LOCAL PLANNING PANEL AGENDA

24 June 2024

LIVERPOOL CITY COUNCIL

LIVERPOOL THE GREAT SOUTH WEST

MATTERS FOR THE LOCAL PLANNING PANEL'S DETERMINATION

Monday, 24 June 2024

To be held at the
MS Teams
Commencing at 2:00pm

Microsoft Teams meeting
Join on your computer, mobile app or room device
Meeting ID: 433 365 281 005
Passcode: FG5gys

Dial in by phone
+61 2 9161 1229,,954495627# Australia, Sydney
Phone conference ID: 954 495 627#

Submissions by the applicant and concerned parties will be considered at the meeting. A concerned party is deemed to be a person who has made a written submission in respect to the application. The Panel shall, upon request, hear submissions from persons who identify prior to a meeting that they wish to make a submission to be considered by the Panel. Presentations to the Panel by the applicant and concerned parties shall be restricted to **3 minutes each**. The Panel Chairperson has the discretion to extend the period if considered appropriate.

Should you wish to address the Panel, please advise Andrijana Mijoski, Acting Panel Support Officer on 8711 7915, by 4pm, Friday 21st June 2024.

ITEM No.	SUBJECT	PAGE No.
1	**DEVELOPMENT APPLICATION DA-629/2023** **Demolition of existing structures and construction of a 120-place childcare centre with basement parking.** **LOT 3 DP 602936** **123 Epsom Road, Chipping Norton**	**5 - 585**

ITEM No.	SUBJECT	PAGE No.
2	**DEVELOPMENT APPLICATION DA-640/2023** **Demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of 4 multi-dwelling units with strata subdivision.** **LOT 9 DP 236405** **84 Lucas Avenue, Moorebank**	**586 - 668**

ITEM No.	SUBJECT	PAGE No.
3	**DEVELOPMENT APPLICATION DA-562/2023** **Demolition of the existing structures and construction of a four-storey residential flat building with 31 dwellings (one x studio, 10 x 1-bedroom, 18 x 2-bedroom and two x 3-bedroom dwellings) and two basement levels. The development includes nine dwellings that would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of State Environmental Planning Policy (SEPP) (Housing) 2021.** **LOT 387 to 389 DP 237249** **11, 13 & 15 Woolnough Place Cartwright**	**669- 976**

ITEM No.	SUBJECT	PAGE No.
4	**DEVELOPMENT APPLICATION RD-27/2024** **Review of Determination Application pursuant to Section 8.2 of the EP&A Act 1979 for the review of Refusal Notice DA-99/2023 for the demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front bick fence and associated landscaping.** **LOT 10 DP 31050** **10 Holland Crescent, Casula**	**977 - 1119**

Item Number:	**1**
Application Number:	Development Application No. 629/2023
Proposed Development:	Demolition of existing structures and construction of a 120-place childcare centre with basement parking.
Property Address	No. 123 Epsom Road, Chipping Norton
Legal Description:	Lot 3 DP 602936
Applicant:	Artmade Architectural Pty Ltd
Land Owner:	Mr M T Brooks and Mrs C M Brooks
Cost of Works:	$4,607,319.00
Recommendation:	Refusal
Assessing Officer:	Ben Paterson

1. EXECUTIVE SUMMARY

The subject development application DA-629/2023 seeks consent for the demolition of existing structures and construction of a 120-place childcare centre with basement parking at No. 123 Epsom Road, Chipping Norton, which is legally described as Lot 3 in DP 602936.

The land is zoned R2 Low Density Residential under *Liverpool Local Environmental Plan (LLEP) 2008* where the proposed development is permissible with consent.

The subject application was required to be notified to properties within a 75m radius in accordance with the Liverpool Community Participation Plan 2022. The proposal was notified between 12 December 2023 and 16 February 2024. A total of 38 submissions were received, primarily raising concerns in relation to traffic-related matters, and the relevant matters of objection have been discussed in detail in the report below.

The application is referred to the Liverpool Local Planning Panel (LLPP) in accordance with the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consent, endorsed by the Minister for Planning and Public Spaces on 30 June 2020,* as the development falls within the category of:

> ***Contentious Development***
> *Development that:*
> *(a) In the case of a council having an approved submissions policy – is the subject of the number of submissions set by that policy, or*
> *(b)* ***In any other case – is the subject of 10 or more unique submissions by way of objection.***

An assessment of the application has demonstrated that the proposal is inconsistent with provisions and requirements of the *Environmental Planning and Assessment Act 1979 (EP&A Act), State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021* and Liverpool Development Control Plan (LDCP) 2008 that are relevant to the proposal.

Additional information had been requested from the applicant on 14 March 2024 and a follow up meeting was held on 22 March 2024. The applicant submitted a response that only partially addressed the matters within the request for additional information.

Matters remain not addressed including, but not limited to:

- Total unencumbered outdoor play area non-compliance due to the inclusion of areas of dense planting and areas not suitable for children play.
- Reduction/relocation of outdoor play areas behind the building line.
- Safety.
- Fencing.
- Further variation to the materials and colour schedule that more suitably address the streetscape.
- Traffic queuing along Epsom Road close to the intersection with Governor Macquarie Drive during peak periods as identified within submissions.

Should the development have been supported, some remaining contentions could be conditioned within a consent, including but not limited to:

- Stormwater pipe and grate opening design.
- Crash barriers and bollards.
- Driveway and footpath design.

However, it is considered that further redesign to ensure compliance with all the abovementioned issues is to be addressed prior to any consent being granted. Therefore, a recommendation has been made using the current level of information submitted.

The application has been assessed pursuant to the provisions of the *EP&A Act 1979* and it is recommended that the application be refused based on insufficient information being submitted and inconsistencies with relevant environmental planning instruments and policies. Accordingly, the proposed development as submitted would be contrary to the public interest if approved.

2. SITE DESCRIPTION AND LOCALITY

2.1 Site Description

The subject site is identified as No. 123 Epsom Road, Chipping Norton, which is legally described as Lot 3 in DP 602936. The site is irregular in shape and has a total area of approximately 2,322sqm with a:

- primary frontage to Epsom Road of 32.575m.
- secondary street frontage to Governor Macquarie Drive of 70.505m.
- corner splay of 12.87m.
- Southern side boundary of 70.065m.
- Rear boundary of 22.7m.

The site is relatively flat and currently contains a dwelling, swimming pool, tennis court and a metal shed located within the rear yard. Several Palm trees (Phoenix Canariensis) are located at the north-eastern part of the site, as shown in **Figure 1**.

Figure 1: Aerial Image of subject site (*Source: Geocortex*)

2.2 Locality Description

The site is located within an established residential area of Chipping Norton and is directly adjoined by residential properties. Development in the vicinity of the site is typically single and two storey detached dwelling houses with several multi-dwelling housing developments in the surrounding area.

The site is well serviced by public open space with Ashfordby Park located 240m to the south-east and South Park located 450m to the north-west. Both parks provide passive and active recreation opportunities for the community. Joey's Cottage Preschool is located on the opposite side of Epsom Road 50m north-east of the site.

The site is also serviced by the Liverpool to Chipping Norton bus route, with the closest stop 100m to the south of the site. The service provides easy access to nearby public schools, shops, and other services.

Figure 2: Locality surrounding the proposed development site (*Source: Geocortex*)

Site Inspection Photos

A site inspection was conducted on 18 March 2024. Photos (Figures 3-6) indicate the subject site and the surrounding area's character.

Figure 3: 123 Epsom Road, eastern frontage.

Figure 4: 123 Epsom Road, northern frontage.

Figure 5: Setback from Governor Macquarie Drive including trees to be retained and protected.

Figure 6: 127A Epsom Road, neighbouring development to the south.

2.3 Site Constraints

Are there any constraints or affectation on the site: - Bushfire - Flooding - Heritage Items - Aboriginal heritage - Environmentally Significant Land - Threatened Species/ Flora/ Habitat/ Critical Communities - Acid Sulphate Soils - Aircraft Noise - Flight Paths - Railway Noise - Road Noise/ Classified Road - Significant Vegetation - Contamination - Salinity	- Flooding: The site is mapped within the special flood consideration area and the application was referred to Council's Flooding Department who raised no objections subject to conditions. - Heritage: The site is not identified as an item of heritage and is not within a heritage conservation area. It does, however, adjoin an item of landscape heritage and opposite an item of general heritage. The application was referred to Council's Heritage Officer, who raised no objections, subject to conditions. - Acid sulphate soils: The site is mapped as containing class 5 acid sulphate soils however the proposal is highly unlikely to lower the water table below 1m AHD. - Moderate salinity potential.
Are there any restrictions on title? Attach 88B instrument to the report	Nil.

3. SUBJECT SITE HISTORY

The following is a list of relevant applications related to the subject site/s, from Council's record systems:

DA No.	Lodged	Proposed Development	Determined
B/1690/1987	23 November 1987	Screen enclosure.	Approved on 30 November 1987

DA-454/1987	14 August 1989	Erection of a dwelling.	Determined on 27 May 2002
DA-1201/2009	15 June 2009	Awning.	Approved on 17 June 2009
PPL-5/2018	22 August 2018	Multi dwelling house and attached dwelling house and amend heritage listing for Item 21.	Advice Provided
RZ-9/2018	13 December 2018	Planning proposal to amend LLEP - Schedule 1 to permit multi dwelling housing with consent on the site.	Approved and gazette on 10 January 2020
PL-80/2020	15 October 202	Demolition of existing structures and erection of 11 dwelling housing development.	Advice Provided
DA-978/2021	30 August 2021	Demolition of all existing structures and construction of a 11-unit multi-dwelling housing development with associated landscaping and site works.	Approved on 17 June 2022
PL-20/2023	16 March 2023	Construction of single storey 120 place childcare centre with basement parking.	Advice Provided
DA-629/2023	**8 December 2023**	**Demolition of existing structures and construction of a 120-place childcare centre with basement parking.**	***Currently Under Assessment***

The following is a brief timeline on the history of the subject application DA-629/2023:

Date	Proposed Development
12 December 2023	The subject application was placed on notification.
19 December 2023	An extension of the notification period between 18 January and 16 February 2024 was granted.
16 February 2024	The notification period ended, and 38 submissions were received.

14 March 2024	A request for additional information (RFI) letter was sent to the applicant in relation to the following matters: • Demolition plan. • Plan of Management (PoM). • Inconsistent report information. • Site plan/landscape plan. • Outdoor play areas. • Nappy change tables/toilet facilities. • Pedestrian entrance. • Front setback. • Existing character. • Shadow diagrams. • Submissions. • Car parking. • Environmental health. • Land development engineering. • Traffic and transport. • Urban design and public domain. • Community planning.
22 March 2024	The applicant requested a 14-day extension until 15 April 2024 to submit the requested information and this was accepted.
27 March 2024	A meeting was held between the applicant and Council officers to discuss the RFI matters.
16 – 23 April 2024	The applicant submitted additional information and this information was re-referred to Council's Engineering and Urban Design & Public Domain officers.
07 May 2024	The applicant was provided with a copy of all submissions relating to the subject application.
13 May 2024	The subject application was reallocated to a new development assessment planner.
14 May 2024	The additional information and submissions were referred to Council's Traffic & Transport officer for re-review.
24 June 2024	The subject DA scheduled for LPP deliberations.

The submitted documents were found to be unsatisfactory in response to the issues raised by Council and there is insufficient level of information submitted with the subject application to make a full and proper assessment of the development. As such the proposal has been recommended for **refusal** in this instance.

4. DETAILS OF THE PROPOSED DEVELOPMENT

The development application seeks Council consent for the demolition of existing structures and construction of a 120-place childcare centre with basement parking. The proposal would consist of the following:

Demolition:

- Demolition of the all existing structures, swimming pool, tennis court, concrete hardstand area and removal of six trees (one of which would be transplanted).

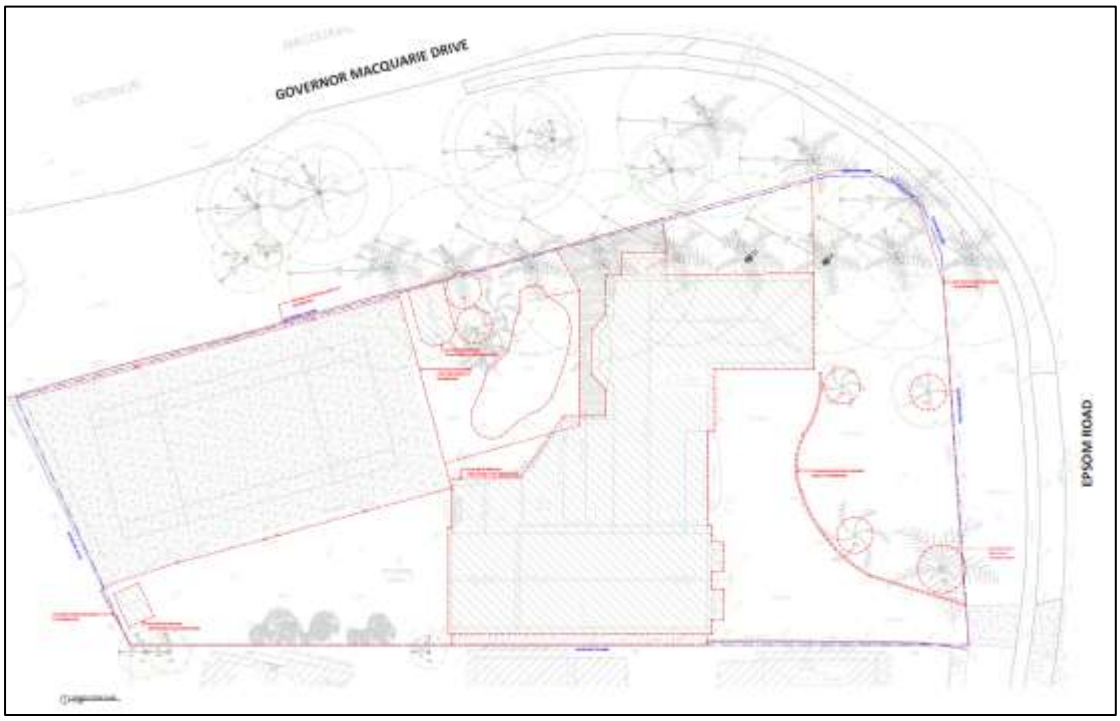


Figure 7: Proposed demolition plan

Construction of a Childcare Centre with basement carparking:

Basement, Access and Parking:

- Vehicular access to the basement level is proposed from Epsom Road via two-way manoeuvring.
- Pedestrian access from the basement to the childcare centre is proposed via a lift and staircase.
- A total of 33 car parking spaces have been proposed inclusive of 21 staff spaces and 12 visitor spaces (including two accessible spaces).
- A total of eight bicycle parking spaces.

- Bin collection room.
- Pram storage.
- Laundry and storage.
- Locker room.
- Mechanical services.

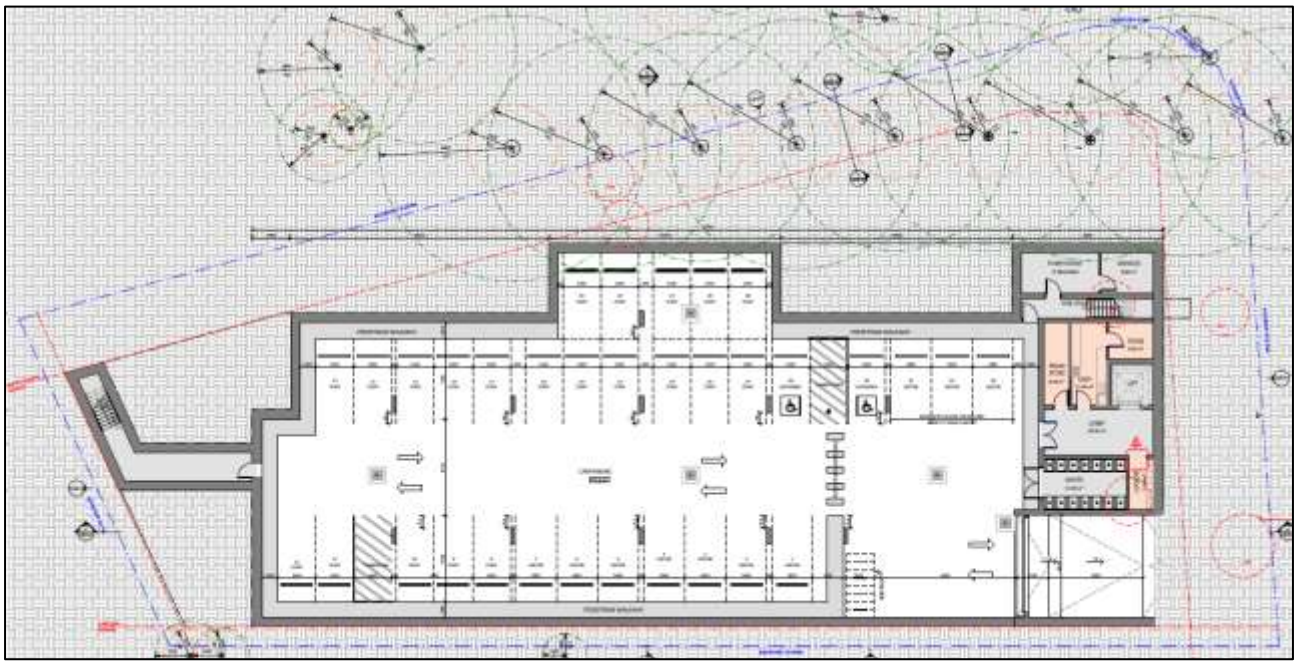


Figure 8: Proposed basement plan

Ground Floor Internal and External:

A total of five single storey buildings all connected via a covered walkway with:

- Entry lobby, kitchen, pantry, office, toilet and staff room.
- Playroom 1, three cot rooms, two nappy change rooms, storage and playroom 2.
- Playroom 3, toilet and nappy change, storage and playroom 4.
- Playroom 5, toilet and nappy change, storage and playroom 6.
- Playroom 7, toilet and nappy change and storage.
- Five outdoor play areas and six external storage areas.

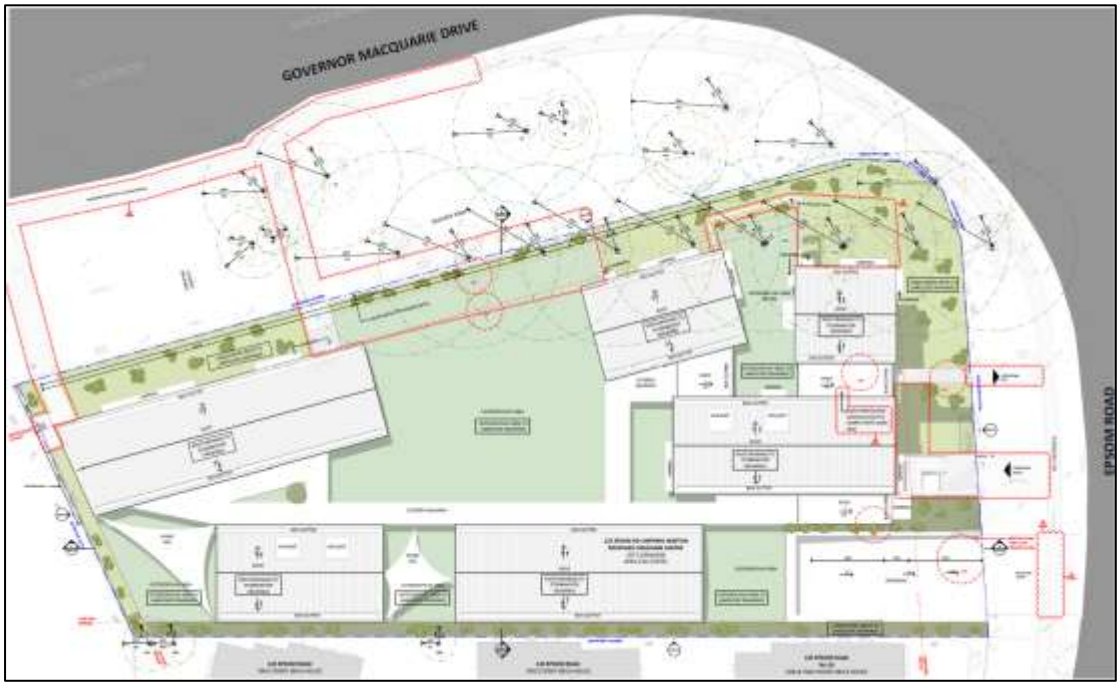


Figure 9: Proposed site plan.

Figure 10: Proposed ground floor plan.

Operational Details:

- The proposed hours of operation are between 7:00am and 6:00pm, Monday to Friday. The child care centre would be closed on Saturdays, Sundays and Public Holidays; and
- 120 children are proposed with 19 educators, one administration officer and one cook.

5. STATUTORY CONSIDERATIONS

The following planning instruments have been considered in the planning assessment of the subject development application:

(a) *State Environmental Planning Policy (Biodiversity and Conservation) 2021.*
(b) *State Environmental Planning Policy (Resilience and Hazards) 2021.*
(c) *State Environmental Planning Policy (Sustainable Buildings) 2022.*
(d) *State Environmental Planning Policy (Transport and Infrastructure) 2021.*
(e) *Education and Care Services National Regulations 2011*.
(f) Child Care Planning Guideline 2021.
(g) *Liverpool Local Environmental Plan (LLEP) 2008*.
(h) Liverpool Development Control Plan (LDCP) 2008.
- Part 1 – General Controls for all developments; and
- Part 3.8 – Non-Residential Development in Residential Zones.

<u>Contributions Plans</u>

- Liverpool Contributions Plan 2018 – Established Areas – applies to all developments pursuant to Section 7.11 of the EPA & Act.

6. PLANNING ASSESSMENT

The development application has been assessed in accordance with the relevant matters of consideration prescribed by Section 4.15 of the *EP&A Act 1979* and the *Environmental Planning and Assessment Regulation (EPAR) 2021*, as follows:

6.1 Section 4.15(1)(a)(1) – Any Environmental Planning Instrument

(a) *State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021*

The subject land is located within the Georges River catchments and as such Chapter 6 Water catchments of the SEPP applies to the application. The Biodiversity and Conservation SEPP aims to protect the environment of the Georges River catchments by ensuring that biodiversity values are protected and preserved and that water quality impacts are considered.

The application was referred to Council's Floodplain engineer. Although the proposed development is within a special flood consideration area, the proposed development is considered a sensitive use, and therefore, Council's flood related controls do not apply to the proposed development. Should the proposal have been supported, conditions of consent would be imposed to ensure floor levels are compatible with probable maximum flood levels and a flood evacuation plan would be required to be prepared.

Additionally, the application was referred to Council's Land Development Engineering Department who reviewed stormwater management and drainage associated with the

proposal. An initial assessment identified several additional items of information that would be required to make an accurate assessment of the stormwater requirements with catchments, on-site stormwater detention (OSD) calculations, access to the discharge control device and compliance with relevant Australian Standards with basement pumped systems.

Whilst supplementary submissions had been, in part addressed, Council's Land Development Engineer had identified further issues regarding outlet pipe size, grate openings and existing pipe/stormwater street network. Despite this, these additional items would have been capable of being addressed as conditions of consent should the application have been supported.

Accordingly, the proposed development is consistent with the controls and objectives of SEPP (Biodiversity and Conservation) 2021.

(b) *State Environmental Planning Policy (Resilience and Hazards) 2021*

The proposal has been assessed under the relevant provisions of SEPP (Resilience and Hazards) 2021. The objectives of SEPP (Resilience and Hazards) 2021 are:

- *to provide for a state wide planning approach to the remediation of contaminated land.*
- *to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.*

Pursuant to the above SEPP, Council must consider:

- whether the land is contaminated.
- if the land is contaminated, whether it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the proposed use.

Pursuant to Clause 4.6 of SEPP (Resilience and Hazards) 2021, Council is required to undertake a merit assessment of the proposed development and the following table summarises the matters for consideration in determining a development application (Clause 4.6).

Clause 4.6 - Contamination and remediation to be considered in determining development application	**Comment**
(1) A consent authority must not consent to the carrying out of any development on land unless:	
(a) it has considered whether the land is contaminated, and	A preliminary site investigation (PSI) was submitted with DA-629/2023 which supported the proposed use due to the low contamination risk present on site.
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and	The site was deemed to be suitable for the proposed use in accordance with the submitted PSI.

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.	As above.

Based on the above assessment, the proposal is considered to satisfy the relevant objectives and provisions of SEPP (Resilience and Hazards) 2021.

(c) *State Environmental Planning Policy (Sustainable Buildings) 2022*

SEPP (Sustainable Buildings) 2022 - Chapter 3 applies to development, other than development for the purposes of residential accommodation, that involves-

(a) the erection of a new building, if the development has a capital investment value of $5 million or more, or

(b) alterations, enlargement or extension of an existing building, if the development has a capital investment value of $10 million or more.

The subject application has an estimated CIV value of $4,607,319 and is therefore 'exempt' as it does not meet the above criteria.

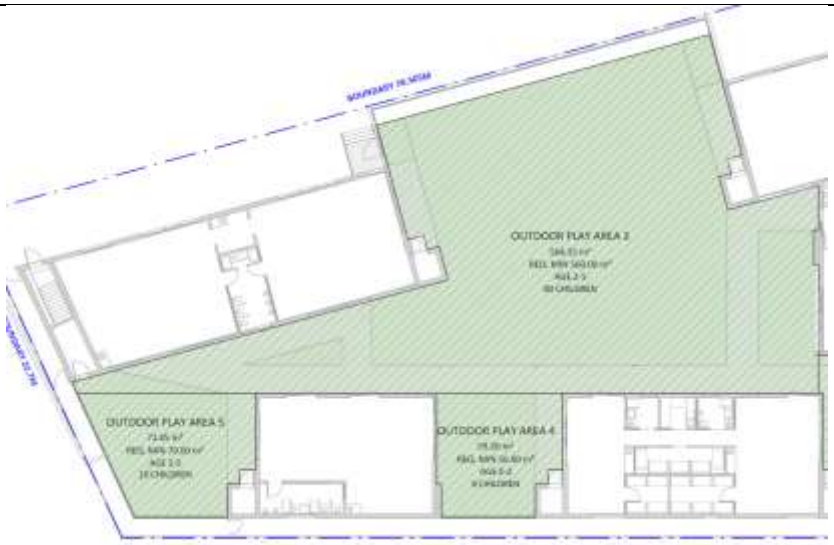
(d) *State Environmental Planning Policy (Transport and Infrastructure) 2021*

This proposal has been assessed under the provisions of *SEPP (Transport and Infrastructure) 2021*, specifically Chapter 3 – Educational establishments and child care facilities (previously known as *SEPP (Educational Establishments and Child Care Facilities) 2017)*.

State Environmental Planning Policy (Transport and Infrastructure) 2021			
Chapter 3 – Educational Establishments and child care facilities **Part 3.3 Early education and care facilities – specific development controls**			
Clause	**Requirements**	**Proposed**	**Comment**
3.22 - Centre-based child care facility—concurrence of Regulatory Authority required for certain development	This clause applies to development for the purpose of a centre-based child care facility if: (a) the floor area of the building or place does not comply with regulation 107 (indoor unencumbered space requirements) of the *Education and Care Services National Regulations*, or	Regulations 107 and 108 of Educational and Care Services National Regulation specifies the following: • Indoor - 3.25m² per child • Outdoor - 7.0m² per child **Required Indoor**: (120 x 3.25sqm) = 390sqm Room 1: 0-2 Room – 39.25sqm Room 2: 0-2 Room – 26.66sqm Room 3: 3-5 Room – 68.08sqm Room 4: 3-5 Room –	

		67.09sqm Room 5: 2-3 Room – 66sqm Room 6: 3-5 Room – 66.82sqm Room 7: 2-3 Room – 66.48sqm **<u>Proposed indoor</u>** = 400.38sqm **<u>Required outdoor</u>**: (120 x 7) = 840sqm	**Complies**
	(b) the outdoor space requirements for the building or place do not comply with regulation 108 (outdoor unencumbered space requirements) of those Regulations	**<u>Proposed outdoor</u>** = 806sqm	**Non-Compliance**
	Non-Compliance: As noted within the RFI letter and pursuant to Regulation 108 of the *Education and Care Services National Regulations* "*Calculating unencumbered space for outdoor areas should not include areas of dense hedges or plantings along boundaries which are designed for landscaping purposes and not for children's play*" and "*other areas not suitable for children should be excluded when calculating outdoor unencumbered space*." Excluding clusters of shrub planting and significant tree trunks that are not suitable for children's play, Council had calculated the proposed outdoor space area to be approximately 806m^2, a difference of 45.5m^2 from that of the 851.50m^2 calculated as part of the submitted applicant's total. Refer to comparative figures below for further reference. The applicant has providing outdoor landscaping elements that provide for a variety of experiences that would facilitate the development of cognitive and physicals skills, however, if a variation to this clause is sought by the applicant a referral to NSW Department of Education for concurrence is required in this instance.		
Outdoor Play Area 1			

 Council calculation: 84.23m²	 Applicant calculation: 84.10m²
Outdoor Play Area 2	
 Council calculation: 75.5m²	 Applicant calculation: 72.80m²
Outdoor Play Areas 3, 4 and 5	

 Council calculation: 646.41m²			
 Applicant calculation: 694.60m²			
23 - Centre-based child care facility—matters for consideration by consent authorities	Before determining a development application for development for the purpose of a centre-based child care facility, the consent authority must take into consideration any applicable provisions of the Child Care Planning Guideline, in relation to the proposed development	The assessment of the proposed is in accordance with the Child Care Planning Guidelines.	**Complies**
24- Centre-based child care facility in Zone IN1 or IN2—additional matters for consideration by	To minimise land use conflicts with existing industrial development	The site is zoned R2 Low Density Residential and is not located in proximity to industrial development.	**Complies**

consent authorities			
25 - Centre-based child care facility—floor space ratio	FSR in zone R2 – Low Density Residential is not to exceed 0.5:1 unless specified elsewhere.	Site area: 2,322sqm GFA 719.01sqm = 0.309:1	**Complies**
26 - Centre-based child care facility—non-discretionary development standards	To identify development standards for particular matters relating to a centre-based child care facility that, if complied with, prevent the consent authority from requiring more onerous standards for those matters. – a) the development may be located at any distance from an existing or proposed early education and care facility b) indoor and outdoor space complies with regulation 107 and 108 of the Education and Care Services National Regulations c) the development may be located on a site of any size and have any length of street frontage or any allotment depth, d) the development may be of any colour or colour scheme unless it is a State or local heritage item or in a heritage conservation area.	 Noted As per Clause 3.22 above. Noted The site is not listed as a local heritage or State heritage.	**Complies**
27 - Centre-based child care facility—development control plans	1) A provision of a development control plan that specifies a requirement, standard or control does not apply in relation to a) Operational or management plans or arrangements (including hours of operation)	 The assessment was accompanied by a PoM. The proposed hours of operation are Monday to Friday: 7:00am to 6:00pm. Closed Saturday, Sundays, and Public Holidays	**Complies**

	b) Demonstrated need or demand for child care services	Social comment has been provided demonstrating a growing need for childcare centres is required in the locality.	**Complies**
	c) Proximity of facility to other early education and care facilities	The nearest childcare centre is approximately 60m north-east of the site.	**Complies**
	d) Any matter in relation to development for the purpose of a centre-based child care facility contained in design principles set out in Part 2 of the *Child Care planning Guideline* or matter for consideration set out in Part 3 of the requirements set out in Part 4 of Guideline other than height, side and rear setback or car parking rates	Noted.	**Complies**

In accordance with the Child Care Planning Guideline 2021, Chapter 4 of the *Education and Care Services National Regulations 2011* is to be applied and the key controls are discussed in the following table:

Education and Care Services National Regulations 2011			
Chapter 4 National Regulations	**Requirement**	**Assessment**	**Comment**
97 Emergency and Evacuation Procedures	The emergency and evacuation procedures required under regulation 168 must set out — (a) instructions for what must be done in the event of an emergency; and (b) an emergency and evacuation floor plan.	A PoM and an emergency evacuation plan has been submitted with DA-629/2023. These procedures would form part of the licensing requirements.	**Complies**
104 Fencing	The approved provider of an education and care service must ensure that any outdoor space used by children at the education and care service	Fencing has been provided around outdoor spaces used by children.	**Complies**

	premises is enclosed by a fence or barrier that is of a height and design that children preschool age or under cannot go through, over or under it.		
106 Laundry and Hygiene Facilities	The proposed development includes laundry facilities or access to laundry facilities OR explain the other arrangements for dealing with soiled clothing, nappies and linen, including hygienic facilities for storage of soiled clothing, nappies and linen prior to their disposal or laundering. Laundry/hygienic facilities are located where they do not pose a risk to children	Laundry and hygiene facilities provided and located away from children's play areas.	**Complies**
107 Indoor Space Requirements	3.25m^2 of unencumbered space per child.	**Required**: Indoor – (120 x 3.25) 391sqm Room 1: 0-2 Room – 39.25sqm Room 2: 0-2 Room – 26.66sqm Room 3: 3-5 Room – 68.08sqm Room 4: 3-5 Room – 67.09sqm Room 5: 2-3 Room – 66sqm Room 6: 3-5 Room – 66.82sqm Room 7: 2-3 Room – 66.48sqm Proposed indoor = 400.38sqm	**Complies**
	It is <u>recommended</u> that a child care facility provide: • a minimum of 0.3m3 per child of external storage space • a minimum of 0.2m3 per child of internal storage space.	**Recommended**: External – (120 x 0.3) 36sqm Proposed external: 42.35sqm **Recommended**: Internal – (120 x 0.2) 24sqm Proposed internal: 38sqm	**Complies**
108 Outdoor Space Requirements	7m^2 of unencumbered space per child.	Required: outdoor - (120 x 7) 840sqm Proposed outdoor = 807sqm	**Non-Compliance**
	Non-Compliance: As noted within the RFI letter and pursuant to Regulation 108 of the *Education and Care Services National Regulations* "*Calculating unencumbered space for outdoor areas should not include areas of dense hedges*		

	or plantings along boundaries which are designed for landscaping purposes and not for children's play." Excluding clusters of shrub planting and significant tree trunks, Council has calculated the proposed outdoor space to be approximately 806m2, a difference of 45.5m^2 from that of the 851.50m^2 as noted in the applicant's calculation. The applicant is commended for providing outdoor landscaping elements that provide a variety of experiences that facilitate the development of cognitive and physicals skills, however, if a variation to this clause is sought by the applicant a referral to NSW Department of Education for concurrence is required.		
109 Toilet and Hygiene Facilities	The proposed development includes adequate, developmentally and age appropriate toilet, washing and drying facilities for use by children being educated and cared for by the service. The location and design of the toilet, washing and drying facilities enable safe and convenient use by the children.	The proposed development provides for toilets and hygiene facilities that are located in between each playroom.	**Complies**
110 Ventilation and Natural Light	The approved provider of an education and care service must ensure that the indoor spaces used by children at the education and care service premises — (a) are well ventilated; and (b) have adequate natural light; and (c) are maintained at a temperature that ensures the safety and wellbeing of children.	The proposed childcare centre has access to adequate natural light through windows facing different orientations. Natural cross ventilation is also available to all playrooms through window openings.	**Complies**
111 Administrative Space	The approved provider of a centre-based service must ensure that an adequate area or areas are available at the education and care service premises for the purposes of— (a) conducting the administrative functions of the service; and	Administrative areas have been proposed to facilitate conducting the administrative functions of the service, consulting with parents of children and conducting private conversations. Submitted floor plans illustrate reception rooms, office rooms	**Complies**

	(b) consulting with parents of children; and (c) conducting private conversations.	and staff rooms to carry out administrative tasks.	
112 Nappy Change Facilities	The proposed development includes an adequate area for construction of appropriate hygienic facilities for nappy changing including at least one properly constructed nappy changing bench and hand cleansing facilities for adults in the immediate vicinity of the nappy change area. The proposed nappy change facilities can be designed and located in a way that prevents unsupervised access by children.	Nappy change facilities have been provided for children who wear nappies, including hygienic facilities for nappy changing and bathing. A nappy change room is located adjacent to each playroom.	**Complies**
113 Outdoor Space - Natural Environment	The approved provider of a centre-based service must ensure that the outdoor spaces provided at the education and care service premises allow children to explore and experience the natural environment.	The centre proposes an outdoor play area which is considered to incorporate high quality designed outdoor areas to enable a safe learning environment for children. The outdoor play areas incorporate trees, planting, sand, rock formations and stepping stones as a natural play environment.	**Complies**
114 Outdoor Space - Shade	The approved provider of a centre-based service must ensure that outdoor spaces provided at the education and care service premises include adequate shaded areas to protect children from overexposure to ultraviolet radiation from the sun.	The submitted landscape plan illustrates shade sails and canopy trees covering certain outdoor play spaces.	**Complies**
115 Premises Designed to Facilitate Supervision	The approved provider of a centre-based service must ensure that the education and care service premises (including toilets and nappy change facilities) are designed and maintained in a way that facilitates supervision of children at all times that they are being educated and cared for by	The internal layout of the proposed centre has been designed to allow for supervision of children when activity rooms and play spaces are in use. Toilets and nappy change facilities are located between the rooms and accessible.	**Complies**

	the service, having regard to the need to maintain the rights and dignity of the children.		
123 Educator to child ratios—centre-based services	The minimum number of educators required to educate and care for children at a centre-based service as follows; Children age between 0 to 24 months- 1 educator to 4 children;	20 children are proposed and five staff provided.	**Complies**
	Children age between 24 months to 36 months - 1 educator to 5 children;	40 children proposed and eight staff provided	**Complies**
	Children age between 36 months and over - 1 educator to 11 children; and	60 children proposed and six staff provided	**Complies**
	Children over preschool age- 1 educator to 15 children.	Nil.	**Not Applicable**

(e) Child Care Planning Guideline 2021:

In determining a development application for development for the purpose of a centre-based childcare facility, the consent authority must take into consideration any applicable provisions of the Child Care Planning Guideline (CCPG) 2021. The development is not considered to achieve compliance with the provisions of CCPG 2021 and relevant compliance tables can be found in Attachment 2. The proposed variations sought by the applicant are as follows:

Variation 1: Overshadowing
Pursuant to *CCPG Part 3.1 Site Selection and location:* ***C1***

> *Proposed developments in or adjacent to a residential zone must consider:*
> *Visual amenity impacts (e.g. additional building bulk and overshadowing, local character)*

The overshadowing of the three adjoining units (1, 8 and 9 – refer to Figure 11) at No. 125 Epsom Road appears to be of concern, however, it has been demonstrated that the proposed development would not significantly exacerbate this issue. The northern façade of unit 9 (the western unit) is currently overshadowed for the most part of the day. The proposed development would cause additional overshadowing during the early hours (between 9am and 10am) to the rear of the site, however the unit would retain suitable solar access to its private open space (POS) between 11am and 5pm.

The northern façade of unit 8 (the centre unit) is also currently overshadowed for the most part of the day. The POS is located to the eastern side of the dwelling and currently does not achieve suitable solar access. Whilst the proposed overshadowing plans demonstrate that solar access would remain insufficient, a minor improvement has been demonstrated due to the proposed development. The northern façade of Unit 1 (the eastern unit) is currently overshadowed for the most part of the day and the POS currently receives limited solar access; however, the proposed development demonstrates that negligible additional overshadowing would be caused.

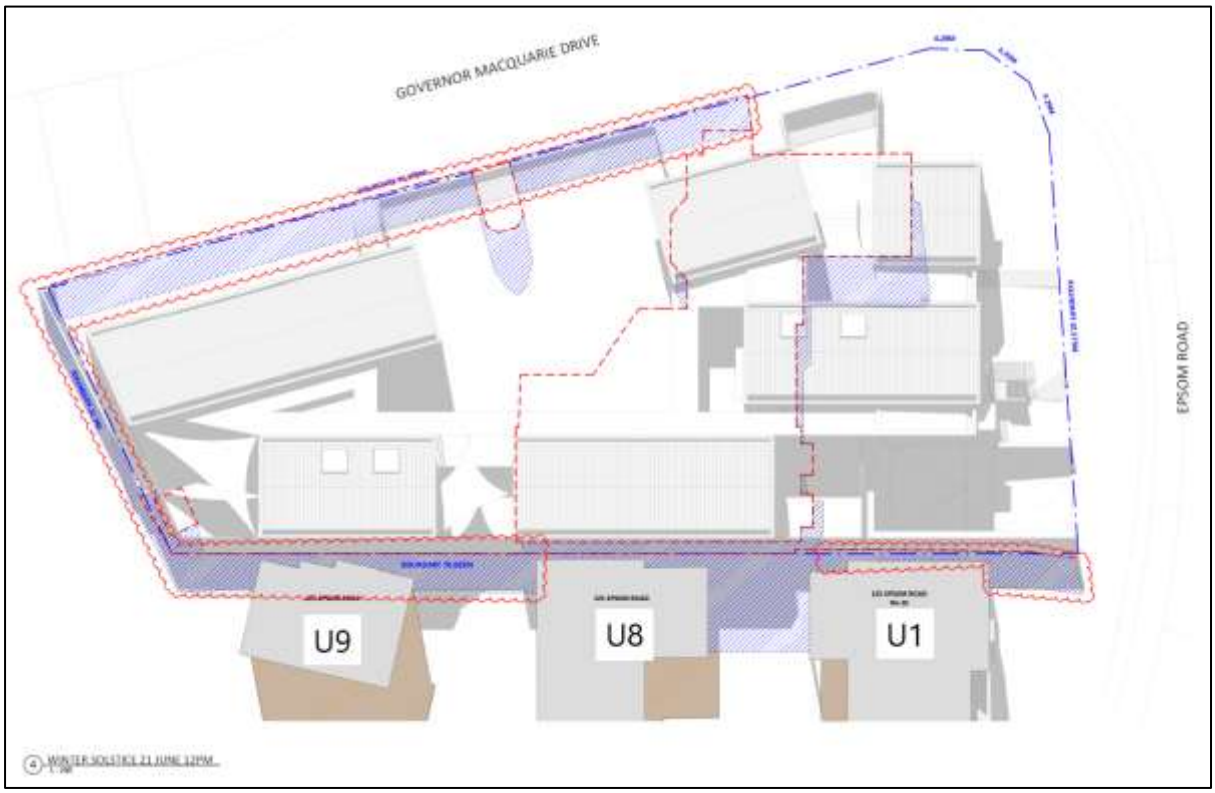


Figure 11: Winter solstice 21 June 12pm (existing v proposed overshadowing)

Variation 2: Roads & Safety

Pursuant to *CCPG Part 3.1 Site Selection and location:* ***C2***

> *To ensure that the site selected for a proposed child care facility is suitable for the use the following must be considered:*
> *The characteristics of the fronting road or roads (for example its operating speed, road classification, traffic volume, heavy vehicle volumes, presence of parking lanes) is appropriate and safe for the proposed use.*

The adjoining road could be made safe for the proposed use, however, the development in its current form is of concern involving children located close to a roundabout, on a busy, regional road. Outdoor play area 2 is close to the intersection of heavy and high-speed vehicles. The current design may expose the children to environmental health concerns and

safety issues. Relocation of play areas behind the building line and safety bollards should be considered. Alternatively, the potential to incorporate additional safety measures such as bollards or crash barriers should be explored.

Variation 3: Materials & Colours
Pursuant to *CCPG Part 3.2 Local Character, Streetscape and the public domain interface:* ***C5***

> *To ensure that the child care facility is compatible with the local character and surrounding streetscape:*
> *Recognise predominant streetscape qualities, such as building form, scale, materials and colours. Include design and architectural treatments that respond to and integrate with the existing streetscape.*

The proposed development has the potential to provide an appropriate built form for the locality and to be consistent with the existing and future desired character. However, in terms of aesthetic integration with the surrounding character, it is considered further amendments are required and further variation to the colour scheme was requested. The colours selected are 'medium grey' in shade, and all the building facades and roofs are mostly uniform in colour. A uniformly mid grey building is more suited within an industrial setting and would not be in keeping with the warm tones, articulation, and residential character of the neighbourhood.

A lighter shade, warmer shade and/or more variation in shades/colour throughout the development is required.

Variation 4: Fencing & Safety
Pursuant to *CCPG Part 3.2 Local Character, Streetscape and the public domain interface:* ***C6***

> *To ensure clear delineation between the child care facility and public spaces:*
> *Fencing to ensure safety for children entering and leaving the facility.*

It is considered that the current fencing scheme requires further refinement to achieve a satisfactory safety outcome. The following items should be addressed as follows:

Acoustic Fence Barrier 2 - the fencing along the boundary of outdoor play area 3 interfacing with Governor Macquarie Drive is mainly a metal fence with clear perspex on top of a low wall. While it may appear to be set back well behind the road and the heritage listed palms have the potential to act as an additional neutral safety barrier, the area is adjacent to a heavy vehicle parking bay which raises environmental concerns relating to noise and air pollution.

Acoustic Fence Barrier 4 - along the boundary of outdoor Play area 2 interfacing with the site's corner, it is very close to the roundabout. A 1m high solid wall, with metal fencing

above and clear perspex paneling is proposed, however, relocation of this play area behind the building line to prioritise safety is requested. There has been no traffic engineer, civil engineer or other safety advice or any supporting information provided demonstrating that these metal fences and solid wall can withstand vehicle force and are an adequate safety measure to protect the children's play spaces from vehicles.

Concrete or other crash barriers, bollards or other safety treatments along the road have not been considered to provide protection to the play areas and the child-care centre buildings. Further to the above, it appears both fences are transparent, in this context on a busy road with heavy vehicles, it is not appropriate to have the children visible to traffic in their play area, and it is a poor outcome for the children to have the visual outlook to traffic, and these visual privacy issues must be addressed.

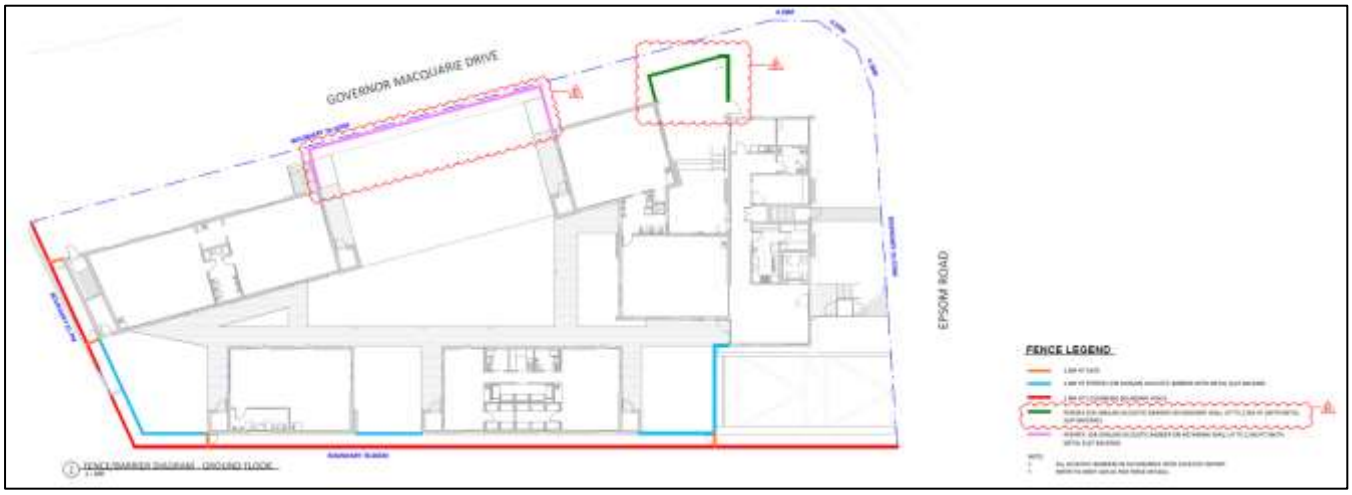


Figure 12: Current fencing strategy

Variation 5: Privacy & Overlooking

Pursuant to *CCPG Part 3.5 Visual and acoustic privacy:* ***C20***

> *To protect the privacy and security of children attending the facility:*
> *Minimise direct overlooking of indoor rooms and outdoor play spaces from public areas through: Appropriate site and building layout facility; suitably locating pathways windows and doors; permanent screening and landscape design.*

The buildings have been adequately set back from the street in accordance with LDCP 2008, however, several privacy concerns have been identified as follows:

Playrooms 4, 5 and 6 windows are north facing, would be a main source of natural northerly light to the playrooms, however they currently face directly onto a busy road (Governor Macquarie Drive) which would result in either poor visual privacy for the children, or curtains continually drawn reducing natural light into the rooms. There is a truck parking bay directly outside of playrooms 5 and 6 further impacting the visual privacy of these windows. Screening of these windows would be required to ensure compliance and improve amenity.

Additional privacy measures would need to be explored by the applicant to ensure both privacy and safety. A low fence along the boundary of Governor Macquarie Drive and Epsom Road to create a buffer, edge, privacy, and sense of security between the childcare centre and the public domain should be considered.

Variation 6: Parking & Safety

Pursuant to *CCPG Part 3.8 Traffic, parking and pedestrian circulation:* ***C35***

> *To provide a safe and connected environment for pedestrians both on and around the site the following design solutions may be incorporated:*
> *Defined pedestrian crossings included within large car parking areas.*

Pedestrian pathways are provided within the basement car parking. The provided swept path analysis illustrate significant encroachment into the vehicle overhang over the pedestrian walkway when car spaces nos. 12 and 13 are used. Appropriate signage and safety bollards are recommended to mitigate pedestrian safety concerns.

Figure 13: Swept paths car space 13

Figure 14: Swept paths car space 12

(f) ***Liverpool Local Environmental Plan (LLEP) 2008***

(i) Zoning and Permissibility

The subject site is zoned R2 Low Density Residential under LLEP 2008) and the proposed development is best defined as a '***centre-based child care'***, which is a permissible use within the zone, with consent. A centre-based childcare is defined below and the zoning of the site can also be seen in **Figure 15** below.

centre-based child care facility means—

(a) a building or place used for the education and care of children that provides any one or more of the following—

(i) long day care,

(ii) occasional child care,

(iii) out-of-school-hours care (including vacation care),

(iv) preschool care, or

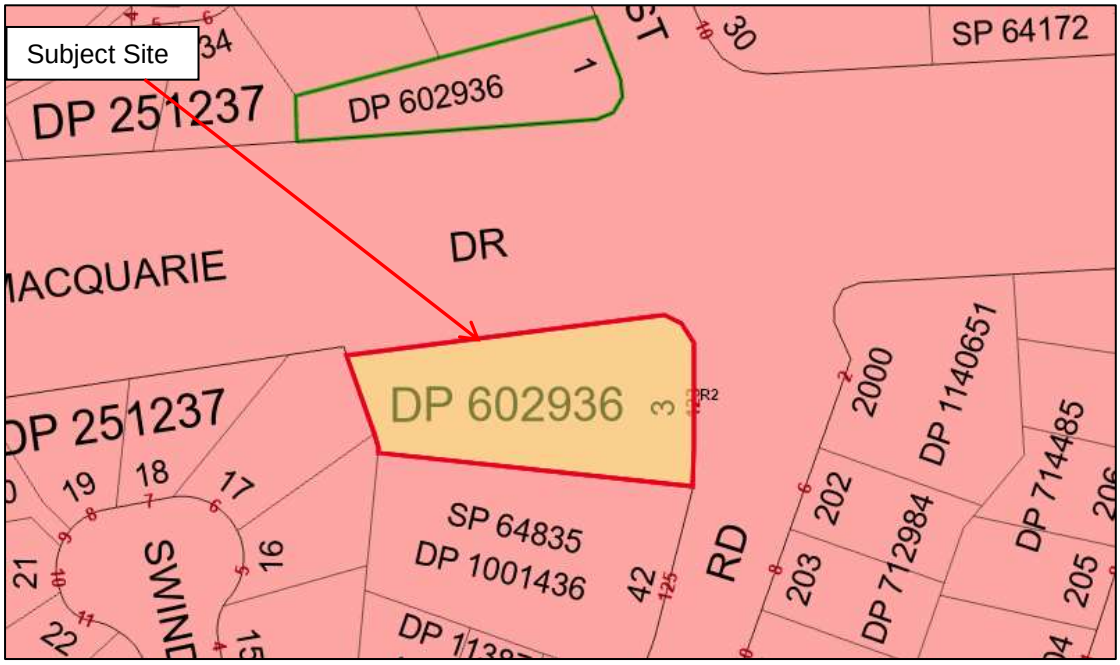


Figure 15: Zoning map (*Source: Geocortex*)

(ii) Objectives of the zone

The objectives of the R2 Low Density Residential zone are:

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To provide a suitable low scale residential character commensurate with a low dwelling density.*
- *To ensure that a high level of residential amenity is achieved and maintained.*

It is considered that the proposal would have the potential to be consistent with the objectives of the R2 - Low Density Residential zone by enabling other land uses, such as childcare centres that provide facilities and services to meet the day to day needs of residents. Improvements to the quality of the development may have the potential to ensure that a high level of amenity is achieved and maintained. However, a full and comprehensive assessment of the impact of the development upon the residential amenity of surrounding sites cannot conclusively be determined until all additional information has been received.

(iii) Principal Development Standards

LLEP 2008 contains principal development standards which are discussed with respect to the proposal as follows:

Clause	Required	Proposed	Complies
2.7 Demolition requires development consent	The demolition of a building or work may be carried out only with development consent.	A demolition plan was submitted with DA-629/2023	**Complies**
4.3 Height of Buildings	Maximum height of 8.5m	The maximum proposed height of the development is 6.7m.	**Complies**
4.4 Floor Space Ratio	Maximum FSR of 0.5:1 is applicable.	Site area: 2,322sqm GFA 719.01sqm = 0.309:1	**Complies**
4.6 Exceptions to Development Standards	Provisions relating to exceptions to development standards	No Clause 4.6 variation requested.	**Not Applicable**
5.10 Heritage Conservation	Provisions relating to the conservation of the environmental heritage of Liverpool.	The site is not identified as a heritage item or conservation area. However, there are a series of palm trees (*Phoenix Canariensis*) adjoining the northern eastern boundary of the site which are identified as a local heritage item (Item No.21) under LLEP 2008. A Heritage Impact Statement (HIS) has been submitted. The report concludes that the proposed works would have a minimal and satisfactory impact on this item. The application was reviewed by Council's Heritage Officer and no objection was raised subject to the implementation of the measures outlined within the tree protection plan and retention of the heritage listed palm trees.	**Complies**
5.21 Flood Planning	Provisions relating to the minimisation of flood risk to life and property.	The proposed development is within the special flood consideration area; and the proposed development is considered as sensitive uses. Therefore, flood related controls do	**Complies**

		apply to this development. A flood advice report and an evacuation plan were submitted, and the application was reviewed by the Council's Floodplain Engineer who raised no objections subject to conditions.	
7.7 Acid Sulfate Soils	Class 1, 2, 3, 4 or 5	Site mapped as containing class 5 acid sulphate soils, however the proposal is highly unlikely to lower the water table below 1m AHD.	**Complies**
7.8A Floodplain Risk Management	Repealed	Not applicable.	**Not applicable**
7.31 Earthworks	Council to consider matters listed (a)-(g)	Cut/fill is proposed due to the proposed basement and is satisfactory.	**Considered acceptable**

6.2 <u>Section 4.15(1)(a)(ii) – Any Draft Environmental Planning Instruments</u>

No applicable draft EPIs.

6.3 <u>Section 4.15(1)(a)(iii) – Any Development Control Plan</u>

(a) Liverpool Development Control Plan (LCDCP) 2008

The proposed development is subject to the LDCP 2008. The application has been assessed against the relevant controls of LDCP 2008, particularly Part 1 General Controls for all Development and Part 3.8 Non-Residential Development in Residential Zones (Childcare Centres). The development is not considered to achieve general compliance with the provisions of LDCP 2008 and relevant compliance tables can be found within Attachment 3. The below variations are sought by the applicant as follows:

Variation 1: Sustainable Design

Pursuant to *LDCP* Part 1 General Controls for all Development*: 22 Energy Conservation » Non-Residential*

> *<u>Control 3.</u> Encourage passive solar designed dwellings.*
>
> *<u>Objectives</u>*
>
> *a) To reduce the necessity for mechanical heating and cooling.*
> *b) To minimise greenhouse gas emissions.*

c) To provide thermal comfort by minimising temperature variations within buildings.

It is considered that the proposal does not include adequate sustainability measures and it was recommended that a revised proposal be proposed which incorporated various best practice measurements to include:

- Consideration for solar panels on the rooftop to offset some of the lighting and electricity requirements.
- The provision of ceiling fans to all habitable areas to reduce the reliance on A/C systems for cooling.
- The provision of a rainwater tank for water collection, storage, and reuse for irrigation of landscape and other uses within the site, such as toilet flushing, etc.
- The implementation of best practice sustainability measures and materials (where practical).

Variation 2: Location & Safety

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.3 Site Planning » Site Location*

Control 2. Child Care Centres shall not be permitted:

- adjacent to industrial activities.
*- **Within 300m of an existing Child Care Centre**.*
- On classified roads.
- Adjacent to railway lines.
- On streets with a carriageway width of 6.5m or less.
- On streets, which are cul-de-sacs.
*- **On lots adjacent to a roundabout (including a proposed roundabout)***
- In areas where aircraft noise levels exceed 25 Australian Noise Exposure Forecast (ANEF).

Objectives

a) To ensure that Child Care Centres are sensitive to site attributes, such as streetscape character, natural landform, drainage, existing vegetation, land capability, slope, solar access and if relevant, heritage items.
b) To ensure privacy for neighbours.

The development is of concern, being a childcare centre, with vulnerable people, located close to a roundabout, on a busy road. One of the key objectives of this part of the DCP is '*To provide and maintain a safe and healthy learning and play environment for children.'* If a merit-based assessment of the proposed development is to be considered, further mitigating measures are to be incorporated into the design to ensure occupant safety from vehicles.

Variation 2: Location & Safety

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.3 Site Planning » Site Planning*

> *Control 5. The site layout should contribute to personal safety and to the protection of property by permitting casual surveillance of adequately lit outdoor spaces from windows and entries.*
>
> *Objectives*
>
> *c) To ensure that Child Care Centres are sensitive to site attributes, such as streetscape character, natural landform, drainage, existing vegetation, land capability, slope, solar access and if relevant, heritage items.*
> *d) To ensure privacy for neighbours.*

The site layout would contribute to personal safety providing adequate casual surveillance of outdoor spaces from windows and entries. However, as identified in CCPG item C6 above a detailed fencing strategy is required including concrete or other crash barriers, bollards, or safety treatments along the road.

Variation 2: Rear Setback

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.4 Setbacks*

> *Control 4. Buildings shall be setback from the side and rear boundaries in accordance with Table 2.*
>
> *Objectives*
>
> *a) To set Child Care Centres back from the street and adjacent properties to provide reasonable space for landscaping, private open space and solar access.*
> *b) To set Child Care Centres back from other dwellings to provide visual and acoustic privacy.*
> *c) To create a streetscape that provides a desirable and safe environment.*
> *d) To establish a streetscape of a scale and sense of enclosure appropriate to the locality.*
> *e) To maximise the amount of area capable of allowing the growth of trees and shrubs.*

As per LDCP Table 2 the rear setback required for a single storey building is 4m and the majority of the western (rear) setback of the development is set back at least 10.685m. However, a proportion of built form (35% of the boundary length) is set back 1.2m from the boundary. Given that no windows are proposed along this boundary, dense planting is provided for, and solar access to the neighbouring property to the west is retained, this variation would be considered acceptable on merit.

Variation 3: Open space in front of the Building Line

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.5 Landscaped Area and Open Space » Open Space*

> *Control 2. Outdoor open space is to be located behind the childcare centre i.e. away from roads/streets.*
>
> *Objectives*
>
> *a) To ensure that a minimum amount of Open Space is provided for outdoor activities.*
> *b) To ensure outdoor open space areas are located to minimise any potential risk from errant vehicles to children and staff.*

As noted in CCPG item C2 and C6 above outdoor play area 2 is close to the intersection of heavy and high-speed vehicles. The current design may expose the children to environmental health concerns and safety issues. The potential to incorporate additional safety measures should be explored. Relocation of play areas behind the building line and safety bollards should be considered to ensure compliance.

Variation 4: Open space in front of the Building Line

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.6 Building Form, Style and Streetscape » Building Appearance*

> *Control 5. The front building facades shall be articulated. This articulation may include front porches, entries, wall indents, changes in finishes, balconies and/or verandahs.*
>
> *Objectives*
>
> *a) To encourage designs that will enhance the character of the neighbourhood.*
> *b) To promote variation of building facade and design.*
> *c) To ensure the building enhances the streetscape through the use of suitable built form design and landscaping.*
> *d) To ensure buildings address all street frontages.*
> *e) To discourage garages and in particular garage doors, from visually dominating the streetscape.*
> *f) To ensure that the building design, detailing colour and finish shall add visual interest to the street and shall compliment the street.*

As noted in CCPG item C5 above further variation to the materials and colours schedule is recommended to better integrate with the surrounding streetscape.

Variation 5: Overshadowing

Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.9 Amenity and Environmental Impact » Overshadowing*

Control. Adjoining properties must receive a minimum of three hours of sunlight between 9am and 3pm on 21 June to at least:

- one living, rumpus room or the like and/or
- 50% of the private open space.

Objectives
To minimise overshadowing of neighbouring dwellings and their private open space.

As noted in CCPG item C1 above, the adjoining properties do not currently achieve a minimum of three hours of sunlight between 9am and 3pm on 21 June to one living room and 50% of the private open space. However, the proposed development would not further exacerbate this issue.

Variation 6: Privacy
Pursuant to *LDCP Part 3.8 Non-Residential Development in Residential Zones » 2 Child Care Centres » 2.9 Amenity and Environmental Impact » Privacy*

Control 3. Building siting, window location, balconies and fencing must consider the importance of the privacy of on-site and adjoining buildings and private open spaces.

Objectives
To ensure appropriate noise and vibration attention measures are incorporated into the development.

As detailed in CCPG item C19 above additional privacy mitigation measures are suggested, particularly with regards to playrooms 4, 5 and 6 adjacent to Governor Macquarie Drive.

6.4 Section 4.15(1)(a)(iiia) – any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4

There are no draft planning agreements or planning agreements that apply to the site.

6.5 Section 4.15(1)(a)(iv) –The Regulations
EPAR 2021 includes provisions in which the consent authority can request additional information under Clause 36. Additional information has been requested from the applicant on 14 March 2024 and a follow up meeting was held on 22 March 2024. The applicant submitted a response that only partially addressed the matters within the request for additional information. There are still matters which remain unaddressed including, but not limited to; total unencumbered outdoor play area non-compliance; reduction/relocation of outdoor play areas behind the building line; safety; fencing; and further variation to the materials and colours schedule that would suitably address the streetscape.

Whilst some remaining contentions could be conditioned within a consent, including but not limited to; stormwater pipe and grate opening design; transparency of fencing; crash barriers and bollards; driveway and footpath design. It is considered that further redesign to ensure compliance with all the abovementioned issues be addressed prior to consent being granted occur. Therefore, a recommendation has been made using the current level of information submitted.

6.6 Section 4.15(1)(b) – The Likely Impacts of the Development

Head of Consideration	Comment
Built Environment	The built form does not appear to propose significant adverse impacts on neighbouring developments; however, amendments were requested to ensure consistency with the residential character in the form of an amended materials and colours scheme. This matter was not satisfactorily addressed by the applicant in response to the RFI, therefore insufficient information has been provided to asses this issue. Further safety concerns are raised regarding the play areas located within front setback areas. In its current form the application is lacking in sufficient information required to provide a full and proper assessment of the likely impacts of the development on the built environment for both its users and neighbouring occupants.
Natural Environment	The proposed development is not likely to have significant adverse impacts on the existing natural environment, as the development is of an appropriate scale and size for the site, with adequate integration with the heritage listed palm trees. However, the proposal does not address or satisfy the key provisions as detailed in this report, specifically in relation to the outdoor play area for its occupants. An education and care service premises must provide for every child being educated and cared for within a facility to have a minimum of 7.0m^2 of unencumbered outdoor space. If this requirement is not met, then concurrence of the regulatory authority is required under the Education SEPP.
Social Impacts	The proposed development, if in compliance would have a positive economic impact on the locality through construction of the development, however, further information is required a full and proper assessment of the potential social impact. The adjoining road may be considered safe for the proposed use, however, the development in its current form is of concern being a childcare centre, with vulnerable people, located close to a roundabout, on a busy, regional road (Governor Macquarie Drive). As noted above the location of the outdoor play areas is of concern. Outdoor play area 2 is close to the intersection of heavy and high-speed vehicles. The current design would expose the children to environmental health concerns, i.e. vibration, air pollution (suspended particles) and

	noise. The impacts of these are quite severe for early aged kids. It is noted that the submitted traffic report indicates significant queue lengths to Epsom Road. If this queue eventuates it is likely to impact the operation of Epsom Road intersection with Wilby Street and Cosford Close. Additional information including queuing analysis and proposed mitigation measures was required, however not provided by the applicant.
Economic Impacts	The proposal would not have a negative economic impact on the locality through construction of the development.

6.7 Section 4.15(1)(c) – The Suitability of the Site for the Development

The proposal is a permissible form of development in the zone, however, due to the proposed non-compliances with relevant environmental planning instruments, as detailed in this report, the subject site in its current form is not considered to be suitable for the development proposal as submitted.

6.8 Section 4.55(1)(d)– Any Submissions made in relation to the Development

(a) Community Consultation

The development application was required to be notified to properties within a 75m radius in accordance with the Liverpool Community Participation Plan 2022. The proposal was notified during the period between 12 December 2023 and 16 February 2024. A total of 38 submissions were received objecting to the proposal and the issues of concern raised in the submissions can be summarised as follows:

Issue raised	Comments
Issue 1: Increased traffic congestion	As detailed in the submitted Traffic Impact Assessment (TIA) the proposed development is not expected to have significant adverse impact on the local road network. The TIA has been carried out with reference to the Roads and Maritime Services (RMS) Guide to Traffic Generating Developments, LDCP and Australian Standards AS 2890. The TIA concludes that the estimated peak period traffic generation is of low impact on existing flows on Eighteenth Avenue and the surrounding road network and can be readily accommodated without significant adverse impacts. It is noted that Council has raised that the (SIDRA modelling movement summary) indicates a queue length of around 154m (95% back of queue) on Epsom Road southern approach (left turning lane). If this queue eventuates it is likely to impact the operation of Epsom Road intersection with Wilby Street and Cosford Close. To ensure this impact is appropriately addressed a revised traffic

	report addressing the issues raised in the objections including queueing analysis and proposed measures to mitigate the problem should be provided. The analysis is to consider traffic growth on Epsom Road ten years after the opening of the facility.
Issue 2: Part 3.8, Section 2.3 of the Liverpool Development Control Plan (LDCP) 2008 states that child care centres shall not be permitted within 300m of an existing centre. (Joey's Cottage Preschool is less than 100 metres away)	It is noted that Chapter 3, Section 3.27 of SEPP (Transport and Infrastructure) 2021 overrides the DCP control and states that DCP provisions such as issues to proximity do not apply.
Issue 3: Concern is raised about the capacity of the proposed child care centre. Part 3.8, Section 2.2 control 1 states a maximum capacity of 45 0-5 year olds with consideration of a maximum 60 children however, the application proposes twice the LDCP control at 120 Children.	It is noted that Chapter 3, Section 3.27 of SEPP (Transport and Infrastructure) 2021 overrides the DCP control and states that DCP provisions such as maximum capacity does not apply.
Issue 4: Part 3.8, Section 2.3 of LDCP 2008 states that childcare centres should be located '*on streets with widths that permit adequate safe manoeuvrability of vehicles and line of sight for pedestrians'* and shall not be permitted '*on lots adjacent to a roundabout or on a classified road'*.	The development is of concern, being a childcare centre, with vulnerable people, located close to a roundabout, on a busy road. One of the key objectives of this part of the DCP is '*To provide and maintain a safe and healthy learning and play environment for children.'* As identified within this report the Council would encourage additional safety measures to be put in place to ensure the safety of occupants prior to any determination. It is noted that an existing childcare centre Joey's Cottage Preschool is located 60m away adjacent to the roundabout.
Issue 5: The Child Care Centres' location and capacity will result in unacceptable queuing of traffic along the Western Side of Epsom Road. The roads leading up to the roundabout have two lanes which divide traffic between vehicles turning left, those either going straight or turning right. This includes the lanes on the western side of Epsom Road, in front of the site. The concern is that left turn access into and left turn egress	As per the submitted TIA and based on commissioned traffic surveys and the *Guide to Traffic Generating Developments (2002)* it is considered that the traffic generation of the proposed development is low (96 vehicles in the AM peak and 84 vehicles during the PM peak). It is noted that the (SIDRA modelling Movement Summary) indicates a queue length of around 154m (95% back of queue) on Epsom Road southern approach (left turning lane). If this queue eventuates it is likely to impact the operation of Epsom Road intersection with Wilby Street and Cosford Close. To ensure this impact is appropriately addressed a revised traffic report addressing the issues raised in the objections including queueing analysis and proposed measures to mitigate the problem should be provided. The analysis is to consider traffic growth on

from the site will cause vehicles not using the centre to be queued at peak times.	Epsom Road ten years after the opening of the childcare centre.
Issue 6: Concern is raised that staff and parents driving to the site from directions other than northbound on Epsom Road after using the roundabout will need to drive south on Epsom Road and use other nearby streets or the roundabout adjacent the Chipping Norton Village to turn around and enter the driveway.	Visitor access from alternate directions is expected and may be accommodated via the roundabout further south at Childs Road. The submitted TIA concludes that the proposed development is not expected to have significant adverse impact on the local road network. However, as noted above Council would request a revised traffic report addressing the implications of queuing with regards to traffic banking up and its potential flow on effect to the roundabout further south prior to determination.
Issue 7: The traffic report does not factor in that Epsom Road decreases from double lane to single lane in each direction south of the site. Any car queuing to enter the site may impact on all northbound vehicles along Epsom Road which are waiting to access the roundabout.	The provided traffic report concludes traffic generation of the proposed development is low (96 vehicles in the AM peak and 84 vehicles during the PM peak) and unlikely to significantly increase queueing of the northbound lane. As noted above a revised traffic report is required to suitably address potential queueing prior to determination.
Issue 8: The location of the site and the difficulty in accessing the driveway could lead to parents using the vehicle inspection bay along Governor Macquarie Drive, on the northern side of the site. This would cause significant safety issues and has the potential to increase the frequency of disrupted flow of traffic on Governor Macquarie Drive.	Sufficient on-site parking is available within the basement and as such on-street parking is not required by visitors. Existing signage along Governor Macquarie Drive notes that the vehicle inspection bay is to be used by vehicles over 4.5tonnes. Additional instructions regarding the restriction of the use of this bay could be incorporated into the PoM.
Issue 9: Section 2.5 of the traffic report submitted notes the peak AM and PM times on the site are 7:45am to 8:45am (1 hour) and 4:30pm to 5:30pm (1 hour). The traffic report calculates the traffic generation using the Guide to Traffic Generating Development (2002) as generating 96 vehicles in the AM peak (48 in/48 out) and 84 vehicles	Development listed under Column 3 of Schedule 3 of SEPP (Transport and Infrastructure) 2021 relates to "*site with access to classified road or to road that connects to classified road (if access within 90m of connection, measured along alignment of connecting road)".* Governor Macquarie Drive is a regional road and not a classified road, and it does not connect to a classified road. Therefore, the subject site is exempt and is not considered traffic-generating development.

during the PM peak (42 in/42 out). Therefore, Section 2.122 of the Transport and Infrastructure SEPP requires that traffic generating development be referred to TfNSW for comment.	
Issue 10: Limited on-street parking available. Parents will not use the basement parking and there is no available drop-off/pick-up space on the street	The application was reviewed by Council's Traffic & Transport officer who raised no concerns with regards to the number of parking spaces provided for within the basement. The PoM would encourage parents to utilise this basement parking due to the limited on-street parking available.
Issue 11: Governor Macquarie Road is a thorofare for trucks servicing Warwick Farm Freight Company	As addressed within this report and prior to determination the applicant is encouraged to incorporate additional safety measures to protect its occupants from vehicles along Governor Macquarie Drive. Additional privacy measures are also recommended adjacent to the vehicle stopping bay.
Issue 12: Suitability of location given the proximity of the preschool opposite and numerous other centres within close proximity.	As noted above Chapter 3, Section 3.27 of SEPP (Transport and Infrastructure) 2021 permits development within proximity to surrounding childcare centres and as detailed within the provided social impact comment the centre is designed to support the population growth within the area.
Issue 13: Excavation of basement carpark will affect the stability of neighbouring buildings	Suitable conditions of consent would be imposed to ensure relevant construction standards and codes are met.
Issue 14: Potential flooding at the river from the Louis Mountbatten Bridge	The application was referred to Councils Flood Plain engineer who raised no concerns.
Issue 15: Heritage Palms to be retained	The submitted arborist report incorporates retention and protection measures of the heritage palm trees. The application was referred to both Council's Heritage and Landscape officers who raised no concerns subject to the implementation of tree protection measures outlined within the recommendations of the arborists report.
Issue 15: The proposed childcare centre buildings do not comply with the minimum rear setbacks required by Part 3.8, Section 2.4 of LDCP 2008. Section 2.4 requires a minimum 4m setback from single-storey buildings to the rear property boundary.	The majority of the western (rear) setback of the development is setback over 10m. However, a proportion of built form (35% of the boundary length) is setback 1.2m from the boundary. This is considered satisfactory on merit as no windows are proposed along this boundary, dense planting is provided for and solar access to the neighbouring property to the west is retained.
Issue 16: Although the child care centre buildings are proposed as single-storey, the proposed 1.2m side setback and higher floor levels result in	The overshadowing of the three neighbouring units (1, 8 and 9) at No. 125 Epsom Road appears to be of concern, however, it has been demonstrated that the proposed development would not exacerbate this issue. The northern façade of unit 9 (the rear western unit) is currently overshadowed for the most part of the

adverse effects to adjoining amenity of the southern adjoining multi-dwelling housing through overshadowing onto dwellings on 125 Epsom Road.	day. The proposed development would cause additional overshadowing during the early hours (9-10am) to the rear of the site, however the unit would retain suitable solar access to its private open space (POS) from 11am-5pm. The northern façade of unit 8 (the centre unit) is also currently overshadowed for the most part of the day. The POS is located to the eastern side of the dwelling and currently does not achieve suitable solar access. While the proposed overshadowing plans demonstrate that solar access would remain insufficient, it would be improved upon. The northern façade of unit 1 (the front eastern unit) is currently overshadowed for the most part of the day. The POS currently receives limited solar access; however, the proposed development demonstrates that negligible additional overshadowing would be caused.

(b) Internal Referrals

The following comments have been received from Council's internal departments:

DEPARTMENT	COMMENTS
Traffic and Transport	Additional information required. **Car parking assessment** The proposed parking provision is acceptable. A total of 33 car parking spaces is acceptable (21 for staff and 12 for visitors) including two accessible parking spaces. Four bicycle parking spaces (two each for staff and visitors), one shower and four lockers (trip end facilities), and a space for delivery vehicles. The TIA indicates that loading/servicing and waste collection is to be undertaken outside of peak children pick up/drop off periods when the on-site visitor parking would be largely vacant. **Access and car parking design** The objectors raise concern that traffic generated by the proposed development would exacerbate the queue on Epsom Road close to the intersection with Governor Macquarie Drive during the peak periods for vehicles turning left from Epsom Road onto Governor Macquarie Drive. It is noted that the submitted traffic report (SIDRA modelling movement summary) indicates a queue length of around 154m (95% back of queue) on Epsom Road southern approach (left turning lane). If this queue eventuates it is likely to impact the operation of Epsom Road intersection with Wilby Street and Cosford Close. The applicant is to be requested to submit a revised traffic report addressing the issues raised in the objections including queueing analysis and propose measures to mitigate the problem. The analysis is to consider traffic growth on Epsom Road ten years after the opening of the facility. **Future intersection upgrade** Based on the strategic concept, it appears that the land at DP 602936 would be

	impacted (approximately 5m encroachment at the corner of the block). However, the design still can be updated at the later design stage.
Environmental Health	Supported, subject to conditions of consent. **SEPP – Hazards/resilience –** PSI General recommendations have included a hazardous materials survey and waste classification of excavated soils prior to removal from the site. **Acoustic Report and Noise Management Plan** The acoustic report is supported subject to conditions. The proposed outline of the noise management plan is in line with the recommended guidelines and policies. The methods and proposed strategies are suitable in nature and closely follow general recommendations within the relevant guidelines. Council conditions would complement this plan, with the noise plan being generally supported. **Food Act 2003** The provided plans show a general compliance with the food standards code and are supported.
Natural Environment Landscape	Supported, subject to conditions of consent. • Tree protection measures are to be put in place in accordance with the recommendations of the arborists report.
City Design Heritage	Supported, subject to conditions of consent. • All measures of the tree protection plan are to be implemented. • None of the heritage listed palm trees are to be moved or removed without consent from Council. • A heritage interpretation plan should be prepared focusing on the previous homestead associated with the remnant palm trees and the subject landowners.
Flooding	Supported, subject to conditions of consent. • The proposed development is within the special flood consideration area; however, the proposed development is considered as sensitive uses. Therefore, flood related controls do apply to this development.
Building and Compliance	Supported, subject to conditions of consent. • Compliance with the Building Code of Australia (BCA) would be fully assessed by the appointed certifier.
Land Development Engineering	Supported, subject to conditions of consent. • Stormwater outlet pipe to the kerb inlet pit shall be 375mm RCP. • Ensure minimum grate openings are in accordance with LCC OSD Standard. Minimum grate openings to be: i. 600mm x 600mm for pits up to 800mm in depth ii. 900mm x 900mm for pits greater than 800mm in depth • Prior to the issue of a construction certificate the certifying authority shall

	ensure that an investigation on the existing pipe/stormwater street network has been completed. This is to ensure that the existing pipe network can cater for the proposed whole site discharge to the pit.
Community Planning	No objection, subject to compliance with legislative requirements and addressing of below safety concerns: • Outdooor play area 2 is close to the intersection of hevay and high speedy vehicles. Current design would expose the kids to the environment health concerns, i.e. vibration, air pollution (suspended particles) and noise. Impacts of these are quite severe for the early aged kids. • A low height retaining wall has been suggested on the outdoor play area along the Governor Macquarie Drive. However, considering the high-speed heavy vehicle movement along that road, we think additional precautions should be taken along that road for the remaining part of the centre. There are some gaps in between the existing trees and landscaping elements. • We also recommend checking if adequate safety has been ensured in the currently proposed fencing around the play area. For example, crash barrier, concrete half wall with metal fence
Urban Design & Public Domain	Additional information required. • The applicant has reduced the amount of play space in front of the buildings towards the street, however there is still significant play area in front of the building line. The applicant should shift move all play area behind the line of the building. The required 7sqm unencumbered outdoor play space per child still must be achieved. The above change may result in a reduction of the number of children and built form to be able to comply, however outdoor play space amenity and size is critical to children aged 0-5 years. • The design has not changed in response to the future 5m widening. Council has concerns for the potential road widening resulting in the development's setback from the road reducing by 5m. The development is already of concern by not adhering to the safety requirements in the LDCP Part 3.8, in being a childcare centre on a classified road and near a roundabout and is only being considered based on the generous existing setback of the site boundary to the road. Council recommends confirmation of the road widening, where it would be occurring, and this outline overlaid with the proposed drawings. The proposal should be designed to accommodate the road widening in the first instance, not rely on redesign later. If the widening is along Governor Macquarie Drive and the roundabout this could result in significant redesign of the proposal, or a child-care centre not supported for this site. • The applicant should provide a 3D render of the development from Governor Macquarie Drive, demonstrating the street address, fence design, materiality, height, and play space receded behind the built form line. • The colours selected are 'medium grey' in shade, this is not a 'light colour' and all the building facades and roof are mostly uniform in colour. A uniformly mid grey building evokes an industrial setting and would not be in keeping with the warm tones, articulation, and residential character of the neighbourhood. CDPD encourages the applicant to either select a lighter shade, warmer shade and/or apply more variation in shades/colour

throughout the development.

- The fencing to the neighbouring properties appears to have transparency, creating visual privacy issues between the children play areas and the neighbours. The applicant is to demonstrate how visual privacy between the adjoining neighbours and the childcare centre is being achieved. It is recommended the fence is not transparent for the first 1.8m.

- Council notes that the proposal does not include adequate sustainability measures. It is recommended that the revised proposal incorporate various best practice measurements including:

  - Solar panels on the rooftop to offset some of the lighting and electricity requirements,
  - The provision of ceiling fans to all habitable areas to reduce the reliance on A/C systems for cooling,
  - The provision of a rainwater tank for water collection, storage, and reuse for irrigation of landscape and other uses within the site, such as toilet flushing, etc.
  - The implementation of best practice sustainability measures and materials (where practical)
  - This information should be clearly identified within the updated drawings.

- The applicant has noted they would provide further information in construction certificate (CC) drawings. CDPD has the following information to further assist addressing this requirement:

  In the CC drawings, the applicant is to ensure the design of the driveway enables the pedestrian footpath to not be disrupted by the driveway and appear continuous in colour, materials, and finish, to ensure it is visually clear pedestrians have priority and assist with vehicle calming. Reference image of a pedestrian footpath appearing continuous in materiality and level.

  Refer to this site for further information:
  Continuous footpath treatment to reinforce pedestrian priority at driveways (nsw.gov.au)

  This information does not need to be updated on drawings and can be a condition for consent, included in CC drawings.

	• CDPD have concerns about the solar access of the southern boundary planting, as it is wedged between the built form and the boundary fence (and as per acoustic fence detail 2). The solar diagrams indicate the area would not get sufficient access to sunlight to support plant growth and this should be considered by the applicant. The currently proposed central outdoor play area is adjacent to Governor Macquarie Drive. Outdoor play area 2 is close to the intersection of heavy and high-speed vehicles: • Acoustic fence barrier 2 - the fencing along the boundary of outdoor play area 3 interfacing Governor Macquarie Drive is mainly metal fence with clear perspex on top of a low wall and while it may appear set back far from the road it is adjacent to a heavy vehicle parking bay. • Acoustic fence barrier 4 - along the boundary of outdoor play area 2 interfacing the site corner, very close to the roundabout has a 1m high solid wall, with metal fencing above and clear perspex panelling. • There has been no traffic engineer, civil engineer or other safety advice or supporting information provided demonstrating that these metal fences and solid wall can withstand vehicle force and are an adequate safety measure to protect the children's play spaces from vehicles. • Concrete or other crash barriers, bollards or other safety treatments along the road have not been considered, to provide protection to both the play areas and the child-care centre buildings. • Further to the above, it appears both fences are transparent, in this context on a busy road with heavy vehicles it is not appropriate to have the children visible to traffic in their play area, and it is a poor outcome for the children to have the visual outlook to the traffic, and these visual privacy issues must be addressed. • The development is of concern being a childcare centre, with vulnerable people, located close to a roundabout, on a busy, classified road. The LDCP Part 3.8 states that childcare centres shall not be permitted on classified roads or near roundabouts. One of the key objectives of this part of the DCP is '*To provide and maintain a safe and healthy learning and play environment for children.'* If the applicant is to propose a use that is not permitted in the DCP, they must demonstrate how they are addressing and mitigating the safety concerns. • The applicant is to provide specialist advice (traffic engineer, civil engineer, Safety by Design consultant and/or other) to justify the arrangement of the current design and how children's safety and mitigation measures have been incorporated into the design, particularly the outdoor play areas and playrooms fronting Governor Macquarie Drive and the roundabout.

	• Crash barriers, bollards along the roundabout and along the truck parking bay should be considered. Fencing proposed should demonstrate capability to withstand appropriate loading force. • A solid fence with no transparency is recommended to provide visual privacy for the children. • Playrooms 4, 5 and 6 windows are north facing, would be a main source of natural northerly light to the playrooms, however they currently face directly onto the busy road which would result in either poor visual privacy for the children, or curtains continually drawn reducing natural light into the rooms. There is a truck parking bay directly outside of playrooms 5 and 6 further impacting the visual privacy of these windows. Council encourages the applicant to incorporate screening to these windows to increase privacy from the traffic to Governor Macquarie Drive and improve the amenity for the children. Refer to LDCP Part 3.8 Part 2.7 for front fencing controls. • Further to the above, a low fence along the boundary of Governor Macquarie Drive and Epsom Road is encouraged to create a buffer, edge, privacy, and sense of security between the childcare centre and the public domain, especially important for this location. • The proposal would be subject to significant noise from traffic. Children in daycare centres are aged 0-5 and in their crucial formative years. Noise can cause distress and disturbance and negatively impact the learning and play experience. Council encourages the applicant to incorporate substantial acoustic measures to mitigate noise, such as double-glazed windows. The clear perspex acoustic panelling on top of the fencing shown in the drawings is supported, and acoustic properties should be a priority through any adjustments to the fencing design resulting from the recommendations in this referral.

(c) External Referrals

No external referals were required for the subject application.

6.9 Section 4.15(1)(e) –The Public Interest

The objects of the Act, of relevance to the matters associated with this proposal, are as follows:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,
(b) to facilitate ecologically sustainable development by integrating relevant eco/nomic, environmental and social considerations in decision-making about environmental planning and assessment,
(c) to promote the orderly and economic use and development of land,
(g) to promote good design and amenity of the built environment,

The proposed development lacks sufficient information to effectively address relevant social considerations with respect to occupant safety and it does not incorporate adequate sustainability measures within the proposed built form. Insufficient information has been submitted to ascertain that good design and amenity has been achieved. Therefore, approval of the proposed development as submitted would be contrary to the public interest given the application is inconsistent with the objects of the Act.

7 DEVELOPER CONTRIBUTIONS

Development contributions have not been applied to the development in accordance with the Liverpool Contribution Plan 2018 Establsihed Areas as it is recommended for refusal.

8 RECOMMENDATION

That Development Application DA No 629/2023 be **refused**.

ATTACHMENTS

1. Reasons for Refusal
2. Child Care Planning Guideline (CCPG) 2021 - Compliance Tables
3. Liverpool Development Control Plan (LDCP) 2008 - Compliance Tables
4. Request for Additional Information - 14/03/2024
5. Applicant Response to Council RFI
6. Architectural Drawings
7. Landscape Drawings
8. Statement of Environmental Effects (SEE)
9. Plan of Management (POM)
10. Traffic Report
11. Noise Management Plan
12. Stormwater Drawings
13. Evacuation Diagram
14. Survey plan
15. Waste management plan
16. Social impact assessment
17. Heritage impact statement
18. Geotechnical report
19. Site Investigation Report
20. Flood Risk Impact and/or Management Plan
21. Design Report
22. Arborists report
23. Acoustic report

LIVERPOOL CITY COUNCIL

NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

Attachment 1: Reasons for Refusal

Application number	DA-629/2023 PAN-391659
Applicant	ARTMADE ARCHITECTURAL PTY LTD C/- SHERIF SAAD
	PO BOX REVESBY NSW 2212 CAMPBELLTOWN NORTH NSW 2560
Description of development	Demolition of existing structures and construction of a 120 place childcare centre with basement parking
Property	DP 602936 Cnr Lot 3 123 EPSOM ROAD, CHIPPING NORTON NSW 2170
Determination:	Refused Consent Authority - Council
Date of determination	24/06/2024

Under section 4.18(1) of the EP&A Act, notice is given that the above development application has been determined by refusing consent using the power in section 4.16(1)(b) of the EP&A Act, for the reasons specified below:

Reasons for refusal

1. The proposed development is inconsistent with the objectives in Section 1.3(a), 1.3(b), 1.3(c) and 1.3(g) of the *Environmental Planning and Assessment Act 1979* as a result of non-compliances with planning controls and unsatisfactory plans and information provided in relation to its social consideration, sustainable design merit, design and amenity of the built environment, and consideration of health and safety of its occupants.

2. Insufficient information has been submitted to Council to carry out a full assessment of the application pursuant to Section 4.15(1)(a), 4.15(1)(b), 4.15(1)(c), 4.15(1)(d) and 4.15(1)(e) of the *Environmental Planning and Assessment Act 1979 (*EP&A Act 1979).

3. The proposed development has not effectively demonstrated compliance with the relevant provisions of the State Environmental Planning Policy (Transport and Infrastructure) 2021, in particular Chapter 3 Educational Establishments and Childcare Facilities. Section 3.23 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 requires that the consent authority must take into consideration any applicable provisions of the Childcare Planning Guidelines (CCPG), before determining a development application. The proposed development has not effectively demonstrated compliance with the relevant matters for consideration following:

    a) 3.1 Site Selection and Location – C2 Location adjacent to a roundabout

    b) 3.2 Local Character, Streetscape and the Public Domain Interface – C5 Material and Colours & C6 Fencing and Safety

    c) 3.5 Visual and Acoustic Privacy – C20 Privacy and overlooking

    d) 3.8 Traffic, Parking and Pedestrian Circulation – C35 Parking and safety

4. The proposed development has not effectively demonstrated compliance with the relevant provisions of the Education and Care Services National Regulations (2011 SI 653). The proposed development has not effectively demonstrated compliance with the relevant National Quality Framework Assessment Checklist regulations below:

    a) 108 Outdoor Space Requirements – insufficient area demonstrated.

5. The proposed development does not achieve satisfactory compliance with the Liverpool Development Control Plan (LDCP) 2008, Part 1 General Controls for all Development, in terms of non-compliance with the following:

    a) Section 22 Energy Conservation – additional best practice measures to be incorporated

6. The proposed development does not achieve satisfactory compliance with the Liverpool Development Control Plan (LDCP) 2008, Part 3.8 Non-Residential Development in Residential Zones (Childcare Centres), in terms of non-compliance with the following:

    b) Section 2.3 Site Planning – location adjacent to a roundabout and within 300m of an existing Child Care Centre, privacy and safety

    c) Section 2.3 Site Planning – privacy and safety

    d) Section 2.4 Setbacks – rear setback

    e) Section 2.5 Landscaped Area and Open Space – open space in front of the building line

    f) Section 2.6 Building Form, Style and Streetscape – materials and colours

    g) Section 2.9 Amenity and Environmental Impact – overshadowing and privacy

7. Pursuant to Section 4.15(1)(b) of the Environmental Planning and Assessment Act 1979, the proposed development has not adequately demonstrated the likely impacts of the development, and otherwise, based on the information submitted, is likely to have an adverse impact in terms of the following:

    a) Natural Environment – further detail is required to demonstrate that the proposed development would not create a detrimental impact on the existing natural environment.

    b) Built Environment – further detail is required to demonstrate that the proposed development would not create an adverse impact on the surrounding built environment.

    c) Social and Economic Impact – further clarification is required to demonstrate that the proposed development would not result in a detrimental social impact.

8. Insufficient information has been submitted to demonstrate that the site is suitable for the proposed development, pursuant to Section 4.15(1)(c) of the *Environmental Planning and Assessment Act 1979.*

9. The proposed development is not considered to be acceptable as insufficient information has been provided to address additional information requested from internal referrals, and public objectors, pursuant to the provisions of Section 4.15(1)(d) of the Environmental Planning and Assessment Act 1979 – specifically in relation to the potential traffic impact.

10. Pursuant to Section 4.15(1)(e) of the Environmental Planning and Assessment Act 1979, the proposal is not considered to be in the public interest, having regard to the above reasons of refusal, it would risk allowing an undesirable precedent within the locality, in the future.

Right of appeal / review of determination
If you are dissatisfied with this determination:

Request a review
You may request a review of the consent authority's decision under section 8.3(1) of the EP&A Act. The application must be made to the consent authority within 6 months from the date that you received the original determination notice provided that an appeal under section 8.7 of the EP&A Act has not been disposed of by the Court.

Rights to appeal
You have a right under section 8.7 of the EP&A Act to appeal to the Court within 6 months after the date on which the determination appealed against is notified or registered on the NSW planning portal.

Child Care Planning Guideline 2021 (CCPG)

Determining a Development Application for development for the purpose of a centre-based child care facility, the consent authority must take into consideration any applicable provisions of the Child Care Planning Guideline 2021 (CCPG). The key controls are discussed in the following table:

Child Care Planning Guideline 2021 Part 3. Matters for considerations			
Objectives	**Considerations**	**Assessment**	**Comment**
3.1 Site Selection and location			
C1 *Proposed developments in or adjacent to a residential zone must consider:*	The acoustic and privacy impacts of the proposed development on the residential properties;	An Acoustical Report prepared by Renzo Tonin & Associates, has been submitted and acoustic treatments have been recommended to mitigate potential noise emission. The proposed development is unlikely to result in adverse impacts subject to these recommendations.	**Complies**
	The setbacks and siting of buildings within the residential context; and	The setbacks and siting of the development is suitable within the residential context.	**Complies**
	Visual amenity impacts (e.g. additional building bulk and overshadowing, local character)	The proposed development is considered to provide for an appropriate built form for the locality as it promotes the visual amenity from the streetscape and does not impose a detrimental impact on residential amenity for the locality.	**Complies on merit**
	Variation: Overshadowing of the three neighbouring Units (1, 8 & 9) at 125 Epsom Road appears to be of concern, however, it has been demonstrated that the proposed development will not significantly exacerbate this issue. The northern façade of Unit 9 (rear western unit) is currently overshadowed for the most part of the day. The proposed development		

	will cause additional overshadowing during the early hours (9-10am) to the rear of the site, however the unit will retain suitable solar access to its POS from 11am-5pm. The northern façade of Unit 8 (centre unit) is also currently overshadowed for the most part of the day. The POS is located to the eastern side of the dwelling and currently does not achieve suitable solar access. While the proposed overshadowing plans demonstrate that solar access will remain insufficient, it will be improved upon. The northern façade of Unit 1 (front eastern unit) is currently overshadowed for the most part of the day. The POS currently receives limited solar access; however, the proposed development demonstrates that negligible additional overshadowing will be caused.		
	Traffic and parking impacts of the proposal on residential amenity.	The proposed development provides 33 car parking spaces, in accordance with the LDCP 2008.	**Complies**
C2 *To ensure that the site selected for a proposed child care facility is suitable for the use.*	The location and surrounding uses are compatible with the proposed development or use.	The selected site is suitable for the centre-based child care as it is located within proximity to a school and is surrounded by residential development.	**Complies**
	The site is environmentally safe including risks such as flooding, land slip, bushfires, coastal hazards.	The site is mapped within the special flood consideration area. The application was referred to Council's Flooding Department who raised no objections subject to conditions. The site is not located in a bushfire prone land and is not located within a land slip or coastal area.	**Complies by Conditions**
	There are no potential environmental contaminants on the land, in the building or the general proximity, and whether hazardous materials remediation is needed.	A Stage 1 preliminary site investigation was submitted to Council. The report concludes that the site is suitable for the proposed	**Complies**

		redevelopment works and was reviewed by Council's Environmental Health Section. They supported the findings of the contamination assessments, subject to conditions if consent were granted.	
	The characteristics of the site are suitable for the scale and type of development proposed having regard to: • size of street frontage, lot configuration, dimensions and overall size • number of shared boundaries with residential properties	The selected site is considered suitable for the centre-based child care as the building footprint and design is compatible with surrounding properties in terms of bulk and scale.	**Complies**
	The development will not have adverse environmental impacts on the surrounding area, particularly in sensitive environmental or cultural areas	As per SEPP discussion above.	**Complies**
	Where the proposal is to occupy or retrofit an existing premises, the interior and exterior spaces are suitable for the proposed use. Where the proposal relates to any heritage item, the development should retain its historic character and conserve significant fabric, setting or layout of the item.	New building proposed.	**Not Applicable**
	There are suitable drop off and pick up areas, and off and on street parking.	As discussed under car parking controls under the LDCP 2008, on-site car parking and drop off areas are considered suitable.	**Complies**
	The characteristics of the fronting road or roads (for example its operating speed, road classification, traffic volume, heavy vehicle volumes, presence of parking lanes) is appropriate and safe	The adjoining road may be considered safe for the proposed use, however, the development in its current form is of concern being a	**Potential to Comply**

	for the proposed use	childcare centre, with vulnerable people, located close to a roundabout, on a busy, regional road. Outdoor play area 2 is close to the intersection of heavy and high speed vehicles. The current design may expose the children to environmental health concerns and safety issues. The potential to incorporate additional safety measures should be explored. Relocation of play areas behind the building line and safety bollards should be considered.	
	The site avoids direct access to roads with high traffic volumes, high operating speeds, or with high heavy vehicle volumes, especially where there are limited pedestrian crossing facilities	The site generally avoids direct access to high traffic roads. Council's Traffic Department reviewed traffic generation impacts associated with the proposal who raised no objections, subject to conditions.	**Complies**
	It is not located closely to incompatible social activities and uses such as restricted premises, injecting rooms, drug clinics and the like, premises licensed for alcohol or gambling such as hotels, clubs, cellar door premises and sex services premises.	The site is not in a close vicinity of restricted premises and the like.	**Complies**
C3 *To ensure that sites for child*	Near compatible social uses such as schools and other educational establishments,	The site is located within close proximity to compatible uses	**Complies**

care facilities are appropriately located.	parks and other public open space, community facilities, places of public worship.	such as St. Francis Xavier Catholic Church, Lurnea Public School and a number of small childcare centres.	
	Near or within employment areas, town centres, business centres, shops.	The site is located within close proximity to Market Plaza Chipping Norton to the East and a number of businesses to the East.	**Complies**
	With access to public transport including rail, buses, ferries.	The site is located approximately 110-120m from two bus stops on Epsom Road.	**Complies**
	In areas with pedestrian connectivity to the local community, businesses, shops, services and the like.	Pedestrian connectivity is considered to be suitable with footpaths to bus stops and shops provided in nearby streets.	**Complies**
C4 *To ensure that sites for child care facilities do not incur risks from environmental, health or safety hazards.*	Heavy or hazardous industry, waste transfer depots or landfill sites.	The site is not located in close proximity to heavy or hazardous industries.	**Complies**
	LPG tanks or service stations	The site is not located in close proximity to service stations or LPG tanks.	**Complies**
	Water cooling and water warming systems.	The site is not located in close proximity to water cooling systems.	**Complies**
	Odour (and other air pollutant) generating uses and sources or sites which, due to prevailing land use zoning, may in future accommodate noise or odour generating uses.	The site is not located in close proximity to odour polluting or noise generating sites.	**Complies**
	Extractive industries, intensive agriculture, agricultural spraying activities.	The site is located within a residential area.	**Complies**
	Any other identified environmental hazard or risk relevant to the site and/ or	The site is located within a residential area.	**Complies**

	existing buildings within the site.		
3.2 Local Character, streetscape and the public domain interface			
C5 *To ensure that the child care facility is compatible with the local character and surrounding streetscape.*	Contribute to the local area by being designed in character with the locality and existing streetscape. Build on the valued characteristics of the neighbourhood and draw from the physical surrounds, history and culture of place. Reflect the predominant form of surrounding land uses, particularly in low density residential areas. Recognise predominant streetscape qualities, such as building form, scale, materials and colours. Include design and architectural treatments that respond to and integrate with the existing streetscape.	The proposed development has the potential to provide for an appropriate built form for the locality and to be consistent with the existing and future desired character. However, in terms of aesthetic integration with the surrounding character it is considered further amendments are required. Further variation to the colour scheme was requested. The colours selected are 'medium grey' in shade, and all the building facades and roofs are mostly uniform in colour. A uniformly mid grey building evokes an industrial setting and would not be in keeping with the warm tones, articulation, and residential character of the neighbourhood. A lighter shade, warmer shade and/or more variation in shades/colour throughout the development is required.	**Non-Compliance**
	Use landscaping to positively contribute to the streetscape	Landscaping has been incorporated into the	**Complies**

	and neighbouring amenity.	design of the development.	
	Integrate car parking into the building and site landscaping design in residential areas.	As discussed under car parking controls under the LDCP 2008, basement car parking is suitable.	**Complies**
C6, C7 and C8 *To ensure clear delineation between the child care facility and public spaces*	Fencing to ensure safety for children entering and leaving the facility.	It is considered that the current fencing strategy requires further refinement to achieve satisfactory safety.	**Non-Compliance**
	Items of consideration include: • Acoustic Fence Barrier 2 - the fencing along the boundary of Outdoor Play Area 3 interfacing Governor Macquarie Drive is mainly metal fence with clear perspex on top of a low wall. While it may appear setback far from the road it is adjacent to a heavy vehicle parking bay. • Acoustic Fence Barrier 4 - along the boundary of Outdoor Play Area 2 interfacing the site corner, very close to the roundabout has a 1m high solid wall, with metal fencing above and clear perspex panelling. • There has been no traffic engineer, civil engineer or other safety advice or supporting information provided demonstrating that these metal fences and solid wall can withstand vehicle force and are an adequate safety measure to protect the children's play spaces from vehicles. • Concrete or other crash barriers, bollards or other safety treatments along the road have not been considered, to provide protection to both the play areas and the child-care centre buildings. • Further to the above, it appears both fences are transparent, in this context on a busy road with heavy vehicles it is not appropriate to have the children visible to traffic in their play area, and it is a poor outcome for the children to have the visual outlook to the traffic, these visual privacy issues must be addressed.		
	Windows facing from the facility towards the public domain to provide passive surveillance to the street as a safety measure and connection between the facility and the community	Windows are proposed facing towards Governor Macquarie Drive and Epsom Road which allow passive surveillance to the street.	**Complies**
	Integrating existing and proposed landscaping with fencing.	Landscape plan submitted which illustrates integration of landscape and fencing.	**Complies**

	On sites with multiple buildings and/or entries, pedestrian entries and spaces associated with the child care facility should be differentiated to improve legibility for visitors and children by changes in materials, plant species and colours.	The proposed child care centre provides one main entrance point for pedestrians, which is supplied along with a pedestrian path to access it. Sliding doors are also incorporated from the main activity space to provide access to the outdoor play areas.	**Complies**
	Where development adjoins public parks, open space or bushland, the facility should provide an appealing streetscape frontage by adopting some of the following design solutions: • clearly defined street access, pedestrian paths and building entries • low fences and planting which delineate communal/private open space from adjoining public open space • minimal use of blank walls and high fences.	The proposal provides clearly defined street access, building entries and pedestrian paths. The landscape plan demonstrates integrated landscaping and fencing.	**Complies**
C9 and C10 *To ensure that front fences and retaining walls respond to and complement the context and character of the area and do not dominate the public domain.*	Front fences and walls within the front setback should be constructed of visually permeable materials and treatments. Where the site is listed as a heritage item, adjacent to a heritage item or within a conservation area front fencing should be designed in accordance with local heritage provisions.	The site is not listed as a heritage item and no fencing has been proposed within the front setback area.	**Complies**
	High solid acoustic fencing may be used when shielding the facility from noise on classified roads. The walls should be setback from the property boundary with screen landscaping of a similar height between the wall and the boundary.	No Acoustic fencing proposed within the front setback area. The proposed fencing will not detract from the public domain. Acoustic fencing is proposed along the secondary frontage, Governor Macquarie	**Complies**

		Drive, these walls are appropriately setback form the road via a grassed area, however, alignment with the building line is recommended,	
3.3 Building orientation, envelope, building design and accessibility			
C11 *To respond to the streetscape and site, mitigate impacts on neighbours, while optimising solar access and opportunities for shade.*	Orient a development on a site and design the building layout to: - Ensure visual privacy and minimise potential noise and overlooking impacts on neighbours by: • Facing doors and windows away from private open space, living rooms and bedrooms in adjoining residential properties. • Placing play equipment away from common boundaries with residential properties • Locating outdoor play areas away from residential dwellings and other sensitive uses.	The proposed development would not pose significant overlooking impacts on neighbours due to sufficiently positioned windows and the single storey built form design.	**Complies**
	Optimise solar access to internal and external play areas.	The building is designed to have solar access to the internal and external play areas due to the northern orientation.	**Complies**
	Avoid overshadowing of adjoining residential properties.	As detailed in Item C1 above, overshadowing of the three neighbouring Units (1, 8 & 9) at 125 Epsom Road appears to be of concern, however, it has been demonstrated that the proposed development will not exacerbate this issue. The proposed development is considered to generally avoid unreasonable	**Complies on merit**

		overshadowing to adjoining residential properties. The impact on solar access is considered to be negligible compared to that which the neighbouring development currently receives.	
	Minimise cut and fill.	Cut and fill proposed due to the proposed basement.	**Considered acceptable**
	Ensure buildings along the street frontage define the street by facing it.	The proposed built form has been designed so that it addresses the street frontage.	**Complies**
	Ensure that where a child care facility is located above ground level, outdoor play areas are protected from wind and other climatic conditions.	The outdoor play areas would be shielded from adverse weather conditions through fencing and landscape design. Shading is also provided to shield children from UV rays.	**Complies**
C12 *To ensure that the scale of the child care facility is compatible with adjoining development and the impact on adjoining buildings is minimised.*	Building height should be consistent with other buildings in the locality. Building height should respond to the scale and character of the street.	The maximum proposed height in the development is 6.8m, this is not considered to be a significant departure from the existing character of the street.	**Complies**
	Setbacks should allow for adequate privacy for neighbours and children at the proposed child care facility.	Side and rear setbacks are consistent with the requirements of the LDCP 2008.	**Complies**
	Setbacks should provide adequate access for building maintenance.	Side and rear setbacks are consistent with the requirements of the LDCP 2008.	**Complies**
	Setbacks to the street should be consistent with the existing character.	The setbacks and siting of the development is suitable within the residential context.	**Complies**
C13 and C14 *To ensure that*	Where there are no prevailing setback controls minimum	The subject site is zoned R2 Low Density	**Not Applicable**

setbacks from the boundary of a child care facility are consistent with the predominant development within the immediate context	setback To a classified road should be 10 metres. On other road frontages where there are existing buildings within 50 metres, the setback should be the average of the two closest buildings. Where there are no buildings within 50 metres, the same setback is required for the predominant adjoining land use.	Residential. Setbacks have been applied in accordance with controls within Part 3.8 Non-Residential Development in Residential Zones: (Childcare Centres), in which the proposed development complies.	
	On land in a residential zone, side and rear boundary setbacks should observe the prevailing setbacks required for a dwelling house.	The subject site is zoned R2 Low Density Residential. Setbacks have been applied in accordance with controls within Part 3.8 Non-Residential Development in Residential Zones: (Childcare Centres), in which the proposed development complies.	**Not Applicable**
C15 *To ensure that buildings are designed to create safe environments for all users.*	Located to allow ease of access, particularly for pedestrians.	The proposed child care centre provides one main entrance point for pedestrians, which is supplied along with a pedestrian path to access it. Sliding doors are also incorporated from the main activity space to provide access to the outdoor play areas.	**Complies**
	Directly accessible from the street where possible.	Entry is directly accessible from the street.	**Complies**
	Directly visible from the street frontage.	Entry is directly visible from the street.	**Complies**
	Easily monitored through natural or camera surveillance.	Entry to the facility is easily monitored through natural surveillance of windows.	**Complies**
	Not accessed through an outdoor play area.	Entrance is not accessed through outdoor play area.	**Complies**

	In a mixed-use development, clearly defined and separate from entrances to other uses in the building.	Not within a mixed-use development.	**Not Applicable**
C16 *To ensure that child care facilities are designed to be accessible by all potential users.*	Providing accessibility to and within the building in accordance with all relevant legislation	The proposed site is accessible for all users. • Public buses are within close proximity to the subject site. • Platform lift provided and relatively flat entrance point.	**Complies**
	Linking all key areas of the site by level or ramped pathways that are accessible to prams and wheelchairs, including between all car parking areas and the main building entry.	A lift has been proposed from the basement to the entry of the childcare centre, and a platform lift has been provided from the front entrance.	**Complies**
	Providing a continuous path of travel to and within the building, including access between the street entry and car parking and main building entrance. Platform lifts should be avoided where possible.	There is a continuous path of travel from the building entrance to the carpark.	**Complies**
	Minimising ramping by ensuring building entries and ground floors are well located relative to the level of the footpath.	Design has limited ramping, having relatively level building entries and a platform lift where required.	**Complies**
3.4 Landscaping			
C17 and C18 Landscaping *To provide landscape design that contributes to the streetscape and amenity.*	Appropriate planting should be provided along the boundary integrated with fencing. Screen planting should not be included in calculations of unencumbered outdoor space.	Planting has been provided along the boundaries. Screen planting has not been included in unencumbered outdoor space calculations.	**Complies**
	Use the existing landscape where feasible to provide a high quality landscaped area by: • Reflecting and reinforcing the local context • Incorporating natural features of the site, such	Landscape design contributes to the streetscape with the following: • Various native species have been proposed within the landscaped area.	**Complies**

	as trees, rocky outcrops and vegetation communities into landscaping.	The submitted Landscape plan shows a variety of tree species located within the front, side and rear setback of the site.	
	Incorporate car parking into the landscape design of the site by: • Planting shade trees in large car parking areas to create a cool outdoor environment and reduce summer heat radiating into buildings • Taking into account streetscape, local character and context when siting car parking areas within the front setback • Using low level landscaping to soften and screen parking areas.	Car parking located within basement.	**Not Applicable**
3.5 Visual and acoustic privacy			
C19 and 20 *To protect the privacy and security of children attending the facility*	Minimise direct overlooking of indoor rooms and outdoor play spaces from public areas through: Appropriate site and building layout	The building has been adequately setback from the street in accordance with LDCP 2008, however, several privacy concerns have been identified; Playrooms 4, 5 and 6 windows are north facing, will be a main source of natural northerly light to the playrooms, however they currently face directly onto a busy road which will result in either poor visual privacy for the children, or curtains continually drawn reducing natural light into the rooms. There is a truck	**Non-Compliance**

		parking bay directly outside of playroom 5 and playroom 6 further impacting the visual privacy of these windows. Screening of these windows would be required to ensure compliance and improve amenity.	
	Suitably locating pathways, windows and doors	Pathways, windows and doors are generally located in appropriate areas, however the windows to the above noted playrooms require additional screening.	**Potential to Comply**
	Permanent screening and landscape design.	There is sufficient screening between the indoor and outdoor play areas to the majority of the proposed development. However, further to the above, a low fence along the boundary of Governor Macquarie Drive and Epsom Road is required to create a buffer, edge, privacy and sense of security between the childcare centre and the public domain.	**Potential to Comply**
C21 *To minimise impacts on privacy of adjoining properties.*	Minimise direct overlooking of main internal living areas and private open spaces in adjoining developments through: Appropriate site and building layout	The proposed development would not pose significant overlooking impacts on nieghbouring sites due to sufficiently positioned windows and the single storey built form design.	**Complies**
	Suitable location of pathways, windows and doors	Pathways, windows and doors are located in appropriate areas.	**Complies**
	Landscape design and screening.	There is sufficient screening between the indoor and outdoor play areas.	**Complies**

C22 and 23 *To minimise the impact of child care facilities on the acoustic privacy of neighbouring residential developments.*	A new development, or development that includes alterations to more than 50 per cent of the existing floor area, and is located adjacent to residential accommodation should: Provide an acoustic fence along any boundary where the adjoining property contains a residential use.	The proposed development is within a residential area with adjoining properties containing a residential use, therefore have proposed acoustic fencing along the property boundaries.	**Complies**
	Ensure that mechanical plant or equipment is screened by solid, gap free material and constructed to reduce noise levels e.g. Acoustic fence, building, or enclosure.	Mechanical Plant and equipment would be enclosed and located within the basement.	**Complies**
	A suitably qualified acoustic professional should prepare an acoustic report which will cover the following matters: • Identify an appropriate noise level for a child care facility located in residential and other zones • Determine an appropriate background noise level for outdoor play areas during times they are proposed to be in use • Determine the appropriate height of any acoustic fence to enable the noise criteria to be met.	An Acoustical Report prepared by Renzo Tonin & Associates, has been submitted and acoustic treatments have been recommended to mitigate potential noise emission. The proposed development is unlikely to result in adverse impacts subject to these recommendations.	**Complies**
3.6 Noise and air pollution			
C24 and 25 *To ensure that outside noise levels on the facility are minimised to acceptable levels.*	Adopt design solutions to minimise the impacts of noise, such as: Creating physical separation between buildings and the noise source.	An Acoustical Report prepared by Renzo Tonin & Associates, has been submitted and acoustic treatments have been recommended to mitigate potential noise emission. The proposed development is unlikely to result in adverse impacts subject to these	**Complies**

		recommendations.	
	Orienting the facility perpendicular to the noise source and where possible buffered by other uses	Noise would be buffered by landscaping and acoustic fencing.	**Complies**
	Using landscaping to reduce the perception of noise	Landscaping within the outdoor area proposed.	**Complies**
	Limiting the number and size of openings facing noise sources	Noise sources would be reduced.	**Complies**
	Using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens)	Acoustic report provides recommendations which could be conditioned if consent were granted.	**Complies**
	Using materials with mass and/or sound insulation or absorption properties, such as solid balcony balustrades, external screens and soffits	As above.	**Complies**
	Locating cot rooms, sleeping areas and play areas away from external noise sources.	Sleeping rooms and play areas are located away from noise sources such as car parking area and mechanical plant and equipment.	**Complies**
	An acoustic report should identify appropriate noise levels for sleeping areas and other non-play areas and examine impacts and noise attenuation measures where a child care facility is proposed in any of the following locations: • On industrial zoned land • Where the ANEF contour is between 20 and 25, consistent with AS 2021 – 2000 • Along a railway or mass transit corridor, as defined by State Environmental Planning Policy (Infrastructure) 2007	Proposed child care centre is not located in any of the specified locations.	**Not Applicable**

	• On a major or busy road • Other land that is impacted by substantial external noise		
C26 and 27 *To ensure air quality is acceptable where child care facilities are proposed close to external sources of air pollution such as major roads and industrial development.*	Locate child care facilities on sites which avoid or minimise the potential impact of external sources of air pollution such as major roads and industrial development.	The area is for predominantly residential housing. The existing child care centre is not located adjacent to major roads or industrial development. Therefore, no air quality assessment report is required	**Not Applicable**
	A suitably qualified air quality professional should prepare an air quality assessment report to demonstrate that proposed child care facilities close to major roads or industrial developments can meet air quality standards in accordance with relevant legislation and guidelines.	The area is for predominantly residential housing. The existing child care centre is not located adjacent to major roads or industrial development. Therefore, no air quality assessment report is required	**Not Applicable**
	The air quality assessment report should evaluate design considerations to minimise air pollution such as: • creating an appropriate separation distance between the facility and the pollution source. The location of play areas, sleeping areas and outdoor areas should be as far as practicable from the major source of air pollution • using landscaping to act as a filter for air pollution generated by traffic and industry. Landscaping has the added benefit of improving aesthetics and minimising visual intrusion from an adjacent roadway • incorporating ventilation design into the design of the	The area is for predominantly residential housing. The existing child care centre is not located adjacent to major roads or industrial development. Therefore, no air quality assessment report is required	**Not Applicable**

	facility.		
3.7 Hours of operation			
C28 and C29 *To minimise the impact of the child care facility on the amenity of neighbouring residential developments.*	Hours of operation within areas where the predominant land use is residential should be confined to the core hours of 7.00am to 7.00pm weekdays. The hours of operation of the proposed child care facility may be extended if it adjoins or is adjacent to non-residential land uses	The proposed hours of operation are Monday to Friday: 7:00am to 6:00pm. Closed Saturday, Sundays and Public Holidays.	**Complies**
	Within mixed use areas or predominantly commercial areas, the hours of operation for each child care facility should be assessed with respect to its compatibility with adjoining and co-located land uses.	As above.	**Complies**
3.8 Traffic, parking and pedestrian circulation			
C30, C31 and C32 *To provide parking that satisfies the needs of users and the demand generated by the centre and to minimise conflicts between pedestrians and vehicles.*	Off street car parking should be provided at the rates for child care facilities specified in a Development Control Plan that applies to the land.	The proposed development provides 33 car parking spaces, in accordance with the LDCP 2008.	**Complies**
	In commercial or industrial zones and mixed use developments, on street parking may only be considered where there are no conflicts with adjoining uses, that is, no high levels of vehicle movement or potential conflicts with trucks and large vehicles.	Site is not within mixed-use or commercial areas.	**Not Applicable**
	A Traffic and Parking Study should be prepared to support the proposal to quantify potential impacts on the surrounding land uses and demonstrate how impacts on amenity will be minimised. The study should also address any proposed variations to parking rates and demonstrate that: • The amenity of the	Traffic and Transport supported the proposal, subject to conditions if consent were granted.	**Complies**

	surrounding area will not be affected • There will be no impacts on the safe operation of the surrounding road network		
C33 and C34 *To provide vehicle access from the street in a safe environment that does not disrupt traffic flows.*	A classified road	Site is not fronting a classified road.	**Not Applicable**
	Roads which carry freight traffic or transport dangerous goods or hazardous materials.	Site is not fronting a heavy usage or hazardous road.	**Not Applicable**
	The alternate access must have regard to: • The prevailing traffic conditions • Pedestrian and vehicle safety including bicycle movement • The likely impact of the development on traffic	Alternate access is not required.	**Not Applicable**
	Child care facilities proposed within cul-de-sacs or via narrow lanes or roads should ensure that safe access can be provided to and from the site, and to and from the wider locality in times of emergency.	Site is not located within cul-de-sac or narrow road, however safe access to and from the site is provided.	**Complies**
C35, C36 and C37 *To provide a safe and connected environment for pedestrians both on and around the site.*	Separate pedestrian access from the car park to the facility.	Pedestrian access would be separate from the basement car park to the facility.	**Complies**
	Defined pedestrian crossings included within large car parking areas.	Pedestrian pathways are provided within the basement car parking. The provided swept path analysis illustrate significant encroachment of the vehicle overhang over the pedestrian walkway when car spaces 12 & 13 are used. Appropriate signage and safety bollards are recommended to mitigate pedestrian safety concerns.	**Potential to Comply**
	Separate pedestrian and vehicle entries from the street	Vehicle and pedestrian access to the child	**Complies**

	for parents, children and visitors.	care centre would be separate from the street.	
	Pedestrian paths that enable two prams to pass each other.	Pedestrian's paths are able to accommodate two prams passing one another.	**Complies**
	Delivery and loading areas located away from the main pedestrian access to the building and in clearly designated, separate facilities	The proposed delivery and loading space is shared with visitor spots 31-33. It is proposed that deliveries are to occur after 9:30am and before 2:30pm to avoid peak visitor hours. Appropriate signage and enforcement of parking arrangement would be required. The application was reviewed by Council's Traffic & Transport officer who raised no objections subject to conditions of consent.	**Complies by Condition**
	Minimise the number of locations where pedestrians and vehicles cross each other	Vehicle and pedestrian access to the child care centre would be separate from the street.	**Complies**
	In commercial or industrial zones and mixed-use developments, the path of travel from the car parking to the centre entrance physically separated from any truck circulation or parking areas	Site is not within mixed-use or commercial areas.	**Not Applicable**
	Vehicles can enter and leave the site in a forward direction.	Vehicles can enter and leave the site in a forward direction.	**Complies**
	Clear sightlines are maintained for drivers to child pedestrians, particularly at crossing locations.	The proposed carpark is appropriately sited. Pedestrian pathways are proposed to allow pedestrians to safely access building entrances from car park spaces.	**Complies**
	Mixed use developments	Site is not within	**Not**

	should include: • driveway access, manoeuvring areas and parking areas for the facility that are separate to parking and manoeuvring areas used by trucks • drop off and pick up zones that are exclusively available for use during the facility's operating hours with spaces clearly marked accordingly, close to the main entrance and preferably at the same floor level. Alternatively, direct access should avoid crossing driveways or manoeuvring areas used by vehicles accessing other parts of the site • parking that is separate from other uses, located and grouped together and conveniently located near the entrance or access point to the facility.	mixed-use areas.	**Applicable**
	Car parking design should: • Include a child safe fence to separate car parking areas from the building entrance and play areas • Provide clearly marked accessible parking as close as possible to the primary entrance to the building in accordance with appropriate Australian Standards • Include wheelchair and pram accessible parking.	Fences are proposed between vehicle basement and building entrances. The proposed carpark is appropriately sited. Pedestrian pathways are proposed to allow pedestrians to safely access building entrances from car park spaces. Disability spaces proposed and in proximity to basement lift. Basement lift provides direct access to internal area of building.	**Complies**

Liverpool Development Control Plan (LDCP) 2008

The proposed development is subject to the Liverpool Development Control Plan 2008 (LDCP) 2008. Part 1 of the LDCP 2008 covers general controls relating to all types of development within the Liverpool LGA. The key controls are discussed in the following table:

Part 1 General Controls for all Development			
Control	**Requirement**	**Proposed**	**Comment**
2. Tree Preservation	Consider impact of development on existing vegetation	The demolition plan proposes removal of 6 trees (1 of which will be transplanted) which were supported by an Arborist Report and is considered satisfactory.	**Complies**
3. Landscaping and Incorporation of Existing Trees	Incorporation of existing trees into development where appropriate.	Additional trees and plants have been proposed in a satisfactory landscape plan. Tree 14 will be transplanted to an alternate location onsite and done in coordination with the project arborist.	**Complies**
4. Bushland and Habitat Preservation	Consider impact of development on bushland and habitats	Minimal to no impact on bushland and habitats considering the location of the development.	**Complies**
5. Bushfire Risk	Land on or adjacent to bushfire prone land to comply with RFS requirements	The subject site is not classified as Bushfire prone land.	**Not Applicable**
6. Water Cycle Management	Consideration of stormwater and drainage	The application was referred to Council's Land Development Engineering Department who raise no objection to the proposal subject to conditions of consent.	**Complies by Conditions**
7. Development Near a Watercourse	Consideration of impact to riparian corridors.	The subject site is located more than 40m from a water course.	**Not Applicable**

8. Erosion and Sediment Control	Sediment Control Plan or Soil and Water Management Plan required	Sediment and erosion control details submitted with DA-629/2023 and could be conditioned if consent were granted.	**Complies**
9. Flooding	Flood affection of property to considered	The site is mapped within the special flood consideration area. The application was referred to Council's Flooding Department who raised no objections subject to conditions.	**Complies by Conditions**
10. Contaminated Land Risk	Previous use to be considered in assessing risk	A Preliminary Site investigation was submitted with DA-629/2023 which supported the proposed use due to low contamination risk.	**Complies**
11. Salinity Risk	Salinity Management response required for affected properties	Conditions of consent could be included if consent were granted.	**Complies**
12. Acid Sulfate Soils Risk	Affected properties to consider impact of development on soils	Site mapped as containing class 5 acid sulphate soils, however the proposal is highly unlikely to lower the water table below 1m AHD.	**Complies**
13. Weeds	Noxious weeds to be removed as part of development where applicable	No noxious weeds present.	**Not Applicable**
14. Demolition of Existing Developments	Appropriate demolition measures must be implemented	A demolition plan has been submitted with DA-629/2023. Appropriate conditions would be imposed if consent were granted.	**Complies**
15. Onsite Sewage Disposal	S68 Application required where connection to sewer not available	Property is connected to sewer.	**Not Applicable**
16. Aboriginal Archaeology	AHIA required where items of aboriginal archaeology exist	The site is not identified as containing Aboriginal archaeology.	**Not Applicable**

17. Heritage and Archaeology	Consideration of the impact on the heritage significance on any heritage buildings, sites, streetscapes or areas.	The subject site is not identified as an item of heritage, nor is it within a heritage conservation area. It does, however, adjoin an item of landscape heritage and is located opposite an item of general heritage. The application was referred to Council's Heritage Officer, who raised no objections, subject to conditions.	**Complies by Conditions**
20. Car Parking and Access	Car Parking Controls 1 Space Per Staff Member 1 space per 10 children	The minimum number of staff proposed is 21 and the minimum number of children proposed is 120. Therefore, the minimum required car parking spaces are: 21 staff and 4 visitor spaces = 33 spaces. The proposed development provides 33 car parking spaces, in accordance with the LDCP 2008.	**Complies**
21. Subdivision of Land and Buildings	Subdivision of land shall meet the minimum lot width requirements as set out in Table 18.	Subdivision is not proposed.	**Not Applicable**
22. Energy Conservation	Provisions to reduces the necessity for mechanical heating and cooling and to minimise greenhouse gas emissions.	It is considered that proposal does not include adequate sustainability measures. It was recommended that a revised proposal incorporate various best practice measurements including: • Consideration for solar panels on the	**Potential to Comply**

		rooftop to offset some of the lighting and electricity requirements, • The provision of ceiling fans to all habitable areas to reduce the reliance on A/C systems for cooling, • The provision of a rainwater tank for water collection, storage, and reuse for irrigation of landscape and other uses within the site, such as toilet flushing, etc. • The implementation of best practice sustainability measures and materials (where practical).	
24. Landfill	All fill applied should be Virgin Excavated Natural Material.	Landfill is not proposed.	**Not Applicable**
25. Waste Disposal	A Waste Management Plan (WMP) shall be submitted with a Development Application for any relevant activities generating waste.	A WMP was submitted with DA-629/2023 and sufficiently addressed waste activities for the proposal.	**Complies**
26. Outdoor advertising and signage	Applicable signage controls for development in Residential Zones	No signage proposed under DA-629/2023.	**Not Applicable**

Part 3.8 of the LDCP 2008 is applicable to the proposal in addressing matters relevant to child care centres within residential zones. The key controls are discussed in the following table:

LDCP 2008 Part 3.8 – Part 3.8 Non-Residential Development in Residential Zones: (Childcare Centres)

Control	Requirement	Proposed	Comment
Licence Requirements	Development consent from Council under the Environmental Planning and Assessment Act 1979. A licence to operate from the NSW Department of Community Services (DOCS) under the Children and Young Persons (Care and Protection) Act 1998 and the Children's Services Regulation 2004.	Development application lodged with council.	**Considered Acceptable**
Lot Sizes	The maximum number of children in any centre cannot exceed 45 for 0-5 year olds, however Council may consider a maximum number of 60 children per centre of which 30% must be aged between 0-2.	Not applicable pursuant to SEPP. The proposed development would incorporate a minimum of 120 children.	**Not Applicable**
	The proposed child care centre must comply with open space requirements as set out in the Children Services Regulation 2004.	Not applicable pursuant to SEPP. SEPP requirements in regards to indoor and outdoor space take precedence.	**Not Applicable**
Site Location	Child Care Centres should be located: - In the general vicinity of primary schools, major employment areas and recreation areas. - Within the grounds of community facilities, educational facilities or churches. - Near services such as shops, medical facilities and public transport. - On streets with widths that permit adequate safe manoeuvrability of	The child care centre is considered to be located in an appropriate area as detailed within the SEPP (Transport and Infrastructure) 2021 – Chapter 3, Part 3.3 assessment and the CCPG 2021 Item C1 assessment above.	**Complies**

	vehicles & lines of sight for pedestrians, cyclists and vehicles; and on approach streets within the road hierarchy such as on collector streets. - Where traffic control devices do not impede vehicular access to sites. - Where the children will not be adversely affected by lead contamination, offensive noise and air pollution. - Child Care Centres must be located and designed so as not to pose health or safety risk to children using the centre.		
	Child Care Centres shall not be permitted: - adjacent to industrial activities. - Within 300m of an existing Child Care Centre. - On classified roads. - Adjacent to railway lines. - On streets with a carriageway width of 6.5m or less. - On streets, which are cul-de-sacs. - <u>On lots adjacent to a roundabout (including a proposed roundabout)</u> - In areas where aircraft noise levels exceed 25 Australian Noise Exposure Forecast (ANEF).	The development is of concern being a childcare centre, with vulnerable people, located close to a roundabout, on a busy road. One of the key objectives of this part of the DCP is '*To provide and maintain a safe and healthy learning and play environment for children.*' If a merit based assessment of the proposed development is to be considered further mitigating measures are to be incorporated into the design to ensure occupant safety.	**Potential to Comply**
Site Planning	Site planning should be sensitive to site attributes such as; streetscape character; natural landform; existing vegetation; views and	The proposed childcare centre is sensitive to existing landform and vegetation through the retention of heritage listed trees. However, as	**Non-Compliance**

	land capability.	noted in item C5 above amendments to the materials and colours schedule are recommended to ensure a streetscape character which provides a smooth transition between the existing low density development and the child care centre.	
	The site layout should enhance the streetscape through the use of landscaping and built form.	Landscaping has been sufficiently proposed to enhance the streetscape.	**Complies**
	Site planning should enable buildings to address streets and public open spaces.	The proposed childcare centre would address the street.	**Complies**
	The site layout should ensure that the external play area is maximised and enjoys solar access.	The proposed layout provides adequate solar access to play areas.	**Complies**
	The site layout should contribute to personal safety and to the protection of property by permitting casual surveillance of adequately lit outdoor spaces from windows and entries.	The site layout would contribute to personal safety providing adequate casual surveillance of outdoor spaces from windows and entries. However, as identified in item C6, C7 & C8 above a detailed fencing strategy is required including concrete or other crash barriers, bollards or safety treatments along the road.	**Non-Compliance**
	In areas exposed to significant levels of off-site noise, the site layout and building forms should	As demonstrated within the acoustic report appropriate noise	**Complies by condition**

	assist in minimising noise entry.	mitigating measures would be imposed.	
	The site layout should ensure that the front entrance to the Child Care Centre is easily located and accessible.	The front entrance would be easily accessible and is appropriately located.	**Complies**
	The layout must be designed around the site attributes such as slope; existing vegetation; land capability and/or solar access.	The site layout is considered appropriate being designed around site attributes.	**Complies**
	The siting of windows of habitable rooms on the first floor shall minimise overlooking to the principal private open space of neighbouring properties.	No first floor windows proposed.	**Complies**
	Stormwater from the site must be able to be drained satisfactorily. Where the site falls away from the street, it may be necessary to obtain an easement over adjoining property to drain water satisfactorily to a Council stormwater system. Where stormwater drains directly to the street, there may also be a need to incorporate on-site detention of stormwater where street drainage is inadequate. Refer to Water cycle management in Part 1.	The application was referred to Council's Land Development Engineering Department who reviewed stormwater management and drainage associated with the proposal. They were supportive, subject to conditions if consent were granted.	**Complies**
Setbacks	<u>Front Setbacks</u> Front Setback: 5.5m Secondary Setback: 4.0m	Front setback = Ground floor: 5.5m Secondary setback: 4m	**Complies**

	Verandahs, balconies, eaves and other sun control devices may encroach on the minimum front and secondary setback by up to 1m	Ground floor: Porch = 4.5m	**Complies**
	Side Setbacks Single storey buildings: 1.2m Second storey component of buildings: 1.2m Access doors from children's internal space: 4m	Ground floor side setback is 1.2m Access door to children's internal space is greater than 10m.	**Complies** **Complies**
	Rear Setbacks Single storey buildings: 4m Second storey component of buildings: 8m Access doors from children's internal space: 4m	Ground Floor: 1.2m - 10.685m The majority of the western (rear) setback of the development is setback at least 10.685m. However, a proportion of built form (35% of the boundary length) is setback 1.2m from the boundary. Given that no windows are proposed along this boundary, dense planting is provided for, and solar access to the neighbouring property to the west is retained this variation is considered acceptable on merit.	**Complies on merit**
Landscaped Area	A minimum of 25% of the site area shall consist of Landscaped Area, this may include lawn, deep rooted trees, garden beds and mulched areas. There must be an unencumbered area of 5 x	Approximately 1145m^2 (49%) landscaped area proposed. The site can	**Complies** **Complies**

	6m in the rear setback for the opportunity to accommodate the planting of deep rooted trees. A minimum of 50% of the front setback area shall be landscaped area. There must be an unencumbered area of 3 x 5m in the front setback for the opportunity to accommodate deep rooted trees.	accommodate deep rooted trees within the rear setback. The proposal provides well over 50% front landscaping. The proposal achieve the minimum dimensions for deep rooted trees.	**Complies** **Complies**
Open Space	A proposed Child Care Centre must comply with open space requirements as set out in the Children Services Regulation 2004. Outdoor open space is to be located behind the childcare centre i.e. away from roads/streets.	As noted in item C2 above Outdoor play area 2 is close to the intersection of heavy and high speed vehicles. The current design may expose the children to environmental health concerns and safety issues. The potential to incorporate additional safety measures should be explored. Relocation of play areas behind the building line and safety bollards should be considered.	**Non-Compliance**
Building Form, Style and Streetscape	Where large glass areas cannot be avoided appropriate shade devices shall be incorporated into the design. The roof design shall be compatible with surrounding properties with respect to height,	Appropriate shade devices have been incorporated into the design through the proposed shade structures. The proposed roof form and building design is compatible with surrounding properties in terms of pitch and architectural design.	**Complies** **Complies**

	pitch, building materials and colour. The building shall be designed so that it is in character with the surrounding residential area in terms of bulk, scale, size and height. The front pedestrian entrance must be visible from the street. The front building facades shall be articulated. This articulation may include front porches, entries, wall indents, changes in finishes, balconies and/or verandahs. For two storey developments, the side walls shall be articulated if the wall has a continuous length of over 10m. Buildings that face two street frontages or a street and public space must address both frontages by the use of verandahs, balconies, windows or similar modulating elements.	The front pedestrian entrance would be visible from the street. As noted in item C5 above further variation to the materials and colours schedule is recommended to better integrate with the surrounding streetscape. Single storey proposed. Appropriate articulation provided to both street frontages.	**Complies** **Non-Compliance** **Complies** **Complies**
Security	Entrances to buildings should be orientated towards the front of the site facing the street. Blank walls addressing the street frontage and other public places must be avoided.	The front entrance is orientated to the street. The proposed development provides sufficient wall indents and variation in materials and finishes.	**Complies** **Complies**
Landscaping	A landscape plan must be submitted to Council with	A landscape plan has been submitted with the	**Complies**

	the development application. Refer to Part 1 of the DCP. Areas of grass are to be limited to play areas. Other landscaped areas are to be planted. Trees adjacent to/or within the play area, are to provide shade and allow winter sun entry. Trees adjacent to private open space areas and living rooms should provide summer shade and allow winter sun entry. Landscaping species must be appropriate to prevent injury to children. No toxic, spiky or other hazardous plant species. The setback areas of development are to be utilised for canopy tree planting. The landscape design for all development must include canopy trees that will achieve a minimum 8m height at maturity within front and rear setback areas. Any tree with a mature height over 8m should be planted a minimum distance of 3m from the building or utility services. Landscape planting should principally comprise of native species to maintain the character of Liverpool and provide an integrated	proposed development. The proposal was referred to Council's Natural Environment Landscape department. Council's Natural Environment Landscape officer has reviewed the plans and have no objections to the proposal, subject to conditions if consent were granted.	

	streetscape appearance. Council will consider the use of deciduous trees in small private open space areas such as courtyards for control of local microclimate and to improve solar access. The landscaping shall contain an appropriate mix of canopy trees, shrubs and groundcovers. Avoid medium height shrubs (0.6 – 1.8m) especially along paths and close to windows and doors. Tree and shrub planting alongside and rear boundaries should assist in providing effective screening to adjoining properties. The height of screening plants to be provided is 2.5 to 3m at maturity. Landscaping on any podium level or planter box shall be appropriately designed and irrigated. Landscaping on podium levels and planter boxes should be accessible from internal rooms as appropriate for gardener access.		
Fencing	Side (behind the building setback) and rear fencing shall be 1.8m in height. Where a fence adjoins a park it shall be of a high-grade material consistent in quality with the building	Proposed side and rear fencing is a maximum height of 1.8m solid acoustic fencing. Not applicable.	**Complies** **Not applicable**

	and the context of the park, and shall be designed to address the park.		
	Fences shall be constructed of materials compatible with the proposed building.	Proposed fencing would be compatible with proposed building and consistent with residential area.	**Complies**
	Fencing shall be designed to minimise opportunities for graffiti.	Fencing would been designed to minimise opportunities for graffiti.	**Complies**
	Gates shall be the same height as the fence, self-closing and be secure and fitted with a childproof lock.	Gates are 1.8m in height.	**Complies**
	Wall finishes must have low reflectivity.	The proposed fencing would have low reflectivity.	**Complies**
	Front fences are to be light coloured and low in height or open form.	No front fencing proposed.	**Not Applicable**
	Fences should not prevent surveillance by the building's occupants of the main open or communal areas within the property or the street frontage.	No front fencing proposed.	**Not Applicable**
	Where noise insulation is required, consider the installation of double-glazing or other noise attenuation measures at the front of the building rather than construction of a high solid form fence.	No solid acoustic fence proposed along front boundaries.	**Not applicable**
	<u>Primary Frontage</u> Front fences shall have a	No front fencing proposed.	**Not Applicable**

	maximum height of 1.2m, and constructed of masonry, timber and/or vegetation. The front fence must be 30% transparent. The front wall may exceed 1.2m (to a maximum of 1.8m) only if: - The fence is articulated by 1m and has landscaping in front of the fence, and - The fence does not impede safe sight lines from the street and from vehicles entering and exiting the site, and - Front fences are to be constructed of materials compatible with the proposed design of the dwelling. <u>Secondary Frontage:</u> For side walls or fences along the secondary frontage, a maximum height of 1.2m is required for the first 9m measured from the front boundary, the remaining fence/wall may then be stepped up to a maximum of 1.8m	The fencing to the secondary frontage, Governor Macquarie Drive, is greater than 1.2m in height. Although this is supported to assist in safety mitigation a detailed fencing strategy is recommended that includes Outdoor Play area 2 setback aligned with the building line.	**Potential to Comply**
Site Access	All vehicles shall enter and leave the site in a forward direction. Dead end streets or cul-de-sacs present traffic movement and parking	Vehicles would enter and exit in a forward direction and the site is not located on a dead end street or cul-de-sac.	**Complies**

	problems and are inappropriate locations for Child Care Centres or facilities.		
Location	To provide adequate vehicle access and on-site car parking facilities for residents and visitors. To minimise reliance on on-street parking. To provide safe and easy access to and from the site for pedestrians and motorists. To provide adequate turning areas for manoeuvring into and out of car parking spaces and/or garages. To minimise the impact of driveways and parking areas on existing landscaping, landform and streetscape. To ensure pavement or driveway materials are sympathetic to the streetscape and surrounding landscape character.	The proposed development provides 33 car parking spaces, in accordance with the LDCP 2008. The proposed development provides stairs and a lift from the basement and a ramp from the front street entrance.	**Complies**
Noise	Development for childcare centres shall not be permitted in areas where aircraft noise levels exceed 25 Australian Noise Exposure Forecast (ANEF).	The childcare centre would not be located in an area where aircraft noise levels exceed 25 Australian Noise Exposure Forecast (ANEF).	**Complies**
Contaminants	All buildings whether to be built, extended, renovated or converted shall not contain any material or substance that will cause lead or asbestos or other	The proposal was referred to Council's Environmental Health department. Council's Environmental Health officer has reviewed the	**Complies**

	contamination or poisoning.	subject site history and confirmed the site did not require any further contamination assessment subject to conditions if consent were granted	
Site Operation	In residential zones the days/hours of operation shall be limited to 7.00 am - 7.00 pm: Monday – Saturday. No operation on Sundays or public holidays. Child Care Centres or facilities shall be no closer than 50m to mobile phone towers or antennas or transmission line easements or other similar electromagnetic radiation sources.	The proposed hours of operation would be Monday – Friday 7am to 6pm. No operation on Saturdays, Sundays or public holidays. The proposed childcare centre would not be located closer than 50m to mobile phone towers or antennas or transmission line easements or other similar electromagnetic radiation sources.	**Complies**
Overshadowing	Adjoining properties must receive a minimum of three hours of sunlight between 9am and 3pm on 21 June to at least: - one living, rumpus room or the like and/or - 50% of the private open space.	As noted in item C1 above, the adjoining properties do not currently achieve a minimum of three hours of sunlight between 9am and 3pm on 21 June to one living room and 50% of the private open space. However, the proposed development would not exacerbate this issue.	**Complies on merit**
Privacy	Habitable room windows facing side boundaries are to be offset by at least 1m from any habitable room windows in an adjoining dwelling. Habitable room windows on the first floor that face the side boundary are to avoid unreasonable overlooking by having a minimum sill height of	The first floor windows and balcony do not pose overlooking impacts due to sufficiently positioned windows and balcony balustrade height. As detailed in C19 & C20 above additional privacy mitigation measures are suggested, particularly to Playrooms 4, 5 and 6.	**Potential to comply**

	1.5m, except where they face a street or public open space. Building siting, window location, balconies and fencing must consider the importance of the privacy of on-site and adjoining buildings and private open spaces. Landscaping should be used where possible to increase visual privacy between dwellings and adjoining properties.		
Acoustic Privacy	Noise attenuation measures should be incorporated into building design to ensure acoustic privacy between on-site and adjoining buildings. Developments in areas adversely impacted upon by rail or traffic related noises must incorporate the appropriate noise and vibration mitigation measures into the design in terms of the site layout, building materials and design, orientation of the buildings and location of sleeping and recreation areas. The proposed buildings must comply with the Department of Environment and Climate Change criteria and the current relevant Australian Standards for noise and vibration and quality assurance.	The proposal was referred to Council's Environmental Health department. Council's Environmental Health officer has reviewed the supplied acoustic report and have no objections to the proposal, subject to conditions if consent were granted.	**Complies**

Waste Management	Waste disposal facilities shall be provided for development. These shall be located adjacent to the driveway entrance to the site.	Waste disposal facilities have been provided.	**Complies**
	Any structure involving waste disposal facilities shall be located as follows: - Setback 1m from the front boundary to the street. - Landscaped between the structure and the front boundary and adjoining areas to minimise the impact on the streetscape. - Not be located adjacent to an adjoining residential property. Details of the design of waste disposal facilities are shown in Part 1 of the DCP.	The waste bin room is located within the basement.	**Complies**
Letterboxes and Numbering	Letterboxes shall be located along the front boundary and be clearly visible and accessible from the street. The street number of a site must be visible from the street and made of a reflective material to allow visitors and emergency vehicles to easily identify the site.	Appropriate conditions could be imposed if consent were granted.	**Complies**
Frontage works and damage to Council assets	Where a footpath, road shoulder or new or enlarged access driveway is required to be provided this shall be provided at no cost to Council. Council must be notified	Appropriate conditions could be imposed if consent were granted.	**Complies**

	of any works that may threaten Council assets. Council must give approval for any works involving Council infrastructure. Where there are no existing street trees in front of the site and contributions have not been collected for street tree planting, it may be a condition of consent that street trees are provided in the footpath area immediately in front of the site.		

LIVERPOOL CITY COUNCIL

Ref No.:	DA-629/2023
Contact:	Maddison Spiteri
Ph:	02 8711 7782
Date:	14 March 2024

ARTMADE ARCHITECTURAL PTY LTD
C/- SHERIF SAAD
PO BOX 702
REVESBY NSW 2212

REQUEST FOR ADDITIONAL INFORMATION
(In accordance with the provisions under Section 36 and 104 of the *EP&A Regulations 2021*)

ADDRESS: **DP 602936 Cnr Lot 3**
123 EPSOM ROAD, CHIPPING NORTON NSW 2170

DESCRIPTION: **DEMOLITION OF EXISTING STRUCTURES AND CONSTRUCTION OF A 120 PLACE CHILDCARE CENTRE WITH BASEMENT PARKING**

Council has conducted an assessment of Development Application DA-629/2023, and the following matters are identified, which prevent Council from supporting the proposal in its current form:

PLANNING:

Demolition Plan:

1. The applicant shall provide a separate Demolition Plan. All structures/trees proposed to be removed shall not be shown on the Site Plan (these two plans shall be on separate PDF's).

Plan of Management (PoM):

2. There is a discrepancy between the overall proposal and the PoM regarding the number of children for the centre referenced on page 9 as "70 children". The PoM is also unclear regarding the total number of staff onsite at any one time which references "19 + float & service staff", which does not clearly detail the total staff proposed (this must include administration, chef's etc).

3. The PoM is inconsistent in detailing the days of operation as it does not specify that the centre is closed on Saturdays and Sunday (as detailed within the SEE).

Inconsistent Report Information:

4. The SEE is unclear regarding the total number of staff onsite at any one time. Pages 13-14 reference a total of 19 staff to be employed, however page 2 states there may be admin or cooking staff. The SEE must accurately detail the total number of staff proposed within the operational details (including any administration, chef's etc).

   Note: This discrepancy is also noted in the Traffic Impact Assessment and the Social Impact Assessment which only references 19 staff at any one time. Should the

proposed development incorporate more than 19 staff including admin, chefs etc, this must be clearly and accurately detailed in all accompanying reports for Council to assess.

Site Plan / Landscape Plan:

5. The site plan/demolition plan details existing primary and secondary front fencing to be removed, however the Landscape Plan labels 'chain wire' and 'metal' fencing on these boundaries. The applicant shall amend the plans to ensure consistency regarding the removal or retention of front boundary fencing.

Outdoor Play Areas:

6. Unencumbered outdoor play areas have not been clearly demonstrated on the plans as the nominated outdoor play areas incorporate significant tree trunks, clusters of shrub planting and door swing areas which cannot be utilized as play space. Council is supportive and encourages the incorporated landscaping elements within outdoor play areas, however, the plans must clearly identify the areas nominated for unencumbered play space and must exclude areas that cannot be utilised for play.

7. In addition to the above, the required unencumbered outdoor play space is 7sqm per child equating to 840sqm total. The submitted plans demonstrate a total of 772.48sqm of outdoor play space which does not comply. The applicant shall amend the proposal to demonstrate compliance.

8. Outdoor play areas 3 and 2 incorporate significant areas without shade. Additional shade measures shall be incorporated into these play areas, whilst maintaining the ability for natural sunlight areas.

9. Outdoor open space is to be located behind the childcare centre i.e. away from roads/streets. Outdoor play area 2 is not located behind any buildings and poses safety risks due to the proximity to the street. The application shall be amended to ensure outdoor play areas are located behind buildings and away from front setback areas.

Nappy Change Tables / Toilet Facilities:

10. Nappy changing tables must be clearly labelled on the plans.

11. The annotation within "Jnr WC 3" behind the sink has not been labelled although it appears to be a shower. The applicant shall ensure plans clearly label facilities.

Pedestrian Entrance:

12. The proposed pedestrian entrance to the site does not meet the requirements noted in the Child Care Planning Guideline regarding equitable access to the site for all users through the lack of levelled or ramped pathways. The front entrance from the street shall be amended to provide safe entry way and equitable access for all through the inclusion of a ramp.

Front Setback:

13. Verandahs, balconies, eaves and other sun control devices may encroach on the minimum front and secondary setback by up to 1m. The submitted plans demonstrate the front verandah setback to be 4.43m which does not comply. The applicant shall amend the proposal to demonstrate compliance.

Existing Character

14. The proposed development does not demonstrate a colours and materials scheme which is in keeping with the existing and desired future character of the locality. The existing character demonstrates variation in materials, colours and roof forms. The proposed development shall provide further variation in the colours and materials of the built form, particularly for the street fronting facades.

Shadow Diagrams:

15. The proposed shadow diagrams demonstrate an increased overshadowing impact to the southern site dwellings private open spaces between 9am and 3pm, particularly the dwellings directly adjoining to the subject site as shown below and outlined in red. The applicant shall amend the proposal to ensure that the adjoining properties POS can maintain adequate sunlight in accordance with the Liverpool DCP 2008.

Extract from Shadow Diagrams

Submissions:

16. The proposed development has received submissions which need to be addressed by the applicant. To access these objections please lodge a GIPA Request through council. More information on lodging a GIPA request can be found at: https://www.liverpool.nsw.gov.au/council/corporate-information/public-access-to-information

Car Parking:

17. Additional swept paths shall be provided for the basement car parking and particularly car spaces 11, 12 and 13. The applicant shall provide swept paths which demonstrate vehicle manoeuvrability entering and exiting car parking spaces within the basement.

ENVIRONMENTAL HEALTH:

18. Noise has been considered within the Plan of Management. It is not known whether this section has been prepared or reviewed by a suitably qualified acoustic consultant.

    - The Application shall be supported by a Noise Management Plan prepared under the supervision of a suitably qualified acoustic consultant. The Noise Management Plan must identify and implement strategies to minimise noise from the proposed development and incorporate: approaches for promoting noise awareness by patrons and staff; training procedures; a complaint lodgement procedure to ensure that members of the public and local residents are able to report noise issues; an ongoing review process and a plan for responding to noise complaints. The Noise Management Plan shall clearly specify the responsibilities of site personnel in managing noise and include a detailed list of steps taken to manage potential noise impacts. It must take into account section 6.8 of the AAAC Guideline for Child Care Centre Acoustic Assessment Version 3.0.

        - Note: 'Suitably qualified acoustic consultant' means a consultant who possesses Australian Acoustical Society membership or are employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.

        - The report's cover or title page must confirm membership details or include a watermark for the relevant certification body.

        - Council is unable to recommend specific consultants or auditors.

19. Detailed plans and specifications of the mechanical ventilation system servicing the food preparation and dining areas of the premises shall be prepared by an appropriately qualified person. The plans shall certify compliance with AS/NZS 1668- 'The Use Of Ventilation and Air-Conditioning In Buildings' and include the following:

    - The location of the mechanical ventilation system outlet including detailed specifications of the stack height and discharge velocity required to service the food preparation and dining area;
    - Proposed methods to mitigate odour and noise impacts arising from the operation of the mechanical ventilation system; and
    - The sound output level (Sound Pressure Level at 1 metre) of the mechanical ventilation system.

    - Please note: In addition to the requirements of AS/NZS 1668.1 and AS 1668.2, an extraction system shall be provided where there is any dishwasher and other washing and sanitizing equipment that vents steam into the area to the extent that there is, or is likely to be, condensation collecting on walls and ceilings.

20. Detailed floor and section plans for the food premises are to be submitted to Council for review.

The plans are to demonstrate compliance with the following:

- \- AS4674-2004 – Design, construction and fit-out of food premises

- - Food Standards Code (Australia)
- - Building Code of Australia

21. In this regard, the submitted plans shall make provisions for the following:

- Construction details/finishes for the floors (including coving), walls, ceiling, fixtures and fittings in the food preparation area of the premises;
- Location and construction details of all light fittings and any floor wastes within the food preparation area;
- A designated hand washing facility, accessible and no further than 5 metres, except for toilet hand basins, from any place where food handlers are handling open food, fitted with a single spout capable of delivering a supply of warm running water;
- A double-bowl wash sink suitable for cleaning and sanitising food contact surfaces and equipment;
- Details of proposed cooking appliances and mechanical ventilation system;
- Please note: In addition to the requirements of AS/NZS 1668.1 and AS 1668.2, an extraction system shall be provided where there is any dishwasher and other washing and sanitising equipment that vents steam into the area to the extent that there is, or is likely to be, condensation collecting on walls and ceilings;
- A cleaner's sink for disposal of liquid waste (which is not to be located in areas where open food is handled); and
- Details of storage facilities for cleaning equipment and staff personal belongings.

LAND DEVELOPMENT ENGINEERING:

22. The proposed application is unsatisfactory. Prior to further assessment by Land Development the following matters must be addressed by the applicant.

- An electronic copy of the DRAINS model used to design the OSD system is to be provided. (.DRN file). Provide input/output calculations in an excel spreadsheet.

- Pre and post development stormwater calculations and volume requirements shall be provided for the various storm events (5 year ARI, 20 year ARI and 100 year ARI).

- A pre and post development catchment plan is to be provided showing areas draining into the OSD system.

- Access to the discharge control device is to be provided for inspections and maintenance of the silt trap and mesh screen, with a removable galvanised steel grate placed above the outlet and silt trap. Minimum grate openings to be:

    - 600mm x 600mm for pits up to 800mm in depth
    - 900mm x 900mm for pits greater than 800mm in depth

- Proposed basement car park is to ensure that the stormwater drainage system has been designed in accordance with the requirements for pumped systems in AS3500.3:2003 and Council's Stormwater Drainage Design Specifications for pump out systems for basement carparks.

TRAFFIC AND TRANSPORT:

23. Based on the strategic concept prepared for the future upgrade of the intersection of Governor Macquarie Drive and Epsom Road, it appears that the subject land at DP 602936 will be impacted (approximately 5m encroachment at the corner of the block). However, the design still can be updated at the later design stage. The applicant is to be made aware of this and design their development accordingly.

URBAN DESIGN AND PUBLIC DOMAIN:

24. The proposed development and subsequent increase in pedestrian activity require the implementation of adequate public footpath infrastructure to support it. The proposal and submitted landscape documentation must include embellishments to the adjoining public domain frontage (where appropriate), this can include (but is not limited to):

- A pedestrian footpath (to Council's specifications).
- An additional street tree planting (minimum 100L pot size);
- Front boundary fencing;
- Letterbox, street numbering, and/or service location (if required);
- Footpath connections between the proposed pedestrian entries/pathways and the public footpath. Refer to Point 25 below;
- The proposed driveway layback and connection to the driveway within the site boundary (i.e., between the front curb and front boundary); and
- Additional treatments for the safe intersection of footpaths & driveways (for pedestrian priority and promoting vehicle calming). Refer to 5.5 below.

25. All the proposed pedestrian entrances, including emergency exits, require connection to a public footpath within the public domain frontage to provide safe pedestrian access to the site.

26. CDPD encourages the proponent to submit additional information in the form of architectural renders/photomontages. All 3D documentation must be updated to reflect the proposed materials and finishes.

27. CDPD encourages the development to maximize light colour materials, when possible, to reduce heat absorption.

28. No indication of the intended location of both the letterbox and street number has been included within the submission. The proposed letterbox and street number location (including orientation) can form a crucial part of the front landscaping proposal and must be clearly indicated within the future or revised landscaping documentation.

    - *Letterboxes shall be located along the front boundary and be clearly visible from the street.*
    - *The street number of a site must be visible from the street and made of a reflective material to allow visitors and emergency vehicles to easily identify the site.*

29. A detailed schedule of materials and finishes must be provided to indicate all proposed architectural and landscape treatments (e.g., paving, fencing, surface, plantings, etc).

30. CDPD notes that the proposal does not include adequate sustainability measures. It is recommended that the revised proposal incorporate various best practice measurements including:

    - Solar panels on the rooftop to offset some of the lighting and electricity requirements,
    - The provision of ceiling fans to all habitable areas to reduce the reliance on A/C systems for cooling,
    - The provision of a rainwater tank for water collection, storage, and reuse for irrigation of landscape and other uses within the site, such as toilet flushing, etc.
    - The implementation of best practice sustainability measures and materials (where practical)

    This information should be clearly identified within the updated drawings.

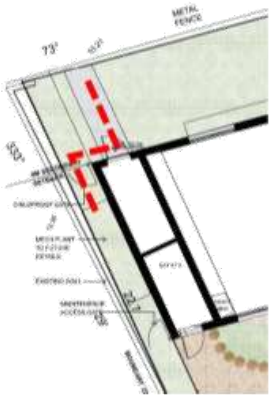
31. CDPD Supports the proposed flooring surfaces. However, more detail addressing landscape treatments (e.g., paving, fencing, surface, plantings, etc) is required. This might include but is not limited to Materials and Finishes Plan, Setout Plan (i.e., Dimensions), Materials and Finishes Schedule.

32. CDPC supports the location of the proposed driveway and pedestrian entry as it is consistent with the existing site conditions. However, as per the Arborist Report, Tree 14 (Phoenix canariensis), a significant mature tree is to be retained and transplanted within the site. The submitted Landscape Plan does not indicate the future location of T14.
33. Based on the ground floor plan, it is assumed, that a concrete material will be used for the driveway surface that is consistent or similar to the specifications of Council's footpath. However, CDPD strongly encourages this development to include treatments to support pedestrian priority along the future proposed pedestrian footpath, to set a precedent for safe pedestrian movement within the area and to assist with traffic calming when entering and exiting the site. Refer to below.

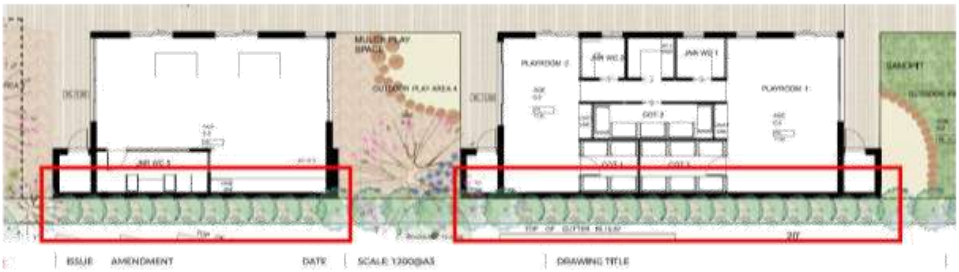
34. Where the public domain (i.e., footpath) and vehicle driveways intersect treatments such as changes in materials & colour, elevation (i.e., raised thresholds) and/or line marking, and signage (consult your traffic engineer) should be incorporated into the proposal to support the priority of the pedestrian and/or cyclist within the public domain. See the example image below.

35. The solar analysis diagrams note that temporary shade sails are proposed in the outdoor play area 3 during summertime to reduce sun exposure. Details of location, extent, height, colour, etc. Have not been provided within the landscape plan. This information must be provided as part of the revised master plan.

36. The landscape site plan proposes to locate the mechanical plant on the west setback. This is not in accordance with the landscape ground floor plan. Ensure all plans are in accordance. If the mechanical plant is to stay in the location it is proposed, ensure the footpath of the emergency exit connects to allow access, see below. In addition, the landscape plan must show the change in material.



37. CDPD have concerns about the solar access of the southern boundary planting, as it is wedged between the built form and the boundary fence (and as per acoustic fence detail 2). The solar diagrams indicate the area will not get sufficient access to sunlight to support plant growth. This should be considered by the applicant.



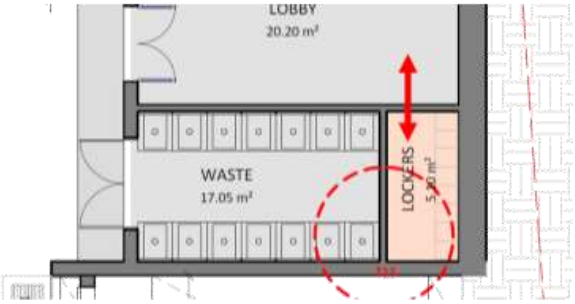
Amenity

38. The submitted architectural plans do not provide fencing details for both proposed fences facing Governor Macquarie Drive (2.6m & 2.5m acoustic fencing). The revised architectural package must include these details.

39. Junior Toilet 5 does not comply with the following design guidelines:
    - Direct access from both activity rooms and outdoor play areas.
    - Windows into bathrooms and cubicles without doors to allow adequate supervision by staff.

    CDPD encourages the proponent to seek a better design outcome to comply with the above guidelines.

40. Lockers must have an entry door; the architectural plans must be updated. See below.



COMMUNITY PLANNING:

41. The currently proposed central outdoor play area is adjacent to the Macquarie Drive. Outdooor play area 2 is close to the intersection of heavy and high speed vehicles. Current design would expose the kids to the environment health concerns, i..e vibration, air pollution (suspended particles) and noise. Impacts of these are quite severe for the early aged kids.

    LCC DCP Part 3.8 Section 2.3 refers,(1) '*Childcare Centre should be located: Near Services such as shops, medical facilities and public transport.* (2) *Childcare centre shall not be permitted: On lots adjacent to a roundabout'.* Section 2.5 refers, '*Outdoor Open space is to be located behind the childcare centre i.e. away from roads/streets.*'

    We recommend clarification on how the proposal complies with these requirements.

Figure: Outdoor Play Area 2 is adjacnet to a busy intersection and future road reserve which is a health & safety concern

We also recommend checking if adequate safety has been ensured in the currently proposed fencing around the play area. For example, crash barrier, concrete half wall with metal fence. The currently proposed fencing along the road is not enough to ensure adequate safety.

In response, Council is affording three (3) options to progress the application, as follows:

1. Prepare and submit further supporting information/amendments to the NSW Planning Portal, addressing the matters as raised. If amended plans are submitted for assessment, an additional processing fee will apply in accordance with Council's adopted fees and charges. Based on the value of works, the amount payable is $257.00; or

2. Request that the current proposal proceed to determination in its current form, which may result in refusal of the application; or

3. Withdraw the application. Should you wish to withdraw the application, you must correspond with Council in writing, to which you will be entitled to a partial refund of fees paid.

To enable Council to process the application as efficiently as possible, you are requested to action the above within **fourteen (14) days** of the date of this letter.

If a response is not received within the above time period, the application will be determined on the basis of the available information, which may result in refusal of the application.

General Notes

It is important to label the documents in line with Councils electronic filing naming convention *i.e. DA Number – Additional Information – Site Plan – XXX Address.pdf*

To track the progress of your application, please visit https://eplanning.liverpool.nsw.gov.au/ and click on "Track an Application". The ePlanning portal also contains other relevant information including an online mapping system and access to frequently requested planning information. Alternatively, please visit the NSW Planning Portal.

If you have any further enquiries, please contact Maddison Spiteri on the abovementioned contact details.

Yours faithfully

Maddison Spiteri
Senior Development Assessment Officer
DEVELOPMENT ASSESSMENT

ArtMade Architects

Suite 507 – 50 Holt Street, Surry Hills, NSW 2010 \ P: 02 8760 9300
hello@artmade.com.au \ artmade.com.au

15/04/24

Liverpool City Council
Council Chambers
33 Moore Street,
LIVERPOOL NSW 2170

Dear Maddison,

DA Application – DA-629/2023: 123 Epsom Road, CHIPPING NORTON

We refer to Council's RFI letter dated 14 March 2024 regarding the above mentioned application. Please find attached amended architectural drawings & supporting documents addressing the concerns raised. Below is a summary of the amendment:

PLANNING:

1. Please refer to sheet DA02.02 DEMOLITION PLAN on amended architectural drawings prepared by ArtMade architects.
2. Please refer to the amended PoM.
3. Please refer to the amended PoM.
4. Please refer to amended SEE prepared by Planning Bricks & Traffic report prepared by TTPP
5. Please refer to amended landscape drawings prepared by MWLA
6. Please refer to sheet DA03.03 CALCULATIONS for outdoor play area diagram on amended architectural drawings prepared by ArtMade architects.
7. A calculation table has been provided to ensure compliance.
8. Please refer to amended landscape drawings prepared by MWLA
9. Please refer to amended architectural drawings prepared by ArtMade architects. Outdoor play area 2 is setback to align with the built form, away from the roundabout, and also is protected by a 1m height masonry wall.
10. Please refer to amended architectural drawings prepared by ArtMade architects.
11. Please refer to amended architectural drawings prepared by ArtMade architects.
12. Please refer to amended architectural drawings prepared by ArtMade architects.

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hello@artmade.com.au \ artmade.com.au

13. As discussed with Council on Wednesday 27th March 2024, it was agreed that the amended deck area can be a minor variation.

14. As discussed with Council on Wednesday 27th March 2024, the pitched roof form fits in with the existing character of the street. The proposed materiality consists of light colours, and therefore will remain unchanged.

15. Please refer to amended architectural drawings prepared by ArtMade architects. The existing fence is now shown on diagrams to reveal that there are no additional overshadowing impacts from the proposed development. Hourly shadow diagrams are also provided for further clarity.

16. Planner has lodged a GIPA. Can Council please provide an update on this application?

17. Please see additional swept path prepared by TTPP.

ENVIRONMENTAL HEALTH:

18. Please see Noise Management Plan prepared by Renzo Tonin & Associates

19. Please refer to amended architectural drawings prepared by ArtMade architects.

20. Please refer to sheet DA10.10 KITCHEN DETAILS on amended architectural drawings prepared by ArtMade architects.

21. Please refer to sheet DA10.10 KITCHEN DETAILS on amended architectural drawings prepared by ArtMade architects.

LAND DEVELOPMENT ENGINEERING:

22. DRAINS model, calculations & catchment plan can be provided. Please see comments below by SW engineer from jones Nicholson.
    For OSD access – maintenance grates have already been provided.
    For basement carpark – confirmed this has been designed per guidelines

TRAFFIC AND TRANSPORT:

23. As discussed with Council on Wednesday 27th March 2024, we are awaiting input from community Planning

URBAN DESIGN AND PUBLIC DOMAIN:

24. Please refer to amended architectural drawings prepared by ArtMade architects.

25. Please refer to amended architectural drawings prepared by ArtMade architects.

26. Please refer to amended architectural drawings prepared by ArtMade architects.

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27. Materials chosen are light colours, including white and light grey.

28. Please refer to amended architectural drawings prepared by ArtMade architects.

29. Please refer to amended landscape drawings prepared by MWLA

30. Please refer to amended SW drawings prepared by Jones Nicholson

31. Please refer to amended landscape drawings prepared by MWLA

32. Please refer to amended landscape drawings prepared by MWLA

33. Please refer to amended architectural drawings prepared by ArtMade architects

34. Please refer to amended architectural drawings prepared by ArtMade architects

35. Please refer to amended landscape drawings prepared by MWLA

36. Please refer to amended landscape drawings prepared by MWLA & architectural drawings by ArtMade Architects

37. Please refer to amended landscape drawings prepared by MWLA

38. Refer to architectural drawings prepared by ArtMade architects for 2.6m acoustic fence detail (sheet DA05.01 – 2. "Acoustic Fence Detail 1") – FYI section marker added to ground floor plan for clarity of location. For 2.5m acoustic fence detail, refer to sheet DA05.01 – 4. "Acoustic Fence Detail 3".

39. Outdoor Play Area 5 has direct access to Jnr WC 4. We believe it is unnecessary to have direct access to Jnr WC 5 also. Jnr WC 5 has windows to allow supervision.

40. Please refer to amended architectural drawings prepared by ArtMade architects.

COMMUNITY PLANNING:

41. As discussed with Council on Wednesday 27th March 2024, we are awaiting input from community planning

Should you have any queries, we are happy to discuss. Please contact us on 8760 9300.

Regards,

ArtMade Architects

ARTISTS IMPRESSION.

ARCHITECTURAL DRAWING LIST - DA

Sheet Number	Sheet Name	Current Revision	Current Revision Date
DA00.00	COVER PAGE	B	11.04.24
DA02.01	SITE PLAN	B	11.04.24
DA02.02	DEMOLITION PLAN	A	11.04.24
DA03.01	BASEMENT FLOOR PLAN	B	11.04.24
DA03.02	GROUND FLOOR PLAN	B	11.04.24
DA03.03	CALCULATIONS	B	11.04.24
DA04.01	EXTERNAL ELEVATIONS & FINISHES	B	11.04.24
DA05.01	SECTIONS & FENCE DETAILS	B	11.04.24
DA06.01	SHADOW DIAGRAMS - SHEET 1	B	11.04.24
DA06.02	SHADOW DIAGRAMS - SHEET 2	A	11.04.24
DA06.03	VIEW FROM SUN & OUTDOOR PLAY AREA SQUARE/COVERED AREA PLACE	B	11.04.24
DA10.20	KITCHEN DETAILS	A	11.04.24

123 EPSOM ROAD
CHIPPING NORTON, NSW 2170

CHILDCARE CENTRE
DEVELOPMENT APPLICATION

Rev	Date	Description
B	11.04.24	DA SUBMISSION
A	04.03	ISSUED FOR DEVELOPMENT APPLICATION

Abbreviation	Description
ACOUSTICS	ACOUSTICS
CONSULTANT	CONSULTANT
CLIENT	CLIENT
CONTACT	CONTACT
CONTRACTOR	CONTRACTOR
DEMOLISH	DEMOLISH
DIMENSIONS	DIMENSIONS
DRAWING	DRAWING
EXISTING	EXISTING
FINISHES	FINISHES
FLOOR	FLOOR
GENERAL	GENERAL
GROUND	GROUND
HEIGHT	HEIGHT
INTERNAL	INTERNAL
LANDSCAPE	LANDSCAPE
LOCATION	LOCATION
MANUFACTURER	MANUFACTURER
CALCULATION	CALCULATION

NOTES

1. DO NOT SCALE FROM DRAWINGS WHICH ARE INCOMPLETE.
2. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT. ANY DISCREPANCY TO BE REPORTED TO ARCHITECT.
3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS, INCLUDING SPECIFICATIONS, SCHEDULES, ENGINEERS DRAWINGS, ETC.
4. ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
6. ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR.
7. TIMBER FRAMING IS TO BE CONFIRMED BY ENGINEER.

CLIENT

MARK BROOKS

ARCHITECT

Architecture & Interiors

COORDINATED IN ACCORDANCE WITH
1. PRELIMINARY INTERNATIONAL STANDARD CONSTRUCTION KITS

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PROJECT

CHILDCARE CENTRE

PROJECT ADDRESS

123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME

COVER PAGE

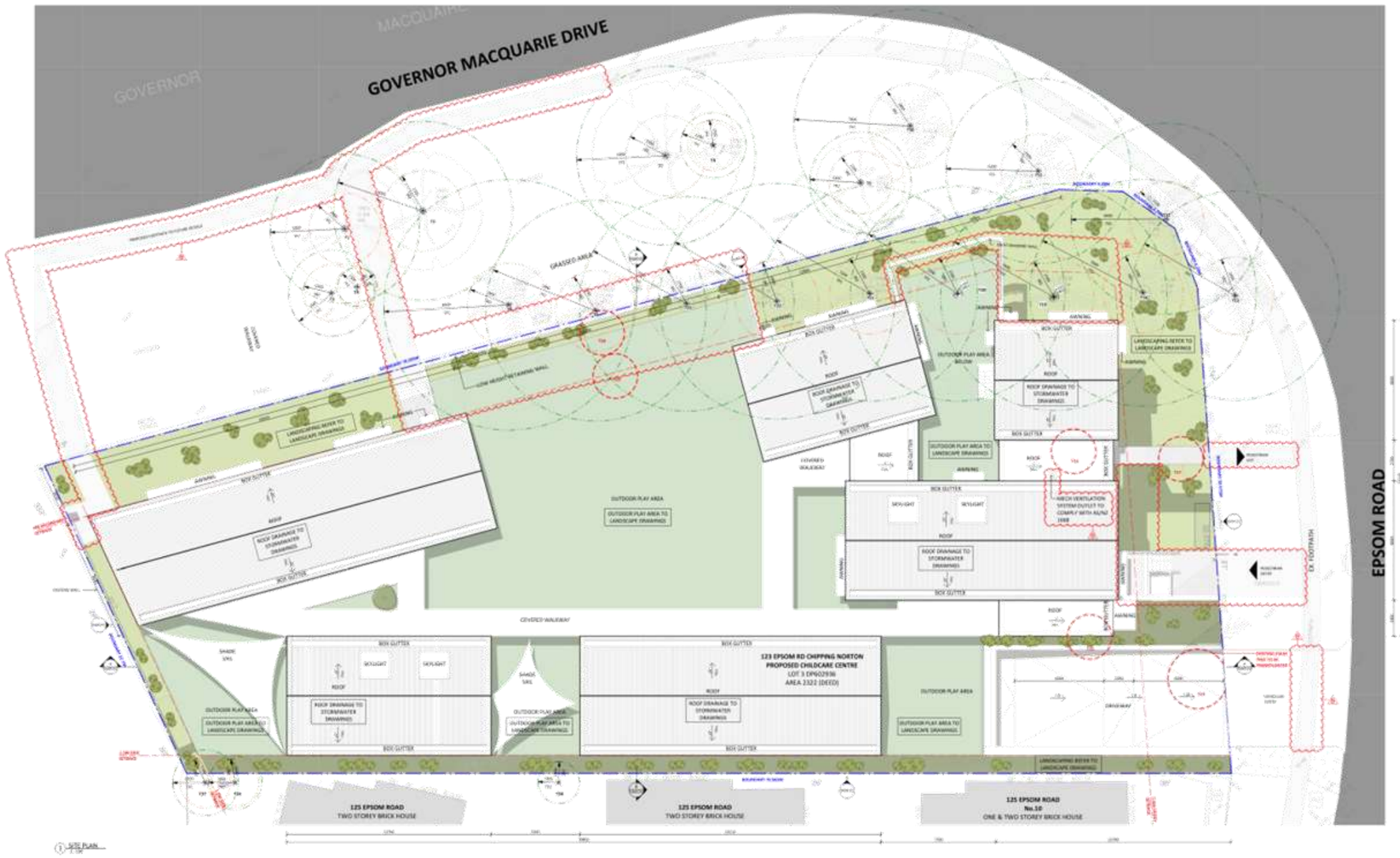
ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA00.00	B	DA

Sheet Size	Scale	Loc.
A0	NTS	LIVERPOOL

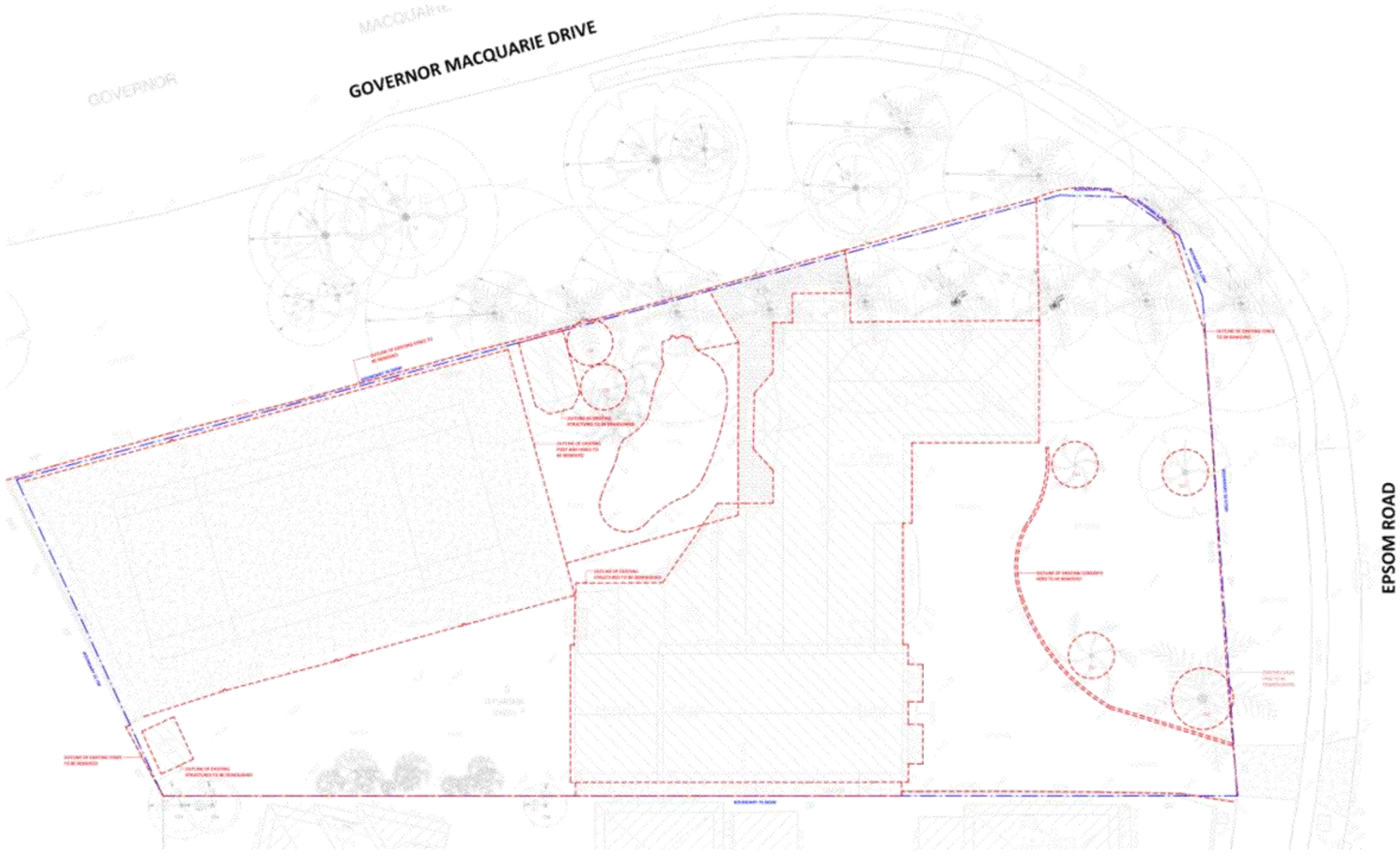
NOT FOR CONSTRUCTION

Drawn By	Checked By	Date
HG/SH	AS/SS	11.04.24


GOVERNOR MACQUARIE DRIVE
EPSOM ROAD
123 EPSOM RD CHIPPING NORTON
PROPOSED CHILDCARE CENTRE
LOT 3 DP602936
AREA 2322 (DEED)
OUTDOOR PLAY AREA
CENTRED WALKWAY
DRIVEWAY
125 EPSOM ROAD
TWO STOREY BRICK HOUSE
125 EPSOM ROAD
TWO STOREY BRICK HOUSE
125 EPSOM ROAD
No.10
ONE & TWO STOREY BRICK HOUSE

1 SITE PLAN

GENERAL NOTES
ABBREVIATIONS
LANDSCAPE LEGEND
MARK BROOKS
CHILDCARE CENTRE
123 EPSOM ROAD, CHIPPING NORTON
2170
SITE PLAN
ISSUED FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION



1 DEMOLITION PLAN
1 : 100

DEMOLITION NOTES

DEMOLITION LEGEND

ABBREVIATIONS

ENC	ENCLOSED
EN	EXISTING NOSE LEVEL
EXT	EXTERNAL
FFL	FINISHED FLOOR LEVEL
F	FLOOR
FGL	FINISHED SURFACE LEVEL
GL	GROUND LINE
GCT	GUTTERING
NGL	EXISTING GROUND LINE
RHS	REQUIREMENTS
TOW	PROPOSED LINE
TOW EX	EXISTING LEVEL
ABOVE	VERTICAL PLANE
BELOW	VERTICAL SUPERIMPOSE

P	25.06.24	22/06/2023	
ISSUE	DATE		DESCRIPTION

ASSIGNED DESIGNERS

ARCHITECT	PLANNING GROUP
TRAFFIC	TTPD
STORMWATER	SH
ACOUSTIC	ACOUSTIC TOWN
GEOTECH	HORIZON GEOTECH
ARBORIST	ARBORTHINGS
HERITAGE	HERITAGE LIFE
CONTAMINATION	SITE WORK P
CONSULTANT	SPC

NOTES

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS.
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- ALL WORK MUST BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
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PROJECT

CHILDCARE CENTRE

PROJECT ADDRESS

123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME

DEMOLITION PLAN

ISSUED FOR DEVELOPMENT APPLICATION

Project Number	Sheet No.	Issue	Phase
23701	DA02.02	6	DA

Sheet Size	Scale	L.G.A.
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
HG/SH	AS/SS	11.04.24

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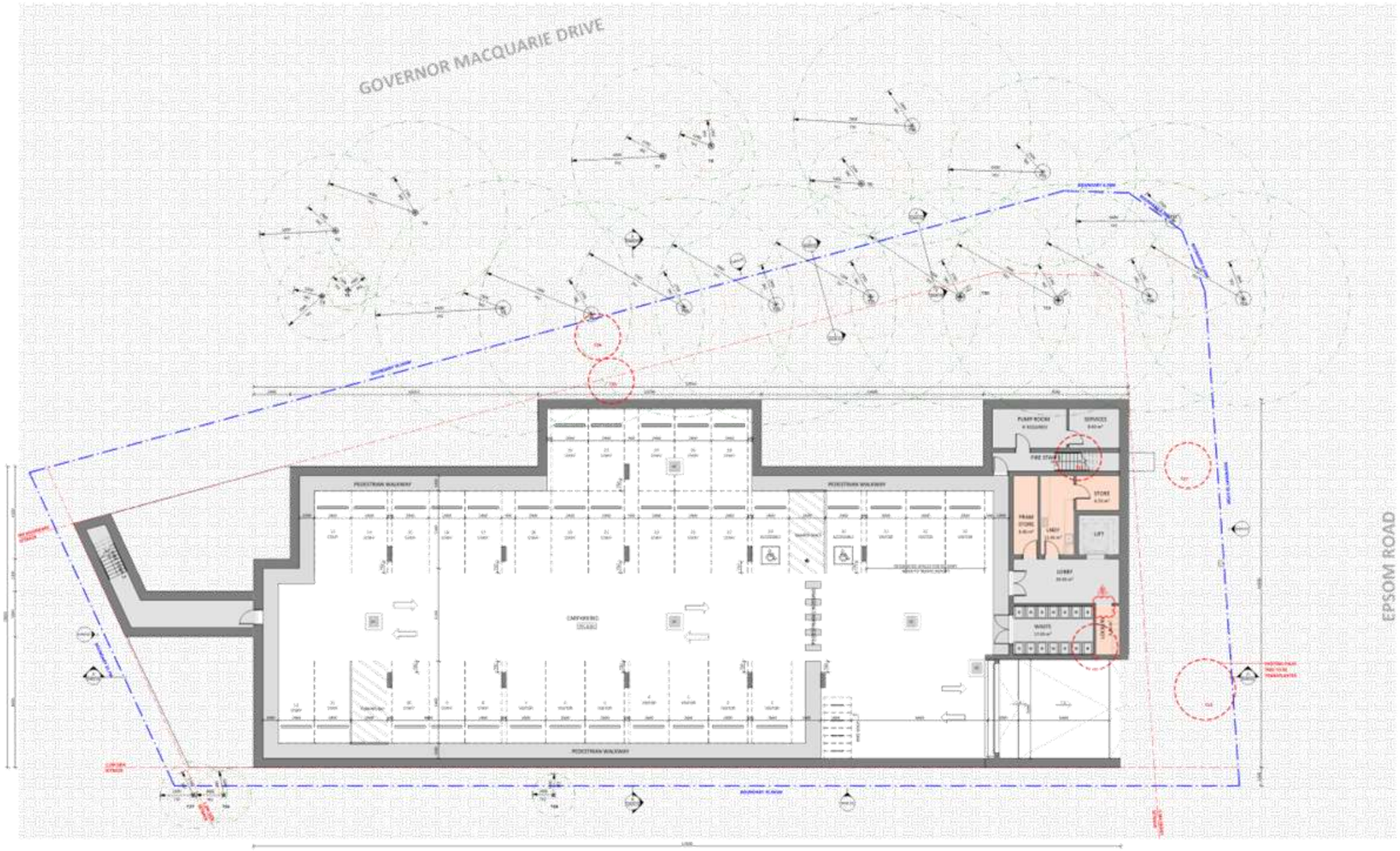

1 BASEMENT FLOOR PLAN
1:100

GENERAL NOTES

ABBREVIATIONS

LANDSCAPE LEGEND

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CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

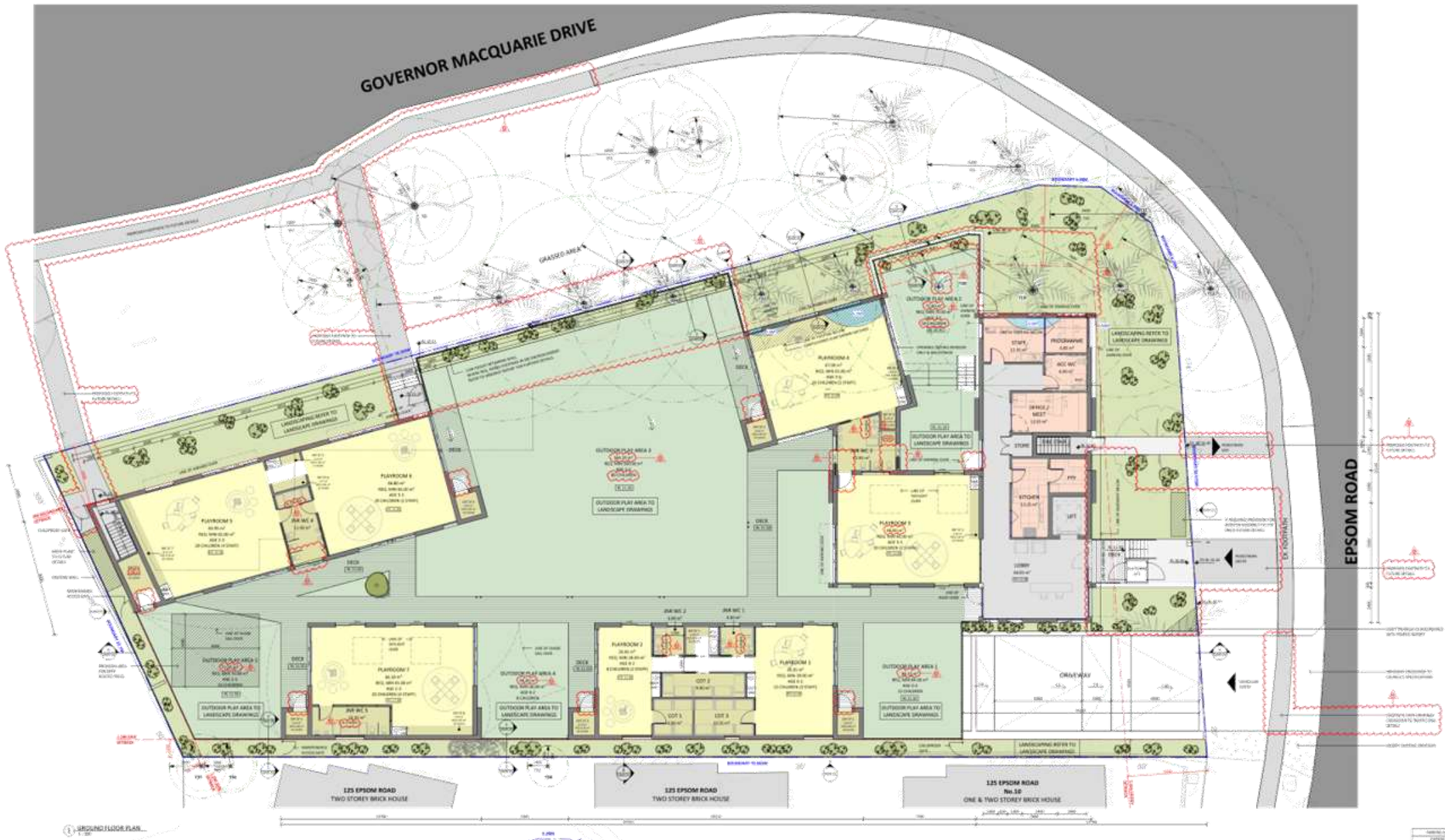
SHEET NAME
BASEMENT FLOOR PLAN

ISSUED FOR DEVELOPMENT APPLICATION

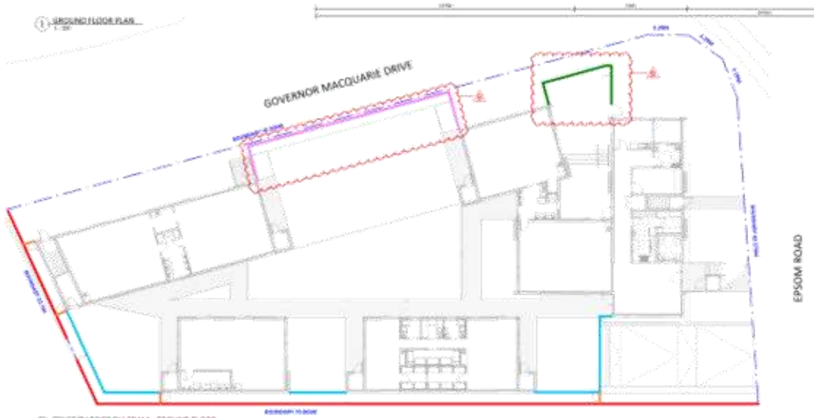
Project number	Sheet No.	Issue	Phase
23701	DA03.01	B	DA

Sheet Size	Scale	LGA
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24



1 GROUND FLOOR PLAN
1 : 100



2 FENCE/BARRIER DIAGRAM - GROUND FLOOR
1 : 100

FENCE LEGEND

GENERAL NOTES

ABBREVIATIONS

LANDSCAPE LEGEND

CLIENT	MARK BROOKS
ARCHITECT	Architecture
PROJECT	CHILDCARE CENTRE
PROJECT ADDRESS	123 EPSOM ROAD, CHIPPING NORTON 2170
SHEET NAME	GROUND FLOOR PLAN
ISSUED FOR DEVELOPMENT APPLICATION	
Project number: 23701	Sheet No.: DA01.02
Issue: B	Phase: DA
Sheet Size: A0	Scale: As indicated
L.G.A.: LIVERPOOL	
Drawn By: KG/SH	Checked By: AS/SS
Date: 11.04.24	

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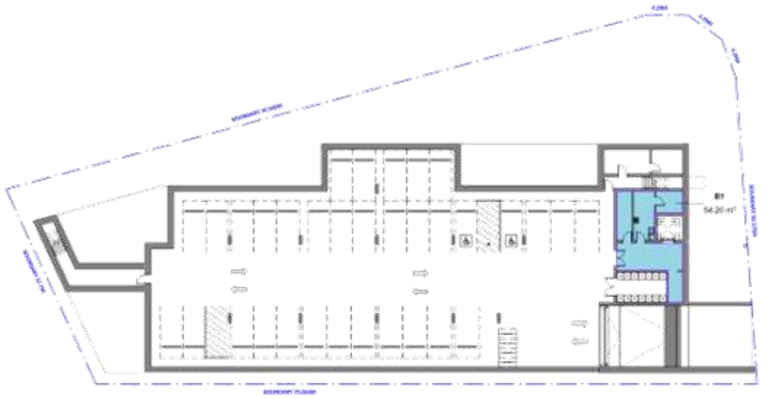
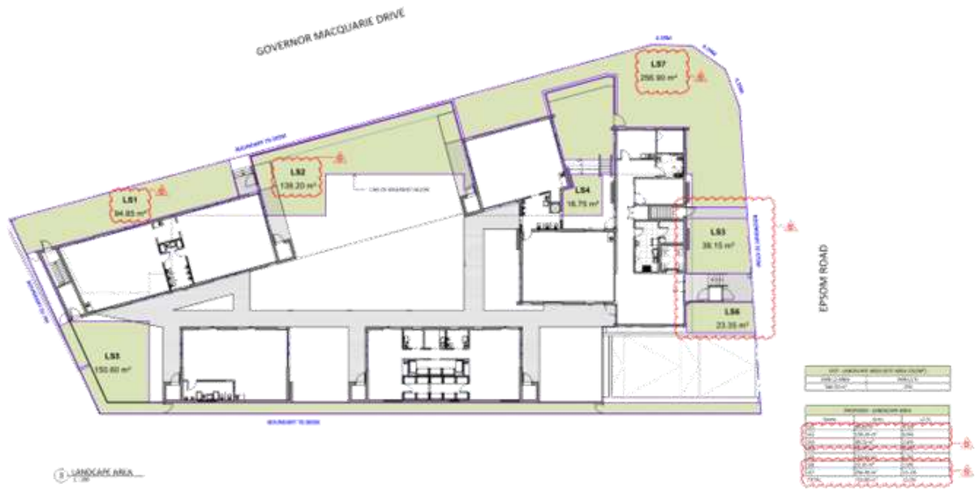


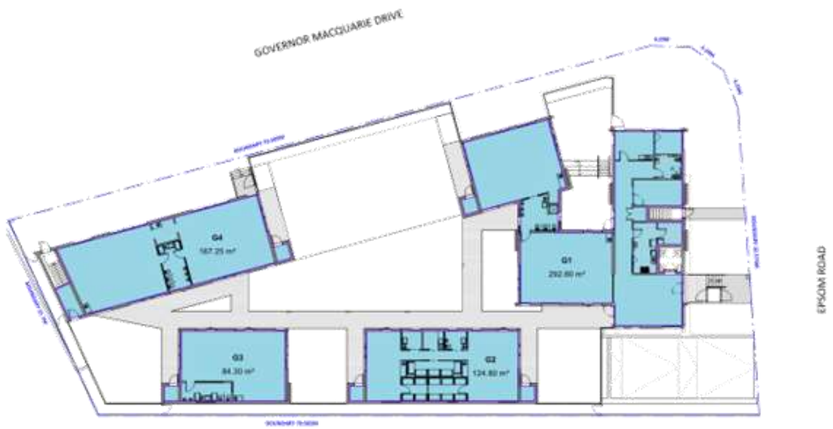
1 GFA - BASEMENT LEVEL
1 : 200



2 LANDCAPE AREA
1 : 200

LOT - LANDSCAPE AREA (EXISTING AREA COUNT)	
TOTAL LANDSCAPE AREA	1,000.40 m²
TOTAL LANDSCAPE AREA	100.0%

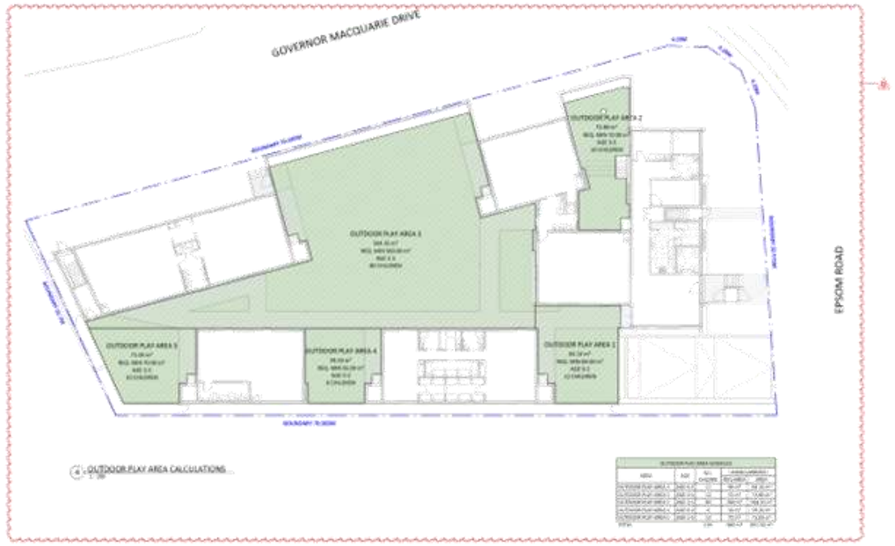
PROPOSED - LANDSCAPE AREA		
NAME	AREA	%
LS1	94.85 m²	9.48%
LS2	139.20 m²	13.92%
LS3	150.60 m²	15.06%
LS4	16.75 m²	1.67%
LS5	38.15 m²	3.81%
LS6	23.35 m²	2.33%
LS7	256.90 m²	25.69%
TOTAL	719.80 m²	71.98%



3 GFA - GROUND FLOOR LEVEL
1 : 200

GFA - GROUND FLOOR (COUNT)	
TOTAL GFA	292.8

PROPOSED - GFA		
NAME	AREA	%
G1	292.80 m²	21.0000%
G2	124.80 m²	8.9483%
G3	84.30 m²	6.0448%
G4	167.25 m²	11.9926%
G5	28.80 m²	2.0655%
G6	14.40 m²	1.0328%
G7	14.40 m²	1.0328%
TOTAL	702.25 m²	50.3500%



4 OUTDOOR PLAY AREA CALCULATIONS
1 : 200

OUTDOOR PLAY AREA SUMMARY				
AREA	AGE	No. CHILDREN	REQ. OPEN SPACE (m²)	REQ. LANDSCAPE AREA (m²)
OUTDOOR PLAY AREA 1	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 2	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 3	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 4	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 5	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 6	2-5 Y.O.	20	140 m²	70.00 m²
OUTDOOR PLAY AREA 7	2-5 Y.O.	20	140 m²	70.00 m²
TOTAL		140	980 m²	490.00 m²

REV	DATE	DESCRIPTION
A	12.06.24	CONCEPTUAL DESIGN
B	11.07.24	ISSUED FOR DEVELOPMENT APPLICATION
C	25.07.24	ISSUED FOR DEVELOPMENT APPLICATION

PROJECT	TILLMANNS GROUP
STATUS	TYPE
FOR INFORMATION	DA
ACCOUNTS	ISSUED TO DATE
LANDSCAPE	HOLLICK RECORD
CONSULTANT	HOLLICK RECORD
ASSET	NAME
ASSET	NAME
CERTIFICA	ONE CERTIFICATE
MANAGER	MANAGER
CONTRACTOR	CONTRACTOR
CALCULATION	DA

NOTES
1. This drawing is to be read in conjunction with all other relevant drawings and specifications.
2. Drawings to be read in conjunction with Landscape Consultant's Specification.
3. Prior to ordering or manufacture of any materials or fabrication, all dimensions and conditions on site must be checked and verified.
4. Do not scale drawings.
5. Any discrepancies or omissions in the drawings or between the drawings and the site must be reported to the Landscape Architect before proceeding with the work.
6. All dimensions are in millimetres unless otherwise specified.
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ARCHITECT
Architecture

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
CALCULATIONS

ISSUED FOR DEVELOPMENT APPLICATION

Project Number	Sheet No.	Issue	Phase
23701	DA03.03	B	DA

Sheet Size	Scale	L.G.A.
A0	1 : 200	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24

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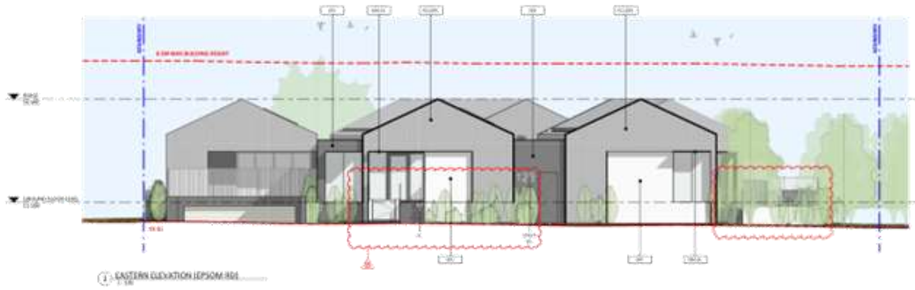
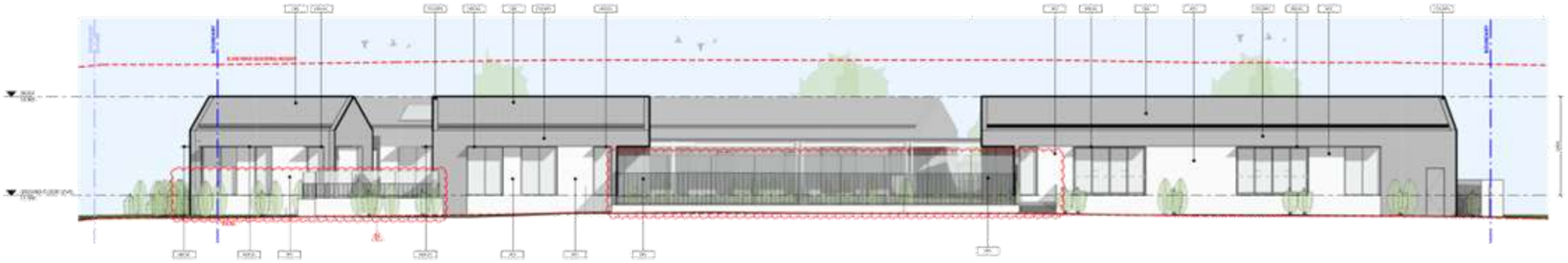
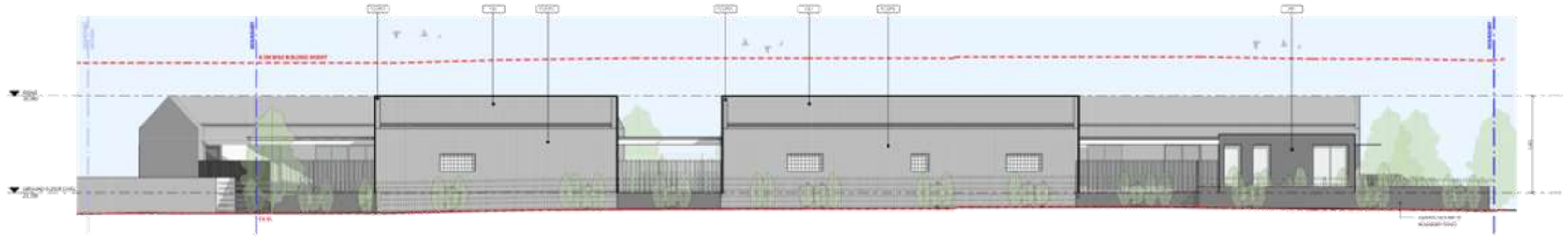


1 EASTERN ELEVATION (EPSOM RD)

2 WESTERN ELEVATION



3 NORTHERN ELEVATION (GOVERNOR MACQUARIE DR)



4 SOUTHERN ELEVATION

ARTISTS IMPRESSION (PHOTOMONTAGE)

EXTERNAL FINISHES

CB1	BRICK (LITTER), (COMMON) COLOUR/FINISH: WINDSPRAY/STONEGLAZE
CB2	GARAGE DOOR COLOUR/FINISH: WINDSPRAY/STONEGLAZE
FC1/XP1	SMOOTH BARGE FC SHEETING WHITE COLOUR PAINTED COLOUR: TBC
PC1	ALUMINIUM WINDOWS & DOOR FRAMES DURALUX POWDERCOAT COLOUR: TO MATCH XP3
HEX1	HEXA SCREEN COLOUR: TO MATCH XP3
XP1	EXTERNAL PAINT 1 FINISH COLOUR: DULUX WHITEWASH OR SIMILAR
XP2	EXTERNAL PAINT 2 FINISH COLOUR: TRUE WHITE OR SIMILAR
XP3	EXTERNAL PAINT 3 FINISH COLOUR: WOODLAND GREY OR SIMILAR
XP4	DECKING/ANT PAINT FINISH COLOUR: TO MATCH XP3

NOTES

1. ALL PROPRIETARY PRODUCTS TO BE INSTALLED IAW MANUFACTURER'S SPECIFICATIONS.
2. ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF ANY WORK. DO NOT SCALE DRAWINGS.
3. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA, AUSTRALIAN STANDARDS, AND ALL LOCAL GOVERNMENT REQUIREMENTS.
4. ALL DIMENSIONS TO BE WORKED FROM FIGURED DIMENSIONS.
5. ALL DIMENSIONS TO BE WORKED FROM NOMINATED DATUMS.
6. ALL DIMENSIONS TO BE CHECKED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
7. ALL DIMENSIONS TO BE WORKED FROM NOMINATED DATUMS.
8. ALL DIMENSIONS TO BE CHECKED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
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SHEET NAME
EXTERNAL ELEVATIONS & FINISHES

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA04.01	B	DA

Sheet Size	Scale	LGA
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24

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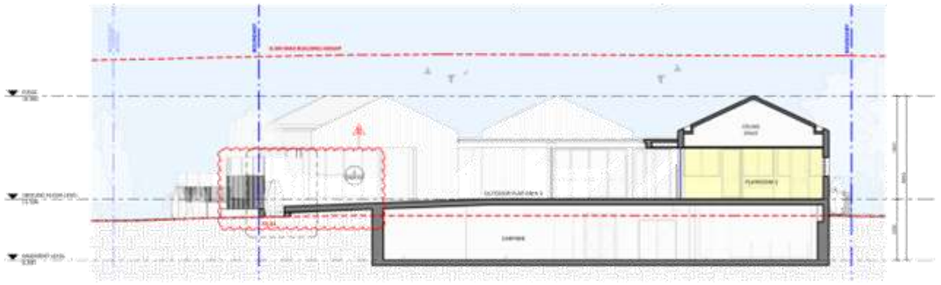
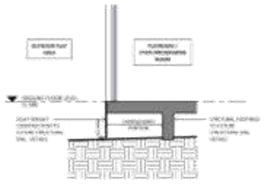
A SECTION A-A

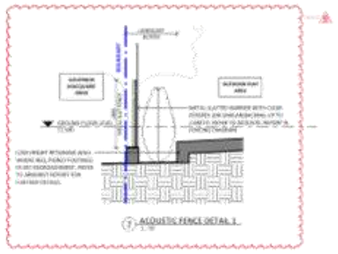


B SECTION B-B

8.5M HT HEIGHT DIAGRAM

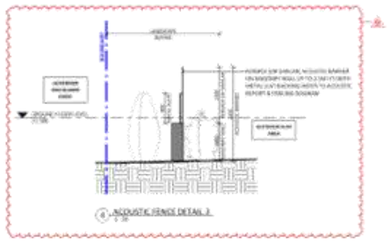


1 TYP CANTILEVED FLOOR DETAIL

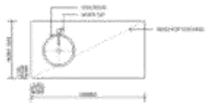


2 ACOUSTIC FENCE DETAIL 1

3 ACOUSTIC FENCE DETAIL 2

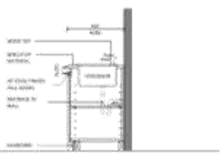


4 ACOUSTIC FENCE DETAIL 3



TYPICAL CRAFT SINK - PLAN

TYPICAL CRAFT SINK - ELEVATION



TYPICAL CRAFT SINK - SECTION

A	15.04.24	ISSUED FOR DA	
B	16.07.24	ISSUED FOR DEVELOPMENT APPLICATION	
ISSUE	DATE	DESCRIPTION	

ARCHITECTURAL DRAWINGS	
PLANNER	PLANNING WORLD
CIVIL	TTW
STRUCTURAL	TTW
ACOUSTIC	ARBOUR TONG
ARBORIST	HELLEN RICHER
TRAFFIC	GRAVITAS
BCA	TTW
ESD	ARC SUSTAINABILITY
WASTE	WASTE MAPLAN
ENVIRONMENTAL	ECO LOGIC
CALCULATION	GIC

NOTES

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MARK BROOKS

ARCHITECT

Architecture & Design

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PROJECT

CHILDCARE CENTRE

PROJECT ADDRESS

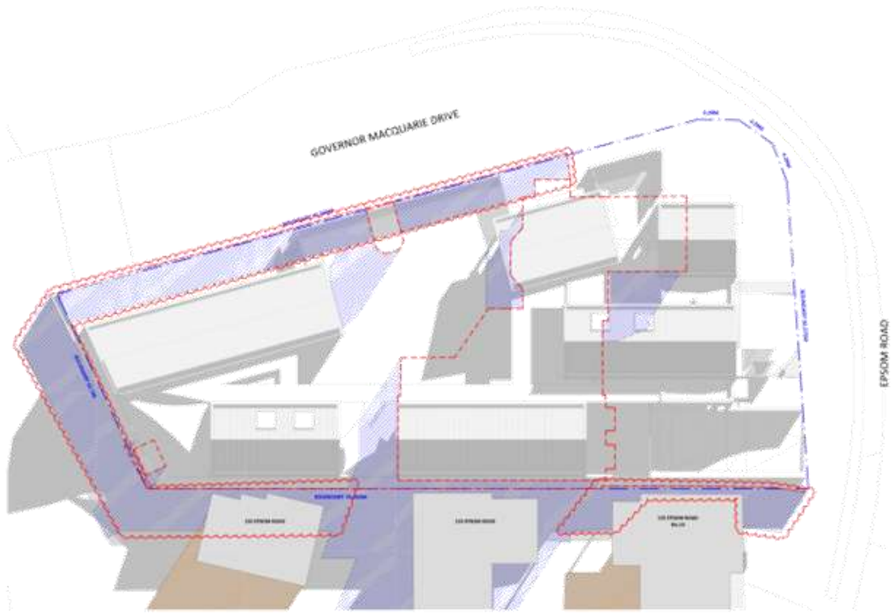
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME

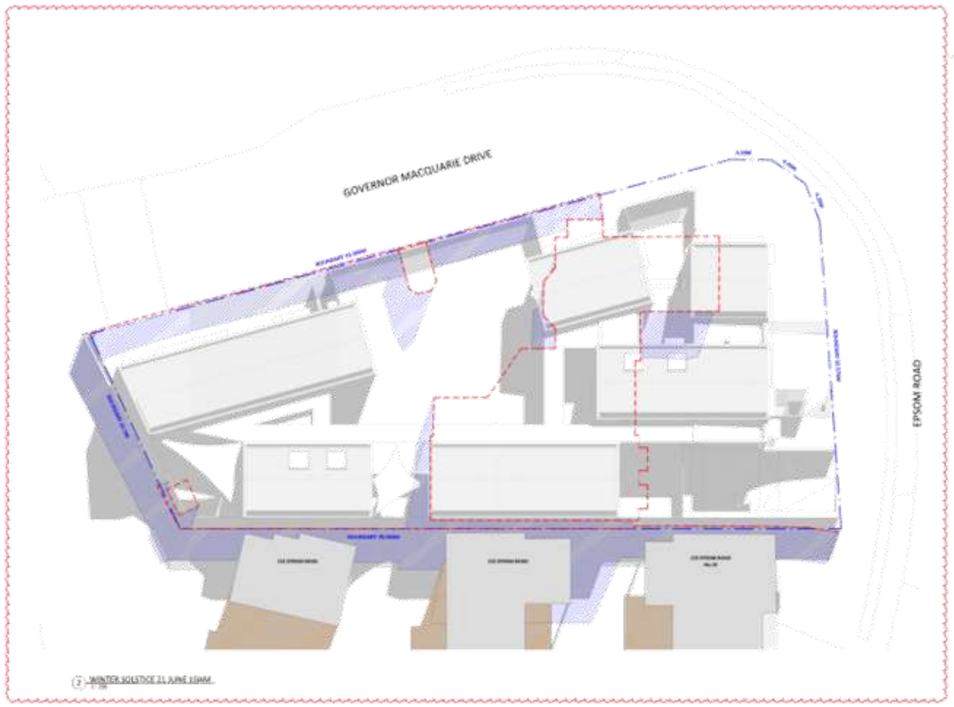
SECTIONS & FENCE DETAILS

ISSUED FOR DEVELOPMENT APPLICATION			
Project number	Book No.	Issue	Phase
23701	3A05.01	B	DA
Sheet No.	Scale	I.G.K.	
A0	As indicated	LIVERPOOL	
Drawn By	Checked By	Date	
HG/SH	AS/SS	11.04.24	

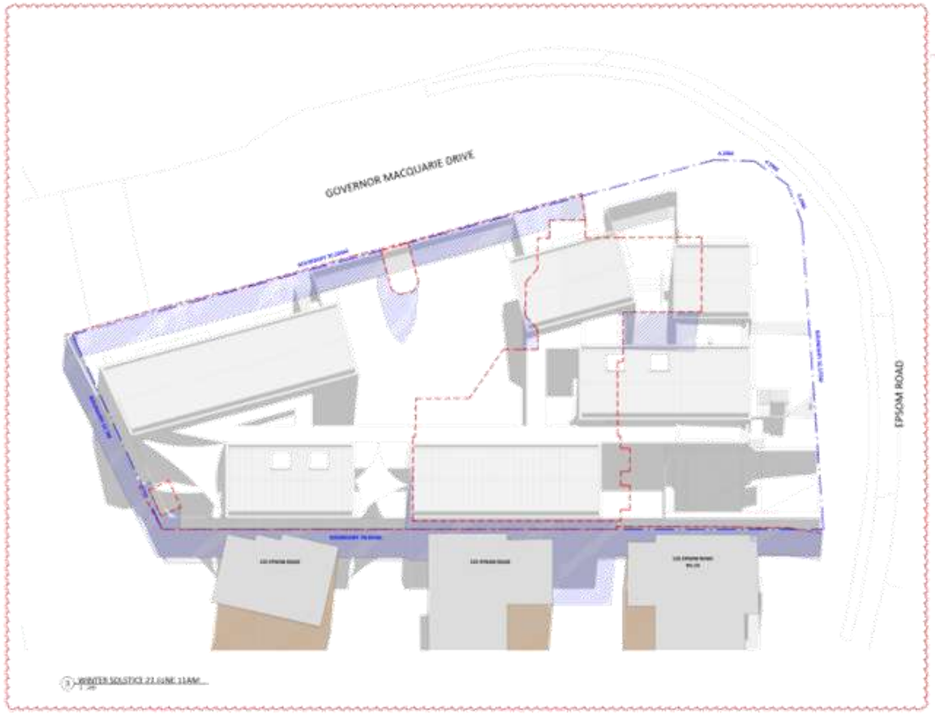
NOT FOR CONSTRUCTION



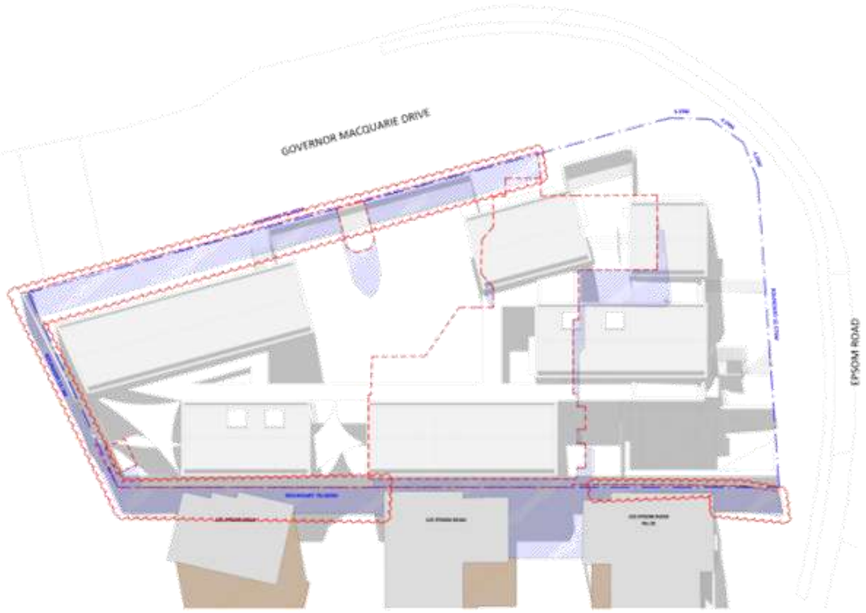
1 WINTER SOLSTICE 21 JUNE 9AM
1:200



2 WINTER SOLSTICE 21 JUNE 10AM
1:200



3 WINTER SOLSTICE 21 JUNE 11AM
1:200



4 WINTER SOLSTICE 21 JUNE 12PM
1:200

LEGEND

NOT FOR CONSTRUCTION

A	15.04.24	CONSULTANT REVIEW	
B	11.04.24	ISSUED FOR DEVELOPMENT APPLICATION	
ISSUE	DATE	DESCRIPTION	

DRAWING DISCLAIMER

PLANNER	TURNBULL PLANNING
CIVIL	ADAM SMITH
STORMWATER	DFC
ACOUSTIC	ADAMS TOWN
LANDSCAPE	HELLEN RICHARDS
SAFETY	ARBORCHECK
BCA	DFC
ESD	ESD SOLUTIONS
WASTE	WASTE MAPS
CONTAMINATION	CITY GREEN
CASA CERTIFICATE	DFC

NOTES

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MARK BROOKS

ARCHITECT

Architecture

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PROJECT

CHILDCARE CENTRE

PROJECT ADDRESS

123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME

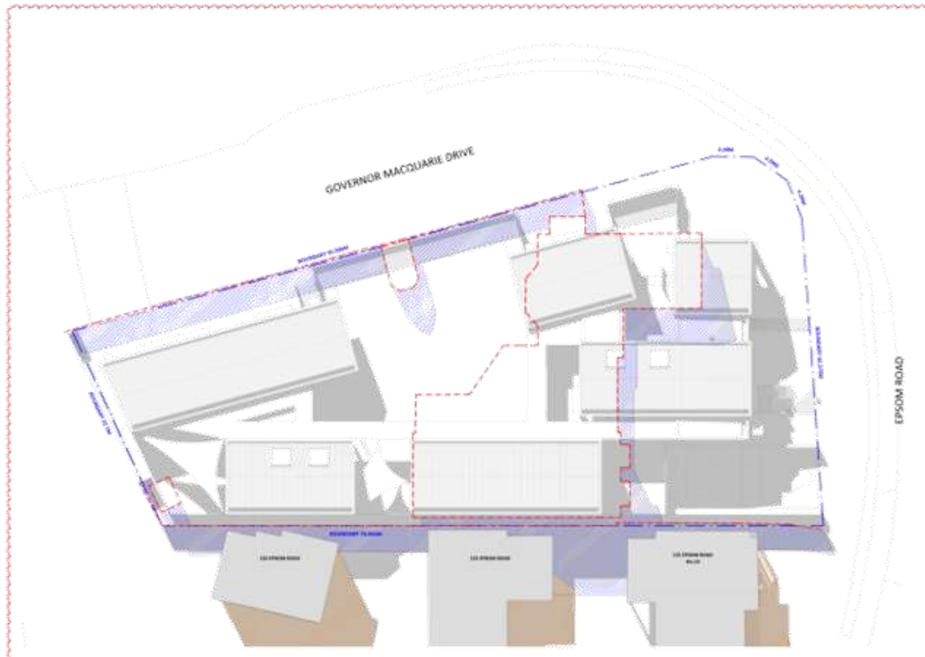
SHADOW DIAGRAMS SHEET 1

ISSUED FOR DEVELOPMENT APPLICATION

Project Number	Sheet No.	Issue	Phase
23701	DA06.01	B	DA

Sheet Size	Scale	Location
A0	1 : 200	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24



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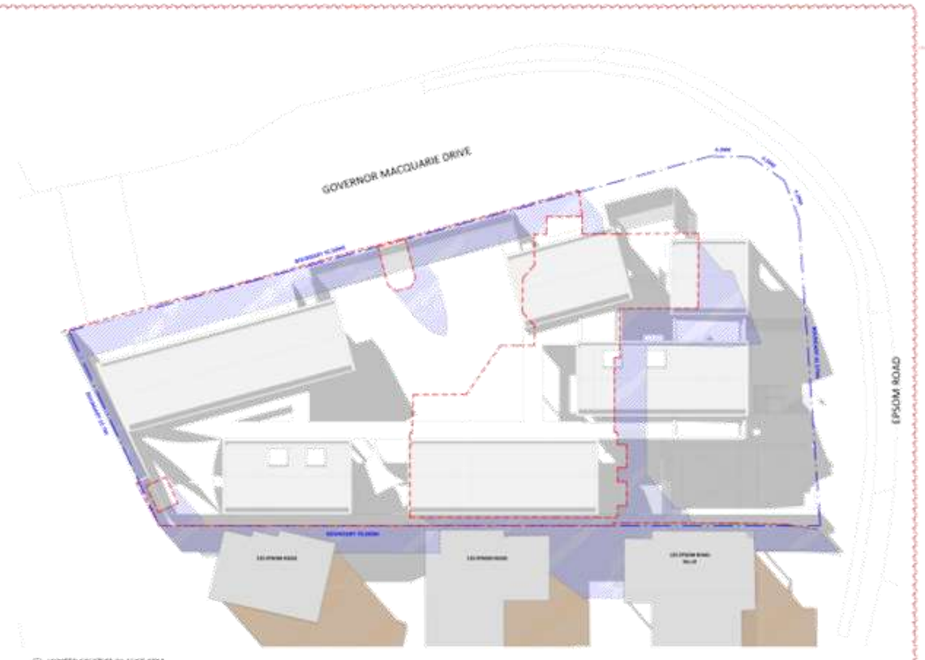

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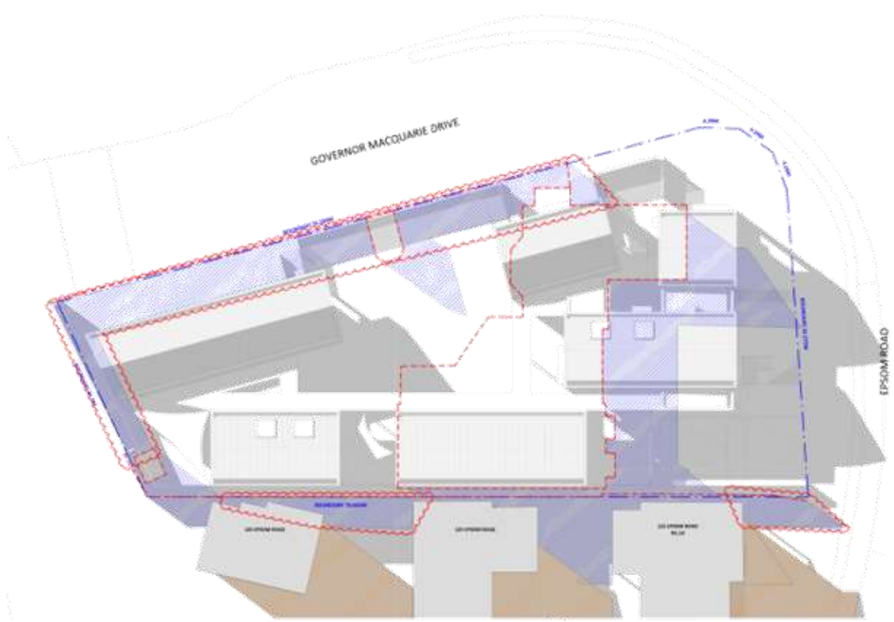

3 WINTER SOLSTICE 21 JUNE 3PM

LEGEND

NOT FOR CONSTRUCTION

A	21.06.24	LODGEMENT	
ISSUE	DATE	DESCRIPTION	

ENGINEER (CIVIL/STRUCTURAL)
ELECTRICAL
HYDRAULICS
MECHANICAL
ACOUSTICS
LANDSCAPE
FIRE
BCA
ACCESS
SUSTAINABILITY
HERITAGE
CONTAMINATION
CASA/OLS/PANS
CLIENT
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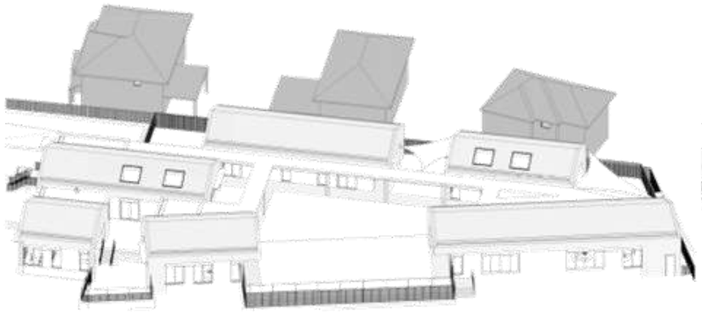
PROJECT
CHILDCARE CENTRE
PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170
SHEET NAME
SHADOW DIAGRAMS - SHEET 2
ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA06.02	A	DA

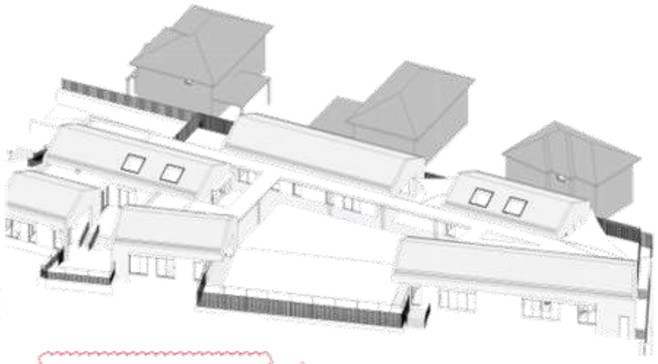
Sheet Size	Scale	L.G.A.
A0	1 : 200	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	21.04.24

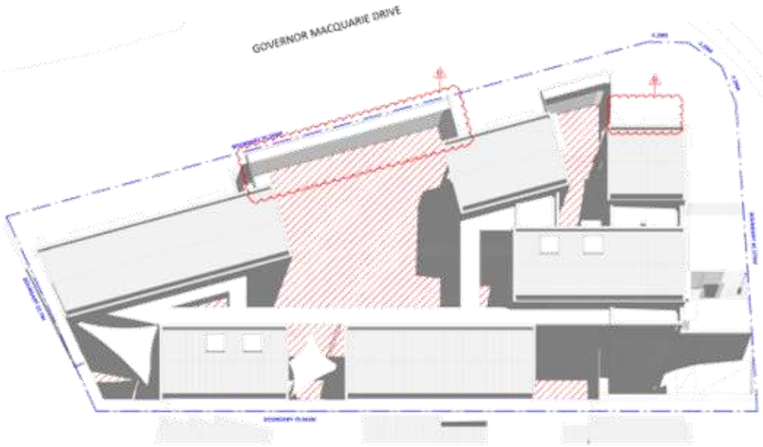
1 PROPOSED VIEW FROM SUN - 9AM WINTER 21 JUNE



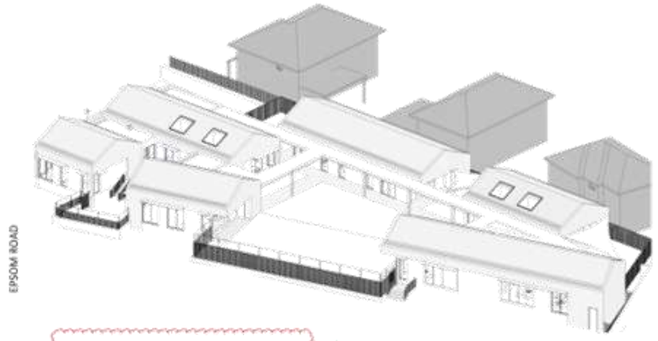
2 PROPOSED VIEW FROM SUN - 12PM WINTER 21 JUNE



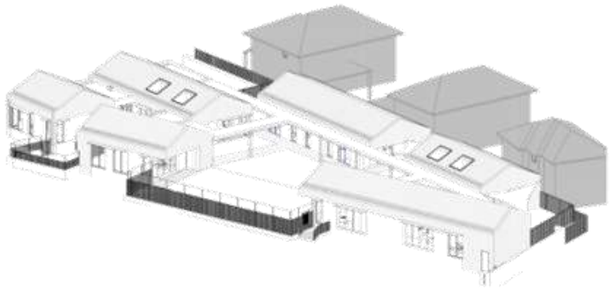
3 PROPOSED VIEW FROM SUN - 3PM WINTER 21 JUNE



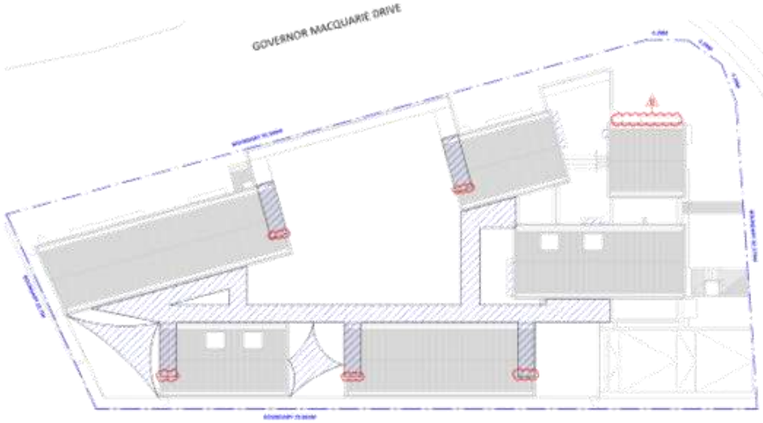
6 OUTDOOR SOLAR ACCESS - 21 JUNE WINTER SOLSTICE 10AM
1 : 100



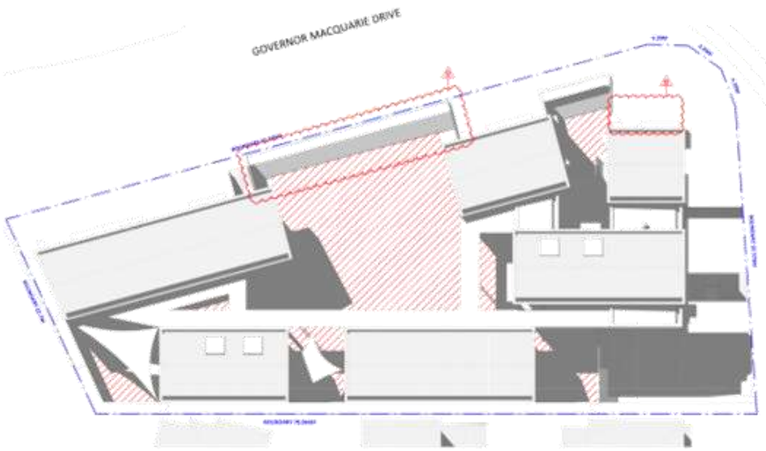
4 PROPOSED VIEW FROM SUN - 2PM WINTER 21 JUNE



5 PROPOSED VIEW FROM SUN - 3PM WINTER 21 JUNE



7 COVERED AREA CALC
1 : 100



8 OUTDOOR SOLAR ACCESS - 21 JUNE WINTER SOLSTICE 2PM
1 : 100

LEGEND

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Rev	Date	Description
A	11.04.24	[illegible]
B	11.04.24	[illegible]
C	11.04.24	[illegible]

Issue	Description
[illegible]	[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
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[illegible]	[illegible]
[illegible]	[illegible]

NOTES

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2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]

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MARK BROOKS

ARCHITECT
Architecture & Interiors
[illegible]

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
VIEW FROM SUN & OUTDOOR PLAY AREA SOLAR/COVERED AREA CALCS

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Work No.	Issue	Phase
23701	DA06.03	B	DA

Sheet Size	Scale	Ltd at
A0	1 : 200	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24

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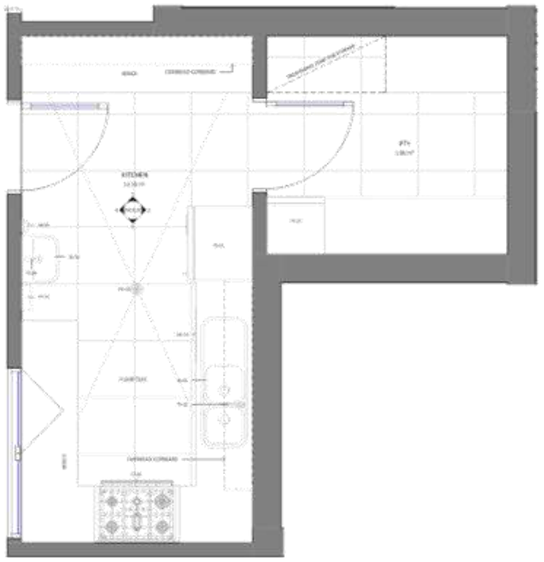
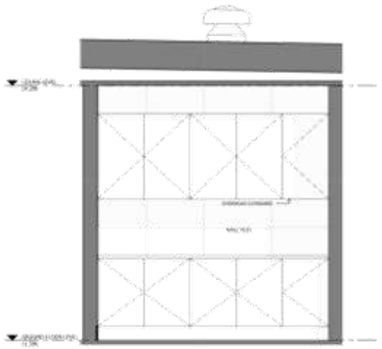
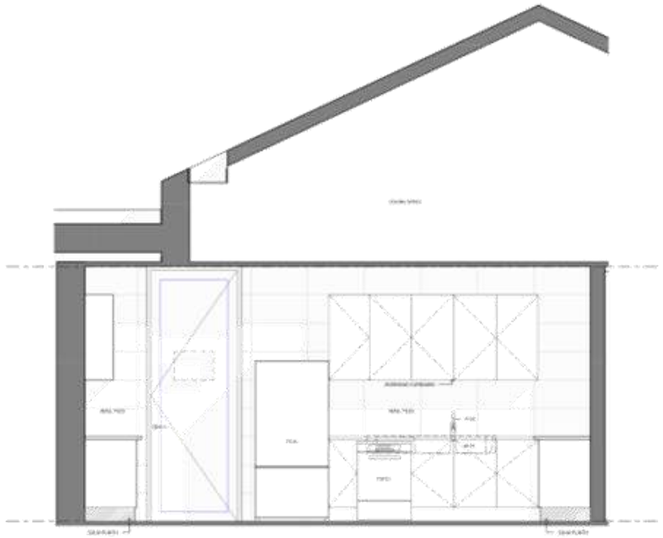


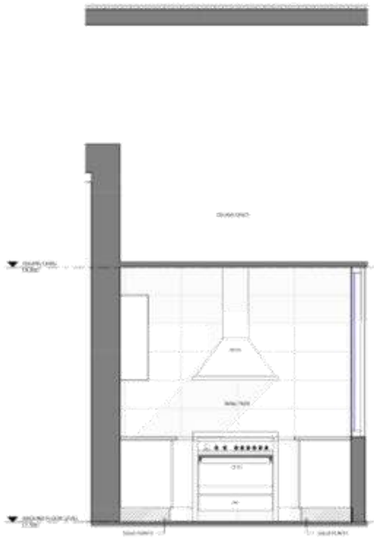
A GROUND FLOOR PLAN



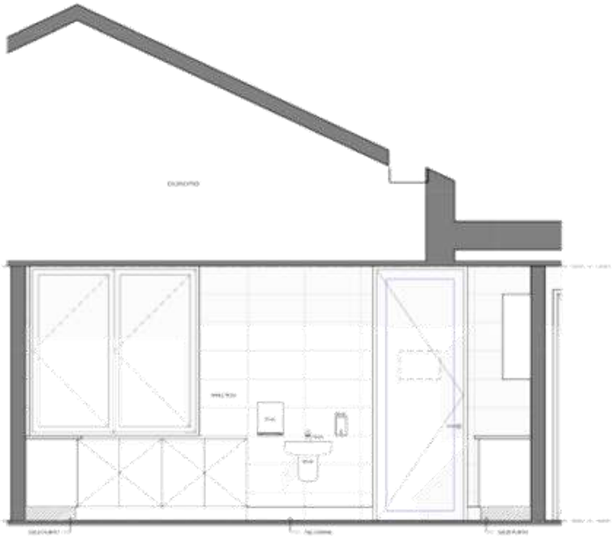
1 KITCHEN - ELEVATION 1



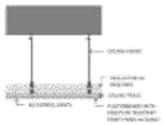
2 KITCHEN - ELEVATION 2



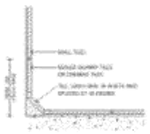
3 KITCHEN - ELEVATION 3



4 KITCHEN - ELEVATION 4



WET AREA CEILING DETAIL



TILE COVING DETAIL

	LAYERING & KITCHEN LEGEND
BR-01	KITCHEN WALL PANELS QUARTZ INSERTS TO KITCHEN PANELWALL
CT-01	GAS COOK TOP
DW-01	DISHWASHER
FR-01	FRIDGE
FS-01	FREEZER
FW-01	FLOOR QUARTZ TILE KITCHEN
KT-01	KITCHEN TOPS - QUARTZ TO BENCH
MW-01	MICROWAVE
OH-01	RANGE HOOD (REFER TO DETAIL)
PA-01	PICABELL PAINT
PW-01	PAINT
TW-01	COVING TILE WALL

NOT FOR CONSTRUCTION

KITCHEN NOTES

1. WATERPROOFING & SEALS TO BE PROVIDED FOR ANY AREAS ABOVE FLOOR LEVELS.
2. KITCHEN FACILITIES TO COMPLY WITH FOOD REGULATION 1989 & AS 4674:2004 REQUIREMENTS.
3. WALLS OF ALL SPACES REQUIRING WET AREAS (WALLS OF ADJOINING CONSTRUCTION TO PROVIDE FLUSH AND FAIR SURFACE FOR WET AREA TILING).
4. DO NOT USE DROP IN PERFORATED PANELS TO COVERED OVER KITCHEN AREA.
5. LIGHT FITTINGS TO BE DESIGNED TO FACILITATE EASY CLEANING & TO PREVENT CONTAMINATION OF FOOD UPON SHATTERING. LIGHT FITTINGS TO BE FREE FROM ANY FEATURES THAT WOULD HARBOUR DIRT, DUST AND INSECTS.
6. INTERSECTIONS OF WALLS AND CEILINGS TO BE FLUSHED, DETAILED AREAS AND SUSPENDED CONSTRUCTION.
7. INTERSECTIONS OF WALLS AND FLOORS TO BE COVED AND TO FORM A COMPLETELY UNINTERRUPTED SURFACE.
8. FLOOR TILE FINISH TO BE FINISHED FLUSH TO ADJACENT.
9. CONTRACTOR TO ESTIMATE THE FOLLOWING FOR REVIEW PRIOR TO INSTALLATION OF ANY LIBERTY & CUSTOMERS:
10. NO LABEL ON FOOD UNDER KITCHEN CUPBOARDS ENTRY.
11. ALL CIRCUITS, ELECTRICAL WIRING & PIPES AND CONDUITS TO FLOATING WALLS OR CEILINGS SHALL BE FIXED ON BRACKETS IN ACCORDANCE WITH AS4674-2004.
12. ALL HOT WATER TAPS MUST BE THERMOSTATICALLY CONTROLLED TO MAINTAIN THE DELIVERED WATER TEMPERATURE OF ALL SANITARY FIXTURES USED FOR PERSONAL HYGIENE.
13. THE OPERATION OF THE PREMISES MUST COMPLY WITH THE FOOD ACT 2003 & THE FOOD STANDARDS CODE.
14. REFER TO HYDRAULIC ENGINEER'S DOCUMENTATION AND SPECIFICATIONS FOR ALL RELEVANT HYDRAULIC & PLUMBING FITTINGS & FIXTURES.
15. REFER TO ELECTRICAL ENGINEER'S DOCUMENTATION AND SPECIFICATIONS FOR ALL RELEVANT ELECTRICAL FITTINGS & FIXTURES.
16. ALL LIGHTING CONCEPTS ARE INDICATIVE ONLY. AS PER DRAWINGS MUST BE SUBMITTED FOR APPROVAL BY THE ARCHITECT PRIOR TO FABRICATION & INSTALLATION.
17. AN EXTRACTION SYSTEM SHALL BE PROVIDED WHERE THERE IS AN DISHWASHER AND OTHER COOKING AND HEATING EQUIPMENT THAT EMITS STEAM AND THE ABOVE TO BE SUBMITTED THAT THERE IS, OR LIKELY TO BE, A CONSIDERATION VISUALLY FOR ON WALLS AND CEILINGS.

P	25.06.24	[illegible]	
C	11.04.24	[illegible]	DESCRIPTION

ARCHITECT CONSULTANTS
[illegible]

NOTES
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]

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MARK BROOKS

ARCHITECT
Architecture

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
KITCHEN DETAILS

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA10.10	A	DA

Sheet Size	Scale	LGA
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
HG/SH	AS/SS	11.04.24

PROJECT

123 EPSOM ROAD, CHIPPING NORTON

LANDSCAPE ARCHITECTURAL DRAWING LIST

DWG NO.	SHEET NAME	SCALE	ISSUE	REV. DATE
LS00	LANDSCAPE | COVER PAGE (THIS PAGE)	NTS@A3	C	15.04.24
LS01	LANDSCAPE | SITE PLAN	1:200@A3	C	15.04.24
LS02	LANDSCAPE | GROUND FLOOR	1:200@A3	C	15.04.24
LS03	LANDSCAPE | SECTION + ELEVATION	1:100@A3	C	15.04.24
LS04	LANDSCAPE | MOOD BOARD	NTS@A3	C	15.04.24
LS05	LANDSCAPE | PLANT SPECIES	NTS@A3	C	15.04.24
LS06	LANDSCAPE | NOTES	NTS@A3	C	15.04.24
LS07	LANDSCAPE | TYPICAL DETAILS	AS SHOWN@A3	C	15.04.24

MWLA

PROJECT NUMBER

2339

CLIENT

MARK BROOKS

ISSUE

FOR DA SUBMISSION | UPD

DATE

15.04.24

NOMINATED LANDSCAPE ARCHITECT

MELISSA WILSON

MELISSA WILSON LANDSCAPE ARCHITECTS

0416 112 862
LEVEL 4 | 15 FOSTER STREET SURRY HILLS, 2010 NSW
PO BOX DARLIGHURST NSW 1300
www.melissawilson.com.au

TREES TO BE RETAINED OR REMOVED

- Trees to be retained and protected
- New location for transplanted tree
- Trees to be removed
- Tree to be transplanted

TREE PROTECTION

All trees nominated to be retained are to be protected throughout the duration of the demolition and construction periods. All tree protection measures and enclosures are to be constructed in accordance with the guidelines of the Arboricultural Impact Assessment.

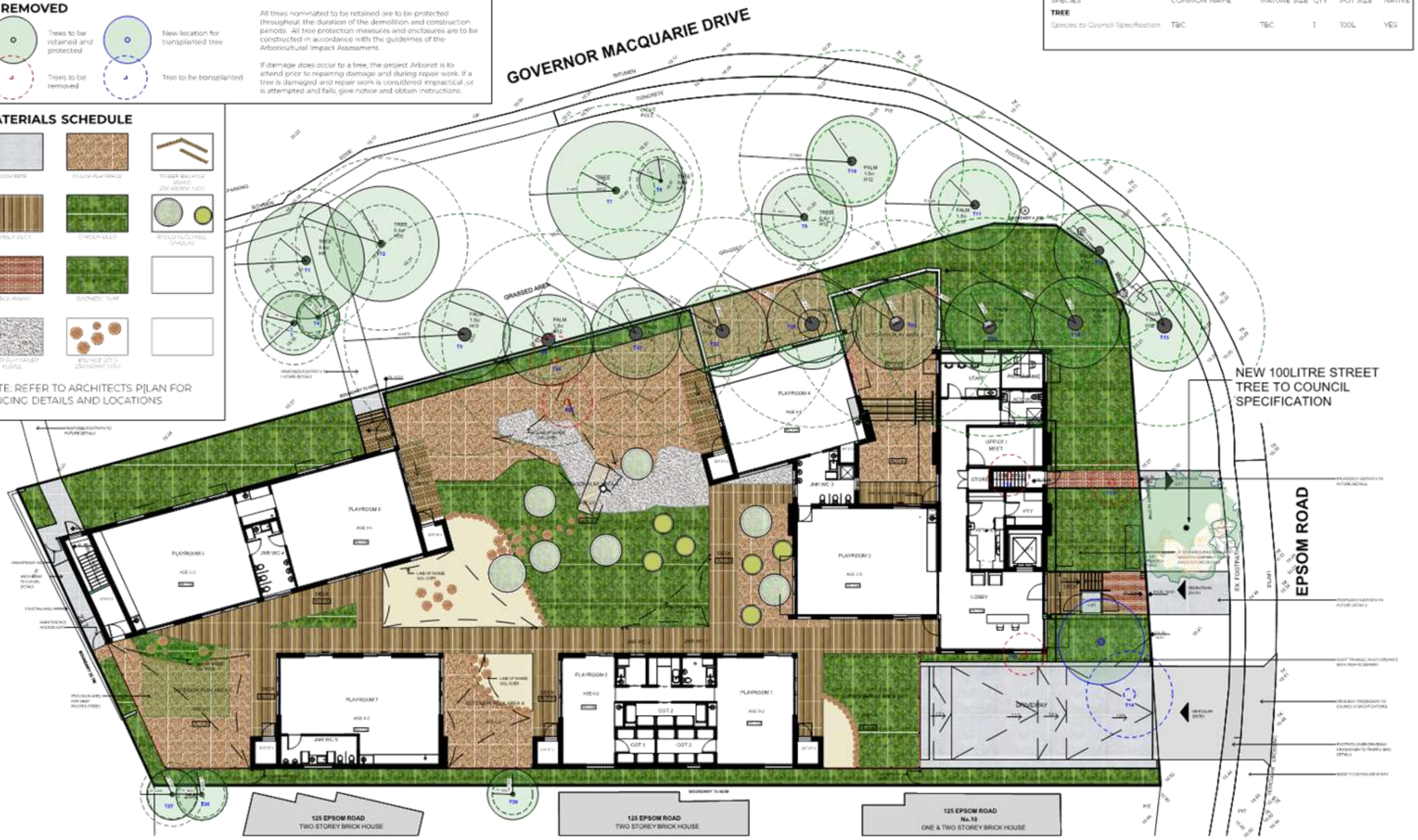
If damage does occur to a tree, the project Arborist is to attend prior to repairing damage and during repair work. If a tree is damaged and repair work is considered impractical, or is attempted and fails, give notice and obtain instructions.

MATERIALS SCHEDULE

NOTE: REFER TO ARCHITECTS PLAN FOR FENCING DETAILS AND LOCATIONS

INDICATIVE PLANT SCHEDULE | STREET TREE

SPECIES	COMMON NAME	MATURE SIZE	QTY	POT SIZE	NATIVE
TREE					
Species to Council Specification	TBC	TBC	1	100L	YES



MELISSA WILSON
LANDSCAPE ARCHITECTS
0416 112 862 | Level 4 | 15 Foster Street Surry Hills, 2010 NSW
PO BOX 1320 Darlinghurst, NSW 1300
www.melisswilson.com.au
NAMATH PTY LTD TRADING AS MELISSA WILSON

ISSUE	AMENDMENT	DATE
A	DRAFT DA	30.10.23
B	FOR DA SUBMISSION	17.11.23

SCALE: 1:200@A3
DRAWN: MW
CLIENT: MARK BROOKS
PROJECT NUMBER: 2339

DRAWING TITLE
LANDSCAPE | SITE PLAN

PROJECT
123 EPSOM ROAD, CHIPPING NORTON

DWG NO.
LS01
ISSUE
B

NOTES
REFER TO DETAIL SURVEY FOR SITE IDENTIFICATION, BOUNDARY INFORMATION & LEVELS.
ALL LEVELS AND DIMENSIONS TO BE CONFIRMED ON SITE. IF ANY DISCREPENCIES OCCUR PLEASE NOTIFY THE LANDSCAPE ARCHITECT

NOT FOR CONSTRUCTION

INDICATIVE PLANT SCHEDULE

SPECIES	COMMON NAME	MATURE SIZE	QTY	POT SIZE	NATIVE
TREES					
Brachychiton acerifolius	Lemon Myrtle	6-8m			
Banksia integrifolia	Coastal Banksia	6-8m		100L	YES
Buckinghamia celsissima	Ivory Curl Tree	5m		75L	YES
Lagerstroemia indica	Crepe Myrtle	7m		75L	
Lagerstroemia 'Tonto'	Tonto	3-4m		75L	
SCREEN PLANTING					
Diploprotachyum fallcatum	Himalayan Weeping Ban	2-3m		45L	
Elaeocarpus reticulatus	Blueberry Ash	6-8m		75L	YES
Grevillea 'Moonlight'	Moonlight	3m		45L	YES
Syzygium 'Firescreen'	Firescreen	3m		45L	YES
SHRUBS					
Alpinia caerulea	Shell Ginger	2m		5L	YES
Arthropodium cirratum	NZ lily	0.4m		5L	
Dianella Caerulea	Blue Flax Lilly	0.3		150mm pot	YES
Grevillea 'Mt Tamboritha'	Mt Tamboritha	0.5m		5L	YES
Isopogon nodosus	Knobbling CLub Rush	0.3		150mm pot	YES
Lomandra 'Lime Tuff'	Lime Tuff	0.5m		5L	YES
Pennisetum 'Nafray'	Nafray	0.6m		150mm pot	YES
Westringia 'Blue Gem'	Blue Gem	0.6m		5L	YES
GROUNDCOVERS					
Dichondra repens	Kidney Weed	-		5L	YES
CLIMBERS					
Hibbertia scandens	Climbing Guinea Flower	-		150mm pot	YES

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CLIENT: MARK BROOKS
PROJECT NUMBER: 2339

DRAWING TITLE
LANDSCAPE | GROUND FLOOR

PROJECT
123 EPSOM ROAD, CHIPPING NORTON

DWG NO.
LS02
ISSUE
B

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CLIENT: MARK BROOKS

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DRAWING TITLE

LANDSCAPE | SECTION + ELEVATION

PROJECT

123 EPSOM ROAD, CHIPPING NORTON

DWG NO.

LS03

ISSUE

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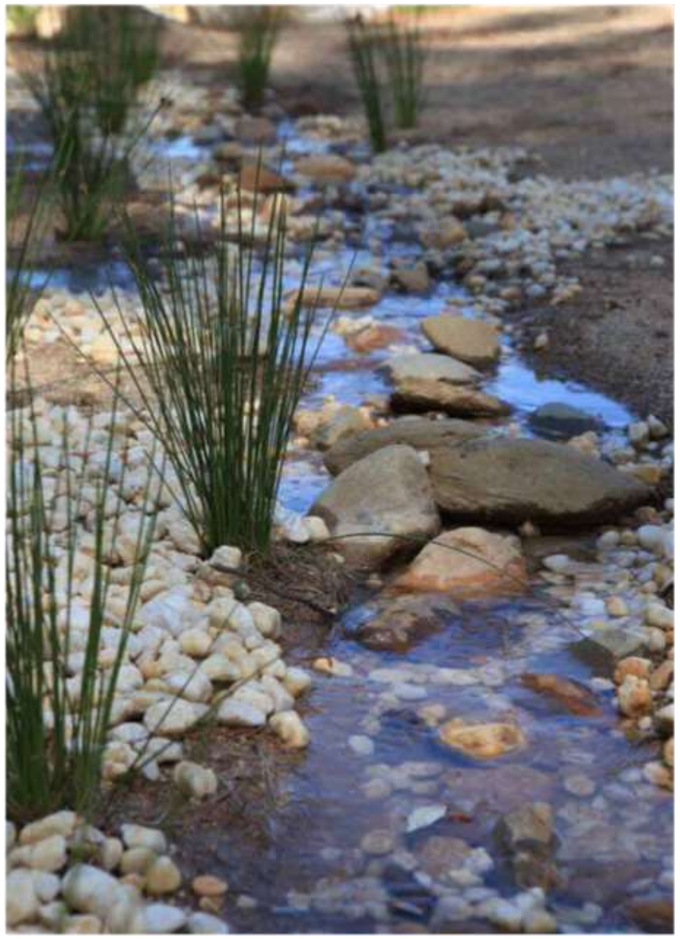

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DRAWING TITLE

LANDSCAPE | MOOD BOARD

PROJECT

123 EPSOM ROAD, CHIPPING NORTON

DWG NO.

LS04

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TREES

Backhousia citriodora

Banksia integrifolia

Buckinghamia celcissium

Citrus spp.

Citrus spp.

DECIDUOUS TREES

Lagerstroemia indica

Lagerstroemia 'Tonto'

SCREEN PLANTING

Drepanostachyum falcatum

Elaeocarpus reticulatus

Grevillea 'Moonlight'

Syzygium 'Firescreen'

GROUNDCOVERS

Dichondra repens

CLIMBERS

Hibbertia scandens

SHRUBS | GRASSES

Alpinia caerulea

Arthropodium cirratum

Dianella caerulea

Grevillea 'Mt Ramboritha'

Isolepis nodosa

Lomandra 'Lime Tuff'

Pennisetum 'Nafray'

Westringia 'Blue Gem'

HERBS

Cymbopogon citratus

Lavendula 'Avonview'

Origanum vulgare

Rosmarinus 'Corzo'

Thymus spp.

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DRAWING TITLE
LANDSCAPE | PLANT SPECIES

PROJECT
123 EPSOM ROAD, CHIPPING NORTON

DWG NO.
LS05

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LANDSCAPE NOTES

ON SLAB PLANTER DRAINAGE
Location
Note that all waterproofing of slabs and location of drainage outlets is to the project engineers specification.

DRAINAGE CELL:
350mm x 350mm x 30mm drainage cell as supplied by Atlantis Water Management or approved equal. Lay according to manufacturer's instructions. Drainage cell to be fully wrapped in geotextile fabric as specified.

GEOTEXTILE FABRIC:
Geotextile as recommended appropriate by Atlantis Water Management or similar and approved. Wrapped and taped to manufacturer's instructions.
Sources/ contacts:
Atlantis Water Management
Phone: 9419 6000

SAND BLINDING LAYER:
Coarse washed river sand laid to a depth of 50mm as detailed.

MEMBRANE PROTECTION BOARD
Provide 5mm FC sheeting or similar and approved securely affixed to all vertical faces of the membrane in a manner that will not damage the integrity of the membrane. Note hold point requirements.

TOPSOIL
Source | Type:
Imported topsoil type A: Light weight planter box mix, Benedict's SmartMix No. 4. Product code RN133. As supplied by Benedict Sand and gravel or approved equivalent.
Imported topsoil type B: Light weight subsoil mix, Benedict's SmartMix No. 5. Product code BO133. As supplied by Benedict Sand and Gravel or approved equivalent.

PLANTING BEDS ON SLAB
Clean out any loose cement and other material likely to be harmful to plant growth. Install Drainage cell as specified and to manufacturers instructions. Seal edge of geotextile fabric to planter box wall. Provide membrane protection board to sides of planter and secure with liquid nails or similar method that will not damage the waterproof membrane. Note hold point requirement. Provide sand blinding layer as specified in clause 3.3. Install topsoil in 150mm layers and consolidate as specified below.

TOPSOIL CONSOLIDATION
Compact lightly and uniformly in 150mm layers. Compact topsoil mix with a single pass of a 50 kg hand drawn tennis court roller or similar means to a compacted depth of 150mm. Lightly water with a fine mist spray each layer, prior to installing the following layer. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:

Finished to 30mm above design levels to allow for consolidation.
Smooth and free from stones or lumps of soil.
Graded to drain freely, without ponding, to catchment points.
Graded evenly into adjoining ground surfaces.
Ready for planting.

SETTLEMENT PERIOD
Allow the topsoil in planter boxes to settle for one week prior to planting. Top up any settlement as required to meet design levels.

Topsoil depth
Typically spread topsoil to the depths as indicated on drawings
Surplus topsoil
General: Spread surplus topsoil on designated areas on site, if any; otherwise, dispose off site.

PLANTING BEDS ON GRADE
SUBSOIL
Excavate to bring the subsoil to a minimum of 300mm below finished design levels, to allow for infilling with topsoil mix. Break up the soil to a further depth of 100mm.
Remove all building rubble, waste oil, cement and other material harmful to plant growth from planting beds prior to placement of topsoil.
Cultivate to a minimum depth of 100 mm over areas to be planted or grassed. Do not disturb services or tree roots; if necessary, cultivate these areas by hand. During cultivation, thoroughly mix in materials required to be incorporated into the subsoil. Remove stones exceeding 25 mm, clods of earth exceeding 50 mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation. Trim the surface to the required design levels after cultivation.
Confirm that the planting beds are free draining, if not install sub-soil drainage lines and connect to stormwater system
Apply additives after ripping or cultivation and incorporate into the upper 100 mm layer of the subsoil.

TOPSOIL
Where possible use site topsoil and compost mixed at a rate of 4 soil:1 compost, thoroughly mixed before placement. If imported soil is required soil shall be same or similar to Benedicts Sand and Gravel *Organic Garden mix M13* for garden bed areas or *Turf Underlay* mix for turf areas
Spread the topsoil on the prepared subsoil and grade evenly, making the necessary allowances so that required finished levels and contours are achieved after light compaction
Compact lightly and uniformly in 150 mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which is ready for planting.
Spread topsoil to the following typical depths:
Planting beds: 300 mm
Grass areas: 100 mm.

COMPOST
Well rotted vegetative material or animal manure, or other approved material, free from harmful chemicals, grass and weed growth, and with a neutral pH value.

PLANTING
Trees: Excavate a plant hole to twice the diameter of the root ball and at least 100mm deeper than the root ball. Break up the base of the hole to a further depth of 100mm, and loosen the compacted sides of the hole.
Shrubs\groundcovers: Excavate a hole big enough for the plant plus 100 mm all round.
Provide plants which have large healthy root systems, with no evidence of root curl, restriction or damage are vigorous, well established, free from disease and pests, of good form consistent with the species or variety; and are hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site.
Trees: Provide trees which, unless required to be multi-stemmed, have a single leading shoot.
Label at least one plant of each species or variety in a batch using a durable, readable tag.
Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.
When the hole is of the correct size, remove the plant from the container with minimum disturbance to the root ball. Ensure that the root ball is moist and place in the final position, in the hole and plumb, with the top soil level of the plant root ball level with the finished surface of the surrounding soil, or 75 mm below paving level to allow placement of mulch.
Backfill with topsoil mixture. Lightly tamp and water to eliminate air pockets. Ensure that topsoil is not placed over the top of the rootball, so that the plant stem is the same height as in the container.
Thoroughly water plants before planting and immediately after planting.
In planting beds and individual plantings, place slow release fertiliser pellets around plants at the time of planting at the rate recommended by the manufacturer.

MULCH
All garden bed areas are to be mulched to 50mm depth with same or similar to *Forest Blend* as supplied by Benedict Sand and Gravel.
Provide mulch which is free of deleterious and extraneous matter such as stones, soil, weeds and sticks.
Place mulch clear of plant stems, and rake to an even surface flush with the surrounding finished levels.

IRRIGATION
Design, supply and install an automatic irrigation system that will deliver evenly, sufficient water to the trees, shrubs, groundcovers, turf and other planting on the site to maintain healthy growth continuously throughout the year.
The contractor shall be responsible for establishing the numbers and locations of emitters, spray heads, solenoid valves, filters etc required to provide a satisfactory performance of the system. Spray heads shall be directed away from seating, walls, paving, paths and steps.

Provide an automatic irrigation system with drippers/ microsprays to all garden beds. Ensure the pipework is installed in the least visible position possible. The detailed layout of all irrigation is to be approved prior to installation.
Drippers: Drippers shall deliver 2.3 litres per hour, at 400mm spacing or to base of individual plants as required and should be pressure compacted drippers.
Spray heads: To meet requirements of trees and lawn areas.
Valves: Richdel or similar approved 24 volt solenoid valves to be installed in Brookes or approved equal valve boxes. Top of box to be installed flush with finished soil level and covered with mulch layer.
Controller: Richdel or similar approved with numbers of stations required to isolate each area. Contractor is to allow for Controller in lockable metal cabinet in a location to the direction of the Architect. Power outlet for the operation of this unit to be supplied by others.
Pipework: Class HDPE pipe with pressure rating PN12.5 to be used for main lines. Copper pipework under paving and through masonry is to be installed. Drip lines will be LDPE laid on the surface of the soil under the mulch layer.
Cabling: 24 volt cabling to be enclosed in conduit in all areas. All wire must be installed in an unbroken length from the controller to the solenoid valve. All wires to be multistrand multicore and manufactured to AS 1125 and have polyethylene protective coating. All wire connectors must be waterproof. Cable to be minimum 1.0m2.
Rain sensor: A "mini clik" or similar or approved device to be supplied and installed to the approval of the superintendent. This unit is to be set to turn the system off after 3mm of rain has occurred.
The irrigation contractor shall check and monitor the system performance; once per month throughout the planting establishment period.
The contractor shall provide the client with a recommended watering schedule for summer and winter that includes the dates to change the operation.

MAINTENANCE/ ESTABLISHMENT
Throughout the planting establishment period (12 weeks), carry out maintenance work including, watering, mowing, weeding, rubbish removal, fertilising, pest and disease control, reseeding, returfing, staking and tying, replanting, cultivating, pruning, hedge clipping, aerating, reinstatement of mulch, renovating, top dressing, and keeping the site neat and tidy. Continue to replace failed, damaged or stolen plants.
Ongoing maintenance of landscape works is to be undertaken by the tendered landscape contractor engaged by the building management such that the landscape is maintained throughout the life of the building in accordance with the above requirements.

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LANDSCAPE | NOTES
PROJECT
123 EPSOM ROAD, CHIPPING NORTON

DWG NO.
LS06
ISSUE
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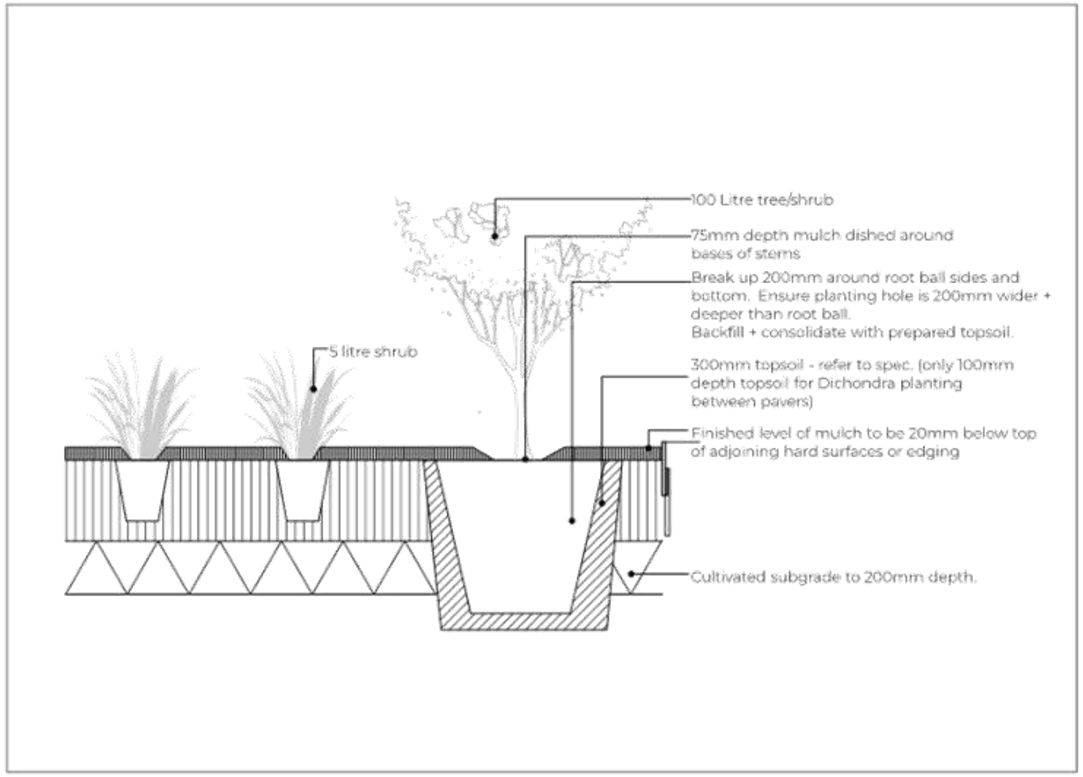
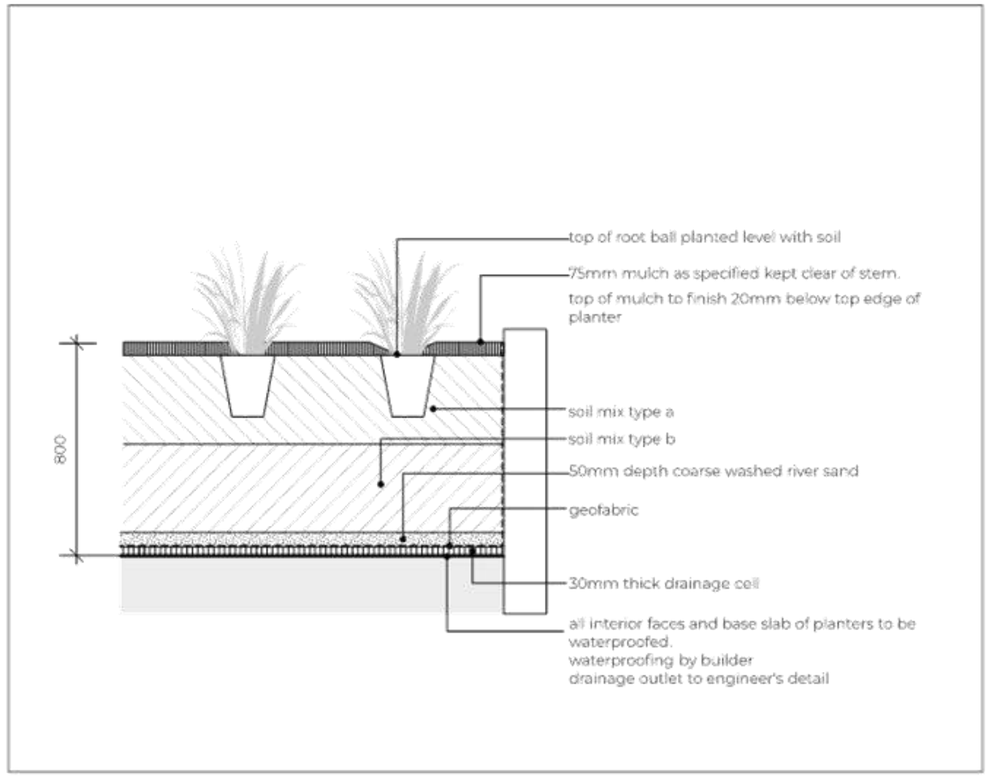


1 MASS PLANTING ON GRADE
1:20@A3



2 MASS PLANTING ON SLAB
1:20@A3

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LANDSCAPE | TYPICAL DETAILS

PROJECT
123 EPSOM ROAD, CHIPPING NORTON

DWG NO.
LS07
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APRIL 2024

STATEMENT OF ENVIRONMENTAL EFFECTS

DEMOLITION OF EXISTING STRUCTURES AND CONSTRUCTION OF A CHILD CARE CENTRE WITH BASEMENT PARKING

123 EPSOM ROAD, CHIPPING NORTON

PREPARED FOR MARK BROOKS
PB112023

PLANNING BRICKS

PLANNING BRICKS

Date	Version	Prepared By
13 November 2023	Draft V1	Julie Horder - Director
19 November 2023	Final	Julie Horder - Director
15 April 2024	Updated SEE – RFI Response	Julie Horder - Director

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15 April 2024

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PLANNING BRICKS

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1 INTRODUCTION

1.1 Overview

This Statement of Environmental Effects (SEE) has been prepared by Planning Bricks on behalf of Mr Mark Brooks (the Applicant) to accompany a Development Application (DA) lodged pursuant to Section 4.12 of the Environmental Planning and Assessment Act 1979. The DA seeks consent for demolition of all existing structures and construction of a centre based child care centre at 123 Epsom Road, Liverpool (the site) .

The proposed child care centre will comprise a single storey building and outdoor play areas to provide care for 120 children. A basement carpark is also proposed which will provide 33 parking spaces and lift access to the ground floor.

The purpose of this SEE is to assess the proposal against the relevant statutory planning controls and assess the likely impacts of the proposed development in accordance with the requirements of Section 4.15(1)(b) of the Environmental Planning and Assessment Act 1979 (EP&A Act 1979).

This SEE is structured as follows:

- Section 1 – provides an introduction and background to the application;
- Section 2 – provides a detailed description of the site and its locality;
- Section 3 - provides a detailed description of the proposed development;
- Section 4 – provides an assessment of the proposed development against the relevant planning provisions;
- Section 5 – provides an assessment of the potential environmental and social impacts and sets outs any proposed mitigation measures; and
- Section 6 – provides a conclusion.

1.2 Supporting Documentation

This DA is supported by the following reports and plans:

- Architectural Plans prepared by ArtMade Architects;
- Survey Plan prepared by Beveridge Williams;
- Landscape Plan prepared by Melissa Wilson Landscape Architects;
- Arborist Report prepared by Arborlogix;
- Noise Impact Assessment prepared by Renzo Tonin;
- Heritage Impact Assessment prepared by Weir Phillips;
- Quantity Surveyors Report prepared by QPC&C Quantity Surveyors;

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- Stormwater Plans prepared by Jones Nicholson (JN);
- Traffic and Parking Assessment prepared by The Transport Planning Partnership (TTPP);
- Geotechnical Investigation prepared by AW Geotechnics Pty Ltd;
- Preliminary Environmental Site Investigation prepared by Environmental Consulting Services Pty Ltd;
- Waste Management Plan prepared by MRA Consulting Group;
- Plan of Management prepared by Oz Education Early Learning Centres;
- Social Impact Comment prepared by Planning Bricks.

1.3 Consultation

The proposed development was the subject of a Pre-Development Application meeting which occurred on 5 April 2023. The written comments from this meeting (dated 19 April 2023) have been considered and utilised to inform this submission. The key council comments and a response is detailed in Table 1 below.

Table 1 Pre-DA Advice and Response

Issue/Planning Control	Council Comment	Response
Planning Matters	Safety and mitigation measure must be addressed – in relation to the boundary with Governor Macquarie Drive.	The proposal includes 1.8m high fencing along the Governor Macquarie Drive boundary which will provide acoustic amelioration and security for the proposed centre.
	To address Chapter 3 of the SEPP Transport and Infrastructure 2021.	See Section 4.3.2 of this report.
	Council would like to see a mix of grass and soft play within the proposed landscaping.	The landscape plan incorporates a mix of grass and soft play (refer to Landscape Plan prepared by Melissa Wilson).
	A delivery bay is required to comply with DCP requirements.	Sufficient space is provided within the basement carpark for delivery vehicles.
	Car parking – the development must be able to accommodate car parking for admin staff or chef if there is one on site.	The car park provides 21 staff parking spaces which provides for the required carers (19) and any admin or cooking staff.
	Utilisation of sliding cavity doors for internal rooms such as cot rooms is preferred.	Where appropriate sliding cavity doors have been utilised.
Heritage	A Heritage Impact Statement is to be submitted. This should include a consideration of the impact on the adjacent row of palm trees and measures required to ensure their protection during and after construction works.	A Heritage Impact Assessment has been prepared by Weir Phillips and has considered the impacts on the adjacent row of palm trees.
Traffic and Transport	The applicant is to submit a Traffic Impact Assessment (TIA)	A Traffic and Parking Assessment has been prepared by The Transport Planning Partnership (TTPP).

PLANNING BRICKS

Issue/Planning Control	Council Comment	Response
	The TIA is to assess the proposed driveway access and car parking arrangements comply with the DCP and AS: 2890.	The Traffic and Parking Assessment has assessed the driveway access and car parking arrangements.
	Vehicular access to the site from Epsom Road is to be left-in and left-out only.	Yes – see Traffic and Parking Assessment
	Operational Traffic Management Plan is to be prepared to govern the use of parking given the proposed tandem parking arrangement.	Yes – see Plan of Management prepared by Oz Education Early Learning Centres.
Flood Management	The proposed development site is located within the Georges River catchment. The site is not affected by flooding under 1% Annual Exceedance Probability (AEP) event. However, it is affected by the Probable Maximum Flood (PMF) event.	The PMF affectation has been considered and addressed in the Stormwater Management Plans.
	On-site detention (OSD) tank/basin shall be provided if the stormwater pipe receiving flows from the site does not have adequate capacity to cater the additional flow.	An OSD tank is provided as part of the proposed development.
	On-site water quality treatment facilities shall be incorporated in the proposal.	On-site water quality treatment facilities are provided as part of the stormwater management.
	A flood evacuation plan shall be developed and maintained, including suitable warning systems, signage and exits, to ensure the safe evacuation of people during floods up to and including the Probable Maximum Flood.	A Flood Evacuation Plan has been prepared by Jones Nicholson.
	A stormwater management supporting calculations.	Stormwater Plans have been prepared by Jones Nicholson.
	A water quality modelling report and electronic copy of the MUSIC model.	Modelling has been prepared by Jones Nicholson
Environment and Health	In accordance with Clause 4.6(1) of State Environmental Planning Policy (Resilience and Hazards) 2021, the consent authority is required to consider contamination and the need for remediation when determining an Application.	A Preliminary Environmental Site Investigation has been prepared by Environmental Consulting Services Pty Ltd.
	If the premises will be used to prepare food for sale, the Application shall be supported by detailed floor and section plans of the food preparation area and food storage areas	Premises are not to be used to prepare food for sale.
	The Application shall be supported by an acoustic report and a Noise Management Plan	A Noise Impact Assessment has been prepared by Renzo Tonin. Noise management recommendations are included in the PoM.

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2 SITE ANALYSIS

2.1 The Site

The subject site consists of 123 Epsom Road, Chipping Norton. The legal description of the site is Lot 3 in DP 602936.

The subject site includes an existing part one, part two storey dwelling which has its main frontage of 32.58m to Epsom Road, a played corner of 12.87m and a secondary frontage of 70.51m to Governor Macquarie Drive Road. The site has a rear (western Boundary) alignment of 22.7m and a side (southern) boundary alignment of 70.07m. The site has an area of 2,233m^2. The subject site is outlined in red on **Figure 1**.

Figure 1: Subject site (edged red) and surrounds (Source: www.nearmaps.com.au)

The site is relatively flat with a minor slope from east to west. The highest point is at RL10.73 which is located adjoining the dwelling entrance. From this point, the site gently slopes to RL10.21 towards the north western corner of the site.

The site is not subject to any easements. A Survey Plan of the site is provided under separate cover.

2.2 Existing Development

The site currently contains a part one, part two storey brick dwelling with a tile roof fronting Epsom Road. Vehicle access is via a curved driveway off Epsom Road (Figure 2). The rear portion of the site contains a swimming pool and pool shed, tennis court and metal shed outbuilding.

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Located along the northern boundary line are a series of established Canary Island Palm Trees (*Phoenix Canariensis*), see Figure 3. A mature palm tree is also located on the northern side of the driveway. The rear yard contains a variety of grassed area, shrubs and mature trees.

The site is not identified as a heritage item and is not located within a conservation area. However, there are a series of Palm Trees (*Phoenix Canariensis*) adjoining the northern eastern boundary of the site which are identified as a local heritage item (Item No.20) under the Liverpool Local Environmental Plan 2008.

Figure 2: Subject site viewed from Epsom Road

Figure 3: Subject site viewed from Governor Macquarie Drive

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2.3 Site Context

2.3.1 Adjoining Development

To the north of the subject site is Governor Macquarie Drive, a regional road under the care and control of Liverpool City Council. Governor Macquarie Drive has a carriageway width of approximately 10 metres enabling one lane of traffic flow in each direction.

A wide road verge traverses either side of Governor Macquarie Drive including a vacant parcel of Crown owned land for the purposes of public road (Lot 1 DP602936), which is located on the northern side of Governor Macquarie Drive (Figure 4). Beyond the vacant lot are 7 Abingdon Street, a single storey dwelling fronting Abingdon Street (with its side boundary to the vacant lot) and 7 Dening Close, a 2 storey dwelling fronting Dening Close (with its rear boundary to the vacant lot). Figure 4 below shows 7 Abingdon Street and 7 Dening Close in the foreground.

Figure 4: Lot 1 DP 602936 - corner of Governor Macquarie Drive and Abingdon Street

To the north east of the site is the intersection of Governor Macquarie Drive and Epsom road which is controlled by a roundabout (Figure 5). Beyond the roundabout is 10 Abingdon Street, which contains a 52 place child care centre known as 'Joey's Cottage Preschool' (Figure 6).

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Figure 5: Intersection of Epsom Road and Governor Macquarie Drive

Figure 6: 10 Abingdon Street, Chipping Norton

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To the east of the subject site is Epsom Road, a local road with a carriageway width of approximately 12 metres. Further to the east at the corner of Epsom Road and Governor Macquarie Drive is 2 – 4 Epsom Road, Chipping Norton (Figure 7), which contains a single storey building and at grade parking, utilised as a medical centre known as "Align Medical Centre'. Also to the east is 6 and 6A Epsom Road which contains a 3 car garage at the front of the site and two single storey detached dwellings towards the rear (Figure 8).

Figure 7: 2- 4 Epsom Road, Chipping Norton

Figure 8: 6 and 6A Epsom Road, Chipping Norton

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To the south is 125 Epsom Road, a multi-dwelling development consisting of 11 x 2 storey brick townhouses, four of which front Epsom Road (Figure 9).

Figure 9: 125 Epsom Road, Chipping Norton

Adjoining the (majority of the) rear boundary to the west is 6 Swindon Place, a single storey dwelling with a two car garage and 5 Swindon Place, a two storey dwelling with a single garage (Figure 10).

Figure 10: 6 Swindon Place (left) and 5 Swindon Place (right) – Source: Google Streetview

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2.3.2 Land Uses Surrounding the Site

The site is located within the R2 Low Density Residential zone (Figure 11) which extends along Epsom Road northwards to Ascot Drive and southwards to Alfred Road. Land uses within the R2 zone include multi-dwelling developments, detached dwellings, child care centres and medical centres.

The wider locality includes industrial uses to the east within the Chipping Norton industrial area and a further pocket of industrial land to the west, beyond the Georges River. A small shopping centre is located to the south of the site, at the corner of Childs Road and Epsom Road.

Figure 11: Extract of Land Zoning Map – site outlined in yellow

2.4 Public Transport

The subject site is well serviced by public transport with several bus stops located along Epsom Road. This includes bus stops 100m to the north of the site and 80m to the south of the site, which are both serviced by bus route 903, which provides regular services to and from Liverpool railway station.

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3 THE PROPOSAL

3.1 Description

Development consent is sought for demolition of the existing structures and construction of a centre based child care with basement parking to cater for a total of 120 children.

The proposed built form involves the erection of 5 single storey buildings which are centred around a large outdoor play area with smaller outdoor play areas also provided throughout the site. Landscaped setbacks are provided along the Epsom Road and Governor Macquarie Drive frontages which enables the retention of 23 trees (on and adjoining the site).

The architectural plans prepared by ArtMade Architects are provided under separate cover and the proposed development is described in detail below.

3.1.1 Demolition and Excavation

All existing structures on the site including the existing pool, tennis court and concrete hardstands will be demolished as part of the proposed development.

The site of the existing swimming pool will be filled with Virgin Excavated Natural Material (VNEM) and compacted as recommended in the Geotechnical Investigation Report prepared by AW Geotechnics Pty Ltd.

The proposed basement will involve excavation of between 2m and 2.9m. The Geotechnical Investigation Report includes recommendations for excavation including retaining and shoring of the excavation.

3.1.2 Basement

The proposed basement will be accessed directly off Epsom Road via a 6.5m wide ingress/egress driveway. The basement provides parking for 33 vehicles consisting of 10 visitor spaces, 21 staff spaces and 2 accessible spaces. Stacked car parking spaces are provided for 10 of the 21 staff spaces. Bike racks are also provided adjoining the driveway access ramp.

Pedestrian walkways are provided along the outside walls of basement and a centrally located painted pedestrian crossing is also provided.

The ground floor of the child care centre will be accessed through the lobby area located at the eastern end of the basement. The lobby provides lift access to the ground floor as well access to the staff lockers, pram storage and laundry.

A pump room, service room and waste room is also provided in the basement. Fire egress stairs are provided at the eastern and western ends of the basement.

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3.1.3 Ground Floor and Outdoor Play Areas

At ground level the proposed child care centre will contain 5 single storey buildings which are all connected via a covered walkway and centred around a large outdoor play area. The ground level will provide 7 separate indoor playrooms across the 5 buildings being:

- Playroom 1: 12 children (0 – 2 yrs) and 3 staff with a separate cot room, nappy change room and toilets (shared with playroom 2);
- Playroom 2: 8 children (0 – 2 yrs) and 2 staff with a separate cot room, nappy change room and toilets (shared with playroom 1);
- Playroom 3: 20 children (3 – 5 yrs) and 2 staff with access to toilets (shared with playroom 4);
- Playroom 4: 20 children (3 – 5 yrs) and 2 staff with access to toilets (shared with playroom 3);
- Playroom 5: 20 children (2 – 3 yrs) and 4 staff with access to toilets (shared with playroom 6);
- Playroom 6: 20 children (3 – 5 yrs) and 2 staff with access to toilets (shared with playroom 5); and
- Playroom 7: 20 children (2 – 3 yrs) and 4 staff with toilets.

At the front of the site, fronting Epsom Road and Governor Macquarie Drive, is the administration building and Playroom 3 and 4. Parents/guardians of the children and staff will enter the ground floor of the centre via a pathway off Epsom Road into the lobby and reception area. The front portion of this building also contains the kitchen, office/meeting room, staff room and accessible toilet.

Playroom 3 is accessed directly off the lobby area whilst playroom 4 is accessed off the covered walkway. The walkway also provides access to the large centrally located outdoor play area (outdoor area 3) and the other playroom buildings.

To the west of the central outdoor area is playrooms 5 and 6 which are setback 4m from Governor Macquarie Drive. To the south of the central outdoor area are playrooms 1, 2 and 7.

The playrooms all have direct access to outdoor play areas, with 5 separate outdoor areas provided across the site:

- Outdoor Play Area 1: 12 children adjoins Playroom 1;
- Outdoor Play Area 2: 10 children adjoins Playrooms 3 and 4;
- Outdoor Play Area 3: 80 children centrally located in site;
- Outdoor Play Area 4: 8 children adjoins Playroom 7;
- Outdoor Play Area 5: 10 children adjoins Playroom 5 and 7.

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3.2 Development Data

The following table summarises the core development data of the proposed development.

Table 2 Development Data

Component	Proposal
Site Area	2322m^2
Gross Floor Area	724.20m^2 (FSR: 0.31:1)
Height of Building	6.65m
Front Setback (Epsom Road)	5.5m (min)
Secondary Street Setback (Governor Macquarie Drive)	4m (min)
Rear Setback	1.2m
Side Setback	1.2m
Unencumbered Outdoor Play Space	852.45m^2 (7.11m^2 per child)
Unencumbered Indoor Play Space	397.60m^2 (3.31m^2 per child)
Landscaped Area forward of building line	433.15m^2
Parking	33 spaces

3.3 Operational Details

3.3.1 Number of Children and Staff

The proposed child care centre will cater for up to 120 children per day, comprising of:

- 20 x 0 – 2 year olds;
- 40 x 2 – 3 year olds; and
- 60 x 3 – 5 year olds

The Education and Care Services National Regulations requires that minimum number of educators required to educate and care for children at a centre-based services in NSW is to be calculated in accordance with the following ratios for children:

- from birth to 24 months of age—1 educator to 4 children;
- over 24 months and less than 36 months of age—1 educator to 5 children; and
- aged 36 months of age or over (not including children over preschool age) —1 educator to 10 children (in NSW).

Based on the above ratios and number of children, the proposed centre requires a total of 19 staff to comply with the Regulation. The child care centre proposes to employ 19 primary contact staff and an administration officer and cook.

3.3.2 Operating Hours

The centre will operate between the following hours:-

- Monday to Friday: 7:00 am – 6:00pm.
- Closed Saturdays, Sundays and Public Holidays.

A Plan of Management which provides further detail as to how the centre will be operated and managed has been prepared by Oz Education Early Learning Centres and is provided under separate cover.

3.4 Landscaping and Fencing

The DA is accompanied by a detailed Landscape Plan, prepared by Melissa Wilson Landscape Architects. The key elements of the landscape scheme includes:

- Provision of soft and hard landscaping;
- Screen planting along all boundaries of the site;
- Mass planting on slab;
- Timber/log poles and walking beams;
- Sandpits (3);
- Productive garden;
- Water play area;
- Synthetic turf and mulch play areas; and
- Raised pots for children's planting.

Fencing is proposed as per the recommendations on the Noise Impact Assessment prepared by Renzo Tonin & Associates which includes the following:

- 1.8m high colorbond boundary fence along western and southern boundaries;
- Outdoor Play Areas 1, 4 and 5 have barriers set in from the southern boundary which have a height of 1.8m above the ground floor level of the centre building (RL 11.5 + 1.8 = 13.3m). The barriers are constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).
- The barrier along the northern side of Outdoor Play Area 2 (fronting corner of Governor Macquarie Drive and Epsom Road) is to have a height of 2.5m, primarily to shield the children in the outdoor play area from the intrusion of road traffic noise. The barrier is

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to be constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).

- The barrier along the northern side of Outdoor Play Area 3 (fronting Governor Macquarie Drive is to have a height of 2.6m above the retaining wall (RL 10.97 + 2.6 = 13.57 m). The barrier is to be constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).

3.5 Stormwater

Stormwater drainage plans have been prepared by Jones Nicholson Pty Ltd which show the provision of:

- an 8m³ OSD tank as per Liverpool City Council's OSD Standard 2021; and
- a system of downpipes, pits and pipes to capture the runoff from the site, and safely convey to the proposed OSD and then through a water quality chamber to the existing drainage pit in the street.

3.6 Waste Management

A Waste Management Plan has been prepared by MRA Consulting Group. All waste on site during demolition and construction of the proposal will be appropriately managed and minimised by recycling and disposing of material at an appropriate waste facility.

In relation to management of waste during operation of the centre, it is proposed that:-

- General waste and recycling bins are to be placed in high circulation areas across the site (play areas, pathways, and kitchen). This waste is collected by site management or cleaner daily and deposited in the respective bins in the waste storage area.
- The required bins (7 x 240L general waste bins and 7 X 240L recycling bins) are to be located in the waste storage area located within the car park.
- The 14 MGB's will be collected twice per week by a private contractor.
- On the scheduled waste collection days, site management will be responsible for facilitating safe waste collection from the basement by a private waste contractor.
- The waste management area will be concealed from general view to maintain site amenity while also reducing the risk of windblown litter, vandalism, and illegal dumping.
- Some bulky items may be required to be removed from the site from time to time, including but not limited to broken furniture or appliances. Management will be responsible for arranging timely bulky waste collection by a private waste contractor and therefore the waste storage area is sufficient. The space shall be managed to avoid overspill into the carpark space and access to the lift and stairs.

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4 PLANNING ASSESSMENT

4.1 Overview

The matters for consideration under Section 4.15(1) of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) that apply to the determination of development applications are detailed in Table 3 below.

Table 3 Section 4.15(1) Matters for consideration - general

Matter for consideration	Consideration
(a)(i) the provision of any environmental planning instrument	Consideration of the relevant EPIs is provided in **Sections 4.2 – 4.4** below.
(a)(ii) any proposed instrument (that has been the subject of public consultation and has been notified to the consent authority	Consideration of any relevant Draft EPI is provided in **Sections 4.5** below
(a)(iii) any development control plan	Consideration of the relevant DCP is provided at Appendix B.
(a)(iiia) any planning agreement entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4	Not applicable
(iv) the regulations	The application meets the relevant requirements of the EP& A Regulations
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts on the locality	The likely impacts of the development are considered at **Section 5**.
(c) the suitability of the site for the development,	The site is suitable for the development (**Sections 4** and **5**)
(d) any submissions made in accordance with this Act or the regulations	Any submissions are considered at **Section 5.5** below.
(e) the public interest	The proposal is in the public interest (**Section 5.6**).

4.2 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 commenced on 1 March 2022. Chapter 4 of the Resilience and Hazard SEPP relates to the remediation of land and aims to promote the remediation of contaminated land, for the purpose of reducing the risk of harm

to human health or any other aspect of the environment, by specifying certain considerations that are relevant in determining development applications.

Clause 4.6 of the Resilience and Hazard SEPP requires that a consent authority must not consent to the carrying out of any development on land unless it has considered whether the land is contaminated, the suitability of the site to the proposed development and whether satisfactory measures are put into place to remediate the land should it be required to do so.

The subject site has been historically used for residential purposes, there is no information regarding its previous use that would indicate that the site is contaminated. A Preliminary Environmental Site Investigation has been prepared by Environmental Consulting Services Pty Ltd which concluded that the site is suitable for proposed redevelopment and sensitive land use provided the following recommendations are implemented:

- *A hazardous building materials survey should be undertaken by a suitably qualified consultant prior to the demolition of buildings and structures. Asbestos containing material (ACM) identified during the building survey, should be dismantled by an appropriately licensed asbestos removalist in such a manner that does not impact the ground surface; and*
- *Excavated soil material generated during excavation and redevelopment activities should be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines and disposed of to an appropriate and licenced facility.*

The above recommendations can be incorporated into any future development consent as conditions of consent.

4.3 State Environmental Planning Policy (Transport and Infrastructure) 2021

State Environmental Planning Policy (Transport and Infrastructure) 2021 commenced on 1 March 2022. The Transport and Infrastructure SEPP sets out the planning rules and controls for infrastructure, including:

- Chapter 2 Infrastructure (essential services such as hospitals, roads, water supply, telecommunications and electricity networks)
- Chapter 3 Educational establishments and child care facilities (schools, child care centres, and TAFEs)
- Chapter 4 Major infrastructure corridors
- Chapter 5 Three ports—Port Botany, Port Kembla and Port of Newcastle
- Chapter 6 Moorebank Freight Intermodal Precinct.

The relevant Chapters of the Transport and Infrastructure SEPP are considered below.

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4.3.1 Chapter 2 - Infrastructure

Clause 2.119 – Development with frontage to classified road

The proposed development is subject to consideration of Clause 2.119 of the Transport and Infrastructure SEPP as the site has frontage to Governor Macquarie Road, a classified road. The proposed development does not propose vehicular access to Governor Macquarie Road as such the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development. In regard to traffic noise and vehicle emissions, the child care centre has been designed to include measures to ameliorate potential traffic noise and vehicle emissions from Governor Macquarie Drive including acoustic fencing and the provision of mechanical ventilation.

4.3.2 Chapter 3 – Educational Establishments and Child Care Facilities

Chapter 3 - Educational Establishments and child care facilities is applicable to the proposed child care centre. A summary of compliance against the relevant provisions is detailed in the table below.

Table 4 Chapter 3 Educational Establishments and Child Care Facilities Compliance Table

Clause	Compliance	Comment
Part 3.3 Early education and care facilities – specific development controls		
Cl 3.22 Centre-based child care facility—concurrence of Regulatory Authority required for certain development Applies to development for the purpose of a centre-based child care facility if— (a) the floor area of the building or place does not comply with regulation 107 (indoor unencumbered space requirements) of the Education and Care Services National Regulations, or (b) the outdoor space requirements for the building or place do not comply with regulation 108 (outdoor unencumbered space requirements) of those Regulations.	N/A	The proposed child care centre provides indoor and outdoor unencumbered space in accordance with the Education and Care Services National Regulations
Cl 3.23 Centre-based child care facility—matters for consideration by consent authorities Before determining a development application for development for the purpose of a centre-based child care	Yes	To assist the consent authority, an assessment of the proposed development against the applicable provisions of the *Child Care Planning Guideline* is provided at Annexure A.

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Clause	Compliance	Comment
facility, the consent authority must take into consideration any applicable provisions of the *Child Care Planning Guideline*, in relation to the proposed development.		
Cl 3.25 Centre-based child care facility—floor space ratio (1) Development consent must not be granted for the purposes of a centre-based child care facility in Zone R2 Low Density Residential if the floor space ratio for the building on the site of the facility exceeds 0.5:1. (2) This section does not apply if another environmental planning instrument or a development control plan sets a maximum floor space ratio for the centre-based child care facility	Yes	The site is zoned R2 Low Density and is subject to a maximum FSR of 0.5:1 under the provisions of the Liverpool Local Environmental Plan 2008. The proposed development has an FSR of 0.31:1 and therefore complies with this Clause.
Cl 3.26 Centre-based child care facility—non-discretionary development standards (2) The following are non-discretionary development standards for the purposes of section 4.15(2) and (3) of the Act in relation to the carrying out of development for the purposes of a centre-based child care facility— (a) location—the development may be located at any distance from an existing or proposed early education and care facility	Noted	Complies
(b) indoor or outdoor space (i) for development to which regulation 107 (indoor unencumbered space requirements) or 108 (outdoor unencumbered space requirements) of the Regulations applies —the unencumbered area of indoor space and the unencumbered area of outdoor space for the development complies	Yes	Regulation 107 and 108 of Educational and Care Services National Regulation specifies the following: - Indoor – 3.25m^2 per child (390m^2 required) - Outdoor – 7.0m^2 per child (840m^2 required) The proposal provides 398.95m^2 of indoor unencumbered space and 850m^2 of

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Clause	Compliance	Comment
with the requirements of those regulations, or		outdoor unencumbered space and therefore complies with the regulations.
(c) site area and site dimensions—the development may be located on a site of any size and have any length of street frontage or any allotment depth,	Noted	Complies
(d) colour of building materials or shade structures—the development may be of any colour or colour scheme unless it is a State or local heritage item or in a heritage conservation area.	Noted	Complies – the site is not identified as a heritage item and is not located within a conservation area. However, there are a series of Palm Trees (Phoenix Canariensis) adjoining the northern eastern boundary of the site which are identified as a local heritage item (Item No.20) under the Liverpool Local Environmental Plan 2008.
Cl 3.27 Centre-based child care facility—development control plans		
(1) A provision of a development control plan that specifies a requirement, standard or control in relation to any of the following matters (including by reference to ages, age ratios, groupings, numbers or the like, of children) does not apply to development for the purpose of a centre-based child care facility—	Noted	The provisions listed within this clause that are present within the Liverpool Development Control Plan 2008 do not apply to the proposed development.
(a) operational or management plans or arrangements (including hours of operation),	Noted	Complies
(b) demonstrated need or demand for child care services,		
(c) proximity of facility to other early education and care facilities,		
(d) any matter relating to development for the purpose of a centre-based child care facility contained in—		
(i) the design principles set out in Part 2 of the Child Care Planning Guideline, or		
(ii) the matters for consideration set out in Part 3 or the regulatory requirements set out in Part 4 of that		

Clause	Compliance	Comment
Guideline (other than those concerning building height, side and rear setbacks or car parking rates). (2) This section applies regardless of when the development control plan was made.		

4.4 State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) consolidated, transferred, and repealed provisions of 11 SEPPs (or deemed SEPPs). On 21 November 2022 a significant amendment to the water catchment provisions was made and a new consolidated Chapter 6 was inserted which deals with all water catchment matters and applies to land in the following catchments:

- the Sydney Drinking Water Catchment;
- the Sydney Harbour Catchment;
- the Georges River Catchment; and
- the Hawkesbury-Nepean Catchment.

The site is located within the Georges River Catchment. Chapter 6 is considered below.

4.4.1 Chapter 6 – Water Catchments

The site is located within the Georges River Catchment. Part 6.2 of Chapter 6 provides general development controls that must be taken into account in the assessment of a development application. These are considered in the table below.

Table 5 Chapter 6 - Water Catchments

Clause	Compliance	Comment
Part 6.2 – Division 2 – Controls on Development		
Cl 6.6 Water quality and quantity	Yes	The proposed development includes the retention of stormwater and treatment through a water quality chamber prior to release to the existing drainage pit.
Cl 6.7 Aquatic ecology	Yes	The development will not have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation. Sediment and erosion controls will be installed and maintained during

Clause	Compliance	Comment
		demolition and construction works to avoid the sediment runoff from the site.
Cl 6.8 Flooding	Yes	The site is "flood liable land" under the provisions of Chapter 6 as it is susceptible to flooding by the PMF event. The proposal is consistent with Cl6.8 as the development includes the detention and treatment of water prior to release.
Cl 6.9 Recreation and public access	N/A	
Cl 6.10 Total catchment management	N/A	

4.5 State Environmental Planning Policy (Sustainable Buildings) 2022

State Environmental Planning Policy (Sustainable Buildings) 2022 was made in August 2022 and came into effect on 1 October 2023. Chapter 3 of the Sustainable Buildings SEPP applies to non-residential development that involves the erection of a new building, if the development has a capital investment value of $5 million or more. The proposed development has a capital investment value of less than $5 million and is therefore not subject to the provisions of the Sustainable Buildings SEPP.

4.6 Liverpool Local Environmental Plan 2008 (LLEP 2008)

4.6.1 Zoning and Objectives

The subject site is zoned R2 – Low Density Residential under the provisions of the LLEP 2008.

The objectives of the R2 Low Density Residential zone are as follows:

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To provide a suitable low scale residential character commensurate with a low dwelling density.*
- *To ensure that a high level of residential amenity is achieved and maintained.*

The proposal is consistent with the above objectives in that:

- The proposal will provide a child care centre which will serve the day to day need of residents who require care for children;

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- The proposed development consists of a number of single storey buildings in a landscape setting which is commensurate with the low scale residential character of the adjoining area; and
- The proposed development includes mitigation measures to ensure that the residential amenity of adjoining developments is maintained.

4.6.2 Permissibility

The proposed development is categorised as a "centre-based child care facility" under the provisions of the LLEP 2008:

> *"(a) a building or place used for the education and care of children that provides any one or more of the following—*
>
> *(i) long day care,*
>
> *(ii) occasional child care,*
>
> *(iii) out-of-school-hours care (including vacation care),*
>
> *(iv) preschool care,*

Under the provisions of LLEP 2008, centre-based child care facilities are permitted with consent in the R2 Low Density residential zone.

4.6.3 Development Standards and Provisions

The proposal has been assessed against the relevant provisions of the LLEP 2008, as detailed in Table 5 below.

Table 6 LLEP 2008 Compliance Table

Clause	Compliance	Comment
Part 2 Permitted or prohibited development		
Cl2.7 Demolition requires development consent	Yes	The proposed development includes demolition of existing structures.
Part 4 Principal development standards		
Cl 4.3 – Height of buildings Maximum Building Height – 8.5m	Yes	The proposed development has a height of 6.65m.
Cl 4.4 – Floor space ratio Maximum FSR of 0.5:1 Permitted GFA: 386m^2	Yes	The proposed development has a gross floor area of 724.20m^2 and a FSR of 0.31:1.
Part 5 Miscellaneous provisions		
Cl 5.10 – Heritage Conservation	Yes	The site is not identified as a heritage item and is not located within a conservation

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Clause	Compliance	Comment
		area. However, there are a series of Palm Trees (Phoenix Canariensis) adjoining the northern eastern boundary of the site which are identified as a local heritage item (Item No.20) under the Liverpool Local Environmental Plan 2008. A Heritage Impact Statement has been prepared by Weir Phillips to accompany the DA. The report concludes that the proposed works will have a minimal and acceptable impact on this item.
Cl 5.21 Flood Planning	N/A	The site is not located within a flood planning area. The site is only affected by the PMF and not subject to flood planning levels. A flood evacuation plan has been prepared by Jones Nicholson Pty Ltd to accompany the DA.
Cl 7.7 Acid sulfate Soils	Yes	The site is mapped with class 5 acid sulfate soils. The proposed works are not likely to lower the water table below 1 metre AHD on adjacent class 1, 2, 3 or 4 land.
Cl 7.8A Floodplain risk management	Yes	The site is only affected by the PMF. A flood evacuation plan has been prepared by Jones Nicholson Pty Ltd to accompany the DA.
Part 7 Additional Local Provisions		
Cl 7.31 Earthworks	Yes	The proposed development includes excavation in order to provide the basement car park. A Geotechnical Investigation Report accompanies the DA and includes recommendations for excavation including retaining and shoring of the excavation.

4.7 Draft Environmental Planning Instruments

There are no draft planning instruments of relevance to the proposed development.

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4.8 Liverpool Development Control Plan 2008 (LDCP 2008)

The Liverpool Development Control Plan (LDCP 2008) was adopted by Council on 28 July 2008 and came into effect on 29 August 2008. The relevant controls of the LDCP 2008 are identified and assessed in **Appendix A**.

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5 ASSESSMENT OF ENVIRONMENTAL EFFECTS

5.1 Impacts on the Built Environment

5.1.1 Bulk and Scale

The proposed development is a high quality design and is of an appropriate bulk and scale. The single storey presentation to the adjoining streets is modest and consistent with the built form of adjoining and surrounding buildings along Epsom Road and Governor Macquarie Drive.

The proposed layout of the single storey buildings with adjoining outdoor play areas achieves an appropriate built form for the site and its purpose as a child care centre and provides a high level of internal amenity and outlook for the facility users.

The front façade to Epsom Road is well modulated and provides an appropriate address to Epsom Road. The use of a range of materials on the façade of the centre provides further articulation of the built form.

As demonstrated by the 3D view provided at Figure 12 below, the proposal provides a high quality visual appearance through its built form and landscaping and will contribute positively to the public realm.

Figure 12: Artists Impression

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5.1.2 Heritage

The site is not identified as a heritage item and is not located within a conservation area. However, there are a series of Palm Trees (*Phoenix Canariensis*) adjoining the northern eastern boundary of the site which are identified as a local heritage item (Item No.20) under the Liverpool Local Environmental Plan 2008. The site is also located in the vicinity of another heritage item 'Inter-war brick bungalow ("Coolola"),

A Heritage Impact Statement has been prepared by Weir Phillips to accompany the application, which concludes:

> *" The existing dwelling and trees proposed for removal all postdate the heritage item ''Palm trees (Phoenix canariensis)' and do not contribute to its setting or significance. The proposed childcare centre will generally be located away from the heritage listed trees. In instances where the structures may impact on the structural root zones of the nearest trees, the proposal has successfully mitigated the impact by introducing a cantilevered footing system. The proposed childcare centre, including the basement, has been sensitively sited away from the trees so that there is no impact on their root systems. The childcare centre will be comprised of five separate single-storey structures which will help to break up the overall massing and allows for new soft landscaping that will enhance the setting of the item.*
>
> *The proposed works will have no impact on either the fabric of, or significant view corridors towards the heritage item 'Inter-war brick bungalow ("Coolola"), including interiors' because they are sufficiently separated. The existing dwelling and trees proposed for removal all postdate the item and do not contribute to its setting or significance. The childcare centre will be comprised of five separate single-storey structures which will help to break up the overall massing and allows for new soft landscaping that will enhance the setting of the item.*
>
> *The proposed works fulfil the aims and objectives of the Liverpool LEP 2008 and the Liverpool DCP 2008 by improving the quality and diversity of childcare options in Chipping Norton while respecting the heritage significance of the area in which it lies."*

5.1.3 Overshadowing and Solar Access

As demonstrated on the accompanying shadow diagrams and view from sun diagrams, the proposed single storey centre will not result in any adverse overshadowing impacts on adjoining properties. The proposal generally retains at least 3 hours of sunlight to the living areas and/or private open space areas of adjoining dwellings.

Specifically, the adjoining properties to the west (5 and 6 Swindon Pl) will continue to receive at least 3 hours of sunlight to living rooms and their private open space areas during midwinter.

To the south (125 Epsom Rd), there are 3 townhouses directly adjoining the boundary (Nos.1, 8 and 9). Townhouses 1 and 9 will continue to receive 3 hours of sunlight in midwinter to a living room window and 50% of their private open space. Townhouse No.8, which aligns with the existing 2 storey dwelling on the site, does not currently receive 3 hours of sunlight in midwinter to a living room window or 50% of its private open space. The proposed development results in a similar situation, however, due to the location and height of the

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proposed buildings, provides improved solar access to the private open space at 12pm in midwinter.

In regard to solar access to the outdoor play areas, the proposal has taken advantage of its favourable northern orientation, and the proposal will result in a minimum of 37% of the outdoor play area receiving sunlight between 10am and 2pm in midwinter.

5.1.4 Privacy Impacts

The proposed development has been carefully designed to avoid overlooking of adjoining dwellings and their associated areas of private open space. The proposal has been designed as an inward looking facility with no windows or doors located along the southern or western boundaries of the site (which adjoin residential properties). The proposal includes a large outdoor play area in the centre of the site with smaller outdoor play areas setback from the adjoining boundaries and provided with acoustic screening and landscaping.

As a result, it is anticipated that there will be no adverse amenity impacts arising from the proposal in relation to privacy.

5.1.5 Visual and View Impacts

The proposed single storey buildings will not have an adverse impact on visual or views to or across the site.

5.1.6 Acoustic Impacts

Noise impacts and noise attenuation are addressed in the Noise Impact Assessment prepared by Renzo Tonin. The assessment reviewed both noise impacts from the proposed child care centre and the intrusion of external traffic noise sources into the centre. The assessment found that compliance with the applicable noise criteria will require physical noise mitigation measures including glazing on internal playrooms and acoustic barriers/fencing as detailed in Section 3.4 above.

The assessment also included a review of vehicle movements on the driveway ramp to the basement and found that the noise emission levels are predicated to comply with the relevant noise criteria.

Usual noise levels will be generated during construction works which will be carried out during permitted construction hours and will have minimal adverse effects.

5.1.7 Traffic and Parking Impacts

Vehicle access is proposed via a combined entry and exit driveway off Epsom Road into the basement carpark. The basement carpark provides car parking for 33 cars including 21 staff spaces and 12 visitor spaces and 2 accessible spaces. The proposed basement also includes provision for bicycle parking and end-of-trip facilities.

A Traffic and Parking Assessment accompanies the application and includes the following key findings:

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- *The proposed development requires 31 car spaces in accordance with the DCP. It is proposed to comply with this requirement and provide 33 car spaces.*
- *The proposed childcare is estimated to generate approximately 96 trips in the AM peak period and 84 trips in the PM peak period, which is approximately 1-2 trips per minute.*
- *The SIDRA Intersection modelling results indicate that the Governor Macquarie Drive-Epsom Road intersection adjacent to the subject site would operate at level of service C during both road network peak periods in the existing scenario. The intersection would operate at LoS D in the AM peak and LoS C in the PM peak in the post-development scenarios which is considered acceptable.*
- *In summary, the proposed development is not expected to have an adverse impact on the local road network.*

As detailed in Section 2.4 above, the site is well serviced by public transport with several bus stops located along Epsom Road. This includes bus stops 100m to the north of the site and 80m to the south of the site, which are both serviced by bus route 903, which provides regular services to and from Liverpool railway station.

5.1.8 Stormwater Impacts

The proposal will connect the new roof structures into a an 8m³ OSD tank. Stormwater will be conveyed through a water quality chamber before being released to the existing drainage pit on Epsom Road.

It is anticipated there will be no adverse stormwater impacts as a result of the proposal.

5.2 Impacts on the Natural Environment

5.2.1 Cut and Fill

The proposed development has been designed to minimise cut and fill as far as is practical for the proposed use and built form. The proposal provides an appropriate visual outcome with the concealment of parking beneath the built form within a basement carpark.

The proposed basement will involve excavation of between 2m and 2.9m. The Geotechnical Investigation Report includes recommendations for excavation including retaining and shoring of the excavation.

The site of the existing swimming pool will be filled with Virgin Excavated Natural Material (VNEM) and compacted as recommended in the Geotechnical Investigation Report prepared by AW Geotechnics Pty Ltd.

5.2.2 Vegetation Impacts

The landscape proposal has been designed by a suitably qualified landscape architect and promotes optimal amenity. The landscape plan includes a mix of trees, shrubs and grasses and provides sandpits and water play areas. The proposal meets the required outdoor unencumbered space areas and the required landscaped percentage. Further, all the existing

Palm Trees on the site will be retained and one will be replanted which greatly assists with the contextual fit of the proposal with the existing landscape character of the site and the locality.

The proposed works include the landscaping works which involve the planting of mature trees, shrubs and groundcovers with a focus on indigenous species.

As such the proposal will have no significant impact on the natural environment.

5.3 Social and Economic Impacts

A Social Impact Comment has been provided by Planning Bricks and submitted under separate cover. The assessment concludes:

"The most significant social benefits of the proposal relate to:

- *Improved access to child care services in Chipping Norton and the wider locality. The proposal will 120 child care places. Delivery of child care services at this location (close to employment opportunities, public transport and surrounding social infrastructure) will enhance convenience for families and caregivers of young children in Chipping Norton and the wider locality.*
- *Provision of a high quality early education and care service which supports the broader social sustainability of the Liverpool community by addressing the opportunity gap between children from low and high income families.*
- *The provision of a childcare centre provides additional social infrastructure in a location which supports the needs of residents and workers in the area.*

Overall, the level of impacts of the development have been assessed as ranging from low to moderate, with no major significant negative impacts identified that cannot be effectively mitigated."

5.4 The Suitability of the Site

The site is entirely suitable for the proposed child care centre. The site is located within an existing residential neighbourhood with surrounding uses consisting of medium density dwellings, single dwellings, a medical centre and a child care centre. These uses are compatible with the proposed development. The provision of a child care centre on the site is a permissible and suitable use of the site.

The site is not subject to any hazards and is provided with the necessary services and facilities and the site is well connected to pedestrian and public transport networks.

5.5 Submissions

Any relevant submissions will need to be considered by the consent authority in the determination of the DA.

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5.6 Public Interest

The proposal is in the public interest as it has been demonstrated in this report that the proposal will not result in any adverse effects on the surrounding area and the environment, and the proposal allows for appropriate use of the site.

The proposed child care centre will provide an additional early education and care service for the community which supports the forecasted population growth. The provision of a child care centre at this location which is accessible via public transport and close to employment will enhance convenience for families of young children and support participation of parents/caregivers in the workforce.

The proposal has been assessed against the relevant environmental planning instruments and is deemed to be acceptable.

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6 CONCLUSION

The proposed development is for demolition of all existing structures and construction of a centre based child care centre. The proposed development satisfies the relevant planning controls relating to the site and proposal.

The proposed development exhibits design excellence, in that it delivers a high standard of architectural and urban design. The proposed built form and architectural language is appropriate for the site and responds to the desired character of the Chipping Norton locality.

The proposed development will provide a high quality early education and care service which supports the broader social sustainability of the Liverpool community.

The proposal demonstrates compliance with the relevant provisions of the LLEP 2008 and the LDCP 2008. The proposal responds to and respects the existing built forms within the adjoining streetscapes and does not adversely impact on solar access, privacy or amenity of neighbouring sites.

Having regard to the above and in light of the matters for consideration listed in Section 4.15(1) of the EP &A Act 1979, the proposal is considered to be in the public interest and warrants favourable consideration by Council.

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APPENDIX A

CHILD CARE PLANNING GUIDELINE

COMPLIANCE ASSESSMENT

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Table 7 Child Care Planning Guideline Assessment

Section/Clause	Comment
Section 2 – Design Quality Principles	
Principle 1 – Context	The proposal exhibits good design at it responds to its location and context, which includes being a corner site on a busy intersection with adjacent multi-dwelling developments and non-residential uses. The proposal respects the natural and built environment and includes the retention of the on-site Palm Trees and protection of the adjoining heritage listed Palm Trees. As detailed in the accompanying SIC, the proposal optimises nearby public transport and is responsive to the demographic, cultural and socio-economic makeup of the future facility users and the Chipping Norton and the wider Liverpool LGA community.
Principle 2 – Built Form	The proposed layout of the single storey buildings with adjoining outdoor play areas achieves an appropriate built form for the site and its purpose as a child care centre and provides a high level of internal amenity and outlook for the facility users. The proposed built form of the child care centre provides an appropriate scale, bulk and height when considering the existing built from of the surrounding area. The proposal provides a high quality visual appearance through its built form and landscaping and will contribute positively to the public realm.
Principle 3 – Adaptive Learning Spaces	The proposed child care centre presents a well-designed facility that will achieve a high level of learning amenity for children and staff. The proposed design is centred around the landscaped outdoor play area which allows for surveillance of children indoors and outdoors and includes smaller outdoor play areas for younger children. There are limited opportunities for concealed spaces and the layout of the centre achieves optimal solar access and solar penetration into classrooms.
Principle 4 – Sustainability	The proposed facility has been designed to take advantage of its northern orientation and achieves natural light and cross ventilation throughout all the buildings. The development provides windows facing different orientations with the proposed ceiling heights being proportional to the room size to ensure natural lighting is available to learning spaces.
Principle 5 – Landscape	The landscape proposal has been designed by a suitably qualified landscape architect and promotes optimal amenity. The landscape plan includes a mix of trees, shrubs and grasses and provides sandpits and water play

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Section/Clause	Comment
	areas. The proposal meets the required outdoor unencumbered space areas and the required landscaped percentage. Further, all the existing Palm Trees on the site will be retained and one will be replanted which greatly assists with the contextual fit of the proposal with the exiting landscape character of the site and the locality.
Principle 6 – Amenity	The proposed child care centre promotes a high level of amenity for students and staff. The internal layout and placement of buildings on the site promotes optimal amenity regarding access to sunlight, natural ventilation, outlook and privacy. The proposal provides well designed facilities for learning and teaching. The building has been designed around the sites northern aspect and will provide solar access to learning spaces.
Principle 7 – Safety	The design of the centre promotes safe outcomes. The proposed indoor and outdoor areas will include equipment, vegetation and play equipment which has a low health and safety risk and will be regularly maintained. The entrance to the child care centre will be securely controlled at the basement and front entrance but will provide large welcoming lobby areas. The proposal provides passive surveillance over the entrance area. The basement carpark is well designed and promotes safe paths of travel between the child care centre entrance and vehicles.

Section/Clause	Compliance	Comment
Section 3 – Matters for Consideration		
3.1 Site selection and location		
C1 For proposed developments in or adjacent to a residential zone, particularly if that zone is for low density residential uses consider: • the acoustic and privacy impacts of the proposed development on the residential properties	Yes	The site is a corner site with adjoining dwellings to 2 of its 4 boundaries. The acoustic impacts of centre have been assessed in the Noise Impact Assessment prepared by Renzo Tonin & Associates.

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Section/Clause	Compliance	Comment
• the setbacks and siting of buildings within the residential context	Yes	The proposal complies with the setback requirements under the Liverpool DCP 2008.
• visual amenity impacts (e.g. additional building bulk and overshadowing, local character)	Yes	The proposed child care centre consists of single storey buildings which are complimentary to the local character and will not create additional bulk or result in adverse overshadowing.
• traffic and parking impacts of the proposal on residential amenity and road safety	Yes	A Traffic Impact Assessment has been prepared by TTPP to accompany the DA and found that the proposal provides a compliant provision of parking and will not have an adverse impact on the local road network.
C2 When selecting a site, ensure that:		
• the location and surrounding uses are compatible with the proposed development or use	Yes	The site is located within an existing residential neighbourhood with surrounding uses consisting of medium density dwellings, single dwellings, a medical centre and a child care centre. These uses are compatible with the proposed development.
• the site is environmentally safe including risks such as flooding, land slip, bushfires, coastal hazards	Yes	The site is environmentally safe and not subject to any hazards. The site is subject to the PMF, and an Evacuation Plan accompanies the DA.
• there are no potential environmental contaminants on the land, in the building or the general proximity, and whether hazardous materials remediation is needed	Yes	The site has been historically used for residential purposes, there is no information regarding its previous use that would indicate that the site is contaminated. A Preliminary Investigation report has been prepared by Environmental Consulting Services Pty Ltd dealing with contamination

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Section/Clause	Compliance	Comment
		which concluded that the site is considered suitable for proposed redevelopment and sensitive land use.
• the characteristics of the site are suitable for the scale and type of development proposed having regard to: - length of street frontage, lot configuration, dimensions and overall size - number of shared boundaries with residential properties	Yes	The site has characteristics which are suitable for the scale of the proposed child care centre. This includes frontage widths of 32.58m to Epsom Road and 70.51m to Governor Macquarie Drive Road and a site area of 2,233m^2. The site has two boundaries which are shared with residential properties (to the south and west).
• the development will not have adverse environmental impacts on the surrounding area, particularly in sensitive environmental or cultural areas	Yes	The proposed development will not have any adverse environmental impacts on the surrounding area. The proposal will not have any impact on the adjoining heritage listed Palm Trees.
• there are suitable and safe drop off and pick up areas, and off and on street parking	Yes	The proposal provides 33 car parking spaces in the basement car park which permits parking for users of the centre for safe drop off and pick up.
• the characteristics of the fronting road or roads (for example its operating speed, road classification, traffic volume, heavy vehicle volumes, presence of parking lanes) is appropriate and safe for the proposed use	Yes	The site has frontages to both Governor Macquarie Drive (a regional road) and Epsom Road (a local road). However, the proposed development does not propose pedestrian or vehicular access to or from Governor Macquarie Road with all access being via Epsom Road which is considered to be an appropriate and safe road for the proposed use.
• the site avoids direct access to roads with high traffic volumes, high operating speeds, or with high heavy vehicle volumes, especially where there are limited pedestrian crossing facilities	Yes	As above, the proposal has avoided access to Governor Macquarie Drive.

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Section/Clause	Compliance	Comment
• it is not located closely to incompatible social activities and uses such as restricted premises, injecting rooms, drug clinics and the like, premises licensed for alcohol or gambling such as hotels, clubs, cellar door premises and sex services premises.	Yes	The site is not located closely to any incompatible social activities.
C3 A child care facility should be located: • near compatible social uses such as schools and other educational establishments, parks and other public open space, community facilities, places of public worship • near or within employment areas, town centres, business centres, shops • with access to public transport including rail, buses, ferries • in areas with pedestrian connectivity to the local community, businesses, shops, services and the like.	Yes	The centre is in an established suburb with supporting infrastructure (bus services, medical service and recreational spaces). The subject site is well serviced by public transport with several bus stops located along Epsom Road. This includes bus stops 100m to the north of the site and 80m to the south of the site, which are both serviced by bus route 903, which provides regular services to and from Liverpool railway station
C4 A child care facility should be located to avoid risks to children, staff or visitors and adverse environmental conditions arising from: • proximity to: - heavy or hazardous industry, waste transfer depots or landfill sites - Liquefied Petroleum Gas (LPG) tanks or service stations - water cooling and water warming systems - odour (and other air pollutant) generating uses and sources or sites which, due to prevailing land use zoning, may in future accommodate noise or odour generating uses - extractive industries, intensive agriculture, agricultural spraying activities	Yes	The site is not within proximity to any hazardous industries or activities.
• any other identified environmental hazard or risk relevant to the site and/ or existing buildings within the site.	Yes	The site is subject to or within proximity to any known environmental hazards or risks.

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Section/Clause	Compliance	Comment
3.2 Local character, streetscape and the public domain interface		
C5 The proposed development should:		
• contribute to the local area by being designed in such a way to respond to the character of the locality and existing streetscape	Yes	The proposal responds to the character of the locality and the existing streetscaped by providing a number of single storey buildings which are setback beyond well landscaped frontages.
• build on the valued characteristics of the neighbourhood and draw from the physical surrounds, history and culture of place	Yes	The proposal includes retention and protection of the adjoining heritage listed trees and the complimentary trees located on the site which will retain the history of the neighbourhood.
• reflect the predominant form of surrounding land uses, particularly in low density residential areas	Yes	The proposal is compatible with the surrounding land uses which include multi-dwelling developments, detached dwellings, child care centres and medical centres.
• recognise and respond to predominant streetscape qualities, such as building form, scale, materials and colours	Yes	The proposed built form and finishes reflect the predominant streetscape qualities along Epsom Road.
• include design and architectural treatments that respond to and integrate with the existing streetscape and local character	Yes	The architectural design of the proposal ensures the proposal will integrate with the exiting streetscape and local character.
• use landscaping to positively contribute to the streetscape and neighbouring and neighbourhood amenity	Yes	Landscaping is proposed to respond to streetscape and provide good neighbourhood amenity.
• integrate car parking into the building and site landscaping design in residential areas	Yes	The proposed basement car park is integrated into the building and landscape design.

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Section/Clause	Compliance	Comment
• in R2 Low Density Residential zones, limit outdoor play space to the ground level to reduce impacts on amenity from acoustic fences/barriers onto adjoining residence, except when good design solutions can be achieved.	Yes	All outdoor play areas are located at ground level.
C6 Create a threshold with a clear transition between public and private realms, including: • fencing to ensure safety for children entering and leaving the facility	Yes	The proposal includes fencing at the building entrance in order to provide safety to children entering and exiting the centre.
• windows facing from the facility towards the public domain to provide passive surveillance to the street as a safety measure and a connection between the facility and the community	Yes	The proposal includes windows and doors facing the public domain.
• integrating existing and proposed landscaping with fencing.	Yes	The proposal will integrate existing and proposed landscaping.
C7 On sites with multiple buildings and/or entries, pedestrian entries and spaces associated with the child care facility should be differentiated to improve legibility for visitors and children by changes in materials, plant species and colours	N/A	
C8 Where development adjoins public parks, open space or bushland, the facility should provide an appealing streetscape frontage by adopting some of the following design solutions: • clearly defined street access, pedestrian paths and building entries • low fences and planting which delineate communal/private open space from adjoining public open space	N/A	N/A

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Section/Clause	Compliance	Comment
• minimal use of blank walls and high fences.		
C9 Front fences and walls within the front setback should be constructed of visually permeable materials and treatments. Where the site is listed as a heritage item, adjacent to a heritage item or within a conservation area front fencing should be designed in accordance with local heritage provisions.	Yes	The proposed development does not include front fences/walls within the Epsom Road setback. However, the proposal includes acoustic fencing within the setback to Governor Macquarie Drive (as permitted by C10 below). The fencing has been designed to avoid the heritage listed trees within Council's nature strip including their respective SRZ's.
C10 High solid acoustic fencing may be used when shielding the facility from noise on classified roads. The walls should be setback from the property boundary with screen landscaping of a similar height between the wall and the boundary.	Yes	The proposal includes 2.6m high solid acoustic fencing along the frontage to Governor Macquarie Drive (a classified road). The fences are setback from the property boundary to permit screen landscaping between the boundary and the fences.
3.3 Building orientation, envelope, building design and accessibility		
C11 Orient a development on a site and design the building layout to:		
• ensure visual privacy and minimise potential noise and overlooking impacts on neighbours by - facing doors and windows away from private open space, living rooms and bedrooms in adjoining residential properties - placing play equipment away from common boundaries with residential properties - locating outdoor play areas away from residential dwellings and other sensitive uses	Yes	The proposal has been designed as an inward facing facility with no windows or doors located along the southern or western boundaries of the site (which adjoin residential properties). The proposal includes a large outdoor play area in the centre of the site with smaller outdoor play areas setback from the adjoining boundaries and provided with acoustic screening and landscaping.
• optimise solar access to internal and external play areas	Yes	The siting of the proposed buildings and external play areas has taken full advantage of the site's northern orientation.

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Section/Clause	Compliance	Comment
• avoid overshadowing of adjoining residential properties	Yes	The adjoining properties to the west will continue to receive at least 3 hours of sunlight to living rooms and their private open space areas during midwinter. The proposed development results in a similar level of overshadowing to the south as per the existing conditions.
• minimise cut and fill	Yes	The site of the existing swimming pool is proposed to be filled with VNEM and compacted. The proposed basement will involve excavation of between 2m and 2.9m.
• ensure buildings along the street frontage define the street by facing it	Yes	The proposed buildings front Epsom Road.
• ensure where a child care facility is located above ground level, outdoor play areas are protected from wind and other climatic conditions.	N/A	N/A
C12 The following matters may be considered to minimise the impacts of the proposal on local character: • building height should be consistent with other buildings in the locality • building height should respond to the scale and character of the street	Yes	The proposed development consist of single storey buildings which is consistent with the scale and character of the street and the locality.
• setbacks should allow for adequate privacy for neighbours and children at the proposed child care facility	Yes	The setbacks will allow for adequate level of privacy for the children of the centre and adjoining neighbours.
• setbacks should provide adequate access for building maintenance	Yes	The setback and siting of the buildings permits building maintenance to be achieved.
• setbacks to the street should be consistent with the existing character.	Yes	Front and secondary setbacks are consistent with the existing character.

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Section/Clause	Compliance	Comment
Where a Local Environmental Plan or Development Control Plan do not specify a floor space ratio for the R2 Low Density Residential zone, a floor space ratio of 0.5:1 is to apply to a child care facility in the R2 zone	N/A	N/A
C13 Where there are no prevailing setback controls minimum setback to a classified road should be 10 metres. On other road frontages where there are existing buildings within 50 metres, the setback should be the average of the two closest buildings. Where there are no buildings within 50 metres, the same setback is required for the predominant adjoining land use.	N/A	The proposal has been designed to comply with the required setbacks in the LDCP 2008.
C14 On land in a residential zone, side and rear boundary setbacks should observe the prevailing setbacks required for a dwelling house.	N/A	The proposal has been designed to comply with the required setbacks for child care centres in the LDCP 2008.
C15 Entry to the facility should be limited to one secure point which is: • located to allow ease of access, particularly for pedestrians • directly accessible from the street where possible • directly visible from the street frontage • easily monitored through natural or camera surveillance • not accessed through an outdoor play area. • in a mixed-use development, clearly defined and separate from entrances to other uses in the building.	Yes	The proposed centre provides a direct and clear entry point off Epsom Road.
C16 Accessible design can be achieved by: • providing accessibility to and within the building in accordance with all relevant legislation	Yes	The proposal has been designed to be accessible (to and within the facility) in accordance with the relevant legislation.

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Section/Clause	Compliance	Comment
• linking all key areas of the site by level or ramped pathways that are accessible to prams and wheelchairs, including between all car parking areas and the main building entry • providing a continuous path of travel to and within the building, including access between the street entry and car parking and main building entrance. Platform lifts should be avoided where possible • minimising ramping by ensuring building entries and ground floors are well located relative to the level of the footpath.	Yes	The main entry off Epsom Road is provided with a platform lift which provides access into the lobby area via the covered walkway. Lift access is provided from the basement carpark to the ground floor and access is provided throughout the main areas of the centre via a covered walkway.
3.4 Landscaping		
C17 Appropriate planting should be provided along the boundary integrated with fencing. Screen planting should not be included in calculations of unencumbered outdoor space. Use the existing landscape where feasible to provide a high quality landscaped area by: • reflecting and reinforcing the local context • incorporating natural features of the site, such as trees, rocky outcrops and vegetation communities into landscaping.	Yes	Screen planting is proposed to all boundaries and has been integrated with the fencing (refer to submitted Landscape Plans). The proposal has retained the existing significant trees, including the replanting on Tree 14. The proposal retains and protects the adjoining heritage listed Palm Tree.
C18 Incorporate car parking into the landscape design of the site by: • planting shade trees in large car parking areas to create a cool outdoor environment and reduce summer heat radiating into buildings • taking into account streetscape, local character, pedestrian safety and context when siting car parking areas within the front setback • using low level landscaping to soften and screen parking areas.	N/A	The proposal provides parking within a basement car park.

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Section/Clause	Compliance	Comment
3.5 Visual and acoustic privacy		
C19 Open balconies in mixed use developments should not overlook facilities nor overhang outdoor play spaces.	N/A	N/A
C20 Minimise direct overlooking of indoor rooms and outdoor play spaces from public areas through: • appropriate site and building layout • suitably locating pathways, windows and doors • permanent screening and landscape design.	Yes	The indoor rooms and outdoor play spaces have been located away from public areas. The proposed fencing and landscaping will also screen direct overlooking of the indoor and outdoor spaces.
C21 Minimise direct overlooking of main internal living areas and private open spaces in adjoining developments through: • appropriate site and building layout • suitable location of pathways, windows and doors • landscape design and screening.	Yes	The proposal has been designed as an inward facing facility with no windows or doors located along the southern or western boundaries of the site (which adjoin residential properties).
C22 A new development, or development that includes alterations to more than 50 per cent of the existing floor area, and is located adjacent to residential accommodation should: • provide an acoustic fence along any boundary where the adjoining property contains a residential use. An acoustic fence is one that is a solid, gap free fence • ensure that mechanical plant or equipment is screened by solid, gap free material and constructed to reduce noise levels e.g. acoustic fence, building, or enclosure.	Yes	As detailed in the Noise Impact Assessment prepared by Renzo Tonin and shown on the architectural plans, the proposal includes acoustic fencing along the southern and western boundaries. The noise emission from mechanical plant sources have been assessed in a general manner in the Noise Impact Assessment. Normally, the design and identification of mechanical plant associated with the proposed development and controls (if required) to comply with acoustic criteria occur at the Construction Certificate stage.

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Section/Clause	Compliance	Comment
C23 A suitably qualified acoustic professional should prepare an acoustic report which will cover the following matters: • identify an appropriate noise level for a child care facility located in residential and other zones • determine an appropriate background noise level for outdoor play areas during times they are proposed to be in use • determine the appropriate height of any acoustic fence to enable the noise criteria to be met.	Yes	Noise impacts and noise attenuation are addressed in the Noise Impact Assessment prepared by Renzo Tonin.
3.6 Noise and air pollution		
C24 Adopt design solutions to minimise the impacts of noise, such as: • creating physical separation between buildings and the noise source • orienting the facility perpendicular to the noise source and where possible buffered by other uses • using landscaping to reduce the perception of noise • limiting the number and size of openings facing noise sources • using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens) • using materials with mass and/or sound insulation or absorption properties, such as solid balcony balustrades, external screens and soffits • locating cot rooms, sleeping areas and play areas away from external noise sources.	Yes	As detailed in the Noise Impact Assessment, the proposal has adopted a number of noise attenuation solutions including glazing on internal playrooms and acoustic barriers/fencing and the use of landscaping to reduce the perception of noise.
C25 An acoustic report should identify appropriate noise levels for sleeping areas and other non-play areas and examine impacts and noise	Yes	The site adjoins a classified road (Governor Macquarie Drive). The Noise Impact Assessment includes an

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Section/Clause	Compliance	Comment
attenuation measures where a child care facility is proposed in any of the following locations: • on industrial zoned land • where the ANEF contour is between 20 and 25 • along a railway or mass transit corridor, as defined by State Environmental Planning Policy (Infrastructure) 2007 • on a major or busy road • other land that is impacted by substantial external noise.		examination of this impact and includes noise attenuation measures.
C26 Locate child care facilities on sites which avoid or minimise the potential impact of external sources of air pollution such as major roads and industrial development.	Yes	The site is the vicinity of any industrial developments, and the adjoining roads are not major roads which would pose an issue to the facility in regard to air quality.
C27 A suitably qualified air quality professional should prepare an air quality assessment report to demonstrate that proposed child care facilities close to major roads or industrial developments can meet air quality standards in accordance with relevant legislation and guidelines. The air quality assessment report should evaluate design considerations to minimise air pollution such as: • creating an appropriate separation distance between the facility and the pollution source. The location of play areas, sleeping areas and outdoor areas should be as far as practicable from the major source of air pollution • using landscaping to act as a filter for air pollution generated by traffic and industry. Landscaping has the added benefit of improving aesthetics and minimising visual intrusion from an adjacent roadway • incorporating ventilation design into the design of the facility.	Yes	See comment above. Furthermore, landscaping is provided along the boundaries of the site to filter any air pollution and will provide a visual buffer to the adjoining roads. Ventilation design has been incorporated into the design of the facility.

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Section/Clause	Compliance	Comment
3.7 Hours of operation		
C28 Hours of operation where the predominant land use is residential should be confined to the core hours of 7.00am to 7.00pm weekdays. The hours of operation of the proposed child care facility may be extended if it adjoins or is adjacent to nonresidential land uses.	Yes	The centre will operate between the following hours:- • Monday to Friday: 7:00 am – 6:00pm. • Closed Saturdays, Sundays and Public Holidays.
C29 Within mixed use areas or predominantly commercial areas, the hours of operation for each child care facility should be assessed with respect to its compatibility with adjoining and co-located land uses.	N/A	N/A
3.8 Traffic, parking and pedestrian circulation		
C30 Off street car parking should be provided at the rates for child care facilities specified in a Development Control Plan that applies to the land. Where a Development Control Plan does not specify car parking rates, off street car parking should be provided at the following rates: Within 400 metres of a railway or Metro station within Greater Sydney: • 1 space per 10 children • 1 space per 2 staff. Staff parking may be stack or tandem parking with no more than 2 spaces in each tandem space. In other areas: • 1 space per 4 children.	Yes	Parking is provided in accordance with the Liverpool DCP 2008 which requires 1 space per staff and 1 space per 10 children.
C31 In commercial or industrial zones and mixed use developments, on street parking may only be considered where there are no conflicts with adjoining uses, that is, no high levels of vehicle movement or potential conflicts with trucks and large vehicles.	N/A	N/A

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Section/Clause	Compliance	Comment
C32 A Traffic and Parking Study should be prepared to support the proposal to quantify potential impacts on the surrounding land uses, to optimise the safety and convenience of the parking area(s) and demonstrate how impacts on amenity will be minimised. The study should also address any proposed variations to parking rates and demonstrate that: • the amenity of the surrounding area will not be affected • there will be no impacts on the safe operation of the surrounding road network.	Yes	A Traffic and Parking Assessment has been prepared by The Transport Planning Partnership (TTPP).
C33 Alternate vehicular access should be provided where child care facilities are on sites fronting: • a classified road • roads which carry freight traffic or transport dangerous goods or hazardous materials. The alternate access must have regard to: • the prevailing traffic conditions • pedestrian and vehicle safety including bicycle movements • the likely impact of the development on traffic.	Yes	The site is located on the corner of Governor Macquarie Drive (a classified road) and Epsom Road. Access is proposed off Epsom Road.
C34 Child care facilities proposed within cul-de-sacs or via narrow lanes or roads should ensure that safe access can be provided to and from the site, and to and from the wider locality in times of emergency.	N/A	N/A

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Section/Clause	Compliance	Comment
C35 The following design solutions may be incorporated into a development to help provide a safe pedestrian environment: • separate pedestrian access from the car park to the facility • defined pedestrian crossings and defined/ separate paths included within large car parking areas • separate pedestrian and vehicle entries from the street for parents, children and visitors • pedestrian paths that enable two prams to pass each other • delivery, loading and vehicle turnaround areas located away from the main pedestrian access to the building and in clearly designated, separate facilities • minimise the number of locations where pedestrians and vehicles cross each other • in commercial or industrial zones and mixeduse developments, the path of travel from the car parking to the centre entrance physically separated from any truck circulation or parking areas • vehicles can enter and leave the site in a forward direction • clear sightlines are maintained for drivers to child pedestrians, particularly at crossing locations.	Yes	Pedestrian access to the facility from the basement carpark is via a lift. The basement carpark includes a defined pedestrian walkway and crossing. Separate vehicle and pedestrian access to the facility is available off Epsom Road. Deliveries will be undertaken within the basement and will occur after 9:30am and before 2:30pm which will not disrupt the operation of the child care use. The basement carpark minimises where pedestrians and vehicles cross each other, and clear sightlines are provided within the basement and at the street crossover. Vehicles can enter and exit the site in a forward direction. Clear sightlines are provided within the basement and at the driveway crossover.
C37 Car parking design should: • include a child safe fence to separate car parking areas from the building entrance and play areas • provide clearly marked accessible parking as close as possible to the primary entrance to the building in accordance with appropriate Australian Standards • include wheelchair and pram accessible parking.	Yes	Car parking is provided under the building. The accessible parking spaces are provided near the lobby and lift entrance from the basement level to the ground floor.

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Section/Clause	Compliance	Comment
Section 4: Applying the National Regulations to development proposals		
4.1 Indoor space requirements		
Regulation 107 Education and Care Services National Regulations Every child being educated and cared for within a facility must have a minimum of 3.25m^2 of unencumbered indoor space.	Yes	The proposal provides 397.60m^2 or 3.31m^2 of unencumbered indoor space per child which is consistent with the Regulations.
Verandahs as indoor space For a verandah to be included as unencumbered indoor space, any opening must be able to be fully closed during inclement weather. It can only be counted once and therefore cannot be counted as outdoor space as well as indoor space	N/A	N/A
Storage Storage areas including joinery units are not to be included in the calculation of indoor space. To achieve a functional unencumbered area free of clutter, storage areas need to be considered when designing and calculating the spatial requirements of the facility. It is recommended that a child care facility provide: • a minimum of 0.3m^3 per child of external storage space • a minimum of 0.2m^3 per child of internal storage space Storage does not need to be in a separate room or screened, and there should be a mixture of safe shelving and storage that children can access independently. Storage of items such as prams, bikes and scooters should be located adjacent to the building entrance.	Yes	The internal and external unencumbered play area calculations do not include the storage areas. The proposal provides 45.90m^2 or 0.38m^2 per child of external storage space and 37.95m^2 or 0.32m^2 per child of internal storage space which is consistent with the Regulations. A mix of storage arrangements is provided. Pram storage is provided within a storage room adjoining the lobby area at the basement level. Bike parking is provided within the basement.

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Section/Clause	Compliance	Comment
Where an external laundry service is used, storage and collection points for soiled items should be in an area with separate external access, away from children. This will prevent clothes being carried through public areas and reduce danger to children during drop off and collection of laundry.		Laundry is to be done onsite.
4.2 Laundry and hygiene facilities		
Regulation 106 Education and Care Services National Regulations There must be laundry facilities or access to laundry facilities; or other arrangements for dealing with soiled clothing, nappies and linen, including hygienic facilities for storage prior to their disposal or laundering. The laundry and hygienic facilities must be located and maintained in a way that is not accessible by, and does not pose a risk to, children. Child care facilities must also comply with the requirements for laundry facilities that are contained in the National Construction Code.	Yes	The proposal includes a laundry room in the basement which is not accessible by children.
Design guidance On site laundry facilities should contain: • a washer or washers capable of dealing with the heavy requirements of the facility • a dryer • laundry sinks • adequate storage for soiled items prior to cleaning • an on-site laundry cannot be calculated as useable unencumbered play space for children.	Yes	The laundry is larger enough to provide multiple washing machines, dryers, sinks and adequate storage

PLANNING BRICKS

Section/Clause	Compliance	Comment
4.3 Toilet and hygiene facilities		
Regulation 109 Education and Care Services National Regulations A service must ensure that adequate, developmentally and age-appropriate toilet, washing and drying facilities are provided for use by children being educated and cared for by the service; and the location and design of the toilet, washing and drying facilities enable safe use and convenient access by the children. Child care facilities must comply with the requirements for sanitary facilities that are contained in the National Construction Code.	Yes	Each playroom is provided with toilets which are age appropriate for nominated age groups. The sanitary facilities will comply with the NCC.
Design guidance Toilet and hygiene facilities should be designed to maintain the amenity and dignity of the occupants (refer to Figure 3). Design considerations could include: • junior toilet pans, low level sinks and hand drying facilities for children • a sink and handwashing facilities in all bathrooms for adults • direct access from both activity rooms and outdoor play areas • windows into bathrooms and cubicles without doors to allow adequate supervision by staff • external windows in locations that prevent observation from neighbouring properties or from side boundaries.	Yes	The toilets are provided with pans, low levels sink and hand drying facilities and are accessible from both internal and external play areas. Adequate supervision by staff into the toilets is provided through placement of windows. External toilet windows have been located to prevent observations from neighbouring properties/side boundaries.
4.4 Ventilation and natural light		
Regulation 110 Education and Care Services National Regulations Services must be well ventilated, have adequate natural light, and be maintained at a temperature that ensures the safety and wellbeing of children. Child care facilities must comply with the light and ventilation and	Yes	The proposed internal and external areas have been designed to receive natural light and ventilation (see further

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Section/Clause	Compliance	Comment
minimum ceiling height requirements of the National Construction Code. Ceiling height requirements may be affected by the capacity of the facility.		comments below). The proposal has been designed to meet the relevant ceiling height requirement in the NCC.
Design guidance **Ventilation** Good ventilation can be achieved through a mixture of natural cross ventilation and air conditioning. Encouraging natural ventilation is the basis of sustainable design; however, there will be circumstances where mechanical ventilation will be essential to creating ambient temperatures within a facility. To achieve adequate natural ventilation, the design of the child care facilities must address the orientation of the building, the configuration of rooms and the external building envelope, with natural air flow generally reducing the deeper a building becomes. It is recommended that child care facilities ensure natural ventilation is available to each indoor activity room.	Yes	The proposed facility has been designed to achieve cross ventilation throughout all the buildings. However, mechanical ventilation is also provided to ensure ambient temperature are achieved in the facility.
Design guidance **Natural light** Solar and daylight access reduces reliance on artificial lighting and heating, improves energy efficiency and creates comfortable learning environments through pleasant conditions. Natural light contributes to a sense of well-being, is important to the development of children and improves service outcomes. Daylight and solar access changes with the time of day, seasons and weather conditions. When designing child care facilities consideration should be given to: • providing windows facing different orientations • using skylights as appropriate	Yes	The proposed facility has been designed to take advantage of its northern orientation and achieves natural light and throughout all the buildings. The development provides windows facing different orientations with the proposed ceiling heights being proportional to the room size to ensure natural lighting is available to learning spaces.

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Section/Clause	Compliance	Comment
• ceiling heights. Designers should aim to minimise the need for artificial lighting during the day, especially in circumstances where room depth exceeds ceiling height by 2.5 times. It is recommended that ceiling heights be proportional to the room size, which can be achieved using raked ceilings and exposed trusses, creating a sense of space and visual interest.		
4.5 Administrative space		
Regulation 111 Education and Care Services National Regulations A service must provide adequate area or areas for the purposes of conducting the administrative functions of the service, consulting with parents of children and conducting private conversations.	Yes	The proposal provides a staff room and a programme planning room to enable administrative functions and a separate office/meeting room for private consultations. The lobby area at the entrance to the building provides a reception area.
4.6 Nappy change facilities		
Regulation 112 Education and Care Services National Regulations Child care facilities must provide for children who wear nappies, including appropriate hygienic facilities for nappy changing and bathing. All nappy changing facilities should be designed and located in an area that prevents unsupervised access by children. Child care facilities must also comply with the requirements for nappy changing and bathing facilities that are contained in the National Construction Code.	Yes	Nappy change facilities are provided within each toilet area and provide a nappy change bench, hand cleaning facilities for adults and are positioned to enable adequate supervision of the activity and play areas.
4.7 Premises designed to facilitate supervision		
Regulation 115 Education and Care Services National Regulations A centre-based service must ensure that the rooms and facilities within the premises (including toilets, nappy change facilities, indoor and outdoor		

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Section/Clause	Compliance	Comment
activity rooms and play spaces) are designed to facilitate adequate supervision of children at all times, having regard to the need to maintain their rights and dignity. Child care facilities must also comply with any requirements regarding the ability to facilitate supervision that are contained in the National Construction Code.	Yes	The proposed facility has been designed to enable good supervision, whilst also maintaining sufficient privacy.
Design guidance Design considerations should include: • solid walls in children's toilet cubicles (but no doors) to provide dignity whilst enabling supervision • locating windows into bathrooms or nappy change areas away from view of visitors to the facility, the public or neighbouring properties • avoiding room layouts with hidden corners where supervision is poor, or multi room activity rooms for single groups of children • avoiding multi-level rooms which compromise, or require additional staffing, to ensure adequate supervision. If multi-level spaces are proposed, consideration should be given to providing areas that can be closed off and used only under supervision for controlled activities	Yes	The toilet include a mix of solid walls and glazing to permit dignity and supervision. Windows to bathrooms/nappy change areas are located away from view of visitors. The room layouts allow for supervision and have avoided hidden corners. All rooms are single storey.
4.8 Emergency and evacuation procedures		
Regulations 97 and 168 Education and Care Services National Regulations Regulation 168 sets out the list of procedures that an education and care service must have, including procedures for emergency and evacuation. Regulation 97 sets out the detail for what those procedures must cover including: • instructions for what must be done in the event of an emergency	Yes	A Plan of Management has been prepared by Oz Education Early Learning Centres (the operators) which sets out the proposed procedures for emergencies and evacuation.

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• an emergency and evacuation floor plan, a copy of which is displayed in a prominent position near each exit • a risk assessment to identify potential emergencies that are relevant to the service.		An Evacuation Diagram has been prepared by SPS Fire and Safety and will be displayed in a prominent position near each exit.
4.9 Outdoor space requirements		
Regulation 108 Education and Care Services National Regulations An education and care service premises must provide for every child being educated and cared for within the facility to have a minimum of 7.0m2 of unencumbered outdoor space. If this requirement is not met, the concurrence of the regulatory authority is required under the Education SEPP. Unencumbered outdoor space excludes any of the following: • pathway or thoroughfare, except where used by children as part of the education and care program • car parking area • storage shed or other storage area • laundry • other space that is not suitable for children.	Yes	The proposal provides 852.45m^2 or 7.11m^2 of unencumbered indoor space per child which is consistent with the Regulations.
Design guidance Calculating unencumbered space for outdoor areas should not include areas of dense hedges or plantings along boundaries which are designed for landscaping purposes and not for children's play (refer to Figure 9 and 10). When new equipment or storage areas are added to existing services, the potential impact on unencumbered space calculations and service approvals must be considered.	Yes	The calculation of unencumbered space for outdoor areas does not include areas of dense hedges or plantings along boundaries.

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Section/Clause	Compliance	Comment
Verandahs (covered outdoor space) as outdoor space Where a covered space such as a verandah is to be included in outdoor space it should: • be open on at least one third of its perimeter • have a clear height of 2.1 metres • have a wall height of less than 1.4 metres where a wall with an opening forms the verandah perimeter • have adequate flooring and roofing • be designed to provide adequate protection from the elements	N/A	Outdoor play space does not include verandahs or covered spaces.
4.10 Natural environment		
Regulation 113 Education and Care Services National Regulations The approved provider of a centre-based service must ensure that the outdoor spaces allow children to safely explore and experience the natural environment.	Yes	As detailed on the Landscape Plans, the proposal includes a mix of outdoor play areas to encourage social interaction in a safe environment, this includes timber/log poles and walking beams, Sandpits, a productive garden, water play area and raised pots for children's planting.
4.11 Shade		
Regulation 114 Education and Care Services National Regulations The approved provider of a centre-based service must ensure that outdoor spaces include adequate shaded areas to protect children from overexposure to ultraviolet radiation from the sun.	Yes	The proposal provides adequate shaded areas to protect children from overexposure to ultraviolet radiation from the sun.

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Section/Clause	Compliance	Comment
Design guidance Providing the correct balance of sunlight and shade to play areas is important for the health and wellbeing of children and staff. Combining built and natural shade will often be the best option. **Solar access and sun protection** Outdoor play areas should: • have a minimum of 2 hours of solar access between 8.00am and 4.00pm during winter months, for at least 30% (or 2.1m2) of the 7.0m^2 of outdoor space per child required. • adequate shade for outdoor play areas is to be provided in the form of natural shade such as trees or built shade structures giving protection from ultraviolet radiation to at least 30 per cent of the outdoor play area • have evenly distributed shade structures over different activity spaces.	Yes	The proposal will result in a minimum of 4 hours of solar access during midwinter, to at least 37% of the outdoor play area. The proposal provides adequate shade to the outdoor play areas through a mix of natural shade and build shade structures which are distributed over the various outdoor play areas.
Natural shade Natural shade should be a major element in outdoor play areas. Trees with dense foliage and wide-spreading canopies provide the best protection. Existing stands of trees, particularly in rear setbacks, should be retained to provide shaded play areas. Species that suit local soil and climatic conditions and the character of the environment are recommended. Dense shrubs can also provide shade. They should be planted around the site perimeter so they don't obstruct supervision. Pruning shrubs on the underside may create shaded play nooks underneath. Planting for shade and solar access is enhanced by:	Yes	The proposal will the existing mature trees located along the northern and north eastern perimeters of the site. Additionally, it is proposed to supplement these trees with new trees throughout the site and dense screening along the boundaries of the site.

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Section/Clause	Compliance	Comment
• placing appropriately scaled trees near the eastern and western elevations • providing a balance of evergreen and deciduous trees to give shade in summer and sunlight access in winter.		
Built shade structures Built structures providing effective shade include: • permanent structures (pergolas, sails and verandahs) • demountable shade (marquees and tents) • adjustable systems (awnings) • shade sails.	Yes	The proposal includes covered walkways and shade sails to provide shade over walkways and to outdoor play areas.
4.12 Fencing		
Regulation 104 Education and Care Services National Regulations Any outdoor space used by children must be enclosed by a fence or barrier that is of a height and design that children preschool age or under cannot go through, over or under it. Child care facilities must also comply with the requirements for fencing and protection of outdoor play spaces that are contained in the National Construction Code.	Yes	All outdoor areas are enclosed by fences or barriers to ensure the safety of children. Fencing will comply with the NCC.
4.13 Soil assessment		
Regulation 25 Education and Care Services National Regulations Subclause (d) of Regulation 25 requires an assessment of soil at a proposed site, and in some cases, sites already in use for such purposes as part of an	Yes	Given the historical use of the site for residential purposes, land contamination is not likely. However a PSI has been prepared by Preliminary Environmental Site Investigation

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Section/Clause	Compliance	Comment
application for service approval. With every service application one of the following is required: • a soil assessment for the site of the proposed education and care service premises • if a soil assessment for the site of the proposed child care facility has previously been undertaken, a statement to that effect specifying when the soil assessment was undertaken • a statement made by the applicant that states, to the best of the applicant's knowledge, the site history does not indicate that the site is likely to be contaminated in a way that poses an unacceptable risk to the health of children.		which concluded that the site is considered suitable for proposed redevelopment and sensitive land use.

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APPENDIX B

LIVERPOOL DEVELOPMENT CONTROL PLAN 2008

COMPLIANCE ASSESSMENT

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Table 8 Liverpool DCP 2008 Assessment

Section/Clause	Compliance	Comment
Part 1 General Controls for all Development		
Section 2 – Tree Preservation Tree removal requires consent	Yes	The proposal includes removal of 5 trees; however these are either exempt species or a noxious weed. The proposal includes the transplanting of 1 tree (Tree No.14).
3.1 Retention of existing on-site trees Existing trees and native vegetation are to be retained, protected and incorporated into the development proposal.	Yes	The proposal retains all existing trees with exemption to the 5 trees noted above, which are either exempt species or a weed.
3.1 Retention of existing street trees Existing street trees are to be retained	Yes	The proposal will retain and protect the 13 existing street trees.
3.4 Landscape Specifications Landscape planting should be principally comprised of native species to provide an integrated streetscape appearance.	Yes	Refer to landscape plans.
The landscaping shall contain an appropriate mix of canopy trees, shrubs and groundcovers.	Yes	The proposed landscape plan includes a mix of ground covers, shrubs and trees. Synthetic turf is limited to play areas.
Landscaping in the vicinity of a driveway entrance must not obstruct visibility for the safe ingress and egress of vehicles and pedestrians.	Yes	Landscaping adjoining the driveway is limited to groundcovers.
6. Water Cycle Management Stormwater must managed appropriately	Yes	Stormwater drainage plans have been prepared by Jones Nicholson Pty Ltd which show the provision of an 8m³ OSD tank.
8. Erosion and Sediment Control Appropriate erosion and sediment control measures must be in place.	Yes	An Erosion and Sediment Control Plan has been prepared by Jones Nicholson which includes appropriate measures to minimise erosion and site runoff during demolition and construction works.
9. Flooding Risk Identify flood risk, land use risk and planning controls	Yes	The site is not located within a flood planning area. The site is only affected by the PMF and not subject to flood planning

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Section/Clause	Compliance	Comment
		levels. A flood evacuation plan has been prepared by Jones Nicholson Pty Ltd to accompany the DA.
10. Contaminated Land Risk Previous use to be considered in assessing risk	Yes	Refer to discussion in Section 4.2 of this report.
11. Salinity Risk Affected properties to consider impact of development on soils	N/A	The site is no located in an area coloured yellow, orange or red on the State Government issued salinity potential maps.
12. Acid Sulfate Soils Risk	Yes	The site is mapped with class 5 acid sulfate soils. The proposed works are not likely to lower the water table below 1 metre AHD on adjacent class 1, 2, 3 or 4 land.
13. Weeds Noxious weeds to be removed as development where applicable	Yes	The proposed development includes removal of weeds.
14. Demolition of Existing Developments Appropriate demolition measures must be implemented	Yes	A condition of consent as part of any development consent can ensure compliance with this requirement
16. Aboriginal Archaeology AHIA required where items of aboriginal archaeology exist	N/A	Site not identified as containing Aboriginal artefacts or containing or within the vicinity of heritage items.
17. Heritage and Archaeological Sites A Statement of Heritage Impact required for applications within vicinity of a heritage item	Yes	A Heritage Impact Assessment has been prepared by prepared by Weir Phillips or the proposed development.
20. Car Parking and Access		
Vehicular egress and entrances must be integrated into the building design so they are visually recessive. This can be achieved by locating the opening a small distance behind the front façade.	Yes	The vehicular entrance to the basement is recessive and is setback beyond the main building façade.
Access ways to underground parking should be sited to minimise noise impacts on adjacent habitable rooms, particularly bedrooms.	Yes	The proposed access is setback from the southern boundary. The proposed centre will not operate before 7am or after 6pm on weekdays and is closed on the weekends.

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Section/Clause	Compliance	Comment
Doors to vehicular access points are to be roller shutters or tilting doors set back from the building façade;	Yes	The roller door is setback from the building façade.
Vehicular entries are to have high quality finishes to walls and ceilings as well as high standard detailing. No service ducts or pipes are to be visible from the street.	Yes	The vehicular entry will include high quality finishes and ducts and pipes will not be visible from the street.
1 space per staff member and 1 space per 10 children Plus service facilities for a van	Yes	The proposal requires 21 parking spaces for staff and 12 spaces for children. A total of 33 spaces. The proposed development provides 33 spaces. Sufficient space is provided within the basement carpark for delivery vehicles. Deliveries and waste pickup will occur outside peak drop-off/pick up times.
Disabled car parking shall be provided in accordance with Table 12	Yes	The proposal requires accessible parking at the rate of 2 accessible spaces per 100 spaces. Therefore, for the provision of 33 car spaces, it is required to provide 2 accessible spaces. It is proposed to provide 2 accessible spaces which satisfies the DCP requirements.
Bicycle Parking – 1 per 10 staff and 2 visitors	Yes	The proposal requires 4 bicycle parking spaces. The proposal provides 8 spaces.
All vehicles must enter and leave the property in a forward direction	Yes	The basement carpark will permit vehicles to enter and exit the site in a forward direction.
Design each Driveway Crossing so that it is relatively level within 6m of the site boundary or any pedestrian way, the recommended maximum gradient is 5%.	Yes	The driveway has a maximum gradient of 5% for the first 6m.
A Transport Management Plan shall be submitted with the development application.	Yes	A Traffic and Parking Assessment has been prepared by The Transport Planning Partnership (TTPP).
22. Energy Conservation	Yes	The proposal has been designed to minimise energy consumption.

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Section/Clause	Compliance	Comment
All Class 5 to 9 non-residential developments are to comply with the Building Code of Australia energy efficiency provisions.		
23. Reflectivity Visible light reflectivity from building materials used on the facades of new buildings must not exceed 20%.	Yes	The proposes finishes include a mix of materials and a mix of light and dark finishes.
25. Waste Disposal and Re-use Facilities Development applications for all non-residential development must be accompanied by a waste management plan	Yes	A Waste Management Plan has been prepared by MRA Consulting Group and is provided under separate cover.
Waste management facilities shall be provided for in all new buildings	Yes	Waste management facilities are provided throughout the buildings and the waste storage facility is located in the basement.
26. Outdoor Advertising and Signage To ensure that outdoor advertising signage is complementary to and compatible with the development on which it is displayed and the character of the surrounding locality.	N/A	This DA does not include and outdoor advertising/signage and is to be the subject of a separate application if required.
27. Social Impact Assessment A social impact comment is required for applications for child care centres with more than 20 places	Yes	A Social Impact Comment has been prepared by Planning Bricks and is provided under separate cover.
29. Safety and Security Address 'Safer-by-Design' principles in the design of public and private domain, and in all developments including the NSW Police 'Safer by Design' Crime Prevention Though Environmental Design (CPTED) principles.	Yes	The centre creates opportunities for natural surveillance with indoor and outdoor spaces being able to survey the adjoining area during operational times. The centre will be provided with security sensor lights, a CCTV system and all openings will be lockable and fitted with an alarm system.

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Section/Clause	Compliance	Comment
Part 3.8 Non-residential development in residential zones (Child care centres)		
Note: The proposal has been assessed against the relevant sections of the DCP and has excluded the provisions listed under Pt3.3 (Cl3.27) of the Transport and Infrastructure SEPP		
2.4 Setbacks		
Front Setback – 5.5m	Yes	The centre is setback a minimum of 5.5m from Epsom Road.
Secondary Setback – 4m	Yes	The centre is setback 4m from Governor Macquarie Drive.
Side Setback – 1.2m	Yes	The centre is setback 1.2m from the southern side boundary.
Rear Setback – GF- 4m FF – 8m	On merit	The majority of the western (rear) setback of the development is setback over 10m. However, a proportion of built form (35% of the boundary length) is setback 1.2m from the boundary. The setback of this building is considered appropriate and in accordance with the objectives of the control for the following reasons: • there are no openings proposed along the western elevation and as such visual and acoustic privacy is retained to the adjoining properties; • The proposal allows for solar access to be maintained to the adjoining properties; • The setback allows for dense screen planting; and • the site layout results in a breakup off built form and outdoor play area along this boundary.
2.5 Landscaped Area and Open Space		
A minimum of 25% of the site area shall consist of Landscaped Area, this may include lawn, deep rooted trees, garden beds and mulched areas.	Yes	The proposal includes 30.6% (709.65m^2) of the site area as landscaped area.
There must be an unencumbered area of 5 x 6m in the rear setback for the opportunity to accommodate the planting of deep rooted trees.	Yes	The proposal includes screen planting along the rear boundary, additionally deep rooted trees are provided for

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Section/Clause	Compliance	Comment
		within Outdoor Area 5 noting that the basement does not extend beneath this area.
A minimum of 50% of the front setback area shall be landscaped area.	Yes	At least 50% of the front setback to Epsom Road is landscaped area and over 90% of the setback to Governor Macquarie Drive is landscaped area.
There must be an unencumbered area of 3 x 5m in the front setback for the opportunity to accommodate deep rooted trees.	Yes	There are separate landscaped areas within the Epsom Road setback which are larger than 3 x 5m and can accommodate deep rooted trees.
A proposed Child Care Centre must comply with open space requirements as set out in the Children Services Regulation 2004.	Yes	Refer to assessment in Annexure A.
Outdoor open space is to be located behind the childcare centre i.e. away from roads/streets.	On merit	Given the corner location of the site it is difficult to locate all open space behind the centre and away from roads. The proposal includes barrier fencing where the outdoor space fronts a road (i.e. outdoor play area 2 and 3). The barriers are setback from the boundary of the site and dense landscaping is proposed to provide soften the appearance of the fences.
2.6 Building Form, Style and Streetscape		
Where large glass areas cannot be avoided appropriate shade devices shall be incorporated into the design.	Yes	The proposal includes eaves and shade sails to provide shading where larger glass areas are proposed.
The roof design shall be compatible with surrounding properties with respect to height, pitch, building materials and colour.	Yes	The proposed buildings are compatible with the pitch, height and finishes of surrounding properties.
The building shall be designed so that it is in character with the surrounding residential area in terms of bulk, scale, size and height.	Yes	The proposed built form includes a number of single storey structures appropriately located on the site to address its corner location. The buildings are well articulated to and include a variety of materials which is in character with the surrounding residential area.
The front pedestrian entrance must be visible from the street.	Yes	The proposed entrance is via Epsom Road and will be visible from the street (see Drawing No. DA04.01).

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Section/Clause	Compliance	Comment
The front building facades shall be articulated. This articulation may include front porches, entries, wall indents, changes in finishes, balconies and/or verandahs.	Yes	The buildings fronting Epsom Road include a high level of articulation through the inclusion of a covered entrance deck and use of a variety of materials.
Entrances to buildings should be orientated towards the front of the site facing the street.	Yes	The proposed building entrance is via Epsom Road and will be visible from the street.
Blank walls addressing the street frontage and other public places must be avoided.	Yes	The proposal provides a mix of windows and cladded walls to Epsom Road and Governor Macquarie Drive.
2.7 Landscaping and Fencing		
A landscape plan must be submitted to Council with the development application.	Yes	Landscape Plans have been prepared by Melissa Wilson Landscape Architects and accompany the DA.
Areas of grass are to be limited to play areas. Other landscaped areas are to be planted.	Yes	The proposed landscape plan includes a mix of ground covers, shrubs and trees. Synthetic turf is limited to play areas.
Trees adjacent to/or within the play area, are to provide shade and allow winter sun entry. Trees adjacent to private open space areas and living rooms should provide summer shade and allow winter sun entry.	Yes	The landscape plan includes a variety of evergreen and deciduous trees.
Landscaping species must be appropriate to prevent injury to children. No toxic, spiky or other hazardous plant species.	Yes	Refer to landscape plans.
The setback areas of development are to be utilised for canopy tree planting. The landscape design for all development must include canopy trees that will achieve a minimum 8m height at maturity within front and rear setback areas. Any tree with a mature height over 8m should be planted a minimum distance of 3m from the building or utility services.	Yes	The setback areas include canopy trees which will receive a minimum height of 8m.
Landscape planting should principally comprise of native species	Yes	Refer to landscape plans.
The landscaping shall contain an appropriate mix of canopy trees, shrubs and groundcovers.	Yes	The proposed landscape plan includes a mix of ground covers, shrubs and trees.

PLANNING BRICKS

Section/Clause	Compliance	Comment
Tree and shrub planting along side and rear boundaries should assist in providing effective screening to adjoining properties. The height of screening plants to be provided is 2.5 to 3m at maturity.	Yes	Screen planting is proposed along the southern and western boundaries. Screen planting ranges between 3 – 8m.
Side and rear fencing shall be 1.8m in height	Yes	Fencing along the southern and western boundaries is 1.8m high. Acoustic fencing is inset from the boundaries. See fencing/barrier details on and Drawing No.DA03.02.
Fences shall be constructed of materials compatible with the proposed building.	Yes	The side and rear fencing is proposed to be colorbond. The acoustic barriers are metal slat fencing with Perspex backing.
Fencing shall be designed to minimise opportunities for graffiti.	Yes	Fencing along Governor Macquarie Drive and the corner of Epsom Road and Governor Macquarie Drive are setback beyond proposed dense landscaping.
Gates shall be the same height as the fence, self-closing and be secure and fitted with a childproof lock.	Yes	See fencing and gate details on and Drawing No.3 DA03.02.
Wall finishes must have low reflectivity.	Yes	The proposed externa finishes are of low reflectivity (see Drawing No. DA04.01.
Front fences are to be light coloured and low in height or open form.	N/A	The proposal does not include front fencing. The acoustic fences along Governor Macquarie Drive and the corner of Epsom Road and Governor Macquarie Drive are setback beyond proposed dense landscaping.
Fences should not prevent surveillance by the building's occupants of the main open or communal areas within the property or the street frontage.	Yes	The proposed fences will not prevent surveillance over Epsom Road or the outdoor play areas.
Where noise insulation is required, consider the installation of double-glazing or other noise attenuation measures at the front of the building rather than construction of a high solid form fence.	Yes	The Noise Impact Assessment includes both glazing mitigation measures and external acoustic barriers due to the sites frontage to Governor Macquarie Drive.
Primary Frontage Front fences shall have a maximum height of 1.2m, and constructed of masonry, timber and/or vegetation.	N/A	The proposal does not include front fencing. The acoustic fences along Governor Macquarie Drive and the corner of

PLANNING BRICKS

Section/Clause	Compliance	Comment
The front fence must be 30% transparent.	N/A	Epsom Road and Governor Macquarie Drive are setback beyond proposed dense landscaping.
Secondary Frontage Side fences and walls must be a maximum of 1.8m in height, and constructed of masonry, timber and/or landscaped For side walls or fences along the secondary frontage, a maximum height of 1.2m is required for the first 9m measured from the front boundary, the remaining fence/wall may then be stepped up to a maximum of 1.8m.	N/A N/A	The acoustic fences along Governor Macquarie Drive and the corner of Epsom Road and Governor Macquarie Drive are setback beyond proposed dense landscaping.
2.8 Car Parking and Access		
All vehicles shall enter and leave the site in a forward direction.	Yes	The proposed basement carpark allows vehicles to enter and exit in a forward direction.
2.9 Amenity and Environmental Impacts		
In residential zones the days/hours of operation shall be limited to 7.00 am - 7.00 pm: Monday Saturday. No operation on Sundays or public holidays.	Yes	The centre will operate between the following hours:- • Monday to Friday: 7:00 am – 6:00pm. • Closed Saturdays, Sundays and Public Holidays.
Adjoining properties must receive a minimum of three hours of sunlight between 9am and 3pm on 21 June to at least: - one living, rumpus room or the like and/or - 50% of the private open space.	Yes	The adjoining properties to the west (5 and 6 Swindon Pl) will continue to receive at least 3 hours of sunlight to living rooms and their private open space areas during midwinter. To the south (125 Epsom Rd), there are 3 townhouses directly adjoining the boundary (Nos.1, 8 and 9). Townhouses 1 and 9 will continue to receive 3 hours of sunlight in midwinter to a living room window and 50% of their private open space. Townhouse No.8, which aligns with the existing 2 storey dwelling on the site, does not currently receive 3 hours of sunlight in midwinter to a living room window or 50% of its private open space. The proposed development results in a

PLANNING BRICKS

Section/Clause	Compliance	Comment
		similar situation, however, provides improved solar access to the private open space at 12pm in midwinter.
Habitable room windows facing side boundaries are to be offset by at least 1m from any habitable room windows in an adjoining dwelling.	Yes	The proposal is offset from any habitable room windows of adjoining dwellings.
Building siting, window location, balconies and fencing must consider the importance of the privacy of on-site and adjoining buildings and private open spaces.	Yes	The proposed buildings are provided with blank walls along the southern and western boundaries of the site. Additionally, acoustic barriers (inset from the boundaries) are proposed to protect existing acoustic privacy of adjoining buildings and private open space.
Landscaping should be used where possible to increase visual privacy between dwellings and adjoining properties.	Yes	Screen planting is proposed along the southern and western boundaries (Refer to submitted Landscape Plans).
Noise attenuation measures should be incorporated into building design to ensure acoustic privacy between on-site and adjoining buildings.	Yes	The proposal includes a combination of building design (glazing and materials) and acoustic barriers which are inset from the boundaries of the site.
2.10 Site Services		
Waste disposal facilities shall be provided for development. These shall be located adjacent to the driveway entrance to the site.	Yes	A waste storage area is provided in the basement adjoining the driveway entrance.
Any structure involving waste disposal facilities shall be located as follows: - Setback 1m from the front boundary to the street. - Landscaped between the structure and the front boundary and adjoining areas to minimise the impact on the streetscape. - Not be located adjacent to an adjoining residential property.	Yes	

Plan Of Management + Operations

Oz Education Chipping Norton
123 Epsom Road
Chipping Norton NSW 2170
17.04.24

Oz Education Early Learning Centres
Learning Today, Leading Tomorrow
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Oz Education Early Learning Centres

Founded in 1981 as an entrepreneurial childcare venture, Oz Education was originally established with the aim of preparing children for formal schooling – distinguishing it from the general day care style of the time and unique to what was popular during that period, Oz Education is now one of Australia's most established early learning childcare providers that continues the ambition to deliver excellence across the sector for children and their families.

Operating as a long day care service, with an inclusive preschool program within, Oz Education provides quality education and care to children aged 6 weeks to 6 years old.

Our Vision

Our vision is to create the best outcomes for children in their early years and beyond.

Our Mission

Our mission is to provide high-quality childcare and exceptional early learning opportunities that inspire each child to discover, learn and reach their potential.

Our Guidance

We are guided by:

Education and Care Services National Law Act 2010

Education and Care Services National Regulation 2018

National Quality Standard

Quality Area 1 – Educational program and practice
Quality Area 2 – Children's health and safety
Quality Area 3 – Physical environment
Quality Area 4 – Staffing arrangements
Quality Area 5 – Relationships with children
Quality Area 6 – Collaborative partnerships with families and communities
Quality Area 7 – Governance and leadership

Early Years Learning Framework

Learning Outcome 1 – Children have a strong sense of identity
Learning Outcome 2 – Children are connected with and contribute to their world
Learning Outcome 3 – Children have a strong sense of wellbeing
Learning Outcome 4 – Children are confident and involved learners
Learning Outcome 5 – Children are effective communicators

Our Philosophy

At Oz Education, our priority is the wellbeing of each child – we work toward this by using our Statement of Principles to guide our practices.

The Approved Provider, Management Team, Centre Directors, Assistant Director, Certified Supervisors, all educators and other staff believe that all children, families, Oz Education employees and members of our general community deserve equality, consistency, respect & support in relation to culture, customs, beliefs, values, family structure, physical environments, confidentiality, the right to an opinion, education, health, safety & security.

Aim

We aim for the Council of Australian Government's vision that "all children have the best start in life to create a better future for themselves and for the nation". In order to do this, we must:

- Apply the National Quality Framework
- Maintain the Guiding Principles
- Apply the Education and Care Services National Law, & National Regulation
- Apply the National Quality Standards & its elements to inform our practices
- Apply the Early Years Learning Framework (EYLF) and its outcomes, principles & practices to inform our program
- Follow the approach of the Australian Government's EYLF "to extend and enrich children's learning from birth to five years and through the transition to school" *(Belonging, Being & Becoming – Commonwealth of Australia 2009)*, by implementing a play-based learning program and our Oz Education Advantage Preschool Program for children in the year before formal schooling
- Encourage everyone involved in or with our service to have a sense of Belonging, Being & Becoming

Goals

Our practical goals to ensure the above occur are:

- Protect the wellbeing of every child
- Provide a play-based program for ongoing learning
- Use children's voices, family voices, educator voices & what's happening in our world (current affairs) to inform our program
- Allow for planned, spontaneous and intentional teaching-based experiences
- Complete genuine, cyclical documentation when learning occurs
- Analyse our documentation in relation to the EYLF to demonstrate how each child is achieving outcomes as individuals and as a group
- Keep safe and hygienic environments
- Maintain genuine relationships with children, families and the community
- Be inclusive of all people
- Embrace self-improvement (through internal quality/compliance audits)
- Implement transitions into the service, between rooms and into primary school
- Be sustainably aware of our impact on the environment

Statement of Principles

This Statement of Principles applies to the National Quality Framework's 7 Quality Areas, including our EYLF curriculum, the National Regulation and all Laws that guide the service we provide to our children, their families, our educators and our community.

"These principles inform the delivery of quality early childhood education and care" *(National Quality Standard for Early Childhood Education and Care and School Age Care - Council of Australian Governments; December 2009)*

The Guiding Principles are:

1. The rights of the child are paramount
2. Children are successful, competent and capable learners
3. Equity, inclusion and diversity underpin the framework
4. Australia's Aboriginal and Torres Strait Islander cultures are valued
5. The role of parents and families is respected and supported
6. Best practice is expected in the provision of education and care services

Sustainability Statement

Oz Education endeavours to be a sustainable and environmentally responsible addition to local and wider communities, and our environment.

Foundation strategies for each child, family and educator to build upon include:

- reusing products for repeated or new purposes
- organising waste appropriately – landfill, recycling, greenery; and being waste conscious
- embracing gardening as a form of growing food
- incorporating natural items in both indoor and outdoor environments
- being consumable conscious – water, energy, perishables, etc.

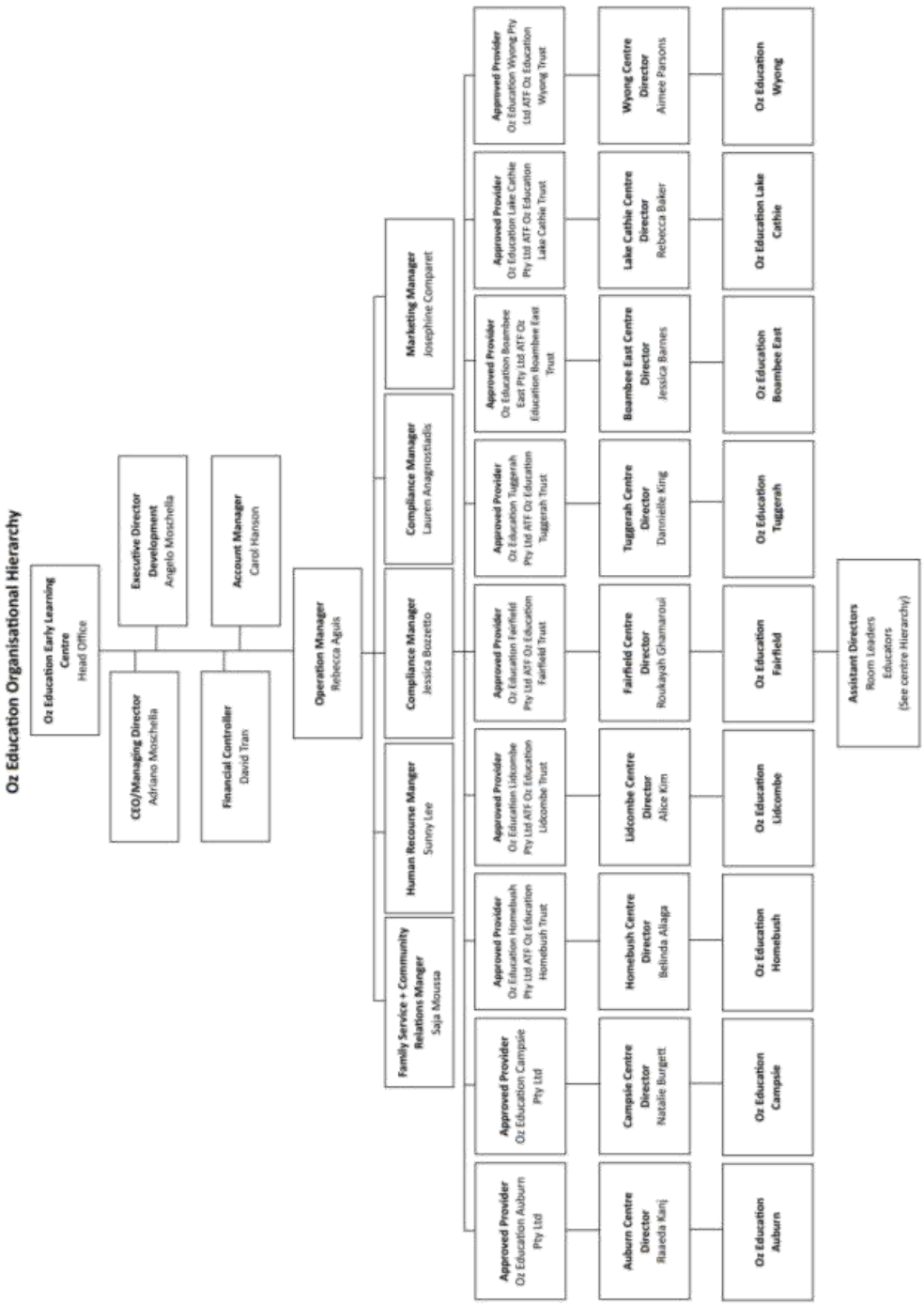
Summary

Our policies assist everyone involved with Oz Education to ensure the above Aim & Goals, Statement of Principles, Strategies and Sustainability Statement can be met through easy to understand guidance in the form of documented information and procedures to follow.

Sources: *Education and Care Services National Law 2010*
Education and Care Services National Regulation 2018
Guide to the National Quality Framework
Guide to the National Quality Standard
Belonging, Being & Becoming
Updated January 2019

OZEDUCATION Early Learning Centres

Our Governance



OZEDUCATION
Early Learning Centres

Management Roles & Responsibilities

Operations Manager	Family & Community Relations Manager	Compliance Manager
Rebecca Agius **8599 1052** **0406 726 396** rebecca@ozeducation.com.au	**Saja Moussa** **8599 1053** **0423 339 247** saja@ozeducation.com.au	**Jessica Bozzetto** **Lauren Anagnostiadis** jessica@ozeducation.com.au lauren@ozeducation.com.au
Law Regulation ACECQA Reporting ACECQA Applications + Waivers DoE Correspondence DoE Compliance Documentation Child protection, MRG + OCG Allegations + Complaints DCJ Emergencies + Hazards Policies + Procedures NQS Misconduct Discipline Incidents, Illness, Public Health Unit Medical Conditions Behaviour management ACCS related behaviour documentation Menu + Dietary requirements Emergency child placement Ratios Assessment + Rating Record keeping & storage Budgets Document templates/forms DA Planning + Design Coordination Acquisition execution New service establishment	Enquiries/enrolments Complaints – Enrolment based ACCS funding + case documentation IS case migration Xplor technical Xplor training Payments Vacancies Waiting list Orientation Transitions Printers Family Accounts CCS Funding MyGov migration PRODA FACS and Gowrie funding	NQS in practice QIP Assessment and Rating Department visits: 1st point of call Ratios Supervision Centre meetings Systematic issues Record keeping & storage Resources & equipment Document templates/forms Audits Routines Programming Environments & presentation Sustainability Documentation & Ed. Leader Preschool program EYLF Educational Curriculum Childcarers
Marketing Manager	**Human Resources Manager**	**Finance Team**
Josephine Comparet **8203 1486** **0434 128 666** josephine@ozeducation.com.au	**Sunny Lee** **8599 1054** **0425 797 955** sunny@ozeducation.com.au	**(CFO + Accountant)**
Marketing & advertising Website & online analytics Online exposure/Social media Community exposure & engagement Branding Event Management Fairs/festivals/events Promotions Regular events/fundraising	Wage payments Rosters + Timesheet approvals Contracts + onboarding docs Performance & Disciplinary PD & training Applications, Interviews, Trials Directors TIL accrual approval Preapproval of Leave - A/L & TIL Job descriptions Paid Parental Leave Traineeships Uniforms Staff induction Leadership team appraisals Easy Employer Worker's Compensation Return To Work (RTW) Coordinator	Finance oversight Financial integrity Group budgeting Group forecast + projection Financial decision making Acquisition planning Centre expense monitoring

Operational Details

Days Open	Monday to Friday 52 weeks per year
Days Closed	All NSW Public Holidays only
Hours of Operation	7am to 6pm Monday to Friday Closed on Sundays and Public Holidays

General Daily Routine

7am	Centre opens – combined indoor/outdoor play – weather permitting
8am	Groups separated by this time – continue welcoming children and families Continued learning & play, and bonding with educators (Summer and/or high temp and/or UV days) Outdoor learning if weather permits
8:30-9am	Possible group time if children's routines permit Begin transition to hand washing and morning tea preparation Morning tea begins to be served for those eating solids Nappy changes occur afterwards if haven't already been necessary Some children sleep/rest afterwards
9:45 am	Transition to learning & play, and bonding with educators (Winter and/or low temp days) Outdoor learning if weather permits
10:45 am	Possible group time if children's routines permit Begin transition to hand washing and lunch preparation
11am	Lunch begins to be served for those eating solids
12pm	Some children sleep/rest afterwards Some children transition to learning & play, and bonding with educators Nappy changes occur afterwards if haven't already been necessary
2pm	(Winter and/or low temp days) Outdoor learning if weather permits
2:30-3pm	Possible group time if children's routines permit Begin transition to hand washing and afternoon tea preparation Afternoon tea begins to be served for those eating solids Nappy changes occur afterwards if haven't already been necessary Some children sleep/rest afterwards
3pm	Some families begin to arrive from 3pm Children's belongings are beginning to be prepared for taking home
4:30pm	Nappy changes occur if haven't already been necessary (Summer and/or high temp and/or UV days) Some children transition to outdoor learning & play if weather permits, and bonding with educators
5pm	Possible group time if children's routines permit Begin transition to hand washing and late snack preparation Late snack begins to be served for those eating solids
6pm	Centre closes

**Note – Each room may have minor variations according to age appropriate care*

Staffing + Ratios

Diligent selection, recruitment criteria and processes support our drive for valuable educators for the benefit of children throughout their time at Oz Education. Qualified educators create quality, and include:

- Early Childhood Teachers (degree qualified)
- Diploma Certified Educators
- Certificate III Certified Educators

The National Regulation's staffing ratios are:

Child Age	Educator : Child Ratio
0-2 years	1:4
2-3 years	1:5
3-5 years	1:10

The centre operates with the following core staff breakdown for 120 children:

Playroom #	Age Group	Children	Staff
1	0 – 2 years	12	3
2	0 – 2 years	8	2
3	3 – 5 years	20	2
4	3 – 5 years	20	2
5	2 – 3 years	20	4
6	3 – 5 years	20	2
7	2 – 3 years	20	4
Total		**120**	**19**

**Note – Our services succeed the required minimum ratio to ensure superior supervision and care to children. A maximum staff of 21 which includes 19 educators, 1 admin and 1 cook.*

Arrivals + Departures

Employees

Generally, employees begin arriving 15 minutes before the opening of the service until approximately 10:30am.

Employees begin departing the service from approximately 2:15pm onwards, until 15 minutes after close.

Children, Families + Supervision

Generally, children and families begin arriving from the opening of the service, until approximately 10am. Children and families usually begin departing the service from approximately 2:30pm onwards, until close.

The 'Delivery and Collection of Children Policy' specifies who can enter, collect children and how identifications are monitored. Children are physically handed over to an educator to ensure each child has been accounted for. Our policy procedures, environments and rosters support consistent supervision across the entire length of the day.

Parking

The number of spaces is determined during the planning period and considers the size of the service. Some staff spaces have been provided as stacked parking spaces, 2 spaces deep, as per the DCP. Staff are coordinated to park according to their roster, with early and extended shifts to occupy the tandem spaces first, followed by later and short shift staff to fill the additional spaces. Employees will also have other standard car spaces also.

Families have designated pick up and drop off zones to ensure efficiency with traffic flow and the safety of children using vehicles. All of the above-mentioned zones and spaces are sign posted and line marked.

Note: Staff spaces 11-14 to be occupied prior to the drop off and not leave until after the pick-up. for further details, refer to traffic report

Access + Security

Entry to the service, which is located on Epsom Road, is obtained via:

1. The ground level pedestrian footpath directly into the centre lobby/foyer via the front entry doors; or
2. The basement carpark ramp, then into the lift or stairwell up to the entre lobby/foyer

The building will be secured with back to base alarm and CCTV.

Design + Construction Considerations

In adherence the National Regulation, the following design rules will apply as a minimum standard for construction.

Item	Notes
Unencumbered Indoor Space	*Minimum 3.25m² per child (approved places)*
Unencumbered Outdoor Space	*Minimum 7m² per child (approved places)*
Exclusive Storage Space	
Ventilation, Natural Light + Temperature Control	*Solar access indoors + outdoors* *Shade elements or structures*
Laundry + Kitchen Facilities	*On site facilities*
Administrative Space	
Child Bathrooms, including Nappy Change Facility	*Bench + mat, bath, hand wash, step storage*
Natural Environment, including Simulated Outdoors	
Fencing + Gates	*Minimum 1.8m height with self-closing gates*
Design Facilitates Supervision	*Transparency vs dignity*
Evacuation Stairs + Safe havens	
Barriers + Glass	*Safety treated glass*
Soil Assessment	
Landscape Design	
Sustainability, Energy + Water Efficiency	
Pedestrian, Vehicle + Mobility Accesses	
Acoustic Privacy + Noise Pollution	*Consideration to noise generating equipment and resources in addition to structure/panels*

**Note – Unencumbered space excludes passageway or thoroughfare, bathroom + hygiene facility, food + bottle preparation area, storage, cot area, employee + administration area; the space must also define as being secure and suitable for children.*

Emergency Management

The service is equipped with procedures and equipment to manage emergencies including but not limited to fire, threat, building + other evacuation or lockdown events.

An Emergency Management Manual provides guidance on the actions to be taken in the event of an emergency, and are contracted to devise and update emergency and evacuation plans

External contractors and technicians also regularly inspect, replace and certify all emergency equipment, and electrical supply and equipment.

Emergency, evacuation, lockdown and first aid management plans are in place via staff training and are available at all entry/exit locations in each area of the centre for immediate access. Every regular employee is expected to hold and maintain the following certifications associated with emergencies and child safety:

- First Aid + CPR
- Asthma + Anaphylaxis
- Child Protection
- WWCC
- National Police Check

Our organisation provides and funds these certifications for any employee that we nominated as a Responsible Person. All other employees are employed on the basis that they hold and will maintain these as aforementioned.

Maintenance

The Centre Director of the service is responsible for recording and coordinating minor maintenance as necessary with assistance from the Operations + Compliance Managers. These minor maintenance items involve work from the resident handyman and other long-term trade relations such as plumbers, electricians, etc.

Major maintenance decision making occurs further in the hierarchy between the CEO, CFO and Operations Manager, and is arranged as necessary.

Cleaning

Contracted cleaners service the premise weekly to ensure the regular sanitisation of all areas of the centre. Employees are trained to ensure the upkeep of the service's general hygiene and organisation to ensure a consistently safe environment.

Insurances

The following insurances are acquired where the operator is to become the licensed Approved Provider:

- Early learning Business Insurance, inclusive of:

- Public + Products Liability Insurance
- Professional Indemnity Insurance

- Workers' Compensation Insurance

Waste Management

An operational waste management plan ensures that the collection and disposal of waste generated by Oz Education comprises of general waste and co-mingle recyclable collections.

Examples of waste generated and their sources are listed below.

General Waste		Co-Mingle Recycling	
Type	Nappies Food waste Soiled tissues + Baby wipes Plastics Non-recyclable packaging	Type	Paper Cardboard Packaging + wrappers Containers Bottles, tins + glass
Source	Playrooms WC Kitchen Laundry	Source	Office + reception Programming Kitchen Laundry

The WMP will nominate the volume and quantity of bins for the exclusive use of the childcare centre.

The bins are conveniently located in a designated, lockable room that is accessible via the footpath and street for waste trucks.

General waste and comingled recyclables are generally transported to the bins by staff at the end of the day, or as required. Nappy waste is transported to the bins by staff immediately after each round of nappy changes, whether that be 1 or multiple child changes.

Staff are educated about the waste disposal during their employment induction and with the use of guidance posters and signage around the childcare centre and at the waste bin area.

Communication + Technology

Digital platforms support the communication between management with educators, and educators with families. The following 3 major IT programs are utilised to communicate between stakeholders:

- Xplor — Childcare Management System for Child Bookings, Attendance, Fees
- Easy Employer — HR System for Rostering, Attendance
- Xplor Playground — Provides families with Routine Care Detail + Education Portfolio

Additional IT support programs include:

- Childcare CRM — Customer Relationship Management System
- MYOB — Income + Expense Processing, Financial reconciliation
- Reading Eggs — Literacy support program for children aged 4-5 years old
- Mathseeds — Math support program for children aged 4-5 years old

Child Care Subsidy (CCS)

All our Early Learning Centres are approved for the government's Child Care Subsidy (CCS) to ensure our fees are affordable. We also offer flexible hours – 9, 10, 11 or full day long daycare sessions to help minimise out-of-pocket expenses for families.

Families apply for CCS by creating an account at MyGov - https://my.gov.au/ then complete an online child care subsidy assessment by linking Centrelink account to myGov.

**Note – CCS will be rejected if a child's immunisation requirements are not met.*

Enrolment & Fees

Positions of enrolment are offered if there is a guaranteed opening on the days you require childcare, based on a first-in, first-served basis and our Priority of Access Guidelines*.

Our enrolment process is easy. We require our Enrolment Form to be completed with the supporting documents listed on the form. To secure a position, a small administration fee of $50 and a fully refundable bond* is required.

Orientations are available at no extra cost to help children experience a smooth transition into our care.

**Note – A bond is refunded only after a child has commenced care and a four weeks' written withdrawal notice is provided. Insufficient notice will result in the bond being forfeited.*

Please tick that the following documents have been provided: [Office Use Only]	
Birth Certificate / Child ID (Original sighted + Copy filed)	
Immunisation History Statement	
Enrolment Agreement Completed	
Debit Form	
Xplor ID – CWA + Direct Debit	
Xplor Home App	
Medical Condition Action Plan (if applicable)	
Court Order (if applicable)	
Childcarer's Welcome Email	
Family Photo (For Belonging Tree)	

Fee Payments

Our fees vary between centre locations. Fees are payable weekly plus one week in advance, via direct debit from a chosen account. The first direct debit payment will commence on the Monday in the first week of care and the balance owing that week will be collected at the end of that week.

Fees are payable for public holidays, sick days or if your child is absent on booked days.

*Priority of Access Guidelines

Positions are prioritised and differed to children that meet the priority of access guidelines as stated below and will be categorised upon enrolment. This will determine the days made on offer.

Priority 1: A child at risk of serious abuse or neglect

Priority 2: A child of a single parent who satisfies, or of parents who both

satisfy, the work/training/study test under Section 14 of the 'A New Tax System (Family Assistance) Act 1999'

Priority 3: Any other child

Grievance + Complaints

In the event that contact must be made with the service regarding complaints, including but not limited to noise, details will be available at the front of the centre building. The following poster will be displayed.

Service Trading Name	Oz Education Chipping Norton
Operations	Monday to Friday 7am – 6pm
Complaints liaison	**Centre Director** ____(Name)____ Ph: _____ **Operations Manager** ____(Name)____ Ph: _____

Grievance + Complaints Procedure

As per the organisation's Grievance + Complaint Procedure, complaints are recorded in the Grievance + Complaint Form followed by the Complaint Register, attached on the following 3 pages.

The following process for documenting a grievance is an excerpt of the Complaint + Grievance Policy:

> *"An issue that addresses any aspect of the service that cannot be resolved immediately and requires minor internal investigation. This includes a complaint that does not allege breaches of the Regulation or Law, or the basic compromisation of a child's health, safety & wellbeing, etc. E.g. not Providing the standard of service as expected, continuous bag confusion, etc.*
>
> *Procedure:*
> - *You do not have to notify DOE*
> - *Obtain advice from Management Team*

- *Document all information related to this grievance and store appropriately and confidentially by using our own Grievance & Complaints Form (attached below)*
- *You must work towards an appropriate resolution with the interested parties confidentially*
- *Record on Grievance & Complaint Register"*

The documentation of grievances + complaints are recorded on a register for the identification of trends for preventative purposes. See forms on the following pages.

Noise Management

The acoustic assessment + report determines engineering requirements recommended for the reduction of noise generated from the service. Where sustained noise complaints are received, the organisation's management will further liaise with an acoustic consultant for appropriate solutions.

The service must take the following measures to ensure noise levels are appropriate to its surroundings:

Upon Establishment	Indoor Operation	Outdoor Operation
Considerations when selecting noise generating equipment	Educators will be informed of their responsibility to control the level of their voice + model this to children	Unsettled children will be taken indoors and comforted before returning outdoors
Families will be informed of the importance of noise minimisation during pick up and drop off periods	Appropriate ratio/supervision control to ensure educators can tend to children as necessary	The Behaviour Management Policy will guide educators to monitor and manage children's behaviours
The Employee Induction Procedure will include noise management training	Minimise the time that different age groups are combined together	Include interactive, focused learning experiences outdoors to encourage calm + quiet play
Noise complaint contact for community communication	Consistently provide interactive, focused learning experiences	Stagger the periods of outdoor play for different groups
Obtain noise absorbing furnishings such as rugs, mats, cushions, lounges, arm chairs, etc.	Provide rest, relaxation and quiet reading areas as part of the environment	Plan gross motor + physical activity as sessions for controlled timing
Include an abundance of foliage + natural elements to absorb outdoor noise + provide focused areas for children, e.g. sand, shrubs, timber	Provide meditation, yoga + reflection time as part of the daily routine learning experiences	The Supervision Policy will nominate zones for educators to be responsible for and monitor behaviours + noise
Consideration of the general routine to ensure that limited noise is generated at times where surrounding residents and tenants occupy their homes before and after work/study, etc., e.g. early morning, late evening		

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Child & Family Complaint / Grievance Form
Centre: _____

Name of child	
Name of parent/s	
Date and time of concern	
Matter of concern	
Staff addressed	

Tick Appropriate box:

☐ **Not notifiable, Documented Grievance** – Resolve internally with assistance from management

☐ **Notification of Complaint**
Complete ACECQA form via NQA IT System; Investigate, document & resolve with assistance from management and authorities if applicable

☐ **Notification of Incident**
Complete ACECQA form via NQA IT System; Investigate, document & resolve with assistance from management and authorities if applicable

Parent 1 Sign: _____ **Date:** _____

Parent 2 Sign: _____ **Date:** _____

Nominated Supervisor Name: _____

Nominated Supervisor Sign: _____ **Date:** _____

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Follow Up Action & Conclusion

Follow Up / Action taken	
Conclusion	Oz Education Witness that has enforced the action and concluded case: Name: _____ Position: _____ Signature: _____ Date: _____

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Grievance + Complaint Register

Date	Person Reporting	Concern	Person Recording

As the register is filling, identify any trends occurring where we can determine risks or hazards causing recurring or similar incidents/accidents.

Complete risk assessments and hazard identification forms as necessary.

Policies and Procedures

Across the organisation, policies guide all stakeholders to adhere to legal, regulatory, educational, health, safety, wellbeing and best practice expectations. The following policies document the procedures we take to guide and manage the abovementioned.

Regulation 168 Required Policies

Acceptance and Refusal of Authorisations Policy
Administration of First Aid Policy
Behaviour Policy (as part of Interactions with Children, Behaviours & Relationships)
Biting Policy (as part of Interactions with Children, Behaviours & Relationships)
Bottle Preparation Policy (as part of Nutrition, Food. Beverages, and Dietary Requirements)
Bullying Policy (as part of Interactions with Children, Behaviours & Relationships)
Cleaning & Maintenance of Premise, Equipment & Furniture
Code of Conduct Policy
Complaint & Grievance Policy – Child, Family & Service
Complaint & Grievance Policy – Educators
Delivery & Collection of Children Policy
Determining the Nominated Supervisor & Responsible Person Policy
Emergency Management, Evacuation & Lockdown Policy + Evacuation Written Procedure
Enrolment Policy
Excursion Policy
Fee Policy
Fever & Emergency Paracetamol Policy (as part of Incident, Injury, Trauma and Illness)
Governance & Management Policy
Incident, Injury, Trauma & Illness Policy
Infectious Diseases Policy
Interactions with Children Policy
Late Collection of Children Policy (as part of Delivery & Collection)
Medical Conditions Policy + Medical Management Package
Nutrition, Food, Beverages, Dietary Requirements & Food Handling Policy
Orientation Policy
Providing a Child Safe Environment Policy
Sleep, Rest & Relaxation Policy
Staffing Arrangements Policy
Sun Protection SunSmart Policy
Tobacco, Alcohol and Illicit Drug Free Environment Policy
Visitor Policy + Handbook
Water Safety & Water-Based Activities Policy

Additional Organisational Policies

Additional Needs Policy
Appraisal Policy
Birthday Celebration Policy
Child Protection Policy
Clothing Policy
Code of Ethics Policy
Company Expectations Policy
Concierge Service Policy
Emergency Service Contact Policy
Handwashing Policy
Inclusion Policy (Including Priority of Access Guidelines)
Manual Handling & Back Care Policy
Medication Policy (Including Emergency Administration of Medication)
Nappy change (Including Toilet Training) Policy
Physical Activity Policy
Sanitising our Kitchen Policy
Simulated Outdoor Environment (Tuggerah ONLY)
Social Media/Networking Policy
Supervision Policy
Technology Usage Policy
Transition Policy

General Curriculum

Planning for an educational program occurs after documenting, assessing and evaluating children's learning. The creation of the educational program is child focused and is based around working toward each Learning Outcome of the Early Years Learning Framework (EYLF) for each child.

Preschool Program

Our Oz Education Advantage Preschool Program provides play-based learning experiences where children are active participants. We also include structured lessons to accompany our Oz Education Advantage Preschool Folder and annual Preschool Timetable of letters and numbers.

Provisions

Included in Oz Education's fees are the following provisions:

- 4 freshly prepared meals, including morning tea, lunch, afternoon tea and late snack
- Health assessments, including on-site dental, eyesight and hearing evaluations
- Nappies and bed linen
- Weekly extra-curricular physical activity + fitness sessions, by trained coaches
- Online app based updates on meals, sleep + rest, and learning experiences
- Interactive online access for Preschoolers to Reading Eggs + Mathseeds (digital literacy and numeracy lessons)

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Sample Menu

MENU WEEK 1

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning tea	Fresh Seasonal Fruits Assorted Cereals Lite Milk or Water	Fresh Seasonal Fruits Wholemeal Toast Lite Milk or Water	Fresh Seasonal Fruits Corn Cakes with Cream Cheese Spread Lite Milk or Water	Fresh Seasonal Fruits Cheese Toasties Lite Milk or Water	Fresh Seasonal Fruits Vanilla Yoghurt Lite Milk or Water
Lunch	Beef Lamb Sausages Served with Garden Salad & Buttered Bread Fresh Apple Wedges	Sweet Lamb Curry Served with Steamed Rice (Peas, Onions, Carrot & Capsicum) Fresh Apple Wedges	Cheesy Pumpkin & Broccoli Pasta (Onion, Peas, Corn & Capsicum) Fresh Orange Wedges	Chicken Stir-fry Noodles (Corn, Onion, Cabbage, Carrot, Beans & Peas) Fresh Orange Wedges	Beef Bolognaise with Penne Pasta & Grated Cheese (Carrot, Onion, Celery, Zucchini, Tomato) Fresh Apple Wedges
Alternative	Chicken / Vegetarian Sausages Served with Garden Salad & Buttered Bread Fresh Orange Wedges	Sweet Tofu Curry Served with Steamed Rice (Peas, Onion, Carrot & Capsicum) Fresh Orange Wedges	As Above Fresh Orange Wedges	Vegetable Stir-fry Noodles (Corn, Onions, Cabbage, Carrot, Beans & Peas) Fresh Orange Wedges	Mixed Bean Vegetable Bolognaise with Penne Pasta Fresh Orange Wedges
Afternoon tea	Carrot & Cucumber Sticks Served with Lebanese Crisps & Homemade Hommus Dip 	Cucumber & Celery Sticks with Vanilla Yoghurt 	Carrot & Cucumber Sticks with Banana Pancakes 	Carrot & Celery Sticks Corn Cakes with Cheese Spread 	Carrot & Cucumber Sticks Scones with Jam
Late snacks	Cheese Sticks Light Jatz Crackers	Multigrain Corn Cakes with Cream Cheese	Dried Apricots Light Jatz Crackers	Carrot & Cucumber Sticks With Sultanas	Water Cracker with Cheese Sticks

Water offered all day

Milk offered during morning tea

UPDATED January 2020

Under 2 years old are served all full cream products & all meals are mashed or in small bite sized pieces.

Oz Education Early Learning Centres
Learning Today, Leading Tomorrow
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123 Epsom Road, Chipping Norton
Traffic Impact Assessment

Prepared for:

Agathon Concepts

15 April 2024

The Transport Planning Partnership

ttpp transport planning

123 Epsom Road, Chipping Norton
Traffic Impact Assessment

Client: Agathon Concepts

Version: V05

Date: 15 April 2024

TTPP Reference: 22539

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	15/03/2023	Ashwini Uthishtran	Ken Hollyoak	Ken Hollyoak	DRAFT
V02	28/09/2023	Ashwini Uthishtran	Ken Hollyoak	Ken Hollyoak	DRAFT
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V04	7/11/2023	Ashwini Uthishtran	Ken Hollyoak	Ken Hollyoak	FINAL
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APPENDICES

A. ARCHITECTURAL PLANS
B. SWEPT PATHS
C. SIDRA RESULTS

1 Introduction

1.1 Project Overview

This Traffic Impact Assessment (TIA) report relates to a proposed childcare at 123 Epsom Road, Chipping Norton.

A Development Application (DA) is to be lodged with Liverpool City Council seeking approval for the demolition of the existing residential dwelling and construction of a childcare to accommodate 120 children.

The Transport Planning Partnership (TTPP) has prepared this TIA report on behalf of Agathon Concepts to accompany the DA.

1.2 Report Structure

This report assesses the traffic and parking implications of the proposed development and is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the subject site
- Chapter 3 provides a brief description of the proposed development
- Chapter 4 examines the traffic generation and its impact
- Chapter 5 assesses the proposed on-site parking provision, and
- Chapter 6 discusses the conclusions of the assessment.

Liverpool City Council has reviewed the Development Application (DA-629/2023) and requested additional information. The comments relating to traffic has been presented in Table 1.1.

Table 1.1: Liverpool City Council Comments

Liverpool City Council Comments	TTPP Response
4.The SEE is unclear regarding the total number of staff onsite at any one time. Pages 13-14 reference a total of 19 staff to be employed, however page 2 states there may be admin or cooking staff. The SEE must accurately detail the total number of staff proposed within the operational details (including any administration, chef's etc). Note: This discrepancy is also noted in the Traffic Impact Assessment and the Social Impact Assessment which only references 19 staff at any one time. Should the proposed development incorporate more than 19 staff including admin, chefs etc, this must be clearly and accurately detailed in all accompanying reports for Council to assess.	Based on experience, chefs and most admin work from 10am-2pm so they are able to use the vacant pick up and drop off car spaces. This would be covered in the Plan of Management for the site. Nonetheless, 21 staff car parking spaces is sufficient to accommodate the required carers (19) and any admin or cooking staff. See Section 4.1.

17. Additional swept paths shall be provided for the basement car parking and particularly car spaces 11, 12 and 13. The applicant shall provide swept paths which demonstrate vehicle manoeuvrability entering and exiting car parking spaces within the basement.	Additional swept paths have been undertaken. See Appendix B. It's noted that swept path into spaces 11, 12 and 13 require the vehicle to traverse on to the pedestrian path. As these are staff spaces, the Plan of Management for the site is to specify that these spaces be occupied or vacated outside of pick up/ drop off periods, such that the pedestrian path is not affected during its use.
23. Based on the strategic concept prepared for the future upgrade of the intersection of Governor Macquarie Drive and Epsom Road, it appears that the subject land at DP 602936 will be impacted (approximately 5m encroachment at the corner of the block). However, the design still can be updated at the later design stage. The applicant is to be made aware of this and design their development accordingly.	Noted. The layout will need to account for the future upgrade.
34. Where the public domain (i.e., footpath) and vehicle driveways intersect treatments such as changes in materials & colour, elevation (i.e., raised thresholds) and/or line marking, and signage (consult your traffic engineer) should be incorporated into the proposal to support the priority of the pedestrian and/or cyclist within the public domain. See the example image below. 	This arrangement is satisfactory as long as it doesn't affect the drainage. This can be further detailed as part of the detailed design/ construction certification.

2 Existing Conditions

2.1 Site Description

The subject site is located at 123 Epsom Road, Chipping Norton and is within the Liverpool City Council local government area. The site area is bound by Governor Macquarie Drive to the north, Epsom Road to the east and residential dwellings to the west and south.

The site is currently occupied by a residential dwelling which has a vehicle driveway off Epsom Road.

Figure 2.1 shows the subject site location and its surrounds.

Figure 2.1: Site Location

2.2 Surrounding Road Network

A brief description of the roads surrounding the site is presented below.

Governor Macquarie Drive is a two-way, two-lane classified Regional Road. It links Newbridge Road to the south and Hume Highway to the north. It has a posted speed limit of 60 km/h and intersects Epsom Road at a roundabout junction with two lanes on each approach.

Epsom Road is a two-way local road with a general north to south alignment. It is configured with two travel lanes and kerbside parking lane on both sides of the road. A speed limit of 40 km/h applies on Epsom Road approximately 15m south of the subject site. The road has a carriageway width of approximately 12m.

2.3 Public Transport

The subject site is located about 1.9 km from Warwick Farm Railway Station. This station is serviced by T2 (Inner West & Leppington), T3 (Bankstown) and T5 (Cumberland) lines.

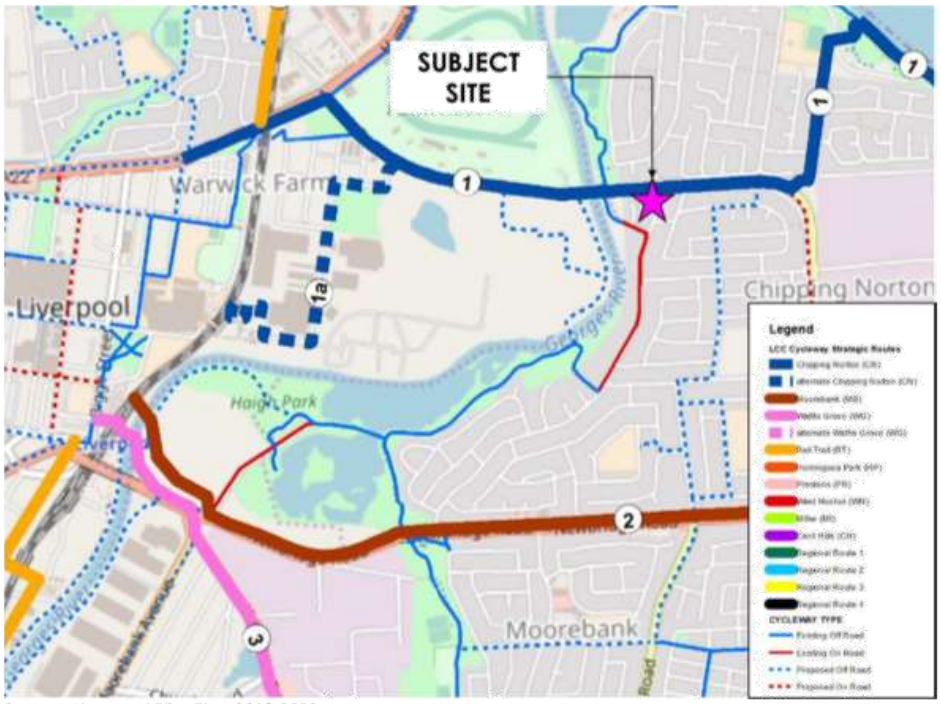
The closest bus stop is located on Epsom Road approximately 100 m south of the site. The bus stop is serviced by bus route 903 which is a loop service between Liverpool and Chipping Norton. During peak periods, the service frequency is every 35 minutes. Bus services run once every hour on Saturday and once every two hours on Sunday.

2.4 Pedestrian and Cyclist Infrastructure

Footpaths are present along both sides of Epsom Road and some sections of Governor Macquarie Drive. Footpaths are sealed with a minimum width of 1.2m, and provide good connectivity to the nearby bus stop on Epsom Road.

On-road cycleways are present south of the site along Epsom Road. The existing cycling facilities surrounding the site are presented in Figure 2.2.

Figure 2.2: Existing Cycling Facilities



Source: Liverpool Bike Plan 2018-2023

2.5 Traffic Volumes

TTPP commissioned traffic surveys on Tuesday, 28 February 2023 between the hours of 7:00am – 10:00am and 3:00pm – 7:00pm. The survey included counts of vehicle turning movements at the intersection of Governor Macquarie Drive and Epsom Road.

The peak hours with the highest number of overall vehicle movements were recorded as occurring at 7:45am – 8:45am in the morning period and 4:30pm – 5:30pm in the evening period.

The turning volumes during these periods are presented in Figure 2.3 and Figure 2.4.

Figure 2.3: Existing AM Peak

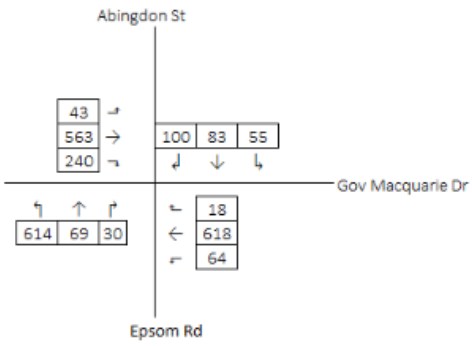
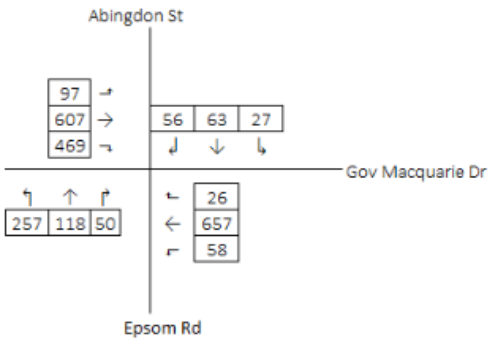


Figure 2.4: Existing PM Peak



3 Proposed Development

3.1 Proposal Description

A Development Application is to be submitted to Liverpool City Council (Council) for the proposed development at 123 Epsom Road, Chipping Norton.

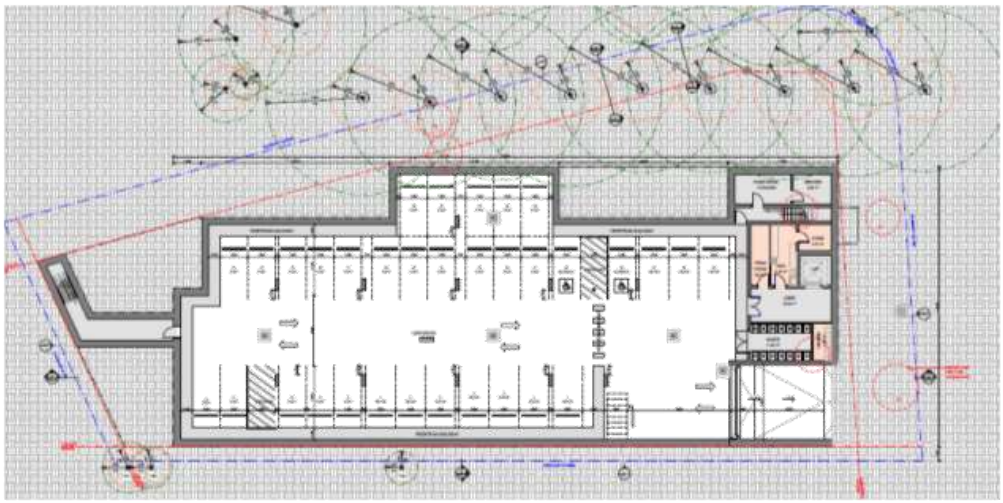
The proposed development would comprise of a new 120-place childcare centre.

The site is proposed to be accessed via a new driveway on Epsom Road which only permits left-in and left-out movements. The existing driveway on Epsom Road is to be reinstated as kerb and gutter.

The site layout for the proposed development is shown in Figure 3.1 and Figure 3.2 with full architectural plans provided in Appendix A.

Figure 3.1: Ground Floor Layout

Figure 3.2: Basement Layout



4 Parking Assessment

4.1 DCP Car Parking Requirements

The Liverpool City Council Development Control Plan (DCP) stipulates off-street car parking rates for new developments within its LGA.

Car parking provisions for the proposed development have been calculated in accordance with the DCP parking rates shown in Table 4.1.

Table 4.1: Car Parking Requirement

Parking Type	Size	DCP Parking Requirement	Minimum Parking Requirement	Parking Provision
Staff	19 Staff	1 space per staff and 1 space per 10 children	19	21
Visitor	120 Children	(stack parking space of employee cars maximum 2 deep, will be considered if there is good design for flow-through of short term car parking) Pick up and set down of children must address their safety	12	12
Total			**31**	**33**

As shown in Table 4.1, the DCP requires 31 spaces to be provided. It is proposed to provide 33 spaces which satisfies the DCP requirement. The breakdown includes 12 visitor car parking spaces and 21 staff car parking spaces which provides for the required carers (19) and any admin or cooking staff.

Some staff spaces have been provided as stacked parking spaces (2 cars deep), which is acceptable according to the DCP.

As part of the plan of management for the site, long shift staff that arrive first will occupy the tandem spaces before the spaces in front are used. Staff that are on-site for a short shift or are leaving early will use the front spaces.

4.2 Accessible Parking

Council's DCP states that accessible parking should be provided at the rate of 2 accessible spaces per 100 spaces for community, recreation, accommodation or education land uses.

Therefore, for the provision of 33 car spaces, it is required to provide 2 accessible spaces.

It is proposed to provide 2 accessible spaces which satisfies the DCP requirements.

4.3 Bicycle Parking

The DCP states that bicycle parking should be provided at the rates shown in Table 4.2.

Table 4.2: Bicycle Parking Requirements

Parking Type	Size	DCP Parking Requirement	Minimum Parking Requirement	Parking Provision
Employee	19	1 per 10 staff	2	4
Visitor	-	2 per centre	2	4
Total			**4**	**8**

As shown in Table 4.2, the DCP requires a total of 4 bicycle parking spaces to be provided.

It is proposed to provide 8 bicycle spaces which satisfies the DCP requirement.

4.4 End-of-Trip Facilities

The DCP states that end-of-trip facilities should be provided at the rates provided in Table 4.3.

Table 4.3: End-of-Trip Facilities

Type	Size	DCP Parking Requirement	Requirement	Provision
Shower and change room	2 spaces	1 per 10 employee bicycle spaces	1	1
Personal Locker		At least one personal locker is to be provided for each Class 1 or 2 (employee) bicycle parking space	4	4

As shown in Table 4.3, 1 shower and change room and 4 personal lockers must be provided.

It is proposed to provide 1 shower and change room and 4 personal lockers, which satisfies the DCP requirements.

4.5 Loading and Waste Collection

The DCP requires that the site has service facilities for a van. It is proposed to accommodate this requirement on site.

These deliveries will occur after 9:30am and before 2:30pm which will not disrupt the operation of the childcare use.

Loading/servicing and waste collection is to be undertaken outside of peak children pick up/ drop off periods when the on-site visitor parking would be largely vacant. This arrangement has been approved and is operational on other childcare sites. It is therefore considered

acceptable. Service and waste vehicles will be directed to visitor parking spaces 31 to 33, which are closest to the lift and waste collection area.

The dimensions of the Waste Wise mini rear-loader to be used for waste collection is shown in Table 4.4.

Table 4.4: Waste Collection Vehicle Dimensions

	Vehicle Type	Length	Width	Height	Operating Clearance	Turning Circle	Payload
Waste Wise	Mini Rear-Loader	6.5m	1.7m	2.08m	2.08m	13m	5t

4.6 Car Park Layout

The car park layout has been reviewed against the requirements of the Australian Standards for Off-Street Car Parking (AS2890.1:2004). The Australian Standard requires car parking spaces to be provided according to its use. Employee parking is to be provided as Class 1A parking spaces and visitor parking is to be provided as Class 3 parking spaces.

Table 4.5 summarises the minimum dimensions required for the parking spaces in the proposed development.

Table 4.5: Car Parking Dimensions

Uses	Class	Width	Length	Aisle Width
Staff	1A	2.4m	5.4m	5.8m
Visitors	3	2.6m	5.4m	5.8m

The proposed car park layout complies with the above minimum requirements. Hence, the proposed car parking layout is satisfactory.

The accessible space is designed as 2.4m by 5.4m, with a shared area adjacent to the parking space. The shared area would contain a bollard to prevent vehicles parking in the space. The design of the accessible space and shared area are compliant with AS 2890.6:2009.

Bike spaces are designed in accordance with the Australian Standard for Bicycle Parking AS2890.3 (2015).

The swept path assessment is provided in Appendix B.

In summary, the car park and associated elements complies with the design requirements set out in the Australian Standards.

5 Traffic Assessment

5.1 Existing Development Traffic Generation

The RMS Technical Direction TDT2013/04a has been the source for determining the traffic generation associated with the existing site.

There is currently a single dwelling house at the subject site. Based on the RMS trip rates for low-density dwellings in regional areas, the existing dwelling is estimated to generate 0.95 vehicle trips in the AM peak and 0.99 trips in the PM peak periods. For the purpose of this assessment, each trip has been rounded to one trip per peak period.

5.2 Proposed Development Traffic Generation

Transport for New South Wales (TfNSW, formerly RMS) provide traffic generation rates for different land uses in the *Guide to Traffic Generating Developments* (2002).

Based on the Guide, the traffic generation rates for a childcare centre are as follows:

- AM Peak: 0.8 vehicle trips per child
- PM Peak: 0.7 vehicle trips per child.

A summary of the traffic generation of the proposed development is presented in Table 5.1.

Table 5.1: Traffic Generation of Proposed Development

Land Use	Size	Trip Rate		TfNSW Trip Generation	
		AM Peak	PM Peak	AM Peak	PM Peak
Childcare Centre	120 children	0.8 vehicle trips per child	0.7 vehicle trips per child	96	84

As the existing traffic generation is low, it has not been subtracted from the proposed development traffic generation.

5.3 Trip Distribution

The trip distribution for the childcare centre in the peak periods has been assumed as an even split between inbound and outbound trips, that is:

- Inbound Trips: 50% of total trip generation
- Outbound Trips: 50% of total trip generation.

Additionally, the trip distribution of development traffic to the road network has been based on existing vehicle movement proportions.

The distribution of development traffic is shown in Figure 5.1 and Figure 5.2.

Figure 5.1: Development Traffic AM Peak

Figure 5.2: Development Traffic PM Peak

5.4 Traffic Modelling

5.4.1 Level of Service Criteria

TfNSW uses level of service as a performance measure to indicate the operating efficiency of a given intersection. The level of service ranges from A to F. Levels of service between A and D indicate the intersection is operating within capacity, with LoS A providing exceptionally good performance to LoS D indicating satisfactory performance. LoS E and F indicate the intersection is operating at or near capacity and generally would require intersection improvement works to maintain reasonable performance.

The level of service is directly related to the average delay experienced by vehicles travelling through the intersection. At signalised intersections, the average delay is the volume weighted average delay over all movements. For roundabouts and priority (give way and stop sign) controlled intersections, the average delay relates to the movement with the highest average delay per vehicle.

Table 5.2 shows the criteria that TfNSW adopts in assessing the level of service at intersections.

Table 5.2: Intersection Level of Service Criteria

Level of Service (LoS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity; at signals incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode.
F	Greater than 70	Unsatisfactory, requires additional capacity	Unsatisfactory, requires other control mode or major treatment

5.4.2 Scenarios

The intersection of Governor Macquarie Drive and Epsom Road has been assessed using SIDRA Intersection, an industry-standard software package that analyses the operating characteristics of intersections. The following scenarios have been assessed:

- Scenario 1 – Existing Conditions (2023)
- Scenario 2 – Scenario 1 plus Development Traffic (2023)

5.4.3 Modelling Results

The SIDRA results for the existing conditions and the post development scenarios are presented in Table 5.3 with full results contained in Appendix C.

Table 5.3: SIDRA Modelling Results (Governor Macquarie Drive-Epsom Road)

Scenarios	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Existing Condition (Scenario 1)	33	C	30	C
Post Development (Scenario 2)	44	D	36	C

Table 5.3 indicates that the intersection between Governor Macquarie Drive and Epsom Road operates at a level of service C during both the AM peak and PM peak.

In the post-development scenario, this intersection would operate at LoS D in the AM peak and LoS C in the PM peak. This is considered acceptable and indicates that the additional development-generated traffic is expected to have a minor impact on the road network.

6 Conclusion

This report examines the traffic and parking implications of a proposed childcare centre at 123 Epsom Road, Chipping Norton. The key findings of this report are presented below:

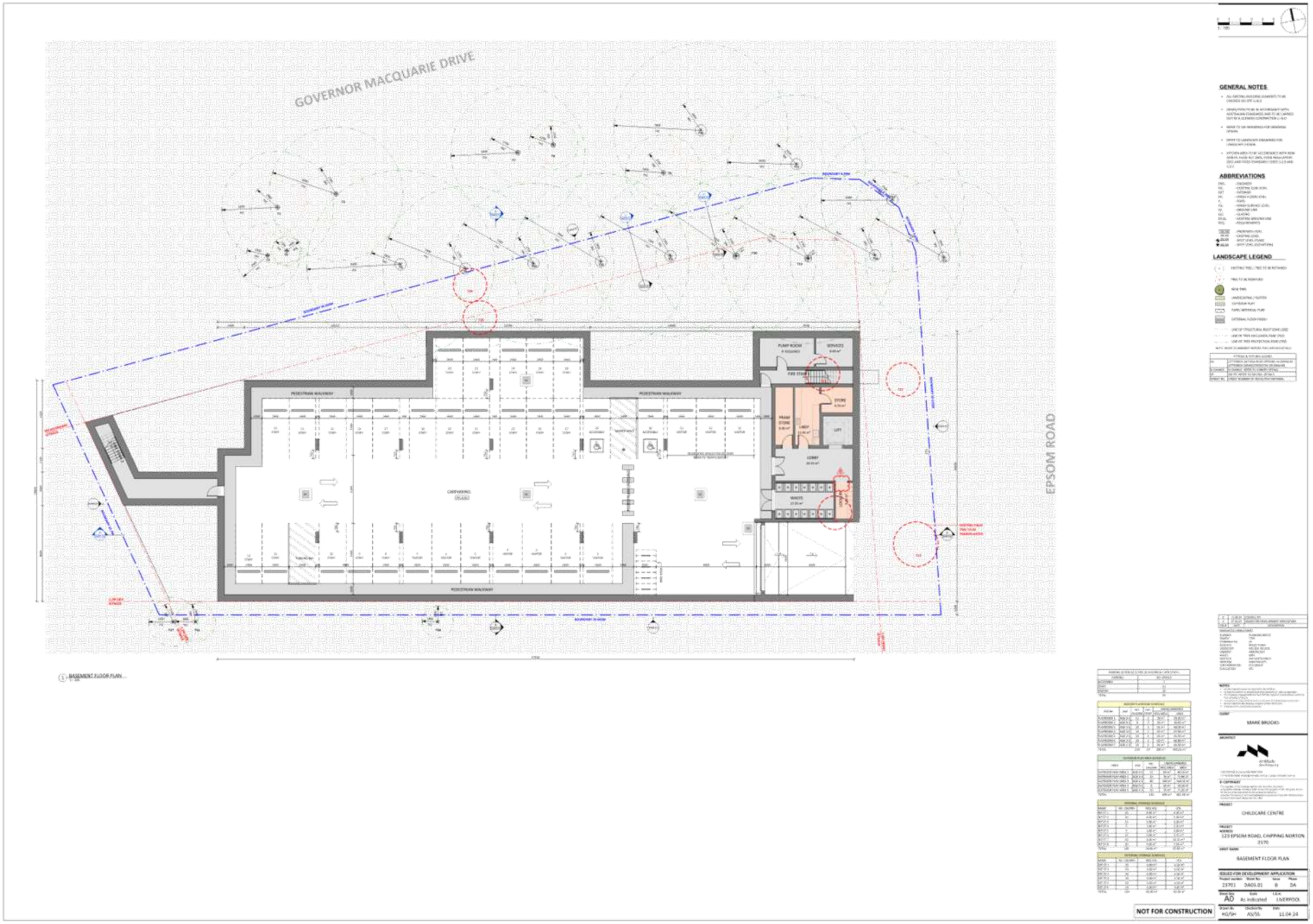
- The proposed development involves the demolition of the existing residential dwelling and construction of a childcare to accommodate 120 children.
- The proposed development requires 31 car spaces in accordance with the DCP. It is proposed to comply with this requirement and provide 33 car spaces.
- The proposed childcare is estimated to generate approximately 96 trips in the AM peak period and 84 trips in the PM peak period, which is approximately 1-2 trips per minute.
- The SIDRA Intersection modelling results indicate that the Governor Macquarie Drive-Epsom Road intersection adjacent to the subject site would operate at level of service C during both road network peak periods in the existing scenario. The intersection would operate at LoS D in the AM peak and LoS C in the PM peak in the post-development scenarios which is considered acceptable.

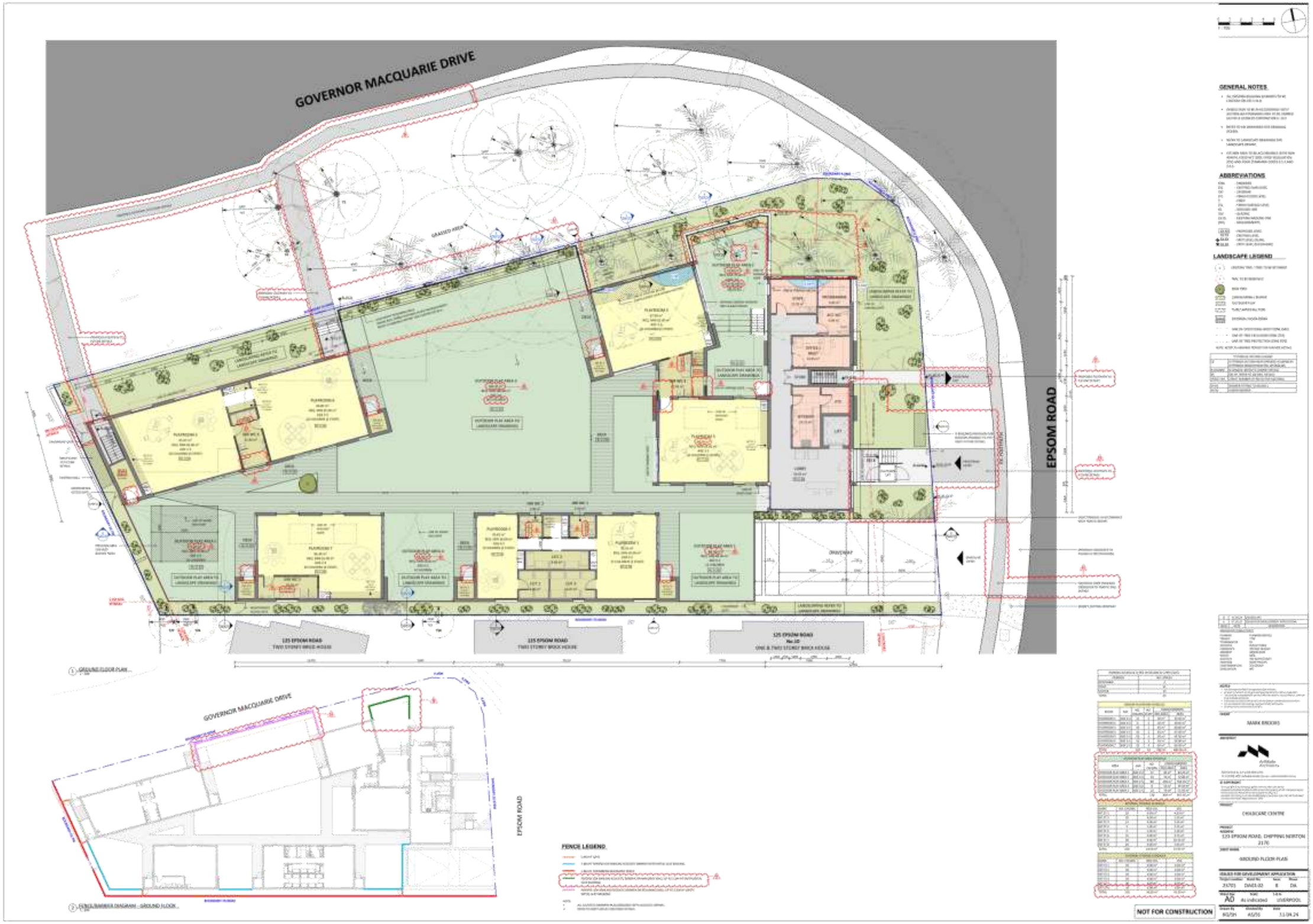
In summary, the proposed development is not expected to have an adverse impact on the local road network.

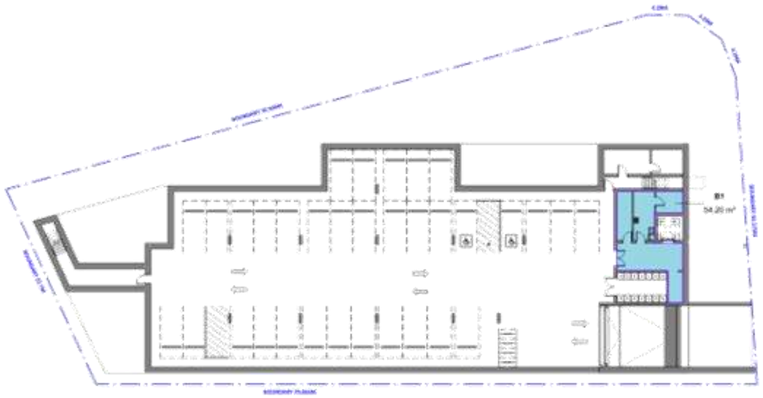
Appendix A

Architectural Plans

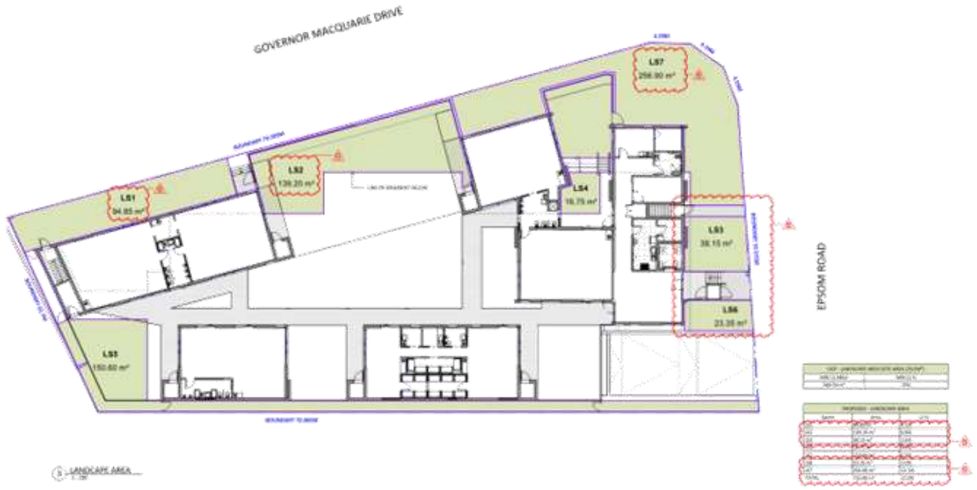
GOVERNOR MACQUARIE DRIVE
EPSOM ROAD
123 EPSOM RD CHIPPING NORTON
PROPOSED CHILDCARE CENTRE
LOT 3 DP602936
AREA 2322 (DEED)
125 EPSOM ROAD
TWO STOREY BRICK HOUSE
125 EPSOM ROAD
TWO STOREY BRICK HOUSE
125 EPSOM ROAD
No.10
ONE & TWO STOREY BRICK HOUSE
OUTDOOR PLAY AREA
COVERED WALKWAY
GRASSED AREA
GENERAL NOTES
ABBREVIATIONS
LANDSCAPE LEGEND
MARK BROOKS
CHILDCARE CENTRE
123 EPSOM ROAD, CHIPPING NORTON 2170
SITE PLAN
ISSUED FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION


GOVERNOR MACQUARIE DRIVE
EPSOM ROAD
PEDESTRIAN WALKWAY
CHIPPING NORTON
PUMP ROOM
SERVICES
FIRE STAIR
STORE
LIFT
LOBBY
WASTE
GENERAL NOTES
ABBREVIATIONS
LANDSCAPE LEGEND
BASEMENT FLOOR PLAN
MARK BROOKS
CHILDCARE CENTRE
123 EPSOM ROAD, CHIPPING NORTON 2170
BASEMENT FLOOR PLAN
ISSUED FOR DEVELOPMENT APPLICATION
A0
As indicated
NOT FOR CONSTRUCTION

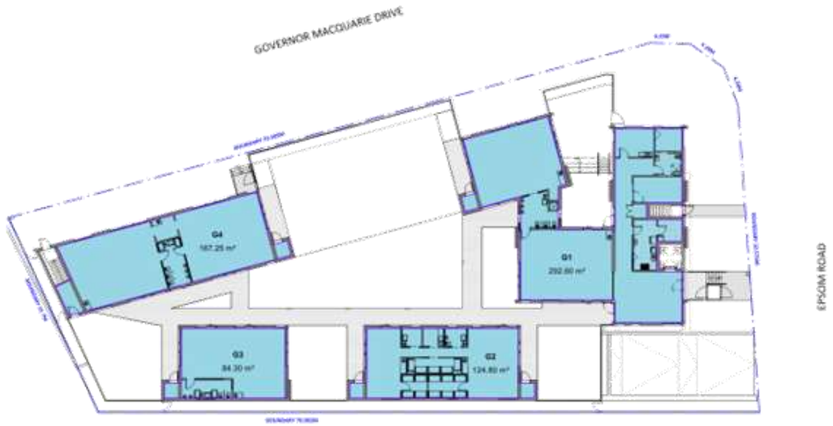

GOVERNOR MACQUARIE DRIVE
EPSOM ROAD
GENERAL NOTES
ABBREVIATIONS
LANDSCAPE LEGEND
GROUND FLOOR PLAN
GOVERNOR MACQUARIE DRIVE
EPSOM ROAD
FENCE LEGEND
FENCE BARRIER DIAGRAM - GROUND FLOOR
MARK BROOKS
CHILDCARE CENTRE
123 EPSOM ROAD, CHIPPING NORTON 2170
GROUND FLOOR PLAN
ISSUED FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION



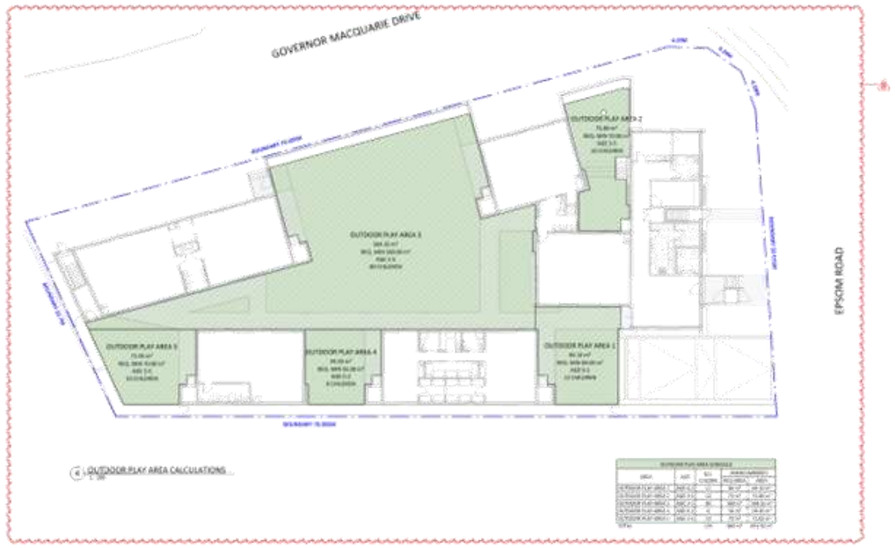
1 GFA - BASEMENT LEVEL



3 LANDCAPE AREA



2 GFA - GROUND FLOOR LEVEL



4 OUTDOOR PLAY AREA CALCULATIONS

1	11.04.24	ISSUED FOR DEVELOPMENT APPLICATION	
A	21.12.23	ISSUED FOR PRELIMINARY APPLICATION	
ISSUE	DATE	DESCRIPTION	

PROJECT DETAILS (CONSULTANT)

CLIENT	MARK BROOKS
ARCHITECT	Architects
PROJECT	CHILDCARE CENTRE
PROJECT ADDRESS	123 EPSOM ROAD, CHIPPING NORTON 2170
SHEET NAME	CALCULATIONS

NOTES

1. FOR DEVELOPMENT APPLICATION PURPOSES ONLY.
2. THE PROPOSED DEVELOPMENT IS SUBJECT TO ASSESSMENT AND APPROVAL BY COUNCIL.
3. THE DEVELOPMENT CONSENT DOCUMENTS MAY REQUIRE CHANGES TO THE PROPOSED DEVELOPMENT.
4. THE DEVELOPMENT CONSENT DOCUMENTS MAY REQUIRE CHANGES TO THE CONSTRUCTION DOCUMENTS.
5. THE CONSULTANT DOCUMENTS MUST NOT BE USED FOR CONSTRUCTION UNTIL THEY ARE ISSUED FOR CONSTRUCTION.
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7. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
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ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA01.03	B	DA

Sheet Size	Scale	L.G.A.
A0	1 : 200	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS/SS	11.04.24

NOT FOR CONSTRUCTION

Appendix B

Swept Paths

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	KH	KH	28/09/23

ttpp transport planning

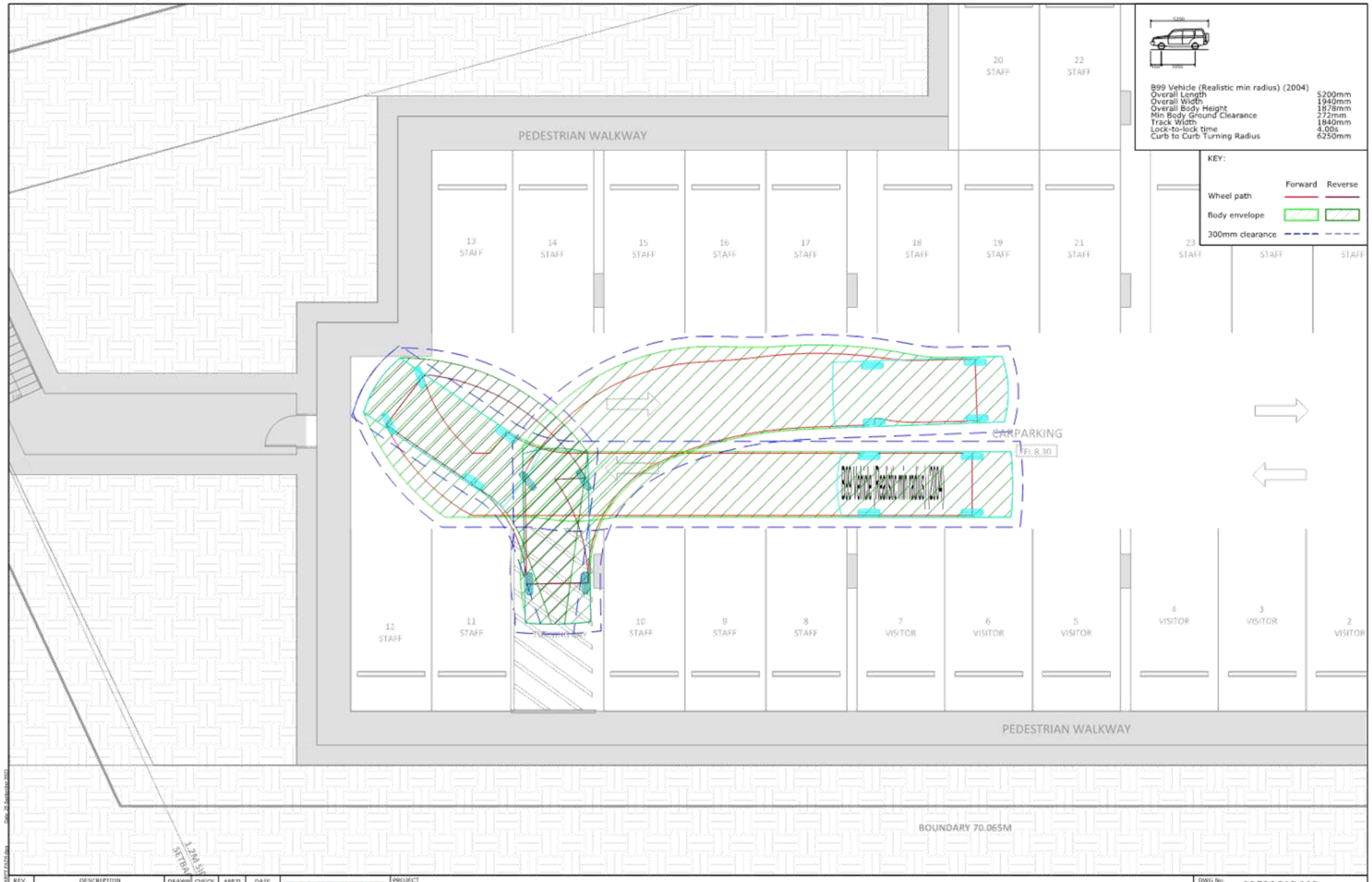
PROJECT: 123 EPSOM ROAD, CHIPPING NORTON

TITLE: SWEPT PATH ANALYSIS
AS2890.1 4.91m B85 VEHICLE & AS2890.1 5.2m B99 VEHICLE - BASEMENT ENTRANCE

DWG No. 22539CAD003
FIGURE 1

DATE STAMP 28 MARCH 2023

PROJECT No. 22539 | SCALE 1:100 @A3 | REV. A



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	KH	KH	28/09/23

ttpp transport planning

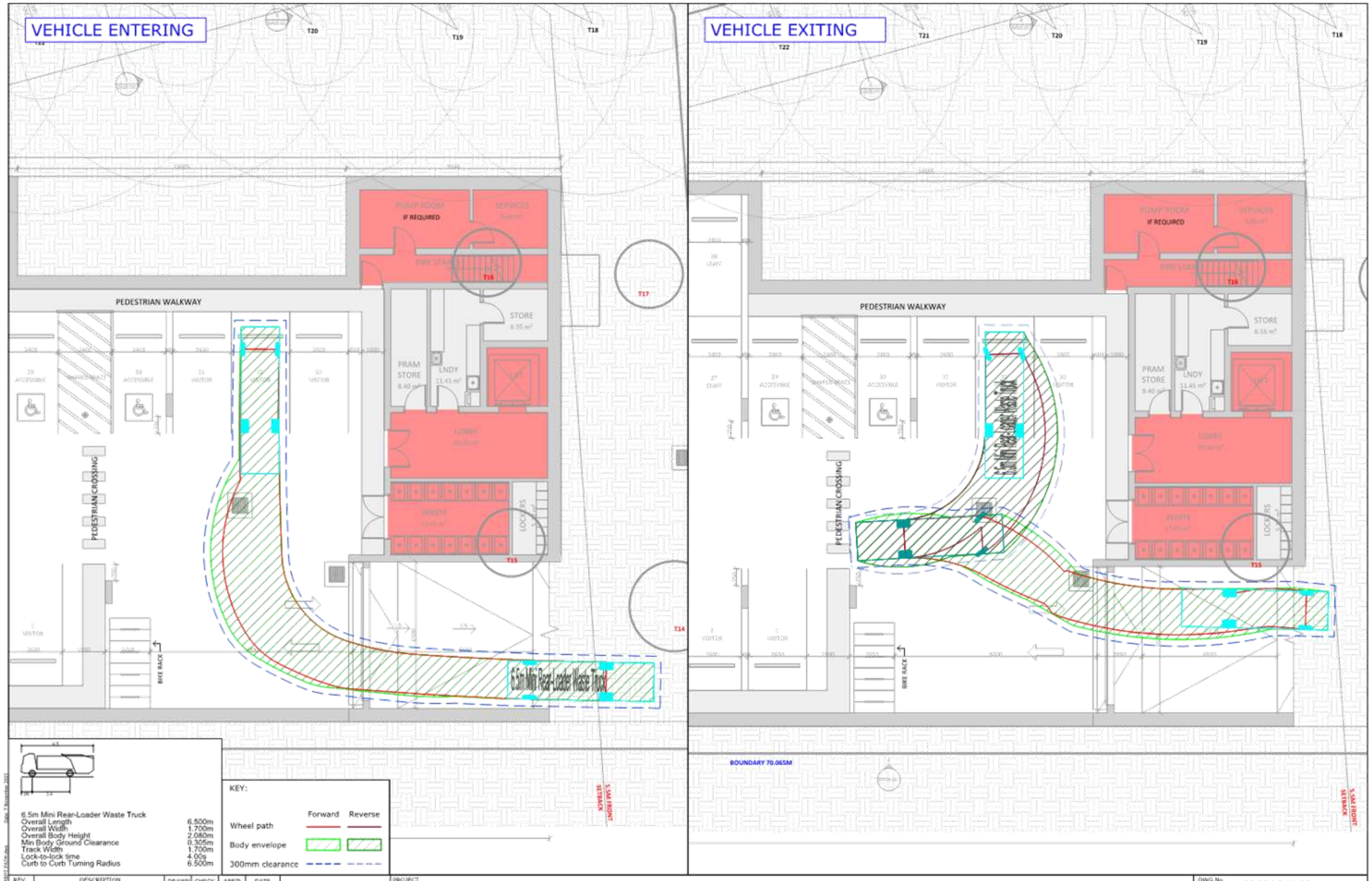
PROJECT: 123 EPSOM ROAD, CHIPPING NORTON

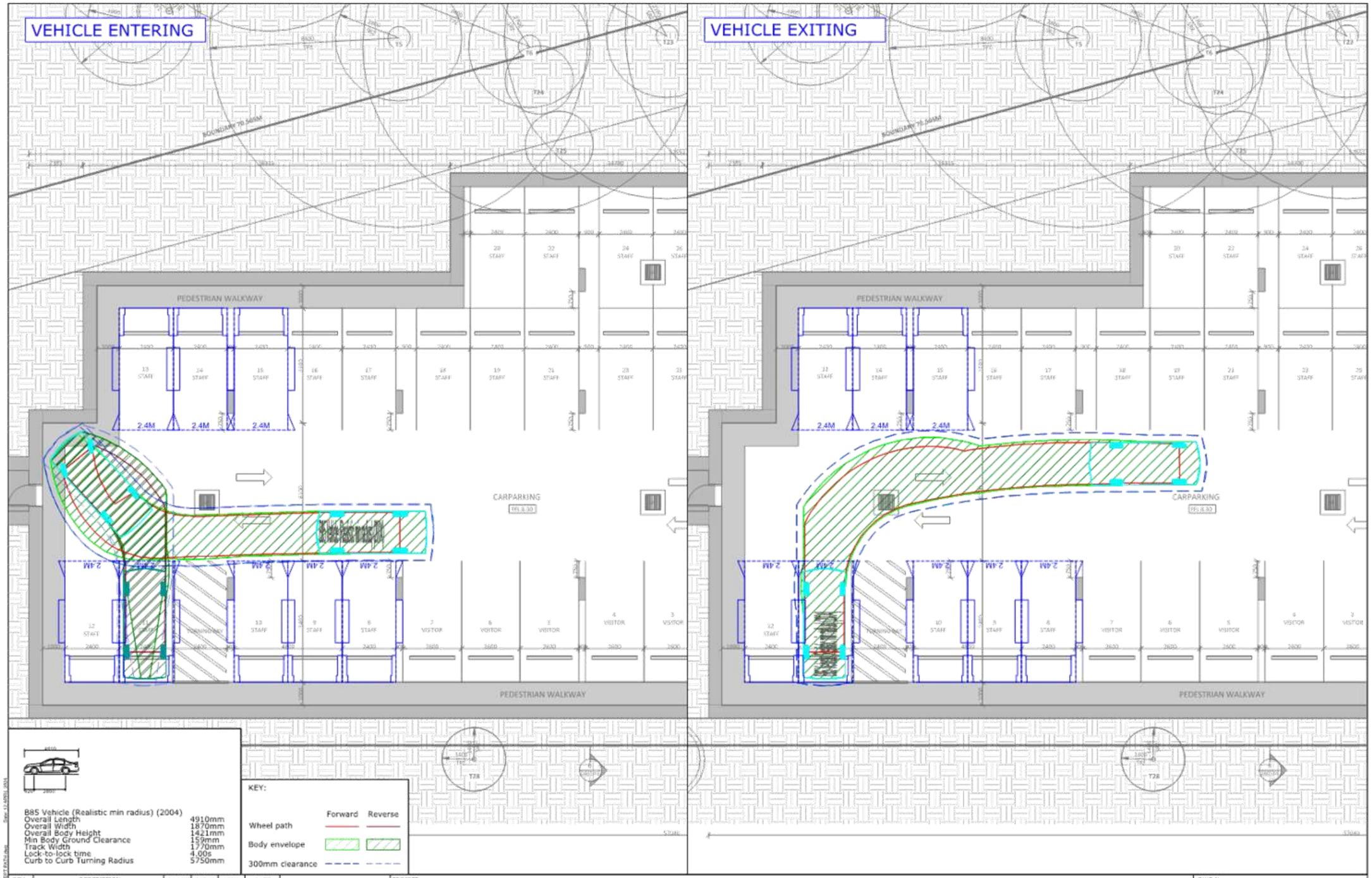
TITLE: SWEPT PATH ANALYSIS
AS2890.1 4.91m B85 VEHICLE & AS2890.1 5.2m B99 VEHICLE - TURNING BAY

DWG No. 22539CAD003 FIGURE 2

DATE STAMP 28 MARCH 2023

PROJECT No.	SCALE	REV.
22539	1:100 @A3	A


VEHICLE ENTERING
VEHICLE EXITING
PEDESTRIAN WALKWAY
PEDESTRIAN CROSSING
BIKE RACK
PUMP ROOM
IF REQUIRED
SERVICES
FIRE STAIR
STORE
PRAM STORE
LNDY
LIFT
LOBBY
WASTE
LOCKERS
6.5m Mini Rear-Loader Waste Truck
BOUNDARY 70.065M
S.SAM FRONT SETBACK
6.5m Mini Rear-Loader Waste Truck
Overall Length 6.500m
Overall Width 1.700m
Overall Body Height 2.080m
Min Body Ground Clearance 0.305m
Track Width 1.700m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 6.500m
KEY:
Forward
Reverse
Wheel path
Body envelope
300mm clearance
REV. DESCRIPTION DRAWN CHECK APP'D DATE
A ISSUE FOR DISCUSSION HT AU KH 07/11/23
ttpp transport planning
PROJECT
123 EPSOM ROAD, CHIPPING NORTON
TITLE
SWEPT PATH ANALYSIS
6.5m MINI REAR-LOADER WASTE TRUCK
DWG No. 22539CAD004
FIGURE 2
DATE STAMP 07 NOVEMBER 2023
PROJECT No. 22539
SCALE 1:150 @A3
REV. A



REV.	DESCRIPTION	DRAWN	CHECK	APPD	DATE
A	ISSUE FOR DISCUSSION	HT	DF	KH	12/04/24

ttpp transport planning

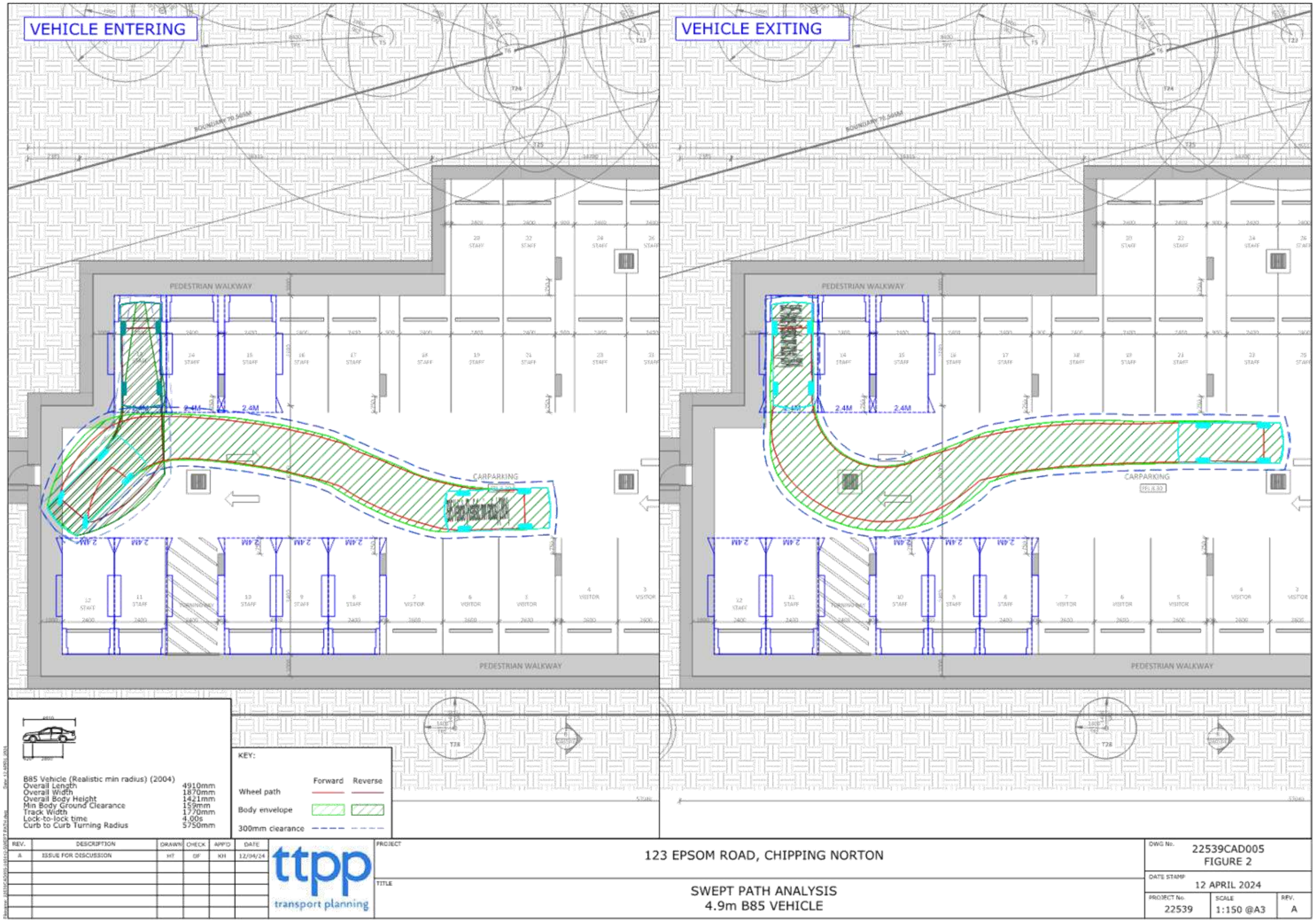
PROJECT: 123 EPSOM ROAD, CHIPPING NORTON

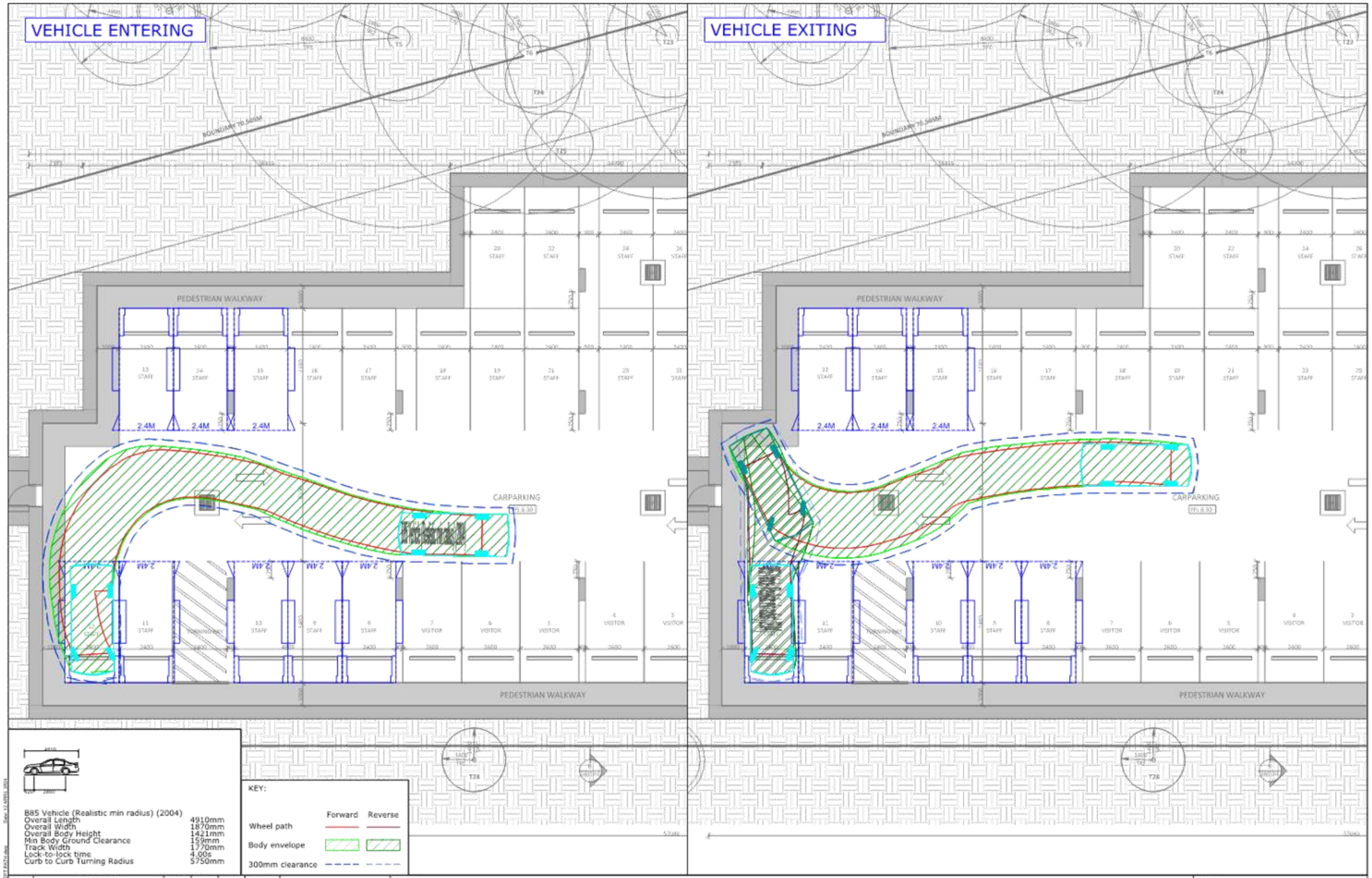
TITLE: SWEPT PATH ANALYSIS
4.9m B85 VEHICLE

DWG No. 22539CAD005
FIGURE 1

DATE STAMP 12 APRIL 2024

PROJECT No.	SCALE	REV.
22539	1:150 @A3	A


VEHICLE ENTERING
VEHICLE EXITING
PEDESTRIAN WALKWAY
CARPARKING
2.4M
B85 Vehicle (Realistic min radius) (2004)
Overall Length 4910mm
Overall Width 1870mm
Overall Body Height 1421mm
Min Body Ground Clearance 159mm
Track Width 1770mm
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 5750mm
KEY:
Forward
Reverse
Wheel path
Body envelope
300mm clearance
REV.
DESCRIPTION
DRAWN
CHECK
APPD
DATE
A
ISSUE FOR DISCUSSION
HT
DF
KH
12/04/24
ttpp
transport planning
PROJECT
123 EPSOM ROAD, CHIPPING NORTON
TITLE
SWEPT PATH ANALYSIS
4.9m B85 VEHICLE
DWG No.
22539CAD005
FIGURE 2
DATE STAMP
12 APRIL 2024
PROJECT No.
22539
SCALE
1:150 @A3
REV.
A



REV.	DESCRIPTION	DRAWN	CHECK	APPD	DATE
A	ISSUE FOR DISCUSSION	HT	DF	KH	12/04/24

ttpp transport planning

PROJECT: 123 EPSOM ROAD, CHIPPING NORTON

TITLE: SWEPT PATH ANALYSIS
4.9m B85 VEHICLE

DWG No. 22539CAD005
FIGURE 3

DATE STAMP: 12 APRIL 2024

PROJECT No. 22539 | SCALE 1:150 @A3 | REV. A

Appendix C

SIDRA Results

MOVEMENT SUMMARY

Site: 101 [Gov Macq Dr-Epsom Rd Ex.AM (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Epsom Rd														
1	L2	614	1	646	0.2	0.833	25.7	LOS B	16.8	118.1	1.00	1.32	1.90	41.5
2	T1	69	4	73	5.8	0.205	10.9	LOS A	1.5	10.9	0.90	0.86	0.90	50.2
3	R2	30	1	32	3.3	0.205	15.2	LOS B	1.5	10.9	0.90	0.86	0.90	50.1
Approach		713	6	751	0.8	0.833	23.8	LOS B	16.8	118.1	0.99	1.26	1.76	42.5
East: Governor Macquarie Dr (E)														
4	L2	64	0	67	0.0	0.153	10.8	LOS A	0.8	5.7	0.70	0.78	0.70	50.0
5	T1	618	23	651	3.7	0.819	18.1	LOS B	14.2	102.3	1.00	1.18	1.59	46.4
6	R2	18	0	19	0.0	0.819	22.3	LOS B	14.2	102.3	1.00	1.18	1.59	46.4
Approach		700	23	737	3.3	0.819	17.5	LOS B	14.2	102.3	0.97	1.14	1.51	46.7
North: Abingdon St														
7	L2	55	0	58	0.0	0.390	29.5	LOS C	2.1	14.4	0.88	0.99	1.03	39.7
8	T1	83	4	87	4.8	0.672	29.1	LOS C	5.8	41.5	1.00	1.17	1.48	39.9
9	R2	100	0	105	0.0	0.672	33.0	LOS C	5.8	41.5	1.00	1.17	1.48	39.9
Approach		238	4	251	1.7	0.672	30.9	LOS C	5.8	41.5	0.97	1.12	1.38	39.9
West: Governor Macquarie Dr (W)														
10	L2	43	1	45	2.3	0.078	5.7	LOS A	0.3	2.3	0.34	0.56	0.34	53.6
11	T1	563	31	593	5.5	0.815	7.7	LOS A	14.0	101.6	0.94	0.65	0.97	51.7
12	R2	240	3	253	1.3	0.815	12.0	LOS A	14.0	101.6	0.94	0.65	0.97	51.6
Approach		846	35	891	4.1	0.815	8.8	LOS A	14.0	101.6	0.91	0.65	0.94	51.7
All Vehicles		2497	68	2628	2.7	0.833	17.6	LOS B	16.8	118.1	0.96	1.01	1.37	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Gov Macq Dr-Epsom Rd Ex.PM (Site Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Epsom Rd														
1	L2	257	0	271	0.0	0.580	17.6	LOS B	5.6	39.5	1.00	1.11	1.29	45.7
2	T1	118	0	124	0.0	0.450	15.6	LOS B	3.5	24.6	0.96	1.03	1.10	47.2
3	R2	50	0	53	0.0	0.450	20.1	LOS B	3.5	24.6	0.96	1.03	1.10	47.1
Approach		425	0	447	0.0	0.580	17.4	LOS B	5.6	39.5	0.99	1.08	1.22	46.3
East: Governor Macquarie Dr (E)														
4	L2	58	0	61	0.0	0.117	9.8	LOS A	0.7	5.0	0.77	0.78	0.77	50.7
5	T1	657	18	692	2.7	0.860	23.1	LOS B	17.9	127.9	1.00	1.32	1.89	43.6
6	R2	26	0	27	0.0	0.860	27.4	LOS B	17.9	127.9	1.00	1.32	1.89	43.6
Approach		741	18	780	2.4	0.860	22.2	LOS B	17.9	127.9	0.98	1.28	1.80	44.1
North: Abingdon St														
7	L2	27	0	28	0.0	0.196	25.6	LOS B	1.2	8.1	0.95	0.98	0.95	41.5
8	T1	63	2	66	3.2	0.476	25.7	LOS B	4.1	29.0	1.00	1.07	1.20	41.5
9	R2	56	0	59	0.0	0.476	29.9	LOS C	4.1	29.0	1.00	1.07	1.20	41.5
Approach		146	2	154	1.4	0.476	27.3	LOS B	4.1	29.0	0.99	1.06	1.15	41.5
West: Governor Macquarie Dr (W)														
10	L2	97	0	102	0.0	0.132	6.2	LOS A	0.8	5.6	0.51	0.60	0.51	53.3
11	T1	607	22	639	3.6	0.876	10.3	LOS A	19.8	141.5	1.00	0.78	1.17	50.2
12	R2	469	1	494	0.2	0.876	14.6	LOS B	19.8	141.5	1.00	0.78	1.17	50.2
Approach		1173	23	1235	2.0	0.876	11.7	LOS A	19.8	141.5	0.96	0.76	1.12	50.4
All Vehicles		2485	43	2616	1.7	0.876	16.7	LOS B	19.8	141.5	0.97	0.99	1.34	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Gov Macq Dr-Epsom Rd Fu.AM (Site Folder: Proposed)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Epsom Rd														
1	L2	655	1	689	0.2	0.888	33.2	LOS C	22.0	153.9	1.00	1.49	2.28	38.2
2	T1	74	4	78	5.4	0.219	10.9	LOS A	1.6	11.7	0.90	0.87	0.90	50.2
3	R2	32	1	34	3.1	0.219	15.2	LOS B	1.6	11.7	0.90	0.87	0.90	50.1
Approach		761	6	801	0.8	0.888	30.3	LOS C	22.0	153.9	0.99	1.40	2.09	39.5
East: Governor Macquarie Dr (E)														
4	L2	72	0	76	0.0	0.182	11.6	LOS A	1.0	6.9	0.73	0.82	0.73	49.4
5	T1	618	23	651	3.7	0.865	23.3	LOS B	17.4	125.4	1.00	1.32	1.86	43.5
6	R2	18	0	19	0.0	0.865	27.5	LOS B	17.4	125.4	1.00	1.32	1.86	43.5
Approach		708	23	745	3.2	0.865	22.2	LOS B	17.4	125.4	0.97	1.27	1.75	44.1
North: Abingdon St														
7	L2	55	0	58	0.0	0.441	33.8	LOS C	2.3	16.4	0.90	1.01	1.10	38.0
8	T1	93	4	98	4.3	0.772	39.7	LOS C	7.6	54.0	1.00	1.25	1.72	35.9
9	R2	100	0	105	0.0	0.772	43.6	LOS D	7.6	54.0	1.00	1.25	1.72	35.9
Approach		248	4	261	1.6	0.772	40.0	LOS C	7.6	54.0	0.98	1.19	1.59	36.3
West: Governor Macquarie Dr (W)														
10	L2	43	1	45	2.3	0.079	5.8	LOS A	0.3	2.3	0.36	0.56	0.36	53.6
11	T1	563	31	593	5.5	0.855	9.7	LOS A	17.8	128.7	1.00	0.71	1.09	50.9
12	R2	270	3	284	1.1	0.855	14.0	LOS A	17.8	128.7	1.00	0.71	1.09	50.9
Approach		876	35	922	4.0	0.855	10.8	LOS A	17.8	128.7	0.97	0.70	1.05	51.0
All Vehicles		2593	68	2729	2.6	0.888	22.4	LOS B	22.0	153.9	0.98	1.11	1.60	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Gov Macq Dr-Epsom Rd Fu.PM (Site Folder: Proposed)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Epsom Rd														
1	L2	282	0	297	0.0	0.637	19.8	LOS B	6.7	46.8	1.00	1.15	1.38	44.5
2	T1	130	0	137	0.0	0.495	17.0	LOS B	4.1	28.5	0.98	1.06	1.17	46.5
3	R2	55	0	58	0.0	0.495	21.4	LOS B	4.1	28.5	0.98	1.06	1.17	46.3
Approach		467	0	492	0.0	0.637	19.2	LOS B	6.7	46.8	0.99	1.11	1.30	45.2
East: Governor Macquarie Dr (E)														
4	L2	62	0	65	0.0	0.132	10.3	LOS A	0.8	5.7	0.79	0.80	0.79	50.3
5	T1	657	18	692	2.7	0.902	30.3	LOS C	22.0	157.7	1.00	1.49	2.26	40.2
6	R2	26	0	27	0.0	0.902	34.6	LOS C	22.0	157.7	1.00	1.49	2.26	40.2
Approach		745	18	784	2.4	0.902	28.8	LOS C	22.0	157.7	0.98	1.44	2.14	40.9
North: Abingdon St														
7	L2	27	0	28	0.0	0.211	27.6	LOS B	1.2	8.7	0.96	0.98	0.96	40.6
8	T1	68	2	72	2.9	0.536	32.0	LOS C	4.8	34.1	1.00	1.11	1.30	38.8
9	R2	56	0	59	0.0	0.536	36.2	LOS C	4.8	34.1	1.00	1.11	1.30	38.8
Approach		151	2	159	1.3	0.536	32.8	LOS C	4.8	34.1	0.99	1.09	1.24	39.1
West: Governor Macquarie Dr (W)														
10	L2	97	0	102	0.0	0.135	6.4	LOS A	0.8	5.7	0.53	0.61	0.53	53.2
11	T1	607	22	639	3.6	0.922	14.4	LOS A	27.0	192.6	1.00	0.90	1.36	47.5
12	R2	502	1	528	0.2	0.922	18.7	LOS B	27.0	192.6	1.00	0.90	1.36	47.5
Approach		1206	23	1269	1.9	0.922	15.5	LOS B	27.0	192.6	0.96	0.87	1.29	47.9
All Vehicles		2569	43	2704	1.7	0.922	21.1	LOS B	27.0	192.6	0.98	1.09	1.54	44.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: TTPP - THE TRANSPORT PLANNING PARTNERSHIP | Licence: NETWORK / 1PC | Processed: Wednesday, 15 March 2023 10:48:19 AM
Project: X:\22539 123 Epsom Road, Chipping Norton\07 Modelling Files\Model\22539-123 Epsom Rd-230307.sip9

The Transport Planning Partnership
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St Leonards NSW 2065

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St Leonards NSW 1590

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www.ttpp.net.au

RENZO TONIN & ASSOCIATES
inspired to achieve

Acoustics
Vibration
Structural Dynamics

PROPOSED CHILDCARE CENTRE AT 123 EPSOM ROAD, CHIPPING NORTON

Noise Management Plan

17 April 2024

Artmade Architects

TN427-02F01 Noise Management Plan (r2)

40 YEARS
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Document details

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Attention:	Stephanie Hong

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Reviewed / Authorised
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Important Disclaimers:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian/New Zealand Standard AS/NZS ISO 9001.

This document is issued subject to review and authorisation by the suitably qualified and experienced person named in the last column above. If no name appears, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

External cladding disclaimer: No claims are made and no liability is accepted in respect of any external wall and/or roof systems (eg facade / cladding materials, insulation etc) that are: (a) not compliant with or do not conform to any relevant non-acoustic legislation, regulation, standard, instructions or Building Codes; or (b) installed, applied, specified or utilised in such a manner that is not compliant with or does not conform to any relevant non-acoustic legislation, regulation, standard, instructions or Building Codes.

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1 Introduction

Renzo Tonin & Associates was engaged to prepare a Noise Management Plan for the operation of the proposed Childcare Centre at 123 Epsom Road, Chipping Norton.

An acoustic report (reference: TN427-01F02 Noise Impact Assessment r2, dated 3 November 2023) was submitted with the Development Application for the proposed Childcare Centre at the subject site (DA-629/2023). Following submission of the application, Liverpool City Council have issued a Request of Additional Information letter (dated 14 March 2024) which identifies the Council's requirement for a Noise Management Plan to be prepared or reviewed and certified by a suitably qualified acoustic consultant (ie. consultant who possesses an Australian Acoustical Society membership or is employed by an Association of Australasian Acoustical Consultants member firm). The Noise Management Plan is to address the following items:

1. Identify and implement strategies to minimise noise from the proposed development
2. Approaches for promoting noise awareness by patrons and staff
3. Training procedures
4. A complaint lodgement procedure to ensure that members of the public and local residents are able to report noise issues
5. An ongoing review process and a plan for responding to noise complaints
6. Responsibilities of site personnel in managing noise and include a detailed list of steps taken to manage potential noise impacts.

2 Noise management plan

The specific Noise Management Plan items raised by Council are addressed in the following sections.

2.1 Strategies to minimise noise

2.1.1 Outdoor play areas

The DA acoustic report (our reference: TN427-01F02 Noise Impact Assessment r2, dated 3 November 2023) assessed noise emission from the proposed Childcare Centre to the surrounding residential receivers. The assessment involved long-term ambient noise monitoring was undertaken in the front and rear yards of the existing residential premises at the site between Monday, 24 June 2023 to Wednesday, 2 August 2023. From measured daytime Rating Background Levels (RBLs), Table 2-1 sets out the background +5dB(A) noise limits at the nearest residential receivers (to the south and south-west) which were determined in accordance with the Association of Australasian Acoustical Consultant's *Guideline for Child Care Centre Acoustic Assessment Version 3.0* (the 'AAAC Guideline').

Table 2-1: Outdoor play noise criteria

Address	Receiver location	Outdoor play noise criteria, $L_{Aeq,15min}$ dB(A)
125 Epsom Road, Chipping Norton	Ground and first-floor receivers of north-eastern villa building	56
	Ground floor receivers of north and north-western villa buildings	57
	First floor receivers of north and north-western villa buildings	61
5 Swindon Place, Chipping Norton	Ground floor receivers	57
	First floor receivers	61
6 Swindon Place, Chipping Norton	Ground floor receivers	57
	First floor receivers	61

2.1.1.1 Physical noise mitigation measures

To comply with the background +5dB(A) noise limits set out above, the following physical noise mitigation measures have been implemented into the DA design of the Childcare Centre:

- The design of the Childcare Centre incorporates an underground basement level carpark which minimises the noise emission of carpark operation during drop-off and pick-up of children (vehicle movements, engine starts, door slams, etc.).
- To shield the adjacent residential receivers from the noise of Childcare Centre operations, the Childcare Centre has acoustic barriers (constructed as a metal slat fence with Perspex backing) that are setback 1.2m from the southern and western site boundaries and are 1.8m high relative the floor level of the outdoor play areas (ie. above the natural ground level).

- Further acoustic shielding to the adjacent residential receivers is provided the 1.8m high lapped-and-capped timber fences along the southern and western site boundaries.

It is noted that Outdoor Play Areas 2 and 3 also have 2.5m and 2.6m high acoustic barriers respectively along the street frontages to shield the Childcare Centre from the noise of road traffic on Governor Macquarie Drive intruding into the site.

The architectural drawings of the proposed Childcare Centre (prepared by Artmade Architects, project no. 23701, drawing no. DA03.02 and DA05.01, Rev. B, dated 11 April 2024) provide illustrations of the proposed acoustic barriers.

2.1.1.2 Operational noise mitigation measures

The ground floor plan drawing prepared by Artmade Architects (project no. 23701, drawing no. DA03.02, Rev. B, dated 11 April 2024) identify the age groups and number of children in each outdoor play area. Based on this distribution of the children in the outdoor play areas, the DA acoustic report predicted the noise emission of outdoor play to be compliant with the background +5dB(A) limit.

To ensure that the noise emission of outdoor play do not exceed the background +5dB(A) limits, the Centre Director is to implement the following noise management measures:

- A separate daily program for both warmer and cooler months should be established to regulate the total time spent outdoor and indoors.
- Centre director is to ensure any variation to the typical daily routine (to account for children's needs, weather conditions, etc.) does not result in a greater number of children in the individual outdoor play areas than that shown on the ground floor plan.
- Outdoor play shall be fully supervised by adequately trained childcare staff to actively monitor the behaviour and noise levels of the children.
- Any child exhibiting distress or uncharacteristic behaviour resulting in increased noise levels (such as crying, screaming, etc.) will be taken inside by staff to be comforted.
- Amplified music is to be avoided in the outdoor play areas.

2.1.2 Indoor play rooms

To reduce the risk of noise impacts from the indoor play areas, the following noise management measures are to be incorporated into indoor play operations:

- Educators to be trained on the importance of minimising noise to the neighbouring residences (particularly controlling the level of their voice) and modelling this behaviour to the children.
- An appropriate ratio of children to educators will be maintained to ensure that educators can tend to children as necessary.
- Minimising the time that different age groups are combined together.

- Provide interactive and focused learning experiences as well as quieter activities such as mediation, yoga, reflection time as part of the daily routine learning experiences. These quieter activities are to be supported by providing rest, relaxation and quiet reading areas as part of the indoor play room environment.
- External doors and windows of an indoor play room are to be closed when noisy activities (such as singing, dancing, active recreation, etc.) are occurring in the play room to reduce potential noise impacts to the adjoining residential receivers.

2.2 Promoting noise awareness by patrons and staff

The implementation of the following approaches is recommended to promote awareness of noise emission impacts by patrons and staff of the Childcare Centre.

- An Employee Induction Procedure which includes noise management training. In addition to the Employee Induction Procedure, the policies and procedures to mitigate noise emission from the Childcare Centre are to be discussed during staff meetings and / or posted in the staff room. These policies and procedures are to be reviewed, updated and redistributed as required to retain relevance and compliance.
- Families are to be informed of the importance of noise minimisation during pick-up and drop-off periods. This can be achieved through signage at the entrance and exits of the Childcare Centre and / or welcome packs to educate parents and guardians on managing behaviours such as avoiding calling out to children, slamming of gates / doors, etc.

2.3 Training procedure

A regular staff meeting schedule is to be developed which includes discussions and/or training on noise issues.

These discussions will ensure that staff are aware of the policies and procedures to minimise noise and any updates to those policies so that the noise management measures can be implemented satisfactorily. The content of these discussions can include but are not limited to:

- Location of noise sensitive receivers
- Current relations with the local community and methods to improve / maintain relations
- General and site-specific measures to mitigate Childcare Centre noise emissions
- Any potential noise issues that have been identified so that the Centre Director can proactively manage the noise before they become formal complaints.

2.4 Ensuring noise issues can be reported

A procedure for investigating, documenting and responding to all complaints and grievances from parent / guardians, volunteers, students, members of the local community and other agencies is to be developed by the Childcare Centre operators.

To ensure that members of the public and local residents are able to report noise issues, the Childcare Centre is to nominate a person (staff, supervisor, centre manager, etc.) to liaise with the community that is adequately trained / experienced in such matters. The name and contact details for this person is to be publicly available (eg. prominently displayed at the entrance of Childcare Centre and/or on the Childcare Centre's website) so that members of the local community are informed on where and to whom they can lodge noise complaints.

APPENDIX A provides an example of a "Noise complaints form".

All complaints are to be documented and recorded in a "Grievance and Complaints Register" which will allow the management team to identify the occurrence of any trends and determine the risks / hazards that are causing these trends to prevent similar incidents from recurring.

Where sustained noise complaints are received, the management team will investigate the cause of the complaint and take appropriate action, including liaison with an acoustic consultant to determine appropriate solutions.

2.5 Plan for responding to noise complaints

- Person nominated to oversee complaints is to liaise with the complainant at the earliest opportunity to understand the specific nature of the complaint. The complaints are to be recorded in the "Grievance & Complaints Register".
- Centre Director is to implement reasonable noise mitigation measures to address the complaint which may include but is not limited to:
    - Closing the external doors / windows of indoor play rooms
    - Reducing the volume of amplified music to the indoor play rooms
    - Advise staff to increase supervision of children playing outdoors to manage outdoor play noise levels
    - Stagger the periods of outdoor play for different groups of children to reduce the number of children outdoors at a time
    - Increase the ratio of children in the outdoor play areas conducting structured passive learning activities in preference to free play

- If the complaint is unable to be resolved by the Centre Director after the implementation of reasonable noise mitigation measures, the complaint is to be escalated to the Management Team.
- Management Team is to arrange a suitably qualified acoustic consultant to attend the site and/or complainant's premises to investigate the complaint. The acoustic consultant will conduct a compliance test and assess the noise emission of the Childcare Centre against the statutory limits.
    - If compliant, the acoustic consultant will issue a 'Compliance Certificate' detailing the assessment and findings.
    - If the testing reveals exceedances of the statutory limits, acoustic consultant is to prepare a report that identifies the additional noise mitigation measures required to bring the Childcare Centre into acoustic compliance. Management team is to then adopt all additional noise mitigation measures recommended by the acoustic consultant and notify the complainant of the actions taken.

2.6 Responsibilities of site personnel and managing potential noise impacts

- Centre Director is to ensure all educators understand that the maximum capacities and age groups each outdoor play area are not to be exceeded at any time.
- Centre Director is to hold regular staff meeting / training which include discussions on noise to ensure all site personnel are aware of the latest policies and procedures to mitigate noise and for staff to identify any potential noise issues with Centre management so that these issues can be addressed before becoming a formal complaint.
- Educators are to actively monitor outdoor play activities to manage the noise levels of the children and provide appropriate care to crying and/or screaming children in a timely manner.
- Person nominated to oversee complaints are to respond to the complaints in an appropriate / professional manner. All complainants are to be treated equitably and fairly.

3 Conclusion

Renzo Tonin & Associates have prepared a noise management plan for the proposed Childcare Centre at 123 Epsom Road, Chipping Norton. Renzo Tonin & Associates is a member firm of the Association of Australasian Acoustic Consultants (AAAC).

With the noise mitigation measures recommended in the DA acoustic report (reference: TN427-01F02 Noise Impact Assessment r2, dated 3 November 2023) and this noise management plan, the noise emissions of the proposed Childcare Centre are predicted to satisfy the noise criteria set out in the AAAC Guideline.

Regards,

Chris Chan
Senior Engineer
chris.chan@renzotonin.com.au

APPENDIX A Noise complaints form

Childcare Centre:

Date:

Staff addressed:

Complaint details

Received by (circle): Phone / Email / In person / Other:

Name: H Ph:

Address: W Ph

Email: M Ph

Description from complainant including when the problem occurred (date and time), what noise caused the complaint (eg. outdoor play, indoor play, any specific activities if known, mechanical plant, etc.) and where the complainant was disturbed (eg. bedroom, living room, balcony, rear yard, etc.):

Investigation

Question Childcare Centre educators to obtain information on what was occurring at the time to determine the most likely cause of the complaint. Include any follow-up actions that were undertaken to remediate the complaint:

PROPOSED CHILDCARE DEVELOPMENT

123 EPSOM ROAD, CHIPPING NORTON, NSW, 2170

Job No. N0230756

STORMWATER SERVICES

- STORMWATER PIPE
- STORMWATER RISING MAIN PIPE
- EXISTING STORMWATER PIPE
- RAINWATER PIPE
- SUB-SOIL DRAINAGE LINE
- CAST IN SLAB PIPE

STORMWATER LEGEND

- PROPOSED SEALED JUNCTION PIT
- PROPOSED GRATED SURFACE INLET PIT (PIT DIMENSIONS ARE GOVERNED BY DEPTH REFER TO DETAIL)
- EXISTING PIT
- PIT TO BE REMOVED
- PROPOSED KERB INLET PIT
- PROPOSED GRATED DRAIN
- PROPOSED RAINWATER TANK
- DOWNPIPE, REFER OF VERTICAL DROP RING - RAINWATER OUTLET FOR BALCONIES, ROOF, CARPARK ETC
- GD1 - DOWNPIPE WITH RAIN HEAD OVERFLOW
- GD2 - DOWNPIPE WITH SUMP SIDE OVERFLOW
- GD3 - DOWNPIPE WITH SUMP HIGH CAPACITY OVERFLOW
- SWALE DRAIN
- OVERLAND FLOW PATH
- ROOF FALL DIRECTION
- F 35.05 — PROPOSED PAVEMENT SURFACE LEVEL
- GL 35.05 — PROPOSED PIT SURFACE LEVEL
- IL 34.75 — PROPOSED PIT INVERT LEVEL
- FFL 23.56 — PROPOSED FINISHED FLOOR LEVEL
- 35.77 — EXISTING SURFACE LEVEL
- 36.00 — EXISTING SURVEY CONTOUR

GENERAL PIPEWORK LEGEND

- FLOW DIRECTION
- SERVICE / SIZE — PIPE FROM ABOVE
- SERVICE / SIZE — PIPE TO BELOW
- FALL DIRECTION
- STM Ø225 @ 1.0%(min) — PIPE TYPE, SIZE AND GRADE
- CONNECTION
- CONTINUATION
- END CAP
- KEYNOTE TAG

PROJECT INFORMATION TABLE

THE TABLES BELOW ARE TO BE READ IN CONJUNCTION WITH THE ADJACENT NOTES

GEOTECHNICAL INFORMATION

COMPANY	REPORT No.	DATED
N/A	N/A	N/A

SURVEY INFORMATION

THE SURVEY INFORMATION ON THESE DRAWINGS HAS BEEN PROVIDED BY

COMPANY	DATED
RIVERSIDE WILLIAMS	15/11/2017

PROOF ROLLING

PROOF ROLLING SPECIFICATIONS

(min) ROLLER WEIGHT	(min) NUMBER OF PASSES
5 TONNE	10

COMPACTION TESTING

RATE OF TESTS	TEST AREA PER LAYER
2	1000m²

TESTING SHALL BE CARRIED OUT BY A REGISTERED NATA LABORATORY.

SAFETY IN DESIGN

THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

+ JN DO NOT CONSIDER THAT THERE ARE ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN OF THIS PROJECT.

GENERAL

1. ALL EXISTING LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
2. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE NOMINATED OR APPLICABLE COUNCIL SPECIFICATION. WHERE A SPECIFICATION HAS NOT BEEN NOMINATED THEN THE CURRENT NSW DEPARTMENT OF HOUSING CONSTRUCTION SPECIFICATION (R79) BE USED. THE NOMINATED SPECIFICATION SHALL TAKE PRECEDENCE TO THESE NOTES.
3. THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE. ENGINEERS DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS & DRAWINGS FROM OTHER CONSULTANTS.
5. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
6. THE CONTRACTOR SHOULD LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
7. CONTRACTOR IS NOT TO ENTER OFFSITE NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
8. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
9. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
10. ALL DRAINAGE LINES THROUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
11. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES AND USELESS ETC. TO THE EXTENT SPECIFIED.
12. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A SAFETY MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS. FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS.

SURVEY

1. JONES NICHOLSON IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY 3RD PARTY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. SET OUT COORDINATES ARE BASED ON SURVEY DRAWINGS PROVIDED FOR THE PURPOSE OF CARRYING OUT THE ENGINEERING DESIGN.
5. CONTRACTOR SHALL VERIFY ALL SET OUT COORDINATES SHOWN ON THE PLANS BY A REGISTERED SURVEYOR.
6. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.
7. ANY DISCREPANCIES SHOULD BE CLARIFIED IN WRITING WITH THE ENGINEER PRIOR TO COMMENCEMENT OF THE WORK FOR CONFIRMATION OF THE SURVEY.

EARTHWORKS

1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
2. OVER FILL AREA OF EARTHWORKS, CLEAR VEGETATION, RUBBISH, SLABS ETC. AND STRIP TOP SOIL, AVERAGE 200mm THICK. REMOVE FROM SITE, EXCEPT TOP SOIL FOR RE-USE.
3. CUT AND FILL OVER THE SITE TO LEVELS REQUIRED.
4. PRIOR TO ANY FILLING IN AREAS OF CUT OR IN EXISTING GROUND, PROOF ROLL THE EXPOSED SURFACE. REFER TO PROJECT INFORMATION TABLES FOR MINIMUM ROLLER WEIGHT AND THE MINIMUM NUMBER OF PASSES.
5. EXCAVATE AND REMOVE ANY SOFT SPOTS ENCOUNTERED DURING PROOF ROLLING AND REPLACE WITH APPROVED FILL COMPACTED IN LAYERS. THE WHOLE OF THE EXPOSED SUBGRADE AND FILL SHALL BE COMPACTED TO MRS STANDARD (MINIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%.
6. FOR ON SITE FILLING AREAS, THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
7. WHERE HARD ROCK IS EXPOSED IN THE EXCAVATED SUB-GRADE, THIS WILL BE INSPECTED AND A DECISION MADE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
8. FILL IN 200mm MAXIMUM (LOOSE THICKNESS) LAYERS TO UNDERSIDE OF BASECOURSE USING THE EXCAVATED MATERIAL AND COMPACTED TO MRS STANDARD (AS 1289 5.1.1). MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%. SHOULD THERE BE INSUFFICIENT MATERIAL FROM SITE EXCAVATIONS, IMPORT AS NECESSARY CLEAN GRANULAR FILL TO THE DESIGN ENGINEERS APPROVAL.
9. COMPACTION TESTING TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT INFORMATION TABLE. THE COSTS OF TESTING AND RE-TESTING ARE TO BE ALLOWED FOR BY THE BUILDER.
10. BATTERS TO BE AS SHOWN OR MAXIMUM 1 VERT : 4 HORIZ. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL PAVEMENT.
11. ALL BATTERS AND FOOTPATHS ADJACENT TO ROADS SHALL BE TOP SOILED WITH 150mm APPROVED TOPMIX AND SEEDED UNLESS OTHERWISE SPECIFIED.

STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC.
3. PIPES OF 300mm DIA. AND LARGER SHALL BE RRJ OR CONCRETE CLASS 2 RUBBER RING JOINTED (RNC).
4. ALL RRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 (N.C).
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS (MD).
6. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE (N.D).
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE (N.D).
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY.
10. ANY PIPES OVER 1.5% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS.
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1200mm TO HAVE CLIMB IRONS.
12. BUILD INTO UPSTREAM FACE OF ALL PITS A 50m SUBSOIL LINE FALLING TO PITS TO MATCH PIO INVERTS.
13. ALL CLEANOUTS & UNDESIGNED PITS TO BE 450 SQUARE LOAD CLASS A UNLESS NOTED OTHERWISE.
14. ALL DRIVEWAY & CBD PITS TO BE 600 SQUARE LOAD CLASS D UNLESS NOTED OTHERWISE.
15. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
16. PITS & DOWNPIPE LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
17. DOWNPIPES SHOWN ARE INDICATIVE ONLY. ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS.
18. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
19. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
20. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS.
21. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
22. ALL BASES OF PITS TO BE BENCHED TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO GRATE.
23. SUBSOIL LINE PIPES AND FITTINGS SHALL BE PERFORATED PLASTIC TO CURRENT AUSTRALIAN STANDARDS. LAY PIPES ON FLOOR OF TRENCH GRADED AT 1% MIN. AND OVERLAY WITH FILTER MATERIAL EXTENDING TO WITHIN 200mm OF SURFACE. PROVIDE FILTER FABRIC OF PERMEABLE POLYPROPYLENE BETWEEN FILTER MATERIAL AND TOPSOIL.
24. SHOULD THE CONTRACTOR ELECT TO INSTALL PRECAST STORMWATER PITS, AND THEY ARE PERMITTED BY COUNCIL AND THE CLIENT, THE PRECAST PITS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS STANDARDS INCLUDING:
    1. SEAL THE SEGMENTS TOGETHER USING A SELF-APPROVED NON-SHRINK GROUT OR MASTIC PIPE PRODUCT. APPLY THE SEALANT IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S REQUIREMENTS.
    2. ENSURE THAT NO GAPS REMAIN AND THAT A SMOOTH FACE EXISTS BETWEEN MASTIC PIPE UNITS.
    3. CLEAN THE SEGMENTS UNDERSURFACE UNTIL THE PERIOD OF CURING IS COMPLETED IN ACCORDANCE WITH THE GROUT OR SEALANT PRODUCT MANUFACTURER'S REQUIREMENTS.

STORMWATER DRAINAGE INSTALLATION

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCE WITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. BEDDING OF THE PIPELINES IS TO BE TYPE HS2 IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
    a. COMPACTED GRANULAR MATERIAL IS TO COMPLY WITH THE FOLLOWING GRADINGS:

SIEVE SIZE (mm)	19	2.36	0.60	0.30	0.15	0.075
% MASS PASSING	100	80-100	35-90	15-60	0-25	0-10

    , AND THE MATERIAL PASSING THE 0.075 SIEVE HAVING NON PLASTICITY AS DESCRIBED IN APPENDIX D OF AS 1726.
    b. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
    c. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE HAUNCH ZONE.
    d. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF
        - 98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND
        - 95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIONLESS MATERIAL.
    e. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
3. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. A GRANULAR GRAVEL AGGREGATE MATERIAL (<10mm) BACKFILL IS RECOMMENDED FOR THE BEDDING, HAUNCH SUPPORT AND SIDE ZONE DUE TO ITS SELF COMPACTING ABILITY.
4. A MINIMUM OF 150mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL FOR PIPES < 600 DIA. 200mm CLEARANCE FOR PIPES 600 TO 1200 DIA AND 0.6 CLEARANCE FOR PIPES > 1200 DIA.

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SCALE	NTS
PROJECT MGR	WW

CIVIL SKETCH

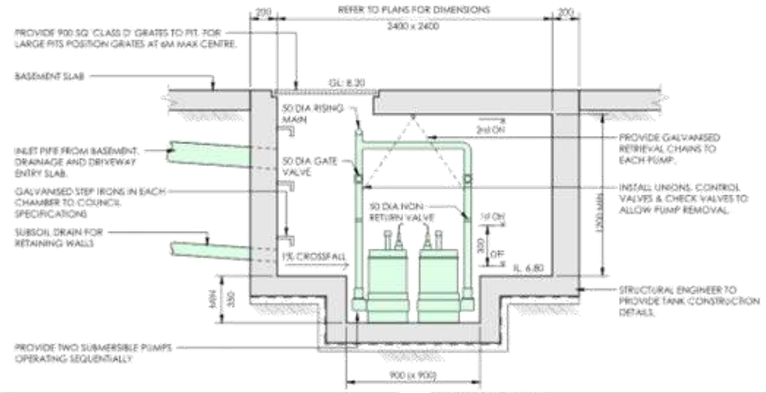
NOTES & LEGEND

PROPOSED CHILDCARE

123 EPSOM ROAD,
CHIPPING NORTON, NSW, 2170

MARK BROOKS

N0230756
CSK01 A



NOTE:
THE PUMP OUT SYSTEM SHALL BE DESIGNED TO BE OPERATED IN THE FOLLOWING MANNER:

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
- A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
- A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE AND DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT.
- A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
- AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.
- CONTRACTOR IS TO CONFIRM PUMP ELECTRICAL LOAD AND CONNECTION WITH ELECTRICAL CONTRACTOR AT THE BEGINNING OF THE PROJECT.

PUMP OUT CALCULATIONS

DRIVEWAY
AREA OF EXPOSED DRIVEWAY = 101 sq.m
MINIMUM VOLUME: 100 YR: 2HR= 6.63 cu.m
SUGGESTED ADOPTED V= 6.9 cu.m
QPEAK: 100 YR; 5 MIN = 5.7 L/s

SUBSOIL CALCULATIONS

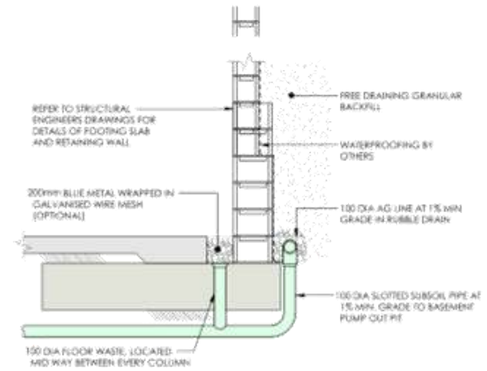
ASSUME SOIL IS SATURATED TO GROUND LEVEL AND INFLOWS CAN BE APPROXIMATED BY SUB SOIL FLOW NET:
Q= 2/3 x K x H (m3/s PER M OF SUBSOIL LINE)
ASSUMED SUBSOIL INFILTRATION: K = (x)(10^-5) (CLAYEY SAND)
H= HEIGHT = 2.3m LENGTH OF SUBSOIL = 184m
Q= 2/3 x (x)(10^-5) X (184x2.3) + 37.8X13)) = 2.82 L/s

COMBINED

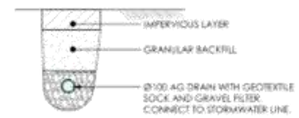
THEREFORE SUGGESTED PUMP CAPACITY
=(1.1 x (2.82+ 5.7) = 9.4 L/s

NOTE: CONTRACTOR TO VERIFY SUBSOIL INFILTRATION RATES VIA GEOTECHNICAL ENGINEERS TESTING, PRIOR TO CONSTRUCTION. SUPERVISING ENGINEER TO VERIFY CHANGES IF INFILTRATION RATES DIFFER SIGNIFICANTLY FROM ASSUMED VALUES.

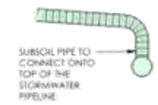
BASEMENT PUMPOUT TANK DETAIL
SCALE 1 : 20



TYPICAL GROUNDWATER DRAINAGE DETAIL
SCALE 1 : 20



TYPICAL SUBSOIL LINE
SCALE 1 : 20



SUBSOIL PIPE CONNECTION
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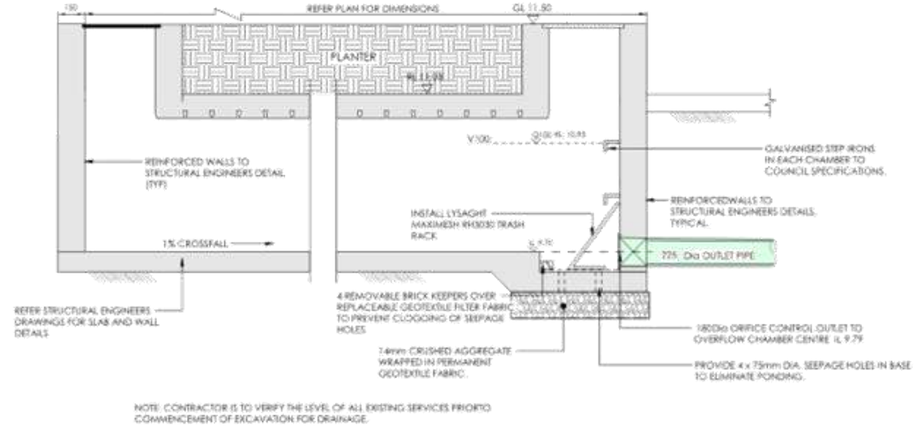

NOTE: CONTRACTOR IS TO VERIFY THE LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION FOR DRAINAGE.

ON SITE DETENTION TANK DETAIL
SCALE 1 : 20

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CIVIL SKETCH

TYPICAL DETAILS

PROPOSED CHILDCARE

123 EPSOM ROAD,
CHIPPING NORTON, NSW, 2170

MARK BROOKS

N0230756
CSK02 B

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DESIGN	WW	CIVIL SKETCH	PROPOSED CHILDCARE	N0230756 CSK03 C
DATE	19/04/2024	STORMWATER BASEMENT PLAN	123 EPSOM ROAD, CHIPPING NORTON, NSW, 2170	
SIZE	A0		MARK BROOKS	
SCALE	1:100			
PROJECT MGR	WW			

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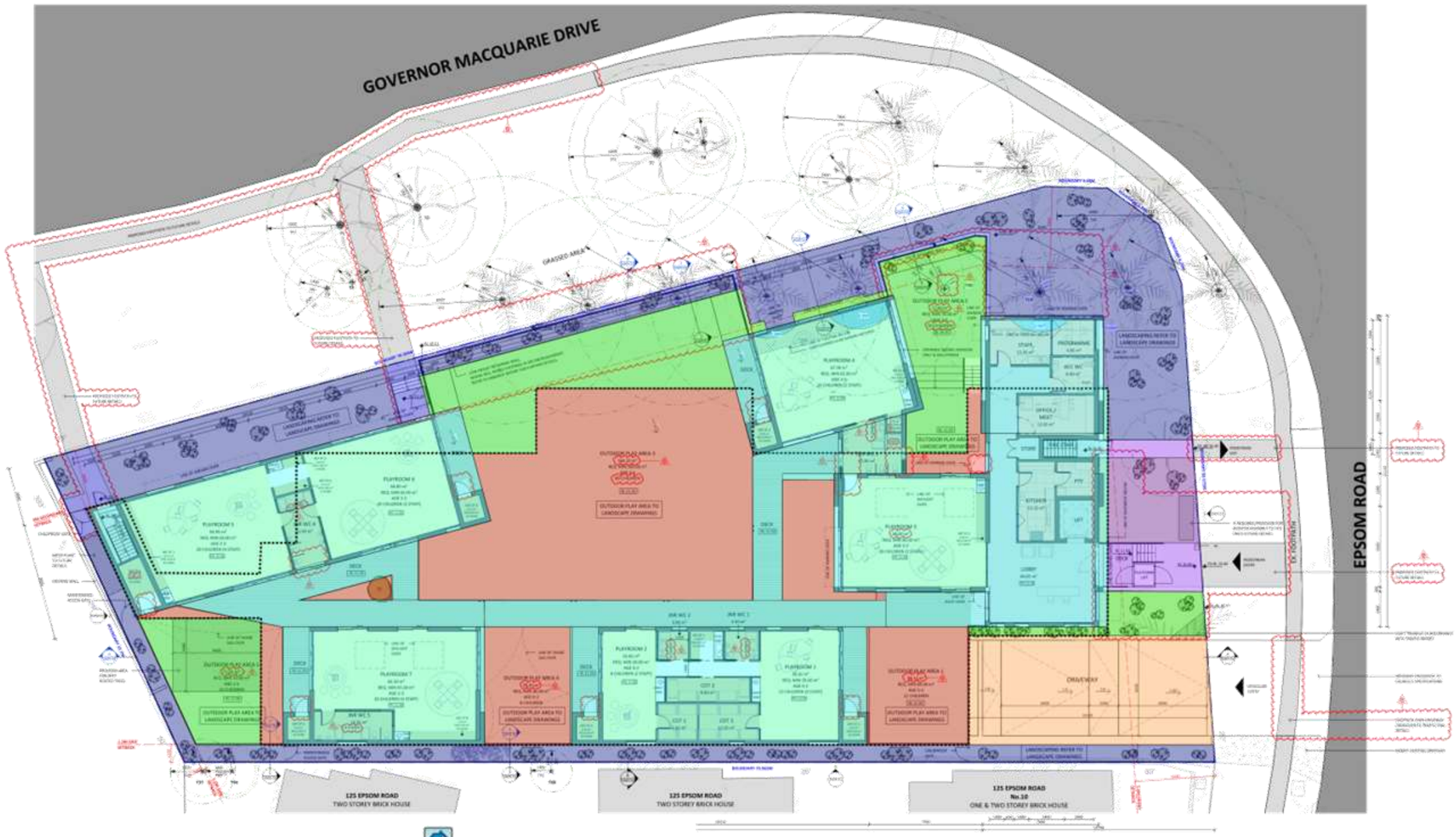
DESIGN	WW	CIVIL SKETCH	PROPOSED CHILDCARE	N0230756 CSK04 C
DATE	19/04/2024	STORMWATER GROUND FLOOR PLAN	123 EPSOM ROAD, CHIPPING NORTON, NSW, 2170	
SIZE	A0		MARK BROOKS	
SCALE	1:100			
PROJECT MGR	WW			

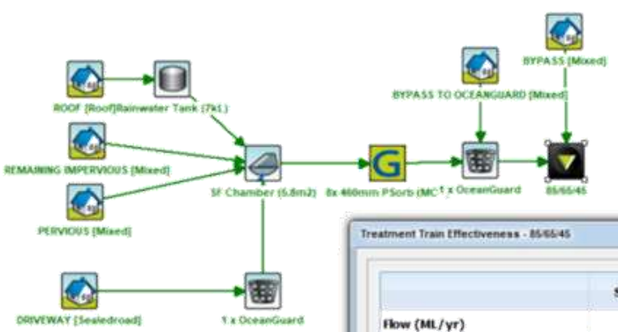
JN

DESIGN	JB	CIVIL SKETCH	PROPOSED CHILDCARE	N0230756 CSK05 B
DATE	15/04/2024	STORMWATER ROOF PLAN	123 EPSOM ROAD, CHIPPING NORTON, NSW, 2170	
SIZE	A0		MARK BROOKS	
SCALE	1:100			
PROJECT MGR	WW			



Legend

Description	Quantity	Unit
BYPASS TO OCEANGUARD	83.00	sq.m
BYPASS	440.23	sq.m
DRIVEWAY	121.41	sq.m
IMPERVIOUS	428.71	sq.m
PERVIOUS	283.57	sq.m
ROOF	1,001.00	sq.m



MUSIC MODEL LAYOUT

Treatment Train Effectiveness - 85/65/45

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.35	1.02	24
Total Suspended Solids (kg/yr)	133	19.9	85
Total Phosphorus (kg/yr)	0.306	0.0647	78.9
Total Nitrogen (kg/yr)	2.97	1.03	65.3
Gross Pollutants (kg/yr)	34.1	0.00243	100

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CIVIL SKETCH

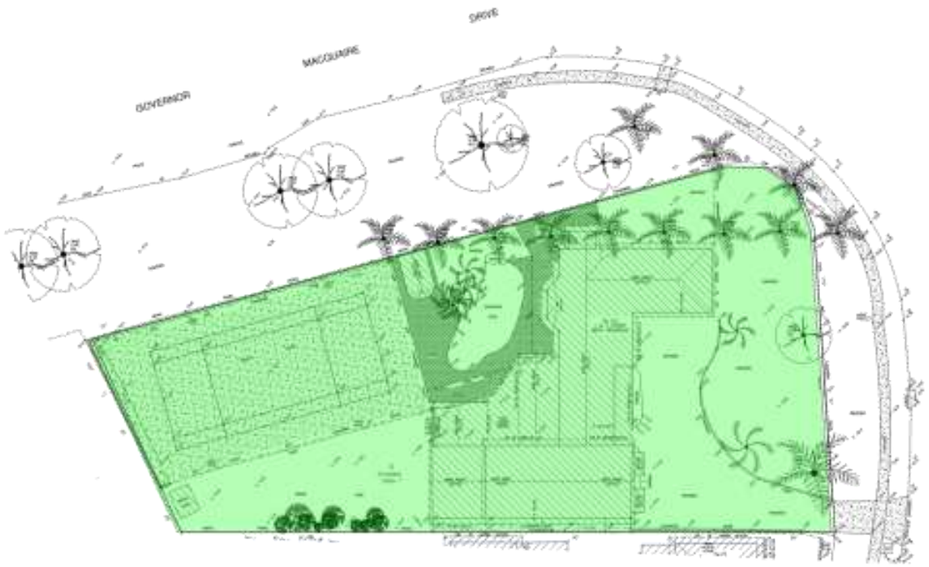
WSUD PLAN

PROPOSED CHILDCARE

123 EPSOM ROAD,
CHIPPING NORTON, NSW, 2170

MARK BROOKS

N0230756
CSK06 B



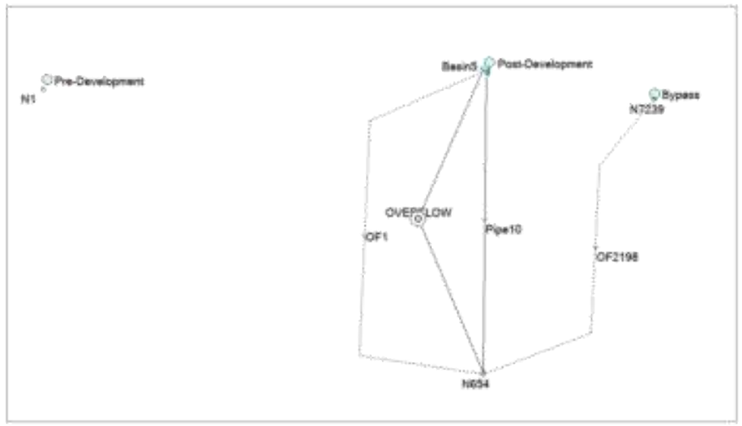
EXISTING CATCHMENT

Pervious Area = 708 m²
Impervious Area = 1650 m²
Total Area = 2358 m²

PROPOSED CATCHMENT

Treated
Pervious Area = 270 m²
Impervious Area = 1550 m²
Total Treated Area = 1820 m²

Bypass
Pervious Area = 472 m²
Impervious Area = 25 m²
Total Bypass Area = 497 m²



DRAINS MODEL LAYOUT

STORM	EXISTING	PROPOSED	IMPACT
1 EY	38 L/s	37 L/s	-1 L/s
0.5 EY	46 L/s	45 L/s	-1 L/s
0.2 EY	55 L/s	54 L/s	-1 L/s
10% AEP	71 L/s	65 L/s	-6 L/s
5% AEP	81 L/s	78 L/s	-3 L/s
2% AEP	86 L/s	87 L/s	1 L/s
1% AEP	98 L/s	94 L/s	-4 L/s

DRAINS RESULTS

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DESIGN	WW
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SCALE	1:100
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CIVIL SKETCH

OSD PLAN

PROPOSED CHILDCARE

123 EPSOM ROAD,
CHIPPING NORTON, NSW, 2170

MARK BROOKS

N0230756
CSK07 B

EVACUATION PROCEDURE

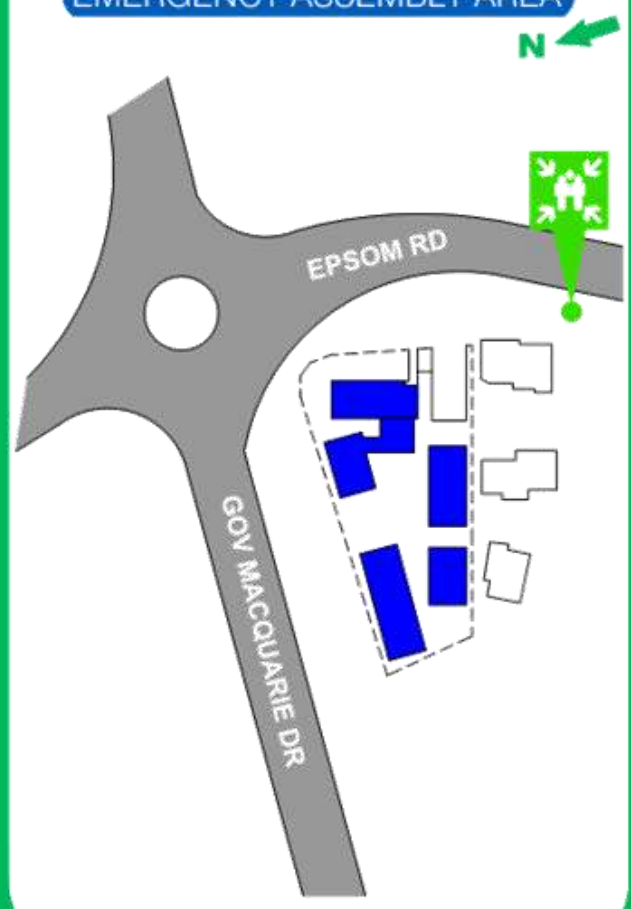
R REMOVE → REMOVE ALL OCCUPANTS AND STAFF AWAY FROM THE DANGER. DO NOT BLOCK EXIT OR EXIT ROUTES.

A ALERT → ALERT THE FIRE SERVICE. TELEPHONE "000". NOTIFY THE WARDEN OR CHIEF WARDEN AND PEOPLE AROUND AS SOON AS POSSIBLE. IF POSSIBLE RAISE AN ALARM TO NOTIFY OTHERS.

C CONTAIN → CONTAIN THE DANGER (FIRE) WHERE POSSIBLE TO DO SO, WHERE SAFE TO DO SO AND IF TRAINED TO DO SO. FOR e.g.. CLOSE DOORS AND WINDOWS, SELECT AND USE CORRECT EXTINGUISHER OR IF AVAILABLE USE FIRE HOSE REEL etc .

E EVACUATE → FOLLOW (CHIEF) WARDEN'S INSTRUCTION, USE FIRE STAIRS WHERE AVAILABLE, TAKE NEAREST AND SAFEST EXIT. DO NOT USE LIFT. EVACUATE IMMEDIATELY, SAFELY AND DO NOT RUN. GO TO THE ASSEMBLY AREA.

EMERGENCY ASSEMBLY AREA



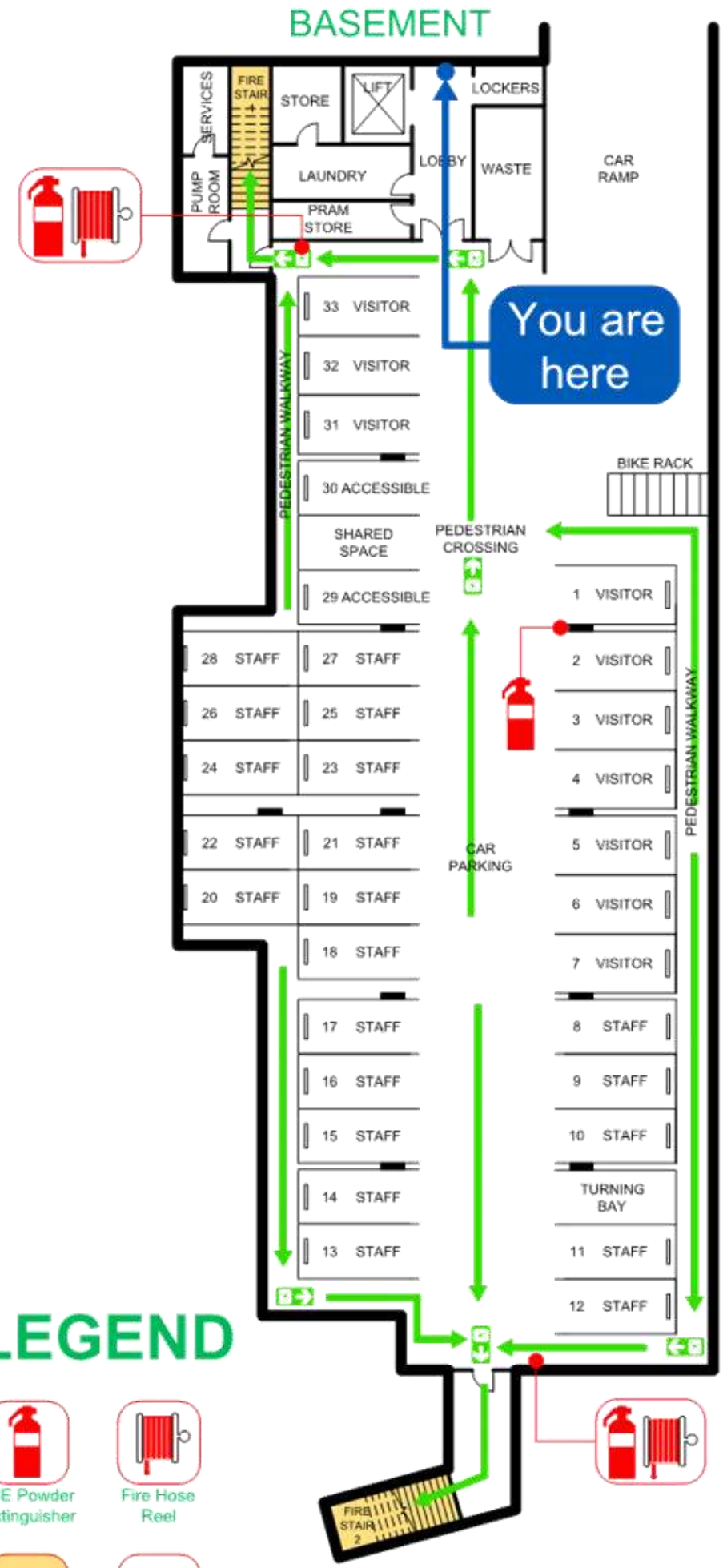
000
EMERGENCY

Prepared by: SPS Fire and Safety
Contact : 1800 799 147
www.spsservices.com.au
Date Prepared:
25-Sep-2023
To be printed in A3 size
Validity 5 years

EVACUATION DIAGRAM

N

NAME: PROPOSED CHILDCARE CENTRE
ADDRESS: 123 EPSOM RD, CHIPPING NORTON NSW 2170
BASEMENT



LEGEND

- ABE Powder Extinguisher
- Fire Hose Reel
- Fire Stairs
- Evacuation Route
- Emergency Exit
- Assembly Area

DISCLAIMER:
This diagram has been prepared before the existence of the building. Path of travel and assembly point will need to be approved by the client and the plan will be deemed appropriate and usable only when the suggested equipment will be shown on the plan is actually installed on the locations. If not, prior to occupancy, they will need to be reviewed and changed. Please note that this is not a fire equipment design. The equipment have been located only as a guideline.

NOT TO SCALE

EVACUATION PROCEDURE

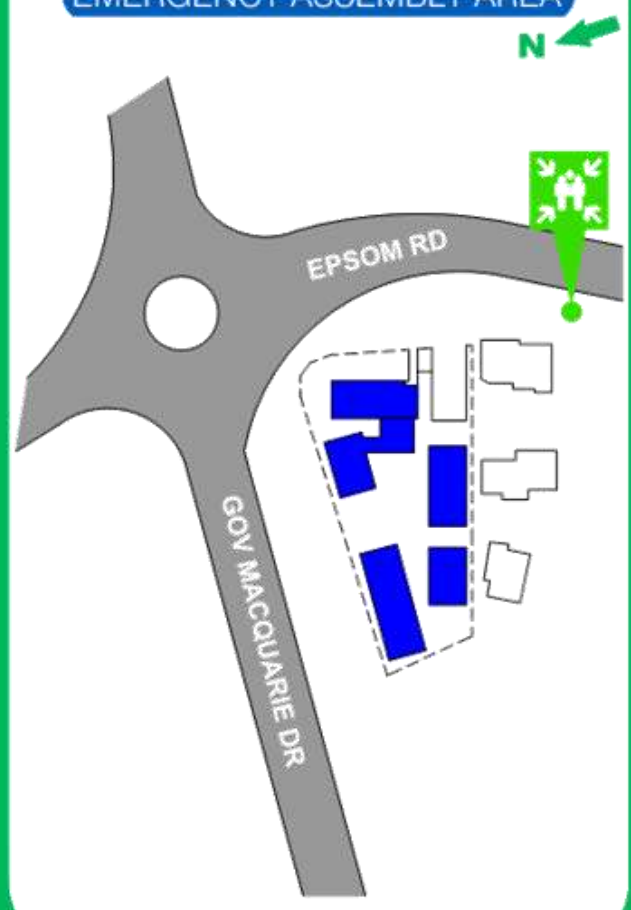
R REMOVE → REMOVE ALL OCCUPANTS AND STAFF AWAY FROM THE DANGER. DO NOT BLOCK EXIT OR EXIT ROUTES.

A ALERT → ALERT THE FIRE SERVICE. TELEPHONE "000". NOTIFY THE WARDEN OR CHIEF WARDEN AND PEOPLE AROUND AS SOON AS POSSIBLE. IF POSSIBLE RAISE AN ALARM TO NOTIFY OTHERS.

C CONTAIN → CONTAIN THE DANGER (FIRE) WHERE POSSIBLE TO DO SO, WHERE SAFE TO DO SO AND IF TRAINED TO DO SO. FOR e.g.. CLOSE DOORS AND WINDOWS, SELECT AND USE CORRECT EXTINGUISHER OR IF AVAILABLE USE FIRE HOSE REEL etc .

E EVACUATE → FOLLOW (CHIEF) WARDEN'S INSTRUCTION, USE FIRE STAIRS WHERE AVAILABLE, TAKE NEAREST AND SAFEST EXIT. DO NOT USE LIFT. EVACUATE IMMEDIATELY, SAFELY AND DO NOT RUN. GO TO THE ASSEMBLY AREA.

EMERGENCY ASSEMBLY AREA



000
EMERGENCY

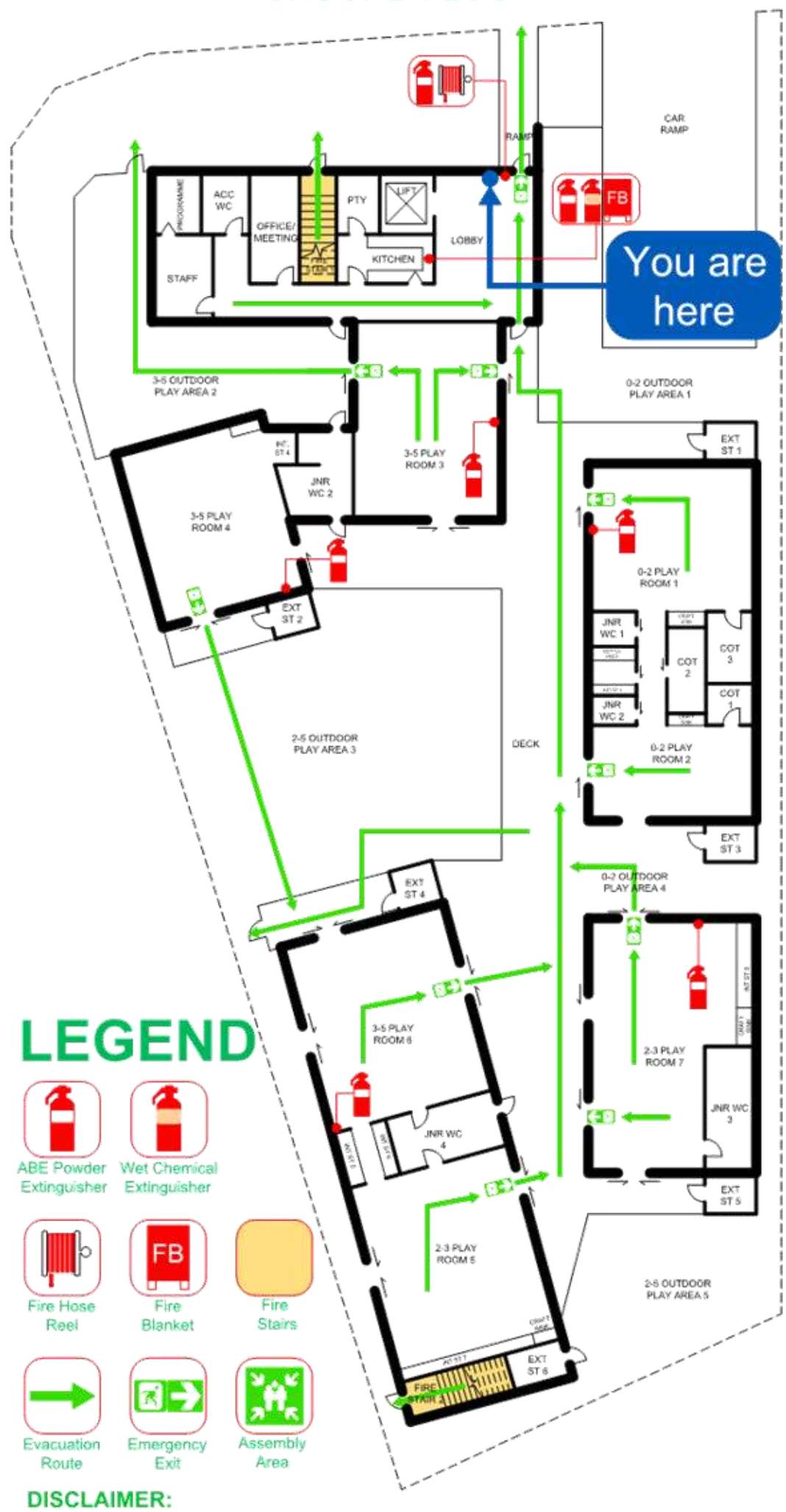
EVACUATION DIAGRAM

N

NAME: PROPOSED CHILDCARE CENTRE

ADDRESS: 123 EPSOM RD, CHIPPING NORTON NSW 2170

GROUND FLOOR



LEGEND

- ABE Powder Extinguisher
- Wet Chemical Extinguisher
- Fire Hose Reel
- Fire Blanket
- Fire Stairs
- Evacuation Route
- Emergency Exit
- Assembly Area

DISCLAIMER:

This diagram has been prepared before the existence of the building. Path of travel and assembly point will need to be approved by the client and the plan will be deemed appropriate and usable only when the suggested equipment will be shown on the plan is actually installed on the locations. If not, prior to occupancy, they will need to be reviewed and changed. Please note that this is not a fire equipment design. The equipment have been located only as a guideline.

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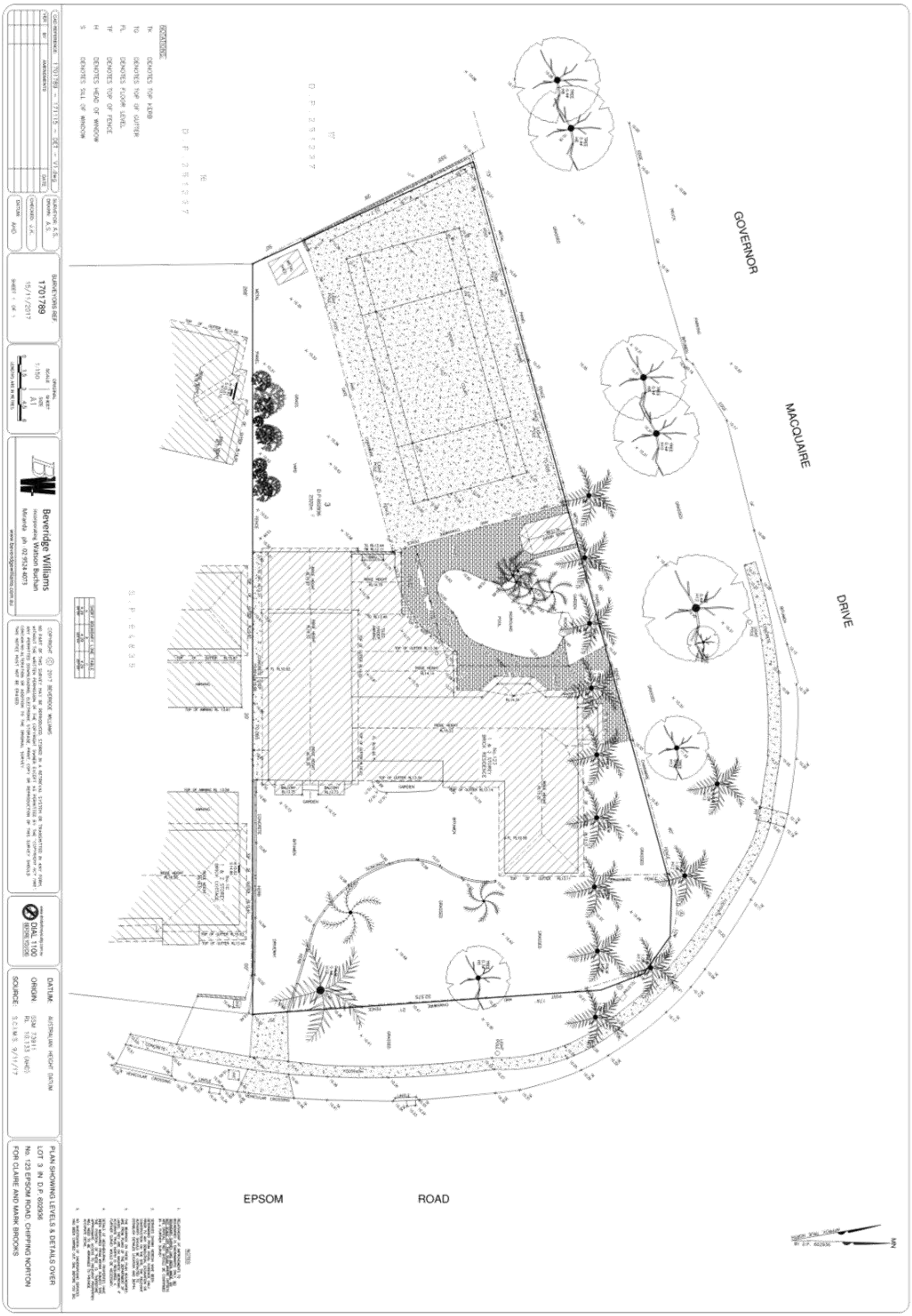
Contact : 1800 799 147
www.spsservices.com.au
Date Prepared:
25-Sep-2023
To be printed in A3 size
Validity 5 years

NOT TO SCALE


GOVERNOR
MACQUAIRE
DRIVE
EPSOM
ROAD
Beveridge Williams
Miranda ph. 02 9524 4073
1701789
PLAN SHOWING LEVELS & DETAILS OVER
LOT 3 IN D.P. 602936
No. 123 EPSOM ROAD, CHIPPING NORTON
FOR CLAIRE AND MARK BROOKS

123 Epsom Rd, Chipping Norton – Waste Management Plan

A Submission to ArtMade Architects

1 November 2023

MRA Consulting Group

Prepared by

Mike Ritchie & Associates Pty Ltd
trading as MRA Consulting Group
ABN 13 143 273 812

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Version History

Ver	Date	Status	Author	Approver	Signature
0.1	31/07/2023	Draft	Tristan McMichael	Jake Stanaway-Dowse	-
0.2	03/08/2023	Review	Jake Stanaway-Dowse	Marissa Delaveris	-
1	01/11/2023	Final	Marissa Delaveris	Jake Stanaway-Dowse	

Disclaimer

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In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

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Glossary

Terminology	Definition
AS	Australian Standard
C&D	Construction and Demolition
DA	Development Application
DCP	Development Control Plan
EPA	Environment Protection Authority
LDCP	Liverpool Development Control Plan
LLEP	Liverpool Local Environment Plan
LEP	Local Environment Plan
LGA	Local Government Area
MGB	Mobile Garbage Bin
WMP	Waste Management Plan
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

1 Introduction

MRA Consulting Group (MRA) have been engaged by ArtMade Architects to prepare a Waste Management Plan (WMP) for a childcare facility at 123 Epsom Road, Chipping Norton in NSW. The proposed development is situated in the Liverpool Local Government Area (LGA).

MRA understands this WMP will accompany a development application to be submitted to Council. This WMP addresses the requirements of the Consent Authority (Council) and conforms to the following reference documents:

- *Liverpool Local Environmental Plan (LLEP) 2008;*
- *Liverpool Development Control Plan (LDCP) 2008;* and

Consideration has also been given to the following supplementary documents in the preparation of this WMP:

- *Better Practice Guide for Resource Recovery in Residential Developments (NSW EPA, 2019);* and
- *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities (NSW EPA, 2012).*

This WMP has been prepared to inform the development design and assist in the delivery of better practice waste management, promoting sustainable outcomes at the demolition, construction, and operational phases of the development.

2 Background

2.1 Description of the Proposed Development

The proposed development is located at 123 Epsom Road, Chipping Norton in the Liverpool Council LGA. The features of the development are as follow:

- Demolition of existing structures and features including:
  - A two-storey residence;
  - Pool;
  - Tennis court;
  - Patio; and
  - Ancillary spaces.
- Construction of a childcare centre featuring:
  - Two-storey childcare centre;
  - Basement and ground level parking;
  - Indoor and outdoor play rooms;
  - Office, staff areas, and meeting rooms; and
  - Kitchen.

The childcare facility will have capacity for 120 children. Relevant site plans for the proposed development are provided in Appendix A.

2.2 Location

The site is legally known as Lot 3 DP 602936 and situated approximately 4.5 km northeast of central Liverpool and 0.5km from Georges River. It is a corner property bordered by Epsom Road to the east, and Gov Macquarie Drive to the north (see Figure 1).

Figure 1: Proposed development in relation to surrounding area

Source: Six Maps, 2023

2.3 Zoning and Land Use

The site is located in R2 – Low Density Residential in the LEP 2008 (Figure 2). The Zone has following objectives:

- To provide for the housing needs of the community within a low-density residential environment.
- To enable other land uses that provide facilities or servicers to meet the day to day needs of the residents.
- To provide a suitable low scale residential character commensurate with a low dwelling density.
- To ensure that a high level of residential amenity is achieved and maintained.

The use is considered to be consistent with the permitted uses of this zone.

Figure 2: Land Use Zoning

Source: NSW ePlanning Spatial Viewer, 2023

2.4 Assumptions

This report is a Waste Management Plan (WMP), forming part of the development documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the final reference/indicative development plan from the project architect, Artmade Architects, dated 01/11/23;
- Waste generation rates and services available for new developments have been derived from MRA's prior experience with similar uses, as well as Council's Development Control Plan, Waste Guideline and NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019).
- This WMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

3 Demolition and Construction Waste

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) wastes. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

Waste storage during construction operations will involve some stockpiling and separation of reusable material, as well as placement of skip bins for the separation of construction materials for recycling. A skip bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Skip bins may require alternative placement across construction operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

A waste storage area shall be designated by the demolition and construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons. A potential location for skip bins and material stockpiles has been identified in Appendix B.

Waste management principles, management measures and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

3.1 Demolition Waste

This section details the demolition waste materials expected for the proposed development, including their quantities and management options, and was designed with consideration of the requirements in the LDCP 2008 and Liverpool Council's Waste Management Guidelines. The information below presents options for materials reuse, recycling and disposal where applicable. All materials are intended to be sent to a suitable, licensed landfill or resource recovery facility.

The objectives for demolition set by the LDCP are as follows:

- To minimise waste generation and disposal to landfill;
- To ensure efficient storage and collection of wastes and recyclables during demolition and construction stages;
- To minimise adverse impact on adjoining premises; and
- To minimise release of contaminated materials.

Table 1 below describes the expected demolition material quantities and appropriate management methods for the proposed development, related to the demolition or deconstruction of internal elements such as walls/openings.

Table 1: Demolition waste generation estimates

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Concrete	90 - 120m^3	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Bricks/pavers	25 - 35m^3	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. The development will be able to reuse a number of existing building bricks as paving in landscaped areas. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles (ceramic)	<30m^3	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Timber (clean)	15 – 30m^3	-	✓	✓	0%	100%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery.
Timber (treated)	15 – 30m^3	-	✓	✓	50%	50%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery where possible.

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Plasterboard	30-60m^3	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D or plasterboard recovery facility for recovery where possible.
Glass	5-10m^3	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous & non-ferrous)	5-15m^3	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery and recycling.
Floor covering	<15m^3	-	✓	✓	50%	50%	Should be removed in bulk and sent to carpet recycler or C&D facility for recovery where possible.
Electronic Waste	<5m^3	-	✓	✓	<20%	80%	wires and electronics separated where possible for scrap.
Residual waste	10 – 20m^3	-	-	-	100%	-	Resource recovery dependant on facility destination capability.
Hazardous Waste	Unknown	-	-	-	100%	-	Existing buildings may contain potentially hazardous materials. Should contaminated or potentially hazardous materials be discovered they

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
							would be handled according to the demolition and/or materials management plan
Total % Diversion from Landfill Estimated						**>80%**	

3.2 Construction Waste

The development consists of the following construction works:

- A two-storey childcare building;
- Basement and ground floor carparking;
- 7 indoor play rooms and 5 outdoor play areas;
- Administration and staff areas;
- Meeting rooms; and
- Kitchen.

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

Table 2: Building waste material by percentage and conversion factor for volume and weight

Building waste material	Tones per m^3	Waste as % of the total material ordered
Bricks	1	5-10%
Concrete	2.4	3-5%
Tiles	0.75	2-5%
Timber	0.5	5-7%
Plasterboard	-	5-20%
Ferrous metal	2.4	-

Source: Parramatta Waste Management Plan Application Template 2017.

Table 3 outlines the expected construction waste quantities for materials through construction of the proposed new development in addition to the appropriate management methods for each material type.

The information below presents multiple options for materials reuse, recycling and disposal where applicable (e.g. return to manufacturer, recycled at construction and demolition (C&D) processor, or disposed to landfill if contaminated).

Table 3: Construction waste material by volume

Type of Material	Estimated Volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Excavated material	1,500 – 2,500m^3	✓	✓	✓	<5%	>95%	Onsite: Reuse for fill and levelling. Offsite: Removed from site for reuse as recycled fill material or soil. Disposal: Removal of any contaminated material for appropriate treatment or disposal.
Bricks/pavers	5 - 10m^3	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Concrete	<10m^3	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles	<5m^3	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.

Type of Material	Estimated Volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Timber (clean)	<10m^3	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible.
Timber (treated)	<10m^3	-	✓	✓	50%	50%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible.
Plasterboard	5-10m^3	-	✓	✓	<10%	90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier or removed to a C&D/plasterboard recovery facility for recovery where possible.
Glass	<5m^3	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous) Metals (non-ferrous)	<10m^3	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse or removed to C&D facility for recovery and recycling.

Type of Material	Estimated Volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Floor covering	<5m^3	-	✓	✓	<10%	>90%	Offcut carpet separated where possible and returned to supplier for reuse.
Electronic waste	<5m^3	-	✓	✓	<10%	>90%	Offcut wires and electronics separated where possible or returned to supplier for reuse.
Packaging materials (pallets, wrap, cardboard, etc)	50 - 100m^3	-	✓	✓	<10%	>90%	Returned to supplier where possible or separated by material type for resource recovery.
Residual waste	5 - 10m^3	-	✓	✓	100%	-	Resource recovery dependant on facility destination capability.
					Total Diversion %	**>90%**	

3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings.

Table 4: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractor	The following are local skip bin operators for consideration in the management of excavation and construction waste for the site: • Bingo Industries; and • Purple Cow. Or another supplier as elected by the building contractor.
Principal Off-Site Recycler	The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site: • Bingo Recycling Centre; • Genesis Xero Waste; and • Blaxland Waste Management Facility. Or another appropriate facility as elected by the waste management contractor.
Principal Licensed Landfill Site	Bingo Industries – Eastern Creek, or other appropriate facility as elected by the waste management contractor.

3.4 Site Documentation

This WMP will be retained on-site during the excavation and construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers).

Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of collections;
- Description of waste and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

4 Ongoing Waste Management

Waste management strategies related to site operations have been established according to relevant sections of Liverpool DCP and NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019).

Waste generation for the operational and ongoing use of the development relates to the use of the site as a childcare facility. Waste generation estimates and bin storage requirements are outlined in Section 4.1. The management of waste is further described within Section 5.

The following space calculations are based on bin dimensions sourced from the NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019) (Table 5).

Table 5: Standard bin sizes and dimensions

Bin Capacity	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m^2)
120L	940	530	485	0.33
240L	1,080	735	580	0.43
660L	1,250	850	1,370	1.16
1,100L	1,470	1,245	1,370	1.71

Source: NSW EPA's Better practice guide for resource recovery in residential developments (2019).

4.1 Waste Generation

The Liverpool DCP does not specify waste generation rates for childcare facilities. Waste generation rates have been derived from the NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments (2019)*. Waste generation estimates for the childcare centre are outlined in Table 6 below, which assumes five days per week operation.

Table 6: Childcare facility waste generation

Waste Stream	Generation Rate	Capacity	Weekly Generation Rate
General Waste	5L/child/day	120 children	3,000L/week
Recycling	5L/child/day		3,000L/week

4.2 Waste Storage Requirements

Temporary Waste Storage

General waste and recycling bins are placed in high circulation areas across the site such as the play areas, pathways, and kitchen. This waste is collected by site management or cleaner daily and deposited in the respective bins in the Waste Storage and Recycling Area (WSRA).

Waste Storage and Recycling Area (WSRA)

The WSRA for the childcare facility is located undercover within the car park. On the scheduled waste collection days, site management will be responsible for facilitating safe waste collection with a private waste contractor.

The waste management and storage areas are based upon the above expected waste volumes for the commercial development. Table 8 provides recommendations for the safe and efficient storage of general waste and comingled recycling for the childcare waste and recycling area and includes additional handling space (footprint x 1.5 m^2).

Table 7: Waste storage requirement

Waste Stream	Weekly Waste Generation (L/Week)	Number of bins & Collection Frequency	Spatial Requirements (m2)
General waste	3,000L	7 x 240L bins Collected **twice per week**	3m^2
Recycling	3,000L	7 x 240L bins Collected **twice per week**	3m^2
		Minimum Spatial Requirement	**9m^2**

**Minimum area includes estimated 1.5 x bin footprint (m^2) required for bins to accommodate manoeuvring of, and access to bins.*

Waste management areas will be located within a storage room adjacent to the lower ground carpark and concealed from general view to maintain site amenity while also reducing the risk of windblown litter, vandalism, and illegal dumping. Due to space limitations the 14 MGB's will need to be collected twice per week by a private contractor for the most effective waste management.

The waste management and storage areas proposed for the childcare facility both fulfil waste management requirements and facilitate safe access and manoeuvring of all bins and equipment for the proposed development. The waste management areas have adequate additional space to facilitate changes to waste management arrangements that may occur in the future, and management can observe bin fullness upon commencement of the use and adjust the amount of bins or collection frequencies as required.

4.3 Bulky Waste

Some bulky items may be required to be removed from the site from time to time, including but not limited to broken furniture or appliances. Management will be responsible for arranging timely bulky waste collection by a private waste contractor and therefore the waste storage area is sufficient. The space shall be managed to avoid overspill into the carpark space and access to the lift and stairs.

5 Waste Management System

5.1 Waste Management System Summary

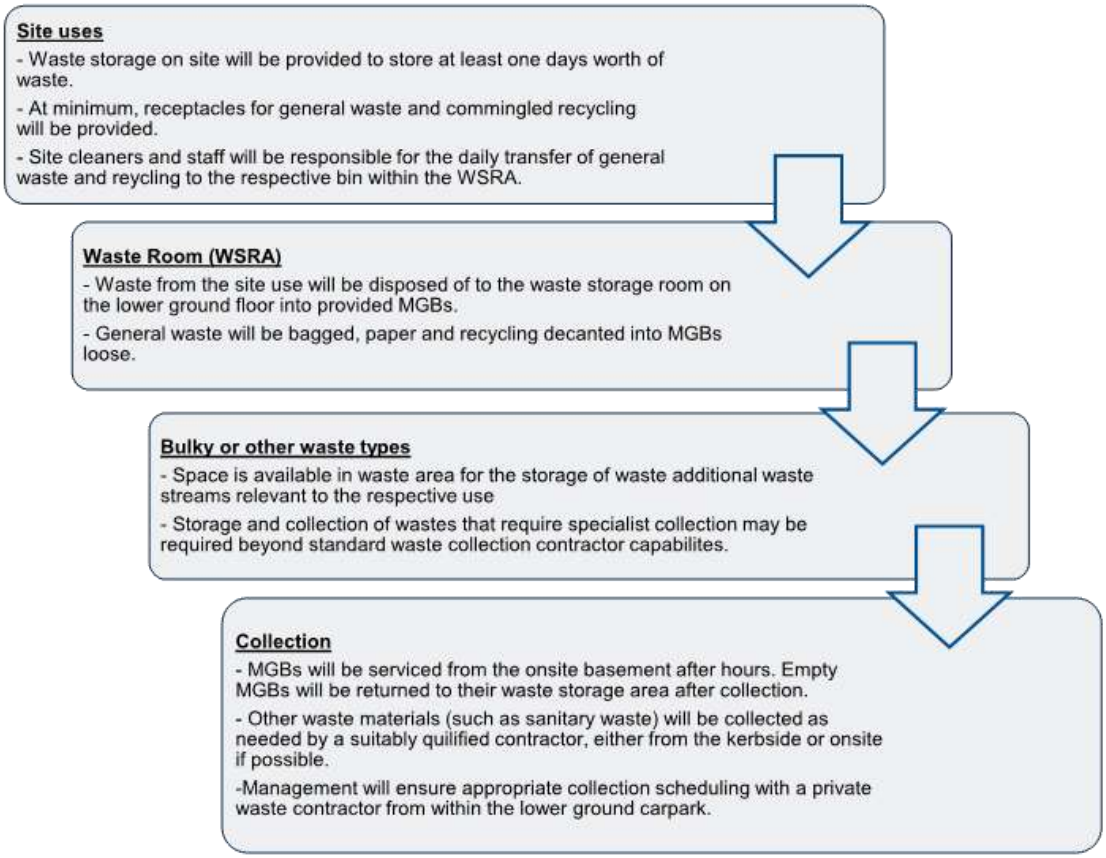
The following specific management methods are proposed for the various collection waste streams expected to be generated at the site, including alterative waste streams outside of general waste, and recycling:

- **General/Residual Waste:** General waste shall be placed within a tied plastic bag prior to transferring into red lid collection bins. For collection purposes, general waste shall be stored within mobile garbage bins (MGBs).
- **Commingled Recycling:** All recyclables will be stored in commingled bins (mixed plastic, paper, cardboard, glass, aluminium, steel). All recyclables should be decanted loose (not bagged) with containers un-capped, drained and rinsed prior to disposal into the recycling bin. Paper should be flattened and placed in paper and cardboard bin if applicable.
- **Garden Waste:** It is expected that landscaping at the site will be maintained by an external contractor who will remove all vegetation waste from ongoing maintenance activities.
- **Commercial Nappy Bin Service and Disposable Gloves Recycling:** Childcare centres daily produce large volume of nappy waste, change pads and gloves. Considering a compostable option for the above items is an increasing practice. Alternatively engaging with Terracycle helps to recycle items that are not collected by kerbside collection services such latex gloves.
- **Clinical and related waste:** Clinical and related wastes such as sharps, chemicals, etc will be retained in dedicated containers within each premises and removed by a suitably qualified sanitary or waste professional. This type of waste is typically removed by specialist in a small vehicle and so expect the site can be accessed as normal by parking in the loading area or supplied parking spaces.
- **Other (Problem) Waste:** The disposal of hard, bulky, electronic, liquid or potentially hazardous wastes shall be organised by the site manager and site users as necessary.
- **Food Waste Processing or Collection:** High volumes of food waste may result from operation of the site as a childcare centre. Food waste going to landfill is a source of damaging greenhouse gases and diverting this waste stream from landfill would not only prevent this, but also reduce costs associated with general waste bin lifts. Many facilities exist in and around Sydney that process food organics waste, producing compost and in some cases electricity (via biogas) while also diverting food waste from landfill.

5.2 Waste Disposal and Recycling Method

The flow of general waste and recycling from generation to collection is as follows (Figure 3):

Figure 3: Waste flow diagram



5.3 Deliveries, Collection Method, and Loading Areas

Management will be responsible for holding a valid waste management contract with a commercial waste service provider, who will service bins from the lower ground floor level. It is expected that a mini rear loader will be utilised for collection. Mini rear loader specifications are included in Table 8. Collections will be organised out of hours and off peak to ensure minimal traffic conflict with visitors and staff.

Table 8: Waste collection vehicle dimensions

	Vehicle Type	Length	Width	Height	Operating Clearance	Turning Circle	Payload
Waste Wise	Mini Rear-Loader	6.5m	1.7m	2.08m	2.08m	13m	5t

Table 10 below outlines relevant requirements and specifications related to the use of collection points and loading areas.

Table 9: Collection points and loading areas requirements and specifications

Component	Requirement	Specification
Collection point	Allow safe waste collection and loading operations	• Adequate clearance and manoeuvring space; • Sufficient clearance for the safe handling of materials and equipment; and • Sectioned loading bay does not impede upon traffic and pedestrian safety.
Vehicle manoeuvring and loading space	Truck space for adequate lift clearance, manoeuvring and operation for a contractor collection vehicle	• Collection from onsite use loading area by rear lift collection vehicle; • Adequate loading bay dimensions to not impede lift clearance; • Operational clearance for truck manoeuvring in a forward direction; and • The provision of space clear of vehicle parking spaces.
Operating times	Appropriate collection times to limit noise and traffic disturbance	• Collection times will be arranged during off-peak times to ensure minimal disturbance to pedestrians and visitors.

5.4 Waste Management System and Responsibilities

The building management will engage site cleaning staff to enact and monitor day to day waste management operations. Should there be any issues that impact on the operational efficiency, safety and suitability of waste management, the site cleaning staff will inform management. Operation of the waste management system is the responsibility of building management and site cleaning staff.

Responsibilities will include:

- Using this waste management plan to inform waste management operations, design and infrastructure;
- Providing educational materials and information to residents and staff on sorting methods for recycled waste, awareness of waste management procedures for minimisation and recovery;
- Making information available to visitors and workers about waste management procedures;
- Appropriate signage in waste service areas and all waste management areas;
- Using contracts to define the allocation of responsibilities with cleaners and building;
- Holding a valid and current contract with licensed collector(s) for waste and recycling collection and disposal;
- Encouraging waste avoidance and achievement of resource recovery targets;
- Providing operational management for delivery of waste objectives;
- Ensuring regular reinforcement of source separation and effective use of waste facilities;
- Organising waste, recycling and bulky pick-ups by elected contractor for the building.
- Organising, maintaining and cleaning the waste rooms and service rooms;
- Arranging access to waste rooms and bins on collection days and to liaise with the WSP for operational issues;
- Organising cleaning of bins as required;
- Monitoring any vermin and pest issues and arranging appropriate controls (traps or fumigating) and maintenance of doors or other points of potential entry;

The building management and site cleaning staff are also responsible for ensuring that workplace safety requirements according to WorkCover NSW Occupational Health and Safety are upheld.

5.5 Waste Storage Area Specifications

The waste room will be constructed to improve amenity, minimise odour, protect surrounding areas and promote user safety, while considering the Liverpool Development Control Plan 2008. Waste storage area specifications include:

- Bin bays are to be well ventilated and screened to a minimum height of 1.5m by a structure and landscaping. Construction materials are to be compatible with the proposed development and adjoining development.
- Bin bays or waste service rooms are to be sufficiently open and well-lit to allow safe use after dark.
- A hose cock for hosing the garbage bin bay and a sewered drainage point are to be provided in or adjacent to the bin storage area. The drainage point should have a fine grade drain cover sufficient to prevent coarse pollutants from entering the sewer. If the hose cock is located inside the bin storage bay it is not to protrude into the space indicated for the placement of bins.
- Sufficient space must be allocated within the bin bays to allow for access to all required bins by waste collectors, as well as manoeuvring of bins within the bay and for the removal and return of bins by the waste collector.

5.6 Signage and Education

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia, 1994).

Signage will be designed to consider language and non-English speaking backgrounds, vision impairment and accessibility. Illustrative graphics must form a minimum 50% of the area of the signage. Signage is to be prominently posted in the waste room indicating:

- Details regarding acceptable recyclables;
- Recyclables are to be decanted loose (not bagged)
- *No standing* and *danger* warnings apply to the area surrounding the waste storage area;
- Contact details for arranging the disposal of bulky items;
- The area is to be kept tidy.

Standard signage requirements and guidance for application apply (see Appendix D).

5.7 Prevention of Pollution and Illegal Dumping

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials), building management and the site cleaning staff will also be responsible for:

- Maintenance of open and common site areas;
- Ensuring waste room is well maintained and kept clean;
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content (paints, e-waste, fluorescent tubes);
- Taking action to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or other work.

6 References

NSW EPA. (2012). *Better practice guidelines for waste management and recycling in commercial and industrial facilities*. Retrieved from https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/managewaste/120960-comm-ind.pdf

NSW EPA. (2016). *Recycling signs, posters and symbols*. Retrieved from http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

NSW EPA. (2019). *Better practice guide for resource recovery in residential developments*. Retrieved from https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/warrlocal/19p1559-resource-recovery-in-residential-developments.pdf?la=en&hash=C29AFB3B95D416F29A6F711B684C620900174075

Liverpool Local Environmental Plan 2008

Liverpool Development Control Plan 2008

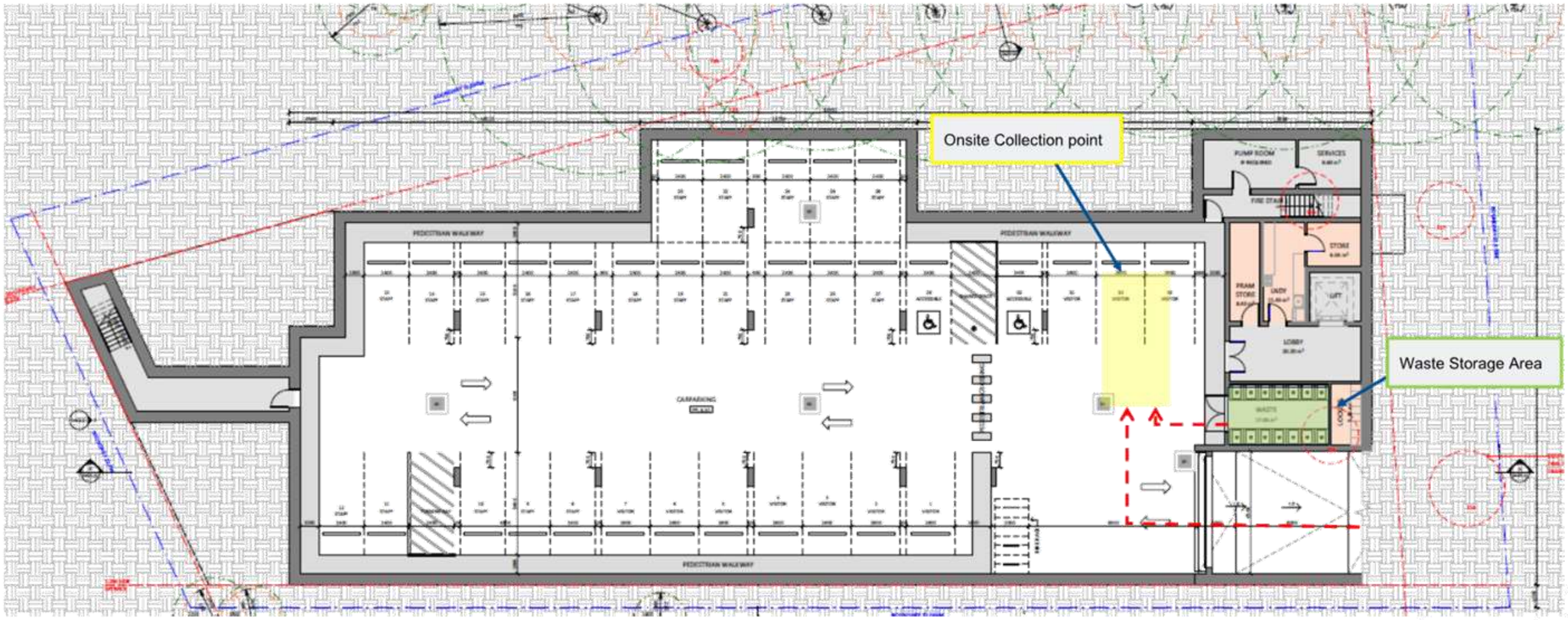
Standards Australia. (1994). *AS 1319: Safety signs for the occupational environment, Homebush, NSW: Standards Australia.*

Standards Australia. (2008). *AS 4123: Mobile waste containers.*

Work Cover. (2011). *Managing work environment facilities code of practice.*

Appendix A Site Plans

Figure 4: Lower Ground Plan



Appendix B Potential Location for C&D Waste Storage

Figure 5: Aerial view of site

Source: Six Maps, 2023.

Appendix C Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW Office of Environment and Heritage (NSW OEH 2008b).

Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016b), in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia 2008).

Figure 6: Examples of standard signage for bin uses

Safety Signs

The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling room where appropriate.

Figure 7: Example and layout of safety signage

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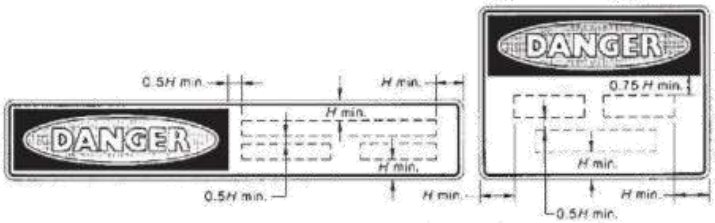
(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS



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NOVEMBER 2023

SOCIAL IMPACT COMMENT

DEMOLITION OF EXISTING STRUCTURES AND CONSTRUCTION OF A CHILD CARE CENTRE WITH BASEMENT PARKING

123 EPSOM ROAD, CHIPPING NORTON

PREPARED FOR MARK BROOKS
PB112023

PLANNING BRICKS

PLANNING BRICKS

Date	Version	Prepared By
1 November 2023	Draft V1	Julie Horder - Director
19 November 2023	Final	Julie Horder - Director

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19 November 2023

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1 INTRODUCTION

This Social Impact Comment (SIC) has been prepared by Planning Bricks on behalf of Mr Mark Brooks (the Applicant) to accompany a Development Application (DA) for demolition of all existing structures and construction of a centre based child care centre at 123 Epsom Road, Chipping Norton (the site) .

The preparation of a SIC for the proposed development is required under the provisions of Liverpool City Council's *Social Impact Assessment Policy* (2023).

The *Social Impact Assessment Policy* defines social impact in the following way:

> *'Social impacts are those which affect individuals and communities, the common or public good and/or the health and welfare of groups of people. Social impacts are not private interests and is considered as a change to one or more of the following concepts; people's way of life, culture, community, political systems, environment, health and wellbeing, personal and property rights, fears and aspirations.'*

The purpose of this SIC is to identify and assess the potential social impacts of the proposed development.

This SIC has been prepared in accordance with Appendix B – Social Impact Comment Initial Assessment Form of Liverpool City Council's *Social Impact Assessment Policy.*

PLANNING BRICKS

2 THE SITE

2.1 Site Description

The subject site consists of 123 Epsom Road, Chipping Norton. The legal description of the site is Lot 3 in DP 602936.

The subject site includes an existing part one, part two storey dwelling which has its main frontage to Epsom Road. The site has an area of 2,233m^2. The subject site is outlined in red on **Figure 1,** and **Figure 2** shows the site as viewed from Epsom Road.

Figure 1: Subject site (edged red) and surrounds (Source: www.nearmaps.com.au)

Figure 2: Subject site viewed from Epsom Road

PLANNING BRICKS

2.2 Land Uses Surrounding the Site

The site is located within the R2 Low Density Residential zone (Figure 3) which extends along Epsom Road northwards to Ascot Drive and southwards to Alfred Road. Land uses within the R2 zone include multi-dwelling developments, detached dwellings, child care centres and medical centres.

The wider locality includes industrial uses to the east within the Chipping Norton industrial area and a further pocket of industrial land to the west, beyond the Georges River. A small shopping centre is located to the south of the site, at the corner of Childs Road and Epsom Road.

Figure 3: Extract of Land Zoning Map – site outlined in yellow

2.3 Public Transport

The subject site is well serviced by public transport with several bus stops located along Epsom Road. This includes bus stops 100m to the north of the site and 80m to the south of the site, which are both serviced by bus route 903, which provides regular services to and from Liverpool railway station.

PLANNING BRICKS

3 THE PROPOSAL

3.1 Description

Development consent is sought for demolition of the existing structures and construction of a centre based child care. The proposed child care centre will comprise a number of single storey buildings and outdoor play areas to provide care for 120 children. A basement carpark is also proposed which will provide 33 parking spaces and lift access to the ground floor.

The proposed development is described in detail in the SEE which accompanies the DA and the architectural plans prepared by ArtMade Architects.

3.2 Operational Details

3.2.1 Number of Children and Staff

The proposed child care centre will cater for up to 120 children per day, comprising of:

- 20 x 0 – 2 year olds;
- 40 x 2 – 3 year olds; and
- 60 x 3 – 5 year olds

The Education and Care Services National Regulations requires that minimum number of educators required to educate and care for children at a centre-based services in NSW is to be calculated in accordance with the following ratios for children:

- from birth to 24 months of age—1 educator to 4 children;
- over 24 months and less than 36 months of age—1 educator to 5 children; and
- aged 36 months of age or over (not including children over preschool age) —1 educator to 10 children (in NSW).

Based on the above ratios and number of children, the proposed centre requires a total of 19 staff to comply with the Regulation. The child care centre proposes to employ 19 primary contact staff.

3.2.2 Operating Hours

The centre will operate between the following hours:-

- Monday to Friday: 7:00 am – 6:00pm.
- Closed Saturdays, Sundays and Public Holidays.

A Plan of Management which provides further detail as to how the centre will be operated and managed has been prepared by Oz Education Early Learning Centres and is provided under separate cover.

PLANNING BRICKS

4 SOCIAL CONTEXT OF LOCALITY

The following section provides an overview of the local social context of this development (with a focus on early childhood data), including the current and forecast demographic profile and local social infrastructure context within walking distance of the site.

Data has been sourced from *.id Informed Decisions*, AEDC, ABS and BOCSAR.

4.1 Population and Age Profile

At the 2021 Census, Liverpool LGA had a (usual resident) population of 233,446, living in 77,898 dwellings with an average household size of 3.14.

The estimated resident population for Chipping Norton as of 30 June 2022 is 9,462, living in 3,197 dwellings with an average household size of 3.01.

In 2021, the largest age group in Chipping Norton was 5 to 9 year olds (6.9%). The 0 – 4 year old age group was 6.3% of the population.

4.2 Population Forecast

The Liverpool City Council population forecast for 2023 is 245,902 and is forecast to grow to 371,303 by 2041 (a 51% increase between 2023 and 2041).

The 0 to 4 year old age group is expected to grow by 7.6% by 2026 and 8% by 2041.

4.3 Diversity

The Australian Early Development Census (AEDC) found that in Liverpool in 2021, 46.7% of children have English as a second language. In 2021, 33.3% of people in Chipping Norton were born overseas, compared with 43.2% in Liverpool LGA.

4.4 Relative socio-economic advantage and disadvantage

The ABS Socio-Economic Indexes for Areas (SEIFA) provides an indication of the socio-economic conditions of residents in different regions and ranks areas according to their relative socio-economic advantage and disadvantage using Census data. SEIFA is a collection of four indexes, each summarising a different aspect of the socio-economic conditions in an area using different Census data:

- the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) focuses on both advantage and disadvantage;
- the Index of Relative Socio-economic Disadvantage (IRSD) focuses on relative socio-economic disadvantage;
- the Index of Education and Occupation (IEO) focuses on relative Education and Occupation advantage and disadvantage; and
- the Index of Economic Resources (IER) focuses on Economic advantage and disadvantage.

The SEIFA details for Chipping Norton can be summarised as follows:

- **SEIFA Score** – 1016 (the Liverpool LGA has a SEIFA score of 931)

a lower score indicates that an area is relatively disadvantaged compared to an area with a higher score. Scores should only be used in distributive analysis

- **SEIFA Rank** – 7334 (comparatively the suburb of Georges Hall has a rank of 4646)

PLANNING BRICKS

all areas are ordered from the lowest to highest score, then the area with the lowest score is given a rank of 1, the area with the second lowest score is given a rank of 2 and so on.

- **SEIFA Decile** – 6 (comparatively Georges Hall has a decile of 4)

all areas are ordered from lowest to highest score, the lowest 10% of areas are given a decile number of 1 and so on, up to the highest 10% of areas which are given a decile number of 10. This means that areas are divided up into ten groups, depending on their score. Decile 1 is the most disadvantaged relative to the other deciles. Note that the area-based deciles in this data contain an equal number of areas, not people

- **SEIFA Percentile** – 51 (comparatively Georges Hall has a percentile of 33)

all areas are ordered from lowest to highest score, the lowest 1% of areas are given a percentile number of 1 and so on, up to the highest 1% of areas which are given a percentile number of 100. This means that areas are divided up into one hundred groups, depending on their score. Percentile 1 is the most disadvantaged relative to the other percentiles. Note that the area-based percentiles in this data contain an equal number of areas, not people

The IRSD for Chipping Norton is 3 (with 5 being the least disadvantaged and 1 being the most disadvantaged). Figure 4 below provides an extract of the SEIFA data for Chipping Norton.

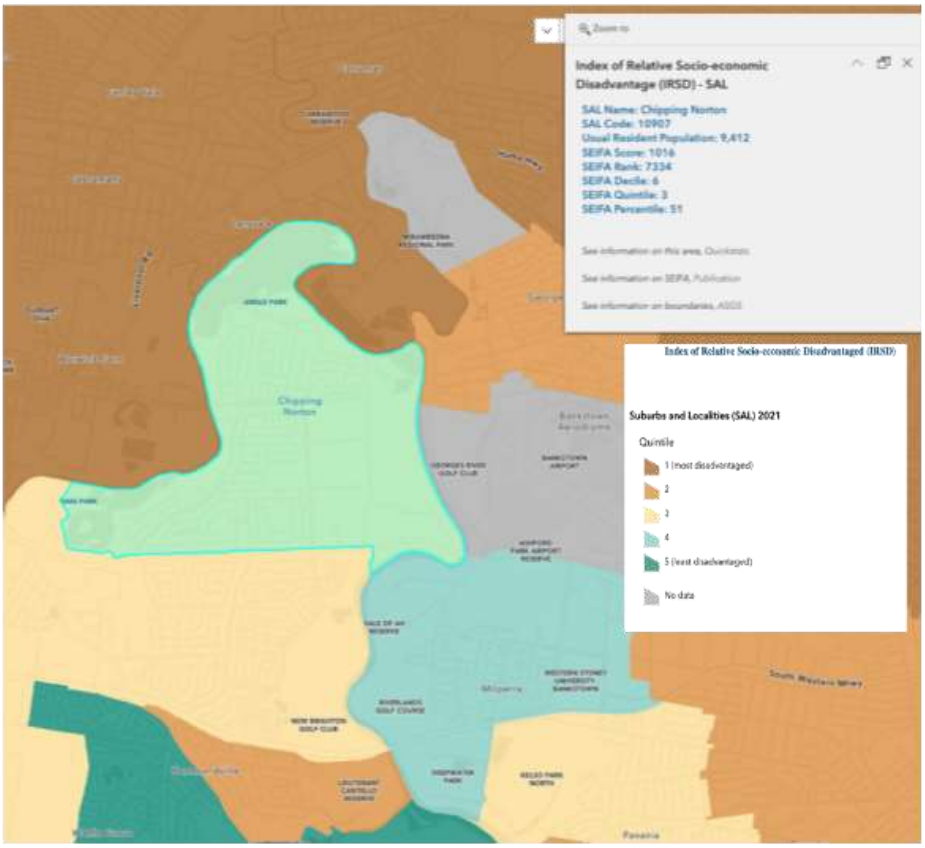

Figure 4: SEIFA – Index of Relative Socio-economic Disadvantaged – 2021 (Source: ABS)

PLANNING BRICKS

4.5 Early Childhood Developmental Vulnerability in Liverpool LGA

The Australian Early Development Census (AEDC) measures the development of children in Australia in their first year of full-time school. The AEDC is considered to be a measure of how well children and families are supported from conception through to school age.

The AEDC data indicates that a relatively high proportion of children in Liverpool LGA are developmentally vulnerable:

- 25.7% of children in Liverpool were recorded as being developmentally vulnerable on one or more domains, compared with 21.2% across NSW.
- 14.3% of children were recorded as being developmentally vulnerable on two or more domains, compared with 10.5% across NSW.

Research shows that investing time, effort and resources in children's early years, when their brains are developing rapidly, benefits children and the whole community. Early developmental gains support children through their school years and beyond. Providing high quality early education and care services supports the broader social sustainability of a community by addressing the opportunity gap between children from low and high income families.

4.6 Employment

At the 2021 Census, approximately 4.5% of the workforce was unemployed which is lower than the unemployment rate across the Liverpool LGA (6.6%). Within Chipping Norton 4,005 people were employed, of which 54% worked full-time and 29% part-time.

4.7 Crime

Key crime date from the NSW Bureau of Crime Statistics and Research (BOSCAR) for Chipping Norton and NSW is provided in the table below.

Offence Type (July 2022 to June 2023)	Chipping Norton suburb (Rate per 100,000)	NSW (Rate per 100,000)	2 Year Trend
Break and Enter Dwelling	179.9	235.7	Up 10% per year
Break and Enter non-dwelling	116.4	99.2	Up 14.3% per year
Motor vehicle theft incidents	222.2	162.9	Up 23% per year
Steal from motor vehicle	455.1	347.7	Up 6.7% per year
Malicious damage to property	317.5	600.3	Stable
Non-domestic assault	179.9	400.2	Up 16.2% per year

In the two year period from July 2022 to June 2023, Chipping Norton had a higher rate of break and enter non-dwelling, motor vehicle theft, and steal from motor vehicle than the rate for NSW. For all other offences detailed above, Chipping Norton has very low rates per 100,000 persons.

PLANNING BRICKS

4.8 Local Social Infrastructure

A review of the key existing local social infrastructure within an 800m catchment area has been undertaken and details are provided below and shown on Figure 5.

1. Recreational facilities and open space:
    a. Ashfordby Park – local park with play equipment on the corner of Derby Crescent and Rugby Crescent
    b. South Park – large recreational area including Chipping Norton sports club, soccer and baseball fields
2. Transport and access
    a. Several bus stops located along Epsom Road. This includes bus stops 100m to the north of the site and 80m to the south of the site, (both serviced by bus route 903), which provides regular services to and from Liverpool railway station
3. Medical Centre:
    a. Align Dentistry, Orthodontics & Medical Centre (opposite site on corner of Epsom Road and Governor Macquarie Drive).

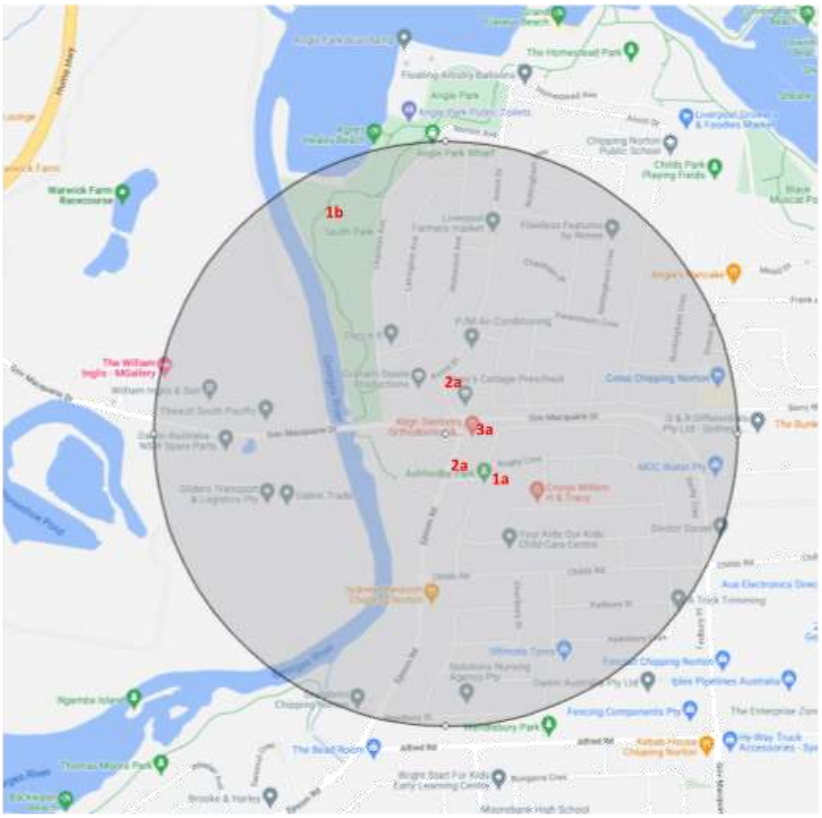

Figure 5: Local Social Infrastructure Context (800m radius of site)

PLANNING BRICKS

4.9 Summary of Social Context and Relevance to Proposal

The review of the local social context of the development has highlighted the following key findings relevant to the proposed development:

- The Liverpool LGA population is growing rapidly (a 51% increase between 2023 and 2041) with the 0 to 4 year old age group expected to grow by 7.6% by 2026 and 8% by 2041. Population growth will increase the demand for social infrastructures services including child care centres.
- The AEDC data indicates that a relatively high proportion of children in Liverpool LGA are developmentally vulnerable. Providing high quality early education and care services supports the broader social sustainability of a community by addressing the opportunity gap between children from low and high income families.
- The area has supporting local infrastructures such as parks and is serviced by regular bus services along public transport.
- The provision of a childcare centre provides additional social infrastructure in a location which supports the needs of residents and workers in the area.

PLANNING BRICKS

5 SOCIAL IMPACT COMMENT

5.1 Population Change

Will the development result in significant changes/s to the local area's population? (either permanently and/or temporarily?

The proposed child care centre will not significantly change the local area population. As detailed in Section 4 above, the 0 to 4 year old age group is expected to grow by 7.6% by 2026 and 8% by 2041. The proposal will provide high quality early education and care services which supports the population growth.

5.2 Housing

Will the proposal increase or reduce the quantity, quality, mix, accessibility and/or affordability of housing?

The proposal involves the loss of one single dwelling which is not considered affordable housing . The child care centre will meet the existing and future local needs for the increasing population.

5.3 Accessibility

Will the development improve or reduce physical access to and from places, spaces and transport?

The site of the proposed child care centre is within walking distance to bus stops along Epsom Road (accessible via footpaths) with regular services to the Liverpool CBD and train station. Additionally, across road is a medical centre which can be accessed by staff at lunch and before/after work.

The proposed building has been designed to provide accessibility throughout the building including the provision of accessible parking, lift access and an accessible WC.

5.4 Community and Recreation Services/Facilities

Will the development increase, decrease or change the demand or need for community, cultural and recreation services and facilities?

The proposed child care centre will provide an additional early education and care service for the community which supports the forecasted population growth. The provision of a child care centre at this location which is accessible via public transport and close to employment will enhance convenience for families of young children and support participation of parents/caregivers in the workforce.

The proposed childcare centre has been designed in accordance with the child care planning guidelines and maximises natural light, cross ventilation and provides access to large outdoor areas and natural materials for play.

PLANNING BRICKS

5.5 Cultural and Community Significance

Will the development impact on any items or places of cultural or community significance?

The site is located adjacent to a heritage item (Item No.21 - Palm trees (*Phoenix canariensis*). There may be perceived risks to this heritage item, due to construction activity at the site. The Heritage Impact Statement prepared by Weir Phillips Heritage and Planning for the proposed development concluded that the proposed works would have a minimal and acceptable impact on the item as the existing trees which from part of the heritage item and lie within the boundaries of the subject site, will be retained. Most of the proposed works are sufficiently separated from the trees, however, some of the structures may impact on the structural root zone of the nearest trees. The proposal has successfully mitigated the impact of this by introducing a cantilevered footing system. The trees will otherwise be protected in accordance with tree protection zone regulations during construction.

Regarding potential impacts to sense of place, some surrounding residents, may have connections, narratives and memories associated with the Palm Trees on and adjoining the site. Importantly the retention of these trees, on and adjoining the site, will retain the sense of place.

5.6 Community Identity and Sense of Belonging

Will the development strengthen or threaten opportunities, social cohesion and integration within and between communities?

The proposed child care centre will strengthen opportunities for social cohesion and integration between communities through the provision of early education programmes which focus on diversity and the sense of belonging. The built environment of the centre will also provide opportunities for social cohesion through its layout of internal spaces and provision of a large lobby area to welcome families and caregivers.

5.7 Health and Well-being

Will the development strengthen or threaten opportunities for healthy lifestyles, healthy pursuits, physical activity and other forms of leisure activity?

The proposal will provide increased convenience and improvements to the daily living needs associated with delivery of a child care centre for the local community. The centre is in an established suburb with supporting infrastructure (bus services, medical service and recreational spaces) which promotes the walkability of the Chipping Norton neighbourhood.

Potential impacts associated with the construction phase such as noise, vibration, dust and disruption for surrounding residents will be managed through the implementation of the Construction Management Plan.

The acoustic impacts of centre have been assessed in the Noise Impact Assessment prepared by Renzo Tonin & Associates which concludes that with the provision of physical noise mitigation measures, the operational noise of the child care centre will comply with the applicable noise criteria.

PLANNING BRICKS

The centre provides large outdoor play areas to promotes physical activity for the children and is also located within walking distances of a number of parks (Figure 5 above) for possible excursions for older children of the centre.

5.8 Crime and Safety

Will the development increase or reduce public safety and opportunities for crime (perceived or actual crime)?

As detailed in Section 4.7 above, Chipping Norton had a higher rate of break and enter non-dwelling, motor vehicle theft, and steal from motor vehicle than the rate for NSW (in the two year period from July 2022 to June 2023). The centre will provide a high degree of personal safety and minimise vandalism and other antisocial behaviours by creating opportunities for natural surveillance with indoor and outdoor spaces being able to survey the adjoining area during operational times. The centre will be provided with security sensor lights, a CCTV system and all openings will be lockable and fitted with an alarm system.

5.9 Local Economy and Employment Opportunities

Will the increase or reduce the quantity and/or diversity of local employment opportunities? (Temporary or permanent)

The proposal will increase the quantity and diversity of local employment opportunities due to the delivery of a child care centre requiring 19 staff on a daily basis.

5.10 Supporting Diverse Communities and Needs of Specific Population Groups

Will the development increase or decrease inclusive opportunities (social, cultural, recreational, employment, governance) for groups in the community with special needs?

The proposed child care centre will include educational programmes and activities which celebrate and support the cultural and linguistic diversity of Liverpool LGA.

HERITAGE IMPACT STATEMENT

Development Application
No. 123 Epsom Road, Chipping Norton
November 2023 | J6419

Weir Phillips
Heritage and Planning

Level 19, 100 William Street Woolloomooloo NSW 2011
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Revision	**Date**	**Person**	**Reviewed by**
Draft Issue	30.10.2023	EN	JP
Final Issue	10.11.2023	EN	JP

Cover Image: 3D render of proposal
Courtesy of ArtMade Architects

We acknowledge that the land on which we live, learn and work as the traditional country of the Gadigal people of the Eora Nation. We acknowledge these traditional owners of this land and acknowledge their living cultures and the unique roles they have played in maintaining life, language, and culture in this region. We pay respect to their Elders past, present and emerging and all Aboriginal people.

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1 INTRODUCTION

1.1 Preamble

This Heritage Impact Statement (HIS) has been prepared in conjunction with a Development Application for the removal of an existing dwelling and the construction of a new childcare centre at No. 123 Epsom Road, Chipping Norton, New South Wales.

The site is located within the Liverpool City Council area. The principal environmental planning instrument for the site is the *Liverpool Local Environmental Plan 2008* (*LEP 2008*). The site is not listed as a heritage item or located in a Conservation Area as identified by Schedule 5, Parts 1 and 2 of the *LEP 2008*. The site does, however, contain part of a heritage item comprising ''Palm trees (*Phoenix canariensis*)'. This item comprises a group of 12 palm trees, six of which are located within the boundaries of the subject site. The site is also located in the vicinity of another heritage item 'Inter-war brick bungalow ("Coolola"), including interiors'.

Under Part 5.10 of the *LEP 2008*:

> *(4) Effect of proposed development on heritage significance*
>
> *The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).*
>
> *(5) Heritage assessment*
>
> *The consent authority may, before granting consent to any development:*
>
> *(a) on land on which a heritage item is located, or*
>
> *(b) on land that is within a heritage conservation area, or*
>
> *(c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.*

The appropriate heritage management document in this instance is a Heritage Impact Statement (HIS).

This statement has been prepared at the request of the owner of the site and accompanies plans prepared by ArtMade Architects.

1.2 Authorship and Acknowledgements

This HIS was prepared by Elliot Nolan, B.A. (Anc.Hist.Hons), M. Mus.Herit.Stud., Grad.Dip.Herit.Cons., and James Phillips, B.Sc. (Arch.), B.Arch., M.Herit.Cons. (Hons), of Weir Phillips Heritage and Planning.

1.3 Limitations

No heritage assessment has been carried out for the site, which is not subject to any statutory heritage listings.

1.4 Methodology

This assessment has been prepared with reference to the *NSW Heritage Manual* update *Statements of Heritage Impact* (2023) and with reference to the Council planning controls listed under Section 1.6.

1.5 Physical Evidence

The site was viewed from the public domain in October 2023. Unless otherwise stated, all photographs of the site were taken by the authors at this time.

1.6 Documentary Evidence

1.6.1 Planning Documents

- *Liverpool Development Control Plan 2008.*
- *Liverpool Local Environmental Plan 2008.*

1.7 Site Location

No. 123 Epsom Road, Chipping Norton is located on the west side of Epsom Road and has frontage to Governor Macquarie Drive (Figure 1). The site is identified as Lot 3, D.P. 602936.

Figure 1: Site location. The subject site is outlined in red.
SIX Maps, 2023

2 SITE ASSESSMENT

2.1 The Site

For the following, refer to Figure 2, an aerial photograph over the site. Refer to Figure 3 which reproduces an existing site plan showing all structures, as well as vegetation on the site.

Figure 2: Aerial photograph of No. 123 Epsom Road. The subject site is outlined in red.
SIX Maps, 2023

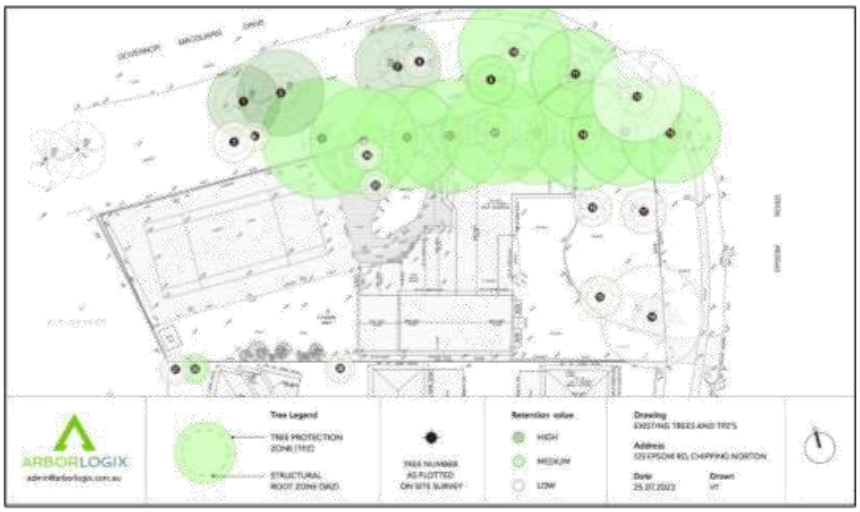

Figure 3: Site plan showing existing trees.
ArborLogix, 2023; annotations by WPH&P.

For the purposes of the following description, Epsom Road is designated as the eastern boundary.

The site is an irregular shaped allotment with frontage to Epsom Road (east) and Governor Macquarie Drive (north) and contains a freestanding dwelling described separately below. The site boundaries are as follows: north, 70.50m; northeast, 12.87m; east, 32.57m; south,

70.06m; and west, 22.7m. The total site area is 2,322m². The site is bound to the north, south and west by a metal panel fence and to the east by a metal wire fence.

The dwelling on the site is a one and two-storey late 20th century period dwelling with an attached two car garage. The dwelling is constructed of face brick with a gabled roof clad in concrete tiles. Window and door openings are timber-framed. The dwelling is oriented to Epsom Road and set back from the street behind an asphalt paved driveway. The rear yard has an in-ground swimming pool with tiled surrounds, as well as a tennis court.

Vegetation on the site comprises lawn and low-lying plantings, as well as established trees comprising native and non-native species on the north and east boundaries. As indicated by Figure 3 above, these trees comprise the following:

- T14 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T15 (*Syragus romanzoffiana*, 'Cocos Palm')
- T16 (*Syragus romanzoffiana*, 'Cocos Palm')
- T17 (*Cinnamomum camphora*, 'Camphor Laurel')
- T18 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T19 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T20 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T21 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T22 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T23 (*Phoenix canariensis*, 'Canary Island Date Palm')
- T24 (*Ligustrum lucidum*, 'Broad Leaf Privet')
- T25 (*Syragus romanzoffiana*, 'Cocos Palm')

Refer to Figures 4 to 6 which illustrate the site as viewed from the public domain.

Figure 4: View of the existing dwelling on the site.

Figure 5: Looking towards existing vegetation both within and outside the site on Epsom Road.

Figure 6: Looking towards existing vegetation within the site on Governor Macquarie Drive.

2.2 The Surrounding Area

2.2.1 The General Area

For the following, refer to Figure 7, an aerial photograph of the site and its surrounds.

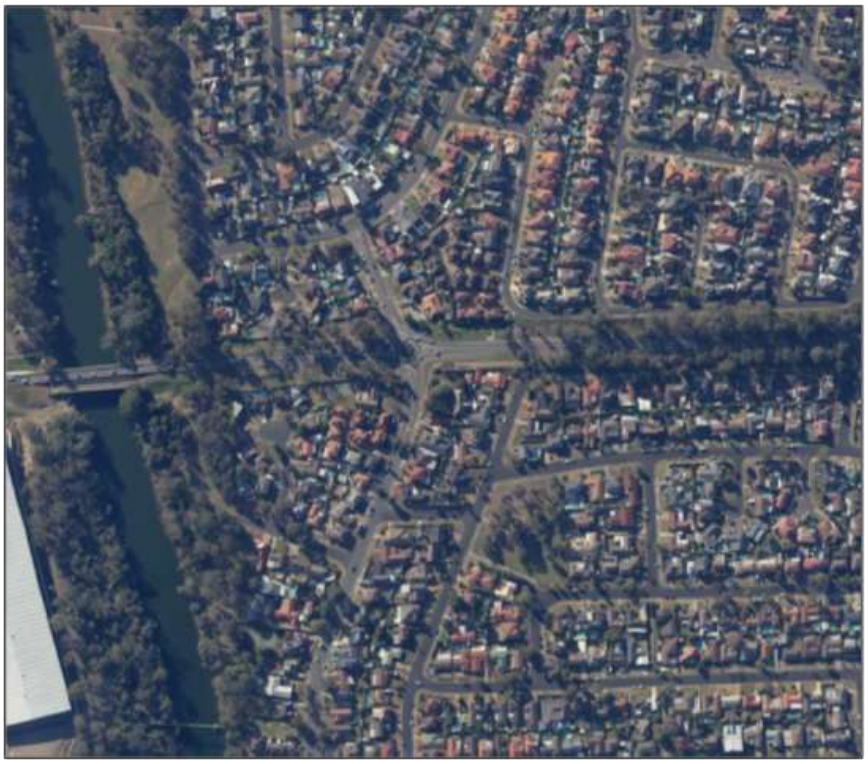

Figure 7: Aerial photograph over the site and surrounding area. The site is outlined in red.
SIX Maps 2023

2.2.2 Epsom Road

Epsom Road runs off Governor Macquarie Drive to connect with Newbridge Road to the southwest. The road carries two-way traffic with provision for street parking on both sides. Concrete footpaths with grass verges and established trees line either side of the road.

The street is primarily residential and characterised by one and two-storey Inter-War and late 20th century period dwellings and townhouses, as well as recent two-storey infill. To the south of the site is No. 125 Epsom Road, a two-storey townhouse complex. Further along is No. 127 Epsom Road, a two-storey contemporary dwelling. On the opposite side of the road, to the east, is No. 2 Epsom Road, a single-storey Inter-War period dwelling, now used as a dentist. Most dwellings are set back from the street and have driveways with garages incorporated within their built footprint.

Refer to Figures 8 to 10 which illustrate the character of Epsom Road.

Figure 8: No. 125 Epsom Road directly to the south of the site, a two-storey townhouse complex.

Figure 9: No. 127 Epsom Road to the south of the site, a two-storey example of infill.

Figure 10: The east side of Epsom Road showing the general character of dwellings.

2.2.3 Governor Macquarie Drive

Governor Macquarie Drive runs off Remembrance Driveway to connect with Newbridge Road in the southeast. The road carries two-way traffic with limited provision for street parking on the south side. Wide grass verges with established trees line either side of the road. Governor Macquarie Drive is landscaped and has no dwellings oriented to it. Refer to Figure 11 which illustrates the general character of the drive in the vicinity of the site.

Figure 11: Looking west on Governor Macquarie Drive outside the subject site.

3 SIGNIFICANCE

3.1 Summary of Statutory Heritage Listings for the Site

No. 123 Epsom Road, Chipping Norton:

- Is not listed as a heritage item by Schedule 5, Part 1 of the *Liverpool LEP 2008*.
- Is not located within a Heritage Conservation Area defined by Schedule 5, Part 2 of the *Liverpool LEP 2008*.
- Is not listed on the State Heritage Register under the *NSW Heritage Act 1977*.

As previously noted, while the subject site is not subject to any statutory heritage listings, it does contain part of a heritage item. Refer to Section 3.2.2 for further information.

3.2 Heritage Items Within the Vicinity of the Site

For the following, in the vicinity has been determined with reference to physical separation, existing and potential view corridors and the nature of the proposed new works.

3.2.1 NSW Heritage Act 1977

There are no items listed on the State Heritage Register under the *NSW Heritage Act 1977* within the vicinity of the subject site.

3.2.2 Liverpool LEP 2008

For the following, refer to Figure 12, which provides a detail of a heritage map from the *Liverpool LEP 2008*. In this plan, local heritage items are coloured brown or green and numbered and Conservation Areas are hatched red and numbered. The site is outlined in red and indicated by the red arrow.

Figure 12: Detail, heritage map showing heritage items and Conservation Areas in relation to the subject site. The site is outlined in red and indicated by the red arrow.
Liverpool LEP 2008

There are two heritage items within the vicinity of the site as defined by Schedule 5 Part 1 of the *Liverpool LEP 2008*:

- **'Palm trees (*Phoenix canariensis*)', Corner of Governor Macquarie Drive and Epsom Road, Chipping Norton**

This item is located adjacent to the northeast of the site. It is identified as '21' in Figure 12 above. The item comprises a grouping of 12 palm trees. Refer to Figure 13 which reproduces the site plan showing these trees.

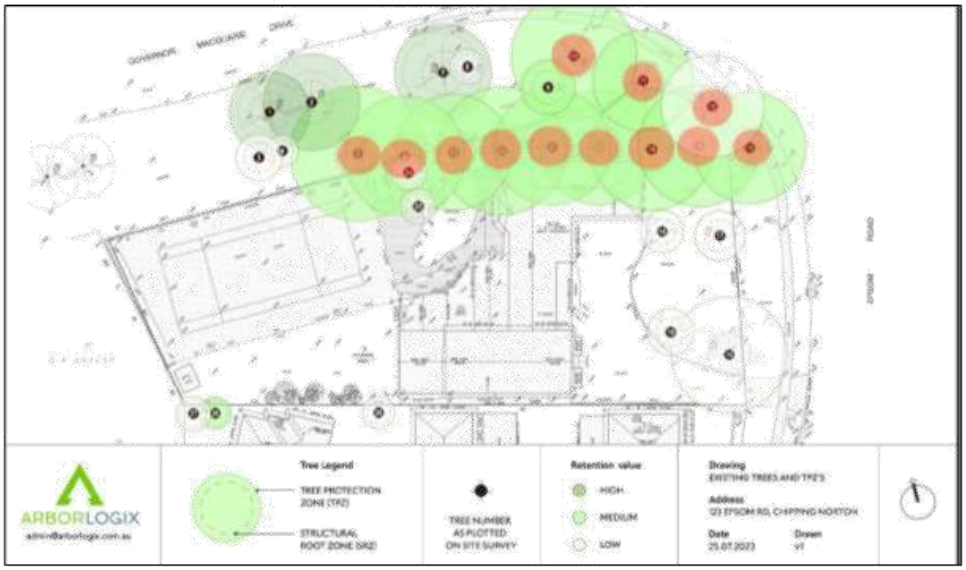

Figure 13: Site plan showing existing trees. Trees shaded in red form part of the heritage item. ArborLogix, 2023; annotations by WPH&P.

The trees that form part of the heritage item are follows:

Within the Subject Site	Outside of the Subject Site
T18	T5
T19	T6
T20	T10
T21	T11
T22	T12
T23	T13

The item is visible, where viewed from the subject site, and vice versa. The item is highly visible in views on approach from the east and west on Governor Macquarie Drive and from the south on Epsom Road.

The State Heritage Inventory does not provide a Statement of Significance for this item.

Refer to Figure 14 which illustrates the item.

Figure 14: Looking towards the heritage item as viewed from Epsom Road. The red arrows indicate the visible trees that form part of the item.

The curtilage for this item is formally identified by the *Liverpool LEP 2008* as 'Adjacent to Lot 3, D.P. 602936'.

- **'Inter-war brick bungalow ("Coolola"), including interiors', Nos 2 and 4 Epsom Road, Chipping Norton**

This item is located to the east of the site and is separated from it by approximately 35m. It is identified as '20' in Figure 12 above. The item comprises a single-storey freestanding Inter-War period dwelling constructed of brick with a gabled roof clad in terracotta tiles. The item is currently used as a dentist.

The item is visible, where viewed from the subject site, and vice versa. The item is highly visible in views on approach from the east and west on Governor Macquarie Drive and from the south on Epsom Road and from the north on Abingdon Road.

The State Heritage Inventory does not provide a Statement of Significance for this item.

Refer to Figure 15 which illustrates the item.

Figure 15: The item as viewed from the intersection of Epsom Road and Governor Macquarie Drive.

This item has a lot boundary curtilage formally identified by the *LEP 2008* as 'Cnr Lot 2000, D.P. 1140651.

3.3 View Corridors

The principal view corridor towards the site is from directly outside on Epsom Road, where the existing dwelling is visible, in addition to the existing trees on and adjacent to the site. As the site occupies a corner lot, it remains highly visible on approach from the south on Epsom Road and from the north on Abingdon Road. Views from the east and west on Governor Macquarie Drive are reduced, except when close by, due to the gentle fall of the road in either direction. Refer to Figures 16 to 18 which illustrate view corridors towards the site.

Figure 16: Looking towards the site on approach from the south on Epsom Road.

Figure 17: Looking towards the site on approach from the north on Abingdon Road.

Figure 18: Looking towards the site on approach from the west on Governor Macquarie Drive.

4 THE PROPOSAL

The following should be read in conjunction with the plans prepared by ArtMade Architects that accompany this application.

It is proposed to remove all structures on the site to facilitate construction of a new childcare centre with basement parking, as noted in detail below:

- Remove the existing dwelling and all structures on the site including the tennis court, swimming pool and hard landscaping, as noted on the plans.
- Retain all existing heritage listed trees within the subject site, as noted on the plans, comprising T18, T19, T20, T21, T22 and T23.
- Remove the existing non-heritage listed trees T15, T16, T17, T24 and T25 and relocate T14, as noted on the plans.
- Construct a new childcare centre to comprise four single-storey structures with associated outdoor play areas to provide for 120 children.
- Excavate for a new basement car park to provide for 33 car spaces (27 staff, 7 visitor and two accessible).
- Construct a new driveway on Epsom Road to access the proposed basement car park.
- Construct a new retaining wall, as noted on the plans.
- Plant new landscaping, as noted on the plans.

The materials and finishes include the following:

- Roof, gutter, downpipes – Colorbond 'Windspray' or similar.
- Garage door – Colorbond 'Windspray' or similar.
- Walls – James Hardie FC sheeting Axon Cladding.
- Window and door frames – Duralloy Powdercoat.
- External Paint – Dulux 'Wistow' or similar and Dulux 'Woodland Grey' or similar.

Refer to Figure 19 which reproduces the proposed site plan.

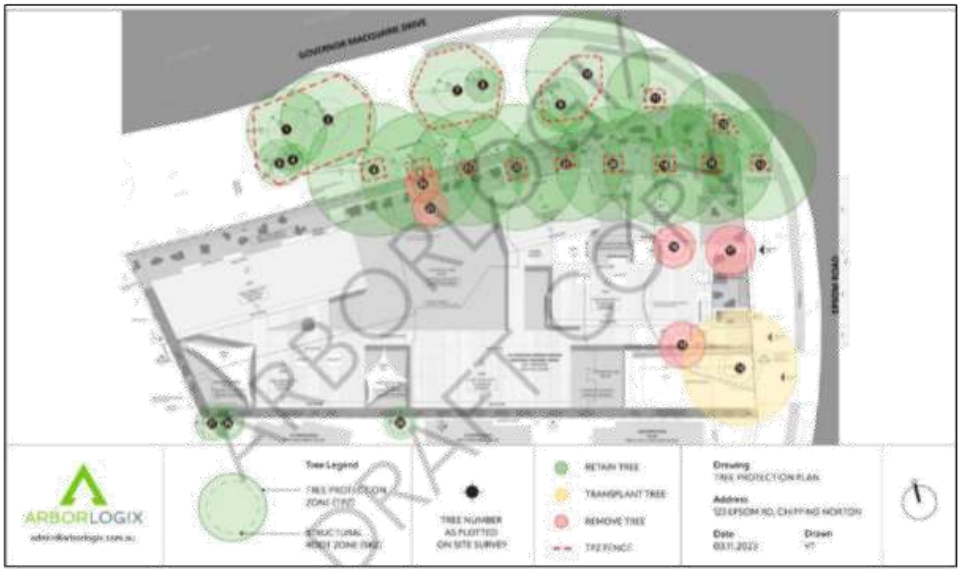

Figure 19: Proposed site plan. Trees shaded in green will be retained as they form part of the heritage item.
ArtMade Architects, 2023; annotations by ArborLogix.

5 EFFECT OF WORK

5.1 Methods of Assessment

The following is a merit-based assessment. It does not consider compliance or otherwise with Council's numerical controls except where non-compliance would result in a heritage impact. Refer to the Statement of Environmental Effects that accompanies this application. The following assessment is made with an understanding of the objectives and controls provided by the *Liverpool LEP 2008* and the *Liverpool DCP 2008*.

5.2 Effect of Work on Heritage Items Within the Vicinity

'Palm trees (Phoenix canariensis)', Corner of Governor Macquarie Drive and Epsom Road, Chipping Norton

This item is located adjacent to the northeast of the site.

The proposed works will have a minimal and acceptable impact on this item for the following reasons:

- The existing dwelling was constructed well after the trees which form part of the item were planted and does not contribute to its setting or significance. Its removal will have no impact.
- The removal of the existing non-heritage listed trees, as noted above, will have no impact as they were planted after the item and are specimens considered to have low significance. Refer to the Arborist Report for further information.
- The existing trees which form part of the heritage item and lie within the boundaries of the subject site, will be retained. Most of the proposed works are sufficiently separated from the trees, however, some of the buildings will intrude on the structural root zone.
- With respect to T21 and T22 which are encroached on by Playroom 4, the proposal will utilise a cantilevered slab system. This raises the structure off the ground and ensures that the tree roots can continue to receive air and water.
- For T23, which will be encroached on by the retaining wall, the proposal will use pier supports which will suspend the slab above the structural root zone.
- In both instances, these works will be carried out under the supervision of the arborist for this project. Refer to the Arborist Report that accompanies this application for further information.
- T14, while it does not lie within the curtilage of the heritage item, is of the same species. It will be carefully transplanted to another suitable location on the site, in coordination with the project arborist, so that it can continue to contribute to the setting of the item.
- The proposed childcare centre will have a minimal and acceptable impact on the heritage item for the following reasons:
- There will be no impact on significant view corridors towards the item, which are obtained from directly outside on Epsom Road and Governor Macquarie Drive. The proposed works are set into the site and back from both street frontages so that views will not be impacted on.
- The childcare centre is well-designed and will sit comfortably in the setting of the heritage item which is characterised by contemporary infill.
- The childcare centre will comprise five single-storey separate structures that are sensitively positioned around the site. This is a positive outcome as it breaks up the massing that would be imposed by a single building.
- The structures will be constructed of high-quality materials including lightweight cladding which will help further to break up the massing. The whole will be presented in a neutral colour scheme of grey and off-white which will not be visually intrusive in the setting of the item.

- The proposed basement will have an acceptable impact as it is sufficiently separated from the root systems of the trees. The basement will locate all parking underground which would otherwise be intrusive in the setting of the item.

- The proposed works include a program of soft landscaping to include new trees of an appropriate species and size which will improve the setting of the item, as well as natural turf. The use of natural turf ensures that the root systems below will continue to receive air and water. Refer to the Landscape Plans for further information.

- For the above reasons, there will be no impact on the ability of the public to understand and appreciate the heritage significance of this item.

'Inter-war brick bungalow ("Coolola"), including interiors', Nos 2 and 4 Epsom Road, Chipping Norton

This item is located to the east of the site.

The proposed works will have a minimal and acceptable impact on this item for the following reasons:

- The existing dwelling was constructed well after the item and does not contribute to its setting or significance. Its removal will have no impact.

- The proposed removal of existing trees on the site will have no impact as they were planted after the item and are specimens considered to have low significance. Refer to the Arborist Report for further information.

- There will be no impact on significant view corridors towards the item, which are obtained from directly outside on Epsom Road and Governor Macquarie Drive. The proposed works are set into the site and back from both street frontages so that views will not be impacted on.

- The proposed childcare centre is well-designed and will sit comfortably in the setting of the heritage item which is characterised by contemporary infill.

- The proposed childcare centre will comprise five single-storey separate structures that are sensitively positioned around the site. This is a positive outcome as it breaks up the massing that would be imposed by a single building.

- The structures will have simple pitched roofs which will not compete with the more complex hipped and gabled roof form of the item.

- The structures will be constructed of high-quality materials including lightweight cladding which will help further to break up the massing. The whole will be presented in a neutral colour scheme of grey and off-white which will not be visually intrusive in the setting of the item.

- The structures will have vertically proportioned openings and avoid large areas of glazing, where visible from the heritage item.

- The proposed basement will have an acceptable impact as it is sufficiently separated from the item. The basement will locate all parking underground which would otherwise be intrusive in the setting of the item.

- The proposed works include a program of soft landscaping to include new trees of an appropriate species and size which will improve the setting of the item. Refer to the Landscape Plans for further information.

- For the above reasons, there will be no impact on the ability of the public to understand and appreciate the heritage significance of this item.

6 CONCLUSION

This Heritage Impact Statement has been prepared in conjunction with a Development Application for the removal of an existing dwelling and the construction of a new childcare centre at No. 123 Epsom Road, Chipping Norton, New South Wales. The site is not listed as a heritage item or located in a Conservation Area as identified by Schedule 5, Parts 1 and 2 of the *LEP 2008*. It is in the vicinity of heritage items listed under the *LEP 2008*.

The existing dwelling and trees proposed for removal all postdate the heritage item "Palm trees (*Phoenix canariensis*)' and do not contribute to its setting or significance. The proposed childcare centre will generally be located away from the heritage listed trees. In instances where the structures will encroach on the structural root zones of the nearest trees, the proposal has successfully mitigated the impact by introducing cantilevered slab and pier systems to ensure that the roots beneath can continue to receive air and water. The proposed childcare centre, including the basement, has been sensitively sited away from the trees so that there is no impact on their root systems. The childcare centre will be comprised of five separate single-storey structures which will help to break up the overall massing and allows for new soft landscaping that will enhance the setting of the item.

The proposed works will have no impact on either the fabric of, or significant view corridors towards the heritage item 'Inter-war brick bungalow ("Coolola"), including interiors' because they are sufficiently separated. The existing dwelling and trees proposed for removal all postdate the item and do not contribute to its setting or significance. The childcare centre will be comprised of five separate single-storey structures which will help to break up the overall massing and allows for new soft landscaping that will enhance the setting of the item.

The proposed works fulfil the aims and objectives of the *Liverpool LEP 2008* and the *Liverpool DCP 2008* by improving the quality and diversity of childcare options in Chipping Norton while respecting the heritage significance of the area in which it lies.

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AWGEOTECHNICS

Monday, August 14, 2023

Mark Brooks
Suite 507/50 Holt Street
Surry Hills NSW 2010

Our Reference: AWT 77188

Your Reference: 23701

Revision A

Site Address

No 123 Epsom Road Chipping Norton New South Wales

Commission

Geotechnical Investigation

1. CONSTRUCTION PROPOSAL

1.1. The proposal is the construction of a childcare centre.

1.2. For reference our office was provided with copies of the concept architectural Plans prepared by Artmade Architects, Ref 23701.

2. SITE DESCRIPTION

2.1. An existing 2 storey dwelling and detached garage are presently on site.

2.2. The site has numerous trees are present on site.

2.3. The observed site drainage would be described as poor to fair.

2.4. The natural site slope is slight.

2.5. The proposed earthworks are understood to be Cut / Fill.

3. ABOUT YOUR REPORT

3.1. This geotechnical report is generally in accordance with the guidelines in AS 2870-2011. We have direct all stakeholders to the following paper, which illustrates the relationship between landscaping/garden maintenance and structural footings.

CSIRO "Foundation Maintenance and Footing Performance: A Homeowner's Guide" Sheet BTF 18, 2003

3.2. The statements presented in this report, including attached appendices, are intended to advise you of what should be your realistic expectations of this report and to present you with recommendations as to how to minimise risks associated with ground works for this project.

3.3. These appendices and other cautioning sections are not intended to reduce our level of responsibility but rather to ensure that all parties who may rely on this report are aware of their responsibilities each assumes in so doing.

3.4. As geotechnical consultants on this project, our responsibilities are restricted to determining the parameters of the strata encountered (within the limitations of our commission and budget) so that the design engineer can design suitable footings.

3.5. As an additional service, we have offered advice in this report to the design engineer on the most suitable type of footing for this site, but it is possible that the engineer will have his own method of support for this structure.

3.6. AS 2870-2011 contains a system of classifying soils based on the ability of the soils to change in soil moisture. These classes are;

AS2870-2011 Site Classification	General Description
Class A	Sand or rock sites with little to no movement (<10mm)
Class S	Slightly reactive clay sites with (11-20mm)
Class M	Moderately reactive clay sites (21-40mm)
Class H1 & H2	Highly reactive clay sites (41-60mm or 61-75mm)
Class E	Extremely reactive clay sites (75mm+)

3.7. As noted above Class ("P") for particular or problem sites that are not able to be classified by reactivity alone. These often indicate filled sites, the presence of substantial vegetation or sites with soft and collapsing soils. It should be noted that the more severe the soil conditions, the heavier and in general, the more expensive the footing system will be.

4. TESTING PROGRAMME

4.1. Four (4) test sites were excavated with a hand & power auger in the approximate locations shown on the attached site sketch.

Note: The position of these test sites were not surveyed, therefore their positions on the attached site sketch should be treated as approximate.

4.2. Numerous disturbed samples were collected and hand classified.

4.3. The onsite material was deemed non-reactive and therefore collecting relevant samples for their shrink/swell parameters with changes in soil moisture was not deemed necessary.

4.4. Adjacent to each test site, the resistance of the strata to a 9kg Dynamic Cone Penetrometer (DCP) was tested and the results are recorded on the attached log sections as blows/100mm.

4.5. Beyond the effective depth of DCP testing, additional pocket penetrometer (PP) testing was undertaken to estimate allowable bearing pressures at depth.

5. FINDINGS

5.1. The stratum encountered is recorded on the attached Log Section (Refer Borelogs).

5.2. No water table was encountered during the testing programme.

5.2.1. We did however encounter "slightly moist" layers throughout the soil profile, which may result in water seepage during excavations.

5.2.2. The absence of a water table during our onsite testing, does not exclude the possibility that water seepage will occur during or after rains where a permeable layer overlies a less permeable layer.

5.2.3. Water seepage may also occur through permeable seams in the soil substrate and if encountered will only prove to be of nuisance value to a competent contractor, however adequate long-term water proofing in these areas will need to be considered.

6. SALINITY TESTING

6.1. Samples retrieved were laboratory tested for their Electrical Conductivity and pH values. The following Exposure Classification has been derived from Table 5.1 of AS2870-2011.

TS No.	Depth (mm)	$EC_{1.5}$ dS/m	EC_e dS/m	pH	Exposure Class
1	500	0.13	2.2	6.3	A1
1	1000	0.11	2.1	6.5	A1
3	1500	0.07	1.4	6.1	A1
3	2000	0.06	1.2	6.2	A1

7. SITE CLASSIFICATION

7.1. According to AS2870-2011 the site classification of the site would be Class P due to the presence of existing structures.

7.2. The soil reactivity would be Class M (ys = 31-40mm) based upon an Ips of 2.5% and a Hs of 1500mm.

NOTE: The above classification has not considered the following;

Clause 2.5.2 of AS2870-2011 and prior to construction a "Site Specific" AS2870-2011 site classification shall be undertaken.

The influence of future trees and their effect on the design ys. Prior to construction the design engineer shall consult Appendix CH or Appendix H of AS2870-2011.

8. GENERAL COMMENTARY & RECOMMENDATIONS

8.1. Abnormal Moisture Conditions

8.1.1. Using the guidelines in AS 2870-2011 we have derived a normal ys in excess of 20 mm (refer front page), which is a measure of the potential of the strata to change volume with changes in soil moisture (generated by seasonal moisture variations).

8.1.2. During the site visit, we also noted features (see front page) within the zone of influence of the proposed building footprint, which are specifically mentioned in Clause 1.3.3 of AS 2870-2011 as contributing to abnormal moisture conditions (AMC). Clause 2.1.2 specifically notes that AMC sites require a "P" classification and AS 2870-2011 offers the following advice to the footing designer on the impact of AMC conditions.

Clause 1.3.3 (in part) "Buildings constructed on sites subject to AMC have a higher probability of damage than that given in Clause 1.3.1"

Clause 1.4.1 General The design conditions specified in Clauses 1.4.2 and 1.4.3 for beams and slabs supported by the foundation on normal sites shall apply.

For other than normal sites, the design of the footing system shall be by engineering principles to ensure the footings perform in accordance with Clause 1.3. Design considerations that are particular to the site shall be considered.

Clause 1.4.3(b) "Past satisfactory performance of similar footings on similar sites"

8.1.3. As the above quoted normal ys does not take into account ground movements generated by the abnormal conditions, the design engineer must use his/her experience and judgment to ensure that the design provides acceptable performance. In doing this, the following must be considered:

8.1.3.1. How the proposed development will change the existing equilibrium of the soil moistures.

8.1.3.2. The long term impact on the soil moisture equilibrium of existing and future vegetation and structures.

8.1.3.3. Appendix H and/or CH of AS2870-2011.

8.1.3.4. Effective site drainage.

8.1.3.5. Past satisfactory performance of similar footings on similar sites.

8.1.4. As the above quoted "normal" ys does not take into account the additional ground movements generated by the "abnormal" conditions, the design engineer must use his/her experience and judgment to ensure that the design provides acceptable performance. In doing this, the following must be considered;

8.1.4.1. How the proposed development will change the existing equilibrium of the soil moistures.

8.1.4.2. The long-term impact on the soil moisture equilibrium of existing and future vegetation and structures

8.1.5. Where vegetation exists within the zone of influence of the proposed footing system, the design engineer shall consult Appendix H and/or Appendix CH of AS2870 in order to provide a suitable structural design.

8.1.6. Although we are not arborists nor have we been provided with a site feature survey showing the location, height and tree canopy information, we have provided an initial estimate of the maximum potential surface movement due to the tree-induced suction change in addition to the normal design suction change "y_{tmax}" below;

Normal ys	y_{tmax}	Estimated Design Class
31-40mm	15 mm	Class H1

8.1.7. Once a site feature survey is completed and the relevant tree information provided, we can provide a specific surface movement suction change calculation "y_t" to aid the design engineer.

8.1.8. If tree piers are preferred in lieu of increasing the stiffness the full slab, below is a design guide for estimating purposes only.

8.2. Hand Auger

8.2.1. Because of limited access, drilling on this site was carried out with a portable auger. If the design depth of piers (i.e. tree piers or sewer piers etc) is deeper than the depth of our test holes further testing with our 4WD mounted drill rig is recommended (once better access becomes available) or an onsite inspection by a suitable qualified person to confirm the strata below the 1500mm level and the approximate set depths of the proposed piers at time of construction.

8.3. Existing Dwelling

8.3.1. Our testing confirmed the presence of shallow surface fill. Whilst the depth of this fill was less than the limits defined in Section 2 of AS 2870-2011 it is inadequate to support the loads associated with the proposed construction. If this shallow fill is not to be removed from site, any loads associated with the proposed construction are to be supported on piers through this fill into suitable natural undisturbed strata under. There are several challenges on this site, which need to be addressed as part of this structural design, which are;

8.3.1.1. The removal of the existing dwelling and the disturbance this will cause to the soil.

8.3.1.2. The removal of the existing dwelling and the subsequent construction of a new dwelling with a different footprint, which will lead to sections of the new footprint overlying soils which will have a different moisture content to other sections.

8.3.1.3. The removal of the existing vegetation and subsequent new landscaping as part of the new development.

8.3.2. To provide adequate long-term performance in accordance with the performance criteria set out in Appendix C of AS2870-2011 (the owner shall confirm this performance criteria meets their expectations and if not, then they shall advise the design engineer in order to design a footing system which does), we believe the following shall be a minimum design;

8.3.2.1. Support all structural footings on piers socketed a minimum 500mm into the V Stiff Clay.

8.3.2.2. Design a footing system with sufficient stiffness to cope with a ys of 41-60mm (Class H1).

8.3.2.3. Ensure all plumbing and drainage meets the requirements of section 5.6 of AS2870-2011.

8.4. Shallow Fill

8.4.1. Our testing confirmed the presence of shallow surface fill. Whilst the depth of this fill was less than the limits defined in Section 2 of AS 2870-2011 it is inadequate to support the loads associated with the proposed construction. If this shallow fill is not to be removed from site, any loads associated with the proposed construction are to be supported on piers through this fill into suitable natural undisturbed strata under.

8.5. Water Table

8.5.1. Although no water table was encountered during our testing, a perched water table or water seepage can occur during or after wet periods, generally where a porous layer overlies less porous strata. This generally results in some water seepage into excavations down to this level, but a competent contractor can usually resolve this issue.

8.6. Piers

8.6.1. At the time of testing our office was informed that the bulk earthworks has been completed even though civil operations are still taking place on the estate. If further alteration of the observed surface takes place through additional cutting or filling, we would recommend that the site is retested. The allowable bearing capacities indicated require examination by the design engineer so as to determine their suitability to support the design loads of the proposed structure. The design engineer may nominate to alter the standard pier configuration (changing diameter, depth and spacing) to better suit the capacities encountered without the presence of rock, very stiff clay or very dense sands with high allowable bearing capacities (>400kPa).

8.6.2. Alternatively, if piles are proposed we would strongly suggest that the "site specific" pile design is undertaken after either the installation of test piles by the preferred piling contractor or a more extensive geotechnical investigations.

8.7. Retaining and Shoring

8.7.1. For any proposed areas of excavation, the following safe temporary excavation angles are applicable;

Strata	Temporary
Sandy Topsoil	20-30°
V Stiff Clay	45°
XW-Rock Class IV	60°

8.7.1. Steeper angles are possible, however all stakeholders must recognize that with steeper angles comes greater risk. If steeper angles then above are envisaged, then they shall be inspected and approved by a suitably qualified person prior to any further site works.

8.7.2. Good site drainage is required in order to achieve the above angles, including the use of spoon drains etc to divert water away from the batters and to stop water cascading over the batters.

8.7.3. The above "safe batter angles" should not be confused with the "angle of repose", if nearby structural footings exist, which for the natural clay-based strata an angle of 45° or natural sand the angle would be 33° would be applicable.

8.7.4. If "batters" are to be used, then regular geotechnical inspections shall be commissioned and as part of these inspections, if delineations in the face are noted, then all stakeholders must have adequate allowance for the use of anchors and shotcreting within their construction budget.

8.7.5. If the excavation cannot be accommodated within the angles noted and adjacent properties and underground infrastructure require continuing support, then shoring of the excavation may be required.

8.7.6. Providing cantilevered "hit and miss" piers with shotcrete infill panels and a capping beam around the perimeter of the excavation will provide adequate long-term support.

8.7.7. For the design of shoring (Uniform Rectangular Lateral Earth Pressures), the following is applicable;

8.7.7.1. For where the structures behind the shoring are "settlement sensitive" : 8 x H kPa where H is the depth of excavation in metres.

8.7.7.2. Where the structures behind the shoring are not "settlement sensitive" : 4 x H kPa.

8.7.7.3. No allowance has been made for street loadings or any proposed "Hard Stand" areas adjacent to the excavation so once this is known, it needs to be factored into the calculations.

8.7.8. Any imposed surcharges from the adjacent structures, batter slopes and backfill must be considered within the design.

The following generic parameters are a guide for the design of retaining structures on site;

Strata	Dry Unit Weight kN/m³	Wet Unit Weight kN/m³	∅	Ko	Ka	Kp
Silty Sand	13	18	25°	0.58	0.41	2.46
Clay – Soft	12	16	20°	0.66	0.49	2.04
Clay – Stiff	16	18	25°	0.58	0.41	2.46
Clay – V Stiff	18	20	27°	0.55	0.38	2.66

NOTES:

- Any imposed surcharges from the adjacent structures, basements and backfill must be considered within the design.
- We believe it prudent to design for ¼ x Wall height pore water pressure builds up in the long term, even if behind wall drainage is incorporated into the design.

8.8. Bearing Pressures

8.8.1. For footings that are founded into V Stiff Clay the allowable bearing pressure of will be in excess of 250kPa.

8.8.2. For footings that are founded into weathered rock the allowable bearing pressure of will be in excess of 300kPa.

8.8.3. The non-cohesive, sand-based soil will collapse at shallow angles and therefore if bored piers are envisaged, we would strongly recommend the use of casing to ensure stability during construction.

8.8.4. Nil skin friction will be obtained from piers in sandy topsoil or rock.

8.9. Adhesion

8.9.1. If adhesion is to be relied upon, then the following values are applicable;

Strata/Depth	Adhesion
Fill/Topsoil	0kPa
Firm Clay	5 kPa

Strata/Depth	Adhesion
Stiff Clay	10 kPa
V Stiff Clay	25 kPa

8.10. Proposed Excavations

8.10.1. XW Rock may be exposed during the excavations. Exposing XW-Rock encountered will have enough natural fracture lines for a suitably sized excavator fitted with a dog tooth tyne to rip it down to finished pad level, however hard rock lenses may occur or Class IV DW rock encountered. If the use of a rock hammer is required, then following guidelines are recommended;

When excavating rock, most Local Authorities place the following limits on ground vibrating (measured as Peak Particle Velocity (PPV));

Maximum PPV: 5mm/sec

PPV at Property Boundary: 3mm/sec

We always recommend that a local contractor experienced in these types of excavations in this type of strata be consulted as to the best way to excavate this rock and limit the ground vibrations, but in lieu of this input, we recommend either;

- Using a rock saw to saw the rock up into blocks for easy removal and this process is virtually vibration free, or
- Grind an isolation trench around the limits of the excavation to a depth 200mm below the base of the excavation then the following values are applicable;

Maximum Peak Particle Velocity 5mm/sec

Distance from adjoining structure (m)	Equipment	Operating Limit (% of Max Capacity)
0 to 3.0m	Saw	-
3.0 to 5.0m	300kg Rock Hammer	50%
5.0 to 10.0m	300kg Rock Hammer	100%
5.0 to 10.0m	600kg Rock Hammer	50%

NOTE 1: These values are approximates based on experience and should be treated as a guide only.

NOTE 2: An earthmoving contractor familiar with the local area shall be consulted to provide further advice on required machinery.

9. GENERAL NOTES

9.1. Any features supported on the natural strata including (but not limited to) slabs, walls, fences, plumbing, paths etc will undergo differential movement. Features supported at depth will not undergo any such movement. Therefore, where features including (but not limited to) slabs, walls, fences, paths, plumbing etc, transgress from one foundation strata to another or where they abut a feature founded on a different strata, a potential for long term differential movement exists. Although it is difficult to quantify this potential provision must be made in the design and construction to accommodate these differential movements.

9.2. The provisions of Section 5.6.4 of AS2870-2011 maybe applicable to this site.

9.3. The landscape plan must be compared with the structural plan to ensure that there will not be any adverse affects on any part of the structure, particularly as plants and watering systems can magnify the shrink/swell effect and compound the problems of features supported in or on reactive strata. The appended CSIRO brochure (while written for buildings under the scope of AS 2870-2011) offers further guidance on this subject. However for ys values of between 11-20mm, single trees must be 0.5 times their mature height away from any structural footing and for rows or clumps of trees, this distance must be increased.

9.4. At the time of our investigation, trafficability was deemed to be "fair" across the site. However it should be noted that trafficability issues may arise from disturbance of soil layers and the removal of vegetation.

9.5. All stakeholders should also be made aware that allowing water to pond or seep into the underlying soil layers will result in the site becoming un-trafficable quickly and therefore all relevant stakeholders should familiarise him/herself in regards to establishing adequate site drainage during excavation works.

9.6. The "sand" when disturbed and allowed to become saturated will make the site un-trafficable for even large machinery.

9.7. After the topsoil is stripped, if trafficability proves difficult or unfavourable weather is present, the earthworks contractor maybe required to import "rip-rap" or "subgrade" material in order to continue with construction.

10. LIMITATIONS

The contents of this report are based on the expertise and experience of the author, representing the company. Our commission didn't extend to slope stability, nor did it extend to testing to comply with the relevant Contaminated Land Act, however we have no evidence to suggest that the site is contaminated.

The opinions and recommendations made in this report are based on the assumption that the test results are representative of the true site conditions. Even under optimum circumstances, actual conditions may differ from those reported to exist. Economic and time constraints necessarily limit the practical extent of any investigation. We therefore cannot accept responsibility for conditions encountered on this site, outside the areas tested, which are different to those reported. Where the attached soil profiles are similar to each other, then we would expect little variation across the site, so if widely different soils are encountered then a further inspection of the site and/or further testing may be required. If the attached soil profiles are different across the site, then variations will be encountered during footing excavations. In these cases, the design engineer/client must make a decision whether to extend the geotechnical budget to do more testing or to cope with the variations during footing excavations. Regardless of the option chosen the final inspection before placement of concrete is critical and the person certifying this inspection should be competent in identification of strata.

This report may only be reproduced in full, if any doubt exists to the number of pages in this report we should be contacted. The original copies of this report are signed in blue ink.

11. REFERENCES

The following papers, reports or books have been consulted in preparing this report:

- AS 2870-2011 "Residential Slabs & Footings" by Standards Australia
- AS2870-1996 Supplement 1-1996 "Residential Slabs and Footings-Construction-Commentary, (Supplement to AS2870-1996).
- AS 3798-2007 "Guidelines on Earthworks for Commercial and Residential Developments" by Standards Australia.
- Paul Walsh & Don Cameron "The Design of Residential Slabs and Footings" by Standards Australia 1997
- M.F. Atkinson "Structural Foundations Manual for Low-Rise Buildings" 1993
- Monograph 9 "Field Geologists Manual 4th Edition – 2001" compiled by D.A. Berkman for AIMM.
- B.G. Look and S.G. Griffiths "An Engineering Assessment of the Strength and Deformation Properties of Brisbane Rocks". AGS Journal Volume 36, no. 3 September 2001.

We believe these to be the most up to date publications available. Should other publications not listed are brought to our attention, we reserve the right to modify this report if they contain information conflicting with this report.

AW Geotechnics

Jason Bau

MIE Aus, NER, RPEQ

www.awgeotechnics.com.au

AWGEOTECHNICS

BORELOGS as per AS1726-2017

TEST SITE 1					TEST SITE 2				
Depth (mm)	Description Soil Type-Colour-Consistency	FILL	DCP	PP kPa	Depth (mm)	Description Soil Type-Colour-Consistency	FILL	DCP	PP kPa
100	**SANDY CLAY (CL) w gravel**		2		100	**SANDY CLAY (CL) w gravel**		1	
200	(mott brn/rd/gy)		4		200	(mott brn/rd/gy) Slightly Moist		2	
300	Slightly Moist		5		300	**SANDY CLAY (CL) w gravel**		1	<50
400	**SANDY CLAY (CL) w gravel**		6		400	(gy) Slightly Moist & Soft		1	
500	(mott brn/rd/gy)		6	100	500	**SANDY CLAY (CL) w gravel**		1	
600	Slightly Moist & Firm to Stiff		6		600	(mott brn/rd/gy)		2	
700			7		700	Moist & Soft to Firm		1	
800			6		800			3	
900			7		900			6	
1000			8		1000			10	150
1100	**SANDY CLAY (CL) w gravel**		10		1100	**SANDY CLAY (CL) w gravel**		13	
1200	(mott gy/rd/or)		11	150	1200	(mott gy/rd/or)		14	
1300	Slightly Moist & V Stiff		12		1300	Slightly Moist & V Stiff		24	
1400			18		1400			25	250
1500			14		1500			27	
1600	END H/A		13		1600	END H/A			
1700			13	250	1700				
1800			12		1800				
1900			12		1900				
2000			13		2000				
2100			12		2100				
2200			11		2200				
2300			12		2300				
2400			14		2400				
2500			15		2500				
2600			18		2600				
2700			17		2700				
2800			21		2800				
2900			30+		2900				
3000					3000				

NOMENCLATURE:

UTP=Unable to Penetrate XW ROCK=Extremely Weathered Rock P/A = Power Auger
Refer Tables 7.3.2 & 7.3.3. AS1726-2017 gy=grey or=orange yell=yellow rd=red wh=white brn=brown bk=black bl=blue gr=green
Refer AS1726-2017 Clause A2.4 for classifying soils.

Notes:

1. Hand Auger (H/A) is a portable auger and where utilised is used because of lack of access or trafficability, it is essential that the results of a hand auger are confirmed once access is provided, further testing using a 4WD mounted drill rig is carried out, or stakeholders shall accept the associated risk of results which may not represent the subject site conditions.
2. 9kg Dynamic Cone Penetrometer (DCP) can be unreliable in certain soils which may include (but not limited too), cohesive soils, soils which may contain gravels with a grain size in excess of 10mm, and strata with allowable bearing pressures in excess of 400kPa.
3. Pocket Penetrometer (PP) readings are an unfactored field strength test and should not be assumed equates to an allowable bearing pressure.

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BORELOGS as per AS1726-2017

TEST SITE 3

Depth (mm)	Description Soil Type-Colour-Consistency	FILL	PP	PP kPa
100	**SANDY CLAY (CL) w gravel**			
200	(mott brn/rd/gy)			
300	Moist		60	
400				
500	**SANDY CLAY (CL) w gravel**			
600	(brn) Very Moist		110	50
700	**SILTY CLAY (CI) w gravel**			
800	(mott brn/rd)			
900	Moist & Stiff to V Stiff		430	200
1000				
1100				
1200	**SANDY CLAY (CL) w gravel**		550	250
1300	(mott gy/rd/or)			
1400	Slightly Moist & V Stiff			
1500			580	
1600				
1700				
1800				
1900				
2000				
2100				
2200				
2300				
2400				
2500				
2600				
2700				
2800				
2900				
3000				
3100				
3200				
3300	**SANDY SILTY CLAY (CI)**		140	75
3400	(gy)			
3500	Moist & Firm to Stiff			
3600			210	100
3700				
3800				
3900			240	
4000				

TEST SITE 3 Continued

Depth (mm)	Description Soil Type-Colour-Consistency	FILL	PP	PP kPa
4100				
4200			150	75
4300				
4400				
4500			180	
4600				
4700				
4800	**SANDY CLAY (CL) w gravel**		250	100
4900	(mott gy/rd)			
5000	Moist & Stiff			
5100			210	
5200				
5300				
5400			210	
5500				
5600				
5700			280	150
5800				
5900				
6000				
6100	END P/A			
6200				
6300				
6400				
6500				
6600				
6700				
6800				
6900				
7000				
7100				
7200				
7300				
7400				
7500				
7600				
7700				
7800				
7900				
8000				

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2. 9kg Dynamic Cone Penetrometer (DCP) can be unreliable in certain soils which may include (but not limited too), cohesive soils, soils which may contain gravels with a grain size in excess of 10mm, and strata with allowable bearing pressures in excess of 400kPa.
3. Pocket Penetrometer (PP) readings are an unfactored field strength test and should not be assumed equates to an allowable bearing pressure.

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BORELOGS as per AS1726-2017

TEST SITE 4

Depth (mm)	Description Soil Type-Colour-Consistency	FILL	DCP/PP	PP kPa
100	**SANDY CLAY (CL) w gravel**			
200	(mott brn/rd/gy)			
300	Moist		250	
400	**SANDY CLAY (CL) w gravel**			
500	(brn)			
600	Very Moist & Soft		100	50
700	**SILTY CLAY (CI) w gravel**			
800	(mott brn/rd)			
900	Moist & V Stiff		560	250
1000				
1100	**SANDY CLAY (CL) w gravel**			
1200	(mott gy/rd/or)		600	
1300	Slightly Moist & V Stiff			
1400				
1500				
1600				
1700				
1800				
1900				
2000				
2100				
2200				
2300			14	
2400			11	250
2500			19	
2600	**SANDY SILTY CLAY (CI)**		15	
2700	(mott gy/rd)		17	
2800	Moist & Stiff to V Stiff		15	
2900			18	
3000				
3100				
3200				
3300			250	100
3400				
3500				
3600			230	
3700				
3800				
3900			190	
4000				

TEST SITE 4 Continued

Depth (mm)	Description Soil Type-Colour-Consistency	FILL	DCP	PP kPa
4100				
4200			190	
4300				
4400				
4500			140	75
4600				
4700				
4800			190	
4900				
5000				
5100			210	100
5200				
5300				
5400			220	
5500				
5600				
5700			270	150
5800				
5900				
6000				
6100	END P/A			
6200				
6300				
6400				
6500				
6600				
6700				
6800				
6900				
7000				
7100				
7200				
7300				
7400				
7500				
7600				
7700				
7800				
7900				
8000				

NOMENCLATURE:

UTP=Unable to Penetrate XW ROCK=Extremely Weathered Rock P/A = Power Auger
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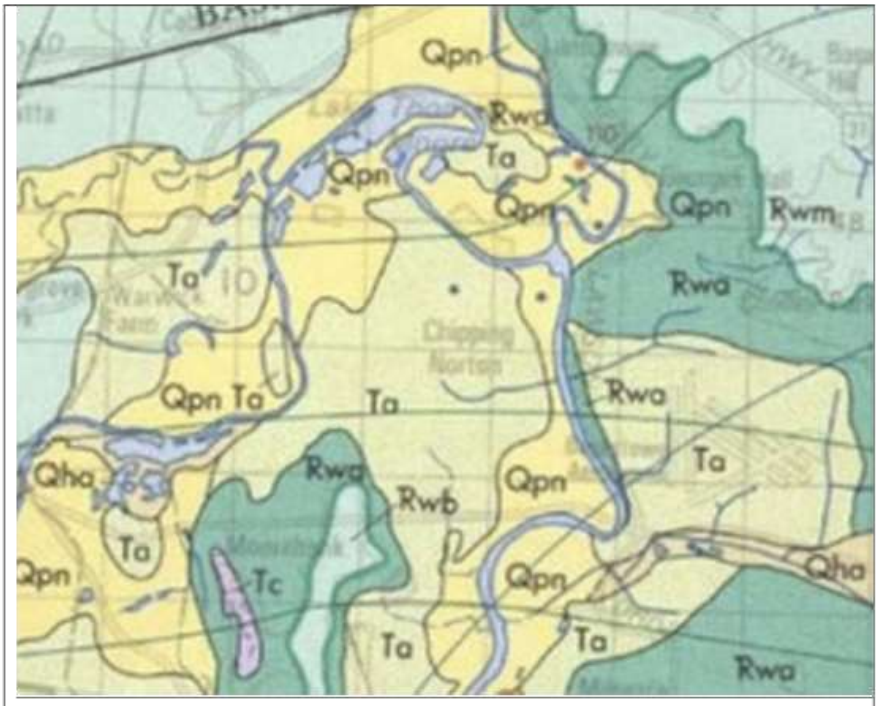
2. 9kg Dynamic Cone Penetrometer (DCP) can be unreliable in certain soils which may include (but not limited too), cohesive soils, soils which may contain gravels with a grain size in excess of 10mm, and strata with allowable bearing pressures in excess of 400kPa.
3. Pocket Penetrometer (PP) readings are an unfactored field strength test and should not be assumed equates to an allowable bearing pressure.

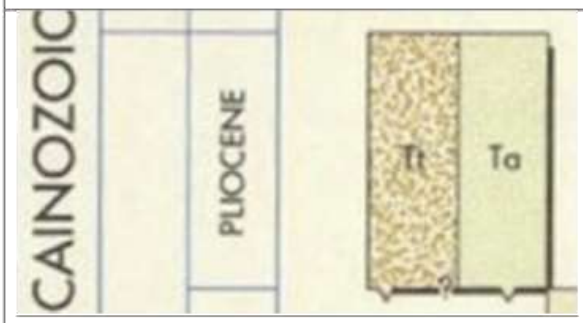
SITE SKETCH (Not to Scale)

SITE PHOTOGRAPHS

AERIAL PHOTOGRAPHS

GEOLOGICAL MAPPING





Ta	*Clayey quartzose sand, and clay*

Taken from NSW Department of Mineral Resources

UNDERSTANDING THIS REPORT

The soils encountered on this subject site have been identified as expansive/reactive soils which have a potential to change volume with changes in soil moisture.

These soil moisture variations can be generated naturally (by rain or lack of rain), by nearby vegetation, either new plantings, existing tree(s) being removed or allowed to continue to grow, or by poor site drainage, where water is allowed to pond or accumulate near the footing system. Another significant cause can be broken or damaged service pipes which carry water near or under the dwelling. These factors are outlined in AS2870-2011, Section 1.1 and are known as: "Abnormal Moisture Conditions"

In preparing this report, we have used our experience and current scientific knowledge to determine the various parameters needed by your Engineer to design an economical footing system which will provide serviceability within the AS2870 performance criteria for the life expectancy of the dwelling.

At the time of our testing we had an understanding of the soil moisture content, and we derived a 'Design Movement' value in 'mm'. We then use to following matrix to arrive at a 'Risk of' potential for this site:

Potential for Long Term Uplift (Heave)

	Wet MC>>PL	Moist MC>PL	Neutral MC=PL	Slight Dry MC<PL	Dry MC<<PL
< 20mm	Not Creditable	Very Low	Low	Low	Moderate
21-40mm	Very Low	Low	Moderate	Moderate	High
41-60mm	Low	Low	High	High	Very High
61-75mm	Low	Moderate	Very High	Very High	Extreme
76-100mm	Low	Moderate	Extreme	Extreme	Very Extreme
> 100mm	Low	Moderate	Very Extreme	Very Extreme	Very Extreme

Potential for Long Term Settlement

	Wet MC>>PL	Moist MC>PL	Neutral MC=PL	Slight Dry MC<PL	Dry MC<<PL
< 20mm	Moderate	Low	Low	Very Low	Not Creditable
21-40mm	High	Moderate	Moderate	Low	Very Low
41-60mm	Very High	High	High	Low	Low
61-75mm	Extreme	Very High	Very High	Moderate	Low
76-100mm	Very Extreme	Extreme	Extreme	Moderate	Low
> 100mm	Very Extreme	Very Extreme	Very Extreme	Moderate	Low

An estimation of bearing pressures may be interpreted by the design engineer's review of Pocket Penetrometer (PP) and Dynamic Cone Penetrometer (DCP) readings. Below is a summary of minimum readings necessary to obtain the allowable bearing capacities nominated.

Allowable Bearing Values (kPa)	<50	50	100	150	250	300+
Min DCP Readings	1	2	4	6	9	12
Min PP Readings	< 100	100	200	300	500	600

Class P N2 Existing Dwelling Yes (Controlled Fill) @Clwith grass & treesient @N Poor to Fairient @

No clients, Client Gentle
Existing Building Platform

General Notes

This is a site classification report generally in accordance with AS 2870-2011 and should be sufficient for a qualified person to design footings for structures covered under the scope of this standard.

Where our proposed earthworks specification states "Unknown", AS 2870-2011 Clause 2.5.2 requires the site to be reclassified prior to footing construction if the proposed cut exceeds the lesser of $0.25H_s$ or 500 mm and the proposed fill exceeds the limits in Clause 2.5.3 of AS 2870-2011. In these instances, the site classification is in the "as tested" state and may not reflect the final site classification after earthworks. Normally this re-classification is done by the design engineer, but upon request, we can do this. Where the site preparation is stated as "known", our classification is based on the data given, as we envisage the finished building footprint (which conforms to the AS 2870-2011 guidelines), therefore re-classification is only required if these guidelines change. This report may not be adequate for large complex dwellings that are generally outside the scope of AS 2870-2011.

AS 2870-2011 contains a system of classifying soils based on their ability to change volume with changes in soil moisture. These classes are Class A, Class S, Class M, Class H1, Class H2 and Class E (the most severe). These "Normal" classes also have a minimum allowable bearing capacity as outlined in Clause 2.4.5 of AS 2870-2011.

AS 2870-2011 also has a Class P for problem sites covering fill, soft or collapsing soils, potential slope stability problems, mining subsidence and abnormal moisture conditions. Abnormal Moisture Conditions (AMC) is a particularly contentious area and Clause 1.3.3 of AS 2870-2011 covers many situations where this clause applies. The most common situations are sites with clay soils (normally Class M, H1, H2 or E (ys > 20)) that have either existing structures or trees or gardens within the zone of influence of the proposed footing. Some of these trees may be on adjoining properties. Where this clause is applicable, we have added further explanatory advice. The soil shrinkage index (Ips) range quoted in this report was assigned after considering the guidelines in Section 2 of AS 2870-2011 and from this we have derived a ys, which is the "characteristic surface movement" under NORMAL moisture conditions.

Footings designed in accordance with AS 2870-2011 have a long-term performance criteria and it should be noted that this does not offer a crack or distress-free performance. It offers a performance criteria that ensures a low probability of foundation failure, provided abnormal moisture conditions, such as over-watering, bad drainage, leaking pipes or nearby trees are not allowed to exist or develop.

These performance criteria are outlined in Appendix C of AS 2870-2011 and under normal conditions a low incidence of Category 1 damage and an occasional incidence of Category 2 damage is expected. This appendix is available from our office upon request.

Where Abnormal Moisture Conditions exist and/or are allowed to continue or develop, then not only will the above probabilities increase, but the damage will be greater. The ultimate responsibility falls on the design engineer to negate the effects of these conditions when they are known and for the owner/occupier to ensure that they do not develop. Our responsibility is limited to identifying these conditions.

If any potential owner is not satisfied with the performance criteria in AS 2870 (which has been applied Australia wide since 1986) then prior to footing design, he/she should consult with the design engineer and have a specially designed footing more suited to their needs.

Classification Limitations

The content of this report is based on the expertise and experience of the author representing this company. Our commission didn't extend to assessing instability due to previous or existing sub-surface mining, landslip or earthquakes, nor did it extend to testing to comply with the relevant contaminated land act or for acid sulfate soils (see note below). If, however any of these exclusions was obvious or where the allotment is within an area where we are aware of a past history of these exclusions, we have made comment and given further advice. This report is based on the assumption that the test results are representative of the true site conditions. Even under optimum circumstances, actual conditions may differ from those reported to exist. Although our investigation exceeds the minimum requirements of AS 2870-2011, economic constraints necessarily limit the practical extent of any investigation. We therefore cannot accept responsibility for conditions encountered on this site outside the areas tested which are different to those reported. The positions of these test sites have not been surveyed and should be regarded as approximate. We have followed AS 2870-2011 soil descriptions contained in Clause C2.1 rather than AS 1289 because where there is a conflict between referenced codes, AS 2870-2011 takes precedence.

Under slab Termiticide Irrigation Systems

These are becoming popular and besides serving their obvious purpose, they also inject extra moisture beneath the slab at various times (measured in years). This creates long term "abnormal" moisture conditions that needs to be addressed at the design stage, therefore if one of these is proposed for this project, the design engineer must be informed prior to preparing the slab. As a general rule, to cope with these systems, the ys must be increased by about 50%, which will generally result in a slab one category higher than would normally be used (refer P12, Supplement to AS 2870-2011). Upon request we can supply more specific advice.

Acid Sulfate Soils (ASS) & Saline Soils

Unless specifically stated, we have not considered the possibility of ASS, which occur around the coastline, generally below AHD 5.0 and occasionally on broad river flood plains at higher levels. Most Councils maintain maps of these areas. In new estates the ASS problem has normally been assessed and neutralised, but it is worthwhile confirming this at land sales, if ASS are suspected. In older areas, the council is normally the best source of advice. ASS, if present, do have the potential to dramatically shorten the life of footings, slabs, reinforcement and bricks. This advice is also relevant for saline soils. Unless specifically stated, we have not considered the possibility of Saline Soils, however we can provide a quotation to complete this testing.

Filled Ground

Controlled Fill - Material that has been placed and compacted in layers by compaction equipment within a defined moisture range to a defined density requirement in accordance with AS 3798-2007 Clause 6.4.2 of AS 2870-2011 defines controlled fill.

Uncontrolled Fill - Fill that does not have sufficient documentation to be classified as controlled is by exclusion, uncontrolled. Where found we have offered further advice within this report.

Topsoil/Estate Dressing

In our soil log section, where we have logged "Topsoil" or "Estate Dressing" it is defined as per clause 1.2.15 of AS 3798-2007 thus:

"A poorly compacted superficial soil containing some organic matter, usually darker than the underlying soils"

Good building practice dictates that all heavy organic strata be scraped clear of the building envelope during the early stages of site preparation and we have assumed that this will be done.

Short Term Site Management

This is the responsibility of the builder, and besides ensuring that the site is handed over to the owner at completion in accordance with accepted practice, the following should also be done:

- Ensure all service trenches are back-filled as soon as possible in accordance with Clause 6.6 of AS 2870-2011, including the clay plug where a service pipe trench exits the building footprint.
- Ensure guttering is connected to the stormwater (via temporary pipes if necessary) as soon as the roof is on.
- Ensure that during construction and at the time of hand-over that the site is maintained as per Clause 5.2.1 of AS 2870-2011.

If any of these practices are not carried out, the site may develop "abnormal" moisture conditions, increasing the risk of damage above the AS 2870-2011 criteria.

Other Construction Issues

The builder must also ensure that other sub-trades such as plumbers, drainers and swimming pool contractors don't establish excavations within the critical zone of influence of the footing system unless the footing is piered below the influence of these excavations. This critical zone varies from 20° (1V:2H) to 45° (1V:1H), depending on the nature of the strata. If this situation is considered possible, then once the proposal is known we can offer further advice. These excavations include inground tanks. Unless we have specifically given written approval, no inground tanks should be sited within 8 metres of any structural footing.

Furthermore, there should be no in ground disposal or storage of water, (i.e. soakage pits, rubble pits, rain gardens or similar), within eight (8) metres of a structural footing, without our prior written approval.

Where the proposed earthworks involve the establishment of cut/fill batters, advice concerning safe angles is beyond the scope of commission in this report. AS 2870-2011, Clause 6.4.4 offer guidelines.

Long Term Site Management

It is the owner's responsibility to ensure both tenants and future owners are aware of these responsibilities. The referenced CSIRO sheets outline these responsibilities and if the builder does not give the owner a copy, they can be sourced from either the CSIRO (1800 645 051) or our office.

The major danger to dwellings is allowing site conditions to deteriorate to "abnormal" in the long term.

Where abnormal moisture conditions are allowed to continue or to develop, then not only will the above probabilities increase, but the damage will be greater.

The CSIRO sheets define both "normal" and "abnormal" conditions.

The significant (not necessarily in order) abnormal conditions that adversely affect the performance of AS 2870-2011 type footings are:

- Trees growing or allowed to grow within the critical zone of influence of the footings.
- Poor site drainage
- Saturated service trenches (poor site drainage).
- Leaking service pipes

The builder, owner/occupier and engineer should take note that management of trees is the most difficult part of the site management procedures and trees present the greatest risk to the future poor performance of the footing system. Trees (existing or proposed) must not be allowed to grow without taking action to negate their effects within the critical zone of the footing system.

Class	Normal ys	Critical Zone
Class M	< 41mm	.75 times mature height
Class H1	41-60mm	1.0 times mature height
Class H2	61-75mm	1.0 times mature height
Class E	76-100mm	1.5 times mature height
Class E	>100mm	2 times mature height

These spacings must be increased for groups or rows of trees.

These distances are only a "rule of thumb" as the tree species and their root systems play an equally important role. Refer Appendix H and/or CH or AS2870-2011.

ENVIRONMENTAL CONSULTING SERVICES

PRELIMINARY ENVIRONMENTAL SITE INVESTIGATION

123 Epsom Road
Chipping Norton NSW 2170

ENVIRONMENTAL CONSULTING SERVICES PTY LTD
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Disclaimer

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Register of Amendments		
Revision	Date	Description
1	02.11.2023	Draft for review
2	15.11.2023	Issued for use

Document Approval		
Prepared by	Date	Signed
Tom Caples	30.10.2023	
Approved by	Date	Signed
Simon Caples Principal Consultant	02.10.2023	
Certified by	Date	Signed
Laurie Fox CPSS, CSA	14.11.2023	

Acknowledgement of Country

ECS acknowledging the Traditional Custodians of the land on which this investigation was conducted we and pay our respects to their Elders past and present.

Executive Summary

Environmental Consulting Services Pty Ltd (ECS) was engaged to undertake a Preliminary Site Investigation (PSI)of the property at 123 Epsom Road Chipping Norton NSW (the Site). ECS understands that it is proposed to redevelop the Site for a childcare facility.

The objective of the environmental investigation was to evaluate the potential for contamination resulting from past Site activities and draw conclusion about the suitability of the Site for sensitive land use. The scope of work undertaken to meet this objective included the review of selected background information including historical aerial photographs and certificates of title, the identification of potential contamination types and the development of a conceptual Site model, a Site walkover and targeted soil sampling.

The Site currently contains a two-storey brick house with an attached triple garage. The Site has mixed surface conditions including lawn spaces within the front and rear yards. There is also a small metal shed within the rear yard as well as a concrete tennis court and pool within the tiled courtyard. Surface soils are otherwise considered to be disturbed natural sandy silty clays with traces of gravel.

During the Site walkover there was no evidence of significant imported fill material (although garden mulch was noted), and asbestos containing material was not observed across the surface or found within the test pits excavated for sampling. Possible asbestos containing material (ACM was observed within the building eaves).

The desk study and historical review showed that the Site has primarily been owned by a single family between 1902 to 1985. The existing house was constructed sometime between mid 1980s and early 1990s. Prior to this time the site was unoccupied and possibly used for agriculture (cropping and orchards).

There was some indication that the Site may have been used for crop production for a short period prior to the establishment of the existing house and has since remained used for residential purposes.

To characterise the surface material, six shallow test pits were excavated into clayey and sandy silt soils. The results of the soil analysis indicated concentrations of contaminants were below the human health and the ecological investigation levels for sensitive landuse. The analysis did not indicate concentrations of organochlorine pesticides within the surface soil which could represent contamination from agricultural land use.

Based on the findings of this investigation, ECS concludes that the Site is considered suitable for proposed redevelopment and sensitive land use provided the following recommendations are implemented:

- A hazardous building materials survey should be undertaken by a suitably qualified consultant prior to the demolition of buildings and structures. Asbestos containing material (ACM) identified during the building survey, should be dismantled by an appropriately licensed asbestos removalist in such a manner that does not impact the ground surface; and
- Excavated soil material generated during excavation and redevelopment activities should be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines and disposed of to an appropriate and licenced facility.

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1.0 INTRODUCTION

Environmental Consulting Services Pty Ltd (ECS) was engaged to undertake a Preliminary Site Investigation (PSI) of the property known as 123 Epsom Road Chipping Norton NSW (the Site). The purpose of this assessment was to accompany a Development Application to Liverpool City Council (Council).

ECS understands that it is proposed to redevelop the Site as a childcare facility. The proposed concept plans for the Site are included in *Appendix 1*.

The investigation has been undertaken with reference to:

- Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2020);
- State Environmental Planning Policy (Resilience and Hazards) 2021;
- Sampling Design part 1 - application (NSW Environment Protection Authority August 2022); and
- National Environment Protection Measure (NEPM) for the Assessment of the Site Contamination (ASC NEPM 2013).

1.1 Scope of Work

The objective of the environmental investigation was to assess the potential for contamination resulting from past Site activities and draw conclusion about the suitability of the Site for sensitive use. The scope of work undertaken to meet this objective included the following:

- Review of published information related to soils geology and hydrogeology including a search of nearby groundwater bores
- The review of selected background information including historical aerial photographs and certificates of title;
- The identification of potential contamination types and the development of a conceptual Site model (CSM);
- Search of relevant online data bases related to contamination
- A Site walkover and targeted soil sampling; and
- The preparation of a site assessment report for submission to council.

2.0 SITE INFORMATION

2.1 Site Identification

The location of the Site is presented in *Figure 2.1 – Site Location Plan* with the Site identification details summarised in *Table 2.1 – Site Identification*.

Table 2.1 – Site Identification

Attribute	Detail
Site Address	123 Epsom Road, Chipping Norton NSW 2170
Lot & Deposited Plan	Lot 3, DP 602936
Current Land Use	Residential
Proposed Land Use	Childcare facility
Local Government Authority	Liverpool City Council
Current Zoning	R2 – Low Density Residential
Site Area (approximately)	2200m^2
Geographical Location (approximate centre)	Latitude: -33.915818 Longitude: 150.954013

Figure 2.1 – Site Location Plan

2.2 Site Location and Regional Setting

The Site is located in Chipping Norton, which is part of the Greater Wester Sydney region. Chipping Norton is located approximately 27km south-west of Sydney's central business district and is bound by the Georges River to the north, east and west, and by Newbridge Road to the south. The suburb is within the City of Liverpool local government area and features a mix of developments, with an industrial and a recreational area to its west. Additionally, Bankstown Airport lies approximately 2.6km to the east and serves as the eastern boundary for Chipping Norton.

The Site is positioned on the south-western corner of Epsom Road at the intersection of Governor Macquarie Drive and consists of an irregular shaped lot (Lot 3, DP 602936) with a street frontage of approximately 40m onto Epsom Road. The northern boundary is bound by Governor Macquarie Drive, although there is generally no street frontage or access from this side of the Site.

The surrounding land mostly comprises of residential development but there is a park to the south-east, as well as a park following the banks of the Georges River to the west of Site. Further to the west, across the Georges River, there are also industrial developments, a sewage treatment plant, and Warwick Farm Racecourse.

The Site is outlined in red and surrounding properties are shown on *Figure 2.2 – Site Layout*.

Figure 2.2 – Site Layout

2.3 Topography and Drainage

The Site is relatively flat and follows the natural gradients of the surrounding landscape. Rain falling on the site would likely infiltrate into the site soils. Excess water would be directed to the municipal drainage system and discharge to Georges River located about 230m to the west.

2.4 Site Features

The surface of the front yard is primarily covered in grass and with a curved bitumen paved driveway which extends to the garages attached to the house. At the rear of the house is a paved rear courtyard with an in-ground pool, as well as a small lawn adjacent to a concrete tennis court that both extend to the rear boundary.

Along the northern side of the house there are several palm trees and there are a few trees scattered within the front yard space. At the rear of the Site, there are a few trees located towards the south-western corner and along the boundaries.

There does not appear to have been any significant filling activities and fill material was not observed across the Site surface or found within the test pits excavated for sampling although some disturbance to surface soils associated with residential use (including gardening) was noted.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geology of the area is shown on the Penrith Geological Map scaled at 1:100,000 (Sheet 9030, 1st Edition 1991). The Site is underlain by Tertiary aged sediments described as clayey quartzose sand, and clay.

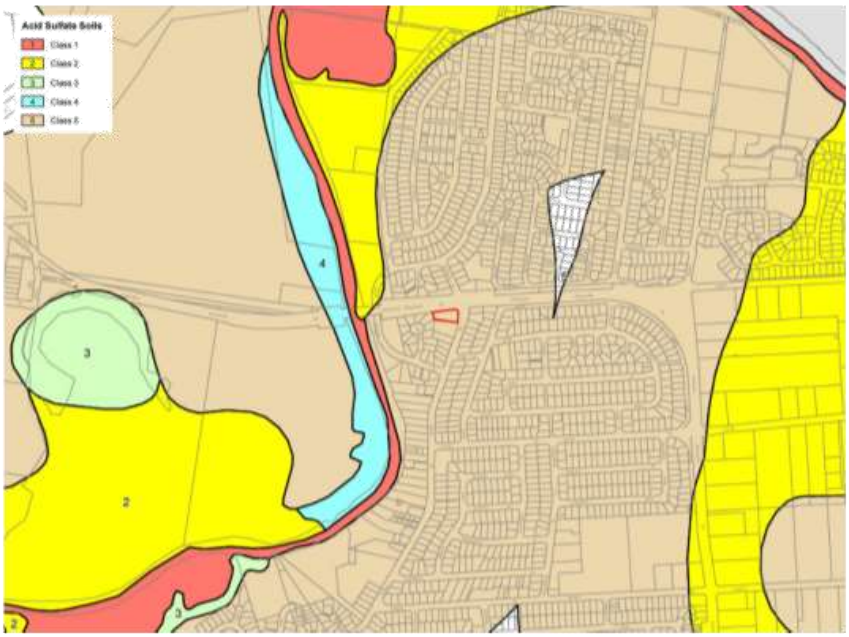
3.2 Acid Sulfate Soil (ASS) Risk Planning

The Liverpool Local Environment Plan (LEP) 2008 prepared by Liverpool City Council includes Acid Sulfate Soil (ASS) risk maps that shows the Site lies within an area labelled as 'Class 5', which indicates a low potential for ASS to be encountered. The LEP requires development consent whilst carrying out of any work that is described in *Table 3.1 – ASS Classification* for each classification shown on the ASS map. An extract from the ASS map is shown in *Figure 3.1 – ASS Risk Map,* with the Site outlined in red.

Table 3.1 – ASS Classification

Class of Land	Works requiring consent:
1	Any works.
2	Works below the natural ground surface. Works by which the water table is likely to be lowered.
3	Works more than 1 metre below the natural ground surface. Works by which the water table is likely to be lowered more than 1 metre below the natural ground surface.
4	Works more than 2 metres below the natural ground surface. Works by which the water table is likely to be lowered more than 2 metres below the natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Figure 3.1 – ASS Risk Map



3.3 Hydrogeology

Groundwater beneath the site is likely to occur within an unconfined aquifer at a depths greater than about 5m bgs (below ground surface). Groundwater flow will likely follow the surface topography and flow towards west northwest eventually discharging to the Georges River.

The nearest surface water body to the Site is the Georges River which is approximately 230m to the west of the Site at its nearest point, as well as approximately 800m to the north and 1.8km to the east. The Georges River flows in a generally northerly and then easterly direction until reaching its mouth and discharging into Botany Bay.

The MinView database provided by the NSW Government (2021) shows that there are no registered groundwater bores within a particularly close proximity to the Site, however, there are several groundwater bores scattered in various locations along the Georges River park spaces. An extract from the Minview database showing locations of licenced groundwater bores is shown on *Figure 3.2 – Groundwater Bores,* with the approximate location of the Site shown in red and groundwater bores shown in blue.

Figure 3.2 – Groundwater Bores

The surrounding registered groundwater bores are listed as being used for both monitoring purposes and some for irrigation. It is considered unlikely that groundwater is being extracted at these locations for consumption.

4.0 DATA QUALITY OBJECTIVES

The Data Quality Objective (DQO) process is a systematic, seven-step process that defines the criteria an investigation should satisfy including the type, quantity and quality of data required to support decisions relating to the investigation. DQOs for this investigation have been developed based on the seven-step approach in accordance with the NSW DEC Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017 and NSW EPA (2022) Sampling Design Guidelines. The DQOs incorporate field quality control and laboratory analysis, methods and information on laboratory quality control data and validate the field and analytical data for this investigation. The DQOs are presented in detail in the following sections.

Step 1 - State the Problem

The Site is proposed to be redeveloped for a childcare facility and could be contaminated from past Site activities. The objective of the investigation is to assess the potential for contamination resulting from past Site activities and to draw conclusions regarding the suitability of the Site for sensitive land use.

This investigation was be undertaken in general accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites 2020. This requires a review of historical Site usage to evaluate the potential for the former uses to result in contamination. Where there is the potential for impact, an intrusive investigation should be undertaken, and appropriate management strategies implemented.

Step 2 – Identify the Decisions

The preliminary assessment for contamination will be initially based on a desk study and Site history review. The decisions associated with this assessment include:

- Has sufficient Site history information been collected and are there any data gaps?
- If there are data gaps are they significant and are further desk study and or intrusive investigations required to fill the identified gaps?
- Have historic land uses resulted in contamination that may preclude sensitive land use;
- Is the Site suitable for proposed sensitive land use?

Step 3 – Identify Inputs to the Decision

The inputs required to make the identified decisions include:

- Desk top study including review of available data regarding the regional and local conditions;
- Review of historical records and air photographs; and
- A Site walkover to help assess areas of environmental concern (AECs)
- Where AECs and data gaps are identified carry out targeted soil sampling and laboratory analysis for a suite of chemicals of potential concern (COPC).

Step 4 – Define the Study Boundary

The boundaries for this assessment have been identified as follows:

- Lateral boundaries – the Site area; and
- Vertical boundaries – surface soils to about 1.0m depth.
- Temporal boundary – site walkover and sampling on 17 October 2023.

Step 5 - Develop an Analytical Approach

Limited intrusive investigation is planned for the PSI and as such targeted soil sampling and laboratory analysis will be carried out. The targeted sampling will be undertaken to assess areas of minor filling associated with the current land use.

The analytical approach for fill and soil layers at AECs is to assess the suitability of the Site, will be as follows:

- The 95% upper confidence limit ≤ of the criteria.
- No individual sample to exceed 250% of the criteria.

- The standard deviation to be < 50% of the criterion.

The decision rules for this investigation are:

- If the Site history and/or preliminary sampling indicates the potential for Site contamination to exist, then an assessment for actual impacts from that activity must be undertaken.
- If the presence of potential sources of contamination are encountered such as areas of filling of damaged asbestos materials on the ground surface, then remediation or management must be undertaken.
- Results of assessment activities undertaken to investigate for actual impacts need to consider the proposed Site use. If the results of sampling encounter concentrations of contaminants greater than nominated Site Assessment Criteria indicating a potential human health of environmental risk, then remediation or management must be undertaken.

Step 6 - Specify Performance or Acceptance Criteria

The null hypothesis is that the soil and fill material is contaminated and exceeds the adopted Site Assessment Criteria. The alternative hypothesis is that the soil and fill material is not contaminated above the adopted Site Assessment Criteria.

The incorrect consideration of background information has the potential to conclude that the Site is contaminated when it is not or alternatively, conclude the Site is not contaminated when it actually is. To provide more certainty to the conclusion regarding the contamination status of the Site, both the background information and the Site conditions will be jointly assessed.

The continuity and understanding of past Site activities provides the basis for the consideration of the necessity for Site sampling. Where there is uncertainty or indications of the potential for contamination, sampling needs to be undertaken.

The preliminary sampling at the Site needs to address the findings of the background data review and needs to include sufficient sampling locations and depths, utilise appropriate field sampling methodologies, review suitable data quality indicators (DQIs) and quality assessment procedures and incorporate appropriate data evaluation procedures such as the use of 95 percent upper confidence limit (95% UCL) calculations.

Step 7 - Optimise the Design for Obtaining Data

The data sources for this assessment are historic records that have been maintained and that are readily available, soil samples that are from targeted locations based on the site walkover and established as the preliminary sampling plan.

The sampling plan prepared for this investigation considered the Site history and the Site setting. A sampling plan was established to assess near surface soil conditions with locations targeting areas of environmental concern if present.

The density of sampling considered the Schedule B2 of the NEPM Guideline on Site Characterisation (2011) and the sampling depth intervals set to assess surface soil. The sampling density also considered the NSW EPA Guidelines. The sampling density is below the recommended sampling density in the EPA Guidelines however, this is considered suitable for the preliminary Site investigation.

Near surface soils are considered the primary indicator for significant impact based on the Site history.

5.0 SITE HISTORY REVIEW

To assess the history of the Site, historical aerial photographs and certificates of title acquired from Lotsearch were reviewed.

5.1 Regional History

Chipping Norton began its first development into a farming area during the early 20th century when a number of former land grants were purchased. The early homestead in this area was named Chipping Norton and part of the land was used as a horse stud, which produced many fine young horses. In 1915, the owner of the estate passed, and the land was then acquired by the government and subdivided into farming blocks by 1919. Following its use for farming, the area also saw some mining activity along the Georges River of the rich topsoil and underlying sand which led to many eroded pits and dangerous banks, which have since begun rehabilitation by local environmental authorities.

5.2 Aerial Photographs

Aerial photographs dating back to 1930 were reviewed to assess historical changes over time at the Site. *Table 5.1 – Aerial Photographs* summarises the features observed in the historical aerial photographs. Copies of the aerial photographs are included in *Appendix 2*.

Table 5.1 – Aerial Photographs

Year	Site Features	Surrounding Area
1930	The Site looks to be part of a larger residential property and contains a few scattered trees and a driveway to the residence on adjacent land to the north.	Land to the south is generally partly cleared and undeveloped. To the north, east and west there are farms (including an orchard) with a few scattered residences and sheds around the roadway. There is also a house on neighbouring land to the south.
1943	The Site is relatively unchanged from the 1930 aerial photograph, although there is a small shed or outhouse that has been built at the south-western corner boundary and some trees have been removed.	Land further to the south has been cleared and there are a few houses as well as additional farming buildings. Land to the north, east and west remains used for farming and is relatively unchanged from the 1930 aerial photograph although the orchard has been removed. There are still patches of uncleared land generally to the south.
1949	The Site is relatively unchanged from the 1943 aerial photograph.	There are several additional farm buildings on land to the south. The surrounding land and uses otherwise appears relatively unchanged from the 1943 aerial photograph although there are orchards to the north and animal pens to the south.
1955, 1956	The Site is relatively unchanged from the 1949 aerial photograph.	The surrounding land is relatively unchanged from the 1949 aerial photograph.
1961	The Site surface appears to have been ploughed and potential used for crop production.	Some of the building to the south-east have been removed, but the surrounding land otherwise appears relatively unchanged. There are surface changes on neighbouring properties, however, they remain used for farming practices.
1965	The Site is relatively unchanged from the 1961 aerial photograph.	The surrounding land is relatively unchanged from the 1961 aerial photograph.
1970	The Site is relatively unchanged from the 1965 aerial photograph, but the surface is now lawn area.	Several of the farm building to the south-east have been removed and there are new farms. There appear to be surface developments further to the north-east. Surrounding land-uses otherwise remain relatively unchanged.

Year	Site Features	Surrounding Area
1978	The Site is relatively unchanged from the 1970 aerial photograph.	Land to the south-west has been cleared subdivided. There are several scattered houses. Land to the south-east and north-east appears to remain used for farming.
1982	The Site is relatively unchanged from the 1978 aerial photograph However, it is no longer part of a larger property.	Governor Macquarie Drive has been constructed north of the Site which has resulted in the removal of the former house associated with the Site. Land to the north-east and south-east has been cleared and partially developed to include new houses. There are several additional houses on land to the north and west of the Site.
1986	The Site is relatively unchanged from the 1982 aerial photograph.	The surrounding land is primarily used for residential purposes, however, there are still areas that are undeveloped scattered throughout.
1991	A house and tennis court have been built on the Site which resemble the outline of the existing house and tennis court.	There are additional houses on surrounding land and a large area remains undeveloped to the north-east.
1994	A pool has been built within the rear courtyard space.	The surrounding land-use remains residential and there are additional houses on lots surrounding the Site.
2000	The Site is relatively unchanged from the 1994 aerial photograph.	There are several new houses to the north-east and surrounding land is now mostly developed for residential use. There is a park to the south-east.
2007	The Site is relatively unchanged from the 2000 aerial photograph.	The surrounding land is relatively unchanged from the 2000 aerial photograph.
2011	The Site is relatively unchanged from the 2007 aerial photograph.	The surrounding land is relatively unchanged from the 2007 aerial photograph.
2015	The Site is relatively unchanged from the 2011 aerial photograph.	The surrounding land is relatively unchanged from the 2011 aerial photograph.
2020	The Site is relatively unchanged from the 2015 aerial photograph.	The surrounding land is relatively unchanged from the 2015 aerial photograph.
2023	The Site is relatively unchanged from the 2020 aerial photograph.	The surrounding land is relatively unchanged from the 2020 aerial photograph.

5.3 Certificate of Title

Historical land title records indicating ownership of the land were reviewed during this assessment. The title records associated with the Site are presented in *Table 5.2 – Title History*. A copy of the title search for the Site is included in *Appendix 3*.

Table 5.2 – Title History

Years owned	Proprietor(s)
1902 to 1936	Frederick Franklin (Orchardist)
1936 to 1944	Mary Franklin (Widow)
1944 to 1956	Walter Frederick Franklin (Orchardist) Lewis Gordon Franklin (Orchardist) Cecil Longstaff Franklin (Orchardist)
1956 to 1979	Walter Frederick Franklin (Orchardist) Lewis Gordon Franklin (Orchardist)
1979 to 1979	Lewis Gordon Franklin (Retired Orchardist) Cecil Longstaff Franklin (Retired Orchardist)
1979 to 1982	Lewis Gordon Franklin (Retired Orchardist) Cecil Longstaff Franklin (Retired Orchardist) Francis Leslie Bulluss (Accountant) Valerie Joy Bulluss (Married Woman)
1982 to 1983	Lewis Gordon Franklin (Retired Orchardist) Francis Leslie Bulluss (Accountant) Valerie Joy Bulluss (Married Woman)
1983 to 1984	Gordon Scott Franklin Francis Leslie Bulluss (Accountant) Valerie Joy Bulluss (Married Woman)

Years owned	Proprietor(s)
1984 to 1985	Francis Leslie Bulluss (Accountant) Valerie Joy Bulluss (Married Woman)
1985 to 1991	B. & C. Peirce Pty Limited *Now* Pinnacle Homes Pty Limited
1991 to 2002	Catherine Ann Peirce
2002 to date	Mark Terence Brooks Claire Maree Brooks

5.4 Gaps in the Site History

Eighteen aerial photos were reviewed covering a time span of 93 years (1930 to 2023) with the largest gap in time being for 13 years between 1930 and 1943. As there was no change in the land-use during this time, the gap is not considered significant.

The aerial photographs confirm that the house was built sometime between 1986 and 1991 and remained as the only significant development recorded on the Site, except for the addition of the pool prior to 1994. There is risk that the demolition and erection of additional structures could have occurred during these gaps, although as the footprint of the house did not change, these gaps are considered minor.

Based on the above, no significant gaps have been identified in the Site history.

5.5 NSW EPA Records

A review of the NSW Environment Protection Authority (EPA) databases was conducted including the following:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of sites notified to the EPA in accordance with the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015);
- Licensed activities under the Protection of the Environment Operations Act (1997).

This review indicated that there are two properties within Carramar that have been notified to the EPA. The details of these properties are summarised in *Table 5.3 – NSW EPA Records*.

Table 5.3 – NSW EPA Records

Address	Type	Management Class
49-51 Riverside Rd	Other Petroleum	Regulation under CLM Act not required.
85-107 Alfred St	Chemical Industry	Contamination currently regulated under the CLM Act.

These listed sites are not considered likely to impact conditions at the Site.

5.6 History Summary

Based on the review of historic aerial photographs, the Site at 123 Epsom Road appears to have been used solely for residential purposes since development of the house sometime between 1986 and 1991. Prior to this time the site was unoccupied and possibly used for agriculture (cropping and orchards).

The house appears to have been the only significant development recorded on Site apart from some minor sheds prior to the 1980s. The historical ownerships of title indicate that the

property held family ownership for approximately 85 years. During this ownership it is considered that the land would have been limited to a short period of crop production and garden space associated residential use prior to the construction of the existing house. There is minimal potential for significant or widespread contamination to be present associated with historical Site use and ownership.

6.0 CONCEPTUAL SITE MODEL SUMMARY

The potential for Site contamination is reflective of past use of the land. The conceptual site model (CSM) is based on the findings of the desktop study including regional and local conditions and historical records. The history review indicated the Site has been primarily used for residential purposes that are unlikely to result in significant contamination.

During this investigation, the following potential areas of environmental concern were identified. Each potential area of concern was analysed and determined if further investigation and management were required.

The CSM is the framework for identifying activities with the potential to contaminate the site and how potential receptors may be exposed to contamination (if present) either in the present or the future. I.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Potential Sources

Based on the results of the background data review the Areas of Environmental Concern (AEC) include the following potential sources of contamination and associated Contaminants of Potential Concern (CoPC) have been identified.

S1 – Hazardous building materials such as asbestos and lead may be present as a result damage, renovation and maintenance of the building on the Site.

S2 – Crop production appears to have been undertaken for a short period (between 1960 and 1970) which may have resulted in the use of some pesticides.

Potential Receptors

Human health receptors
R1 – Construction and maintenance workers;
R2 – End users (residential); and
R3 – Adjacent users (residential and sensitive).

Environmental receptors
R4 – Water bodies (Georges River);
R5 – Ecology (vegetation transitory wildlife and soil biota); and
R6 – Groundwater (freshwater ecosystems).

Potential Pathways

P1 – Ingestion and dermal contact;
P2 – Inhalation of dust;
P3 – Surface water run-off;
P4 – Leaching of contaminants and vertical migration into groundwater;
P5 – Lateral migration of groundwater providing base flow to water bodies; and
P6 – Direct contact with ecological receptors (including accidental and/or via irrigation).

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human, water, or environmental receptors from potential contamination sources on or in the vicinity of the Site, via exposure pathways (complete pathways). The possible pathways between the above potential source (S1 and S2) and receptors (R1 to R6) are provided in *Table 6.1 – Source Pathway Analysis*.

Table 6.1 – Source Pathway Analysis

Source	Pathway	Receptor	Risk Evaluation
S1 & S2	P1 – Ingestion and dermal contact	R1 – Workers	Possible during development works
		R2 – Occupants	Possible following development works
		R3 – Neighbours	Unlikely as potential source is limited
	P2 – Inhalation of dust and/or vapours	R1 – Workers	Possible during development works
		R2 – Occupants	Possible following development works
		R3 – Neighbours	Unlikely as potential source is limited
	P3 – Surface water run-off	R4 – Water bodies	Unlikely as the Site is located over 200m from Georges River
		R6 – Groundwater	Unlikely potential source is limited
	P4 – Leaching of contaminants	R4 – Water bodies	Unlikely as the Site is located over 200m from Georges River
		R6 – Groundwater	Unlikely potential source is limited and groundwater is located at 5m depth or greater
	P5 – Migration of groundwater	R4 – Water bodies	Unlikely the Site is relatively isolated
		R6 – Groundwater	Unlikely potential source is limited and groundwater is located at 5m depth or greater
	P6 –Surface soil contact with ecological receptors	R5 – Ecological, transitory wildlife and soil biota	Unlikely, as potential source is limited, and access to site soils is limited as it is covered in building footprint, driveway and tennis court

Notes: Risk ranking assessed as low and acceptable are shaded in green
Risk ranking assessed to be more than low shaded in yellow.

The potential areas of environmental concern (AEC), identified is associated with historical Site usage, including damaged building materials (from construction, demolition, and degradation) and spraying of pesticides. Near surface soils (to about 0.3m bgs) are considered the primary indicator for impact based on the Site history.

7.0 SITE ASSESSMENT

To assess for the presence of contamination, in particular the presence and quality of fill material, at the Site the following scope of work was undertaken:

- A site walkover with observations for potential Asbestos Containing Material (ACM);
- The excavation of eight shallow test pits around the Site;
- The collection of surface soil samples from the test pits; and
- The analysis of the soil samples for common contaminants including the contaminants of potential concern (CoPC).

The rationale for choosing the environmental sampling locations was random and based on the probability that surface soils would unlikely be impacted from prior activities on the Site.

Targeted sampling was used to evaluate for impact around the house and across the Site in general. Methodical sampling with a density based on the Schedule B2 of the NEPM Guideline on Site Characterisation (2011) or the NSW EPA site assessment guidelines was not considered necessary for this preliminary Site investigation.

7.1 Site Walkover

The site walkover was conducted on 17 October 2023. The Site currently contains a two-storey brick house with an attached double garage, and tennis court and pool at the rear. Additionally, there was a small shed at the south-western site boundary. During this inspection it was noted that there was potentially asbestos containing material (ACM) on the outside of the house (eaves). This potential ACM was observed to be in good condition.

The surface within the front yard space was predominantly grass and there are some mature trees scattered and lining the northern boundary. The only significant surface modification was associated with the construction of the driveway that leads to the front of the house and the garages. Within the rear yard, there are mixed surface conditions which include a tiled courtyard, concrete tennis court, and a grass lawn space.

There was no evidence of imported fill material across the surface of the Site, or within the test pits excavated for sampling although disturbance of the surface soil was noted. Additionally, there was no potential Asbestos Containing Material (ACM) observed across the Site surface or within test pits.

Conditions of the Site are shown in the following figures:

- *Figure 7.1 – Front of House*
- *Figure 7.2 – Rear of House*
- *Figure 7.3 – Rear Garden and Shed*

Figure 7.1 – Front of House

Figure 7.2 – Rear of House

Figure 7.3 – Rear Garden and Shed

7.2 Assessment Method

The sampling plan prepared for this investigation considered the Site history and the Site setting with six shallow test pits excavated to assess surface soils. Test pit locations were established based on a targeted sampling regime and considering accessible areas around the Site. Soil samples were collected from each test pit targeting the surface material. Each sample location was recorded in the field on a test pit log and on a chain of custody.

Test pits were labelled CN1, CN2, CN3, CN4, CN5, CN6 with each sample labelled with its test pit number. A duplicate soil sample was collected from test pit CN1 and labelled CND. The locations of the test pits are presented on *Figure 7.4 – Sample Location Plan*. The subsurface conditions encountered at each location are summarised in *Table 7.1 – Sample Schedule*.

Figure 7.4 – Sample Location Plan

Table 7.1 – Sample Schedule

Sample Number	Sample Depth (m)	Location	Description
CN1	0.0 – 0.1	South-West	Brown coarse-grained clayey sandy soil, organic debris, and gravel.
CN2	0.0 – 0.1	Central	Brown coarse-grained clayey sandy soil, organic debris, and gravel.
CN3	0.0 – 0.1	Mid-South	Brown coarse-grained clayey sandy soil and rocks.
CN4	0.0 – 0.1	North-East	Brown fine-grained sandy soil some organic debris.
CN5	0.0 – 0.1	Mid-East	Brown fine-grained sandy soil some organic debris.
CN6	0.0 – 0.1	South-East	Brown fine-grained sandy soil some organic debris.
CND	0.0 – 0.1	South-West	Duplicate sample collected at location CN1

Soil samples were collected directly from test pits at the nominated sample depth by hand directly into laboratory prepared sample jars wearing a new pair of disposable gloves to collect each sample.

7.3 Quality Plan

The field quality assurance / quality control (QA/QC) procedures adopted during this assessment included: field decontamination protocols, sample labelling storage and handling methodologies. One duplicate soil sample (CND) was collected during this investigation.

Field decontamination involved brushing off excess soil and then rinsing of sampling equipment with potable water. All samples were labelled in the field with the sample location recorded.

The analytical laboratory also conducted a QA/QC programme. This programme included the analysis of one blank sample and one spiked sample with every batch of samples tested; then repeat analysis of approximately 10% of the samples. The results of this laboratory QA/QC program are included within the laboratory reports.

8.0 ASSESSMENT GUIDELINES

The NSW Environment Protection Authority (EPA) has issued a number of guidelines relevant to the concentration of contaminants in soil. These are used in conjunction with the National Environment Protection Council (NEPC) – National Environment Protection (Assessment of Site Contamination) Measure 2013.

The Site Assessment Criteria (SAC) that have been used to evaluate surface soils are based on the National Environment Protection Measure (NEPM) for the Assessment of Site Contamination (NEPM 2013). These criteria are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined present, then remediation and/or management must be undertaken.

The National Environmental Protection Measure (NEPM) provides Health Investigation Levels (HILs) that are concentration levels, which have been tiered (provided in sets based on risk) for various exposure settings pertaining to land uses. The site criteria within the NEPM are based on potential impact to human health and are intentionally conservative.

The HILs have been derived for four (4) generic land use settings. The HILs for the land use type considered in NEPM include:

- HIL A – residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools, and primary schools.
- HIL B – residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- HIL C – public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate.
- HIL D – commercial/industrial such as shops, offices, factories, and industrial sites.

Health Screening Levels (HSLs) for various petroleum hydrocarbon compounds have also been developed. The HSLs also relate to the land use (consistent with the HILs) and are dependent on soil type and depth.

The Site is being redeveloped to be used as a childcare centre. The conservative guidelines used for this proposed land use are the residential criteria (HIL A). Consistent with the HILs, HSLs for residential land use (HSL A) with clayey soils have been adopted for the relevant SAC. These criteria are summarised on *Table 8.1 – Soil Assessment Criteria*.

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) were used for an 'urban residential and public open space' exposure scenario as outlined in NEPM (2013) and adjusted for the soil type.

EILs for selected metals were calculated based on the conservative added contaminant limit (ACL) values for soils with a pH of 5.5 or more (neutral to slightly acidic soils) and CEC of 10 cmoles/kg as presented in Schedule B(1) of NEPM (2013)

Table 8.1 – Soil Assessment Criteria

Contaminant	Site Assessment Criteria (mg/kg)	
	HIL/HSL	EIL/ESL
Heavy Metals		
Arsenic	100[1]	100
Cadmium	20[1]	
Chromium	100[1] (Cr IV)	400 (Cr III)
Copper	6000[1]	190
Lead	300[1]	1100
Mercury	40[1]	
Nickel	400[1]	170
Zinc	7400[1]	270
Total Recoverable Hydrocarbons (TRH)		
Naphthalene	5[2]	170
TRH C6-C10 (F1)	50[2]	180
TRH C10-C16 (F2)	280[2]	120
Monocyclic Aromatic Hydrocarbons		
Benzene	0.7[2]	50
Toluene	480[2]	85
Ethylbenzene	NL[2]	70
Xylene (Total)	110[2]	105
Polycyclic Aromatic Hydrocarbons (PAH)		
Benzo(a)pyrene	3[3]	0.7
Total PAH	300[3]	
Organochlorine Pesticides		
DDT+DDE+DDD	240[1]	180
Aldrin and dieldrin	6[1]	
Chlordane	50[1]	
Endosulfan	270[1]	
Endrin	10[1]	
Heptachlor	6[1]	
HCB	10[1]	
Methoxychlor	300[1]	
Toxaphene	20[1]	
Asbestos		
Bonded ACM	0.01%	

Notes: NL – Not Limiting
1. HIL A levels sensitive land use.
2. Health screening levels HSL A/B for clayey soils over the depth interval 0-1m.
3. Carcinogenic PAHs based on the 8 carcinogenic PAHs.
4. Health screening levels for bonded ACM of residential land use.

The ASC NEPM (2013) ESL of 0.7 mg/kg is based on a set of Canadian soil quality guidelines, which have in the meantime been revised since 2013. The ESL levels in the ASC NEPM (2013) were marked as low reliability and are considered conservative in the Australian context.

The Canadian guidelines were updated in 2010 and now suggest a B(a)P concentration of 20 mg/kg for the protection of environmental health based on the soil contact exposure pathway. In addition, given the low reliability of the B(a)P ESL, ASC NEPC (2013) makes reference to Table 11 of the CRC (2017) which indicates a high reliability ecological guideline for fresh B(a)P of 33 mg/kg (and a range of 21 mg/kg to 135 mg/kg).
It is our opinion that the ecological guideline level of 33 mg/kg shown in the CRC Care document using a species sensitivity distribution methodology for urban residential space) is of a higher level of reliability for use in Australia than the lower reliability Canadian guidelines adopted in the NEPM for species protection.

ASC NEPM Schedule B7 also reports that plants grown on PAH contaminated soil have only limited ability to take in and incorporate anthropogenic PAHs through their roots and into their biomass, especially those PAHs with higher molecular weights including benzo(a)pyrene. Physical and biochemical processes within soil and the soil ecosystem in conjunction with the low solubility of benzo(a)pyrene generally result in benzo(a)pyrene bonding firmly to soil particles or the outside layer of root tissue with root uptake rates being very slow and / or non-existent.

9.0 RESULTS OF THE INVESTIGATION

9.1 Site Conditions

At the locations where sampling was undertaken, surface soils appeared to consist of clayey sandy soils with some organic debris and minor gravel. These soils are expected to be disturbed natural soils with minor gravel from ground disturbance at this location.

No significant thicknesses of fill material were observed at the Site. Additionally, potential Asbestos Containing Material (ACM) was not observed across the Site surface or found within test pits.

9.2 Analytical Results

The results of analysis soil samples are summarised in *Table 9.1 – Summary of Results* and the laboratory reports are included in *Appendix 4*.

Table 9.1 – Summary of Results

Sample Number	CN1	CN2	CN3	CN4	CN5	CN6	CND	SAC
Heavy Metals								
Arsenic	7.8	7	14	13	3.5	4.6	6.2	100
Cadmium	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	20
Chromium	36	25	56	32	24	16	23	100
Copper	12	20	7.3	22	24	9.9	11	6000
Lead	26	29	44	86	26	20	25	300
Mercury	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	40
Nickel	25	5.1	< 5	< 5	13	< 5	21	400
Zinc	86	63	75	110	110	45	73	7400
Total Recoverable Hydrocarbons (TRH)								
Naphthalene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5
TRH F1	< 20	< 20	< 20	< 20	< 20	< 20	< 20	50
TRH F2	< 50	< 50	< 50	< 50	< 50	< 50	< 50	280
Monocyclic Aromatic Hydrocarbons								
Benzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.7
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	480
Toluene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NL
Xylene (Total)	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	110
Polycyclic Aromatic Hydrocarbons (PAH)								
Benzo(a)pyrene	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	3
Total PAH	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	300
Organochlorine Pesticides								
DDT+DDE+DDD	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	0.11	240
Aldrin & Dieldrin	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	6
Chlordane	< 0.1	< 0.1	< 0.1	< 1	< 1	< 0.1	< 0.1	50
Endosulfan	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	270
Endrin	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	10
Heptachlor	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	6
HCB	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	10
Methoxychlor	< 0.05	< 0.05	< 0.05	< 0.5	< 0.5	< 0.05	< 0.05	300
Toxaphene	< 0.5	< 0.5	< 0.5	< 10	< 10	< 0.5	< 0.5	20
Asbestos								
Asbestos	ND	ND	ND	ND	ND	ND	ND	< 0.01

Notes: All measurements in mg/kg except asbestos.
ND - No asbestos detected at the reporting limit of 0.01% w/w. No trace asbestos detected.
Bold font represents a level above the SAC.

The results of the soil analysis indicated concentrations of contaminants of potential concern (CoPC) were below the site assessment criteria (SAC) for sensitive land use (HILs/HSLs). In addition the results are below the ecological levels (EILs/ESLs) for an urban residential and public open space exposure scenario. The low concentrations of some heavy metals detected in soil samples are considered likely to represent natural background concentrations.

9.3 Data Quality Review

Data Quality Indicators

The purpose of establishing data quality indicators is to ensure that the field investigations and analyses were undertaken in a way that enables the collection and reporting of reliable data on which to base the site assessment.

The data quality objectives have been assessed by reference to data quality indicators (DQI) as follows:

Data Representativeness

Data representativeness expresses the degree which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness was achieved by collecting samples at pre-determined locations across the Site and by taking an adequate number of samples to achieve the intended objectives. Consistent and repeatable sampling techniques and methods were utilised throughout the sampling, as described.

Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study. If there is insufficient valid data, as determined by the other data quality indicators, then additional data would be required to be collected.

Completeness also needs to consider the integrity of the samples collected delivered to the laboratory for analysis. The laboratory sample receipt notice summarises the sample integrity on receipt.

Data Comparability

Data comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency for analytical techniques and reporting methods. Reporting of results was done in consistent units and nomenclatures, and comparability was achieved by ensuring that precision and accuracy objectives were met.

Precision

Precision measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples. The criteria used for the assessment of RPDs is based on guidelines given in AS4482.1 (1997) and laboratory criteria but has been set by ECS for this assessment. If duplicate results are not within the acceptable RPDs, investigation into the cause is initiated. If a cause cannot be determined the validity of the data is questioned.

The proposed acceptable range for Relative Percent Difference (RPD) for duplicate samples have been set as follows:

%RPD Range result >10 times PQL then maximum RPD 50%
result >5 times PQL then maximum RPD 75%
result >2 times PQL then maximum RPD 100%
result <2 times PQL then no limit.

RPD is calculated as the absolute value of the difference between the initial and repeat result divided by the average value expressed as a percentage. The overall success is based on assessment of the data set as a whole and not on individual acceptance or exceedance within the data set.

A summary of the duplicate soil samples with the calculated RPDs is presented in the *Table 9.2.* These calculations are limited to metals only as all other contaminant results were below the laboratory Level of Reporting (LOR).

Table 9.2 – Relative Percent Differences Soil

Sample Number	LOR	CN1	CND	RPD (%)	Comment
Heavy Metals					
Arsenic	2	7.8	6.2	23	Accept
Cadmium	0.4	< 0.4	< 0.4	-	Accept
Chromium	5	36	23	43	Accept
Copper	5	12	11	9	Accept
Lead	5	26	25	4	Accept
Mercury	0.1	< 0.1	< 0.1	--	Accept
Nickel	5	25	21	17	Accept
Zinc	5	86	73	16	Accept

The analytical laboratory QA/QC program included the analysis of one blank sample and one spiked sample with every batch of samples tested, and the repeat analysis of approximately 10% of the samples. Laboratory Quality Assurance and Quality Control procedures are provided in the Final Certificate of Analysis.

- A copy of chain of custody (COC) forms are provided with the laboratory results. These forms detail the sample logs such as sample identification, matrix, depths, dates of sampling, container type, and analysis requests;
- A sample receipt notice (SRN) is issued upon delivery of samples, and Sample Integrity and Validated Time of Sample Receipt (VTSR) Holding Times are verified;
- Analytical methods are detailed in the Final Certificate of Analysis; and
- NATA accreditation is held for each method and sample matrix type reported, unless otherwise specified, NATA accredited in-house laboratory methods are referenced from NEPC, ASTM, and modified USEPA / APHA documents.

Performance of intra-laboratory spikes and duplicates are specific to each report, details of which are provided in the Final Certificate of Analysis (FCA). Details referring to instrument detection limits, method detection limits (MDL), and estimated quantitative limits (EQL) are also provided in the FCA.

The soil data is considered to meet the DQIs and thus the sampling results are considered representative of the sample conditions at the time of sampling and usable for the purposes of the PSI.

10.0 CONCLUSIONS

The Site currently contains a two-storey brick house with an attached triple garage. The Site has mixed surface conditions including lawn spaces within the front and rear yards. There is also a small metal shed within the rear yard as well as a concrete tennis court and pool within the tiled courtyard. Surface soils are otherwise considered to be disturbed natural sandy silty clays with traces of gravel which follow the regional topography.

During the Site walkover there was no evidence of significant imported fill material (although garden mulch was noted), and asbestos containing material was not observed across the surface or found within the test pits excavated for sampling.

The desk study and historical review showed that the Site has primarily been owned by a single family between 1902 to 1985. The existing house was constructed sometime between mid 1980s and early 1990s. Prior to this time the site was unoccupied and possibly used for agriculture (cropping and orchards).

There was some indication that the Site may have been used for crop production for a short period prior to the establishment of the existing house and has since remained used for residential purposes.

To characterise the surface material, six shallow test pits were excavated into clayey and sandy silt soils. The results of the soil analysis indicated concentrations of contaminants were below the human health and the ecological investigation levels for sensitive landuse. The analysis did not indicate concentrations of organochlorine pesticides within the surface soil which could represent contamination from agricultural land use.

Based on the findings of this investigation, ECS concludes that the Site is considered suitable for proposed redevelopment and sensitive land use provided the following recommendations are implemented:

- A hazardous building materials survey should be undertaken by a suitably qualified consultant prior to the demolition of buildings and structures. Asbestos containing material (ACM) identified during the building survey, should be dismantled by an appropriately licensed asbestos removalist in such a manner that does not impact the ground surface; and
- Excavated soil material generated during excavation and redevelopment activities should be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines and disposed of to an appropriate and licenced facility.

11.0 LIMITATIONS

This report has been prepared by ECS for ArtMade Architects based on the objectives and scope of work list in Sections 1.1. No warranty, expressed or implied, is made as to the information and professional advice included in this report. Anyone using this document does so at their own risk and should satisfy themselves concerning its applicability and, where necessary, should seek expert advice in relation to their particular situation.

The opinions, conclusions and recommendations in this report are based on conditions encountered during site visits and information reviewed at the date of preparation of the report. ECS has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

In preparing this report ECS has relied on information contained in reports prepared by others and on information from third parties. ECS disclaims liability arising from errors and omissions contained within reports and information prepared by others. ECS has also relied on information contained in searches of government websites and has not independently verified or checked the data contained on these websites.

In preparing this report, current guidelines for assessment and management of contaminated land were considered. The conclusions reached in this report are dependent on the limitations inherent in all subsurface investigations where horizontal and vertical variation in contaminant concentrations can occur. No subsurface assessment can accurately predict the contaminant concentration at all points.

APPENDIX 1

PRELIMINARY
DRAWING NOT FOR FINAL ISSUE
19.10.23

PERSPECTIVE TO BE UPDATED

ARTISTS IMPRESSION

ARCHITECTURAL DRAWING LIST - GA

Sheet Number	Sheet Name	Current Revision	Current Revision Date
DA00.00	COVER PAGE	A	XX.XX.XX
DA01.01	SITE PLAN / DEMOLITION	A	XX.XX.XX
DA02.01	BASEMENT FLOOR PLAN	A	XX.XX.XX
DA03.02	GROUND FLOOR PLAN	D	10.10.23
DA03.03	CALCULATIONS	A	XX.XX.XX
DA04.01	EXTERNAL ELEVATIONS	A	XX.XX.XX
DA05.01	SECTIONS & EXTERNAL FINISHES	A	XX.XX.XX
DA06.01	SHADOW DIAGRAMS	A	XX.XX.XX
DA06.02	VIEW FROM SUN & OUTDOOR PLAY AREA SQUARE/COVERED AREA CALCS	A	XX.XX.XX

123 EPSOM ROAD
CHIPPING NORTON, NSW 2170

CHILDCARE CENTRE
DEVELOPMENT APPLICATION

A	19.10.23	ISSUED FOR DEVELOPMENT APPLICATION	
REVISION	DATE	DESCRIPTION	

ABBREVIATIONS & SYMBOLS

SLAB	SLAB
RAINWATER	RAINWATER PIPE
TANK	TANK
FIRE	FIRE
FIREBOX	FB
SOLID	SOLID
SOLID STEEL	SOLID STEEL
SOLID WOOD	SOLID WOOD
SOLID BRICK	SOLID BRICK
WINDOW	WINDOW
WALL	WALL
SHEET	SHEET
SHEET STEEL	SHEET STEEL
WARDROBE	WARDROBE
CONCRETE	CONCRETE
CONCRETE FLOOR	CONCRETE FLOOR
LOCATION	LOC

NOTES

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE NCC 2019 BUILDING CODE OF AUSTRALIA, AS AMENDED, AS WELL AS ALL RELEVANT AUSTRALIAN STANDARDS, LOCAL COUNCIL REQUIREMENTS, AND ALL OTHER LEGISLATIVE REQUIREMENTS.
2. ALL DIMENSIONS ARE TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF ANY WORK OR PRODUCTION OF SHOP DRAWINGS. ANY DISCREPANCIES TO BE REPORTED TO THE ARCHITECT.
3. DO NOT SCALE DRAWINGS.
4. ALL DIMENSIONS TO BE ADJUSTED TO ACCOMMODATE SERVICES, FIXTURES, FITTINGS AND FINISHES.
5. ALL WORK TO BE PROTECTED AGAINST WEATHER, WATER AND DAMAGE.
6. ALL WORK TO BE PROTECTED AGAINST TERMITES IN ACCORDANCE WITH AS 3660.1.
7. ALL WORK TO BE PROTECTED AGAINST BUSHFIRE.

CLIENT
MARK BROOKS

ARCHITECT
Architecture

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
COVER PAGE

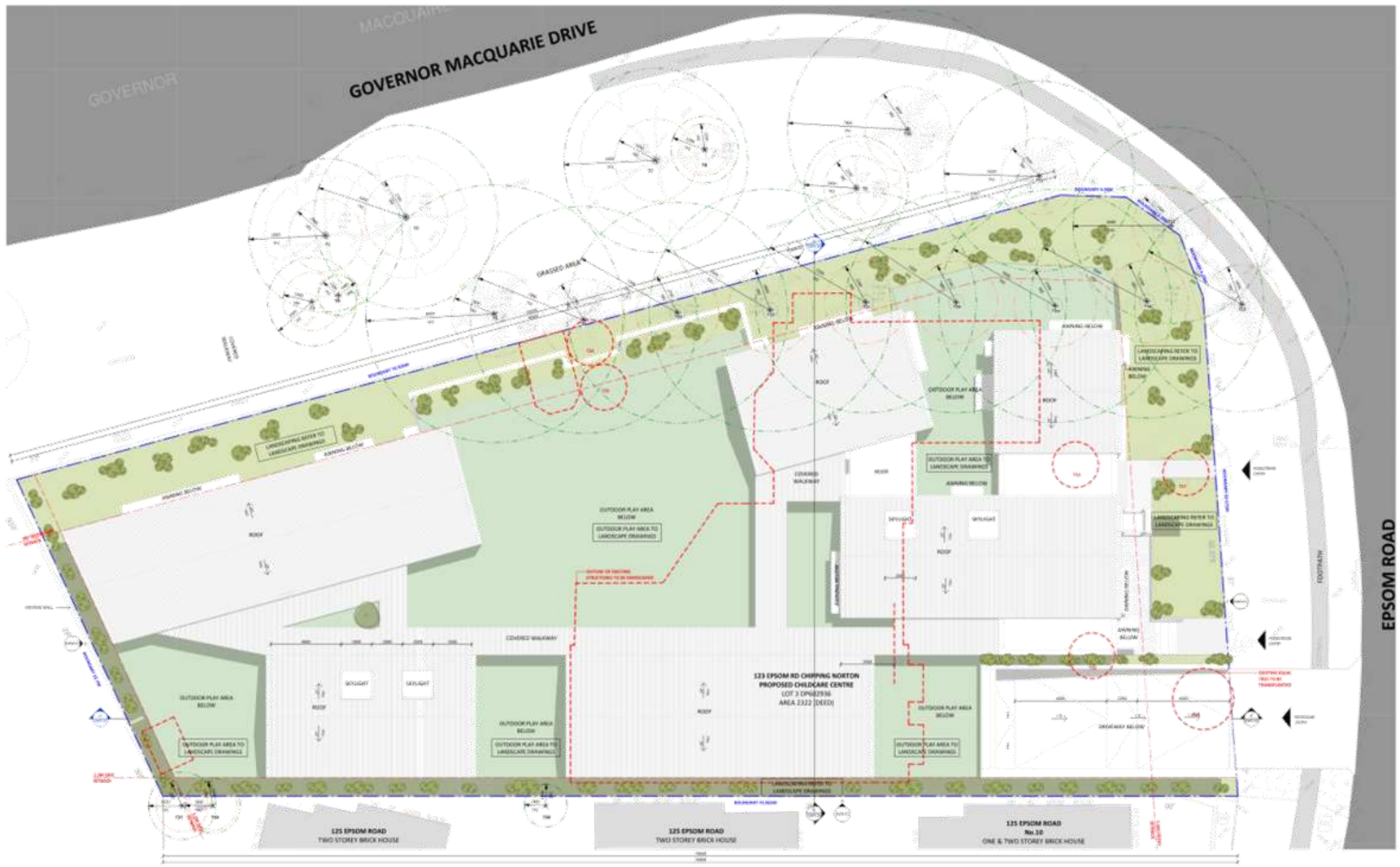
ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA00.00	A	DA

Sheet Size	Scale	L.G.A.
A0	NTS	LIVERPOOL

NOT FOR CONSTRUCTION

Drawn By	Checked By	Date
KG/SH	AS	XX.XX.XX



PRELIMINARY

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19.10.23

GENERAL NOTES

- ALL EXISTING BUILDING ELEMENTS TO BE CHECKED ON SITE (TYP.)
- DIMENSIONS TO BE TAKEN DIMENSIONS WITH ALL BUILDING STANDARDS MUST TO BE CHECKED OUT BY ALL APPROVED CONTRACTOR (+/- 0.5)
- REFER TO CIVIL DRAWINGS FOR DRAINAGE DETAILS.
- REFER TO LANDSCAPE DRAWINGS FOR LANDSCAPE DESIGN.
- ALL WORK MUST TO BE ACCORDANCE WITH THE BCA, NCC, ALL SAA SERIES, HOUSE ACT SERIES, HOUSE REGULATION (EEC) AND ALL CURRENT STANDARDS CODES & LOCAL GOVERNMENT AUTHORITY.

ABBREVIATIONS

DWG	DRAWING
FFL	FINISHED FLOOR LEVEL
EXT	EXTERNAL
FSL	FINISHED SLAB LEVEL
F	FIXED
FGL	FINISHED GROUND LEVEL
GL	GROUND LINE
LVL	LEVEL
NGL	NATURAL GROUND LINE
REQ	REQUIREMENTS
	PROPERTY LINE
	EXISTING WALL
	EXISTING WALL
	INSULATED WALL (PLANS)
	EXISTING TREE (CIVIL DRAWINGS)
	EXISTING TREE (LANDSCAPE DRAWINGS)

LANDSCAPE LEGEND

- EXISTING TREE - TREE TO BE RETAINED
- TREE TO BE REMOVED
- NEW TREE
- LANDSCAPING / TURFING
- TURF / ARTIFICIAL TURF
- EXTERNAL FLOOR FINISH
- LINE OF STRUCTURAL ROOT ZONE (SRZ)
- LINE OF TREE VEGETATION ZONE (TVZ)
- LINE OF TREE PROTECTION ZONE (TPZ)

NOTE: REFER TO RELEVANT REPORT FOR FURTHER DETAILS

NOT FOR CONSTRUCTION

A	19.10.23	ISSUED FOR DEVELOPMENT APPLICATION	
ISSUE	DATE	DESCRIPTION	

DESIGNED & CONSULTANTS

CLIENT	MARK BROOKS
ARCHITECT	Artitude Architecture
STRUCTURAL ENGINEER	TYMAC
FIRE ENGINEER	TYMAC
HYDRAULIC	TYMAC
ELECTRICAL	BENLEC TORRES
LANDSCAPE	GREEN DESIGN
CIVIL ENGINEER	ADAM PRICE
ACOUSTICAL	ADAM PRICE
BCA	ARCHITECTURAL
ACCESS	ARCHITECTURAL
SURVEYOR	CITY VIEW
CONSULTANT	GTL

NOTES

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CLIENT

MARK BROOKS

ARCHITECT

Artitude Architecture

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PROJECT

CHILDCARE CENTRE

PROJECT ADDRESS

123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME

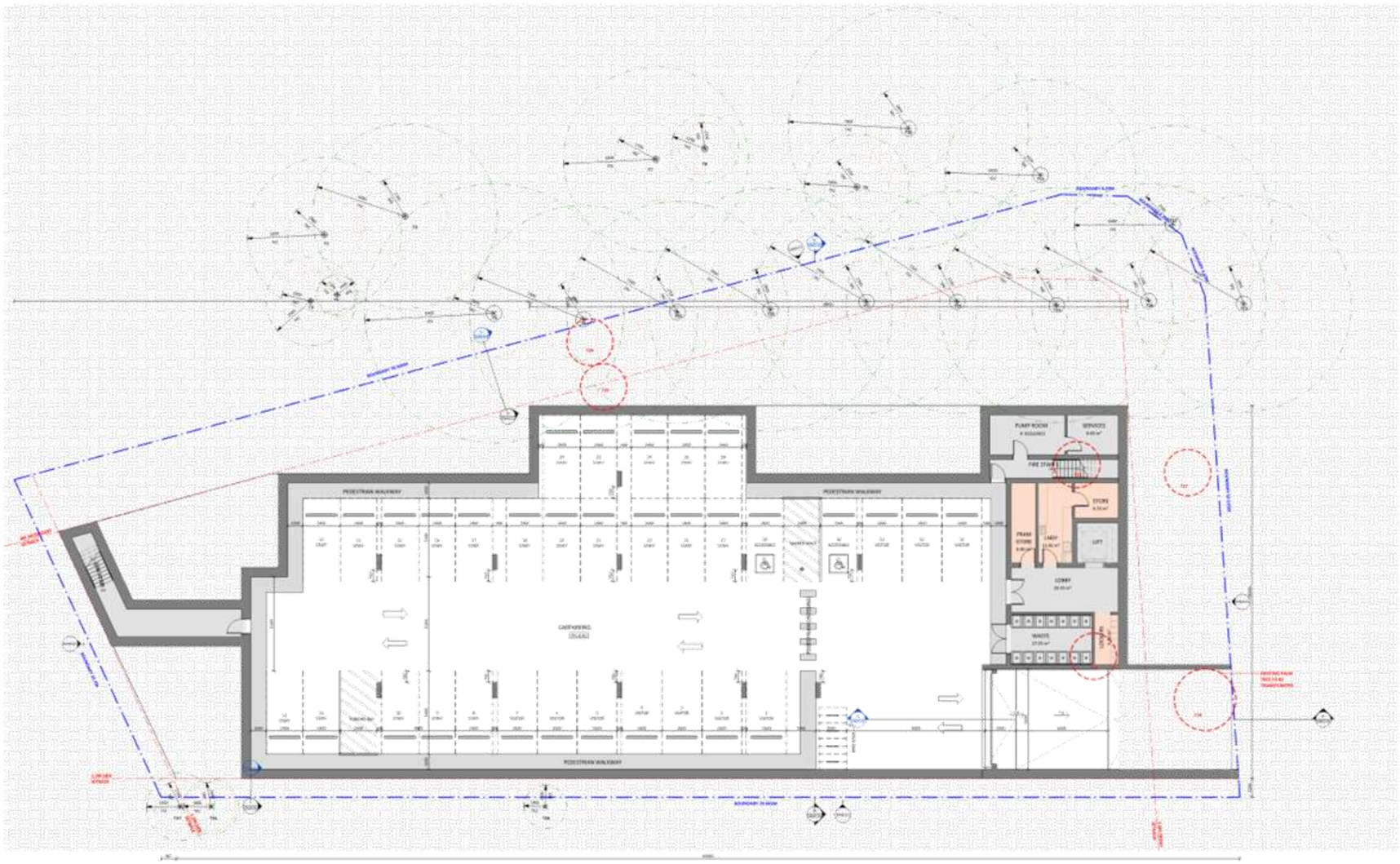
SITE PLAN / DEMOLITION

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA02.01	A	DA

Sheet Size	Scale	L.G.A.
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS	XX.XX.XX



1 BASEMENT FLOOR PLAN
1 : 100

PRELIMINARY
DRAWING NOT FOR FINAL ISSUE
19.10.23

GENERAL NOTES

ABBREVIATIONS

LANDSCAPE LEGEND

PARKING SCHEDULE	
CARPARKING	NO. SPACES
BICYCLE PARKING	6
DISABLED	2
STANDARD	22
TOTAL	30

AUDIOLOGY PLAYROOM SCHEDULE

FLOOR	NAME	NO. CHILDREN	NO. STAFF	PLAY AREA (SQ.M)	CHECK CHILDREN'S AREA
PLAYROOM 1	BABE (0-2)	12	3	36 m²	36.00 m²
PLAYROOM 2	BABE (0-2)	8	2	24 m²	60.00 m²
PLAYROOM 3	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 4	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 5	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 6	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 7	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 8	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 9	PRE (2-3)	20	4	60 m²	60.00 m²
PLAYROOM 10	PRE (2-3)	20	4	60 m²	60.00 m²
TOTAL		180	37	540 m²	600.00 m²

OUTDOOR PLAY AREA SCHEDULE

AREA	FLOOR	NO. CHILDREN	CHECK CHILDREN'S AREA	AREA
OUTDOOR PLAY AREA 1	BABE (0-2)	12	90 m²	85.75 m²
OUTDOOR PLAY AREA 2	BABE (0-2)	8	60 m²	105.00 m²
OUTDOOR PLAY AREA 3	PRE (2-3)	20	150 m²	157.50 m²
OUTDOOR PLAY AREA 4	PRE (2-3)	20	150 m²	157.50 m²
OUTDOOR PLAY AREA 5	PRE (2-3)	20	150 m²	157.50 m²
OUTDOOR PLAY AREA 6	PRE (2-3)	20	150 m²	157.50 m²
TOTAL		100	750 m²	850.00 m²

EXTERNAL STORAGE SCHEDULE			
NAME	NO. CHILDREN	AREA (SQ.M)	VOL
BAY 1.1	20	3.00 m²	4.20 m³
BAY 1.2	20	3.00 m²	4.20 m³
BAY 2.1	20	3.00 m²	4.20 m³
BAY 2.2	20	3.00 m²	4.20 m³
BAY 3.1	20	3.00 m²	4.20 m³
BAY 3.2	20	3.00 m²	4.20 m³
BAY 4.1	20	3.00 m²	4.20 m³
BAY 4.2	20	3.00 m²	4.20 m³
BAY 5.1	20	3.00 m²	4.20 m³
BAY 5.2	20	3.00 m²	4.20 m³
BAY 6.1	20	3.00 m²	4.20 m³
BAY 6.2	20	3.00 m²	4.20 m³
TOTAL	120	36.00 m²	50.40 m³

INTERNAL STORAGE SCHEDULE			
NAME	NO. CHILDREN	AREA (SQ.M)	VOL
BAY 1.1	20	3.00 m²	4.20 m³
BAY 1.2	20	3.00 m²	4.20 m³
BAY 2.1	20	3.00 m²	4.20 m³
BAY 2.2	20	3.00 m²	4.20 m³
BAY 3.1	20	3.00 m²	4.20 m³
BAY 3.2	20	3.00 m²	4.20 m³
BAY 4.1	20	3.00 m²	4.20 m³
BAY 4.2	20	3.00 m²	4.20 m³
BAY 5.1	20	3.00 m²	4.20 m³
BAY 5.2	20	3.00 m²	4.20 m³
BAY 6.1	20	3.00 m²	4.20 m³
BAY 6.2	20	3.00 m²	4.20 m³
TOTAL	120	36.00 m²	50.40 m³

NOTES

CLIENT
MARK BROOKS

ARCHITECT
Architects

© COPYRIGHT

PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
BASEMENT FLOOR PLAN

ISSUED FOR DEVELOPMENT APPLICATION

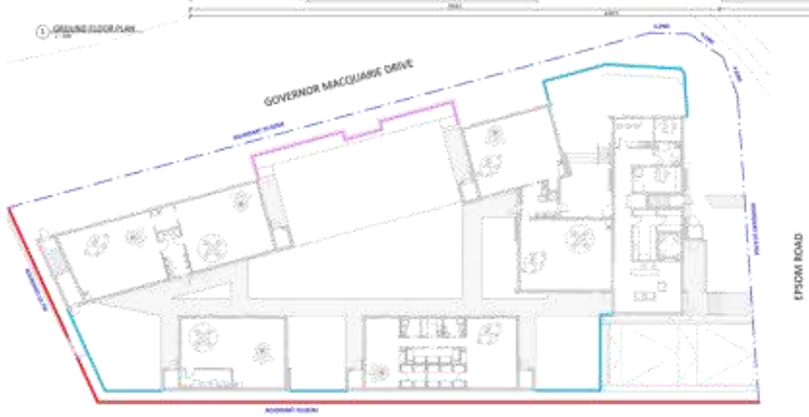
Project number	Sheet No.	Issue	Phase
23701	DA03.01	A	DA

Sheet Size	Scale	L.G.A.
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
KG/SH	AS	XX.XX.XX

NOT FOR CONSTRUCTION

1 GROUND FLOOR PLAN



2 FENCE/BARRIER DIAGRAM - GROUND FLOOR

FENCE LEGEND

PRELIMINARY
DRAWING NOT FOR FINAL ISSUE
19.10.23

GENERAL NOTES

ABBREVIATIONS

LANDSCAPE LEGEND

MARK BROOKS

CHILDCARE CENTRE

123 EPSOM ROAD, CHIPPING NORTON
2170

GROUND FLOOR PLAN

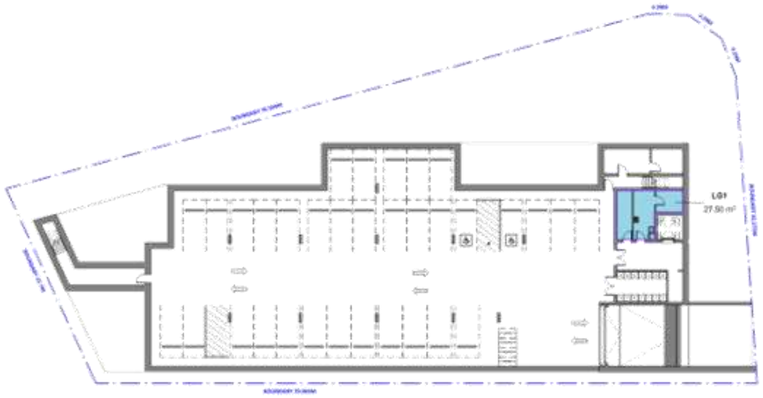
ISSUED FOR DEVELOPMENT APPLICATION

Project Number	Sheet No.	Issue	Phase
21701	DA01-02	5	DA

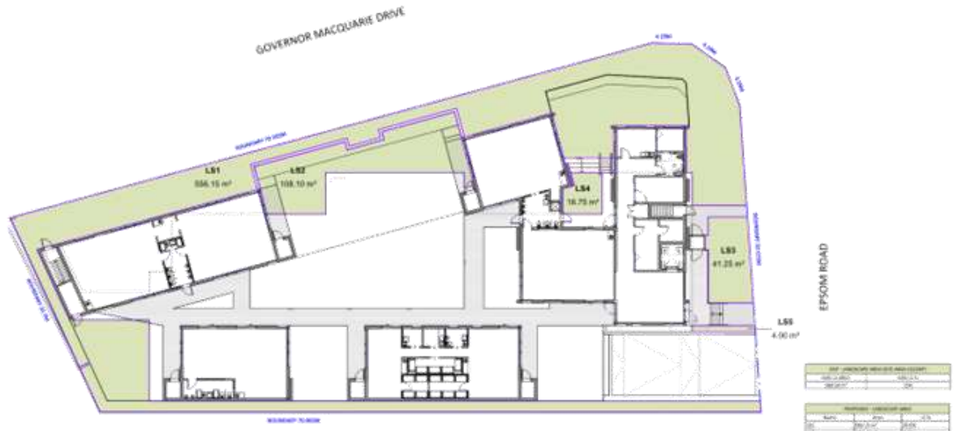
Sheet Size	Scale	Lot
A0	As indicated	LIVERPOOL

Drawn By	Checked By	Date
RG/SN	AS	16.10.23

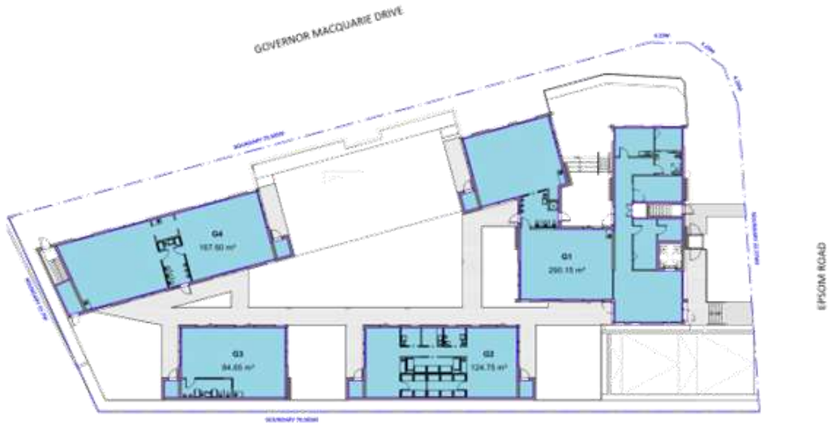
NOT FOR CONSTRUCTION



1 - GFA - BASEMENT LEVEL



2 - LANDSCAPE AREA



3 - GFA - GROUND FLOOR LEVEL

PRELIMINARY
DRAWING NOT FOR FINAL ISSUE
19.10.23

MARK BROOKS

CHILDCARE CENTRE

123 EPSOM ROAD, CHIPPING NORTON 2170

CALCULATIONS

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No.	Issue	Phase
23701	DA01.03	A	DA

Sheet Size	Scale	L.G.A.
A0	1 : 200	LIVERPOOL

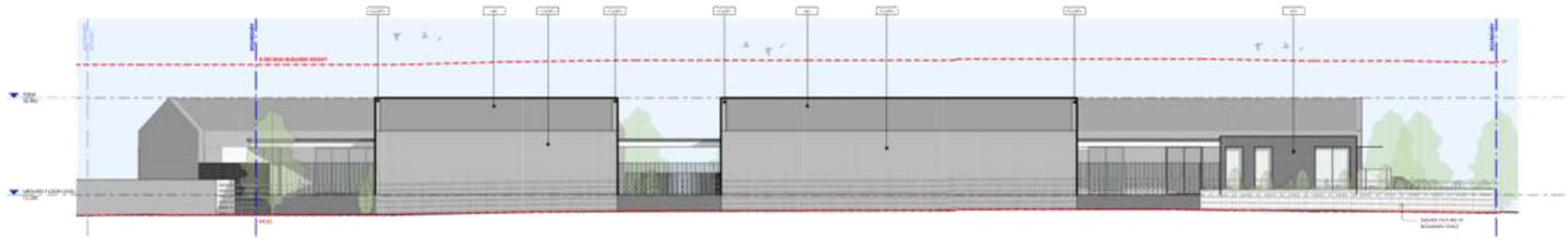
Drawn By	Checked By	Date
KG/SH	AS	XX.XX.XX

NOT FOR CONSTRUCTION

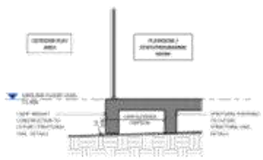
1 NORTHERN ELEVATION (GOVERNOR MACQUARIE DR)

2 EASTERN ELEVATION (EPSOM RD)

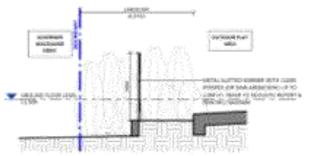
3 WESTERN ELEVATION



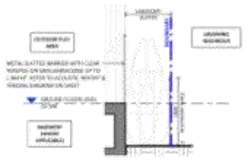
4 SOUTHERN ELEVATION



5 TYP. CANTILEVERED FLOOR DETAIL



6 ACOUSTIC FENCE DETAIL 1



7 ACOUSTIC FENCE DETAIL 2

ARTISTS IMPRESSION

EXTERNAL FINISHES

CB1	WOOD GUTTER, DOWNPIPES CLYNEBANK COLOUR: WOODTONE OR SIMILAR
CB2	GARAGE DOOR CLYNEBANK COLOUR: WOODTONE OR SIMILAR
FC1/XP1	JAMES HARDIE FC SMOOTHING MATT CLEVELAND POINTING COLOUR: XP1
PC1	ALUMINUM WINDOWS & DOOR FRAMES SURMOUNT FOREMENT COLOUR: TO MATCH XP3
HEK1	HEBEL GEZOO COLOUR: TO MATCH XP1
XP1	EXTERNAL PAINT 1 DULUX COLOUR: DULUX WHITEN OR SIMILAR
XP2	EXTERNAL PAINT 2 DULUX COLOUR: VIVID WHITE OR SIMILAR
XP3	EXTERNAL PAINT 3 DULUX COLOUR: WEEDS AND GRY TO DECIDE
XP4	ACRYLICPOINT PAINT DULUX COLOUR: TO MATCH XP1

PRELIMINARY
DRAWING NOT FOR FINAL ISSUE
19.10.23

NOTES

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MARK BROOKS

ARCHITECT

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PROJECT
CHILDCARE CENTRE

PROJECT ADDRESS
123 EPSOM ROAD, CHIPPING NORTON 2170

SHEET NAME
EXTERNAL ELEVATIONS

ISSUED FOR DEVELOPMENT APPLICATION

Project number	Sheet No	Issue	Phase
23701	DA04.01	A	DA

Sheet Size	Scale	L.G.A.
A0	As indicated	LIVERPOOL

Drawn By	Checked by	Date
KG/SH	AS	XX.XX.XX

NOT FOR CONSTRUCTION

APPENDIX 2

LOTSEARCH
LOTSEARCH AERIALS

Date: 09 Oct 2023

Reference: LS048913 EA

Address: 123 Epsom Road, Chipping Norton, NSW 2170

Aerial Imagery 2023

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
0 25 50 75 100 Meters			

Aerial Imagery 2020

123 Epsom Road, Chipping Norton, NSW 2170

Scale: 0 25 50 75 100 Meters	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 2015

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 2011

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 2007

123 Epsom Road, Chipping Norton, NSW 2170

Scale: 0 25 50 75 100 Meters	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 2000

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
0 25 50 75 100 Meters			

Aerial Imagery 1994

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
0 25 50 75 100 Meters			

Aerial Imagery 1991

123 Epsom Road, Chipping Norton, NSW 2170

Scale: 0 25 50 75 100 Meters	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1986

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1982

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
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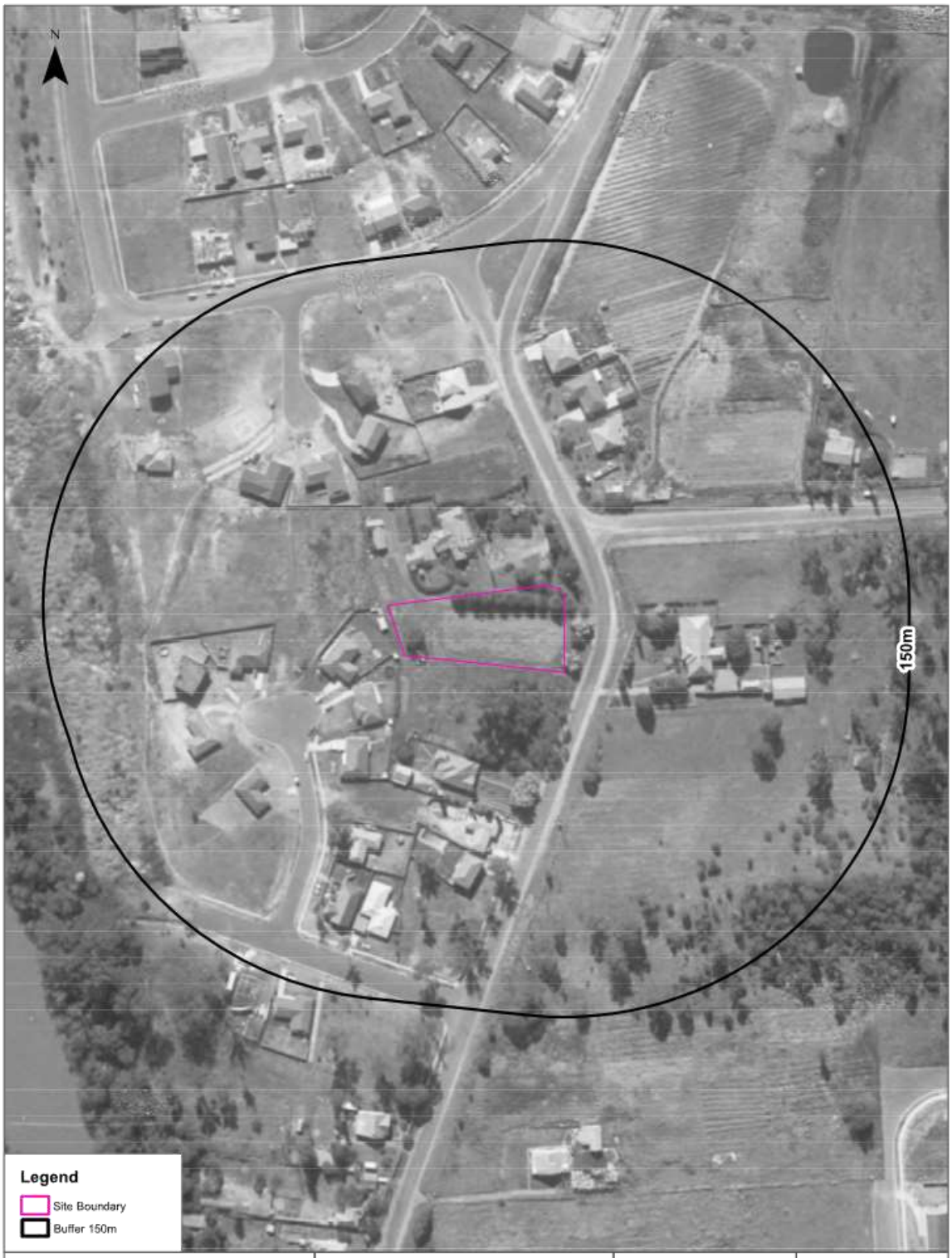
Aerial Imagery 1978

123 Epsom Road, Chipping Norton, NSW 2170



Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1970

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
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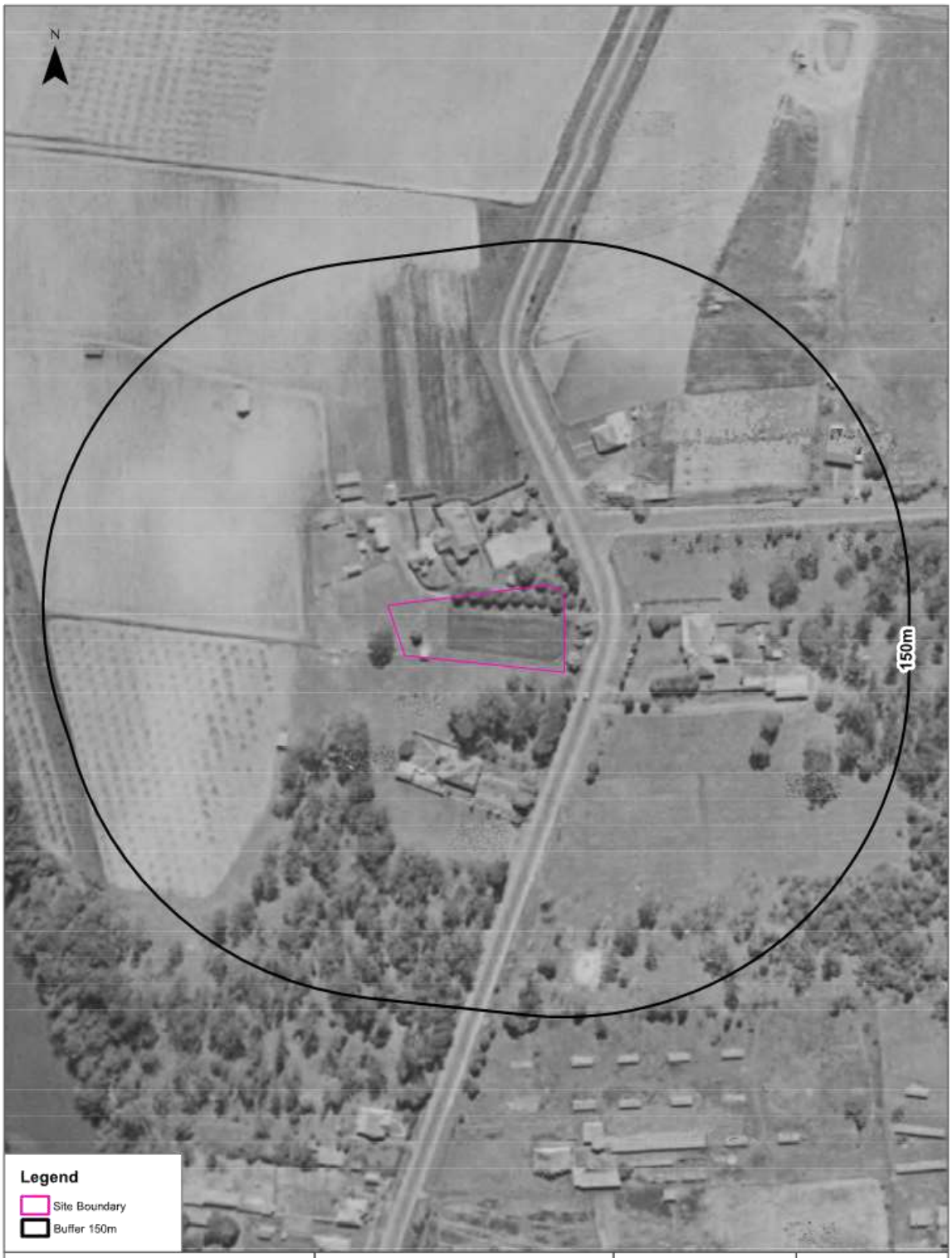
Aerial Imagery 1965

123 Epsom Road, Chipping Norton, NSW 2170



Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

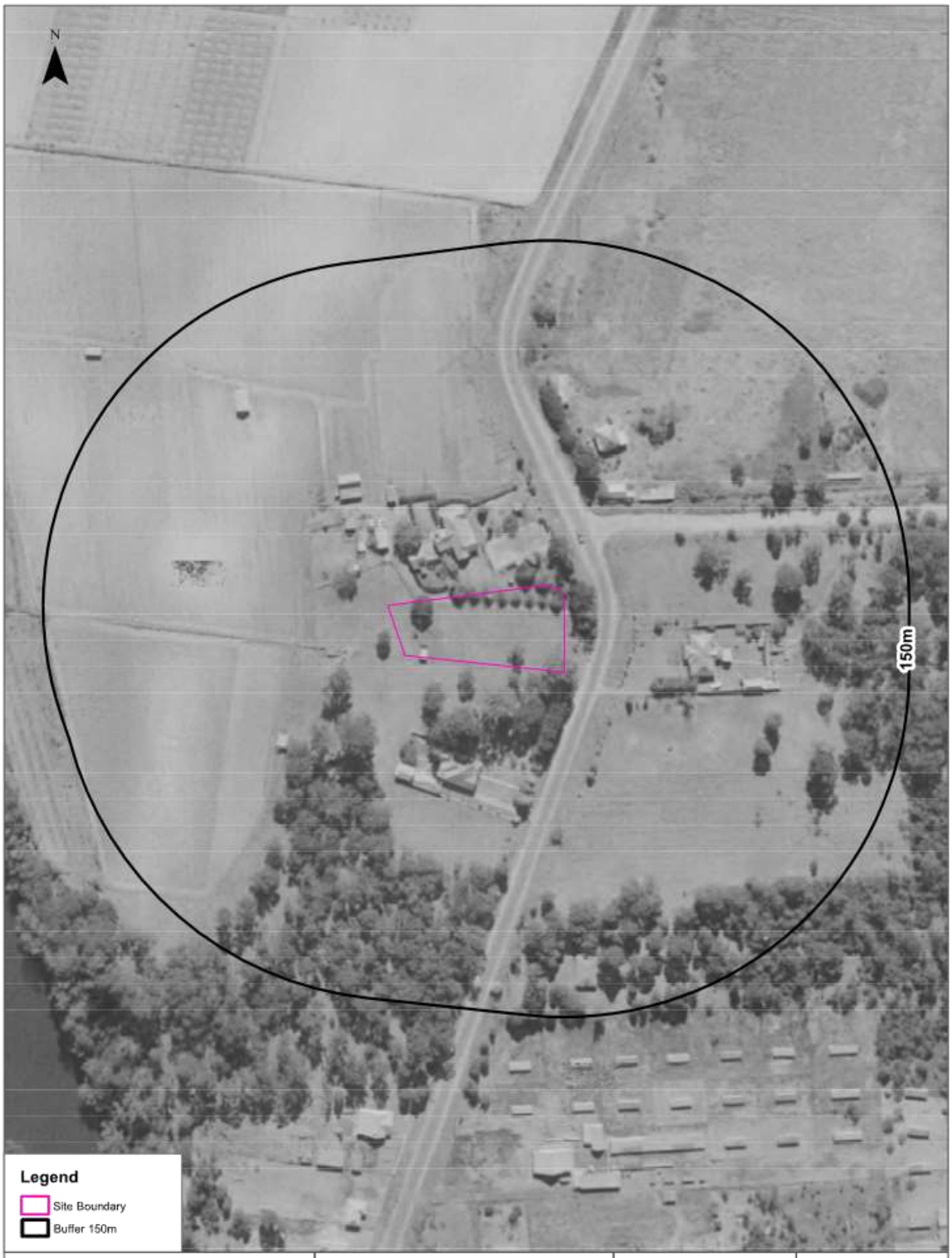
Aerial Imagery 1961

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1955, 1956

123 Epsom Road, Chipping Norton, NSW 2170



Scale:	Data Sources: Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

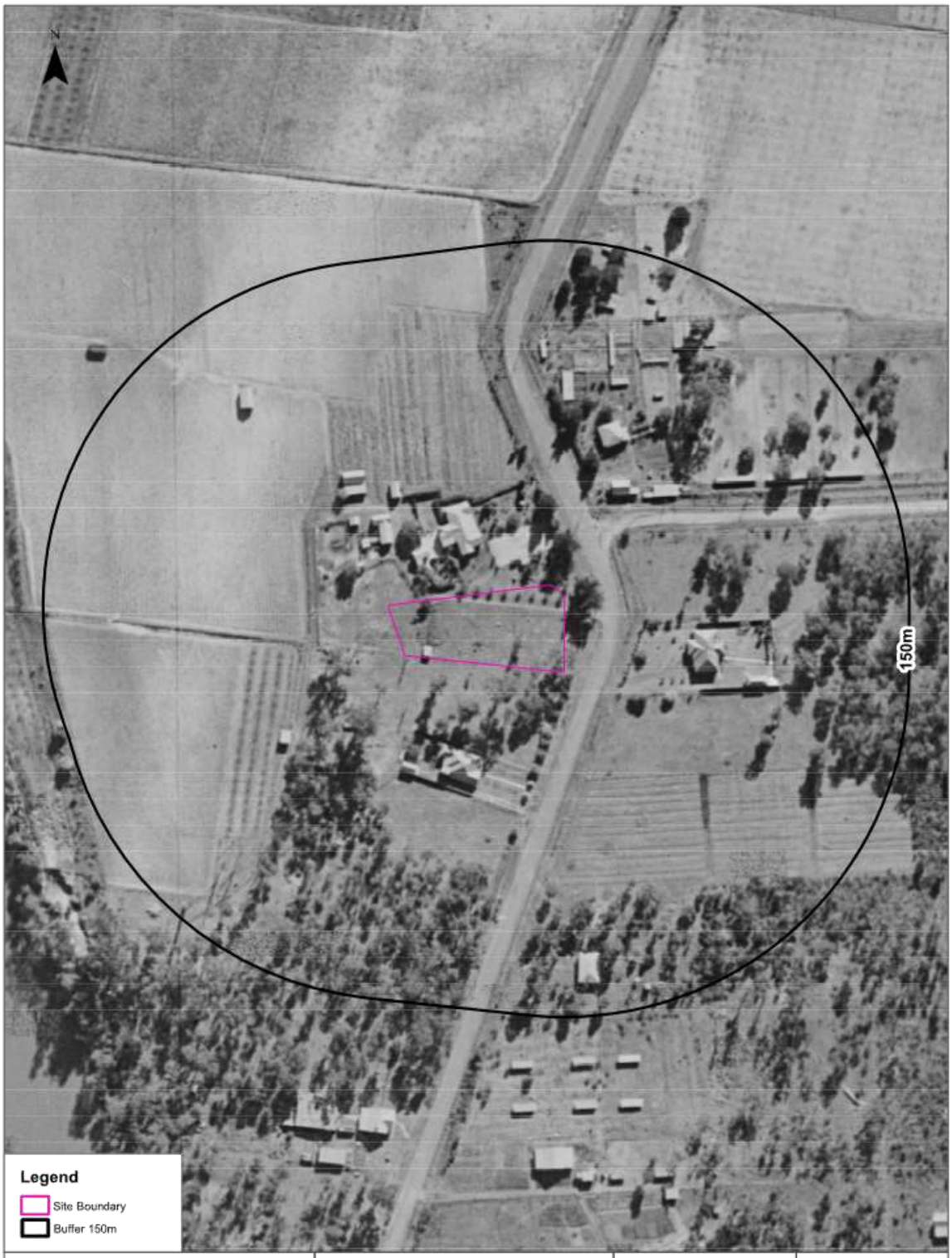
Aerial Imagery 1949

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Source Aerial Imagery: ©2023 Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1943

123 Epsom Road, Chipping Norton, NSW 2170



Scale:	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023

Aerial Imagery 1930

123 Epsom Road, Chipping Norton, NSW 2170

Scale:	Data Sources: Aerial Imagery: © Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 October 2023
0 25 50 75 100 Meters			

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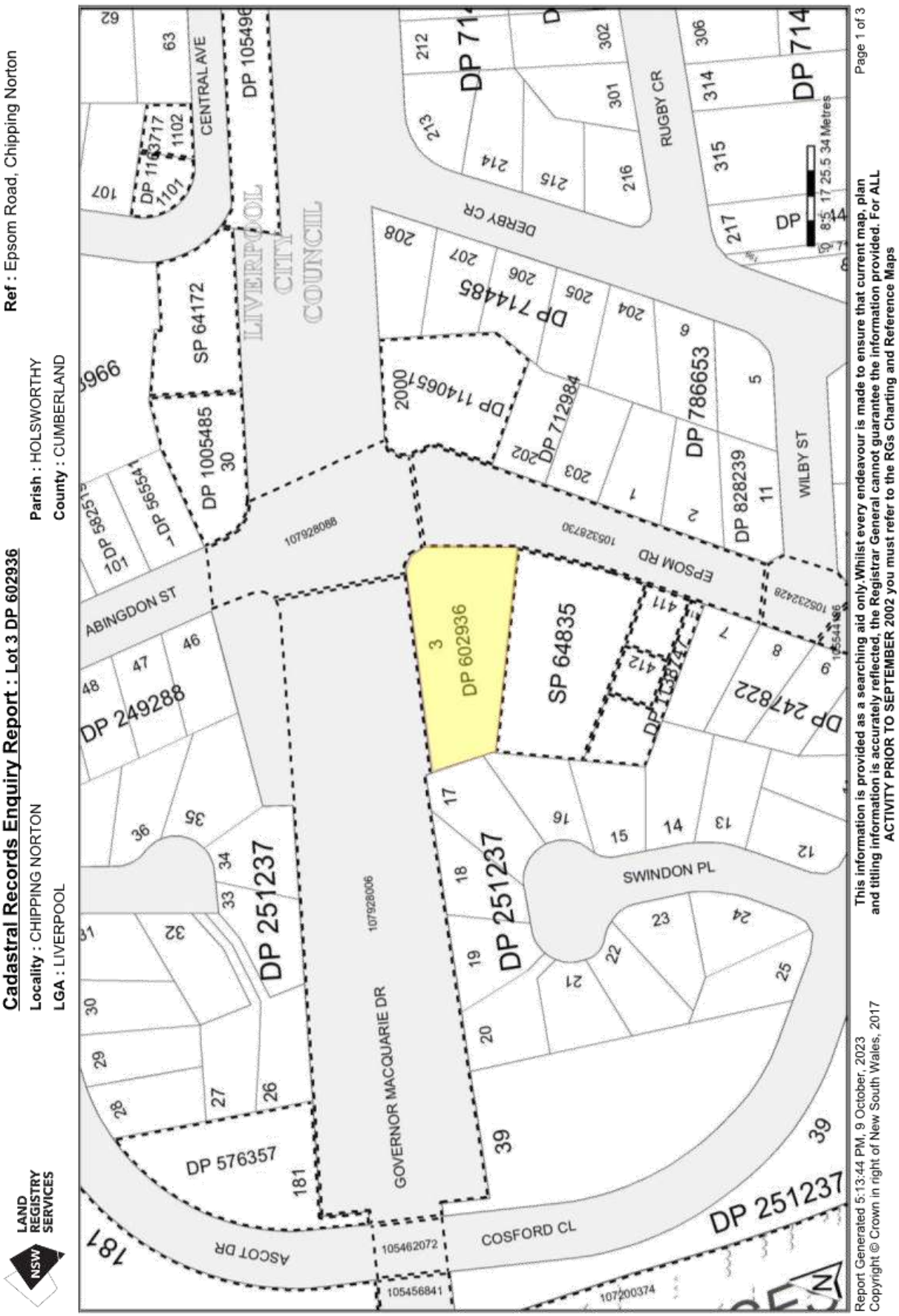
APPENDIX 3


Cadastral Records Enquiry Report : Lot 3 DP 602936
Locality : CHIPPING NORTON
LGA : LIVERPOOL
Parish : HOLSWORTHY
County : CUMBERLAND
Ref : Epsom Road, Chipping Norton
LAND REGISTRY SERVICES
NSW
LIVERPOOL CITY COUNCIL
DP 602936
SP 64835
DP 251237
DP 576357
DP 249288
DP 1005485
SP 64172
DP 786653
DP 828239
DP 247822
DP 714485
DP 1140657
DP 712984
DP 105496
CENTRAL AVE
DERBY CR
RUGBY CR
WILBY ST
EPSOM RD
ABINGDON ST
GOVERNOR MACQUARIE DR
SWINDON PL
ASCOT DR
COSFORD CL
107928088
107928006
105462072
105456841
107200374
105328730
105232428
8.5 17 25.5 34 Metres
Page 1 of 3
This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps
Report Generated 5:13:44 PM, 9 October, 2023
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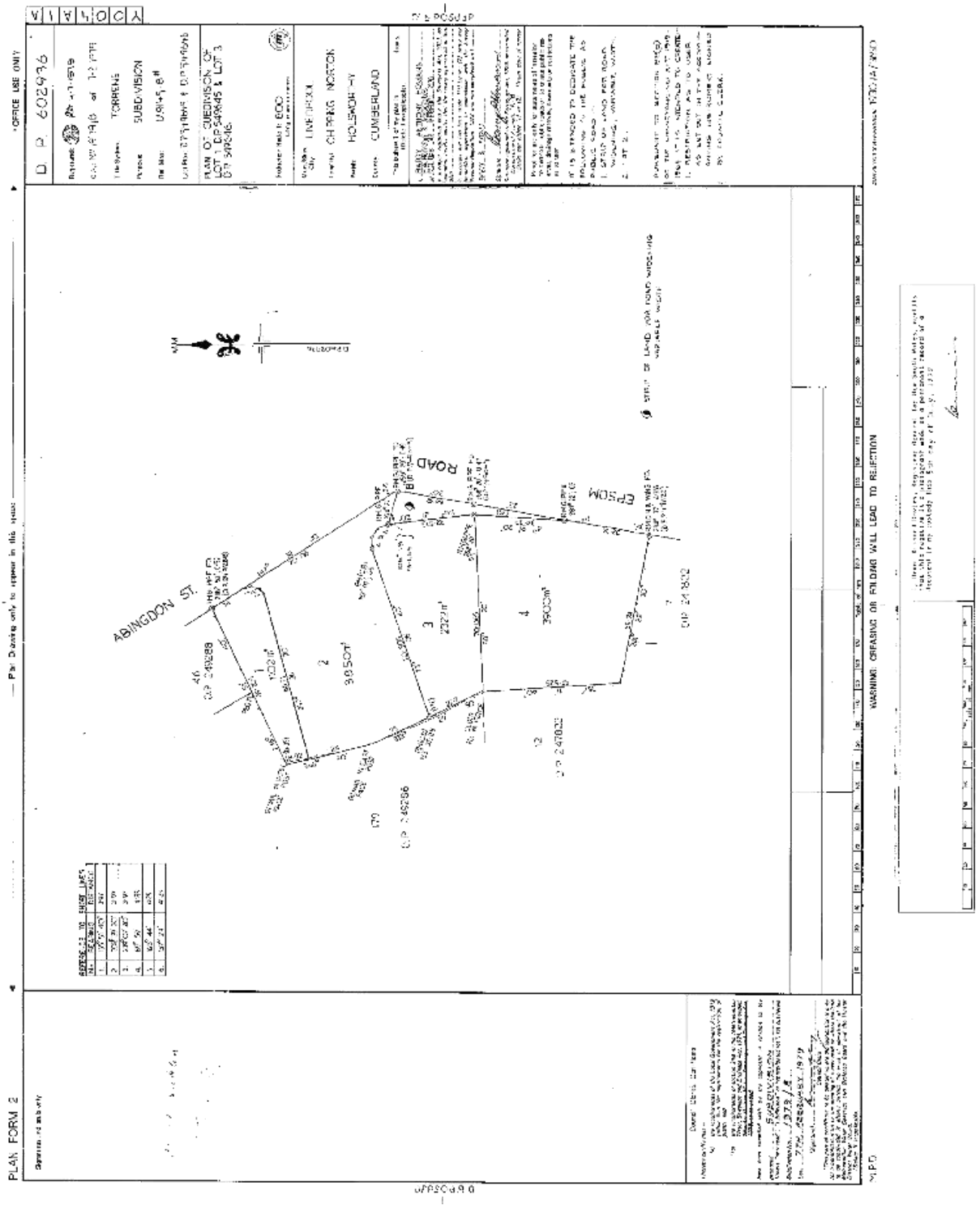


Req:R339979 /Doc:DP 0602936 P /Rev:29-Nov-1992 /NSW LRS /Prg:ALL /Prt:09-Oct-2023 17:13 /Seq:1 of 1
© Office of the Registrar-General /Src:Information /Ref:Epsom Road Chipping Norton
infoTrack

Req:R331029 /Doc:CT 11641-028 CT /Rev:10-Jan-2011 /NSW LRS /Pgs:ALL /Prt:09-Oct-2023 17:18 /Seq:1 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:Epsom Road? Chipping Norton

11641028

NEW SOUTH WALES

[redacted]ICATE OF TITLE
[redacted]PERTY ACT, 1900, as amended.

Appln.No.7206

Prior Titles Vol.7247 Fols.174 & 175

Vol. 11641 Fol. 28

Edition issued 3-8-1971

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness G Barnes

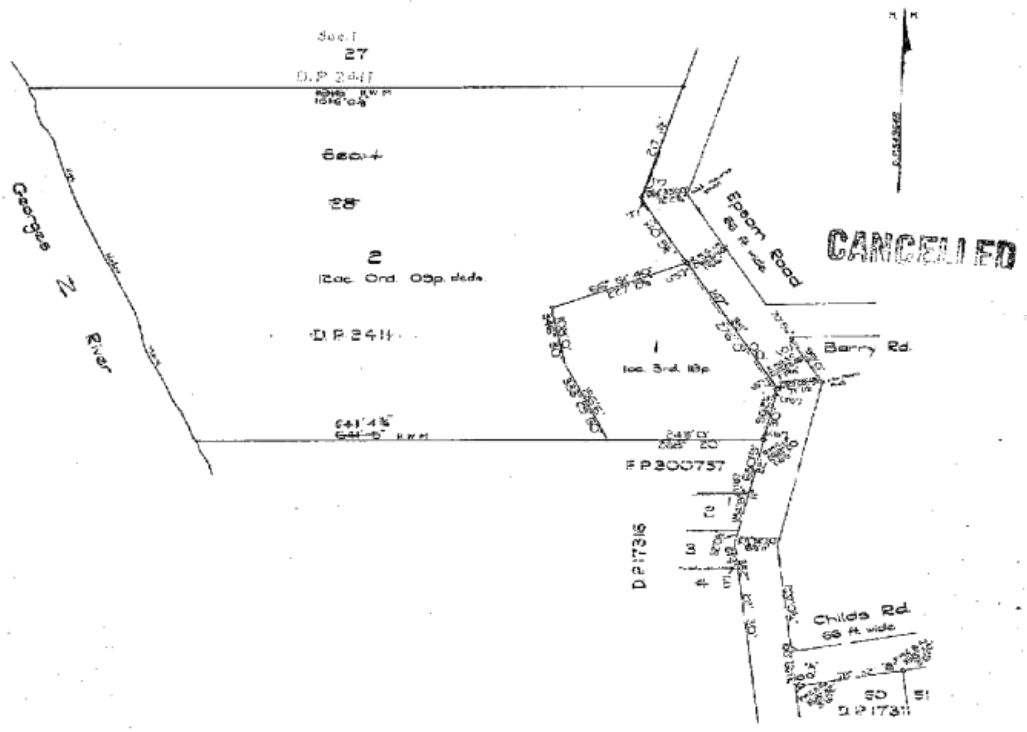
Registrar General.

(Page 1) Vol. 11641 Fol. 28

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PLAN SHOWING LOCATION OF LAND



CANCELLED

ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 1 in Deposited Plan 549645 at Chipping Norton in the City of Liverpool Parish of Holsworthy and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818. EXCEPTING THEREOUT the minerals excepted by Transfer No.151909.

FIRST SCHEDULE

~~WALTER FREDERICK FRANKLIN and LEWIS GORDON FRANKLIN both of Liverpool, Orchardist as Tenants in common in equal shares.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

Registrar General

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

Req:R331029 /Doc:CT 11641-028 CT /Rev:10-Jan-2011 /NSW LRS /Prs:ALL /Prt:09-Oct-2023 17:18 /Seq:2 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:Epsom Road? Chipping Norton

Vol. 11641 Fol. 28

V. C. N. BLIGHT, GOVERNMENT PRINTER

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
Cecil Longstaff Franklin of Chipping Norton Retired Orchardist and Lewis Gordon Franklin of Chipping Norton, Retired Orchardist ~~as joint tenants~~ as to one undivided one half share ~~as joint tenants~~ and the ~~above~~ said ~~Cecil Longsta~~ Lewis Gordon Franklin as to the remaining one undivided one half share ~~as~~ as tenants in common.	Transmission	R239041	—	22-6-1979	

NEW CERTIFICATE(S) OF TITLE ISSUING ON DP 602936.
NO DEALING TO BE REGISTERED WITHOUT REFERENCE TO SURVEY DRAFTING BRANCH.

R239541
DP602936

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
			Interests created pursuant to Section 88B Conveyancing Act 1919 by the registration of Deposited Plan 602936	4.7.1979		
			The interest of the Council of the City of Liverpool in the addition to existing road shown on D.P. 602936	4.7.1979		
			This deed is cancelled as to whole of Road. New Certificates of Title have issued on 7/8/1979 for lots in Deposited Plan No. 602936 as follows:- Lots 1 to 4 Vol. 13918 Fol. 100 to 103 respectively. REGISTRAR GENERAL			
			The residue of land in this folio comprises the Road		REGISTRAR GENERAL	

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Req:R330981 /Doc:CT 13918-101 CT /Rev:28-Jan-2011 /NSW LRS /Pgs:ALL /Prt:09-Oct-2023 17:13 /Seq:1 of 2
© Office of the Registrar-General /Src:Infotrack /Ref:Epsom Road? Chipping Norton

13918 Fol. 101

[redacted]ICATE OF TITLE

NEW SOUTH WALES

[redacted]L PROPERTY ACT, 1900

Vol. 13918 Fol. 101

Appln. No. 7206

Prior Title Vol.11641 Fol. 28

EDITION ISSUED

8 8 1979

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

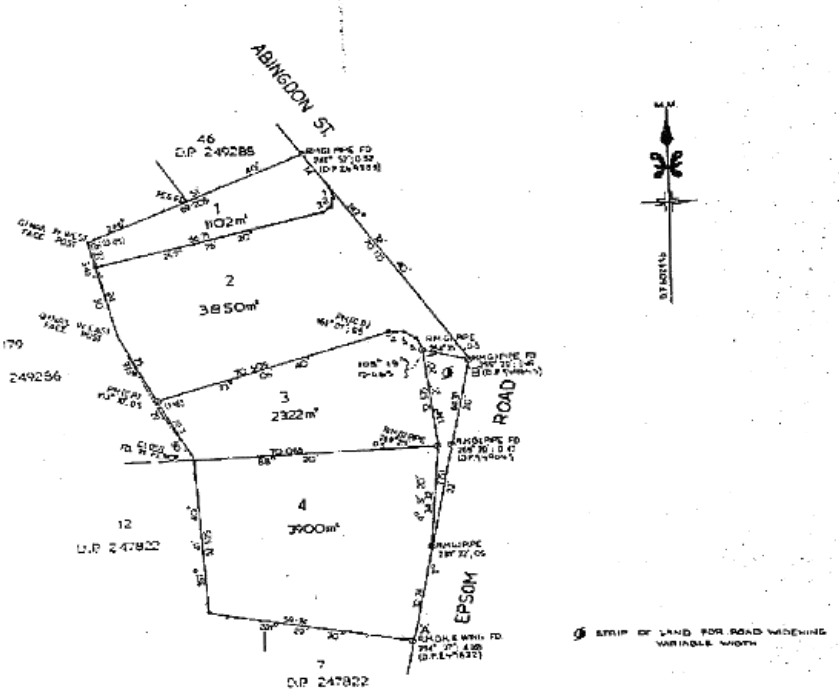
CANCELLED

Registrar General.

PLAN SHOWING LOCATION OF LAND SEE AUTO FOLIO

LENGTHS ARE IN METRES

REFERENCE TO SHEET LINES		
No.	BEARINGS	DISTANCE
1	165° 51' 40"	3.97
2	208° 36 20"	3.95
3	278° 07 20"	3.89
4	89° 50	4.29
5	127° 44	4.25
6	89° 20	4.29



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 3 in Deposited Plan 602936 at Chipping Norton in the City of Liverpool Parish of Holsworthy and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818. EXCEPTING THEREOUT the minerals excepted by Transfer No.151909.

FIRST SCHEDULE

~~CECIL LONGSTAFF FRANKLIN of Chipping Norton, [redacted]red Orchardist and LEWIS GORDON FRANKLIN of Chipping Norton, Retired Orchardist as joint tenants as to one undivided one half share and the said LEWIS GORDON FRANKLIN, as to the remaining one undivided one half share as tenants in common.~~

SECOND SCHEDULE

GRY 1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
RU 2. DP602936 Restriction as to user.

RG 2/62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE REGISTRAR GENERAL'S OFFICE.

Req:R330981 /Doc:CT 13918-101 CT /Rev:28-Jan-2011 /NSW LRS /Pgs:ALL /Prt:09-Oct-2023 17:13 /Seq:2 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:Epsom Road? Chipping Norton

Vol. 13918 Fol. 101

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	REGISTERED	~~Signature of~~ Registrar General
~~Cecil Longstaff Franklin and Lewis Gordon Franklin, both Retired Orchardists, in ½ share as joint tenants and Francis Leslie Bulluss, Accountant and Valerie Joy Bulluss his wife in ½ share as joint tenants, all of Chipping Norton, tenancy in common.~~	Transfer	R518849	~~28-11-1979~~	
~~Francis Leslie Bulluss and Valerie Joy Bulluss in ½ share as joint tenants and Lewis Gordon Franklin in ½ share, as tenants in common by Notice of Death T200229. Registered 30-3-1982.~~				
~~Francis Leslie Bulluss and Valerie Joy Bulluss in ½ share as joint tenants and Gordon Scott Franklin in ½ share, as tenants in common by Transmission T447768. Registered 15-3-1983.~~				
~~Francis Leslie Bulluss and Valerie Joy Bulluss as joint tenants by Transfer V159239. Registered 13.6.1984~~				
B. & C. Peirce Pty. Limited by Transfer V571196 Registered 18-2-1985				

CANCELLED

R518849 T
T200229 N
T447768 T
C.T. 21.4.8.
T576531 D
V159239 T
V571196T

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	PARTICULARS	REGISTERED	~~Signature of~~ Registrar General	CANCELLATION	
~~Mortgage~~	~~R518850~~	~~as regards the interest of Francis Leslie Bulluss and Valerie Joy Bulluss, to Lewis Gordon Franklin of Chipping Norton, Retired Orchardist.~~	~~28-11-1979~~		Discharged	T576534
~~R518850 Mortgage. Mortgagee: Gordon Scott Franklin by Transmission T447768. Registered 15-3-1983.~~					Cancelled	T576531

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND REGISTRY SERVICES **Historical Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/10/2023 5:12PM

FOLIO: 3/602936

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 13918 FOL 101

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
1/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
1/10/1991	Z956052	TRANSFER	
1/10/1991	Z956053	MORTGAGE	EDITION 1
28/3/1994		AMENDMENT: LOCAL GOVT AREA	
17/12/2002	9223836	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 2
30/12/2002	9251516	DISCHARGE OF MORTGAGE	
30/12/2002	9251517	TRANSFER	
30/12/2002	9251518	MORTGAGE	EDITION 3
7/10/2011	AG544396	DISCHARGE OF MORTGAGE	EDITION 4

*** END OF SEARCH ***

Epsom Road, Chipping Norton PRINTED ON 9/10/2023

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Received: 09/10/2023 17:12:59

Req:R330982 /Doc:DL Z956052 /Rev:29-Jul-2010 /NSW LRS /Pgs:ALL /Prt:09-Oct-2023 17:13 /Seq:2 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:Epsom Road? Chipping Norton

OFFICE USE ONLY

APPLICATION TO RECORD CHANGE OF NAME
REAL PROPERTY ACT, 1900
CROWN LANDS CONSOLIDATION ACT, 1913
WESTERN LANDS ACT, 1901

CN / KC | of | X | $

DESCRIPTION OF LAND Note (a)

LAND of which applicant is registered proprietor/holder

Torrens Title Reference	Location	Tenure Card Reference	Land District
C/T VOLUME: 13918 FOLIO 101 NOW BEING THE WHOLE OF THE LAND CONTAINED IN F/I 3/602936	CHIPPING NORTON		

REGISTERED DEALING Note (b)

LEASE, MORTGAGE, or CHARGE of which applicant is registered proprietor

Type of Dealing	Registered Number	Torrens Title Reference

NAME OF REG'D PROPRIETOR(S)/HOLDER(S) (as presently recorded) Note (c)

B AND C PEIRCE PTY LIMITED

EVIDENCE only

being the REGISTERED PROPRIETOR(S)/HOLDER(S) and a change of name, as set out in the statutory declaration below having been effected, the applicant hereby applies to have the following name(s) recorded in the Register.

The name(s), address(es) and occupation(s) or description(s) of the REGISTERED PROPRIETOR(S)/HOLDER(S) should now be recorded as

NAME OF REG'D PROPRIETOR(S)/HOLDER(S) (after change of name)

PINNACLE HOMES PTY LIMITED

OFFICE USE ONLY

STATUTORY DECLARATION

Note (d) In support of this application I Catherine Anne [redacted], COMPANY DIRECTOR solemnly and sincerely declare that:

Note (e) 1. The applicant is identical with B AND C PEIRCE PTY LIMITED, the registered proprietor/holder (or one of them) of the abovementioned land.

Note (f) 2. On the day of , 19 , at in the State of , the applicant married

Note (g) 3. CHANGE OF COMPANY NAME FROM B AND C PEIRCE PTY LIMITED TO PINNACLE HOMES PTY LIMITED DULY LODGED UNDER COMPANY ACT 1961 ON 11 JUNE 1985.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act, 1900, and I hereby certify this application to be correct for the purposes of the Real Property Act, 1900.

Made and subscribed at Marrickville the 24th day of September, 19 91, in the presence of—

JP
Signature of Witness

MICHAEL O'CONNOR
Name of Witness (BLOCK LETTERS)

19 Promontory Avenue
Address and Occupation of Witness Bank officer
Vaucluse NSW 24J

EXECUTION Note (h)

Signature of Applicant

TO BE COMPLETED BY LODGING PARTY Notes (i) and (j)

LODGED BY

COMMONWEALTH BANK OF AUSTRALIA
BRANCH LENDING SUPPORT
308 GEORGE STREET
SYDNEY
PHONE: 227-7558
DX 1020 SYDNEY
24J

2322 Pinnacle Homes
Delivery Box Number

LOCATION OF DOCUMENTS

		Herewith.
		In L.T.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED - -18	Secondary Directions			
Signed	Extra Fee		Delivery Directions			

Req:R330982 /Doc:DL Z956052 /Rev:29-Jul-2010 /NSW LRS /Pgs:ALL /Prt:09-Oct-2023 17:13 /Seq:1 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:Epsom Road? Chipping Norton

RP 13 STAMP DUTY

OFFICE OF STATE REVENUE (N.S.W TREASURY) 1990/91 P11 NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT

B

Z 956052 U

TRANSFER

REAL PROPERTY ACT, 1900

T | of | $ | R

	Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
DESCRIPTION OF LAND Note (a)	Folio Identifier 3/602936	WHOLE	at Chipping Norton

TRANSFEROR Note (b): PINNACLE HOMES PTY LIMITED

ESTATE Note (c): (the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $ and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d): CATHERINE ANN PEIRCE of 123 Epsom Road, Chipping Norton

OFFICE USE ONLY

TENANCY Note (e): as joint tenants/tenants in common

PRIOR ENCUMBRANCES Note (f): subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE 23rd August 1991

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g): Signed in my presence by the transferor who is personally known to me ..... Signature of Witness ..... Name of Witness (BLOCK LETTERS) ..... Address and occupation of Witness ..... Signed in my presence by the transferee who is personally known to me ..... Signature of Witness ..... Name of Witness (BLOCK LETTERS) ..... Address and occupation of Witness

PINNACLE HOMES (NSW) PTY LIMITED was affixed under the authority of the Directors in the presence of BARRY ARTHUR PEIRCE Director whose signature appears opposite hereto

Countersigned

Director

Signature of Transferee

Secretary

Note (g): D. J. Rodgers J.P.

Signature of Witness

DARYL G. RADBURN

Name of Witness (BLOCK LETTERS)

PUBLIC SERVANT

Address and occupation of Witness

C/- 132 MARSDEN ST PARRAMATTA

Signature of Transferee

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY SHELGROVE & PARTNERS 10-22 Hargrave Street EAST SYDNEY NSW 2010 CTB

DELIVERY BOX 245

Ref: Shelgrove

Delivery Box Number 23222 Pinnacle Homes

LOCATION OF DOCUMENTS	CT	OTHER
Herewith.	✓	
In L.T.O. with		
Produced by		

OFFICE USE ONLY

Checked	Passed	REGISTERED - -19	Secondary Directions	
30		01 OCT 1991		
Signed	Extra Fee		Delivery Directions	

* SIDE EVIDENCE of c/w SUBMITTED 1/10/91

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 3/602936

SEARCH DATE	TIME	EDITION NO	DATE
9/10/2023	5:12 PM	4	7/10/2011

LAND

LOT 3 IN DEPOSITED PLAN 602936
AT CHIPPING NORTON
LOCAL GOVERNMENT AREA LIVERPOOL
PARISH OF HOLSWORTHY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP602936

FIRST SCHEDULE

MARK TERENCE BROOKS
CLAIRE MAREE BROOKS
AS JOINT TENANTS (T 9251517)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 151909 LAND EXCLUDES MINERALS
3 DP602936 RESTRICTION(S) ON THE USE OF LAND

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Epsom Road, Chipping Norton PRINTED ON 9/10/2023

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 09/10/2023 17:12:44

APPENDIX 4

eurofins | Environment Testing

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Environmental Consulting Services
10 Fort Street
Petersham
NSW 2049

Attention: **All results - Simon Caples**

Report **1035569-S**
Project name CHIPPING NORTON
Received Date Oct 17, 2023

Client Sample ID			**CN1**	**CN2**	**CN3**	[G01]**CN4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S23-Oc0037298**	**S23-Oc0037299**	**S23-Oc0037300**	**S23-Oc0037301**
Date Sampled			**Oct 17, 2023**	**Oct 17, 2023**	**Oct 17, 2023**	**Oct 17, 2023**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	67	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	57	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	144	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	120	< 100	110
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	120	< 100	110
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	INT	125	106	79
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

eurofins | Environment Testing

Client Sample ID			CN1	CN2	CN3	[G01]CN4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Oc0037298	S23-Oc0037299	S23-Oc0037300	S23-Oc0037301
Date Sampled			Oct 17, 2023	Oct 17, 2023	Oct 17, 2023	Oct 17, 2023
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	118	95	95
p-Terphenyl-d14 (surr.)	1	%	99	121	101	105
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor epoxide	0.05	mg/kg	< 0.05	0.05	0.09	< 0.5
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	111	137	99	81
Tetrachloro-m-xylene (surr.)	1	%	113	128	108	106
Heavy Metals						
Arsenic	2	mg/kg	7.8	7.0	14	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	36	25	56	32
Copper	5	mg/kg	12	20	7.3	22
Lead	5	mg/kg	26	29	44	86
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	25	5.1	< 5	< 5
Zinc	5	mg/kg	86	63	75	110
Sample Properties						
% Moisture	1	%	7.3	20	18	13

eurofins | Environment Testing

Client Sample ID			CN1	CN2	CN3	[G01]CN4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Oc0037298	S23-Oc0037299	S23-Oc0037300	S23-Oc0037301
Date Sampled			Oct 17, 2023	Oct 17, 2023	Oct 17, 2023	Oct 17, 2023
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	-	40	-	-
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	-	7.3	-	-

Client Sample ID			[G01]CN5	CN6	CND
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S23-Oc0037302	S23-Oc0037303	S23-Oc0037304
Date Sampled			Oct 17, 2023	Oct 17, 2023	Oct 17, 2023
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	170	< 50	< 50
TRH C29-C36	50	mg/kg	170	180	< 50
TRH C10-C36 (Total)	50	mg/kg	340	180	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	350	< 100	< 100
TRH >C34-C40	100	mg/kg	140	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	490	< 100	< 100
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	148	131	103
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5

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Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	G01 CN5 Soil S23-Oc0037302 Oct 17, 2023	CN6 Soil S23-Oc0037303 Oct 17, 2023	CND Soil S23-Oc0037304 Oct 17, 2023
Polycyclic Aromatic Hydrocarbons					
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	103	103	96
p-Terphenyl-d14 (surr.)	1	%	105	110	99
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.5	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.5	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.5	< 0.05	0.11
a-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.5	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.5	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 10	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.5	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.5	< 0.05	0.11
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 1	< 0.1	0.11
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	124	145	118
Tetrachloro-m-xylene (surr.)	1	%	106	110	108
Heavy Metals					
Arsenic	2	mg/kg	3.5	4.6	6.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	16	23
Copper	5	mg/kg	24	9.9	11
Lead	5	mg/kg	26	20	25
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	13	< 5	21
Zinc	5	mg/kg	110	45	73
Sample Properties					
% Moisture	1	%	17	12	8.1

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B9			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Oct 20, 2023	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Oct 20, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Oct 17, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	Sydney	Oct 18, 2023	7 Days
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25 °C as rec.)	Sydney	Oct 18, 2023	7 Days
- Method: LTM-GEN-7090 pH by ISE			

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Company Name: Environmental Consulting Services
Address: 10 Fort Street
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Project Name: CHIPPING NORTON

Order No.:
Report #: 1035569
Phone: 02 9518 1161
Fax:

Received: Oct 17, 2023 2:45 PM
Due: Oct 23, 2023
Priority: 5 Day
Contact Name: All results - Simon Caples

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Conductivity (1:5 aqueous extract at 25 °C as rec.)	pH (1:5 Aqueous extract at 25 °C as rec.)	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	CN1	Oct 17, 2023		Soil	S23-Oc0037298	X			X	X
2	CN2	Oct 17, 2023		Soil	S23-Oc0037299		X	X	X	X
3	CN3	Oct 17, 2023		Soil	S23-Oc0037300	X			X	X
4	CN4	Oct 17, 2023		Soil	S23-Oc0037301	X			X	X
5	CN5	Oct 17, 2023		Soil	S23-Oc0037302				X	X
6	CN6	Oct 17, 2023		Soil	S23-Oc0037303				X	X
7	CND	Oct 17, 2023		Soil	S23-Oc0037304				X	X
Test Counts						3	1	1	7	7

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chrometographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Conductivity (1:5 aqueous extract at 25 °C as rec.)	uS/cm	< 10			10	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	107			70-130	Pass	
TRH C10-C14	%	84			70-130	Pass	
TRH C6-C10	%	106			70-130	Pass	
TRH >C10-C16	%	82			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	93			70-130	Pass	
Toluene	%	114			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	117			70-130	Pass	
o-Xylene	%	117			70-130	Pass	
Xylenes - Total*	%	117			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	116			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	96			70-130	Pass	
Acenaphthylene	%	93			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	85			70-130	Pass	
Benzo(a)pyrene	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	%	78			70-130	Pass	
Benzo(g.h.i)perylene	%	97			70-130	Pass	
Benzo(k)fluoranthene	%	106			70-130	Pass	
Chrysene	%	99			70-130	Pass	
Dibenz(a.h)anthracene	%	90			70-130	Pass	
Fluoranthene	%	96			70-130	Pass	
Fluorene	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	92			70-130	Pass	

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Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Naphthalene			%	99			70-130	Pass	
Phenanthrene			%	80			70-130	Pass	
Pyrene			%	95			70-130	Pass	
LCS - % Recovery									
Organochlorine Pesticides									
Chlordanes - Total			%	90			70-130	Pass	
4.4'-DDD			%	78			70-130	Pass	
4.4'-DDE			%	93			70-130	Pass	
4.4'-DDT			%	91			70-130	Pass	
a-HCH			%	84			70-130	Pass	
Aldrin			%	88			70-130	Pass	
b-HCH			%	83			70-130	Pass	
d-HCH			%	84			70-130	Pass	
Dieldrin			%	87			70-130	Pass	
Endosulfan I			%	93			70-130	Pass	
Endosulfan II			%	88			70-130	Pass	
Endosulfan sulphate			%	89			70-130	Pass	
Endrin			%	88			70-130	Pass	
Endrin aldehyde			%	89			70-130	Pass	
Endrin ketone			%	86			70-130	Pass	
g-HCH (Lindane)			%	92			70-130	Pass	
Heptachlor			%	90			70-130	Pass	
Heptachlor epoxide			%	86			70-130	Pass	
Hexachlorobenzene			%	87			70-130	Pass	
Methoxychlor			%	82			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	93			80-120	Pass	
Cadmium			%	96			80-120	Pass	
Chromium			%	94			80-120	Pass	
Copper			%	93			80-120	Pass	
Lead			%	92			80-120	Pass	
Mercury			%	100			80-120	Pass	
Nickel			%	92			80-120	Pass	
Zinc			%	96			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S23-Oc0037298	CP	%	72			70-130	Pass	
TRH C10-C14	S23-Oc0032223	NCP	%	76			70-130	Pass	
TRH C6-C10	S23-Oc0037298	CP	%	71			70-130	Pass	
TRH >C10-C16	S23-Oc0032223	NCP	%	74			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S23-Oc0037298	CP	%	76			70-130	Pass	
Toluene	R23-Oc0035026	NCP	%	76			70-130	Pass	
Ethylbenzene	S23-Oc0037298	CP	%	79			70-130	Pass	
m&p-Xylenes	S23-Oc0037298	CP	%	76			70-130	Pass	
o-Xylene	S23-Oc0037298	CP	%	73			70-130	Pass	
Xylenes - Total*	S23-Oc0037298	CP	%	75			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	R23-Oc0032268	NCP	%	71			70-130	Pass	
Spike - % Recovery									

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S23-Oc0040505	NCP	%	108			70-130	Pass	
Acenaphthylene	S23-Oc0040505	NCP	%	75			70-130	Pass	
Anthracene	S23-Oc0040505	NCP	%	110			70-130	Pass	
Benz(a)anthracene	S23-Oc0040505	NCP	%	79			70-130	Pass	
Benzo(a)pyrene	S23-Oc0040505	NCP	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	S23-Oc0040505	NCP	%	75			70-130	Pass	
Benzo(g.h.i)perylene	S23-Oc0040505	NCP	%	108			70-130	Pass	
Benzo(k)fluoranthene	S23-Oc0045291	NCP	%	114			70-130	Pass	
Chrysene	S23-Oc0045291	NCP	%	125			70-130	Pass	
Dibenz(a.h)anthracene	S23-Oc0040505	NCP	%	71			70-130	Pass	
Fluoranthene	S23-Oc0045291	NCP	%	97			70-130	Pass	
Fluorene	S23-Oc0040505	NCP	%	79			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S23-Oc0040505	NCP	%	99			70-130	Pass	
Naphthalene	S23-Oc0040505	NCP	%	107			70-130	Pass	
Phenanthrene	S23-Oc0040505	NCP	%	98			70-130	Pass	
Pyrene	S23-Oc0045291	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S23-Oc0034541	NCP	%	105			70-130	Pass	
4.4'-DDD	S23-Oc0034541	NCP	%	72			70-130	Pass	
4.4'-DDE	S23-Oc0034541	NCP	%	84			70-130	Pass	
4.4'-DDT	S23-Oc0034541	NCP	%	70			70-130	Pass	
a-HCH	S23-Oc0034541	NCP	%	81			70-130	Pass	
Aldrin	S23-Oc0034541	NCP	%	87			70-130	Pass	
b-HCH	S23-Oc0034541	NCP	%	81			70-130	Pass	
d-HCH	S23-Oc0034541	NCP	%	104			70-130	Pass	
Dieldrin	S23-Oc0034541	NCP	%	98			70-130	Pass	
Endosulfan I	S23-Oc0034541	NCP	%	77			70-130	Pass	
Endosulfan II	S23-Oc0034541	NCP	%	92			70-130	Pass	
Endosulfan sulphate	S23-Oc0034541	NCP	%	86			70-130	Pass	
Endrin	S23-Oc0045291	NCP	%	116			70-130	Pass	
Endrin aldehyde	S23-Oc0034541	NCP	%	101			70-130	Pass	
Endrin ketone	S23-Oc0034541	NCP	%	81			70-130	Pass	
g-HCH (Lindane)	S23-Oc0034541	NCP	%	104			70-130	Pass	
Heptachlor	S23-Oc0034541	NCP	%	87			70-130	Pass	
Heptachlor epoxide	S23-Oc0034541	NCP	%	119			70-130	Pass	
Hexachlorobenzene	S23-Oc0034541	NCP	%	82			70-130	Pass	
Methoxychlor	S23-Oc0045291	NCP	%	73			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-Oc0037298	CP	%	86			75-125	Pass	
Cadmium	S23-Oc0037298	CP	%	89			75-125	Pass	
Chromium	S23-Oc0037298	CP	%	80			75-125	Pass	
Copper	S23-Oc0037298	CP	%	79			75-125	Pass	
Lead	S23-Oc0037298	CP	%	86			75-125	Pass	
Mercury	S23-Oc0037298	CP	%	94			75-125	Pass	
Nickel	S23-Oc0044101	NCP	%	104			75-125	Pass	
Zinc	S23-Oc0044101	NCP	%	143			75-125	Fail	Q08

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	R23-Oc0035972	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S23-Oc0039063	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S23-Oc0039063	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S23-Oc0039063	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	R23-Oc0035972	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S23-Oc0039063	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S23-Oc0039063	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S23-Oc0039063	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	R23-Oc0035972	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	R23-Oc0035972	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	R23-Oc0035972	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	R23-Oc0035972	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	R23-Oc0035972	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	R23-Oc0035972	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	R23-Oc0035972	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S23-Oc0034540	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S23-Oc0043600	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	S23-Oc0044229	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

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Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Endrin aldehyde	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S23-Oc0044229	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S23-Oc0043600	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S23-Oc0043600	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Zinc	R23-Oc0035975	NCP	mg/kg	390	360	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	S23-Oc0036830	NCP	uS/cm	1700	1600	8.2	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	S23-Oc0036830	NCP	pH Units	9.1	9.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-Oc0037301	CP	mg/kg	13	14	6.0	30%	Pass	
Cadmium	S23-Oc0037301	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S23-Oc0037301	CP	mg/kg	32	30	4.7	30%	Pass	
Copper	S23-Oc0037301	CP	mg/kg	22	22	4.0	30%	Pass	
Lead	S23-Oc0037301	CP	mg/kg	86	91	5.3	30%	Pass	
Mercury	S23-Oc0037301	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S23-Oc0037301	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S23-Oc0037301	CP	%	13	12	1.3	30%	Pass	

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Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Authorised by:

Adam Bateup	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic
Laxman Dias	Senior Analyst-Asbestos
Ryan Phillips	Senior Analyst-Inorganic

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Environmental Consulting Services
10 Fort Street
Petersham
NSW 2049

Attention:	All results - Simon Caples
Report	1035569-AID
Project Name	CHIPPING NORTON
Received Date	Oct 17, 2023
Date Reported	Oct 23, 2023

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

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Project Name CHIPPING NORTON
Project ID
Date Sampled Oct 17, 2023
Report 1035569-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
CN1	23-Oc0037298	Oct 17, 2023	Approximate Sample 67g Sample consisted of: Brown coarse-grained clayey sandy soil, organic debris and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CN3	23-Oc0037300	Oct 17, 2023	Approximate Sample 95g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CN4	23-Oc0037301	Oct 17, 2023	Approximate Sample 49g Sample consisted of: Brown fine-grained sandy soil, organic debris and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Oct 17, 2023	Indefinite

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Company Name: Environmental Consulting Services
Address: 10 Fort Street
Petersham
NSW 2049

Project Name: CHIPPING NORTON

Order No.:
Report #: 1035569
Phone: 02 9518 1161
Fax:

Received: Oct 17, 2023 2:45 PM
Due: Oct 23, 2023
Priority: 5 Day
Contact Name: All results - Simon Caples

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Conductivity (1:5 aqueous extract at 25 °C as rec.)	pH (1:5 Aqueous extract at 25 °C as rec.)	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	CN1	Oct 17, 2023		Soil	S23-Oc0037298	X			X	X
2	CN2	Oct 17, 2023		Soil	S23-Oc0037299		X	X	X	X
3	CN3	Oct 17, 2023		Soil	S23-Oc0037300	X			X	X
4	CN4	Oct 17, 2023		Soil	S23-Oc0037301	X			X	X
5	CN5	Oct 17, 2023		Soil	S23-Oc0037302				X	X
6	CN6	Oct 17, 2023		Soil	S23-Oc0037303				X	X
7	CND	Oct 17, 2023		Soil	S23-Oc0037304				X	X
Test Counts						3	1	1	7	7

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Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w\w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V = r x t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{f}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{v}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_n}{N}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (P_A).
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w\w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average % w\w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample ($\%_{WA}$).

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Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos

Authorised by:

Laxman Dias	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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www.eurofins.com.au EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

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6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West NSW 2304
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	Tel: +61 2 4968 8448
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	NATA# 1261
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	Site# 25079 & 25289
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	

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Auckland 1061	Christchurch 7675	Tauranga 3112
Tel: +64 9 526 4551	Tel: +64 3 343 5201	Tel: +64 9 525 0568
IANZ# 1327	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name:	Environmental Consulting Services
Contact name:	All results - Simon Caples
Project name:	CHIPPING NORTON
Project ID:	Not provided
Turnaround time:	5 Day
Date/Time received	Oct 17, 2023 2:45 PM
Eurofins reference	1035569

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 20.4 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✕ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✕ Split sample sent to requested external lab.
- ✕ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to All results - Simon Caples - simon@ecsgroup.com.au.

Global Leader - Results you can trust

ENVIRONMENTAL CONSULTING SERVICES

Chain of Custody

Project: CHIPPING NORTON

Environmental Consulting Services Pty Ltd | Manager: Simon Caples | Ph: 0415 225 474 | Email: simon@ecsgroup.com.au

Event Number:

Lab Number	Sample Number	Sample Date	Matrix: Soil	Matrix: Water	Matrix: Other	BTEX	TPH	PAH	Phenol	Metals	Asbestos	Suite B7	Suite B9	Suite B10	Suite R16	pH	EC			
	CN1	17/10	X								X		X							
	CN2	↓	X										X			X	X			
	CN3		X								X		X							
	CN4		X								X		X							
	CN5		X										X							
	CN6		X										X							
	CND		X										X							

Turn Around Time: 5 DAYS

Comments:

Relinquished By: SIMON | Signed: | Date: 17/10 | Received By: [illegible] | Signed: | Date: 17/10/21 2:06 2.0.4

1025569

9 November 2023

Responsive Engineering

Kiara Gebrael

50 Holt Street
Surry Hills NSW 2010

Our Ref: N0230756-CLTR.01B

Dear Kiara,

123 Epsom Road Chipping Norton NSW 2170

JN has been engaged to provide flood advice for the proposed development at 123 Epsom Road, Chipping Norton NSW. The subject site is located on the corner of Governor Macquarie Drive and Epsom Road, refer Figure 1. The site comprises Lot 3 DP 602936, with an area of 2,981m². The site is relatively flat, with most of the site draining towards the northern kerb inlet pit on Governor Macquarie Drive.

The site is within the Georges River floodplain; the main arm of this river is located approximately 250m to the west. Local topography is shown in the site survey in Appendix B.

Figure 1: Site Location

Proposed Development

The development as proposed consists of a change-of-use to a single-storey childcare centre with basement parking. This can be seen in figure 2.

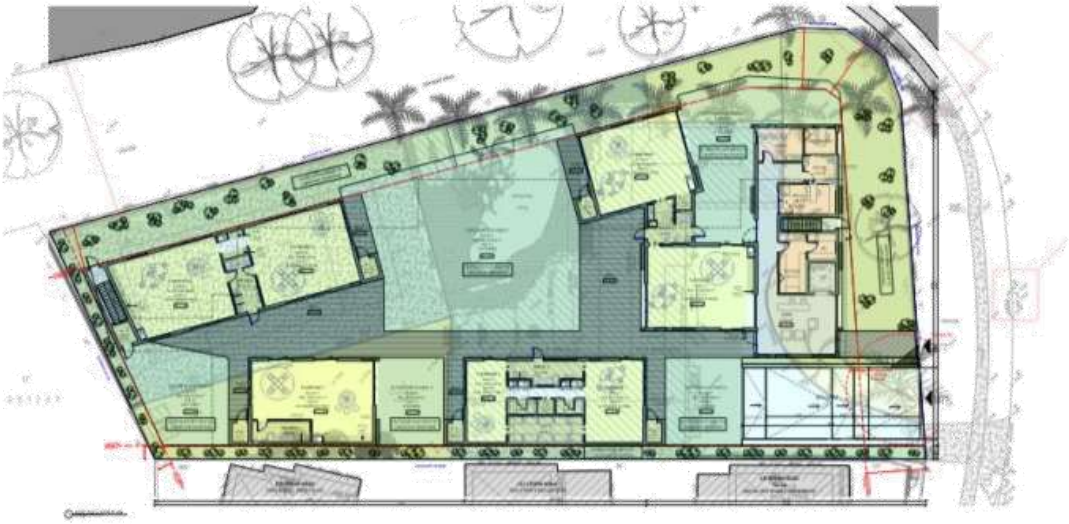

Figure 2: Proposed Development

Council Flood Information

Liverpool City Council have provided flood information for the subject site and indicated that it is only affected by the PMF flood. As mentioned previously, the site is located within the Georges River Catchment and does not have any flood mapping. Liverpool City Council classify a childcare centre as residential and thus low risk, which means that only the PMF needs to be considered. Therefore, minimum floor levels and driveway levels equal to or above the PMF level is required, to enable safe occupation of the site in an event exceeding the Flood Planning Level. The following Flood level has been provided by council:

- PMF event = RL 10.6m AHD

Hydraulic Category

Liverpool Council divides the Georges River floodplain into 3 categories as described below:

High Flood Risk Category: Land below the 1% AEP flood that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties.

Medium Flood Risk Category: The land below the 1% AEP flood that is not subject to a high hydraulic hazard and where there are no significant evacuation difficulties.

Low Flood Risk Category: All other land within the floodplain (i.e. within the extent of the probable maximum flood)

but not identified within either the High Flood Risk or the Medium flood Risk categories.

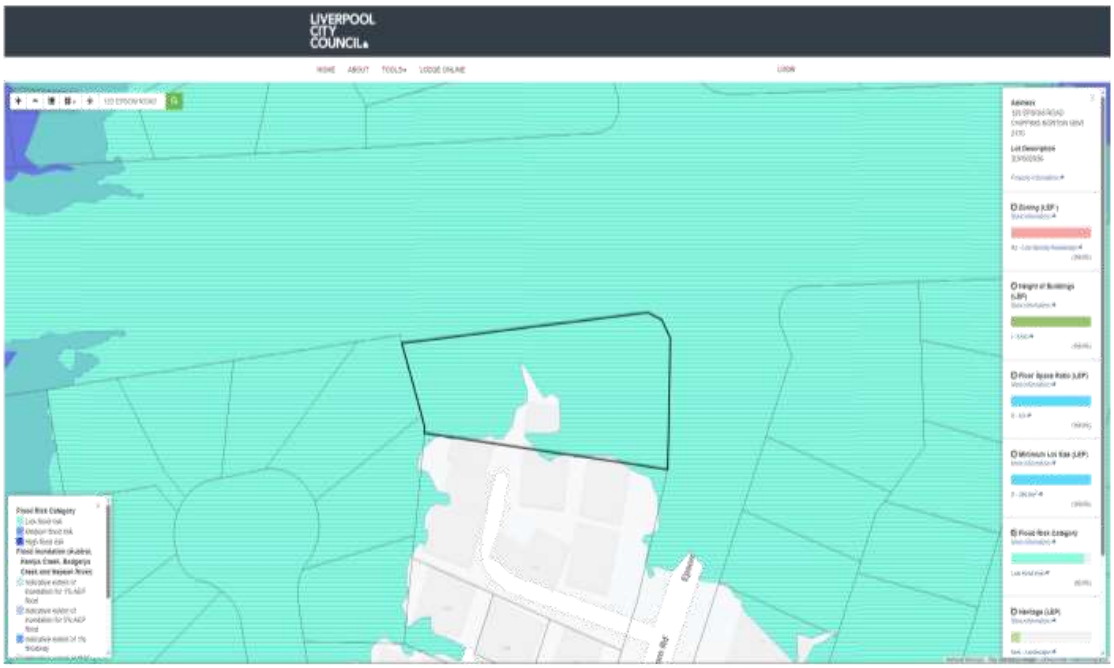

Figure 3: Flood Category mapping

The subject site is within a **Low flood risk** area, refer also Figure 3.

Flood Hazard Category

As seen in Figure 3, the proposed childcare is not in the flood hazard zone for the 1% Flood Hazard mapping. Based on the site works and the flood hazard maps for the 1% AEP and PMF storms, the site is to be considered a low hazard.

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Assessment Against Liverpool City Council DCP 2013 Flood Controls

Liverpool City Council Development Control Plan 2008 (DCP) Chapter 9 outlines development controls specific to individual sites based on the flood risk associated with specific development types. Refer to Table 1 for an assessment against each of the relevant items for both the mainstream flood controls and local overland flooding controls.

Table 4 Georges River Floodplain (Includes Harris Ck and Williams Ck, lower parts of Anzac Ck, but not Cabramatta Creek)

Flood Risk Category	Land Use Risk Category	Planning Controls							
		Floor Level	Building Components	Structural Soundness	Flood Effects	Car Parking & Driveway Access	Evacuation	Management & Design	Fencing
Low Flood Risk	Critical Uses & Facilities								
	Sensitive Uses & Facilities	13	4	4	2, 4, 5	2, 3, 6, 7, 8	6, 8, 9	2, 4	
	Subdivision				2, 4, 5			1	
	Residential (++)	2, 6	2	3	2, 4, 5	2, 3, 6, 7, 8	6, 9		
	Commercial & Industrial	4, 8, 15	2	3	2, 4, 5	2, 3, 6, 7, 8	(4 or 9), 6	2, 3, 5	
	Tourist Related Development	2, 6, 15	2	3	2, 4, 5	2, 3, 6, 7, 8	6, 9	2, 3, 5	
	Recreation & Non-Urban	2, 7	2	3	2, 4, 5	1, 5, 7, 8	6, 8	2, 3, 5	
	Concessional Development	14, 15	2	3	2, 4, 5	1, 7, 8, 9	6, 9	2, 3, 5	
Medium Flood Risk	Critical Uses & Facilities								
	Sensitive Uses & Facilities								
	Subdivision				1, 4, 5			1	1, 2, 3
	Residential	2, 6, 15	2	2	2, 4, 5	2, 3, 6, 7, 8	6, 9		1, 2, 3
	Commercial & Industrial	8, 4, 15	2	2	2, 4, 5	2, 3, 6, 7, 8	4, 6	2, 3, 5	1, 2, 3
	Tourist Related Development	2, 6, 15	2	2	2, 4, 5	2, 3, 6, 7, 8	6, 9	2, 3, 5	1, 2, 3
	Recreation & Non-Urban	2, 7	2	2	2, 4, 5	1, 5, 7, 8	6, 8	2, 3, 5	1, 2, 3
	Concessional Development	14, 15	2	2	2, 4, 5	1, 7, 8, 9	8, 9	2, 3, 5	1, 2, 3
High Flood Risk	Critical Uses & Facilities								
	Sensitive Uses & Facilities								
	Subdivision								
	Residential								
	Commercial & Industrial								
	Tourist Related Development								
	Recreation & Non-Urban	2, 7	2	2	1, 4, 5	1, 5, 7, 8	6, 8	2, 3, 5	1, 2, 3
	Concessional Development	14, 15	2	2	1, 4, 5	1, 7, 8, 9	6, 9	2, 3, 5	1, 2, 3

Key:

	Not Relevant
	Unsuitable Land Use
1, 2, 3	Control reference number relevant to the particular planning consideration. (see Table 6)
(++)	Attached dwellings, Dwelling houses, dual occupancies, multi unit dwelling housing, residential flat buildings (not including development for the purpose of group homes or seniors housing), Secondary dwellings and Semi-detached dwellings are exempt from these controls.

Figure 4: Liverpool City Council DCP Chapter 9: Mainstream Flooding controls

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Table 5 Local Overland Flooding

Flood Risk Category	Land Use Risk Category	Planning Controls							
		Floor Level	Building Components	Structural Soundness	Flood Effects	Car Parking & Driveway Access	Evacuation	Management & Design	Fencing
Local Overland Flood Risk	Critical Uses & Facilities	13	4	5	3	4, 7, 8	7	3, 5	2, 4
	Sensitive Uses & Facilities	13	4	5	3	4, 7, 8	7	3, 5	2, 4
	Subdivision				3		5	1	2, 4
	Residential	3, 5	1	6	3	4, 7, 8	5		2, 4
	Commercial & Industrial	10	1	6	3	4, 7, 8	5	3, 5	2, 4
	Tourist Related Development	3, 5	1	6	3	4, 7, 8	5	3, 5	2, 4
	Recreation & Non-Urban	3, 5	1	6	3	4, 7, 8	5	3, 5	2, 4
	Concessional Development	14	1	6	3	4, 7, 8	5	3, 5	2, 4

Key:

	Not Relevant
1, 2, 3	Control reference number relevant to the particular planning consideration.

Figure 5: Liverpool City Council DCP Chapter 9: Local Overland Flooding controls

Table 1: Assessment against DCP 2008 Chapter 9

Criteria	Comment
Floor Level	
2. Non habitable floor levels to be as high as practical but no less than 5% AEP	Site isn't affected by the 5% AEP flood. Non-habitable floor levels are currently at 11.50 AHD (above the PMF level)
3. Non habitable floor levels to be not less than the 1% AEP flood	Site isn't affected by the 1% AEP flood. Non-habitable floor levels are currently at 11.50 AHD (above the PMF level)
5. Habitable floor levels to be equal to or greater than the 1% AEP flood level plus 300mm freeboard	Site isn't affected by the 1% AEP flood. Non-habitable floor levels are currently at 11.50 AHD (above the PMF level)
6. Habitable floor levels to be equal to or greater than the 1% AEP flood level plus 500mm freeboard	Site isn't affected by the 1% AEP flood. Non-habitable floor levels are currently at 11.50 AHD (above the PMF level)
Building Components	
1. All structures to have flood compatible building components below the 1% AEP flood level plus 300mm freeboard	To be designed during CC stage. See appendix C for Liverpool City Council's flood compatible materials.

2. All structures to have flood compatible building components below the 1% AEP flood level plus 500mm freeboard	To be designed during CC stage. See appendix C for Liverpool City Council's flood compatible materials.
Structural Soundness	
6. Applicant to demonstrate that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a 1% AEP flood plus 300mm freeboard	To be confirmed by the Structural design.
Flood Effects	
2. The flood impact of the development to be considered to ensure that the development will not increase flood effects elsewhere, having regard to: (i) loss of flood storage (ii) changes in flood levels and velocities caused by alterations to the flood conveyance; and (iii) the cumulative impact of multiple potential developments in the floodplain. An engineer's report may be required	The existing site isn't used for flood storage, meaning the proposed site that is above the flood level, has no impact on the surrounding flood effects.
3. The flood impact of the development to be considered to ensure that the development will not increase flood affectation elsewhere having regard to changes in flood levels and velocities caused by alteration of conveyance of flood waters. An engineer's report may be required if Council considers a significant affectation is likely. The unmitigated obstruction, concentration or diversion of overland flow paths to adjacent property shall not be permitted	The existing site isn't affected by any floods up to the 1% AEP. Therefore, the proposed development will have no affect on the surrounding flood effects.
4. A floodway or boundary of significant flow may have been identified in this catchment. This area is the major conveyance area for floodwaters through the floodplain and any structures placed within it are likely to have a significant impact on flood behavior. Within this area no structures other than concessional development, open type structures or small non-inhabitable structures (not more than 30sqm) to support agricultural uses will normally be permitted. Development outside the Boundary of Significant flow may still increase flood effects elsewhere and therefore be unacceptable	This is not applicable to site.
5. Any filling within the 1% AEP flood will normally be considered unacceptable unless compensatory excavation is provided to ensure that there is no net loss of floodplain storage volume below the 1% AEP flood	The existing site is not affected by the 1% AEP flood, therefore this is not applicable.
Car Parking and Driveway Access	
2. The minimum surface level of a car parking space, which is not enclosed (e.g. open car parking space or carport) shall be as high as practical, but no lower than the 5% AEP flood level or the level of the crest of the road at the highest point were the site can be accessed. In the case of garages, the minimum surface level shall be as high as practical, but no lower than the 5% AEP flood.	As site isn't flooded in the 5% AEP; this is not applicable to site.

3. Garages capable of accommodating more than 3 vehicles on land zoned for urban purposes, or basement car parking, must be protected from inundation by floods equal to or greater than the 1% AEP flood plus 0.1m freeboard.	As site isn't flooded in the 1% AEP; this is not applicable as the levels far exceed these requirements. Driveway crest levels should be at the same or similar level to existing.
4. Basement car parking shall be protected from inundation by the 1% AEP flood.	As site isn't flooded in the 1% AEP; this is not applicable as the levels far exceed these requirements. Driveway crest levels should be at the same or similar level to existing.
6. The level of the driveway providing access between the road and car parking space shall be no lower than 0.3m below the 1% AEP flood or such that depth of inundation during a 1% AEP flood is not greater than either the depth at the road or the depth at the car parking space. A lesser standard may be accepted for single detached dwelling houses where it can be demonstrated that risk to human life would not be compromised.	As site isn't flooded in the 1% AEP; this is not applicable as the levels far exceed these requirements. Driveway crest levels should be at the same or similar level to existing.
7. Basement car parking or car parking areas accommodating more than 3 vehicles (other than on Rural zoned land) with a floor level below the 5% AEP flood or more than 0.8m below the 1% AEP flood level; shall have adequate warning systems, signage and exits.	As site isn't flooded in the 1% AEP; this is not applicable as the levels far exceed these requirements. Driveway crest levels should be at the same or similar level to existing.
8. Barriers to be provided to prevent floating vehicles leaving a site during a 1% AEP flood.	Not applicable to site.
Evacuation	
5. The evacuation requirements of the development during flooding shall be considered	The habitable and non-habitable floor level are well above the PMF flood level for site. Safe access can be granted in any rooms on site. Due to Gov Macquarie Drive being flood affected, access from an emergency vehicle will be granted via Epsom Road. See Appendix A for Evacuation Plan.
6. The development is to be consistent with any relevant flood evacuation strategy or similar plan	A Flood Risk Management Plan is to be refined at a later stage of the design. This will outline any flood responses, emergency contacts & the flood evacuation plan. This is to be printed on site with all staff receiving adequate training. Flood evacuation for Liverpool is documented in the SES plan "Liverpool City *Flood Emergency Sub Plan*" April 2023. In summary: • Evacuation center: Liverpool SES to advise on an evacuation center prior to any flood warnings. • Evacuation route: Refer to Evacuation point 5 for flood evacuation route.

	Method: When notified of flooding, childcare centers should liaise with NSW SES and arrange for early release of children.
9. Adequate flood warning is available to allow safe and orderly evacuation without increased reliance upon the SES or other authorized emergency services personnel	Site is approximately 0.9m above the PMF flood so no flood warning is required.
Fencing	
2. Fencing is to be constructed in a manner that does not obstruct the flow of floodwaters so as to have an adverse impact on flooding	Any proposed fencing around the boundary of site is to have access at the bottom of the fencing to allow the flow of floodwaters to not be impacted. To be designed and reviewed at later stages.
4. Fencing shall be constructed to withstand the forces of floodwaters	To be confirmed by the Architectural and Structural design during later stages.

Please contact the undersigned for any further questions and clarification.

For and on behalf of JN,

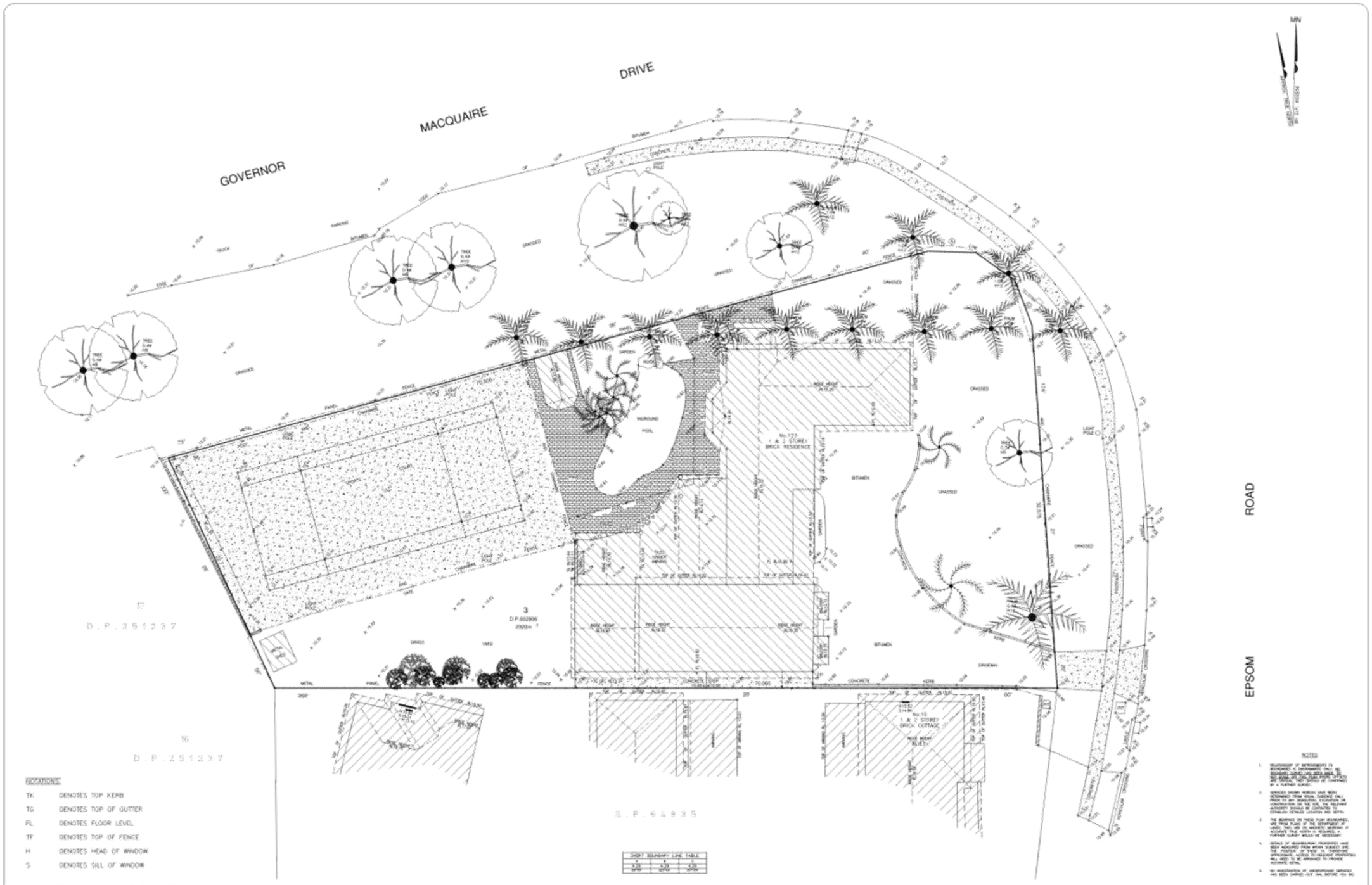
Reviewed by;

Jesse Boulos
Graduate Civil Design Engineer

Dylan Alexander
Civil Design Engineer

Appendix A – Flood Evacuation Plan

Appendix B – Site Survey Plan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ROAD
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2320m²
GRASSED
BITUMEN
CONCRETE
DRIVEWAY
GARDEN
FENCE
METAL
PANEL
LOCATIONS
TK DENOTES TOP KERB
TG DENOTES TOP OF GUTTER
FL DENOTES FLOOR LEVEL
TF DENOTES TOP OF FENCE
H DENOTES HEAD OF WINDOW
S DENOTES SILL OF WINDOW
SHORT BOUNDARY LINE TABLE
NOTES
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VER. BY AMENDMENTS DATE
SURVEYOR: A.S.
DRAWN: A.S.
CHECKED: J.K.
DATUM AHD
SURVEYORS REF.
1701789
15/11/2017
SHEET 1 OF 1
ORIGINAL
SCALE 1:150
SHEET SIZE A1
0 1.5 3 4.5 6
LENGTHS ARE IN METRES
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DATUM: AUSTRALIAN HOGHT DATUM
ORIGIN: SSM 73811 RL 10.133 (AHD)
SOURCE: S.C.I.M.S. 9/11/17
PLAN SHOWING LEVELS & DETAILS OVER
LOT 3 IN D.P. 602936
No. 123 EPSOM ROAD, CHIPPING NORTON
FOR CLAIRE AND MARK BROOKS

Responsive Engineering

Appendix C – Flood Compatible Materials

Building Component	Flood compatible material	Building Component	Flood compatible material
Flooring and Sub-floor Structure	Concrete slab-on-ground monolith construction Suspension reinforced concrete slab.	**Doors**	Solid panel with water proof adhesives Flush door with marine ply filled with closed cell foam Painted metal construction Aluminium or galvanised steel frame
Floor Covering	Clay tiles Concrete, precast or in situ Concrete tiles Epoxy, formed-in-place Mastic flooring, formed-in-place Rubber sheets or tiles with chemical-set adhesives Silicone floors formed-in-place Vinyl sheets or tiles with chemical-set adhesive Ceramic tiles, fixed with mortar or chemical-set adhesive Asphalt tiles, fixed with water resistant adhesive	**Wall and Ceiling Linings**	Fibro-cement board Brick, face or glazed Clay tile glazed in waterproof mortar Concrete Concrete block Steel with waterproof applications Stone, natural solid or veneer, waterproof grout Glass blocks Glass Plastic sheeting or wall with waterproof adhesive
Wall Structure	Solid brickwork, block work, reinforced, concrete or mass concrete	**Insulation** **Windows**	Foam (closed cell types) Aluminium frame with stainless steel rollers or similar corrosion and water resistant material.
Roofing Structure (for Situations Where the Relevant Flood Level is Above the Ceiling)	Reinforced concrete construction Galvanised metal construction	**Nails, Bolts, Hinges and Fittings**	Brass, nylon or stainless steel Removable pin hinges Hot dipped galvanised steel wire nails or similar

Article II. Electrical and Mechanical Equipment **Article III.** For dwellings constructed on land to which this DCP applies, the electrical and mechanical materials, equipment and installation should conform to the following requirements.	**Heating and Air Conditioning Systems** **Article IV.** Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the house above the relevant flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.
Main power supply **Article V.** Subject to the approval of the relevant authority the incoming main commercial power service equipment, including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the dwelling from the main power supply.	**Fuel** **Article VI.** Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.
Wiring Article VII. All wiring, power outlets, switches, etc., should, to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conduits located below the relevant designated flood level should be so installed that they will be self-draining if subjected to flooding.	**Installation** **Article VIII.** The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to an elevation of 600mmabove the relevant flood level.
Equipment **Article IX.** All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	**Ducting** **Article X.** All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self-draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a watertight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.
Reconnection **Article XI.** Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.	**Article XII.**

ArtMade Architects

DESIGN REPORT

CHILDCARE CENTRE

123 EPSOM ROAD, CHIPPING NORTON

10 NOV 2023 | REVISION B

CONTENTS

SURROUNDING CONTEXT
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WIND ROSES
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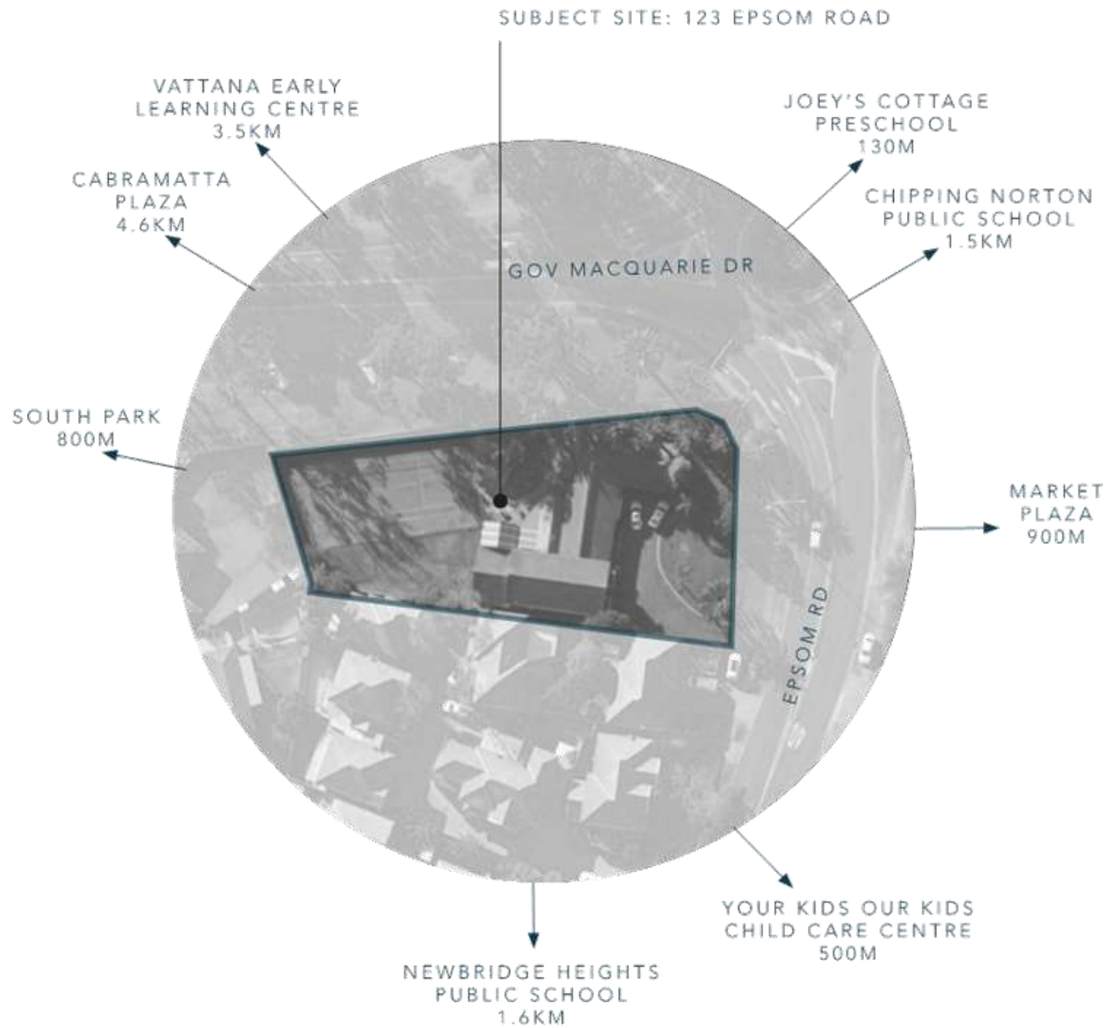
FORM GENESIS SEQUENCE
DESIGN DRIVERS
TEXTURES
PERSPECTIVES
SOLAR ANALYSIS - INDOOR PLAY
SOLAR ANALYSIS - OUTDOOR PLAY

MARK BROOKS

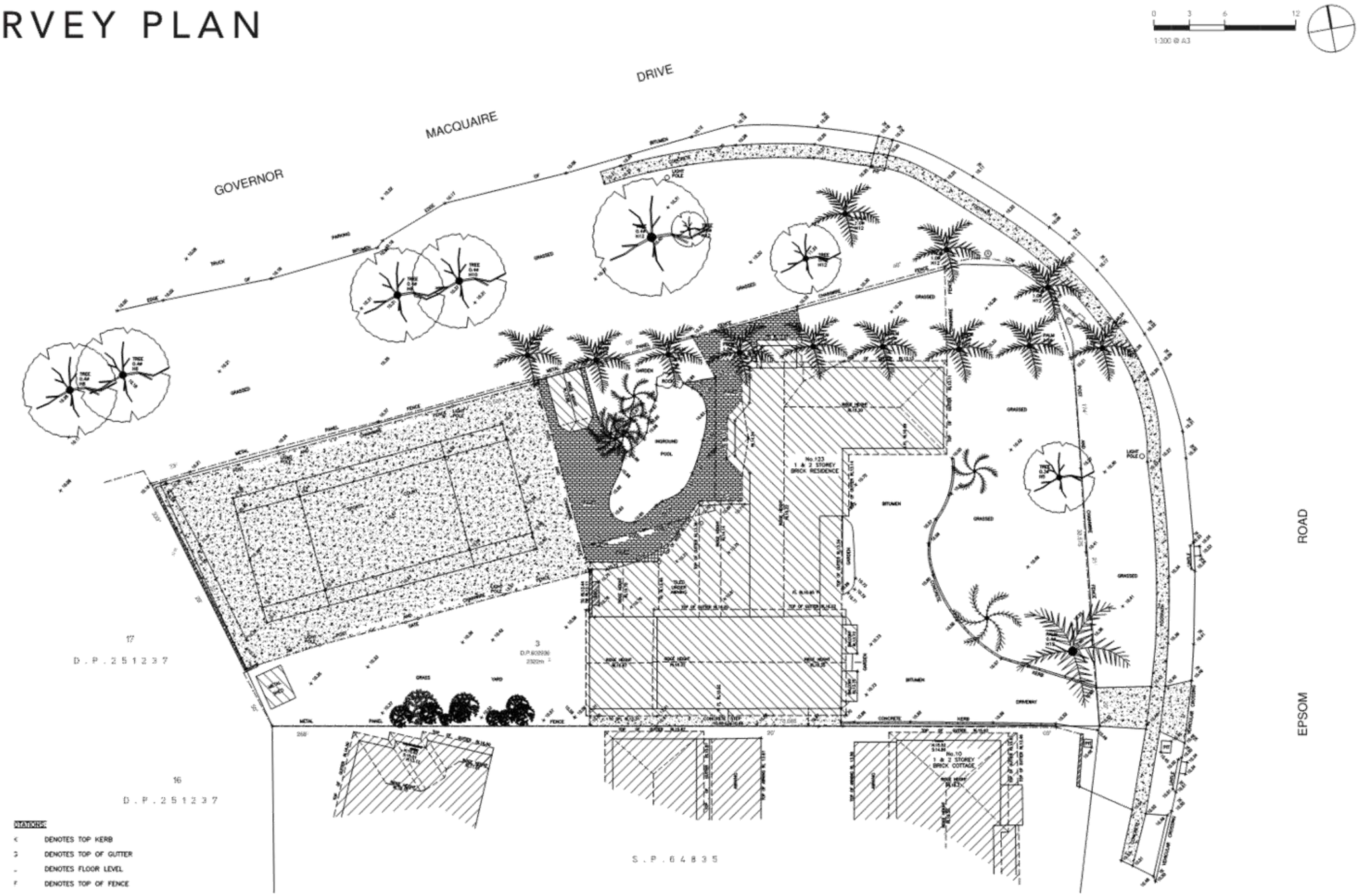
ARTMADE ARCHITECTS

Suite 507 / 50 Holt Street,
SURRY HILLS 2010
P: 02 8760 9300
E: hello@artmade.com.au

SURROUNDING CONTEXT



SURVEY PLAN


0 3 6 12
1:300 @ A3
GOVERNOR
MACQUAIRE
DRIVE
EPSOM
ROAD
No.123
1 & 2 STOREY
BRICK RESIDENCE
No.10
1 & 2 STOREY
BRICK COTTAGE
D.P.251237
S.P.64835
GRASSED
BITUMEN
GARDEN
POOL
GRASS
YARD
STATIONS:
< DENOTES TOP KERB
DENOTES TOP OF GUTTER
DENOTES FLOOR LEVEL
F DENOTES TOP OF FENCE

STREET VIEWS

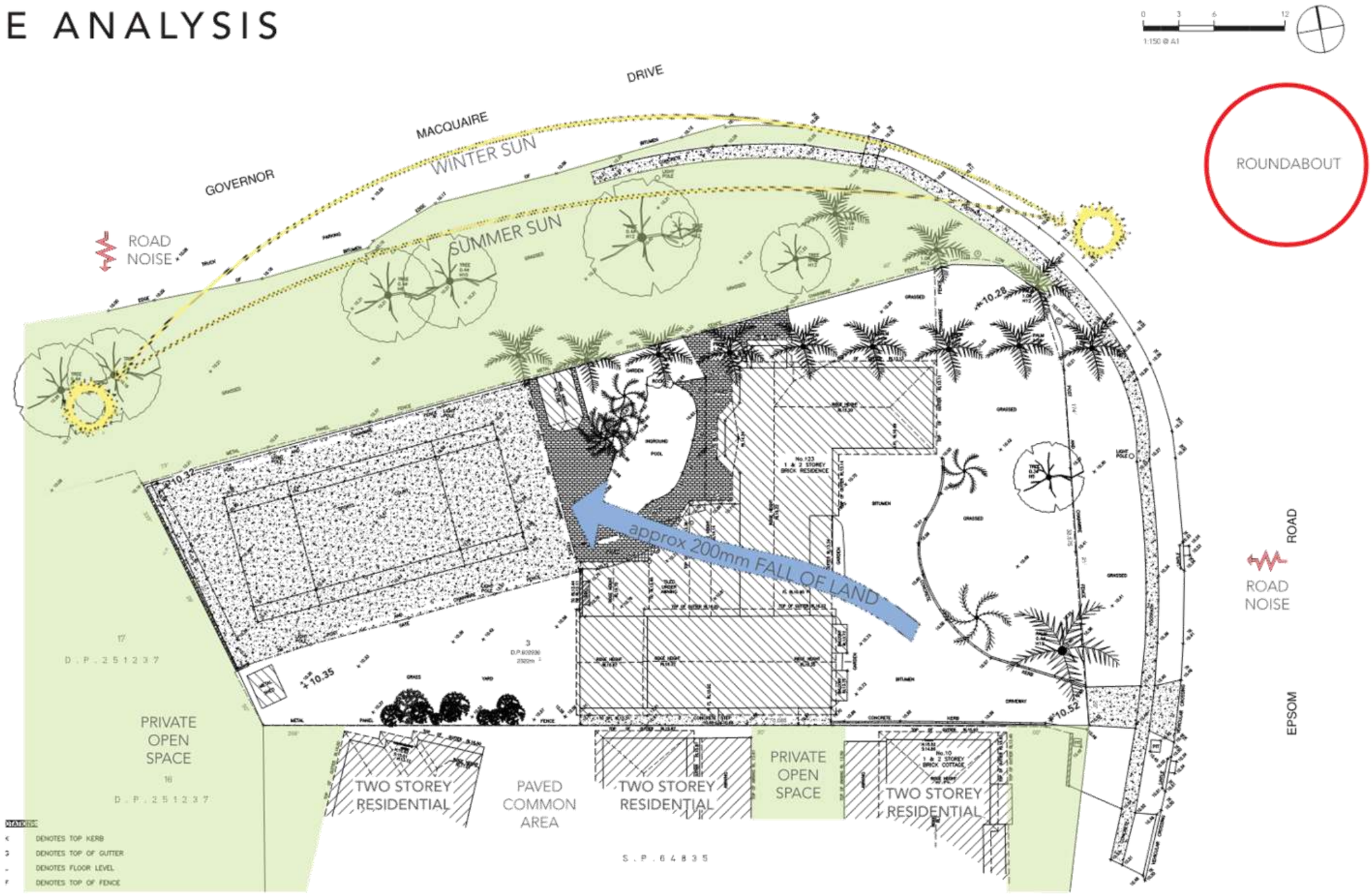
VIEW 1: 123 EPSOM ROAD (SITE)

VIEW 2: 123 EPSOM ROAD FROM GOV MACQUARIE DR (SITE)

VIEW 3: EPSPOM ROAD (OPPOSITE)

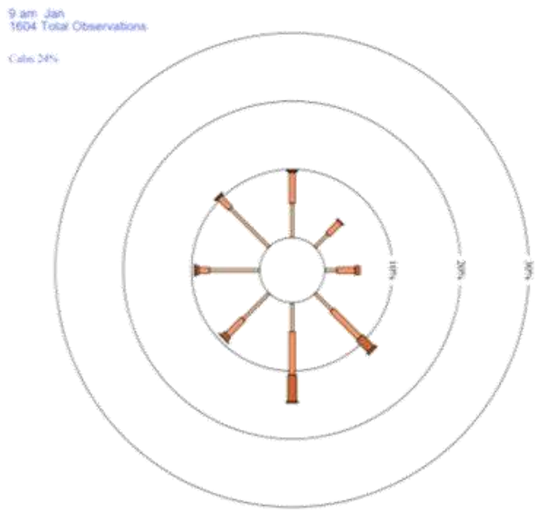
VIEW 4: GOV MACQUARIE DR (OPPOSITE)

SITE ANALYSIS



WIND ROSES

BANKSTOWN AIRPORT AWS



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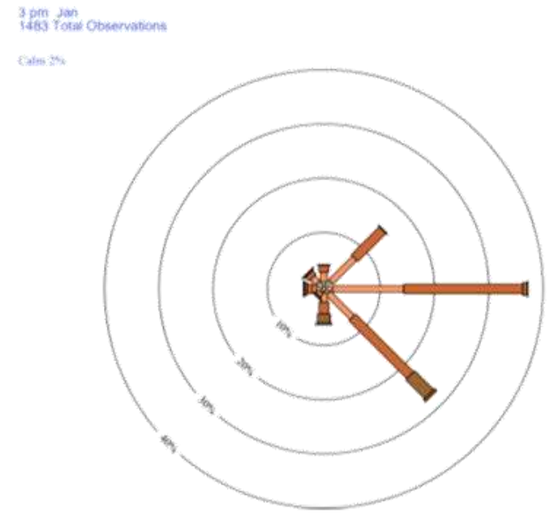

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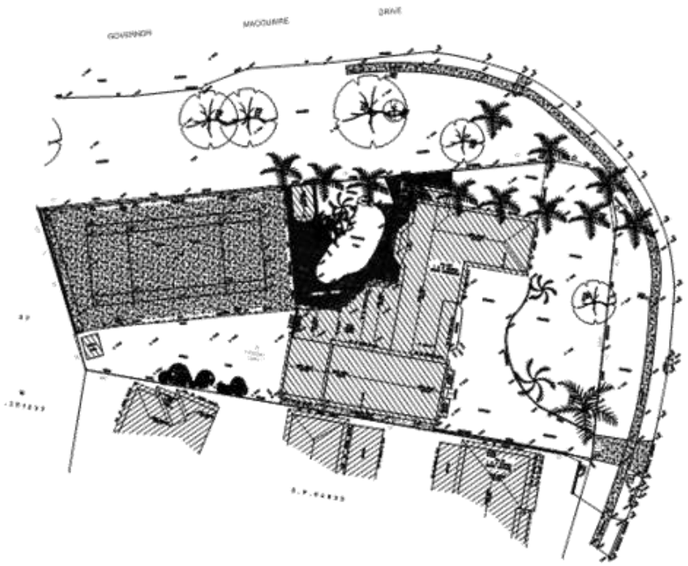

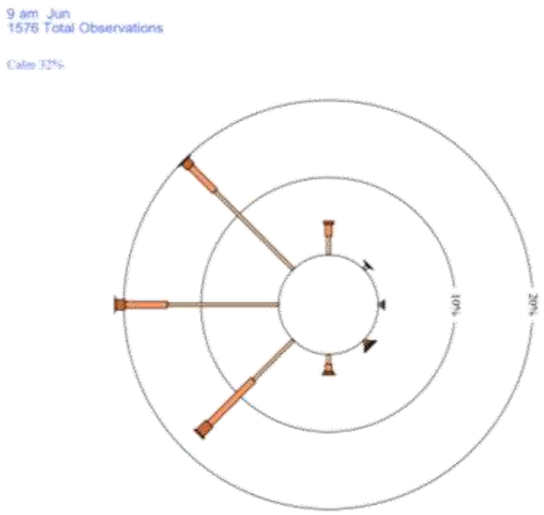

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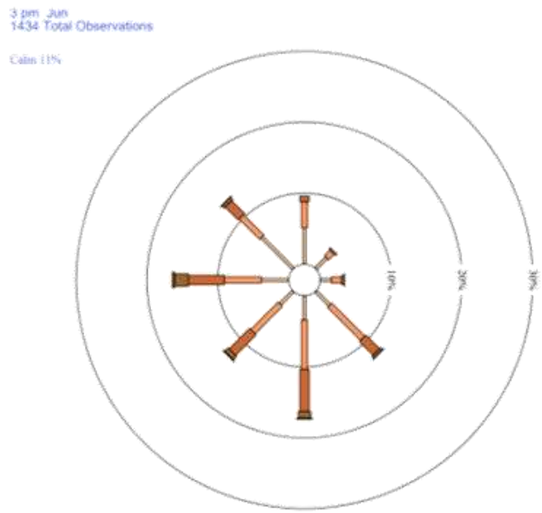
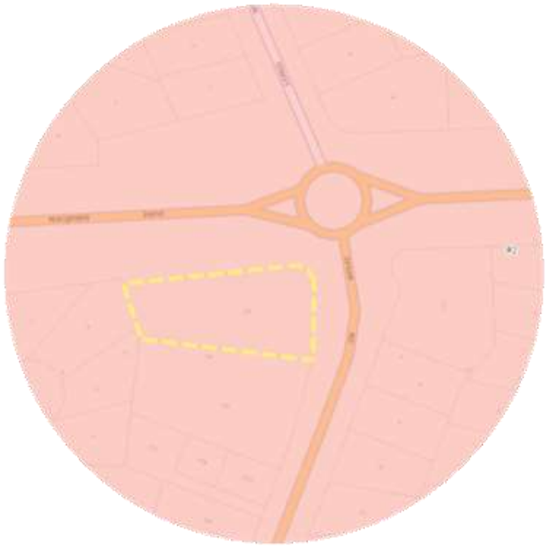


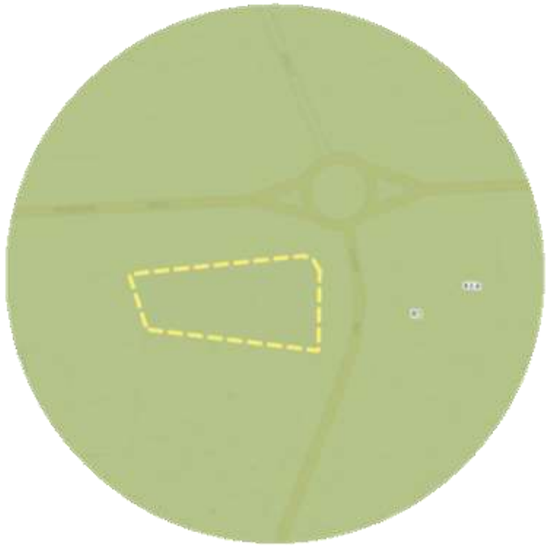
WINTER (JUN) 3PM

PLANNING CONTROLS

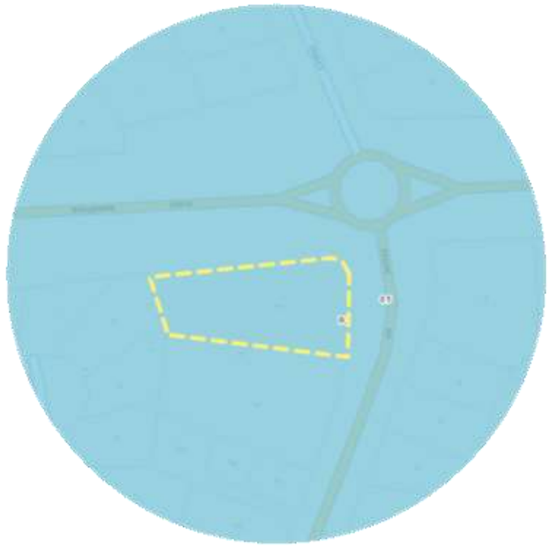
ZONING



HEIGHT



FSR



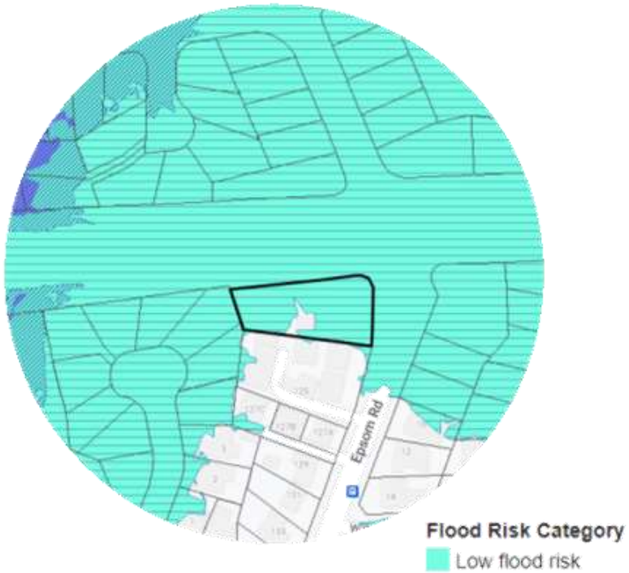
R2: LOW DENSITY RESIDENTIAL

8.5M

0.5:1

- LIVERPOOL LOCAL ENVIRONMENTAL PLAN 2008 (PUB. 25-3-2022)
- LIVERPOOL DEVELOPMENT CONTROL PLAN (LDCP) 2008 - PART 3.8 NON RESIDENTIAL DEVELOPMENT IN RESIDENTIAL ZONES
- CHILDCARE PLANNING GUIDELINE 2017

PLANNING CONTROLS



FLOOD

BUSHFIRE

HERITAGE

DCP CONTROLS

2.4 Setbacks

Objectives

a) To set Child Care Centres back from the street and adjacent properties to provide reasonable space for landscaping, private open space and solar access.

b) To set Child Care Centres back from other dwellings to provide visual and acoustic privacy.

c) To create a streetscape that provides a desirable and safe environment.

d) To establish a streetscape of a scale and sense of enclosure appropriate to the locality.

e) To maximise the amount of area capable of allowing the growth of trees and shrubs.

Controls

Front and Secondary Setbacks

1. Child Care Centres shall be setback in accordance with the following Table 1.

Table 1 Front and Secondary Setbacks

Street	Front Setback	Secondary Setback
Street setbacks	5.5m	4m
For sites in Part 2 Localities, which involve controls for Land Subdivision and Development, refer to the controls for the particular site for setback requirements.		

2. Verandahs, balconies, eaves and other sun control devices may encroach on the minimum front and secondary setback by up to 1m.
3. The secondary setback is the longest length boundary.

Side and Rear Setbacks

4. Buildings shall be setback from the side and rear boundaries in accordance with Table 2.

Table 2 Side and Rear Setbacks

Item	Side Setback	Rear Setback
Single storey buildings	1.2m	4m
Second storey component of buildings	1.2m	8m
Access doors from children's internal space	4m	4m
For sites in Part 2 Localities, which involve controls for Land Subdivision and Development, refer to the controls for the particular site for setback requirements.		

2.5 Landscaped Area and Open Space

Controls

1. A minimum of 25% of the site area shall consist of Landscaped Area, this may include lawn, deep rooted trees, garden beds and mulched areas.
2. There must be an unencumbered area of 5 x 6m in the rear setback for the opportunity to accommodate the planting of deep rooted trees.
3. A minimum of 50% of the front setback area shall be landscaped area.
4. There must be an unencumbered area of 3 x 5m in the front setback for the opportunity to accommodate deep rooted trees.

CAR PARKING

Child care centres

Residential & industrial zones	1 space per staff member and 1 space per 10 children (Stack parking of employees cars, maximum 2 deep, will be considered if there is good design for flow-through of short term car parking) Pick up and set down of children must address their safety

BIKE PARKING

Land Use	Employee/Resident Parking Spaces (Class 1 or 2 facility)	Visitor/Customer Parking Spaces (Class 3 facilities)
Child Care Centres	1 per 10 staff	2 per centre

LANDSCAPE
TEXTURES
VISUAL
CONNECTION
PLAYFUL
SUSTAINABLE

NATURAL VENTILATION
NATURAL DAYLIGHT

FLEXIBILITY
EFFICIENT

EXPERIENCE
CONTEXT
ARRIVAL
LEGIBILITY

123 EPSOM ROAD, CHIPPING NORTON
CHILDCARE CENTRE

PROJECT NO: 23701
10 NOV 2023| REVISION B

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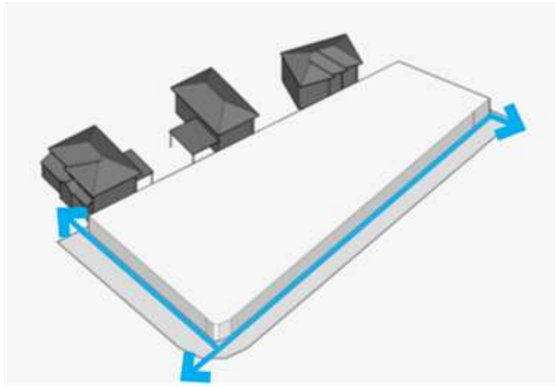
SENSORY DESIGN

TEXTURED WALLS AND OTHER SURFACES PROVIDE OPPORTUNITY FOR A CURIOUS CHILD TO LEARN ABOUT THE WORLD AROUND US.

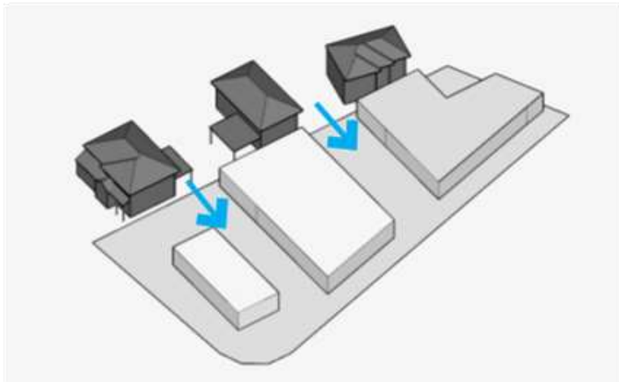
ENCOURAGING CURIOSITY BY HAVING VISUAL CONNECTIONS WITH NATURE AND ACCESS TO DIRECT NATURAL LIGHT.

INWARD FACING, SMALL CHILD SIZED SPACES PROVIDE LITTLE ADULTS WITH A SENSE OF SECURITY IN OUR BIG WORLD.

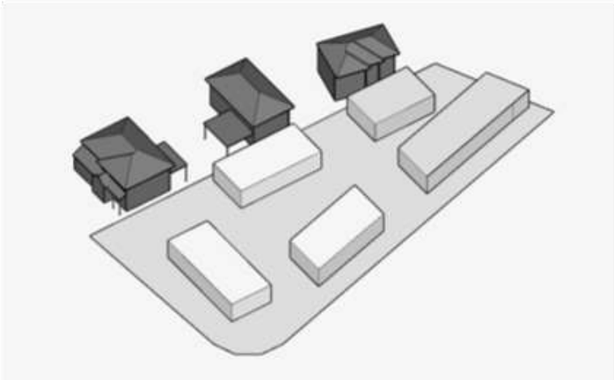
FORM GENESIS SEQUENCE



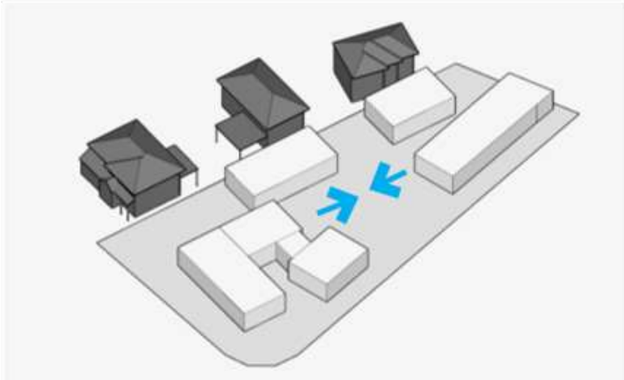
1. SETBACKS



2. NEIGHBOURS

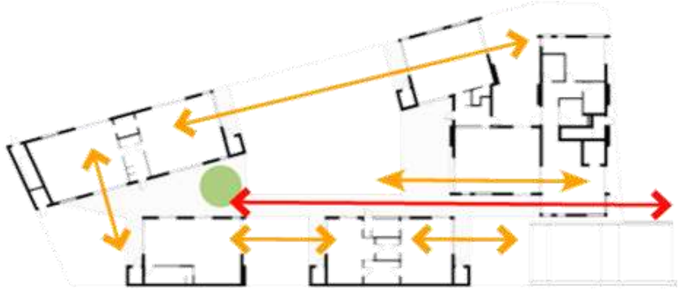


3. PROGRAMME



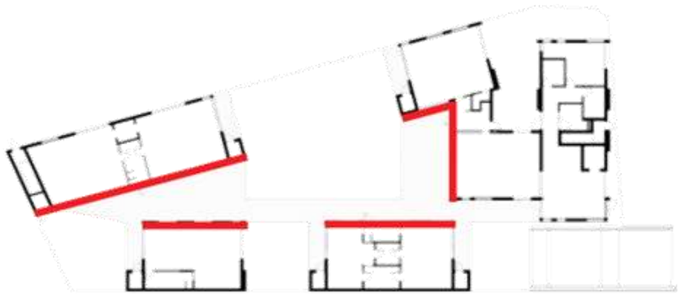
4. CONSOLIDATED OUTDOOR PLAY

DESIGN DRIVERS

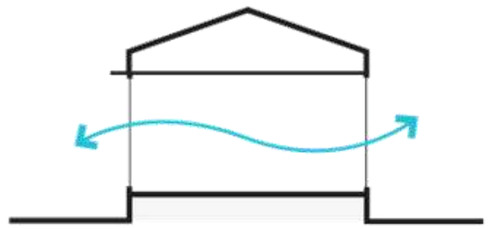


VISUAL CONNECTIONS

SOLAR ACCESS &
WEATHER PROTECTION

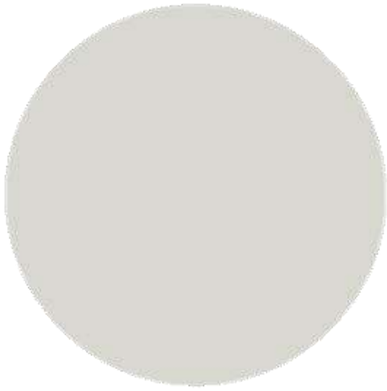


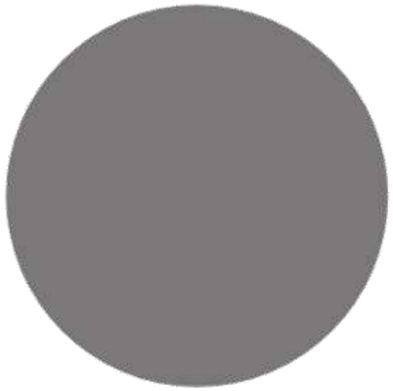
ACOUSTIC



CROSS VENTILATION

TEXTURES



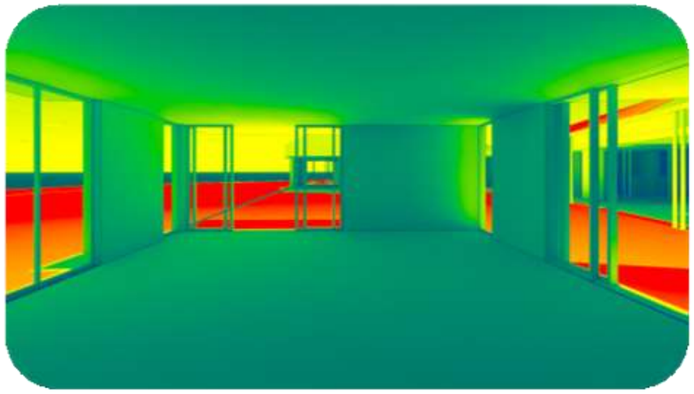


DESIGN EXPLORATION

PERSPECTIVES

SOLAR ANALYSIS - INDOOR PLAY

SUMMER



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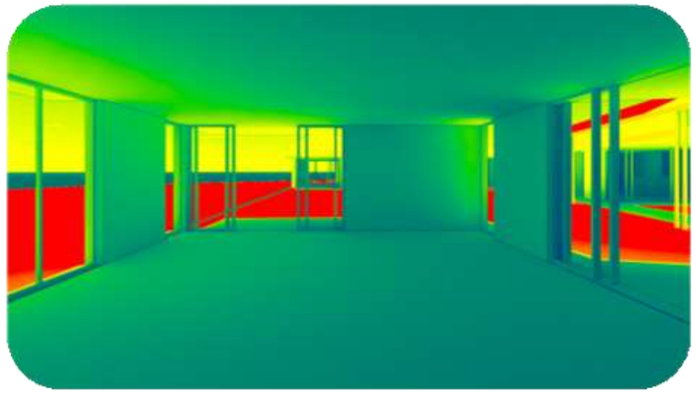

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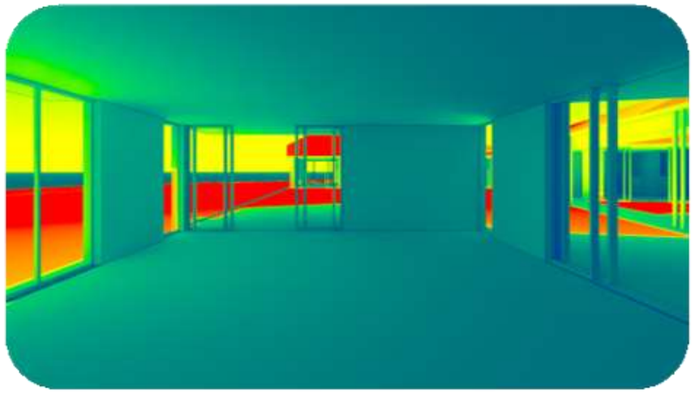
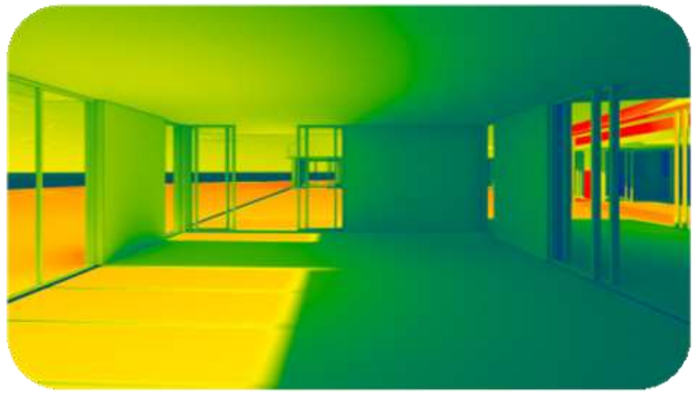


21 DEC, 3PM

WINTER

21 JUN, 9AM



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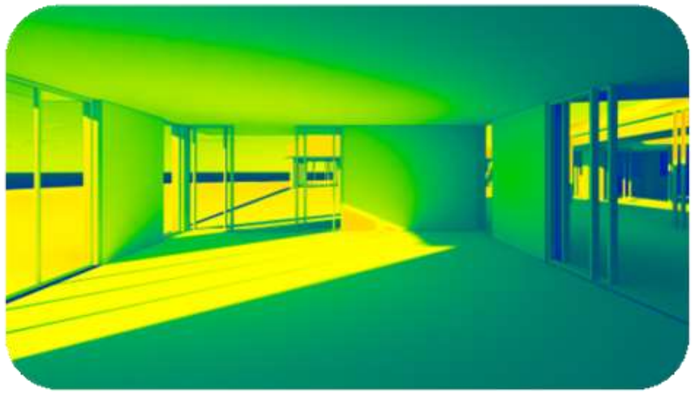

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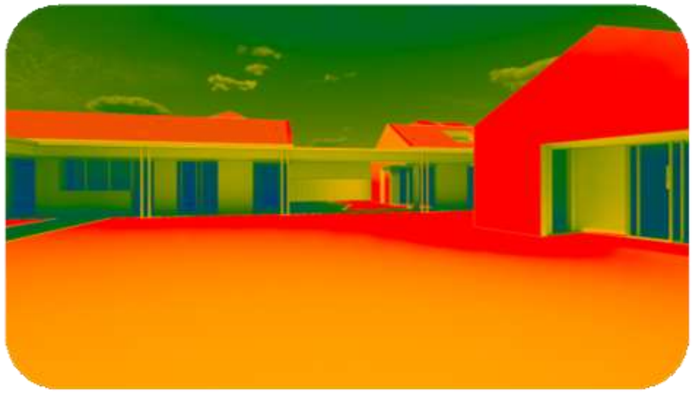
SOLAR ANALYSIS - OUTDOOR PLAY

SUMMER

HOOKS WITH SHADE SAILS - DURING SUMMER



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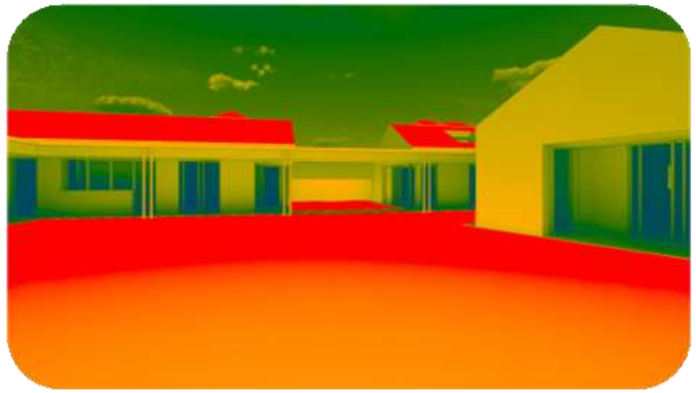

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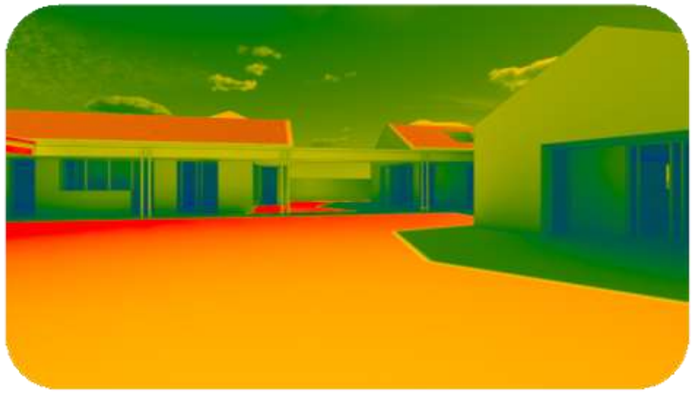

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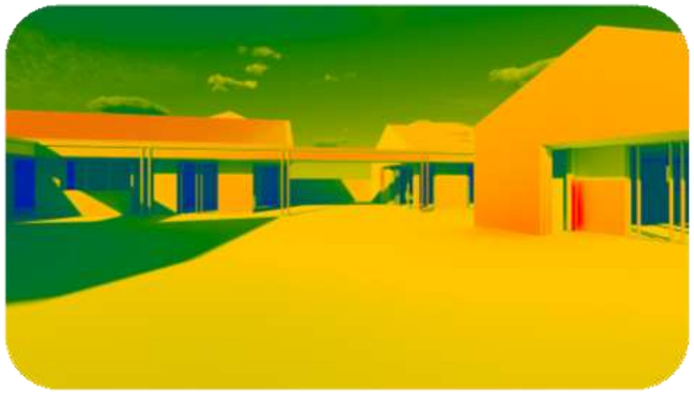

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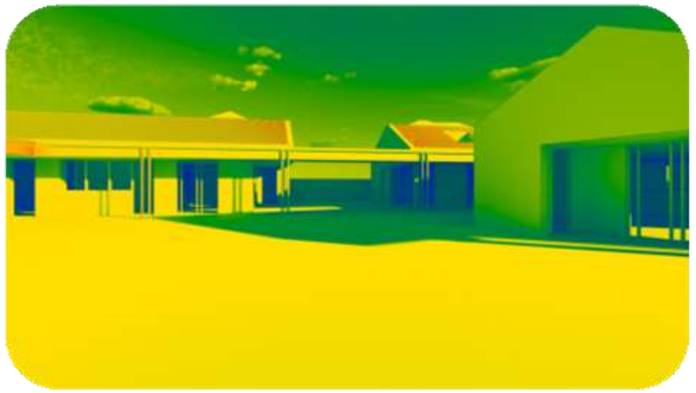

21 JUN, 3PM

123 EPSOM ROAD, CHIPPING NORTON
CHILDCARE CENTRE

PROJECT NO: 23701
10 NOV 2023| REVISION B

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ARBORICULTURAL IMPACT ASSESSMENT

PREPARED FOR

MARK BROOKS % ARTMADE ARCHITECTS

123 EPSOM RD, CHIPPING NORTON

3 NOVEMBER 2023

E admin@arborlogix.com.au **W** arborlogix.com.au **M** 0405 095095 **ABN** 27 625 983 379

Ref: 001759 v1.0

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2. Report summary

2.1. Scope of works

2.1.1. Arborlogix Pty Ltd has been contracted by the client to undertake an arboricultural impact assessment report and provide a tree protection plan for a proposed new development at 123 Epsom Road, Chipping Norton. The site is located on a flat corner block with Governor Macquarie Drive on the northern side, Epsom Road on the eastern side and neighbouring properties on the other 2 sides. The site is currently occupied by a 1 and 2 storey brick residence located centrally in the block with a large bitumen driveway and grassed area on the front eastern side and a tennis court, swimming pool and grassed area at the rear western side.

2.1.2. The proposed development is for demolition of all structures onsite and the construction of a new childcare centre with 5 separate buildings (1 admin block and 4 playroom blocks) located across the site with outdoor play areas between. The parking and driveway into the site will be in the same location as the existing on the eastern side of the property linking onto Epsom Road. There will also be associated landscaping of the site.

2.1.3. Arborlogix Pty Ltd has been asked to assess the trees within this site, and on any neighbouring properties or council land, that have their TPZs (Tree Protection Zones) within 5m of the proposed development footprint or in areas that could be used as access points to the site for construction vehicles and materials. This arboricultural impact assessment report is only concerned with trees that are large enough to be covered by the local DCP (Development Control Plan) and Tree Management Policy for the City of Liverpool Council which includes any trees over 5m in height. Therefore this report includes 28 trees, 12 of these are within the site, 3 of them are within the neighbouring property and 13 are on the council nature strip.

2.1.4. This report will assess these 28 trees for health, vitality, structural defects, form, pests and diseases, life expectancy, significance and retention value. An assessment will also be made of the likely impacts the proposed development will have on these trees. This will be used to aid with determining whether any of these trees would need to be removed for safety reasons or to accommodate the new development, or whether they should be retained and protected.

2.1.5. If the trees are to be retained this report will provide recommendations to any design modifications, construction techniques and the necessary protection measures that will need to be implemented prior, during and post development to ensure the health, vigour and longevity of these trees. Details of these protection measures will be based on local government regulations and protection measures outlined in AS-4970-2009 (Protection of Trees on Development Sites). Any pruning works that may be required to accommodate this development or improve the health and stability of these trees will also be outlined and detailed as part of the recommendations of this report.

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3. Summary of recommendations

This arboricultural impact assessment of the proposed development site made the following recommendations.

3.1. Retention and Protection of Trees 1-14, 18-23 and 26-28 according to AS-4970-2009 (Protection Trees on Development Sites). No roots are to be pruned greater than 40mm diameter within any TPZ and no roots at all within any SRZ without the authorisation of the project arborist. Details of any TPZ encroachment and tree protection required are found in sections 8.1, 8.2 and 8.4 (Tree Protection Plan). Tree 14 will be transplanted to an alternate location onsite and done in coordination with the project arborist.

3.2. Removal and replacement of Trees 15-17 and 24-25 due to their low retention values and/or conflicts with the proposed development design. More details can be found in section 8.1 and 8.3.

3.3. Generally all activities involving soil level changes, excavation, storage, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970) within the TPZ. Installation of any underground services including stormwater infrastructure will need to be done in accordance with the conditions listed in 10.4.2. Some activities may be authorized if required but only by the project arborist. Any additional mulching or irrigation required should be done at the discretion of the project arborist.

3.4. All other tree protection measures required during construction and detailed in section 8.4 (Tree Protection Plan) of this report are to be complied with.

3.5. Any tree removal works and tree protection measures should be carried out by an arborist with a minimum qualification of AQF level 3 and certified by the project arborist. The project arborist should have a minimum qualification of AQF level 5 or equivalent.

3.6. All works on-site should be carried out according to Workcover Authority NSW 2007, *Code of Practice Amenity Tree Industry,* NSW.

3.7. All works should be carried out according to AS-4373-2007 (Pruning of Amenity Trees) and AS-4970-2009 (Protection trees on development sites).

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4. Disclaimer and limitations of report

4.1. This document is only valid in its entirety and is for the exclusive use of the client and Arborlogix Pty Ltd only. Arborlogix Pty Ltd will not be held liable for any use or interpretations from any other person or third party. This report remains the intellectual property of Arborlogix Pty Ltd and any individual or company must have written consent prior to its use for any other purpose. Alterations of this report invalidate the entire report

4.2. All inspections and assessments were carried out using Visual Tree Assessment methods (VTA)[1] from ground level only and do not include the use of diagnostic devices. Although great care is taken to accurately diagnose the condition of the tree, using accepted industry practices; the arborist is limited in determining the exact structural integrity of the tree by interpreting mainly exterior features. There are multiple factors both physical and environmental such as extreme climatic events and conditions that could lead to possible structural failures in trees which would not have been possible to predict or identify from VTA methods and assessments.

4.3. Any protection or preservation methods recommended are not a guarantee of tree survival or safety but have been recommended to improve vigour and reduce risk only. Therefore Arborlogix Pty Ltd does not accept any liability for any future tree failure, illness, damage or injury caused by any undetected or unpredicted faults or failures in any tree or part thereof referred to in this document. Arborlogix Pty Ltd also accepts no responsibility for any failure, loss or decline, damage or injury caused by any tree covered in this document due to any meteorological or other unforeseen event.

4.4. It is the client's responsibility to maintain ongoing inspections and assessments of trees covered in this document and obtain the services of a suitably qualified arborist to carry out the work where necessary. All work should be carried out according to AS-4373-2007 Pruning of amenity trees[2] and AS-4970-2009 Protection of trees on development sites[3].

4.5. Tree identification is based on visual characteristics at the time of inspection using the authors knowledge and supporting reference materials. The accuracy of the identification is not guaranteed since key identifying features are not always available.

4.6. All plans and photographs used in this report are for visual aids only and may not be to scale. Arborlogix Pty Ltd also does not guarantee the accuracy of plans and documents provided by others in this report.

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[1] Mattheck, K and Breloer, H (2007). *The Body Language of Trees* – A handbook for failure
[2] Standards Australia (2007). AS4373:*Pruning of Amenity Trees*
[3] Standards Australia (2009). AS4970: *Protection of Trees on Development Sites*.

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5. Methodology

Tree Assessments were all carried out using the following information and according to the following methods:

5.1. Tree assessments

- Visual Tree Assessment (VTA) method (Mattheck 2007)) (Appendix 1) was used from ground level to determine tree health, structural integrity and presence of any pests or diseases.
- Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) (Appendix 3) is used to provide an index value corresponding to age, vigour and condition.
- The meanings and terminology used to describe and assess each tree are taken from the IACA Dictionary for Managing Trees in Urban Environments (2009). An extract is included as a glossary of terms in Appendix 6 of this report.
- No aerial (climbing) inspections, soil sampling or root excavations were conducted as part of these assessments.
- No additional specialised diagnostics equipment was used to quantitatively determine extent of any decay (i.e. resistographs or non-intrusive tomographic methods such as PICUS)
- All trees were identified using prior knowledge of the species and visual inspection of the subject trees at the time of inspection.
- Trees of the same species, size and age that form a stand or hedge may be grouped together and shown as one tree on plans for simplicity. If this is the case it is always noted in the tree schedule.
- A Lufkin 10m diameter tape was used to obtain the Diameter at Breast Height (DBH) as recommended at 1.4m unless otherwise stated due to variations in tree form (AS-4970-2009). Diameter at Root Crown (DRC) was also measured to enable calculation of Structural Root Zones. If access into a neighbouring property was not possible then measurements were taken from over the fence using a tape measure or estimated.
- Canopy spread was estimated or paced out and the longest span was recorded as the spread.
- Height of each tree was estimated and then cross referenced with photographs.
- Any photographs were taken with an iphone xS (12MP).
- All map data was gathered using www.nearmaps.com.au
- All design work used in this report was completed using Adobe Illustrator and ArborCAD.

5.2. Tree protection zones

This report adopts Australian Standard AS4970-2009 *Protection of trees on development sites* as a point of reference and guide for the recommended minimum setbacks (Appendix 4) from the centre of a tree's trunk to development works. The distances may be increased or decreased by the author in accordance with AS4970 – Section 3.3.4 as a result of other factors providing mitigating circumstances or constraints as indicated by but not restricted to the following:

- Condition of individual trees,
- Tolerance of individual species to disturbance,
- Geology e.g. physical barriers in soil, rock floaters, bedrock to surface
- Topography e.g. slope, drainage,
- Soil e.g. depth, drainage, fertility, structure,
- Microclimate e.g. due to landform, exposure to dominant wind,
- Engineering e.g. techniques to ameliorate impact on trees such as structural soil, gap graded fill, lateral boring,

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- Construction e.g. techniques to ameliorate impact on trees such as pier and beam, bridge footings, suspended slabs,
- Root mapping,
- Physical limitations - existing modifications to the environment and any impact to tree/s by development e.g. property boundaries, built structures, houses, swimming pools, road reserves, utility services easements, previous impact by excavation, or construction in other directions, soil
- level changes by cutting or filling, existing landscaping works within close proximity, modified
- drainage patterns,
- Extraneous factors e.g. potential future impacts from development on adjoining land when the tree is located on or near to a property boundary

5.3. Tree significance, sustainability and retention values

Tree landscape significance rating was calculated using IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) which is shown in Appendix 2. Landscape significance not only takes into account the physical form of the tree but it also assesses other factors such as Heritage, Cultural and Environmental values. These Landscape significance ratings were then combined with the Estimated Life Expectancy values of each specimen to categorise each tree under the Priority Matrix of Retention Values.

This is used in combination with the value obtained from the Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) (Appendix 3) to determine whether the tree should be removed for safety and sustainability reasons or whether it should be retained and what remedial works may be required. Tree Sustainability is an important factor since it takes into account not only the life expectancy but also the effect of other economical, social and environmental factors that need to be addressed as part of a tree management plan.

5.4. Local government documentation reviewed for assessment.

In order to ensure all legal requirements are met when determining which trees can be retained or removed on this development site a number of Local Government Area (LGA) Policies and documents were reviewed:

- Significant Tree Register and/or – Heritage Tree Register — Site is heritage listed.
- Threatened/Endangered species or communities onsite – No listings for this site were found.
- Local Government Area (LGA) Tree Preservation Order – Liverpool City Council

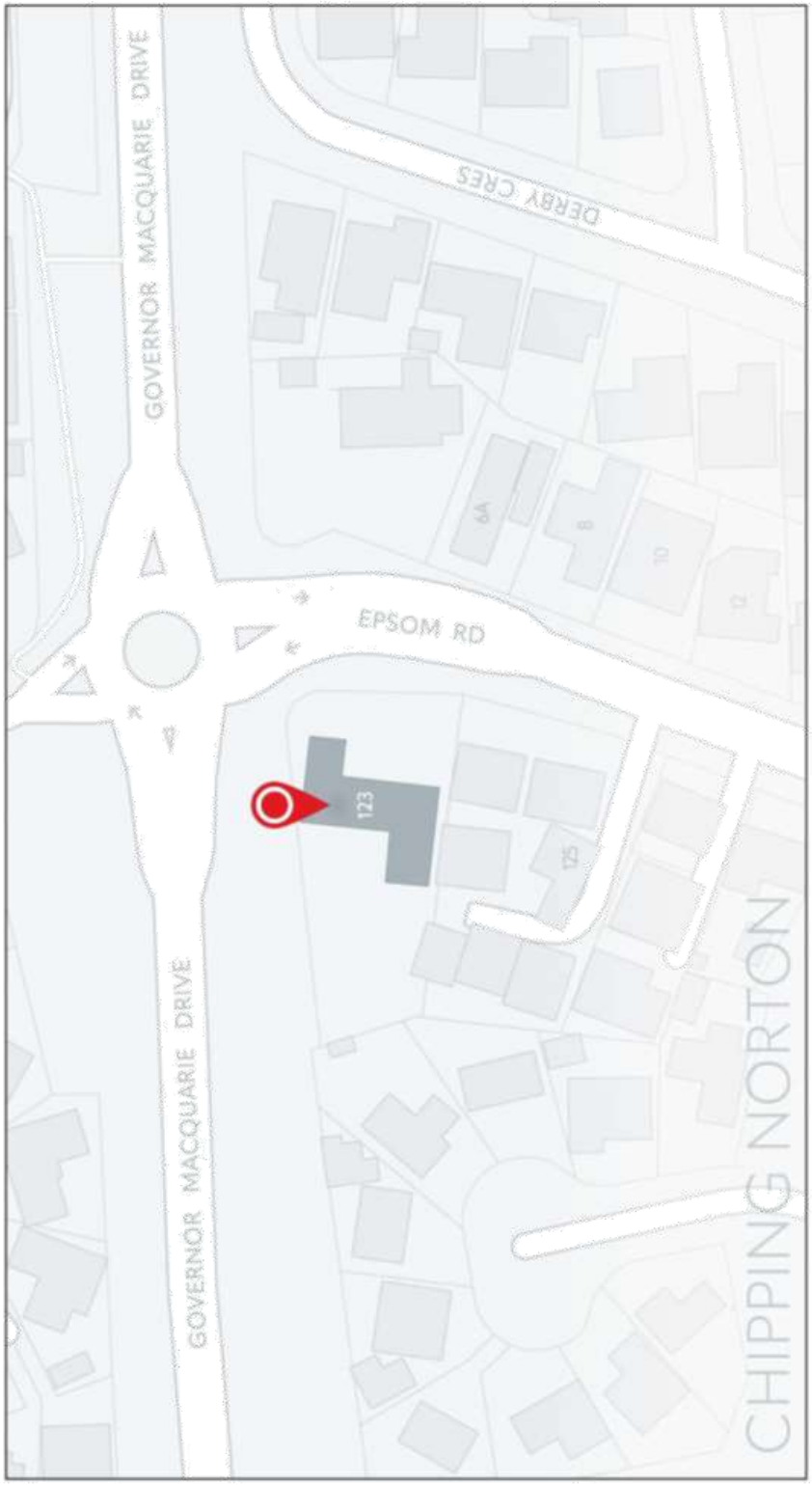
5.5. Documentation provided for this report

The following documentation was provided to assist in preparing this report:

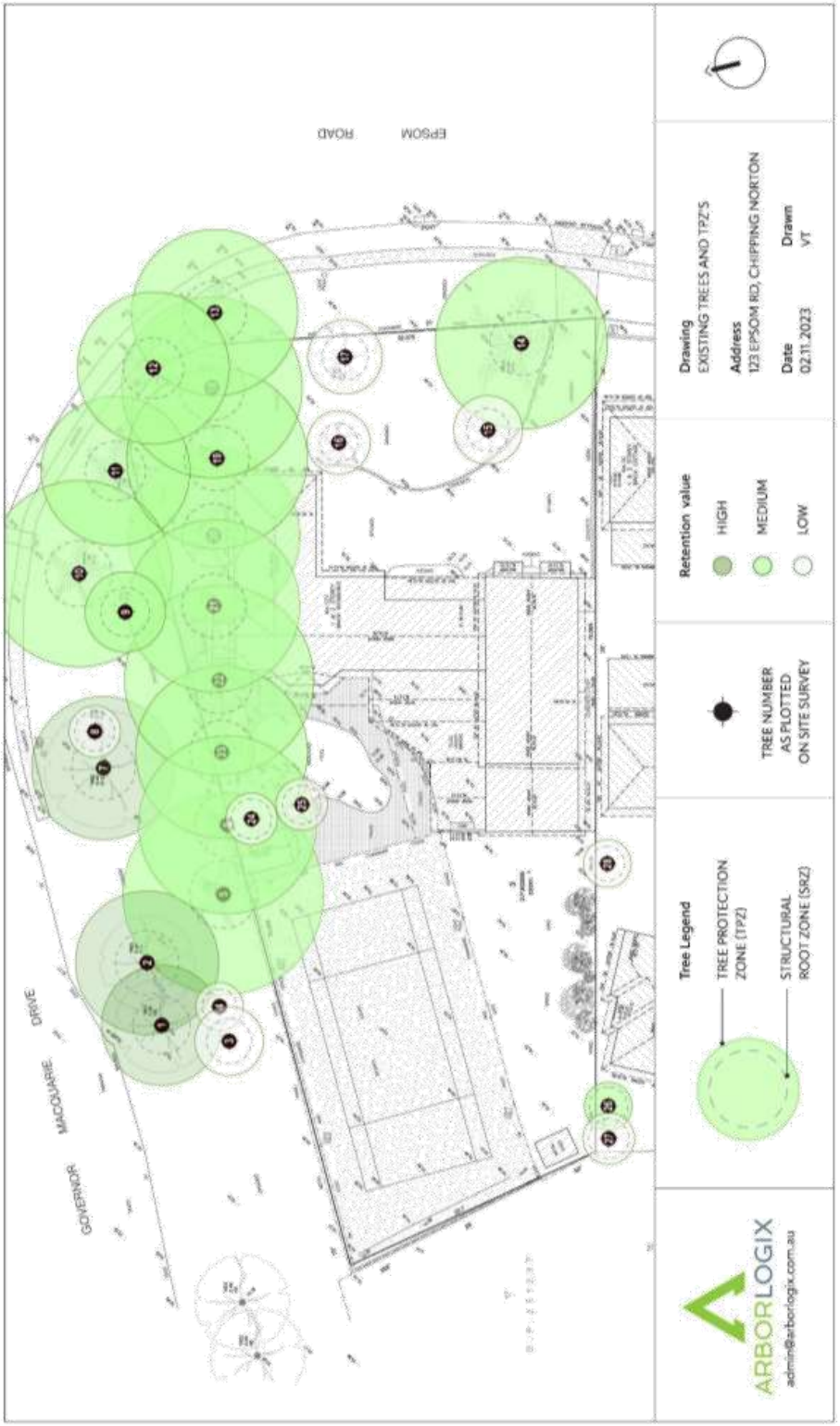
- Site Survey - Beveridge Williams - 15.11.2017 - Drawing no. 1701789
- DA Drawings - ArtMade Architects - 27.10.2023 - Sheet no. DA02.01

6. Site details

6.1. Map of site



6.2. Plan of site showing existing site and location of trees surveyed in report with TPZs and retention values



6.3. Plan of site showing proposed development

7. Tree Assessment

7.1. Tree schedule

KEY FOR TABLE:

AGE - Y = Young, M = Mature, OM = Over Mature D = Dead
DBH – Diameter Breast Height (mm)
SRZ – Structural Root Zone
Risk Rating – LOW, MEDIUM, HIGH, EXTREME (Colour Coded)
HT – Estimated Height (m)
DRC – Diameter above Root Crown (mm)
Health/ Condition – G = Good, F = Fair, P = Poor, D = Dead
SRIV – Sustainable Retention Index Value (Appendix 3)
CS – Estimated Crown Spread (m)
TPZ – Tree Protection Zone

Defects/Comments – NIL = Deadwood <20mm Diameter, Minor D = Minor Deadwood 20-70mm Diameter, Major D = Major Deadwood 70+mm Diameter
Significance/Retention – LOW, MEDIUM, HIGH (Colour Coded according to Retention Value)
SULE – H = High (40+ Yrs), M = Medium (15-40 Yrs), S = Short (5-15 Yrs), R = Remove, S/Y = Small or Young

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
1	Eucalyptus saligna (Sydney Blue Gum)	14	8	420	470	5.0	2.4	M	G/G	MGVG	On council nature strip, prune broken lower limb stub.	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
2	Eucalyptus saligna (Sydney Blue Gum)	15	10	500	600	6.0	2.7	M	G/G	MGVG	On council nature strip	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
3	Eucalyptus crebra (Narrow-leaved Ironbark)	10	4	240	260	2.9	1.9	M	F/P	MGVP	Large scar and canker from previous failure on trunk	LOW	S	LOW / LOW	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
4	Eucalyptus crebra (Narrow-leaved Ironbark)	6	2	110	140	1.3	1.4	Y	G/G	YGVG	On council nature strip, small specimen	LOW	L	LOW / LOW	Retain and Protect (AS-4970-2009)
5	Phoenix canariensis (Canary Island Date Palm)	10	6	700	700	8.4	2.8	M	G/F	MGVF	On council nature strip	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
6	Phoenix canariensis (Canary Island Date Palm)	9	6	620	620	7.4	2.7	M	G/F	MGVF	On council nature strip but pushing into boundary fence.	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
7	Eucalyptus saligna (Sydney Blue Gum)	14	12	500	600	6.0	2.7	M	G/G	MGVG	On council nature strip	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
8	Cupressus sempervirens (Med. Cypress)	8	3	180	200	2.2	1.7	M	G/F	MGVF	On council nature strip, limited space future growth under Eucalypt	LOW	S	LOW / LOW	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
9	Corymbia eximia (Yellow bloodwood)	8	7	280	320	3.4	2.1	M	G/G	MGVG	On council nature strip	LOW	L	MED / MED	Retain and Protect (AS-4970-2009)
10	Phoenix canariensis (Canary Island Date Palm)	10	6	650	650	7.8	2.8	M	G/F	MGVF	On council nature strip	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
11	Phoenix canariensis (Canary Island Date Palm)	8	6	520	520	6.2	2.5	M	G/F	MGVF	On council nature strip	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
12	Phoenix canariensis (Canary Island Date Palm)	6	5	530	530	6.4	2.5	M	G/F	MGVF	On boundary line, impacting fence, smaller specimen than other palms onsite	LOW	S	MED / MED	Retain and Protect (AS-4970-2009)
13	Phoenix canariensis (Canary Island Date Palm)	6	5	580	580	7.0	2.6	M	G/F	MGVF	On council nature strip	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
14	Phoenix canariensis (Canary Island Date Palm)	6	5	600	600	7.2	2.7	M	G/F	MGVF	Smaller specimen, inside site	LOW	M	MED / MED	Retain - Transplant within site.
15	Syagrus romanzoffiana (Cocos Palm)	5	4	240	230	2.9	1.8	M	G/F	MGVF	Exempt species	LOW	M	LOW / LOW	Remove & Replace
16	Syagrus romanzoffiana (Cocos Palm)	5	3	220	180	2.6	1.6	M	G/F	MGVF	Exempt species	LOW	S	LOW / LOW	Remove & Replace
17	Cinnamomum camphora (Camphor Laurel)	6	6	260	280	3.1	1.9	M	G/F	MGVF	Exempt species	LOW	S	LOW / LOW	Remove & Replace
18	Phoenix canariensis (Canary Island Date Palm)	9	6	630	630	7.6	2.7	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
19	Phoenix canariensis (Canary Island Date Palm)	9	6	630	630	7.6	2.7	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
20	Phoenix canariensis (Canary Island Date Palm)	9	6	600	600	7.2	2.7	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
21	Phoenix canariensis (Canary Island Date Palm)	9	6	600	600	7.2	2.7	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
22	Phoenix canariensis (Canary Island Date Palm)	9	6	660	660	7.9	2.8	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
23	Phoenix canariensis (Canary Island Date Palm)	9	6	600	600	7.2	2.7	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
24	Ligustrum lucidum (Broad Leaf Privet)	8	7	180	200	2.2	1.7	Y	G/F	YGVF	Noxious weed species	LOW	R	LOW / LOW	Remove & Replace
25	Syagrus romanzoffiana (Cocos Palm)	6	3	180	180	2.2	1.6	M	G/F	MGVF	Stand of 4 palms adjacent to pool, exempt species	LOW	S	LOW / LOW	Remove & Replace
26	Callistemon sp.(Bottlebrush)	7	6	150	180	1.8	1.6	M	G/G	MGVG	Neighbours tree, close to fence	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
27	Syagrus romanzoffiana (Cocos Palm)	10	5	180	200	2.2	1.7	M	G/F	MGVF	Neighbours, stand of 3	LOW	S	LOW / LOW	Retain and Protect (AS-4970-2009)
28	Photinia robusta (Red leaf photinia)	3.5	3	120	140	1.4	1.4	Y	G/F	YGVF	Neighbours, small specimen, close to fence	LOW	M	LOW / LOW	Retain and Protect (AS-4970-2009)

TABLE 1 – TREE SCHEDULE

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7.2. Site observations and photos

Tree assessments were carried out on the 20th July 2023. Photographs are shown below.

Photo 1: Trees 1-10 out front on council nature strip and Trees 21-25 behind, inside site.

Photo 2: Trees 11 and 12 out front on council nature strip and Trees 18-23 behind, inside site.

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Photo 3: From left to right - Trees 19, 16, 18, 13, 17, 15 and 14

Photo 4: Trees 26 and 27 in neighbours yard.

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8. Impact of proposed development

8.1. Summary of construction impacts on trees surveyed onsite.

8.1.1. All trees that scored HIGH as priority for retention are good specimens and design efforts should be made for their protection throughout the development to ensure there are no detrimental effects to the health of the trees. Trees that have scored MEDIUM for retention should also be protected where possible without impacting the development. If it is not possible to construct the new development without seriously impacting the tree then those trees with MEDIUM retention value should be considered for removal. Trees with LOW retention value should be removed if required to accommodate the new development.

8.1.2. In some cases trees will need to be removed for the development to proceed regardless of their retention value since they are directly within the building footprint and alternative designs are not feasible. Table 2 below summarizes the trees that can be retained and protected and those that will require removal either due to conflicts with the proposed development or due to their condition, form or species type. The table also lists their retention values and the reasons they need to be removed or the TPZ encroachment that will be required if they are retained and protected.

Tree Impact Type	Reason/Details	High Retention	Medium Retention	Low Retention
Recommended for Removal	Impacts from demolition and construction works, new surfaces, grade changes; or trees in poor condition, poor health, poor form, undesirable species, safety concerns.			15, 16, 17, 24, 25
Recommended for retention requiring major TPZ (>10%) encroachments and Tree sensitive construction and design.	Removal of existing structures, surfaces and/or construction of new structures, surfaces, grades, landscaping.		19, 21, 22, 23	
Recommended for retention requiring only minor (<10%) or no TPZ encroachments.	Removal of existing structures, surfaces and/or construction of new structures, surfaces, grades, landscaping. Or no TPZ encroachment required.	1, 2, 7	5, 6, 9-14, 18, 20, 26	3, 4, 8, 27, 28

Table 2 – Summary of construction impacts on trees surveyed onsite

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8.2. Detailed impact appraisal for trees to be retained onsite

8.2.1. Tree sensitive construction techniques can generally be categorised into 2 types:

1. **Tree sensitive building footings** - to minimise the impact to root systems that require major TPZ encroachment it will be necessary to construct these footings using pier and beam / suspended slab style foundations that can be constructed above the root zone still allowing water infiltration and gaseous exchange for the root systems below. Designs for these construction works will need to be pre approved and done in consultation with the project arborist. Implementation of this form of construction will also need to be done according to the following conditions:
    a. Excavations for footings will need to be done manually or using non-destructive techniques (i.e Air Spade or Hydrovac) to ensure no roots are damaged. These excavations may also need to be supervised at the discretion of the project arborist.
    b. The exact location of piers will need to be flexible to ensure they can be moved if there is a conflict with a significant root (greater 50mm diameter).
    c. Piers will need to be located at least 150mm from any significant roots (greater 50mm diameter)
    d. Pruning of roots greater than 30mm diameter should only be done in consultation with the project arborist.
    e. There should be no grade changes without consultation with the project arborist.
    f. The suspended slab will need to be slightly above the ground level to ensure water infiltration and gaseous exchange for the root system.

2. **Tree sensitive surface installations** - driveways, footpaths, landscaping - new surfaces will need to be constructed above the existing grades in the TPZ, involve no excavations within the TPZ or any root pruning and still allow gaseous exchange for the root systems and water infiltration. Designs for these construction works will need to be pre approved and done in consultation with the project arborist. In general these tree sensitive surface installations above the existing grade levels involve a synthetic load spreading material and a large aggregate subbase above a geotech fabric or similar. The upper pavement level can then either be a large aggregate material, permeable pavers or permeable concrete depending on the load spreading material underneath. Many of the popular products on the market now use a plastic cellular product that can be filled with aggregate, spreading the load but preventing any compaction of the layers. Further examples of some of these techniques can be found in Appendix 5.

8.2.2. Table 3 below lists the actual TPZ and SRZ radius and details of any TPZ encroachments, tree sensitive construction and tree sensitive demolition techniques that will be required for each tree. The tree protection plan shown in section 8.4 below also shows details of any encroachment and the location of the TPZs for each tree. In all cases, no roots greater than 40mm diameter in the TPZs of any trees are to be pruned, and no roots at all within the SRZs for any tree, without consultation with the project arborist. TPZ fencing should be set-up as shown in section 8.4 and as directed by the project arborist.

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TREES RECOMMENDED FOR RETENTION AND PROTECTION				
No	**Species**	**TPZ radius (m)**	**SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
1	Eucalyptus saligna (Sydney Blue Gum)	5.0	2.4	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
2	Eucalyptus saligna (Sydney Blue Gum)	6.0	2.7	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
3	Eucalyptus crebra (Narrow-leaved Ironbark)	2.9	1.9	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
4	Eucalyptus crebra (Narrow-leaved Ironbark)	1.3	1.4	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
5	Phoenix canariensis (Canary Island Date Palm)	8.4	2.8	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
6	Phoenix canariensis (Canary Island Date Palm)	7.4	2.7	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
7	Eucalyptus saligna (Sydney Blue Gum)	6.0	2.7	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.

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TREES RECOMMENDED FOR RETENTION AND PROTECTION				
No	**Species**	**TPZ radius (m)**	**SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
8	Cupressus sempervirens (Med. Cypress)	2.2	1.7	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
9	Corymbia eximia (Yellow bloodwood)	3.4	2.1	No TPZ encroachment required. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
10	Phoenix canariensis (Canary Island Date Palm)	7.8	2.8	No TPZ encroachment required. TPZ only extends as far as SRZ. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
11	Phoenix canariensis (Canary Island Date Palm)	6.2	2.5	No TPZ encroachment required. TPZ only extends as far as SRZ. TPZ fencing is only required if construction access or works on this side of the site, otherwise not necessary.
12	Phoenix canariensis (Canary Island Date Palm)	6.4	2.5	No TPZ encroachment required. TPZ only extends as far as SRZ. TPZ fencing required.
13	Phoenix canariensis (Canary Island Date Palm)	7.0	2.6	No TPZ encroachment required. TPZ only extends as far as SRZ. TPZ fencing required.
14	Phoenix canariensis (Canary Island Date Palm)	7.2	2.7	Transplanted elsewhere onsite as per landscape design.
18	Phoenix canariensis (Canary Island Date Palm)	7.6	2.7	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing required.

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TREES RECOMMENDED FOR RETENTION AND PROTECTION				
No	**Species**	**TPZ radius (m)**	**SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
19	Phoenix canariensis (Canary Island Date Palm)	7.6	2.7	Major TPZ and SRZ encroachment required for the proposed new building but this section of building will be constructed using cantilevered slab above the SRZ to ensure no impact to the root system so acceptable according to AS-4970-2009. Impact to this palm will be minimal. Any works within SRZ will need to be done under the supervision of project arborist. Trunk protection required.
20	Phoenix canariensis (Canary Island Date Palm)	7.2	2.7	No TPZ encroachment required. TPZ only extends as far as SRZ. TPZ fencing required.
21	Phoenix canariensis (Canary Island Date Palm)	7.2	2.7	Major TPZ and SRZ encroachment required for the proposed new building but this section of building will be constructed using cantilevered slab above the SRZ to ensure no impact to the root system so acceptable according to AS-4970-2009. Impact to this palm will be minimal. Any works within SRZ will need to be done under the supervision of project arborist. Trunk protection required.
22	Phoenix canariensis (Canary Island Date Palm)	7.9	2.8	Major TPZ and SRZ encroachment required for the proposed new building but this section of building will be constructed using cantilevered slab above the SRZ to ensure no impact to the root system so acceptable according to AS-4970-2009. Impact to this palm will be minimal. Any works within SRZ will need to be done under the supervision of project arborist. Trunk protection required.
23	Phoenix canariensis (Canary Island Date Palm)	7.2	2.7	Major TPZ and SRZ encroachment required for the proposed new boundary wall. This will need to be constructed using piers and suspended across the SRZ to ensure no root pruning is required within SRZ. All works within SRZ will need to be done under the supervision of project arborist. Trunk protection required.
26	Callistemon sp.(Bottlebrush)	1.8	1.6	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing is not necessary.

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TREES RECOMMENDED FOR RETENTION AND PROTECTION				
No	**Species**	**TPZ radius (m)**	**SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
27	Syagrus romanzoffiana (Cocos Palm)	2.2	1.7	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing is not necessary.
28	Photinia robusta (Red leaf photinia)	1.4	1.4	Minor TPZ encroachment required for proposed new development but less than 10% and outside of SRZ (Structural Root Zone) so acceptable according to AS-4970-2009. TPZ fencing is not necessary.

TABLE 3 – TPZ FOR RETAINED TREES AND ASSOCIATED ENCROACHMENTS

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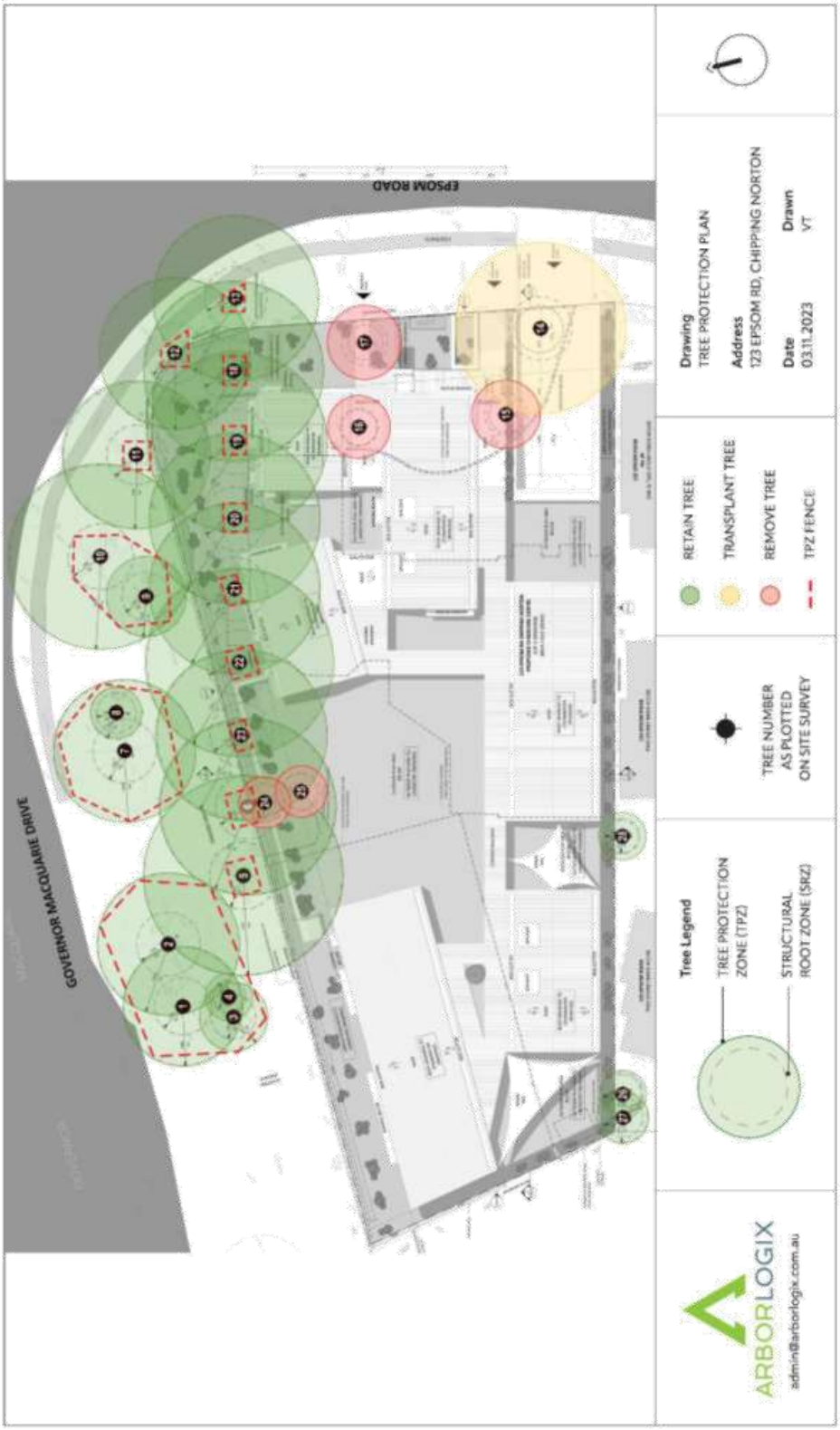
8.3. Trees recommended for removal

Table 3 below lists the trees onsite that have been recommended for removal together with reasons and any additional details.

TREES RECOMMENDED FOR REMOVAL			
No.	**Species**	**Significance / Retention Value)**	**Details / Specifications.**
15	Syagrus romanzoffiana (Cocos Palm)	LOW	Low retention value due to exempt species. Conflict with proposed development, located within the proposed building footprint. Remove and replace new plantings as per landscape design.
16	Syagrus romanzoffiana (Cocos Palm)	LOW	Low retention value due to exempt species. Conflict with proposed development, located within the proposed building footprint. Remove and replace new plantings as per landscape design.
17	Cinnamomum camphora (Camphor Laurel)	LOW	Low retention value due to exempt species. Conflict with proposed development, located within the proposed building footprint. Remove and replace new plantings as per landscape design.
24	Ligustrum lucidum (Broad Leaf Privet)	LOW	Low retention value due to exempt species. Conflict with proposed landscape design. Remove and replace new plantings as per landscape design.
25	Syagrus romanzoffiana (Cocos Palm)	LOW	Low retention value due to exempt species. Conflict with proposed landscape design. Remove and replace new plantings as per landscape design.

Table 4 – Details of trees recommended for removal

8.4. Tree protection and removals plan



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9. Recommendations

This arboricultural impact report recognizes that as a consequence of development in some cases certain trees may need to be removed to accommodate new constructions despite some of the specimen trees being of good health. This report has based its recommendations on ensuring that all trees that can be retained and integrated into this future development will be protected throughout all stages of development.

The recommendations of this report include:

9.1. Retention and Protection of Trees 1-14, 18-23 and 26-28 according to AS-4970-2009 (Protection Trees on Development Sites). No roots are to be pruned greater than 40mm diameter within any TPZ and no roots at all within any SRZ without the authorisation of the project arborist. Details of any TPZ encroachment and tree protection required are found in sections 8.1, 8.2 and 8.4 (Tree Protection Plan). Tree 14 will be transplanted to an alternate location onsite and done in coordination with the project arborist.

9.2. Removal and replacement of Trees 15-17 and 24-25 due to their low retention values and/or conflicts with the proposed development design. More details can be found in section 8.1 and 8.3.

9.3. Generally all activities involving soil level changes, excavation, storage, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970) within the TPZ. Installation of any underground services including stormwater infrastructure will need to be done in accordance with the conditions listed in 10.4.2. Some activities may be authorized if required but only by the project arborist. Any additional mulching or irrigation required should be done at the discretion of the project arborist.

9.4. Branch and Truck protection, if required (only if access into TPZ needed), should be installed as detailed in section 10.3.2 of this report.

9.5. All other tree protection measures required during construction and detailed in section 8.4 (Tree Protection Plan) of this report are to be complied with.

9.6. Any tree removal works and tree protection measures should be carried out by an arborist with a minimum qualification of AQF level 3 and certified by the project arborist. The project arborist should have a minimum qualification of AQF level 5 or equivalent.

9.7. All works on-site should be carried out according to Workcover Authority NSW 2007, *Code of Practice Amenity Tree Industry,* NSW.

9.8. All works should be carried out according to AS-4373-2007 (Pruning of Amenity Trees) and AS-4970-2009 (Protection trees on development sites).

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10. Tree protection requirements - method statement

10.1. Project arborist

10.1.1. A project arborist with a minimum of 5 years experience within the arboriculture industry, demonstrated management of trees on construction sites and a minimum certification of AQF-Level 5 (Diploma Level) should be appointed to oversee all areas of the project regarding any activities that may occur close to or within any TPZs of tree that are to be retained. They should be involved in all stages of early planning to prevent any damage to the trees to be retained and any unnecessary hold ups for the development if certain conditions and requirements have not been addressed.

10.1.2. The project arborist should complete regular inspections and monitoring of the site to ensure all tree protection measures are being adhered to, any additional protection measures are implemented if tree health appears to be in decline and all monitoring is documented for compliance certification. It is very important that communications channels between planners, architects, builders and the project arborist are kept open to ensure that the trees are protected throughout every stage of the development. Remediation measures are far less likely to be successful than careful planning with regards to tree protection. All site personnel must be properly briefed before any work starts.

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10.2. Construction hold points and responsibilities

10.2.1. In order to ensure that all the required tree protection works are complied with and carried out in the correct sequence it is important that all site personnel understand the details of the arboricultural method statement and the site specific conditions that apply. This is done through clear communication channels between the developer, the project arborist and the site demolition and construction personnel. In order to ensure this is done correctly a series of construction hold points need to be met at each stage of the development and continuation to the next hold point cannot happen until the prior one has been inspected and signed off by the project arborist.

10.2.2. It is the site developers responsibility that all personnel are aware of these construction hold points and communication with the project arborist is maintained throughout the development process. It is too late to contact the project arborist at the end of the construction phase and ask them to certify that tree protection measures were in place at the beginning of the project 6 months earlier. Table 4 below details each of the construction hold points and the persons responsible for implementation and certification.

Hold Point	Details	Project Stage	Responsibility	Inspection & Certification
1	Pre construction meeting between project arborist and principal contractor to discuss tree protection requirements, methods and any issues relating to practicality and feasibility of tree protection requirements.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
2	Marking of all trees that are proposed for removal onsite.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
3	Installation of all tree protection requirements (TPZ fencing, ground protection, trunk protection, irrigation) in accordance with AS-4970-2009 and the arboricultural impact assessment report for the site.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
4	Supervision of all demolition, excavations, underground service installations and construction works that will involve a major TPZ encroachment (greater 10% TPZ) of any trees to be retained and protected onsite. No roots greater 40mm diameter pruned without consultation project arborist.	Throughout the development, prior to works occuring within the TPZ.	Principal contractor and construction personnel.	Project arborist
5	Site inspections to ensure AS-4970-2009 compliance during construction, monitor health of trees and determine any measures required to mitigate detrimental impacts on protected trees. Advice on any modifications to tree protection in later stages of development to allow landscaping and approved low impact construction within tree TPZs.	Every 1-2 months as determined by the project arborist in Hold Point 1.	Principal contractor	Project arborist
6	Removal of tree protection measures and inspection of protected trees to ensure health and condition the same as pre construction. Advice on any mitigation works required to improve tree health and new tree planting management.	Construction completion.	Principal contractor	Project arborist

Table 4 – Details of trees recommended for removal

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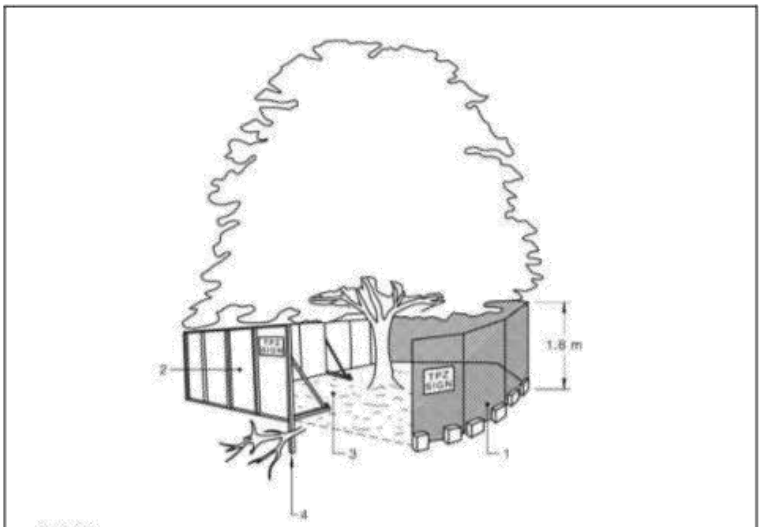
10.3. Tree protection works – prior to demolition

All TPZs (Tree Protection Zones) will need to be constructed as shown in a Tree Protection Plan produced by the project arborist prior to any demolition. Any encroachments or setbacks required to accommodate the new development need to be done in consultation with the project arborist.

10.3.1. General TPZ – no access authorised

The Protective fencing, signage and area within the TPZ should be constructed according to AS-4970-2009.

- Protective Fencing – The fencing delineates the boundary of the TPZ and should be positioned in accordance with Site Plan – Tree Protection zones and in consultation with the project arborist. Section 4, 4.3 of AS-4970 states " Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ should be secured to restrict access. AS-4687 specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20mm and be located clear of roots.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 1 – TPZ fencing example from AS-4970-2009.

- TPZ encroachment – If encroachment is required to accommodate the building footprint then consideration should be given to the fact that the TPZ does actually extend outside of the fenced area and the rules regarding activities prohibited in the TPZ should apply to the distances presented in table 3 section 8.2 above and not just inside the fenced TPZ area.

- Signage – Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from the development site.
- Mulching – Mulch installation across the surface of the TPZ should be carried out at the discretion of the project arborist. If required it should be applied to a depth of 100mm, consisting of approximately 75% leaf litter and 25% wood, and preferably from the same genus and species of tree to which they are protecting.
- Irrigation – At the discretion of the project arborist a timed drip irrigation system can be installed prior to any demolition works if it is deemed necessary.

10.3.2. Access to TPZ – temporary or permanent

The client has not detailed the exact location of logistical vehicular traffic and/or pedestrian traffic required during the construction phase. In general no access or any works are authorized inside a TPZ although pedestrian and vehicular access should still be allowed on roads and pavements already in place. If it is determined that entry into or through any of the TPZs are required then additional protection measures will be required. These are outlined in AS-4970-2009 in section 4.5 and listed below:

- Trunk and Branch Protection
  If access into the TPZ area is required for any scaffolding, or machinery, within 2m of the trees, then trunk and branch protection will need to be installed on limbs up to those above the height of tallest vehicle/scaffold. This should be installed by wrapping 2 layers of hessian (or similar material) around the branches and then securing hardwood battens (75x50x2000mm) at 100mm centers as shown in figure 2 below.

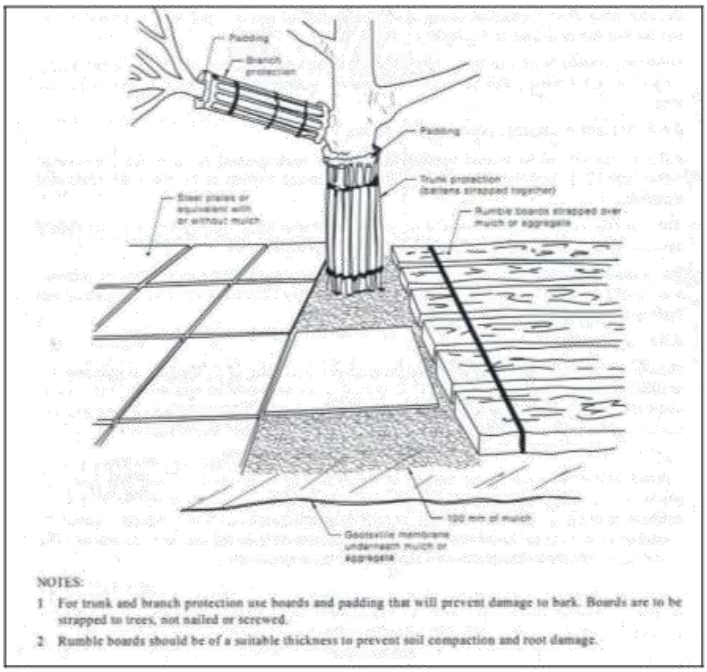


Figure 2 – TPZ TEmporary access – protection measures

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- Ground Protection.
  If machinery or pedestrian access is required within the TPZ then ground protection measures will be required to prevent any compaction or root damage. These measures require a permeable membrane such as geotextile fabric beneath a 100mm layer of mulch with rumble boards or steel plates laid above as shown in figure 2 above.

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10.4. Tree protection measures – during construction

Some activities may be authorized by the project arborist but generally all activities involving soil level changes, excavation, storage, excavation, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970). There are some additional guidelines that do allow certain activities within the TPZ during construction but all of these need to be supervised and determined by the project arborist.

10.4.1. Excavation and fill in TPZ

Guidelines for excavation within the TPZ:

- All works must be carried out under the supervision of the project arborist.
- Root mapping for any encroachment greater than 10% of the TPZ will need to be carried out by the project arborist to determine the extent of root growth within the area designated for development. All root mapping will need to be done with non destructive techniques such as an air spade, water laser, manual digging (taking care not to damage roots or bark) or ground penetrating radar. The root mapping exercise should determine the extent of woody structural roots greater than 50mm diameter within the proposed development footprint and determine the amount of root pruning that would be possible. When the project arborist identifies roots to be pruned (>50mm) they should be cut with sharp tools such as pruners or chainsaws and back to undamaged wood. No 'pruning' is to be done by machinery.
- Root protection during works – Some approved works such as regrading, installation of piers or landscaping may have potential to damage roots. Where roots are exposed within the TPZ, temporary root protection should be installed to prevent them drying out. This may include jute matting or hessian sheeting as multiple layers. This should be pegged in place and kept moist during the period that the root zone is exposed.

Guidelines for adding fill within the TPZ:

- Any material used as fill should be approved by the project arborist and consist of a coarse, gap-graded material to provide aeration and infiltration to the root zone. Clays and any sort of fines should not be used since this will seriously impact the future health of the tree.
- No grade changes greater than 250mm should be done without approval of the project arborist and any compaction should be done with a non-vibrating roller.

10.4.2. Demolition and installation of structures in TPZ

- All demolition and installation of structures within the TPZ will need to be done under the instruction of the project arborist.
- Great care should be taken to ensure no roots are damaged as structures or surfaces are removed since roots are often very close to the surface. No heavy machinery is allowed within any TPZs and any removal of structures and surfaces should be done using appropriate hand and power tools to ensure roots are not damaged underneath the surface being removed.
- Installation of new surfaces should be semi permeable to allow water and gaseous exchange to the root zone underneath. There are several specialised surface materials and technologies that can allow for this whilst ensuring adequate loading is still possible without any additional compaction. The project arborist will need to determine which of these will be suitable for the application.
- Installation of building structures within the TPZ may require piled supports that are located between the larger structural roots and enable the structure to be suspended. This is an engineering solution that

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will require the collaboration of the project arborist and the architect to develop the correct designs. above the root zone and therefore limit the detrimental effects of the encroachment into this area.

- Installing underground services – If services must be routed through a TPZ they should be installed by directional drilling (at least 600mm deep) or in manually excavated trenches using non-destructive techniques such as hydrovacs or airspades (supervised by project arborist) and the services can then be laid underneath or between the root system.
- Scaffolding – When it is essential to erect scaffolding within a TPZ it should be designed to minimize any branch removal. Branches should be tied back, or when unavoidable, pruned as required according to AS-4373. These works may require authority from LGA. Ground protection as detailed in section 10.3.2 above may also be required.

10.4.3. Soft landscaping in TPZ

Guidelines for Soft Landscaping within the TPZ:

- Soft landscaping involves the addition of soil, trees and plants, lawns and mulch. These all have the potential to be extremely damaging to trees if not done according to directions of the project arborist.
- No significant excavations, turfing, plantings, grade changes, soil addition or removal, addition of fertilisers or mulching should be done without consultation with project arborist
- Areas too close to tree trunks should not be have grade changes or be excessively mulched

10.4.4. Monitoring during construction

All the TPZs for the retained trees are to be monitored and maintained throughout the construction phase of development. Areas that may require maintenance include:

- Mulching – mulch (if required) must be maintained to a depth of 50-100mm. Where the existing landscape within the TPZ is to remain unaltered, mulch may not be required.
- Irrigation – Soil moisture levels may need to be monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ upon discretion of project arborist.

The project arborist should monitor at regular intervals all construction works and excavations on site that are within the proximity of any TPZ to ensure that protection measures are being adhered to and no works are likely to affect the health of the protected trees.

10.5. Post construction

At completion of all construction works the project arborist should assess the tree conditions and provide certification for tree protection with a condition that outstanding works or landscaping must not injure the trees. After this all tree protection measures should be removed from the site.

Following the final inspection and completion of remedial works the project arborist should certify the completed works have been carried out in compliance with the approved plans and specifications according to AS-4970-2009. Monitoring documentation and any deviations should also be provided

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11. Qualifications

- **Master Science Degree (MSc Hons)** – Information Technology (Sheffield Hallam University, UK)
- **Graduate Diploma (Arboriculture) – AQF Level 8** - (University of Melbourne) – 1st Class Hons
- **Bachelor Science Degree (BSc Hons)** - Environmental Science (Leeds University, UK)
- **Diploma Horticulture (Arboriculture)** – **AQF Level 5** - (Kurri Kurri TAFE) – Distinction
- **Certified Tree Risk Assessor** –QTRA Certified and ISA TRAQ Certified Risk Assessor
- **Arboriculture AQF Level 3** – Horticulture (Arboriculture) (Ryde TAFE)
- Member Arboriculture Australia – 12 Years
- 20 years arboriculture industry experience - Tree contractor and consulting arborist

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12. References

1. Barrell, Jeremy (2009). *SULE: Its use and status into the new Millennium*. Barrell Tree Consultancy. http://www.barrelltreecare.co.uk/pdfs/BT08-Sydney.pdf

2. Matheny, N.P & Clark, J.R (1994). A photographic Guide to the Evaluation of Hazard Trees in Urban Areas. International Society Arboriculture (ISA)

3. Mattheck, K and Breloer, H (2007). *The Body Language of Trees* – A handbook for failure analysis.

4. Standards Australia (2009). AS-4970: *Protection of Trees on Development Sites*

5. Standards Australia (1996). AS-4373 – *Pruning of Amenity Trees*.

6. Draper, D.B & Richards, P.A (2009). *Dictionary for Managing Trees in Urban Environments*. CSIRO Publishing.

7. Urban Forest Technical Manual. Newcastle council. 2012.

8. Tree Retention Values Table. A.Morton from: Couston, Mark and Howden, Melanie (2001). Footprint Green Pty Ltd, Sydney Australia.

9. Liverpool City Council DCP and Tree Management Policy

10. IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) http://www.iaca.org.au/home/index.php/publications

11. Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) http://www.iaca.org.au/home/index.php/publications

12. Manual for managing trees on development sites v3.0. Barrell Tree Consultancy 2020.

13. Terram Geocell Ground Reinforcement - Tree Root Protection. Terram Geocell 2019. https://terram.com/app/uploads/2020/07/TERRAM_Ground_Reinforcement_Solutions.pdf

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13. Appendices

13.1. Appendix 1 – Visual Tree Assessment (VTA) Method

THE PRINCIPLES OF RECOGNIZING PREDICTABLE TREE FAILURES

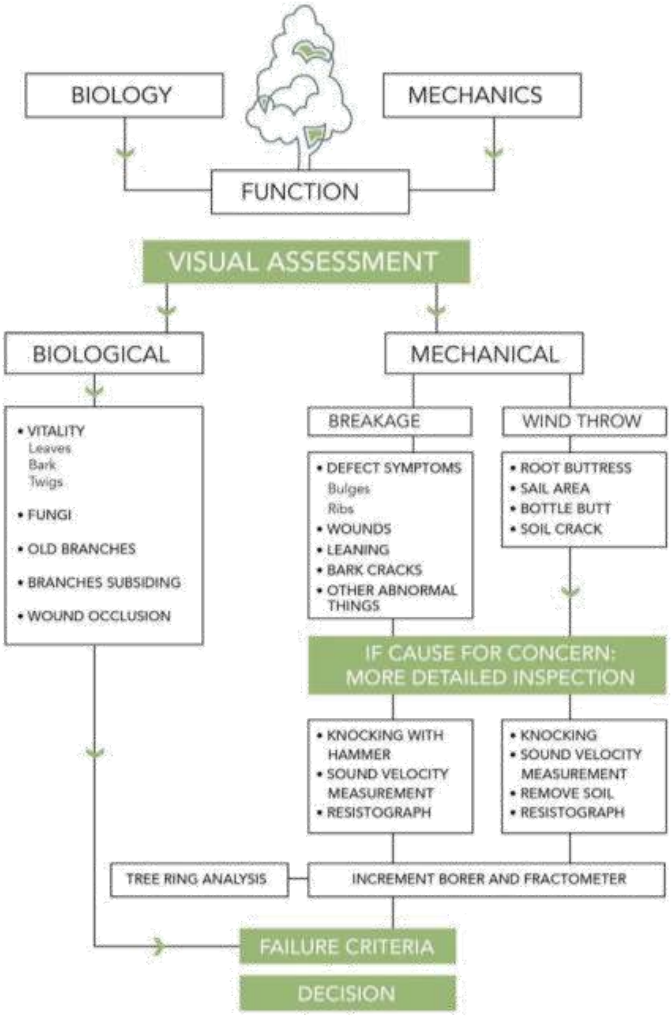

Figure 3 - Schematic Representation of the procedure for evaluating a tree with the VTA system

Source: Mattheck and Breloer "The body Language of Trees" 2007 p.196

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13.2. Appendix 2 – (IACA 2010)© IACA Significance of a Tree, Assessment Rating System (STARS)

Institute of Australian Consulting Arboriculturists, Australia, **www.iaca.org.au**. In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High, Medium and Low significance* in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;- The tree has a form typical for the species;- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;- The tree has form typical or atypical of the species;- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,- The tree provides a fair contribution to the visual character and amenity of the local area,- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;- The tree has form atypical of the species;- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ - tree is inappropriate to the site conditions,- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,- The tree has a wound or defect that has potential to become structurally unsound.Environmental Pest / Noxious Weed Species- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,- The tree is a declared noxious weed by legislation.Hazardous/Irreversible Decline- The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.
Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety.

Table 1.0 below shows how to use the significance ratings to provide a value for the Tree Retention Value – Priority Matrix.

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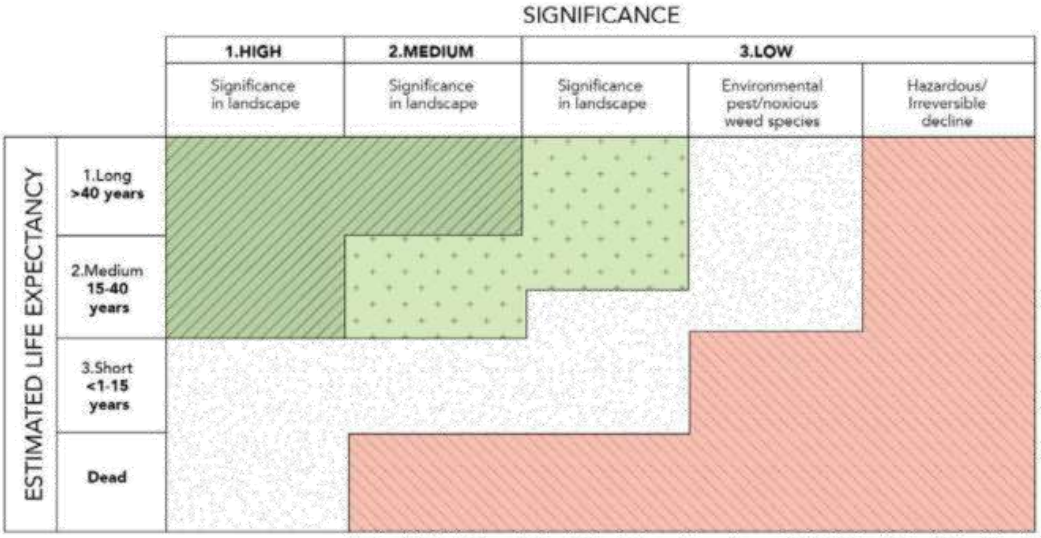
Table 1.0 Tree retention Value- Priority matrix



LEGEND FOR MATRIX ASSESSMENT

	Priority for retention (HIGH) –These trees are considered important for retention and should be retained and protected. Design modification or relocation of building/s should be considered to accomodate the setbacks as prescribed by the Australian Standard AS4970 *Protection of Trees on Development Sites*. Tree sensitive construction measures must be implemented eg. pier and beam etc if works are to proceed within the Tree Protection Zone
	Consider for retention (MEDIUM) – These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been conisdered and exhausted
	Consider for removal (LOW) – These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention
	Priority for removal (LOW) – These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development

REFERENCES:

IACA, Institute of Australian Consulting Arborists

Australia ICOMOS Inc.1999, The Burra Charter – *The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites., www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, IACA, Institute of Australian Consulting Arborists, CSIRO Publishing, Collingwood Victoria, Australia

Footprint Green Pty Ltd, 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon NSW Australia www.footprintgreen.com.au

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13.3. Appendix 3 - IACA, 2010, Sustainable Retention Index Value (SRIV)©

The matrix is to be used with the value classes defined in the Glossary for Age / Vigour / Condition.An index value is given to each category where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	**Good Vigour & Fair Condition (GVF)**	**Good Vigour & Poor Condition (GVP)**	**Low Vigour & Good Condition (LVG)**	**Low Vigour & Fair Condition (LVF)**	**Low Vigour & Poor Condition (LVP)**
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium - Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing env. unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
(Y) Young	**YGVG - 9Index Value 9** Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height Retain, move or replace.	**YGVF - 8 Index Value 8** Retention potential - Short - Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium-high potential for future growth and adaptability. Retain, move or replace.	**YGVP - 5Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Low-medium potential for future growth and adaptability. Retain, move or replace.	**YLVG - 4Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium potential for future growth and adaptability. Retain, move or replace	**YLVF - 3Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	**YLVP - 1Index Value 1** Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height
(M) Mature	**MGVG - 10Index Value 10** Retention potential -Medium - Long Term.	**MGVF - 9Index Value 9** Retention potential - Medium Term. Potential for longer with improved growing conditions.	**MGVP - 6Index Value 6** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVG - 5Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVF - 4Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVP - 2Index Value 2** Retention potential - Likely to be removed immediately or retained for Short Term.

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(O) Over-mature	**OGVG - 6Index Value 6** Retention potential - Medium - Long Term.	**OGVF - 5Index Value 5** Retention potential - Medium Term.	**OGVP - 4Index Value 4** Retention potential - Short Term.	**OLVG - 3Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions.	**OLVF - 2Index Value 2** Retention potential - Short Term.	**OLVP - 0Index Value 0** Retention potential - Likely to be removed immediately or retained for Short Term.

13.4. Appendix 4 – Further Information on Tree Protection Zones from AS4970 2009 (Protection of trees on development sites)

Following extracts and definitions taken from AS-4970-2009:

Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5 in AS4970-2009)."

Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12

Where TPZ = DBH x 12

DBH = trunk diameter measured at 1.4 m above ground (DBH = Diameter at Breast Height)

Radius is measured from the centre of the stem at ground level.

Note: Minimum TPZ size is 2.0m.

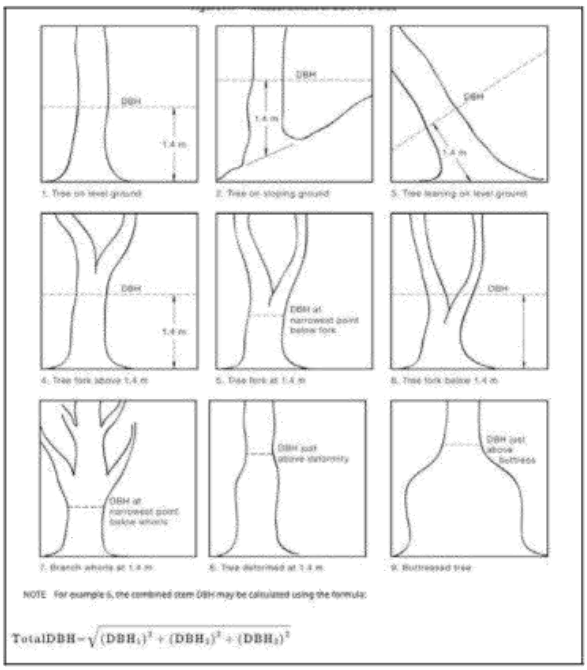

Figure 4 - Examples of DBH measurements on a variety of tree forms - from AS-4970-2009

Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

SRZ radius = (DRC x 50) 0.42 x 0.64

Where

DRC = trunk diameter, in metres, measured above the root crown (DRC = Diameter Above Root Crown)

Note: The SRZ for trees with trunk diameters (DRC) less than 0.15 m will be 1.5 m.

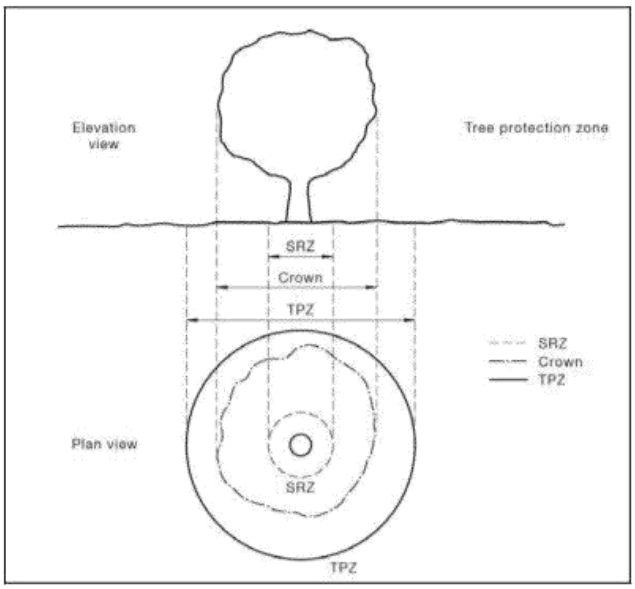

FIGURE 5 - TPZ AND SRZ EXAMPLES FROM AS-4970-2009

Variations to Tree Protection Zones (TPZs) - TPZ Encroachments

It is possible to encroach inside the TPZ radius for development works including root pruning, excavations, compacted fill and machine trenching provided certain conditions are met. There are 2 categories of TPZ encroachments:

1. **Minor TPZ Encroachment** - The proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated elsewhere and continuous with the TPZ. Variations must be made by the project arborist considering the relevant factors listed in Clause 3.3.4 of AS-4970-2009. Figure 6 below shows some examples of minor TPZ encroachment.

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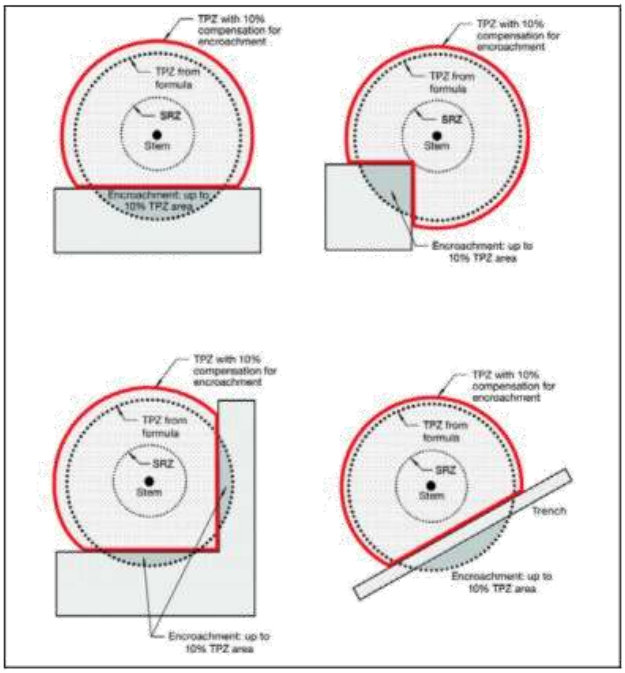

FIGURE 6 - EXAMPLES OF MINOR TPZ ENCROACHMENTS FROM AS-4970-2009

2. **Major TPZ Encroachment** - The proposed encroachment is greater than 10% of the TPZ or inside the SRZ. The project arborist must demonstrate that the tree would remain viable. The area lost to this encroachment should be compensated elsewhere and continuous with the TPZ. This may require root investigation by non-destructive techniques and consideration of relevant factors listed in Clause 3.3.4 of AS-4970-2009. A summary of these factors is listed in section 5.2 above.

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13.5. Appendix 5 - Installation of hard surfaces through Tree Protection Zones

Tree sensitive surface installations need to be installed above the current grade levels and involve no excavations or any root pruning. This is primarily done by using some form of load bearing material that can be installed above the current grade without needing to compact the soil surrounding the existing root system. The materials above will also need to be permeable to allow water infiltration and gaseous exchange for the root system. There are numerous construction and engineering techniques used to achieve this. One of the most popular involves a cellular system that can be filled with large aggregates and then some form of permeable pavement or permeable concrete above. The following figures show a few examples of these tree sensitive hard surface installations.

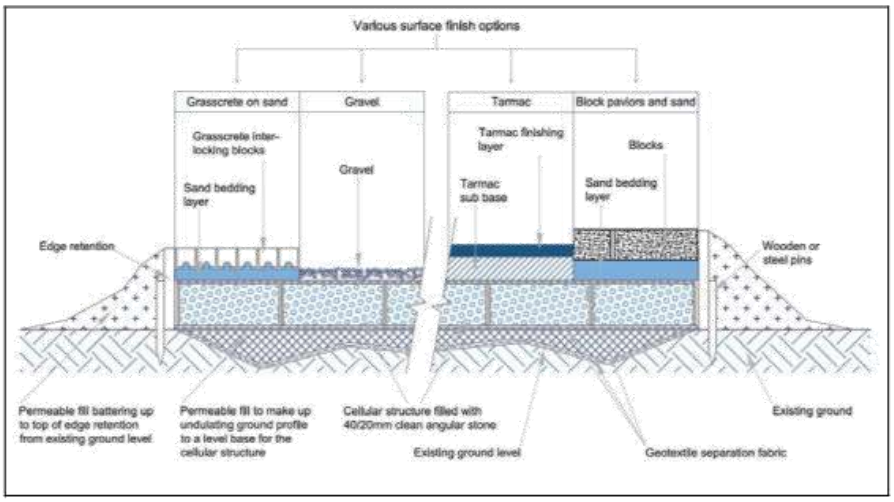

Figure 7 - No dig cellular confinement surfacing with examples of finishing options (Source: Barrel Tree Consultancy 2020)

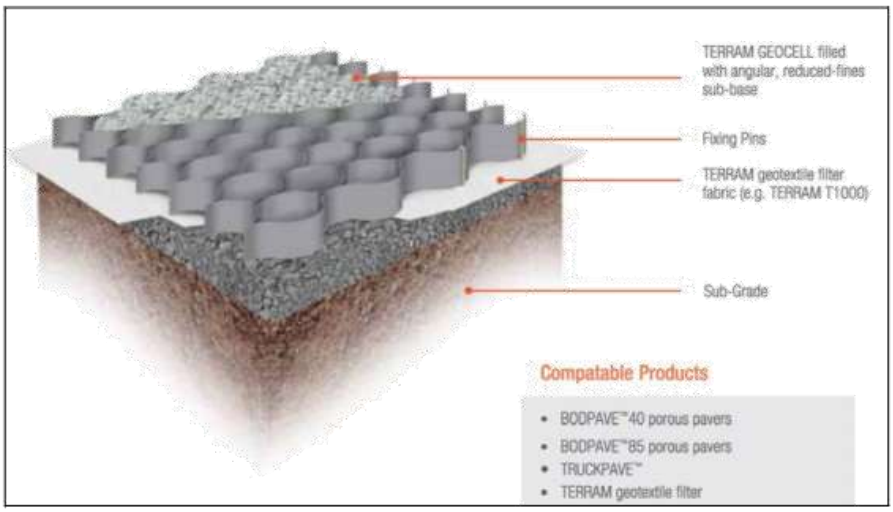

Figure 8 - Terram Geocells - Tree root protection (Source: Terram Geocell 2019)

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13.6. Appendix 6 - Glossary

From Dictionary for Managing Trees in Urban Environments
Institute of Australian Consulting Arboriculturists (IACA) 2009.

Age of Trees

Age Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as Young, Mature and Over-mature (British Standards 1991, p. 13, Harris et al, 2004, p. 262).

Young Tree aged less than <20% of life expectancy, in situ. **Mature** Tree aged 20-80% of life expectancy, in situ.

Over-mature Tree aged greater than >80% of life expectancy, in situ, or senescent with or without reduced vigour, and declining gradually or rapidly but irreversibly to death.

Condition of Trees

Condition A tree's crown form and growth habit, as modified by its environment (aspect, suppression by other trees, soils), the stability and viability of the root plate, trunk and structural branches (including structural defects such as wounds, cavities or hollows, crooked trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with vigour and it is possible for a tree to be of normal vigour but in poor condition. Condition can be categorized as Good Condition, Fair Condition, Poor Condition and Dead.

Good Condition Tree is of good habit, with crown form not severely restricted for space and light, physically free from the adverse effects of predation by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from, or contributed to by vigour.

Fair Condition Tree is of good habit or misshapen, a form not severely restricted for space and light, has some physical indication of decline due to the early effects of predation by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the environment essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from, or contributed to by vigour.

Poor Condition Tree is of good habit or misshapen, a form that may be severely restricted for space and light, exhibits symptoms of advanced and irreversible decline such as fungal, or bacterial infestation, major die-back in the branch and foliage crown, structural deterioration from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local environment that would normally be sufficient to provide for its basic survival if in good to fair condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and predation by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from, or contributed to by vigour.

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Dead Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms;
Processes
Photosynthesis via its foliage crown (as indicated by the presence of moist, green or other coloured leaves);
Osmosis (the ability of the root system to take up water);
Turgidity (the ability of the plant to sustain moisture pressure in its cells);
Epicormic shoots or epicormic strands in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a lignotuber);
Symptoms
Permanent leaf loss;
Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots);
Abscission of the epidermis (bark desiccates and peels off to the beginning of the sapwood).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site, or having been taken away from a site prior to site inspection.

Deadwood

Deadwood Dead branches within a tree's crown have been categorised into 3 categories for the purpose of this report:

Nil – There are no dead branches or they are less than 20mm in diameter so not significant.
Minor – Dead branches are 20-75mm in diameter.
Major – Dead branches are 75mm in diameter and above.

Deadwooding Removing of dead branches by pruning. Such pruning may assist in the prevention of the spread of decay from dieback or for reasons of safety near an identifiable target.

Dieback

Dieback The death of some areas of the crown. Symptoms are leaf drop, bare twigs, dead branches and tree death, respectively. This can be caused by root damage, root disease, bacterial or fungal canker, severe bark damage, intensive grazing by insects, abrupt changes in growth conditions, drought, water-logging or over-maturity. Dieback often implies reduced resistance, stress or decline which may be temporary. Dieback can be categorized as Low Volume Dieback, Medium Volume Dieback and High Volume Dieback.

Low Volume Dieback Where <10% of the crown cover has died. See also Dieback, High Volume Dieback and Medium Volume Dieback.

Medium Volume Dieback Where 10-50% of the crown cover has died.

High Volume Dieback Where >50% of the crown cover has died.

Form of Trees

Crown Form The shape of the crown of a tree as influenced by the availability or restriction of space and light, or other contributing factors within its growing environment. Crown Form may be determined for tree shape and habit generally as Dominant, Codominant, Intermediate, Emergent, Forest and Suppressed. The habit and shape of a crown may also be considered qualitatively and can be categorized as Good Form or Poor Form.

Good Form Tree of typical crown shape and habit with proportions representative of the taxa considering constraints such as origin e.g. indigenous or exotic, but does not appear to have been adversely influenced in its development by environmental factors in situ such as soil water availability, prevailing wind, or cultural practices such as lopping and competition for space and light.

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Poor Form Tree of atypical crown shape and habit with proportions not representative of the species considering constraints and appears to have been adversely influenced in its development by environmental factors in situ such as soil water availability, prevailing wind, cultural practices such as lopping and competition for space and light; causing it to be misshapen or disfigured by disease or vandalism.

Crown Form Codominant Crowns of trees restricted for space and light on one or more sides and receiving light primarily from above e.g. constrained by another tree/s or a building.

Crown Form Dominant Crowns of trees generally not restricted for space and light receiving light from above and all sides.

Crown Form Emergent Crowns of trees restricted for space on most sides receiving most light from above until the upper crown grows to protrude above the canopy in a stand or forest environment. Such trees may be crown form dominant or transitional from crown form intermediate to crown form forest asserting both apical dominance and axillary dominance once free of constraints for space and light.

Crown Form Forest Crowns of trees restricted for space and light except from above forming tall trees with narrow spreading crowns with foliage restricted generally to the top of the tree. The trunk is usually erect, straight and continuous, tapering gradually, crown often excurrent, with first order branches becoming structural, supporting the live crown concentrated towards the top of the tree, and below this point other first order branches arising radially with each inferior and usually temporary, divergent and ranging from horizontal to ascending, often with internodes exaggerated due to competition for space and light in the lower crown.

Crown Form Intermediate Crowns of trees restricted for space on most sides with light primarily from above and on some sides only.

Crown Form Suppressed Crowns of trees generally not restricted for space but restricted for light by being overtopped by other trees and occupying an
understorey position in the canopy and growing slowly.

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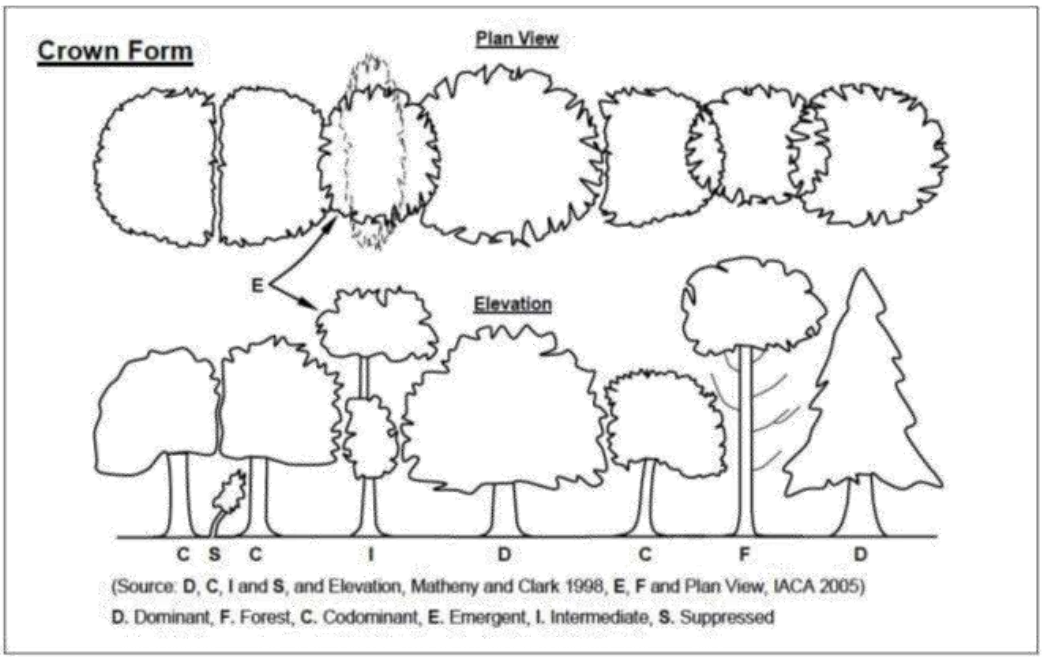

Symmetry Balance within a crown, or root plate, above or below the axis of the trunk of branch and foliage, and root distribution respectively and can be
categorized as Asymmetrical and Symmetrical.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage crown or root plate around the vertical axis of the trunk. This may be due to Crown Form Codominant or Crown From Suppressed as a result of natural restrictions e.g. from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the foliage crown around the vertical axis of the trunk. This usually applies to trees of Crown Form Dominant or Crown Form Forest. An example of an expression of this may be crown symmetrical.

Crown Spread Orientation Direction of the axis of crown spread which can be categorized as Orientation Radial and Orientation Non-radial.

Crown Spread Orientation Non-radial Where the crown extent is longer than it is wide, e.g. east/west or E/W. Further examples, north/south or N/S, and may be Crown Form Codominant, e.g. **A** or **B**, Crown Form Intermediate e.g. **A**, or Crown Form Suppressed e.g. **B**, and crown symmetry is symmetrical e.g. **A**, or asymmetrical e.g. **B**.

Crown Spread Orientation Radial Where the crown spread is generally an even distance in all directions from the trunk and often where a tree has Crown Form Dominant and is symmetrical.

Crown Projection (CP) Area within the dripline or beneath the lateral extent of the crown (Geiger 2004, p. 2). See also Crown spread and Dripline.

Dripline A line formed around the edge of a tree by the lateral extent of the crown. Such a line may be evident on the ground with some trees when exposed soil

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is displaced by rain shed from the crown. See also Crown Projection.

Epicormic Shoots Juvenile shoots produced at branches or trunk from epicormic strands in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be as a result of stress or decline. Epicormic shoots can be categorized as Low Volume Epicormic Shoots, Medium Volume Epicormic Shoots and High Volume Epicormic Shoots.

- **Low Volume Epicormic Shoots** Where <10% of the crown cover is comprised of live epicormic shoots.
- **Medium Volume Epicormic Shoots** Where 10-50% of the crown cover is comprised of live epicormic shoots.
- **High Volume Epicormic Shoots** Where >50% of the crown cover is comprised of live epicormic shoots.

Trunk A single stem extending from the root crown to support or elevate the crown, terminating where it divides into separate stems forming first order branches. A trunk may be evident at or near ground or be absent in acaulescent trees of deliquescent habit, or may be continuous in trees of excurrent habit. The trunk of any caulescent tree can be divided vertically into three (3) sections and can be categorized as Lower Trunk, Mid Trunk and Upper Trunk. For a leaning tree these may be divided evenly into sections of one third along the trunk.

- **Acaulescent** A trunkless tree or tree growth forming a very short trunk. See also Caulescent.

- **Caulescent** Tree grows to form a trunk. See also Acaulescent

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Leaning Trees

Leaning A tree where the trunk grows or moves away from upright. A lean may occur anywhere along the trunk influenced by a number of contributing factors e.g. genetically predetermined characteristics, competition for space or light, prevailing winds, aspect, slope, or other factors. A leaning tree may maintain a static lean or display an increasingly progressive lean over time and may be hazardous and prone to failure and collapse. The degrees of leaning can be categorised as Slightly leaning, Moderately Leaning, Severely leaning and Critically leaning.

Slightly Leaning – A leaning tree where the trunk is growing at an angle within 0-15 degrees from upright.

Moderately leaning - A leaning tree where the trunk is growing at an angle within 15-30 degrees from upright.

Severely Leaning - A leaning tree where the trunk is growing at an angle within 30-45 degrees from upright.

Critically leaning - A leaning tree where the trunk is growing at an angle greater than 45 degrees from upright.

Progressively Leaning – A tree where the degree of leaning appears to increase over time

Static Leaning A leaning tree whose lean appears to have stabilized over time.

Roots

First Order Roots (FOR) Initial woody roots arising from the root crown at the base of the trunk, or as an adventitious root mass for structural support and stability. Woody roots may be buttressed and divided as a marked gradation, gradually tapering and continuous or tapering rapidly at a short distance from the root crown. Depending on soil type these roots may descend initially and not be evident at the root crown, or become buried by changes in soil levels. Trees may develop 4-11 (Perry 1982, pp. 197-221), or more first order roots which may radiate from the trunk with a relatively even distribution, or be prominent on a particular aspect, dependent upon physical characteristics e.g. leaning trunk, asymmetrical crown; and constraints within the growing environment from topography e.g. slope, soil depth, rocky outcrops, exposure to predominant wind, soil moisture, depth of water table etc.

Orders of Roots The marked divisions between woody roots, commencing at the initial division from the base of the trunk, at the root crown where successive branching is generally characterised by a gradual reduction in root diameters and each gradation from the trunk and can be categorized numerically, e.g. first order roots, second order roots, third order roots etc. Roots may not always be evident at the root crown and this may be dependent on species, age class and the growing environment. Palms at maturity may form an adventitious root mass.

Root Plate The entire root system of a tree generally occupying the top 300-600mm of soil including roots at or above ground and may extend laterally for distances exceeding twice the height of the tree (Perry 1982, pp. 197-221). Development and extent is dependent on water availability, soil type, soil depth and the physical characteristics of the surrounding landscape.

Root Crown Roots arising at the base of a trunk.

Zone of Rapid Taper The area in the root plate where the diameter of structural roots reduces substantially over a short distance from the trunk. Considered
to be the minimum radial distance to provide structural support and root plate stability. See also Structural Root Zone (SRZ).

Structural Roots Roots supporting the infrastructure of the root plate providing strength and stability to the tree. Such roots may taper rapidly at short distances from the root crown or become large and woody as with gymnosperms and dicotyledonous angiosperms and are usually 1st and 2nd order roots, or form an adventitious root mass in monocotyledonous angiosperms (palms). Such roots may be crossed and grafted and are usually contained with the area of crown projection or extend just beyond the dripline.

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Significance

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or in situ, or contribution as a component of the overall landscape for amenity or aesthetic qualities, or curtilage to structures, or importance due to uniqueness of taxa for species, subspecies, variety, crown form, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as remnant vegetation, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Sustainable Retention Index Value (SRIV) - A visual tree assessment method to determine a qualitative and numerical rating for the viability of urban trees for development sites and management purposes, based on general tree and landscape assessment criteria using classes of age, condition and vigour. SRIV is for the professional manager of urban trees to consider the tree in situ with an assumed knowledge of the taxon and its growing environment. It is based on the physical attributes of the tree and its response to its environment considering its position in a matrix for age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property. This also factors the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. SRIV is supplementary to the decision made by a tree management professional as to whether a tree is retained or removed (IACA - Institute of Australian Consulting Arboriculturists 2005).

Vigour

Vigour - Ability of a tree to sustain its life processes. This is independent of the condition of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g. dormant, deciduous or semi-deciduous trees. Vigour can be categorized as Normal Vigour, High Vigour, Low Vigour and Dormant Tree Vigour.

Good Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the typical growth of leaves, crown cover and crown density, branches, roots and trunk and resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour Accelerated growth of a tree due to incidental or deliberate artificial changes to its growing environment that are seemingly beneficial, but may result in premature aging or failure if the favourable conditions cease, or promote prolonged senescence if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous pollarding practices over the life of the tree.

Low Vigour Reduced ability of a tree to sustain its life processes. This may be evident by the atypical growth of leaves, reduced crown cover and reduced crown density, branches, roots and trunk, and a deterioration of their functions with reduced resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

Dormant Tree Vigour Determined by existing turgidity in lowest order branches in the outer extremity of the crown, with good bud set and formation, and where the last extension growth is distinct from those most recently preceding it, evident by bud scale scars. Normal vigour during dormancy is achieved when such growth is evident on a majority of branches throughout the crown.

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Acoustics
Vibration
Structural Dynamics

PROPOSED CHILDCARE CENTRE AT 123 EPSOM ROAD, CHIPPING NORTON

Noise Impact Assessment

3 November 2023

Artmade Architects

TN427-01F02 Noise impact assessment (r2)

40 YEARS
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We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

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1 Introduction

The purpose of this report is to present the results, findings and recommendations of an acoustic assessment with respect to the proposed Childcare Centre at 123 Epsom Road, Chipping Norton.

The proposal involves demolishing the existing dwelling at the subject site for the construction of a 120-place Childcare Centre.

The noise impact assessment forms part of the DA submission and has been prepared in line with the Liverpool Development Control Plan 2008. The assessment considers:

- Noise emission from the operation of the proposed Childcare Centre
- Noise intrusion from the surrounding environment onto the proposed Childcare Centre

The works documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. APPENDIX A contains a glossary of acoustic terms used in this report.

2 Project description

The site of the proposed Childcare Centre is 123 Epsom Road, Chipping Norton which is in the south-western corner of the roundabout intersection of Epsom Road and Governor Macquarie Drive. The site currently has a two-storey residential dwelling.

To the south of site is the residential villa development of 123 Epsom Road, Chipping Norton which has multiple two-storey dwellings. This premises has three residential buildings along the northern boundary (ie. adjacent to the Childcare Centre site).

To the south-west and west of the site are the residential premises of 5 Swindon Place and 6 Swindon Place which have two-storey and single-storey dwellings respectively.

Epsom Road is a local road. Governor Macquarie Drive is classified as a regional road which carries a significant volume of traffic throughout the day and dominates the acoustic environment of the area.

The architectural drawings of the proposed Childcare Centre prepared by Artmade Architects (project no. 23701, issue A, dated 27/10/2023) identify that the project involves the demolition of the existing dwelling at the site for the construction of a single-storey Childcare Centre with five outdoor play areas on the ground floor level and a basement level carpark.

The Childcare Centre is proposed to have a total capacity of 120 children with the following age distribution:

- 0-2 years: 20 children
- 2-3 years: 40 children
- 3-5 years: 60 children

2.1 Assessment locations

The surrounding receivers that have been assessed are set out in Table 2-1 and Figure 1.

Table 2-1: Residential assessment locations

Receiver address	ID	Assessment location
125 Epsom Road, Chipping Norton	R1	North-eastern villa building - front yard (ground level)
	R2	North-eastern villa building - eastern facade window (first floor level)
	R3	North-eastern villa building - western facade window (first floor level)
	R4	Northern villa building - eastern facade window (first floor level)
	R5	Northern villa building - western facade window (first floor level)
	R6	Driveway (ground level) between northern and north-western villa building
	R7	North-western villa building – eastern facade balcony (first floor level)
	R8	North-western villa building – western facade window (first floor level)

Receiver address	ID	Assessment location
	R9	North-western villa building – rear yard (ground level)
5 Swindon Place, Chipping Norton	R10	Rear yard (ground level)
	R11	Eastern facade balcony (first floor level)
6 Swindon Place , Chipping Norton	R12	Rear yard (ground level)

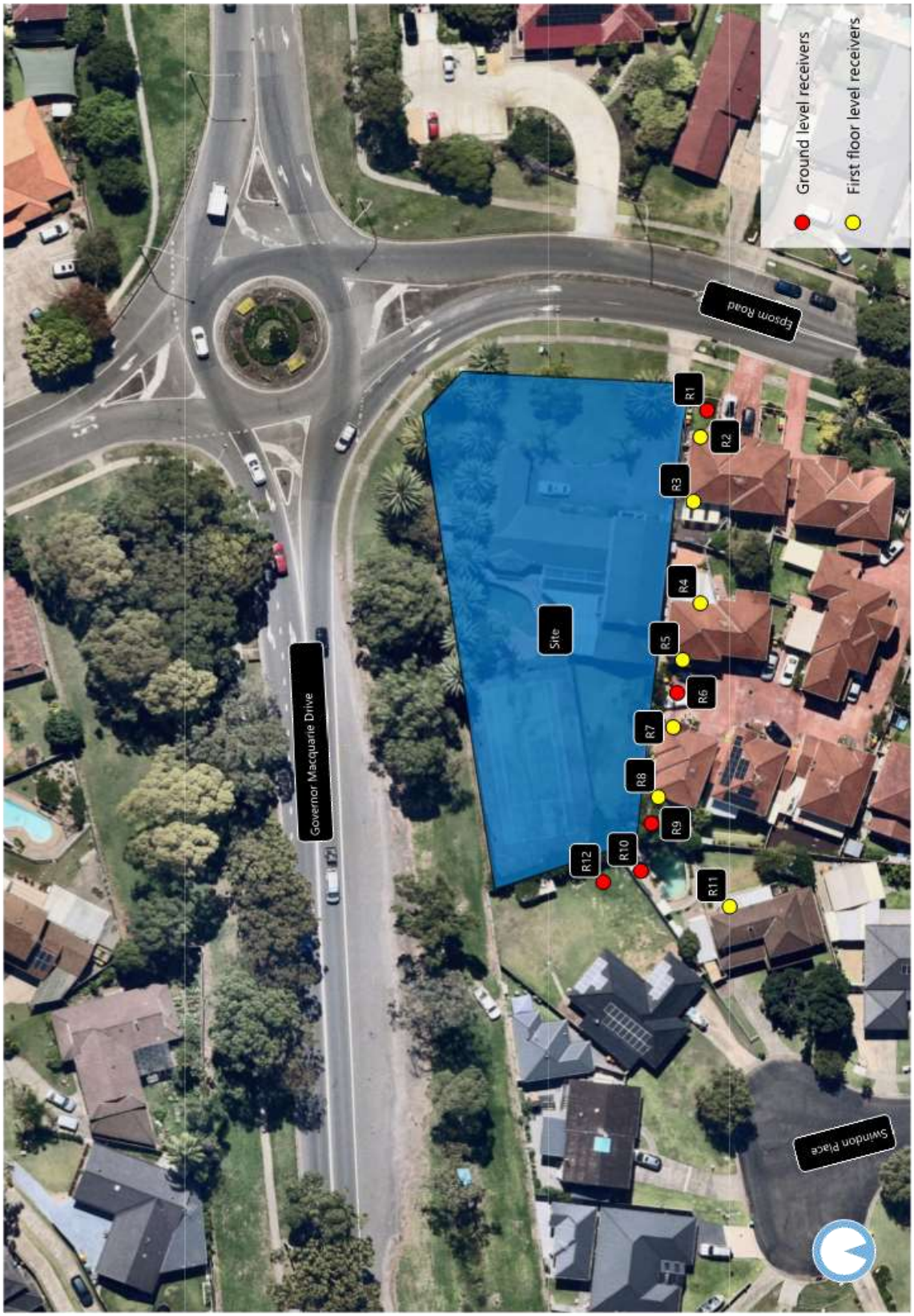


Figure 1: Site and assessment locations

3 Existing noise environment

Criteria for the assessment of operational noise are usually derived from the existing noise environment of an area, excluding noise from the subject development.

Fact Sheet B of the NSW EPA *Noise Policy for Industry* (NPfI) outlines two methods for determining the background noise level of an area, being 'B1 – Determining background noise using long-term noise measurements' and 'B2 – Determining background noise using short-term noise measurements'. This assessment has used the long-term noise monitoring methodology.

As the noise environment of an area almost always varies over time, background and ambient noise levels need to be determined for the operational times of the proposed development. For example, in a suburban or urban area the noise environment is typically at its minimum at 3am in the morning and at its maximum during the morning and afternoon traffic peak hours. The NPfI outlines the following standard time periods over which the background and ambient noise levels are to be determined:

- Day: 07:00-18:00 Monday to Saturday, and 08:00-18:00 Sundays & public holidays
- Evening: 18:00-22:00 Monday to Sunday & public holidays
- Night: 22:00-07:00 Monday to Saturday, and 22:00-08:00 Sundays & public holidays

3.1 Noise measurement locations

Noise measurements are ideally carried out at the nearest or most potentially affected locations surrounding a development. An alternative, representative location should be established in the case of access restrictions or a safe and secure location cannot be identified. Furthermore, representative locations may be established in the case of multiple receivers as it is usually impractical to carry out measurements at all locations surrounding a site.

The long-term measurement locations are outlined in Table 3-1 and shown in Figure 2.

Table 3-1: Noise monitoring locations

ID	Address	Description
L1	123 Epsom Road, Chipping Norton (front yard – ground level)	The monitor was in a free-field location in the front yard of the proposed Childcare Centre site. The monitor had a direct line-of-sight to the vehicles on Epsom Road and a limited field-of-view to the vehicles on Governor Macquarie Drive. The acoustic environment at Location L1 was dominated by traffic noise from Governor Macquarie Drive, with a slight contribution from individual vehicle movements along Epsom Road. The noise monitoring location is considered representative of Receivers R1 and R2 which have a similar exposure to Epsom Road and Governor Macquarie Drive.

ID	Address	Description
L2a	123 Epsom Road, Chipping Norton (rear yard – ground level)	The monitor was in a free-field location in the rear yard of the proposed Childcare Centre site. The monitor was subject to acoustic shielding of the traffic noise from Epsom Road by the existing two-storey dwelling at the site, and from Governor Macquarie Drive by the existing Colorbond fence (approximately 1.8m high) along the northern boundary of the site. The acoustic environment at Location L2a was dominated by traffic noise from Governor Macquarie Drive. The noise monitoring location is considered representative of Receivers R6, R9, R10 and R12 which are at ground level and are a similarly shielded from the noise of traffic on Governor Macquarie Drive by intervening fences, buildings, etc.
L2b	123 Epsom Road, Chipping Norton (rear yard – first floor level)	The monitor was in a free-field location in the rear yard of the proposed Childcare Centre site. An extension pole was used to position the microphone at a first floor level elevation. The monitor was subject to acoustic shielding of the traffic noise from Epsom Road by the existing two-storey dwelling at the site, but had a direct line-of-sight over the boundary fence to the vehicles on Governor Macquarie Drive. The acoustic environment at Location L2b was dominated by traffic noise from Governor Macquarie Drive. The noise monitoring location is considered representative of Receivers R3, R4, R5, R7, R8 and R11 which are at first floor level and have a similar exposure to the noise of traffic on Governor Macquarie Drive.

Figure 2: Noise monitoring locations

3.2 Long-term noise monitoring results

Long-term noise monitoring was carried out from Monday, 24 July 2023 to Wednesday, 2 August 2023. The long-term noise monitoring methodology is detailed in APPENDIX B, and noise level-vs-time graphs of the data are included in APPENDIX C.

Table 3-2 presents the overall single Rating Background Levels (RBL) and representative ambient L_{eq} noise levels for each assessment period, determined in accordance with the NPfI.

Table 3-2: Long-term noise monitoring results, dB(A)

Monitoring location	L_{A90} Rating Background Level (RBL)			L_{Aeq} ambient noise levels		
	Day	Evening	Night	Day	Evening	Night
L1 – 123 Epsom Road, Chipping Norton (front yard – ground level)	51	47	37	59	57	53
L2a – 123 Epsom Road, Chipping Norton (rear yard – ground level)	52	48	41	60	57	54
L2b – 123 Epsom Road, Chipping Norton (rear yard – first floor level)	56	50	42	62	61	57

Day: 07:00-18:00 Monday to Saturday, and 08:00-18:00 Sundays & public holidays

Evening: 18:00-22:00 Monday to Sunday & public holidays

Night: 22:00-07:00 Monday to Saturday, and 22:00-08:00 Sundays & public holidays

As required by the NPfI, the external ambient noise levels presented are free-field noise levels (ie. no facade reflection)

4 Noise criteria

4.1 Childcare SEPP

Planning NSW introduced the *Transport and Infrastructure SEPP* in 2021 as part of the department's consolidation of state environmental planning policies. Chapter 3 of the SEPP titled *Educational establishments and child care facilities* aims to facilitate the effective delivery of educational establishments and early education and care facilities across the State.

Clause 3.23 of the SEPP specifies the following:

3.23 Centre-based child care facility—matters for consideration by consent authorities

Before determining a development application for development for the purpose of a centre-based child care facility, the consent authority must take into consideration any applicable provisions of the Child Care Planning Guideline, in relation to the proposed development.

Therefore, the consent authority must take into consideration the provisions contained in the Child Care Planning Guideline, which are presented in Section 4.2.

4.2 Childcare Guideline

Planning NSW has provided a Child Care Planning Guideline to provide a consistent state-wide planning and design framework for preparing and considering development applications for centre-based childcare facilities.

Part 3 of the Child Care Planning Guideline specifies that the following matters be taken into consideration while designing childcare centres in NSW:

- Acoustic fencing to shield the facility from traffic noise on classified roads (C10)
- Orienting the building to minimise potential noise on neighbours (C11)
- Minimise noise impact on neighbours by providing acoustic fencing and screens (C22)
- Provide an acoustic report which contains noise criteria, background noise levels, height of acoustic fences (C23)
- Ensure outside and inside noise levels within the childcare are acceptable (C24)
- Acoustic report for sites near industry or busy roads, rail and near airports (C25)

C23 states that the acoustic report must establish noise criteria for operational noise generated by a childcare centre. These operational noise limits for childcare centres are established in Section 4.4.

4.3 Council DCP

Clause 3.27(d)(ii) of the SEPP clarifies that existing DCP's that specify a requirement, standard or control relating to any matter for consideration set out in Part 3 of the Child Care Planning Guideline do not apply.

4.4 AAAC Guideline

The Association of Australian Acoustical Consultants (AAAC) has issued a Guideline for Child Care Centre Acoustic Assessment (version 3.0 dated September 2020, the 'AAAC Guideline'). The AAAC Guideline contains suggested limits for residential receptors when assessing noise from a childcare centre.

4.4.1 Noise from outdoor play areas

The AAAC Guideline recommends the following limits for outdoor play areas.

Base Criteria *– With the development of child care centres in residential areas, the background noise level within these areas can at certain times, be low. Thus, a base criterion of a contributed Leq,15min 45 dB(A) for the assessment of outdoor play is recommended in locations where the background noise level is less than 40 dB(A).*

Background Greater Than 40 dB(A) *– The contributed Leq,15min noise level emitted from an outdoor play and internal activity areas shall not exceed the background noise level by more than 5 or 10 dB at the assessment location, depending on the usage of the outdoor play area. AAAC members regard that a total time limit of approximately 2 hours outdoor play per morning and afternoon period should allow an emergence above the background of 10 dB (ie background +10 dB if outdoor play is limited to 2 hours in the morning and 2 hours in the afternoon).*

Up to 4 hours (total) per day *– If outdoor play is limited to no more than 2 hours in the morning and 2 hours in the afternoon, the contributed Leq,15 minute noise level emitted from the outdoor play shall not exceed the background noise level by more than 10 dB at the assessment location.*

More than 4 hours (total) per day *– If outdoor play is not limited to no more than 2 hours in the morning and 2 hours in the afternoon, the contributed Leq,15 minute noise level emitted from the outdoor play area shall not exceed the background noise level by more than 5 dB at the assessment location.*

Table 4-1 displays the outdoor play noise goal for the surrounding residences based on the measured daytime background noise levels and unrestricted times of outdoor play.

Table 4-1: Operational noise criteria, outdoor play areas

Affected receivers	Representative noise monitoring location	Operational criteria
R1 and R2	Location L1	51 + 5 = 56 dB(A)
R6, R9, R10 and R12	Location L2a	52 + 5 = 57 dB(A)
R3, R4, R5, R7, R8 and R11	Location L2b	56 + 5 = 61dB(A)

4.4.2 Noise from sources other than outdoor play

The AAAC Guideline recommends the following limits for noise sources on the site, excluding outdoor play areas.

The cumulative $L_{eq,15\ minute}$ noise emission level resulting from the use and operation of the child care centre, with the exception of noise emission from outdoor play discussed above, shall not exceed the background noise level by more than 5 dB at the assessment location... This includes the noise emission resulting from:

- *Indoor play;*
- *Mechanical plant;*
- *Drop off and pick up;*
- *Other activities/operations (not including outdoor play).*

Table 4-2 displays the noise goal for the surrounding residences based on the measured daytime background noise levels.

Table 4-2: Operational noise criteria, other noise sources

Affected receivers	Representative noise monitoring location	Operational criteria
R1 and R2	Location L1	51 + 5 = 56 dB(A)
R6, R9, R10 and R12	Location L2a	52 + 5 = 57 dB(A)
R3, R4, R5, R7, R8 and R11	Location L2b	56 + 5 = 61dB(A)

4.4.3 Noise impact upon children

With respect to the intrusion of external noise sources into the Childcare Centre, the AAAC Guideline identifies the following noise criteria:

The $L_{Aeq,1hr}$ noise level from road traffic, rail or industry at any location within the outdoor play or activity area during the hours when the Centre is operating should not exceed 55 dB(A).

The $L_{Aeq,1hr}$ noise level from road traffic, rail or industry at any location within the indoor activity or sleeping areas of the Centre during the hours when the centre is operating shall be capable (ie with doors and / or windows closed) of achieving 40 dB(A) within indoor activity areas and 35 dB(A) in sleeping areas.

4.4.4 Additional traffic generated by Childcare development

The NSW EPA's *Road noise for Policy* (RNP) provides road traffic noise assessment criteria with respect to potential noise impacts from the additional traffic that the Childcare Centre development will generate on the surrounding road network to existing land uses.

For the daytime period, Table 3 of the RNP provides the following road traffic noise criteria for existing residences affected by additional traffic on existing roads generated by land-use developments:

- Local roads: $L_{Aeq,1\ hour}$ 55dB(A)
- Freeway, arterial or sub-arterial roads: $L_{Aeq,15\ hours}$ 60dB(A)

It is noted that the above criteria are facade corrected levels that are assessed external to residential buildings.

Vehicles enter/exit the basement level carpark of the Childcare Centre via a driveway ramp from Epsom Road which falls under the classification of a local road. However, the traffic noise at residential receivers surrounding the Childcare Centre is dominated by Governor Macquarie Drive which is classified as a regional/sub-arterial road. Therefore, this assessment of the additional traffic generated by the Childcare Centre development on Epsom Road has been undertaken with respect to the $L_{Aeq,15\ hours}$ 60dB(A) noise criterion.

If the existing traffic noise already exceeds the above targets, the RNP states that:

*For existing residences and other sensitive land uses affected by **additional traffic on existing roads generated by land use developments**, an increase in the total traffic noise level should be limited to 2dB above that of the corresponding 'no build option'.*

5 Operational noise assessment

5.1 Noise sources

5.1.1 Outdoor play areas

As previously stated, the Childcare Centre will cater for up to 120 children in total comprising:

- 0-2 years: 20 children
- 2-3 years: 40 children
- 3-5 years: 60 children

The sound power levels recommended in the 'Association of Australasian Acoustical Consultants (AAAC) Guideline for Child Care Acoustic Assessment (2020)' ('**AAAC Guideline**') have been used in the noise calculations for the outdoor play areas. Table 1 of the AAAC Guideline provide octave band sound power levels for different age groups of children playing (reproduced in Table 5-1).

It is noted that for children conducting passive play, the AAAC Guideline recommends an adjustment of -6dB to the sound power levels.

Table 5-1: Effective sound power levels ($L_{Aeq,15min}$) for groups of 10 children playing

Number and age of children	Sound power levels (dB)								
	dB(A)	Octave band centre frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10 children – 0-2 years	78	54	60	66	72	74	71	67	64
10 children – 2-3 years	85	61	67	73	79	81	78	74	70
10 children – 3-5 years	87	64	70	75	81	83	80	76	72

Notes: If applicable, an adjustment to the above sound power levels of -6 dB could be applied in each age group for children involved in passive play

By way of explanation, the "sound power level" is not the same as the "sound pressure level". The "sound power level" is the source emission strength analogous to the wattage of a light bulb (a higher wattage producing a higher light intensity at any distance). Having established the sound power level of children at play, the sound pressure level then decreases with distance and is further reduced by interposed acoustic barriers.

The Childcare Centre will have five outdoor play areas. The ground floor plan (sheet no. DA03.02) identifies the age group and maximum number of children assigned to each outdoor play area.

To satisfy the AAAC Guideline's noise criterion of background +5dB(A) for outdoor play, this assessment considers the Childcare Centre to operate with all children conducting active outdoor play simultaneously as a worst-case scenario. The sound power levels presented in Table 5-1 are scaled to

take into consideration the maximum number of children in the outdoor play areas to enable prediction of the noise levels to receiver locations. Table 5-2 shows the sound power levels used in the calculations when converted for the appropriate number of children in each outdoor play area.

The noise sources of the children have a height of 1m (in accordance with the assessment procedure set out in the AAAC Guideline) with respect to the floor level of the outdoor play areas.

Table 5-2: $L_{Aeq,15min}$ sound power level of children playing outside

Number and age of children	Sound power levels (dB)								
	dB(A)	Octave band centre frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
Outdoor Play 1 12 children (0-2 years)	79	55	61	67	73	75	72	68	65
Outdoor Play 2 15 children (3-5 years)	89	66	72	77	83	85	82	78	74
Outdoor Play 3 35 children (2-3 years) and 40 children (3-5 years)	95	72	78	83	89	91	88	84	80
Outdoor Play 4 8 children (0-2 years)	77	53	59	65	71	73	70	66	63
Outdoor Play 5 5 children (2-3 years) and 5 children (3-5 years)	86	63	69	74	80	82	79	75	71

5.1.2 Vehicle movements on site

The proposed Childcare Centre will have a basement level carpark which is accessed from Epsom Park Road via a driveway ramp. The carpark will be used by staff, as well as parents and visitors.

Due to the carpark being underground and enclosed, the noise emission of activities within the carpark (such as door closures, engine starts and vehicle movements) will be significantly below the ambient background level at the nearest receivers. The use of the driveway ramp to enter/exit the basement level carpark is the vehicle noise source on the Childcare Centre site that is most likely to impact the nearest receivers.

To assess the acoustic impact of vehicle movements on the Childcare Centre site to the nearest receivers, the $L_{Aeq,15min}$ noise levels were determined based on the number of vehicle movements expected to occur on the driveway. Results of the sound power level measurements from our database and library files have been used for the purpose of this assessment.

The sound power levels of the carpark activities which are anticipated to impact the nearest receivers are shown in Table 5-3.

Table 5-3: Sound power level of carpark activities

Activity	Sound power level, dB(A)
Vehicle moving down driveway ramp at 10km/h	79
Vehicle moving up driveway ramp at 10km/h	83

The number of vehicle movements on the driveway ramp was based on the traffic generation estimated by The Transport Planning Partnership (report reference: 22539, version: V02, dated: 28 September 2023). The provided data predicts the peak number of vehicle movements will occur during the morning from parents dropping off children. Section 4.1 of the traffic report predicts that the Childcare Centre will generate 96 trips (48 in / 48 out) during the morning peak hour.

5.1.3 Mechanical plant

At the development application stage, the specific location and selection of mechanical plant are yet to be finalised. Normally, the design and identification of mechanical plant associated with the proposed development and controls (if required) to comply with acoustic criteria occur at the Construction Certificate stage. Therefore, noise emission from mechanical plant sources have been assessed in a general manner in the following sections of this report.

5.2 Predicted noise levels

Noise emissions were predicted by modelling the noise sources, receiver locations, topographical features of the site/immediate surrounding area and noise control treatments using the Cadna-A noise modelling computer program (version 2023). The modelling program calculates the contribution of each noise source at each specified receiver point and allows for the prediction of the total noise from a site.

The noise prediction model takes into account the topography of the area, attenuation due to distance, acoustic reflections and shielding from intervening structures (barriers, buildings, awnings, etc.).

To comply with the noise emission criteria and traffic noise intrusion criteria set out in Section 4.4, the following physical noise mitigation measures have been developed in consultation with the architect:

- The southern and western boundaries of the site have a 1.8m high barrier constructed from Colorbond.
- Outdoor Play Areas 1, 4 and 5 have barriers set in from the site boundary which have a height of 1.8m above the ground floor level of the Childcare Centre building (RL 11.5 + 1.8 = 13.3m). The barriers are constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).
- The barrier along the northern side of Outdoor Play Area 2 is to have a height of 2.5m, primarily to shield the children in the outdoor play area from the intrusion of road traffic noise. The barrier is to be constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).

- The barrier along the northern side of Outdoor Play Area 3 is to have a height of 2.6m above the retaining wall (RL 10.97 + 2.6 = 13.57 m). The barrier is to be constructed as a metal slat fence with Perspex backing (minimum 12mm thickness).

The ground floor plan and external elevation drawings (sheet no. DA03.02 and DA04.01) provide illustrations of the proposed barriers.

5.2.1 Outdoor play areas

Predicted noise levels for the outdoor play areas are based on the sound power levels for the worst-case scenario of all children conducting active outdoor play simultaneously (set out in Section 5.1.1).

Taking into consideration the barrier attenuation effects of the proposed physical mitigation measures detailed in Section 5.2, Table 5-4 presents the predicted noise levels from children playing in the outdoor play areas impacting upon the nearby residential receiver locations.

The results presented in Table 5-4 reveal noise emission from the outdoor play areas (with the proposed physical mitigation measures). Due to the relatively high background noise levels of the area and strategic layout of the Childcare Centre development (which places the largest outdoor play area away from the adjacent residential receivers with the buildings of the Childcare Centre providing acoustic shielding), the noise emission of outdoor play is predicted to comply with the AAAC Guideline criteria at all receiver locations.

Table 5-4: Predicted $L_{Aeq,15min}$ noise level from outdoor play, dB(A)

Receiver			Noise criteria	Predicted noise level	Compliance?
Address	ID	Location			
125 Epsom Road, Chipping Norton	R1	North-eastern villa building - front yard (ground level)	56	41	Yes
	R2	North-eastern villa building - eastern facade window (first floor level)	56	35	Yes
	R3	North-eastern villa building - western facade window (first floor level)	61	53	Yes
	R4	Northern villa building - eastern facade window (first floor level)	61	46	Yes
	R5	Northern villa building - western facade window (first floor level)	61	56	Yes
	R6	Driveway (ground level) between northern and north-western villa building	57	45	Yes
	R7	North-western villa building – eastern facade balcony (first floor level)	61	57	Yes
	R8	North-western villa building – western facade window (first floor level)	61	57	Yes
	R9	North-western villa building – rear yard (ground level)	57	45	Yes
5 Swindon Place, Chipping Norton	R10	Rear yard (ground level)	57	45	Yes
	R11	Eastern facade balcony (first floor level)	61	52	Yes

Receiver			Noise criteria	Predicted noise level	Compliance?
Address	ID	Location			
6 Swindon Place , Chipping Norton	R12	Rear yard (ground level)	57	46	Yes

5.2.2 Vehicle movements on site

Noise levels from carpark vehicle activities have been calculated to the nominated receiver points. The calculated $L_{Aeq,15\ minute}$ noise levels presented in Table 5-5 are based on the predicted peak traffic generation of 96 trips (48 in / 48 out) in a one-hour period during the morning drop-off of children.

The results presented in Table 5-5 reveal the noise emission of vehicle movements on the driveway ramp to comply with the AAAC Guideline noise criteria at all receiver locations. Therefore, no further noise mitigation measures are required to reduce noise from carpark activities.

Table 5-5: Predicted $L_{Aeq,15min}$ noise level from carpark activities, dB(A)

Receiver			Noise criteria	Predicted noise level	Compliance?
Address	ID	Location			
125 Epsom Road, Chipping Norton	R1	North-eastern villa building - front yard (ground level)	56	35	Yes
	R2	North-eastern villa building - eastern facade window (first floor level)	56	41	Yes
	R3	North-eastern villa building - western facade window (first floor level)	61	32	Yes
	R4	Northern villa building - eastern facade window (first floor level)	61	31	Yes
	R5	Northern villa building - western facade window (first floor level)	61	<20	Yes
	R6	Driveway (ground level) between northern and north-western villa building	57	<20	Yes
	R7	North-western villa building – eastern facade balcony (first floor level)	61	<20	Yes
	R8	North-western villa building – western facade window (first floor level)	61	<20	Yes
	R9	North-western villa building – rear yard (ground level)	57	<20	Yes
5 Swindon Place, Chipping Norton	R10	Rear yard (ground level)	57	<20	Yes
	R11	Eastern facade balcony (first floor level)	61	<20	Yes
6 Swindon Place , Chipping Norton	R12	Rear yard (ground level)	57	<20	Yes

5.2.3 Noise from indoor play areas

To minimise any potential impacts of noise emission from the indoor play areas to the surrounding receivers, the Plan of Management document for the Childcare Centre shall require all external doors

and windows of a playroom to be closed when noisy activities (such as singing, dancing, active recreation, etc.) are occurring in the playrooms.

5.2.4 Mechanical plant

The ground floor plan (drawing no. DA03.02) identifies a proposed location for mechanical plant along the western boundary of the Childcare Centre site.

Although the specific selection of mechanical plant has not been finalised at the present stage, a preliminary assessment of mechanical plant noise has been carried out using the typical mechanical plant sound power levels set out in the AAAC Guideline. The preliminary assessment has considered the noise emission of one medium-sized air conditioning unit in the proposed plant location with a sound power level of 70dB(A). The noise emission from the proposed plant location has been assessed to the adjoining residential receiver location in the rear yard of 6 Swindon Place (Location R12).

Taking into consideration distance attenuation and shielding effects by the western boundary fence, noise emission from the proposed plant location is calculated to be 42dB(A) at Location R12 which is well below the daytime RBL and satisfies the background +5dB(A) noise design target without any additional noise mitigation measures. However, if the final design of mechanical plant has a greater number of plant items and/or mechanical plant with higher noise source levels, then the mechanical plant may require noise mitigation measures. Examples of common methods to control mechanical plant noise that could be implemented (if required) are listed below:

- Procurement of mechanical plant items that have low noise source levels;
- Positioning plant items away from noise sensitive receivers to maximise distance attenuation;
- Installing commercially available silencers/attenuators to the air discharge and air intakes of plant items;
- Lag ductwork and/or line ductwork with acoustically absorptive material; and/or
- Install acoustic screens or enclosures around plant items to acoustically shield the surrounding noise sensitive receivers from mechanical plant noise.

A detailed design of the mechanical plant is to be conducted at the Construction Certificate stage which considers the sound power levels of the selected mechanical plant, the specific location of plant items and any further noise controls (if required) to satisfy the relevant noise criteria.

6 Traffic noise impacts on Childcare Centre

6.1 Outdoor play areas

With respect to traffic noise at the site intruding into the outdoor play areas of the Childcare Centre, the AAAC Guideline identifies an $L_{Aeq,1hr}$ noise level target of 55dB(A).

The long-term monitoring in the rear yard of the Childcare Centre site (Location L2a) revealed the $L_{Aeq,1hr}$ traffic noise level from Governor Macquarie Drive is 60dB(A). It is noted that Location L2a is at ground elevation and subject to acoustic shielding of the Governor Macquarie Drive traffic noise by the existing Colorbond fence (approximately 1.8m high) along the northern boundary of the Childcare Centre site.

The design of the Childcare Centre development removes the existing fence along the northern site boundary but incorporates 2.5m and 2.6m high acoustic barriers along the northern side of Outdoor Play Areas 2 and 3 respectively (as described in Section 5.2). Taking into consideration the acoustic shielding provided by the proposed barriers, the $L_{Aeq,1hr}$ traffic noise levels in the outdoor play areas are predicted to comply with the 55dB(A) noise target.

6.2 Indoor areas

With respect to the traffic noise at the site intruding into the indoor areas of the Childcare Centre, the AAAC Guideline identifies internal $L_{Aeq,1hr}$ noise targets of 40dB(A) for indoor play areas and 35dB(A) for sleeping areas.

In general, the external windows on the northern facade of Playroom 4, 5 and 6 are exposed to the noise of traffic on Governor Macquarie Drive and have higher acoustic performance requirements than other Playroom doors/windows that are shielded from the noise of traffic by the Childcare Centre building and/or acoustic barriers.

Table 6-1 provides a summary of the noise mitigation measures that are required to satisfy the internal traffic noise level targets.

Table 6-1: Noise mitigation measures for internal areas

Indoor area	Orientation	Minimum Rw	Construction
Playroom 3	Northern facade	24	4mm monolithic glass with standard weather seals
Playroom 4	Northern facade	35	10.38mm laminated glass with full perimeter acoustic seals
	Eastern facade	27	6mm monolithic glass with full perimeter acoustic seals
	Western facade	27	6mm monolithic glass with full perimeter acoustic seals
Playroom 5	Northern facade	35	10.38mm laminated glass with full perimeter acoustic seals
Playroom 6	Northern facade	35	10.38mm laminated glass with full perimeter acoustic seals
	Eastern facade	27	6mm monolithic glass with full perimeter acoustic seals

APPENDIX D provides an extract of the ground floor level plan drawing with markups to illustrate the proposed glazing requirements.

7 Road traffic noise assessment

Potential noise impacts from the additional traffic generated by the Childcare Centre development on the existing road network has been assessed with respect to the RNP which provides criteria for different road types and land uses.

Section 2.2 of the traffic report identifies Governor Macquarie Drive to be a classified regional road which connects Newbridge Road to the south and the Hume Highway to the north, while Epsom Road is a local road.

The long-term noise monitoring at Location L1 (front yard of Childcare Centre site) reveals an ambient daytime L_{Aeq} noise level of 61dB(A) (facade corrected) from the traffic on Governor Macquarie Drive and Epsom Road.

As the existing traffic noise already exceeds the RNP noise targets for arterial and local roads, the traffic noise associated with the Childcare Centre development should not give rise to more than 2dB increase above the existing traffic noise level.

APPENDIX E presents extracts of Figures 2.3 and 2.4 from the traffic report which present the results of traffic counts at the Governor Macquarie Drive and Epsom Road intersection during the AM and PM peak periods. Extracts of Figures 5.1 and 5.2 from the traffic report have also been included in APPENDIX E which present the vehicle trips generated by the Childcare Centre development and the distribution of those vehicle trips on the surrounding road network.

The traffic data predicts the development of the Childcare Centre will result in a traffic volume increase of up to 9% on Epsom Road (between the Childcare Centre driveway and Governor Macquarie Drive), with other sections of the public road network experiencing smaller increase in traffic volume.

The projected increase in traffic volume (as a result of the Childcare Centre development) will give rise to a negligible increase of up to 0.4dB to the existing traffic noise levels. The increase in traffic noise levels is significantly less than the 2dB increase accepted by the EPA (in their RNP document) and is not envisaged to be perceptible at the nearest noise sensitive receivers.

8 Conclusion

Renzo Tonin & Associates have conducted an assessment of environmental noise impacts from the proposed Childcare Centre to be located at 123 Epsom Road, Chipping Norton. Noise impacts from the proposed Childcare Centre to potentially affected receivers and the intrusion of external traffic noise sources into the Childcare Centre site have been quantified and compared to relevant Council requirements and the noise criteria set out in the AAAC Guideline for Child Care Centre Acoustic Assessment (version 3.0).

For the operational noise of outdoor play and traffic noise intrusion into the Childcare Centre, the assessment found compliance with the applicable noise criteria will require the physical noise mitigation measures recommended in Section 5.2 and Table 6-1 of this report. The ground floor plan and external elevation drawings (sheet no. DA03.02 and DA04.01) provide illustrations of the proposed barriers, while a markup of the window glazing requirements is provided in APPENDIX D.

The assessment of vehicle movements on the driveway ramp to the basement level carpark (ie. on the Childcare Centre site) and the additional traffic generated by the Childcare Centre development on the surrounding road network revealed noise emission levels that are predicted to comply with the relevant AAAC / RNP noise criteria.

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.		
Adverse weather	Weather effects that enhance noise (particularly wind and temperature inversions) occurring at a site for a significant period of time. In the NSW INP this occurs when wind occurs for more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of nights in winter.		
Air-borne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.		
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.		
Amenity	A desirable or useful feature or facility of a building or place.		
AS	Australian Standard		
Assessment period	The time period in which an assessment is made. e.g. Day 7am-10pm & Night 10pm-7am.		
Assessment Point	A location at which a noise or vibration measurement is taken or estimated.		
Attenuation	The reduction in the level of sound or vibration.		
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.		
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.		
Barrier (Noise)	A natural or constructed physical barrier which impedes the propagation of sound and includes fences, walls, earth mounds or berms and buildings.		
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of common sounds in our environment:		
	threshold of hearing	0 dB	The faintest sound we can hear, defined as 20 micro Pascal
		10 dB	Human breathing
	almost silent	20 dB	
		30 dB	Quiet bedroom or in a quiet national park location
	generally quiet	40 dB	Library
		50 dB	Typical office space or ambience in the city at night
	moderately loud	60 dB	CBD mall at lunch time
		70 dB	The sound of a car passing on the street
	loud	80 dB	Loud music played at home
		90 dB	The sound of a truck passing on the street
	very loud	100 dB	Indoor rock band concert

		110 dB	Operating a chainsaw or jackhammer
	extremely loud	120 dB	Jet plane take-off at 100m away
	threshold of pain	130 dB	
		140 dB	Military jet take-off at 25m away
dB(A)	A-weighted decibel. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter is denoted as dB(A). Practically all noise is measured using the A filter.		
EPA	Environment Protection Authority		
Free-field	An environment in which there are no acoustic reflective surfaces. Free field noise measurements are carried out outdoors at least 3.5m from any acoustic reflecting structures other than the ground.		
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.		
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.		
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.		
Intrusive noise	Refers to noise that intrudes above the background level by more than 5 dB(A).		
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.		
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.		
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).		
LAeq or Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the LAeq.		
LAeq(1hr)	The LAeq noise level for a one-hour period. In the context of the NSW EPA's Road Noise Policy it represents the highest tenth percentile hourly A-weighted Leq during the period 7am to 10pm, or 10pm to 7am (whichever is relevant).		
Lmax	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmax.		
Lmin	The minimum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmin.		
Microphone	An electro-acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.		
Noise	Unwanted sound		
NPfI	Noise Policy for Industry, NSW EPA 2017		
NRC	Noise Reduction Coefficient. A measure of the ability of a material to absorb sound. The NRC is generally a number between 0 and 1 but in some circumstances can be slightly greater than 1 because of absorption at the edges of the material. A material with an NRC rating of 1 absorbs 100% of incoming sound, that is, no sound is reflected back from the material. The NRS is the average of the absorption coefficient measured in the octave bands 250Hz, 500Hz, 1kHz & 2kHz which correspond to the predominant frequencies associated with the human voice.		

RBL	Rating Background Level is the representative LA90 background noise level for a period, as defined in the NSW EPA's noise ploicies.
Reflection	Sound wave reflected from a solid object obscuring its path.
RNP	Road Noise Policy, NSW, March 2011
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain Leq sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 pico watt.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 mico Pascal.
Tonal Noise	Sound containing a prominent frequency and characterised by a definite pitch.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other side, it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or R'w or DnT,w.

APPENDIX B Long-term noise monitoring methodology

B.1 Noise monitoring equipment

A long-term unattended noise monitor consists of a sound level meter housed inside a weather resistant enclosure. Noise levels are monitored continuously with statistical data stored in memory for every 15-minute period.

Long term noise monitoring was conducted using the following instrumentation:

Description	Type	Octave band data	Logger location
RTA07 (NTi Audio XL2)	Type 1	1/1	Location L1 (front yard of Childcare Centre site – ground level)
RTA07 (NTi Audio XL2)	Type 1	1/1	Location L2a (rear yard of Childcare Centre site – ground level)
RTA07 (NTi Audio XL2)	Type 1	1/1	Location L2b (rear yard of Childcare Centre site – first floor level)

Notes: All meters comply with AS IEC 61672.1 2004 "Electroacoustics - Sound Level Meters" and designated either Type 1 or Type 2 as per table, and are suitable for field use.

The equipment was calibrated prior and subsequent to the measurement period using a Bruel & Kjaer Type 4231 calibrator. No significant drift in calibration was observed.

B.2 Meteorology during monitoring

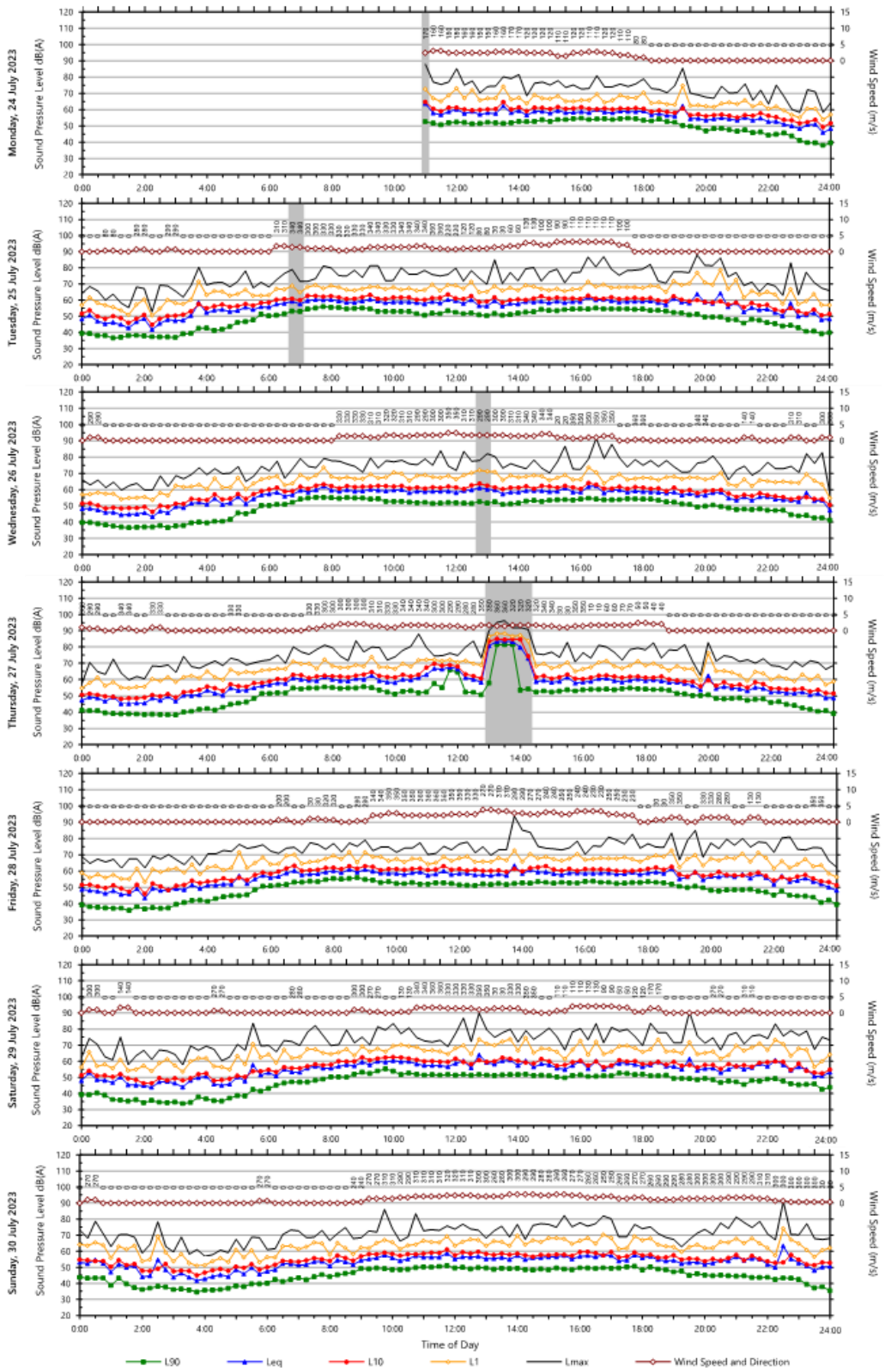
Measurements affected by extraneous noise, wind (greater than 5m/s) or rain were excluded from the recorded data in accordance with the NSW EPA's Noise Policy for Industry. Determination of extraneous meteorological conditions was based on data provided by the Bureau of Meteorology (BOM), for a location considered representative of the noise monitoring location(s). However, the data was adjusted to account for the height difference between the BOM weather station, where wind speed and direction is recorded at a height of 10m above ground level, and the microphone location, 1.5m above ground level. The correction factor applied to the data is based on Table C.1 of ISO 4354:2009 '*Wind actions on structures*'.

B.3 Noise vs time graphs

Noise almost always varies with time. Noise environments can be described using various descriptors to show how a noise ranges about a level. In this report, noise values measured or referred to include the L_{10}, L_{90}, and L_{eq} levels. The statistical descriptors L_{10} and L_{90} measure the noise level exceeded for 10% and 90% of the sample measurement time. The L_{eq} level is the equivalent continuous noise level or the level averaged on an equal energy basis. Measurement sample periods are usually ten to fifteen minutes. The Noise -vs- Time graphs representing measured noise levels, as presented in this report, illustrate these concepts for the broadband dB(A) results.

APPENDIX C Noise monitoring results

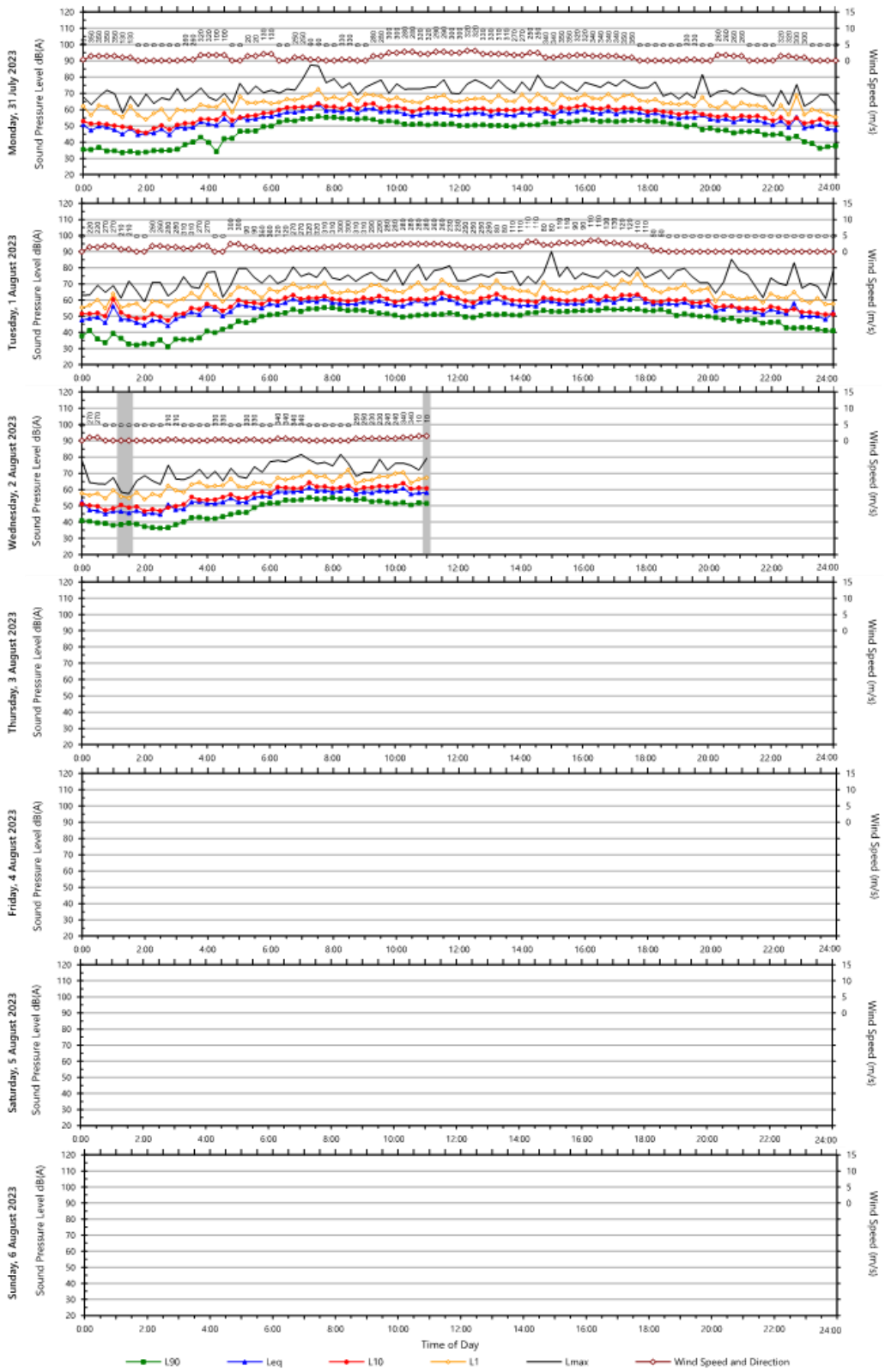
Unattended Monitoring Results **Location: Location L1 (front yard)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

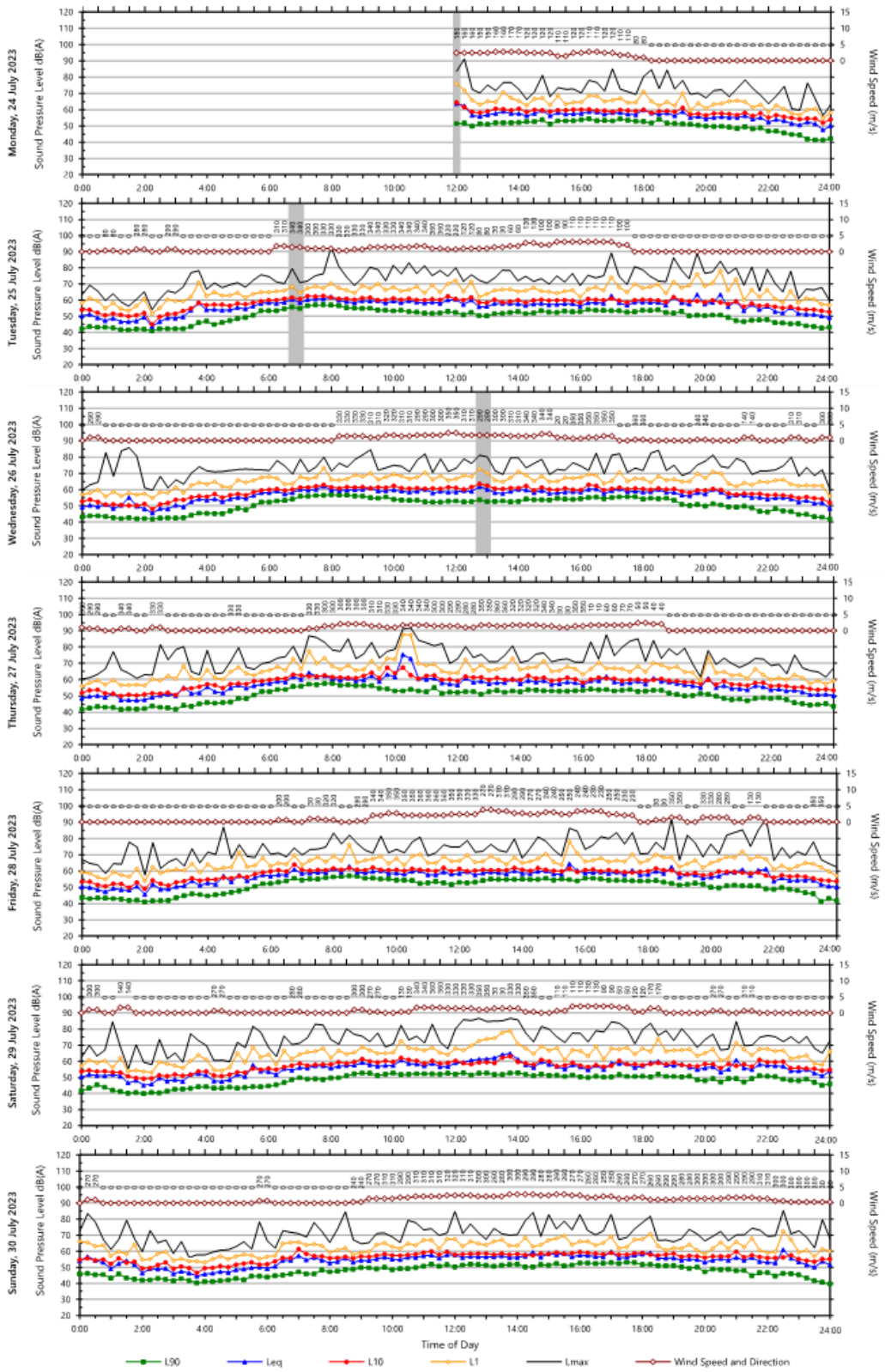
Unattended Monitoring Results **Location: Location L1 (front yard)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

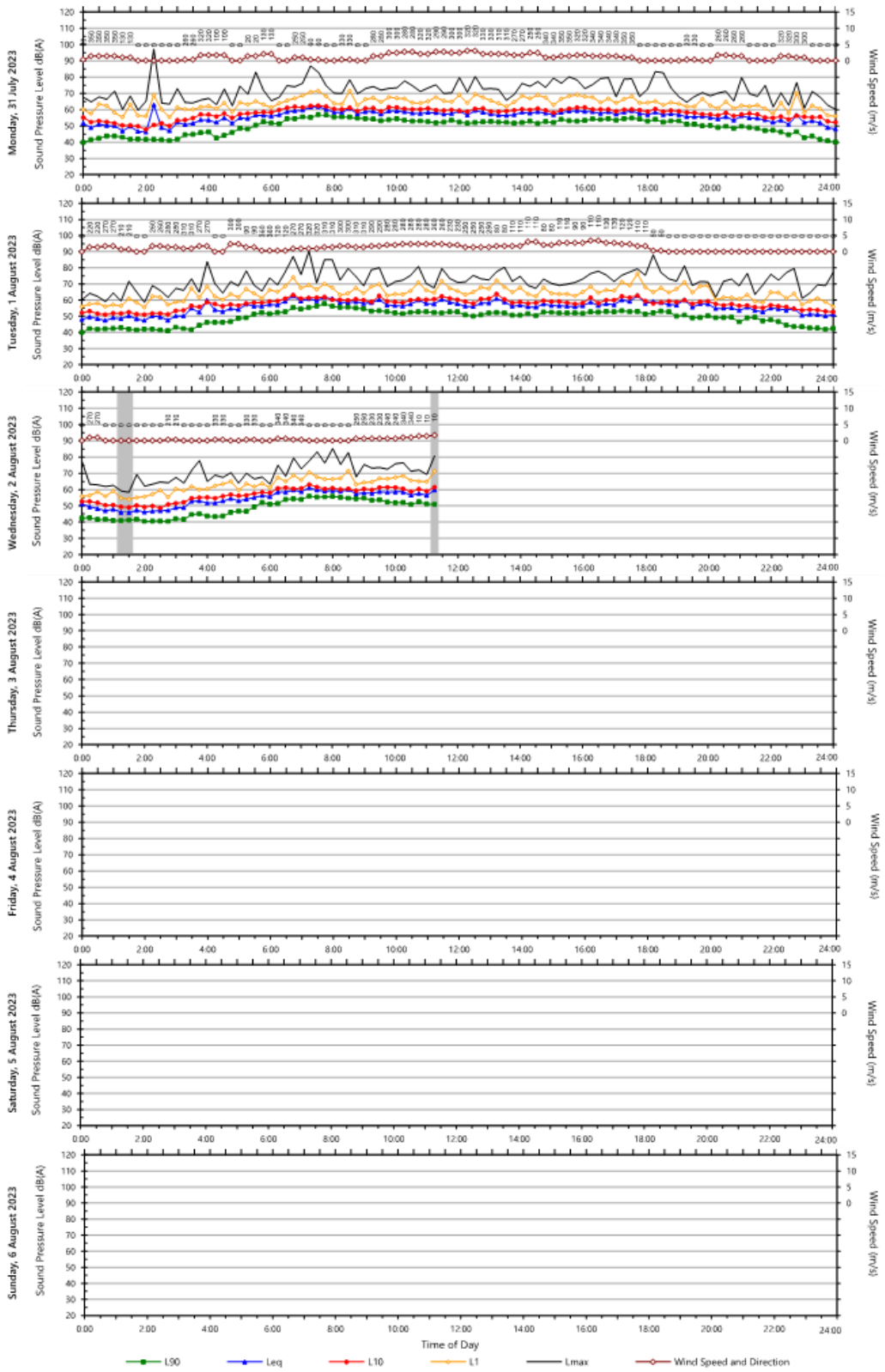
Unattended Monitoring Results **Location: Location L2a (rear yard - ground elevation)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

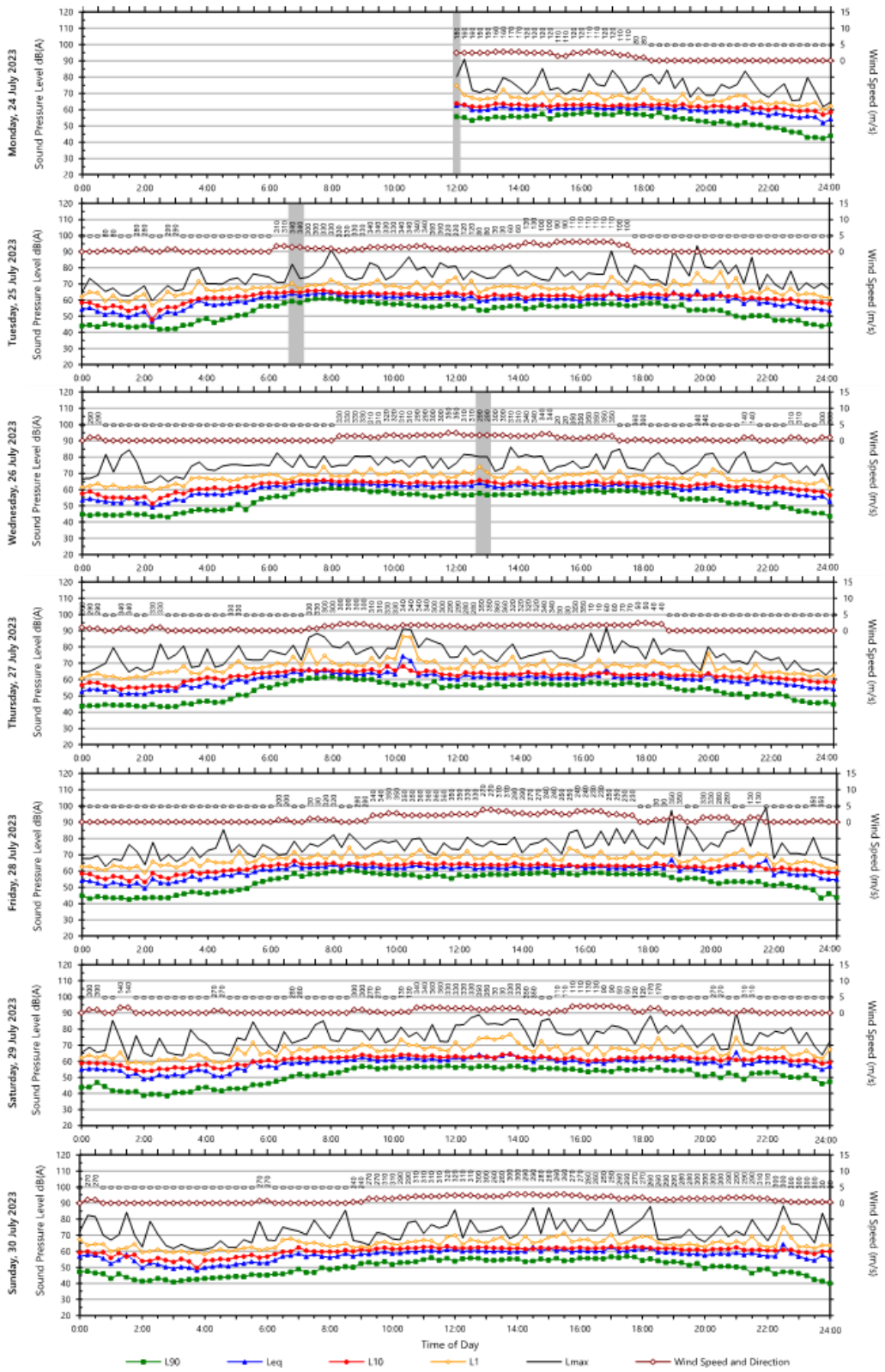
Unattended Monitoring Results **Location: Location L2a (rear yard - ground elevation)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

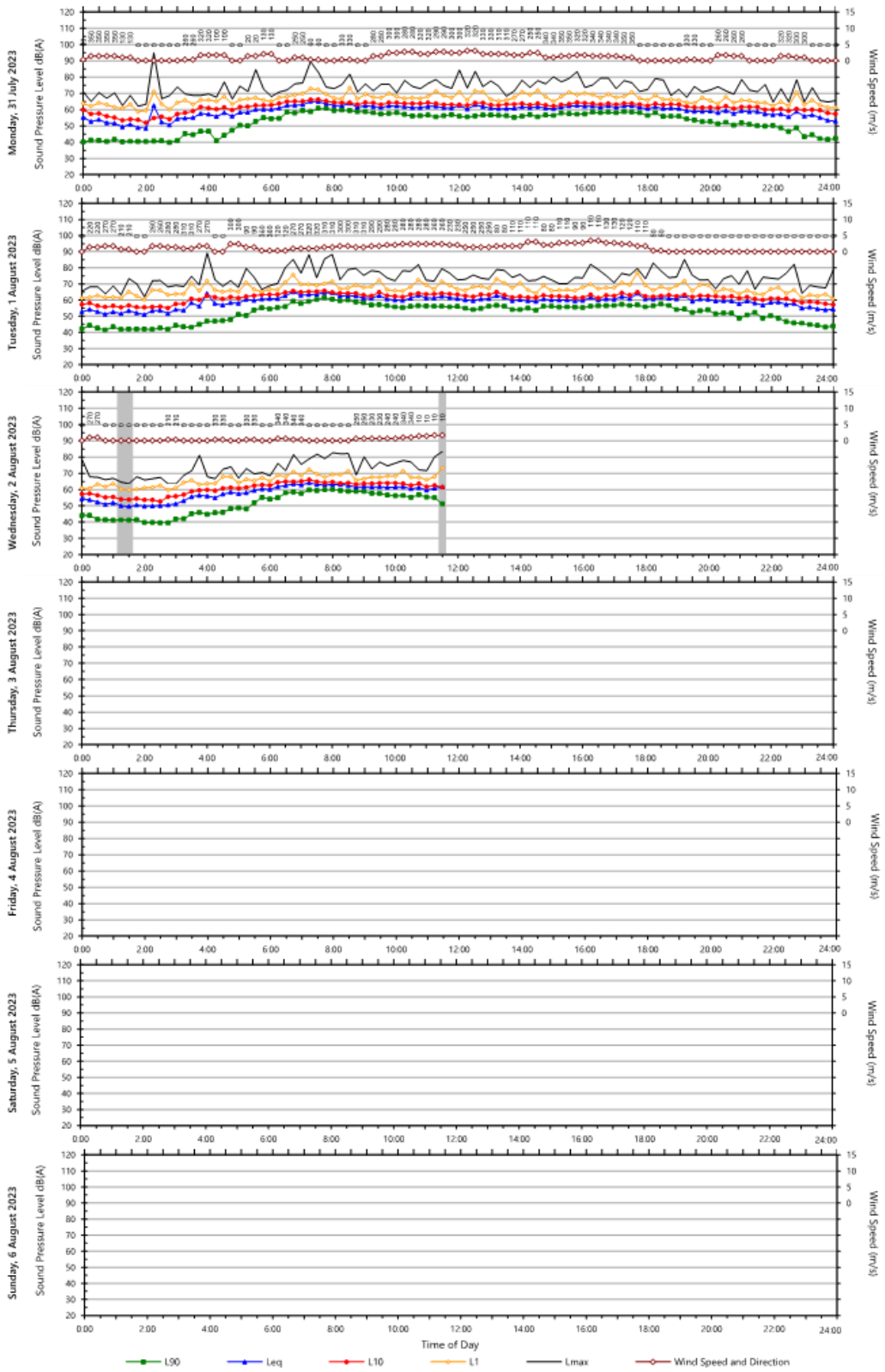
Unattended Monitoring Results **Location: Location L2b (rear yard - first floor level elevation)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

Unattended Monitoring Results **Location: Location L2b (rear yard - first floor level elevation)**



Data File: 2023-07-24_SLM_000_123_Rpt_Report.txt

Template: QTE-26 Logger Graphs Program (r42)

APPENDIX D Glazing requirements

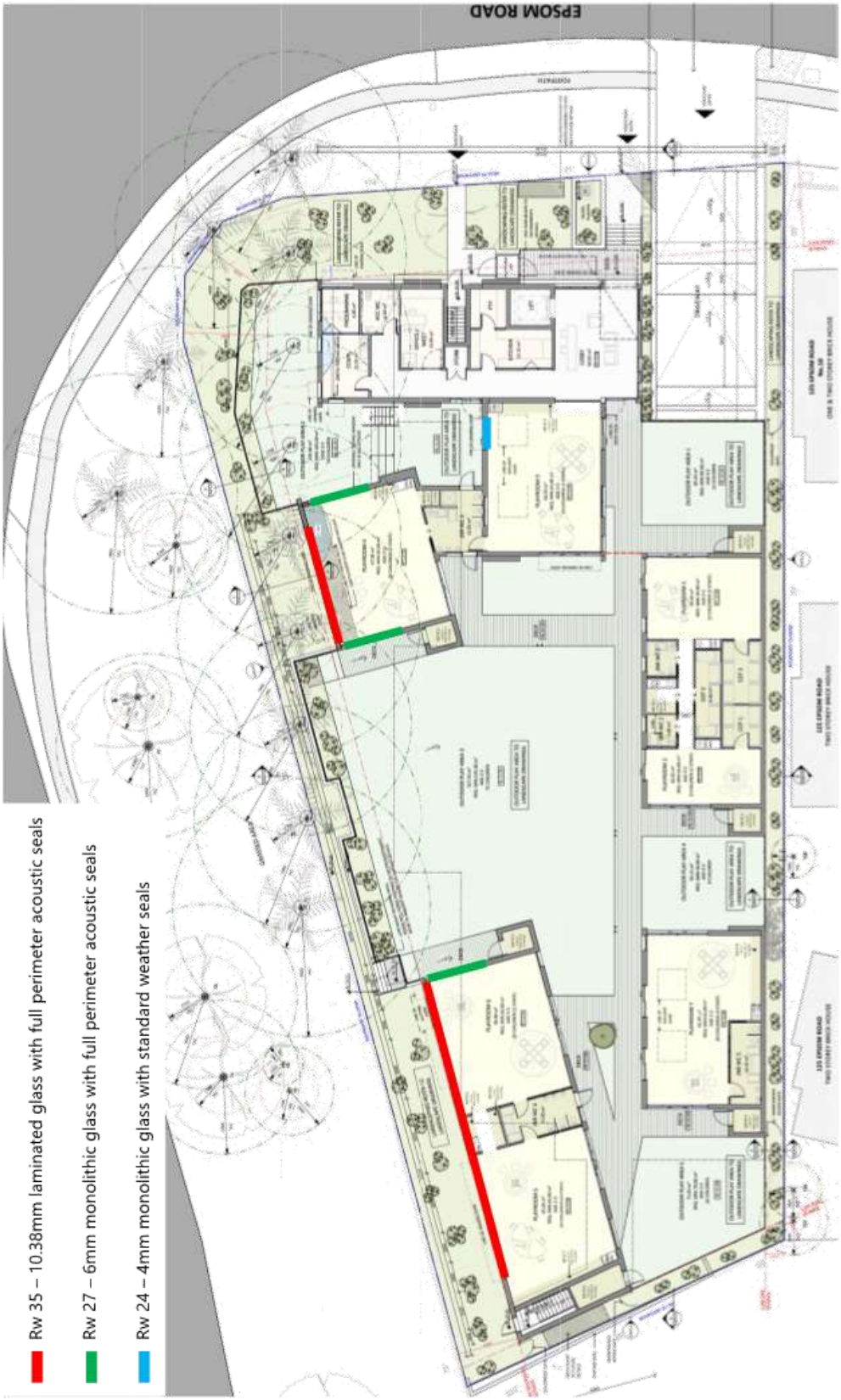


Figure 3: Proposed glazing

APPENDIX E Extract of peak hour traffic volumes

Figure 4: Existing peak hour traffic volumes – junction of Governor Macquarie Drive and Epsom Road

Figure 2.3: Existing AM Peak

Figure 2.4: Existing PM Peak

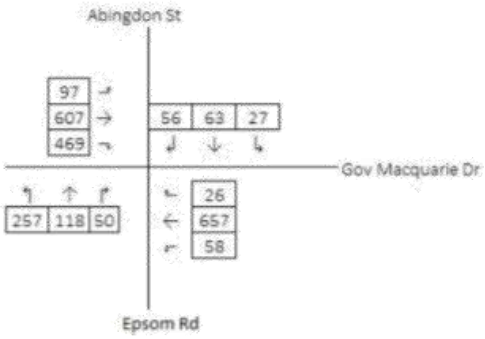


Figure 5: Distribution of additional traffic generated by Childcare Centre development – junction of Governor Macquarie Drive and Epsom Road

Figure 5.1: Development Traffic AM Peak

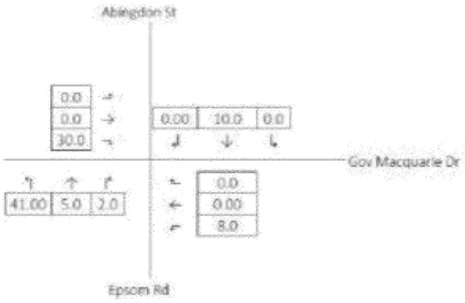
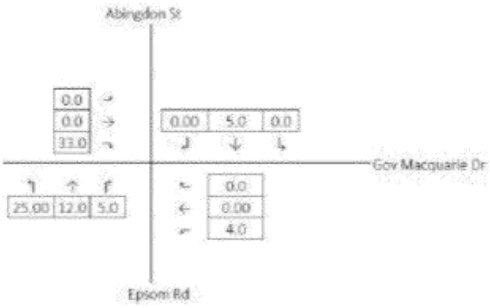


Figure 5.2: Development Traffic PM Peak



Item Number:	**2**
Application Number:	DA-640/2023
Proposed Development:	Demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of four multi-dwelling units with strata subdivision
Property Address	No. 84 Lucas Avenue, Moorebank
Legal Description:	Lot 9 DP236405
Applicant:	Mourad Demian Partnership Pty Limited
Land Owner:	Simon and Marian Fajlion
Cost of Works:	$1,011,600
Recommendation:	Approved subject to conditions of consent
Assessing Officer:	Lawrence Fowle / Patch Planning

1. EXECUTIVE SUMMARY

The subject development application (DA-640/2023) seeks consent for the demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of four multi-dwelling units with strata subdivision, on a site legally known as Lot 9 DP 236405 and formally known as No. 84 Lucas Avenue, Moorebank.

The site is zoned R4 - High Density Residential under Liverpool Local Environmental Plan (LLEP) 2008 and the proposed development is permissible with consent.

The development proposal is generally compliant with Council's applicable local provisions under LLEP 2008 and Liverpool Development Control Plan (LCDCP) 2008. The proposal is an acceptable form of development in that regard.

The application was notified between 3 January and 18 January 2024 in accordance with Liverpool Community Participation Plan 2019. No submissions were received during the notification period.

The application is referred to the Liverpool Local Planning Panel (LLPP) in accordance with the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consent,* as the development falls in the category of:

SCHEDULE 2

Conflict of interest
Development for which the applicant or land owner is:
(e) a relative (within the meaning of the Local Government Act 1993) of a person referred to in (b) to (d).

The applicant Chris Demain has declared that Sam Mannoun (Director, Winsman Group) as the developer for this application and had subsequently declared a conflict of interest for this application as Sam is the brother of the Mayor, Ned Mannoun. In accordance with the Managing Conflict of Interest Development Applications Procedure, a management strategy was prepared for this application. Council managed the potential conflict of interest in the following manner:

- The application was outsourced to an external Town Planning Consultant (Patch Planning) for assessment and development assessment staff were not involved with preparing the application.
- The application would be referred to the LLPP to determine the development application, pursuant to the *Local Planning Panels Direction - Development Applications to Modify Development Consents* (as outlined above).
- The development application record was secured, with access only available to key development assessment staff involved in only managing the application.

The application has been assessed pursuant to the provisions of the *Environmental Planning and Assessment* (EP&A) Act 1979. Based on the assessment of the application, it is recommended that the application be approved, subject to conditions.

2. SITE DESCRIPTION AND LOCALITY

2.1. The site

The subject site is known as No. 84 Lucas Avenue, Moorebank, legally described as Lot 9 DP236405. The site is located on the eastern side of Lucas Avenue, Moorebank, approximately 180m north of the intersection of Lucas Avenue and Maddecks Avenue. The site is rectangular in shape having an approximate area of 669sqm. Existing on the site is a dwelling house with associated structures and it is depicted in the aerial image in Figure 1.

Figure 1– Aerial view of subject site (site outlined in red) (*source: MetroMaps modified by Patch*)

2.2. The locality

The surrounding area consists of a mix of residential development in the form of single dwelling, multi dwelling, and residential flat building developments. Development to the north, northeast and east consist of an existing multi-unit housing development. Development at the south and across Lucas Avenue are generally single dwelling houses. The locality of the site is demonstrated within Figure 2.

Figure 2 – Locality surrounding the proposed development (source: SIX Maps NSW Government)

3. BACKGROUND/HISTORY

3.1. Site Background & History

DA No.	Proposed Development	Determination
DA-640/2023	*Demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of four multi-dwelling units with strata subdivision*	*Subject Application*

4. DETAILS OF THE PROPOSAL

<u>Site Works</u>

- Demolition of existing structures.
- Removal of two trees.
- Driveways and open parking areas.
- Landscaping and associated civil works.
- Strata subdivision.

Multi Dwelling Development – Four two-storey units

Unit #	Bedrooms	POS Area (SQM)	Floor Area (SQM)	Dwelling Orientation
84a (North unit)	2	58	78.6	East-west
84b (Middle north unit)	2	41.6	85	East-west
84c (Middle south unit)	2	40.8	83.2	East-west
84d (South Unit)	2	48.1	77.4	East-west
Total	**8**	**188.5**	**324.2**	-

Each unit consists of the following:

- **Ground floor –** bathrooms, kitchen, living and dining room, laundry, alfresco outdoor area, single garage, and tandem parking space.
- **First floor –** Two bedrooms (one with balcony) and one bathroom.

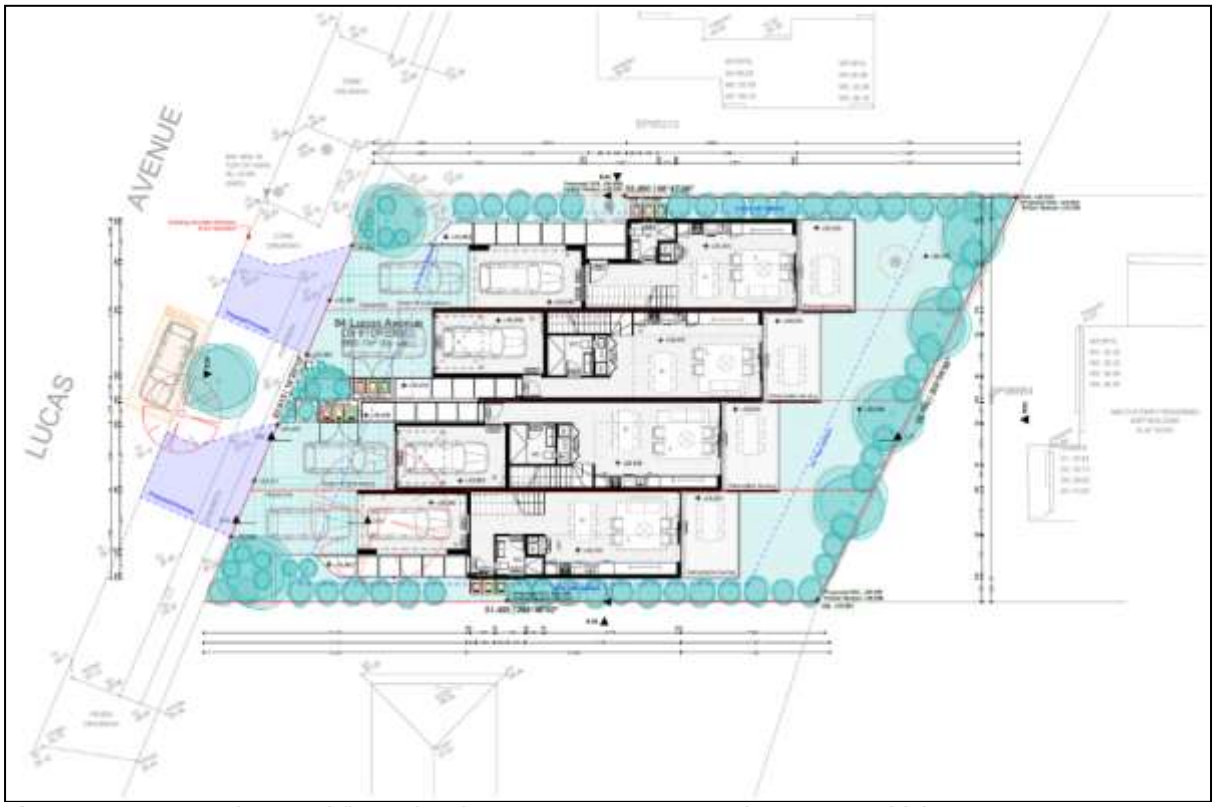


Figure 3– Proposed ground floor plan (*source: Monument Design Partnership)*

Figure 4– Architectural visualisation (*source: Monument Design Partnership*)

5. STATUTORY CONSIDERATIONS

5.1. Relevant matters for consideration

The relevant planning instruments/policies/controls applicable to the proposed development are as follows:

Environmental Planning Instruments (EPI's)

- State Environmental Planning Policy (Sustainability Buildings) 2022 - BASIX.
- State Environmental Planning Policy (Resilience and Hazards) 2021.
- State Environmental Planning Policy (Biodiversity and Conservation) 2021.
- State Environmental Planning Policy (Transport and Infrastructure) 2021.
- Liverpool Local Environmental Plan 2008.

Development Control Plan

- Liverpool Development Control Plan 2008
  - Part 1: General Controls for All Development; and
  - Part 3.6: Multi Dwelling Housing (Terraces, Townhouses and Villas) in the R3 and R4 Zones.

Contributions Plans

- Liverpool Contributions Plan 2018 - Established Areas applies pursuant to Section 7.11 of the EPA & Act.
- Housing and productivity contribution.

6. ASSESSMENT

The development application has been assessed in accordance with the relevant matters of consideration prescribed by Section 4.15 Evaluation of the EP&A 1979 and the Environmental Planning and Assessment Regulation (EPAR) 2021, as follows:

6.1. Section 4.15(1)(a)(i) – Any Environmental Planning Instrument

(a) State Environmental Planning Policy (SEPP) (Sustainable Buildings) 2022

SEPP (Sustainable Buildings) 2022 encourages the design and construction of more sustainable buildings across NSW. The proposal has been assessed under the relevant provisions of SEPP (Resilience and Hazards) 2021, specifically Chapter 2 Standards for residential development — BASIX. The policy applies to all residential developments (excluding alterations and additions less than $50,000).

For residential development, a DA submitted after 1 October 2023 is permitted to use a BASIX certificate created before 1 October 2023 (if it is within the three-month validity period) and to meet the standards in effect at the time the certificate was issued. This

includes amendments made to the application before it is determined by the consent authority. Therefore, as the DA was lodged after 1 October 2023 (15 December 2023) and the BASIX certificate which was lodged with the subject DA was created after (23 October 2023), Chapter 2 of the SEPP is applicable to the DA.

A BASIX certificate (**certificate no: 1373464M**) has been submitted for the proposed development. The proposal is satisfactory in relation to water and energy efficiency and thermal comfort.

(b) State Environmental Planning Policy (Resilience and Hazards) 2021

The proposal has been assessed under the relevant provisions of SEPP (Resilience and Hazards) 2021, specifically Chapter 4 – Remediation of Land and the objectives of Chapter 4 are:

- to provide for a state wide planning approach to the remediation of contaminated land.
- to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

Pursuant to the SEPP, Council must consider:

- whether the land is contaminated.
- if the land is contaminated, whether it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the proposed use.

Pursuant to Clause 4.6 of the SEPP, a consent authority is unable to grant development consent unless it has considered whether the land is contaminated and, if so, whether the consent authority is satisfied that the land is suitable in its contaminated state or can be remediated to be made suitable for the purposes for which the development is proposed to be carried out.

Clause 4.6 - Contamination and remediation to be considered in determining development application	**Comment**
(1) A consent authority must not consent to the carrying out of any development on land unless:	
(a) it has considered whether the land is contaminated, and	It is unlikely the land is contaminated as it is an existing lot used for residential purposes.
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and	The land is suitable for the proposed works, and it is unlikely that the land is contaminated, given the history of the site for residential use.
(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.	The land is considered unlikely to require remediation given (a) and (b) above.

Based on the above assessment, there is no evidence to suggest that the land has been or is contaminated and a formal land contamination assessment is not required. It is considered that the proposal is satisfactory for the site and the relevant objectives and provisions of the SEPP through the imposition of appropriate conditions of consent.

(c) State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 5 of SEPP (Biodiversity and Conservation) 2021 generally aims to maintain and improve the water quality and river flows of the several water catchments. The site is located within the Georges River catchment, which is a regulated catchment under Chapter 5 of the SEPP. When a consent authority determines a development application, on land in a regulated catchment, the consent authority must consider those the matters identified (Clauses 6.6 - 6.10), and compliance with such is provided below.

It is considered that the proposal satisfies the provisions of the SEPP subject to appropriate sedimentation and erosion controls during construction. The development would have minimal impact on the Georges River catchment.

(d) State Environmental Planning Policy (Transport and Infrastructure) 2021

Chapter 2: Infrastructure

Chapter 2 of SEPP (Transport and Infrastructure) 2021 provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process.

<u>Development likely to affect an electricity transmission or distribution network</u>

To satisfy the notification requirement of Clause 2.48(2), a referral to Endeavour Energy had been made and raised no objections subject to conditions.

<u>Development in or adjacent to road corridors and road reservations</u>

The proposal does not front a classified road, and therefore Clause 2.119 of the SEPP does not apply. The proposed development is not on land in or adjacent to the road corridor for a freeway, a tollway or a transitway and therefore Clause 2.120 does not need to be considered for this proposal. Pursuant to Clause 2.122(4) of the SEPP, the proposal is not deemed to be traffic-generating development given it is a residential accommodation with less than 300 dwellings with access to a road which is not a classified road. Written notice was not required to be given to Traffic for New South Wales (TfNSW).

(e) Liverpool Local Environmental Plan 2008

(i) Zoning

The subject site is zoned R4 - High Density Residential under LLEP 2008 and an extract of the zoning map is provided below.

Figure 5 – Extract of the LLEP 2008 zoning map (*source: ePlanning Spatial Viewer*)

(ii) Permissibility

The proposed development is best described as *multi-dwelling housing,* which is defined as follows:

> ***multi dwelling housing*** *means 3 or more dwellings (whether attached or detached) on one lot of land, each with access at ground level, but does not include a residential flat building.*

This form of development is permissible within the R4 - High Density Residential zone.

(iii) Objectives of the zone

The objectives of the R4 - High Density Residential zone are as follows:

- *To provide for the housing needs of the community within a high density residential environment.*
- *To provide a variety of housing types within a high density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To provide for a high concentration of housing with good access to transport, services and facilities.*
- *To minimise the fragmentation of land that would prevent the achievement of high density residential development.*

The proposal is generally consistent with the zoning objectives and whilst the proposal does provide for a medium density housing form, it does not inhibit the ability to achieve higher density housing forms more broadly on surrounding land.

(iv) Principal Development Standards

The LLEP 2008 contains provisions which are relevant to the proposal and an assessment of the application against the relative provisions is provided below.

LLEP 2008 - Principal Development Standards		
Development Provision	**Requirement**	**Comment**
2.7 Demolition requires development consent	The demolition of a building or work may be carried out only with development consent.	**Complies.** Consent sought for demolition works onsite and would form conditions of consent.
4.1 Minimum Lot Size	Minimum lot size permitted: 1,000sqm	**N/A.** No Torrens title subdivision is proposed.
4.3 Height of Buildings	Maximum height permitted: 18m	**Complies**. An 8m maximum building height is proposed.
4.4 Floor Space Ratio (FSR)	Maximum FSR permitted: 1.2:1	**Complies** The proposed FSR is 0.5:1.
5.10 Heritage Conservation	To protect and conserve existing items/locations identified as containing significant heritage value	**N/A.** The site is not listed as a heritage item, and it is not within a heritage conservation area.
6.5 Public Utility Infrastructure	Public utility infrastructure must be available	**Complies** All required utilities are available.
7.7 Acid sulfate soils	The site is not affected by relevant acid sulfate soils mapping.	**N/A**
7.31 Earthworks	Council to consider matters listed (a)-(g)	**Complies with conditions.** Earthworks are proposed and it is unlikely to significantly adversely impact on the amenity of adjoining properties, drainage patterns and soil stability,

		subject to the imposition of conditions of consent. Sediment control details have also been provided.

6.2. Section 4.15(1)(a)(ii) - Any Draft Environmental Planning Instrument

There are no draft Environmental Planning Instruments (EPIs) which apply to the development.

6.3. Section 4.15(1)(a)(iii) - Any Development Control Plan

(a) Liverpool Development Control Plan (LDCP) 2008

The proposed development is subject to LDCP 2008, and the proposal has been assessed under the following parts of the DCP as follows:

- Part 1 of the LDCP 2008, which covers general controls relating to all types of development within the Liverpool LGA; and
- Part 3.6: Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones.

The proposal is consistent with key controls outlined in LDCP 2008 and all relevant compliance tables for the DCP can be found in Attachment 2. Matters where variations are proposed to development controls are provided in the table below.

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
Townhouse and Villa Development on an 18m Frontage Block	At least two dwellings must have a maximum floor space of 80sqm. • These dwelling must have a maximum of two bedrooms. • These dwellings must have a carport, rather than a garage. This control applies over Section 7 – Car Parking and Access.	Two units are proposed with a floor space of less than 80sqm, being: • No.84a: 78.9sqm; and • No.84d: 77.4sqm. The proposal is satisfactory when considering consistency with the objectives of the control. A traffic and transport referral had been made to determine if the parking variation is satisfactory. The referral supports the DA subject to conditions.
	Dwellings at the rear of the property must not	Minor encroachments of the roof and first floor element of the development within 15m of the

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	be more than 1 storey high. An attic is permitted. • The rear of the property for Section 4 means all land 15m from the rear property boundary.	rear boundary. The proposal is compatible with the objectives of the control**.**
Front Setbacks	Garages or Carports must be set back a minimum of 1m behind the main face of the dwelling (see Figure 2). (The main face is the first wall of a habitable room)	The proposed garages are in front of the first wall of a habitable room on the ground floor. The Statement of Environmental Effects (SEE) provided with the DA, provides the following response to this control: *The garages have been well articulated to break up the built form and have been recessed under the first floor balcony to reduce the visual dominance of the garages and bring to* The development outcome is generally supported. Separately, the proposal has been referred to the traffic engineer (as per the recommendation of the development engineer) to confirm that this is supportive from a traffic perspective. The Traffic and Transport referral supports the DA subject to conditions.

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	Verandahs, balconies, eaves and other sun control devices may encroach on the minimum front setback by up to 1m.	The proposal provides for a complying first floor front setback with balconies which protruding **more than** 1m into the front setback. The exceedance into the front setback is limited to small encroachments in each first-floor balcony, which is a minor element of the overall façade. The design has staggered the front façade to align with the angled front boundary. The minor encroachments do not significantly add to the bulk and scale to the development and are offset by areas of the design which are setback at greater than the minimum requirement. The figure below depicts the areas of non-compliance in red (extracted from the applicant's response to a request for further information (RFI) letter). Additionally, the proposal has incorporated additional vertical full height openings to the northern façade of each front balcony to provide additional access to sunlight for the balconies from the north along with the available sunlight from the west.

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
		 Extract from Floor Plans
Side Setbacks	The DCP states that development with windows to habitable rooms require the following side setbacks: • Ground floor – 0.9m; and • First floor – 4m.	<u>Ground Floor</u> There are no habitable room windows at ground level and therefore a setback of 0.9m is required. The proposal provides a 0.9m setback and is compliant with the control. <u>First floor</u> The first-floor bedrooms contain windows along the northern and southern elevation requiring a 4m setback where 1.2m is proposed. The side setback non-compliance is considered acceptable as it achieves the objectives of the control. These are replicated for reference below: *a) To set dwellings back from the street and adjacent properties to provide* *reasonable space for landscaping, private open space and solar access* *b) To set back dwellings from one another to provide visual and acoustic privacy.* *c) To provide setbacks that minimise*

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
		impacts on adjoining neighbours by minimising overshadowing and overlooking. *d) To establish a streetscape of a scale and sense of enclosure appropriate to the locality.* *e) To maximise the amount of area capable of allowing the growth of trees and shrubs.* The proposal achieves the objectives of the zone as the proposal is still setback from the adjoining residential development, with increase separation provided given the adjoining development is high density and in accordance with the Apartment Design Guide (ADG) provides adequate separation. Additionally, the proposal is considered to protect the visual and acoustic amenity of the adjoining dwellings through the implementation of high sill first floor windows with glazing and the acoustic impacts are expected to be minimal given the ground floor habitable rooms do not have windows and the upper floor noise would be minimised through the standard imposition of a condition of consent which requires a development to comply with the National Construction Code (NCC), specifically, the NCC incorporates sound insulation requirements for residential buildings. Further to the above, the proposal is considered to have a minimal overshadowing and overlooking impact on the adjoining residential development, again through the implementation of high sill first floor windows and the proposal achieves compliance with the overshadowing controls of the DCP. The multi dwelling ‘terrace’ design is considered

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
		to provide a positive streetscape outcome consistent with a high-density zone. The final objective is achieved as the proposal provides a fully compliant landscaping scheme which is supported by Councils Landscaping officers. A review of Council records indicates a variation to the side setback control to the first floor has been granted on a recently approved development located at No. 4 Thompson Avenue Moorebank. (DA-561/2023). The DA was for demolition of existing structures, and construction of multi dwelling housing with four dwellings, front fence, and Strata Subdivision and was approved on 20 March 2024. The site at No. 4 Thompson appears to have a similar site area and orientation to the subject site. A review of the assessment report prepared by Council, provided the following justification for the non-compliant side setbacks control at the first floor: *"D4 on the first floor has a habitable room window to the side and is setback by 1.5m. However, the window is restricted to a sill height of 1.5m and would not unduly cause overlooking concerns to adjoining private open spaces as it would generally face the front setback area and driveway of the adjoining property".* The subject proposal provides high sill first floor windows and ensures that privacy to adjoining sites are also maintained.
Private Open Space	4. A minimum of 50% of the Private Open Space must receive 3 hours of hours of sunlight between	The proposed development would achieve the following solar access to individual dwellings: • 84A: 1.75hrs of sunlight to 50% of the POS (58% of requirement).

LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	9:00am and 5:00pm on 21 June.	• 84B: 1 hrs of sunlight to 50% of the POS (33% of requirement). • 84C: 0.5 hrs of sunlight to 50% of the POS (17% of requirement). • 84D: 2 hrs of sunlight to 50% of the POS (67% of requirement). Accordingly, none of the proposed dwellings would comply and this matter is discussed in further detail following this table.
Internal Design	Each dwelling must provide a minimum storage area of 8m3.	The proposal does not explicitly provide separate internal storage and as this is a minor matter related to internal design, it is recommended to be addressed through a condition of consent.

Private Open Space – Solar Access

LDCP 2008 requires that a minimum 20sqm of private open space (POS) achieve three hours of solar access between 9am and 5pm.

On initial review of the application, it was evident that original plans were unable to comply with this control however a numeric summary was not provided in the applicant's original documentation to confirm this definitively. The applicant was requested to provide clarification and, if compliance was not achieved, provide greater justification regarding a departure and/or make design amendments to ensure a compliant outcome.

In response, the applicant revised the design by removing solid awnings that had been proposed over the rear alfresco areas and replacing these with a retractable, clear roof awning which allows additional sunlight penetration when retracted.

This resulted in the revised scheme achieving:

- 84A: 1.75hrs of sunlight to 50% of the POS (58% of requirement).
- 84B: 1 hrs of sunlight to 50% of the POS (33% of requirement).
- 84C: 0.5 hrs of sunlight to 50% of the POS (17% of requirement).
- 84D: 2 hrs of sunlight to 50% of the POS (67% of requirement).

Therefore, the proposal receives on average across all the properties of 1.5 hours (43% of requirement) and no individual property achieves the required two hours.

Although the departure from the standard is significant, on balance, the development is considered to result in a high-quality outcome for the site and the solar access achieved to POS is acceptable on merit for the reasons outlined below.

Existing overshadowing

The solar access achieved to POS by the proposal arises primarily due to existing site conditions rather than from the design itself. Specifically, there is currently significant overshadowing impacts created by adjoining residential flat buildings (RFBs) to the north and east of the development site, at Nos. 82 Lucas Avenue and 87-91 Nuwarra Road Moorebank. The overshadowing impact of the surrounding development during the winter solstice (21 June), is depicted in the diagrams in **Figure 6** and **Figure 7**. These indicate:

- Moderate overshadowing to the rear half of the site occurs in the morning. At 9am, shadowing to the rear primarily occurs from No. 91 Nuwarra Road (shown in green in the below shadow diagrams). By 10am, the shadow from No. 91 Nuwarra Road no longer impacts the site and the rear half of the site is less impacted by shadows in general.
- Between 11am – 1pm at midwinter, significant overshadowing of the rear half of the site (by estimate, approximately 75% - 90% of the rear half) is impacted by the shadow cast from No. 82 Lucas Avenue which is shown in light brown in the below shadow diagrams.
- In the early afternoon, the shadow from No. 82 Lucas Avenue begins to have lesser impact, however at this time, any development outcome on the site would begin to overshadow itself, as is evidenced from the shadow cast by the proposed development.

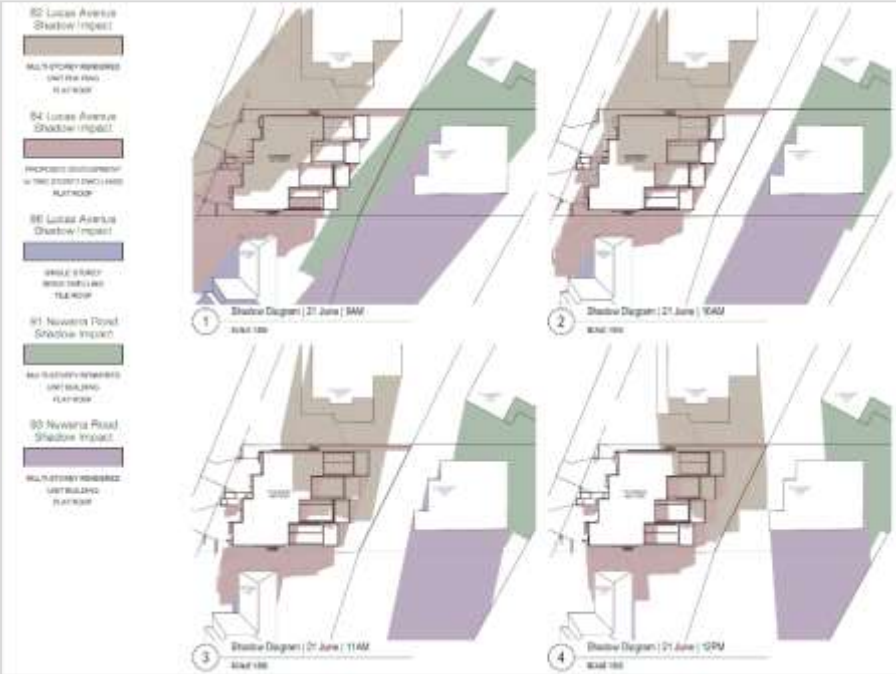


Figure 6– Overshadowing diagrams (21 June) – 9AM-12PM (*source: Monument Design Partnership*)

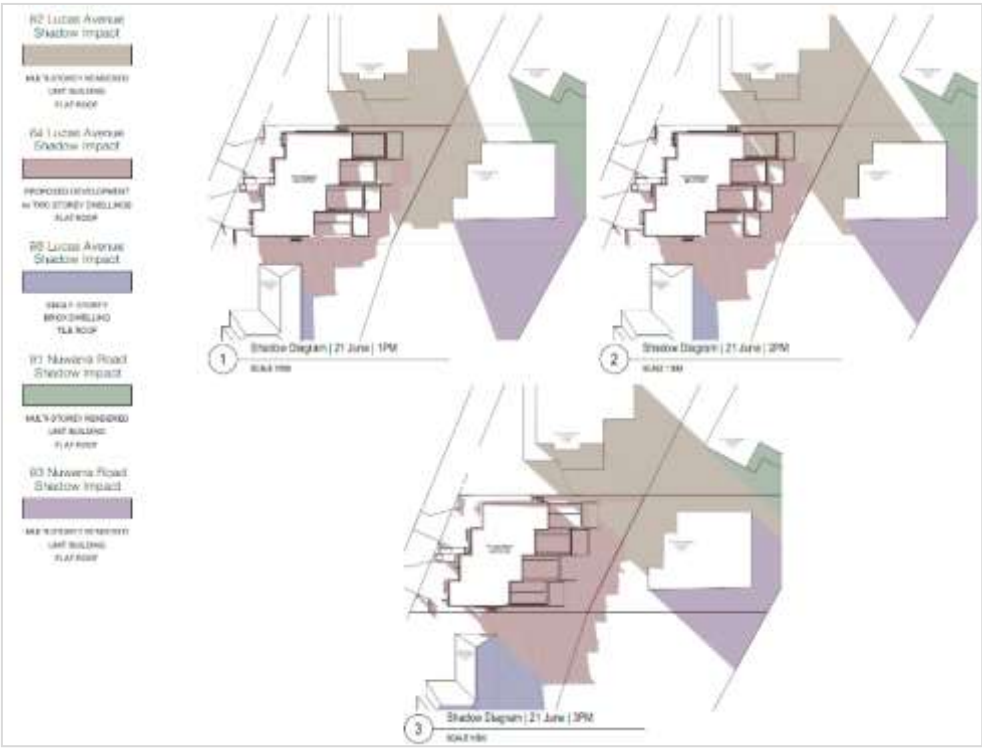


Figure 7– Overshadowing diagrams (21 June) – 1PM-3PM (*source: Monument Design Partnership*)

Proposed Land Use

It is considered that this non-compliance is also exacerbated by the pursual of a lower density housing form than what is intended with respect to the site's zoning and permitted height and FSR controls.

The nature of multi-dwelling housing development is to provide for ground floor private open spaces at the rear, which in the case of the subject site results in significant compliance challenges. In contrast, a higher density development (an RFB) on the same site could possibly orientate private open space (balconies) in other directions to capture sunlight. This is not a readily available design solution for multi-dwelling housing.

The proposed land use is nevertheless permitted in the zone, complies with key development standards, and is a positive development outcome for the area despite the non-compliance with the solar access standard.

Planning Principle – Sunlight

In their response to Council's RFI, the applicant relied on the Planning Principle (Sunlight) established in *The Benevolent Society v Waverley Council [2010] NSWLEC 1082* as justification for the outcomes proposed.

It is noted that in Patch's opinion, the principle is not strictly relevant as it relates specifically to overshadowing (of a proposal) on surrounding development, whereas the matter in question deals with overshadowing of (or solar access to) a proposal and the consideration of existing shadows cast by surrounding development.

Notwithstanding that the planning principle is not strictly relevant, it is agreed that it nevertheless has some applicability for, reasons discussed below.

> *Where guidelines dealing with the hours of sunlight on a window or open space leave open the question what proportion of the window or open space should be in sunlight, and whether the sunlight should be measured at floor, table or a standing person's eye level, assessment of the adequacy of solar access should be undertaken with the following principles in mind, where relevant:*

- *The ease with which sunlight access can be protected is inversely proportional to the density of development. At low densities, there is a reasonable expectation that a dwelling and some of its open space will retain its existing sunlight. (However, even at low densities there are sites and buildings that are highly vulnerable to being overshadowed.) At higher densities sunlight is harder to protect and the claim to retain it is not as strong.*

Comment: The land is zoned R4 High Density Residential, and this is reflected in the density of surrounding development. It is recognised that the ability to maintain solar access at the site is inhibited as a result, with significant existing shadows cast upon the site by the existing development.

- *The amount of sunlight lost should be taken into account, as well as the amount of sunlight retained.*

  Comment: The design has attempted to maximise solar access availability to the POS, incorporating opportunities for solar access to the living areas and front balcony areas, to offset the lack of sunlight to the rear POS areas. This includes:
  - Clerestory windows at the rear of each dwelling facing north, to increase the amount of solar access to the living areas.
  - Openings to the northern elevations to the front facing balconies to increase sunlight access from a northerly aspect to the front facing balconies.

  The additional access to sunlight to the internal living areas and to the front facing balconies, provides additional amenity for future residents and provides some offset to the solar access non-compliance to the POS areas.

- *Overshadowing arising out of poor design is not acceptable, even if it satisfies numerical guidelines. The poor quality of a proposal's design may be demonstrated by a more sensitive design that achieves the same amenity without substantial additional cost, while reducing the impact on neighbours.*

  Comment: Solar access non-compliances are considered to primarily result from existing site conditions rather than poor design.

- *For a window, door or glass wall to be assessed as being in sunlight, regard should be had not only to the proportion of the glazed area in sunlight but also to the size of the glazed area itself. Strict mathematical formulae are not always an appropriate measure of solar amenity. For larger glazed areas, adequate solar amenity in the built space behind may be achieved by the sun falling on comparatively modest portions of the glazed area.*

  Comment: This is not relevant to the matter which relates to private open space, not windows, doors, or glass walls.

- *For private open space to be assessed as receiving adequate sunlight, regard should be had of the size of the open space and the amount of it receiving sunlight. Self-evidently, the smaller the open space, the greater the proportion of it requiring sunlight for it to have adequate solar amenity. A useable strip adjoining the living area in sunlight usually provides better solar amenity, depending on the size of the*

space. The amount of sunlight on private open space should ordinarily be measured at ground level but regard should be had to the size of the space as, in a smaller private open space, sunlight falling on seated residents may be adequate.

Comment: All proposed POS are at least the minimum required under LDCP 2008, with two units (84A and 84D) significantly exceeding the minimum size requirements by 45% and 20% respectively.

- *Overshadowing by fences, roof overhangs and changes in level should be taken into consideration. Overshadowing by vegetation should be ignored, except that vegetation may be taken into account in a qualitative way, in particular dense hedges that appear like a solid fence.*

  Comment: This is not considered particularly relevant to the matter at hand.

- *In areas undergoing change, the impact on what is likely to be built on adjoining sites should be considered as well as the existing development.*

  Comment: This is not considered to be particularly relevant to the matter at hand.

6.4. Section 4.15(1)(a)(iiia) - Planning Agreements

There are no planning agreements which apply to the development.

6.5. Section 4.15(1)(a)(iv) - The Regulations

EPAR 2021 requires the consent authority to consider the provisions of the NCC and accordingly, appropriate conditions of consent would be imposed where compliance with the NCC is required.

6.6. Section 4.15(1)(b) - The Likely Impacts of the Development

(a) Natural Environment

Impacts on the natural environment have been assessed as part of the development application. The proposal is unlikely to result in any detrimental impact on the natural environment surrounding the subject site and appropriate conditions of consent would apply to help minimise and mitigate any potential environmental concerns.

(b) Built Environment

The proposed development is unlikely to create an unreasonable adverse impact on the surrounding built environment. The proposed development is considered to have been

designed in a way that is generally consistent with Council requirements for development in a high-density zone and for multi-dwelling developments.

Furthermore, it is considered that the proposal has been designed with sufficient regard to surrounding properties and any future occupants of the site to ensure that adverse amenity impacts have been minimised, particularly in terms of visual and acoustic privacy and overshadowing.

(c) Social Impacts

The proposed development would have a positive social impact in the area through increasing housing choice in the locality. The development is unlikely to generate any identifiable detrimental social impacts and is consistent with the desired development type in the locality.

(d) Economic Impacts

The short term positive economic impacts development that results from construction spending and employment opportunities generated during the construction phase are generally recognised.

6.7. Section 4.15(1)(c) - The Suitability of the Site for the Development

The subject site is suitable for the proposed development. The proposal is generally compliant with the provisions of LLEP 2008, relevant EPIs and LDCP 2008, as outlined in this report. The proposal is unlikely to result in any significant adverse impacts to the locality and within the public interest.

6.8. Section 4.15(1)(d) - Any submissions made in accordance with the Act or the Regulations

(a) Internal Referrals

The following comments have been received from Council's internal departments:

DEPARTMENT	COMMENTS
Land Development Engineering	**Supported** subject to conditions
Natural Environment – Landscape	**Supported** subject to conditions
Waste Management	**Supported** subject to conditions
Traffic and Transport	**Supported** subject to conditions

(b) External Referrals

AGENCY	COMMENTS

Endeavour Energy	**Supported** subject to conditions

(c) Community Consultation

The development application was notified between 3 January and 18 January 2024 in accordance with Liverpool Community Participation Plan 2019. No submissions were received during the notification period.

6.9. Section 4.15(1)(e) - The Public Interest

The development is consistent with the objectives of the R4 - High Density Residential zone and is generally compliant and considered satisfactory with the relevant planning provisions and controls contained under LLEP and LDCP 2008. Where non-compliances have been identified, these have either been considered justifiable in the circumstances, or addressed by way of consent conditions. As such the proposal is considered to be within the public interest.

7. DEVELOPMENT CONTRIBUTIONS

A Section 7.11 development contributions is applicable to the proposed development in accordance with Liverpool Contributions Plan 2018 – Established Areas. The contribution has been checked by Council's contributions accountant and would be imposed as a condition of consent.

The Housing and Productivity Contribution (HPC) is applicable to the proposed development in accordance with the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023*. The applicability of the HPC is to be confirmed through the NSW Planning Portal by the applicant, this has been imposed as a condition of consent.

8. CONCLUSION

The application has been assessed having regard to the provisions of Section 4.15 of the EP&A Act 1979, the Environmental Planning Instruments, including applicable State Environmental Planning Policies, LLEP 2008, LDCP 2008, and relevant codes and policies of Council. The proposed development is unlikely to result in significant adverse impacts upon neighbouring properties and the locality. Based on the assessment of the application, it is recommended that the application be approved subject to the imposition of conditions.

9. RECOMMENDATION

That development application DA-640/2023 seeking consent for the demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of four multi-dwelling units with Strata subdivision, on a site legally known as Lot 9 DP 236405 and formally known as No. 84 Lucas Avenue, Moorebank, be approved subject to conditions of consent.

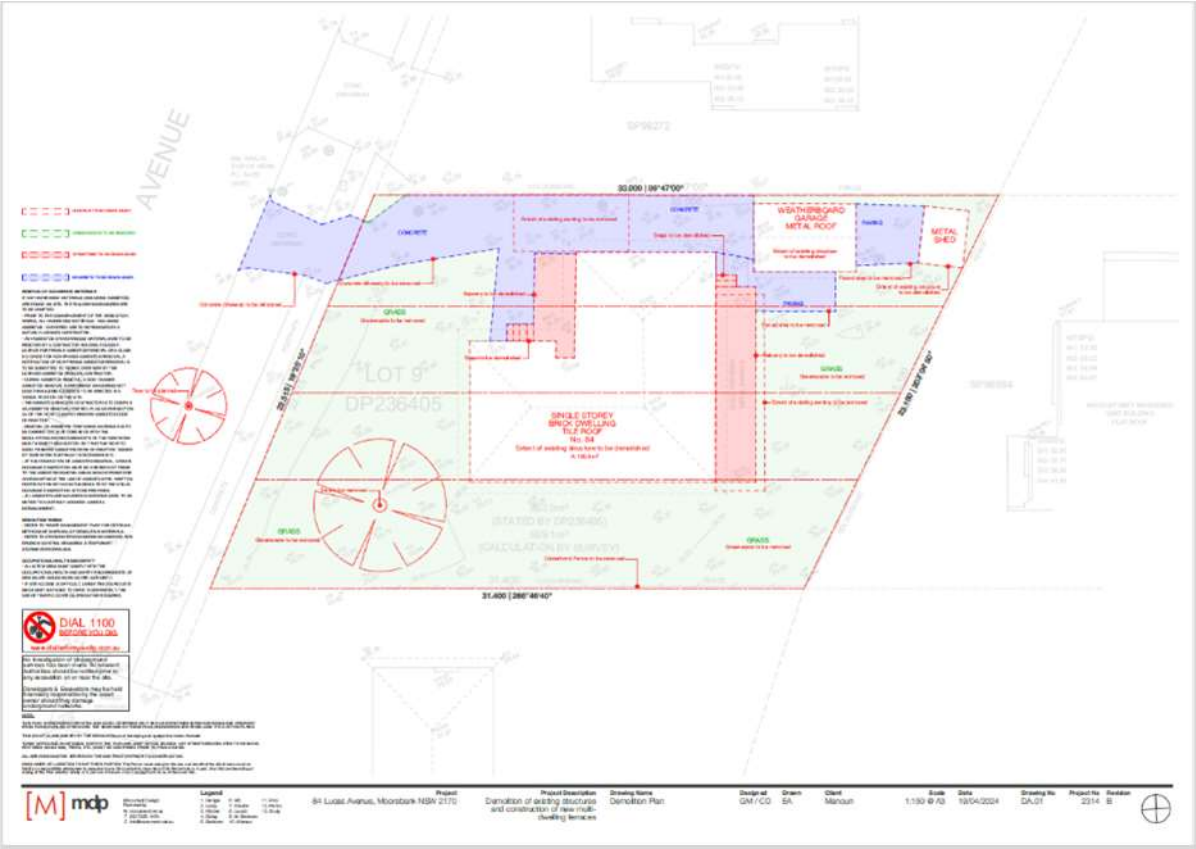
REPORT ATTACHMENTS

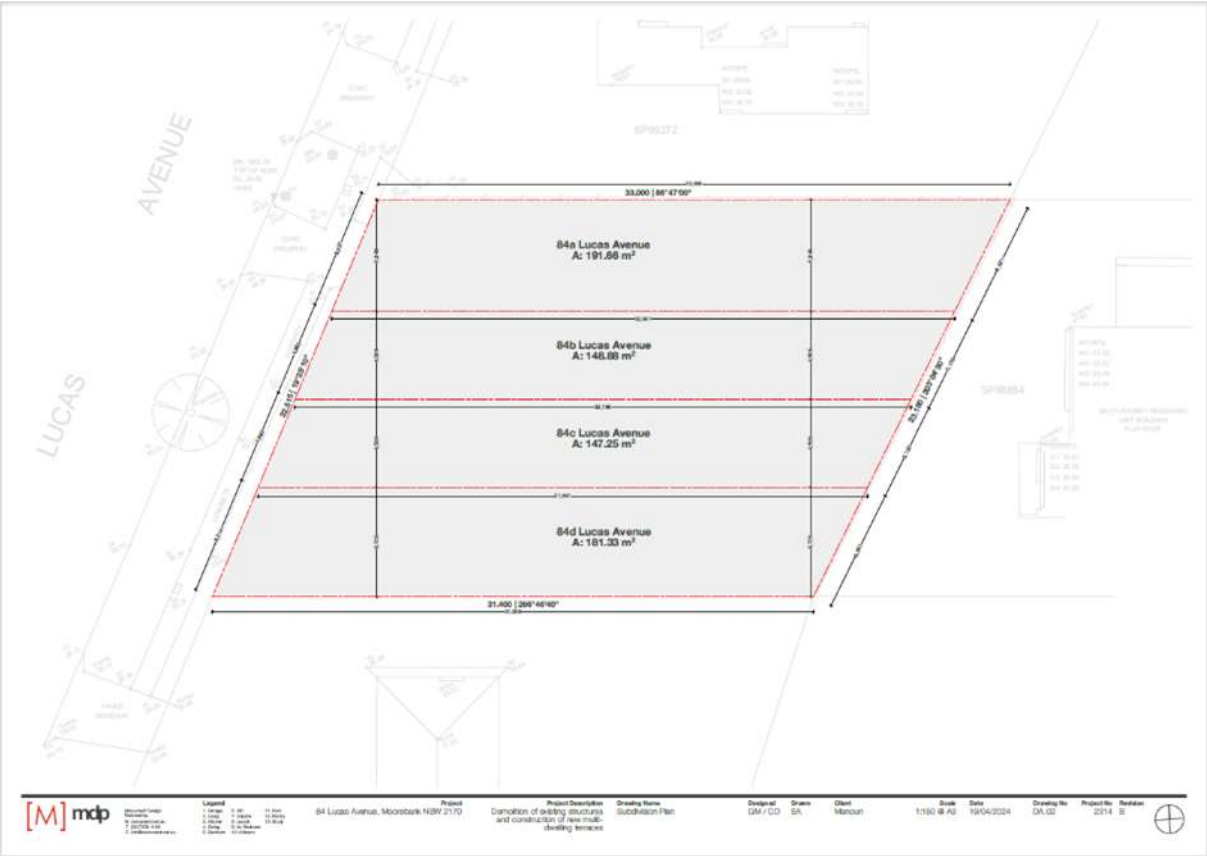
1. **LIVERPOOL DEVELOPMENT CONTROL PLAN 2008 COMPLIANCE TABLES**
2. **PLANS OF THE PROPOSAL**
3. **CONDITIONS OF APPROVAL WITH ASSOCIATED EXTERNAL COMMENTS AND 7.11. PAYMENT FORM**

ATTACHMENTS

1. Plans of the Proposal
2. LDCP 2008 Compliance Tables
3. Conditions for Approval

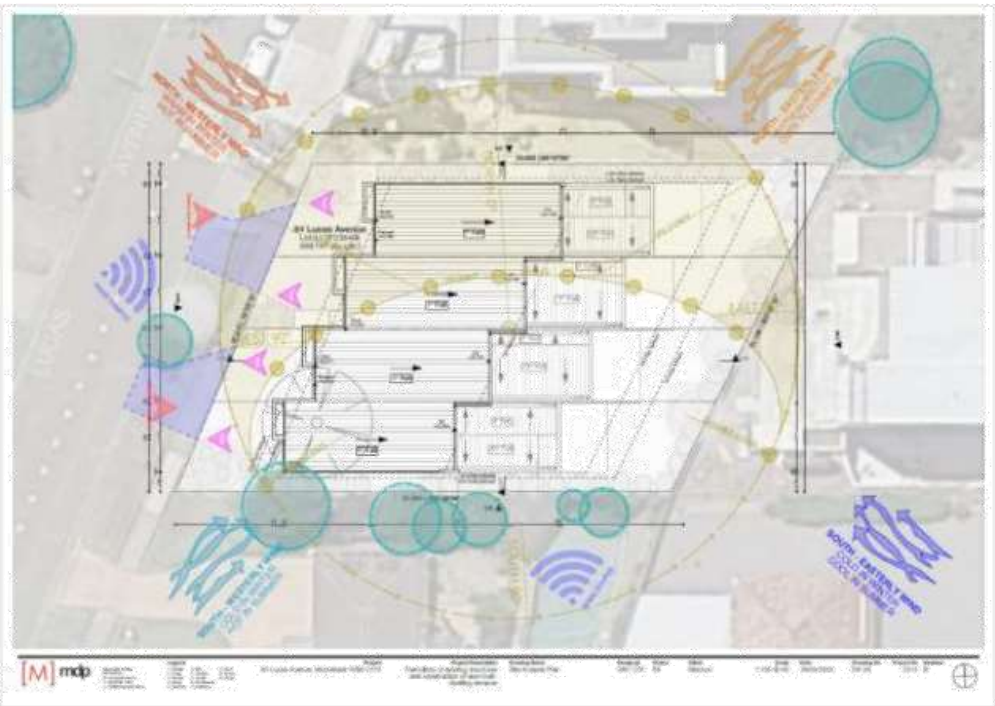
REPORT ATTACHMENT 1 – PLANS OF THE PROPOSAL



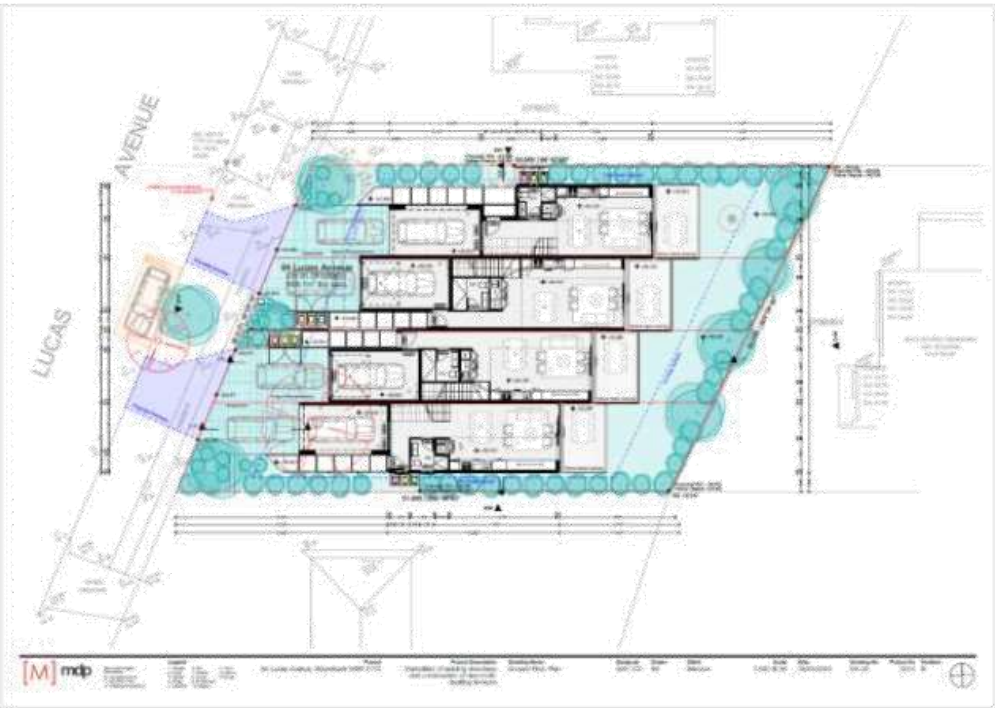


DA-640/2023

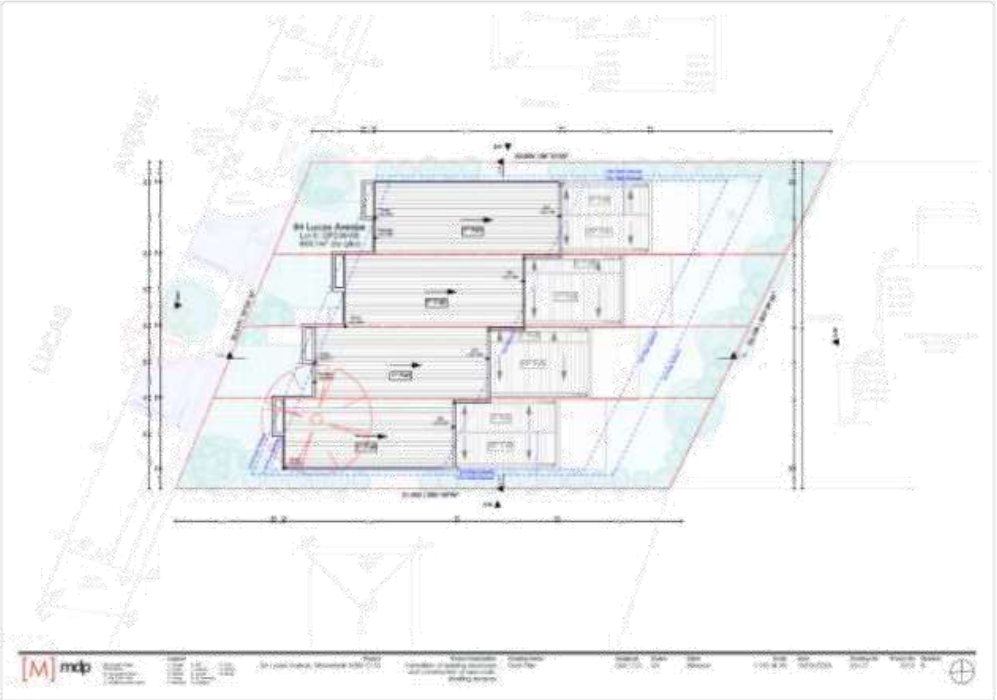
St Joseph's Catholic Primary School
Crouch Park
St Joseph Catholic Church
Field Park
Regan Park
Cole Park
St Thomas' Anglican Church
Moorebank Hotel
84 Lucas Avenue, Moorebank
Proposed Development
Nuwarra Public School
Moorebank Library
The Heights Preschool Centre
Central Park
Bus Stop
Site
[M] mdp

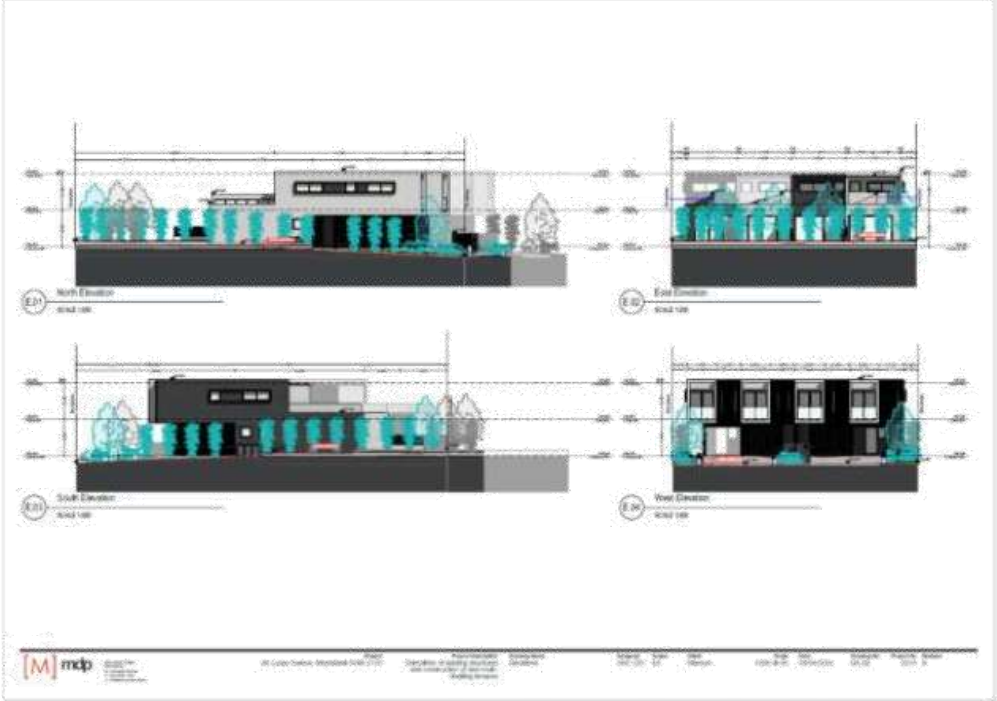

84 Lucas Avenue
[M] mdp

DA-640/2023



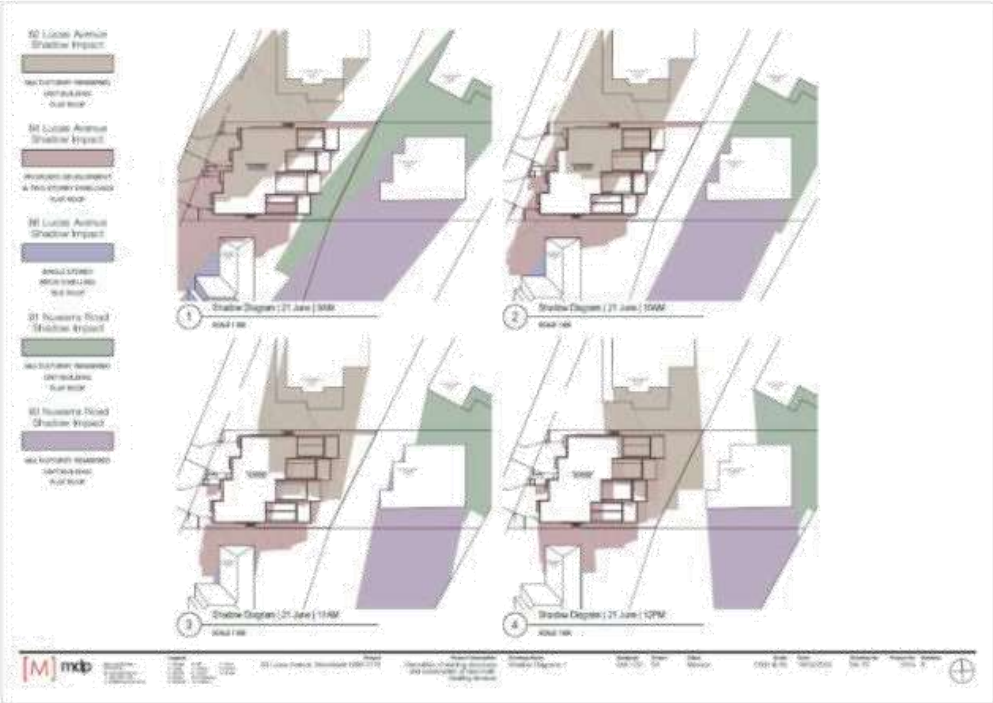
DA-640/2023



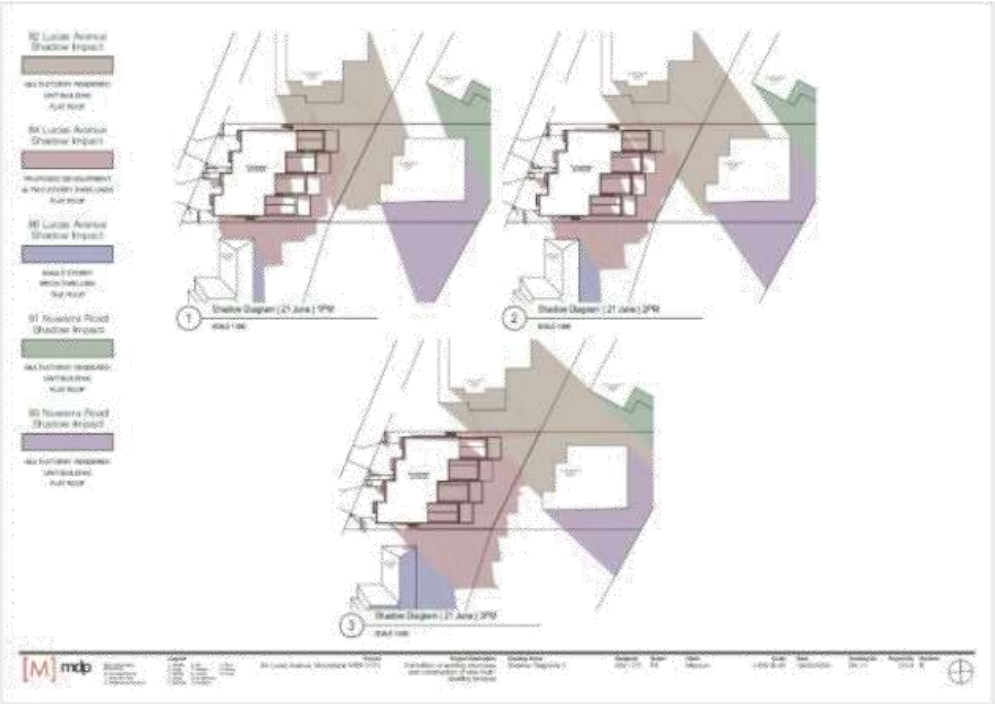

North Elevation
East Elevation
South Elevation
West Elevation

DA-640/2023

Building Section
Bin Enclosure | Front
Building Section
+26.100 @
0 Ground FFL
+26.100
0 Ground FFL
Driveway Section


Shadow Diagram | 21 June | 9AM
Shadow Diagram | 21 June | 10AM
Shadow Diagram | 21 June | 11AM
Shadow Diagram | 21 June | 12PM

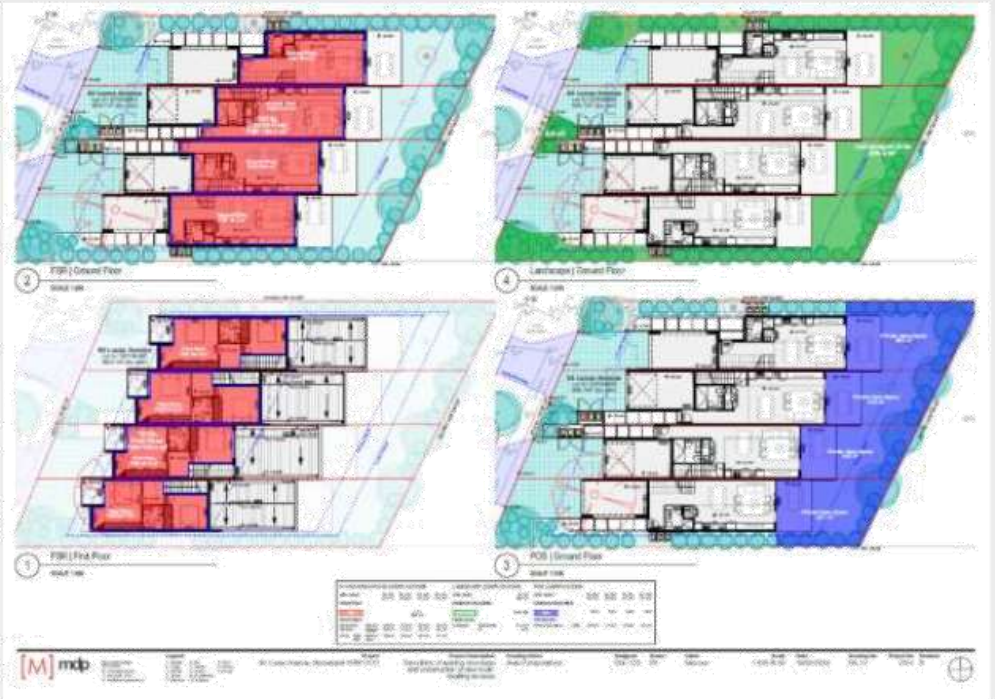
DA-640/2023


82 Lucas Avenue Shadow Impact
84 Lucas Avenue Shadow Impact
86 Lucas Avenue Shadow Impact
91 Nuwarra Road Shadow Impact
93 Nuwarra Road Shadow Impact
1 Shadow Diagram | 21 June | 9AM
2 Shadow Diagram | 21 June | 2PM
3 Shadow Diagram | 21 June | 3PM
mdp

PRIVATE OPEN SPACE SOLAR ANALYSIS (EXCL. AWNING)
1 Sun Perspective | 21 June | 9AM
2 Sun Perspective | 21 June | 10AM
3 Sun Perspective | 21 June | 11AM
4 Sun Perspective | 21 June | 12PM
5 Sun Perspective | 21 June | 1PM
6 Sun Perspective | 21 June | 2PM
7 Sun Perspective | 21 June | 3PM
mdp

DA-640/2023

PRIVATE OPEN SPACE SOLAR ANALYSIS (INC AWNING)
Sun Perspective | 21 June | 9AM (Awning)
Sun Perspective | 21 June | 10AM (Awning)
Sun Perspective | 21 June | 11AM (Awning)
Sun Perspective | 21 June | 12PM (Awning)
Sun Perspective | 21 June | 1PM (Awning)
Sun Perspective | 21 June | 2PM (Awning)
Sun Perspective | 21 June | 3PM (Awning)
mdp


FSR | Ground Floor
Landscape | Ground Floor
FSR | First Floor
POS | Ground Floor
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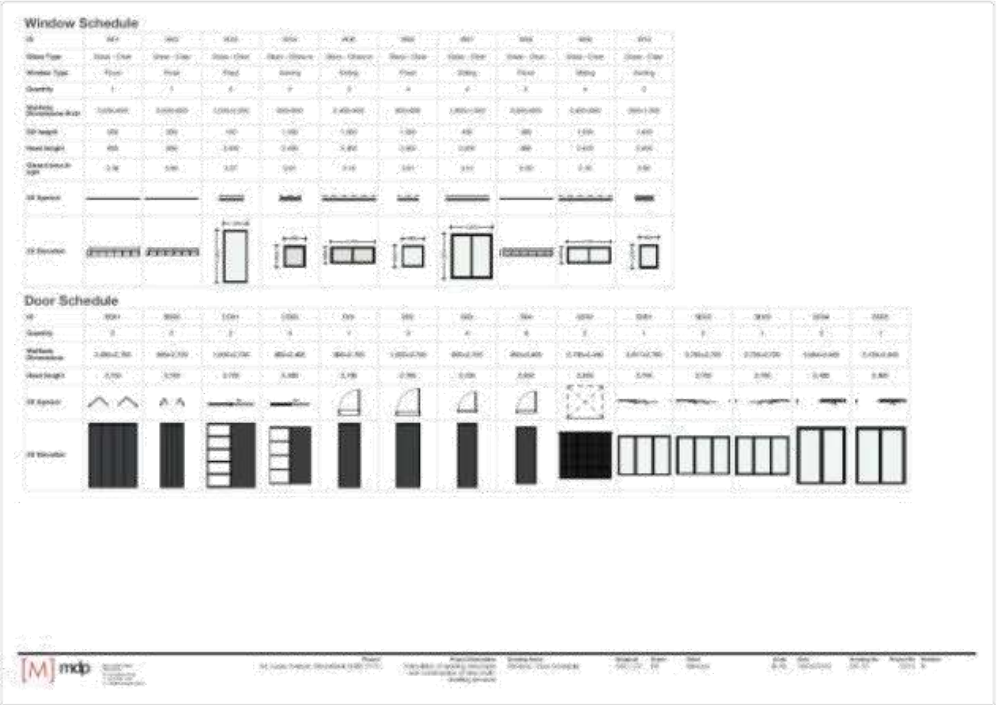

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REPORT ATTACHMENT 2 – LIVERPOOL DEVELOPMENT CONTROL PLAN 2008 COMPLIANCE TABLES

LDCP 2008 - Part 1 General Controls for all Development

Development Control	Provision	Comment	Complies
Section 2. Tree Preservation	Controls relating to the preservation of trees	The subject site contains existing trees. Two (2) trees are proposed to be removed to facilitate the development. The applicant has provided Landscape Plans which was reviewed by Council's Landscape Officer who raised no objection subject to conditions of consent.	Complies.
Section 3. Landscaping and Incorporation of Existing Trees	Controls relating to landscaping and the incorporation of existing trees.	A landscape plan was submitted with the application demonstrating the landscape design for the site.	Complies.
Section 4 Bushland and Fauna Habitat Preservation	Controls relating to bushland and fauna habitat preservation	The site is not mapped as containing significant vegetation.	N/A
Section 5. Bush Fire Risk	Controls relating to development on bushfire prone land.	The site is not mapped as bushfire prone land.	N/A
Section 6. Water Cycle Management	Stormwater runoff shall be connected to Council's drainage system by gravity means. A stormwater drainage concept plan is to be submitted.	This aspect has been reviewed by Council's Land Development Engineer, who has raised no issues subject to conditions.	Complies.
Section 7. Development Near a Watercourse	If any works are proposed near a water course, the *Water Management Act 2000* may apply, and you may be required to seek controlled activity approval from the NSW Office of Water.	The proposal is not within 40m of a watercourse.	N/A
Section 8. Erosion and	Erosion and sediment control plan to be submitted.	Conditions of consent will be imposed to ensure that erosion	Complies.

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Development Control	Provision	Comment	Complies
Sediment Control		and sediment control measures are implemented.	
Section 9. Flooding Risk	Provisions relating to development on flood prone land.	The site is not identified as flood prone land.	N/A
Section 10. Contaminated Land Risk	Provisions relating to development on contaminated land.	As per the RHSEPP assessment above the development is considered acceptable and the site suitable for the future use of the land.	Complies
Section 11. Salinity Risk	Provisions relating to development on saline land.	Development to comply with the BCA requirements.	Complies
Section 12. Acid Sulphate Soils	Provisions relating to development on acid sulphate soils	The development site is not identified as containing acid sulphate soils on the relevant mapping.	N/A
Section 13. Weeds	Provisions relating to sites containing noxious weeds.	The site is not identified as containing noxious weeds.	N/A
Section 14. Demolition of Existing Development	Provisions relating to demolition works	Demolition of existing structures is proposed and conditions to be applied to ensure compliance with relevant SafeWork NSW and Australian Standards requirements.	Complies
Section 15. On Site Sewage Disposal	Provisions relating to OSMS.	OSMS is not proposed.	N/A
Section 16. Aboriginal Archaeology	An initial investigation must be carried out to determine if the proposed development or activity occurs on land potentially containing an item of aboriginal archaeology.	The development site is not mapped as a potential area containing Aboriginal archaeology.	N/A
Section 17. Heritage and Archaeology	Provisions relating to heritage sites.	The site does not contain a heritage item nor is it within a heritage conservation area.	N/A
Section 20. Car Parking and Access	Car Parking Controls Residential & Business Zones	4 dwellings of less than 100sqm and 2 bedrooms are proposed, each requiring the provision of 1.5 spaces (6 spaces total).	Non-Compliance – acceptable on merit.

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Development Control	Provision	Comment	Complies
	1 space per small dwelling (<65sqm) or 1 bedroom 1.5 spaces per medium dwelling (65-110sqm) or 2 bedrooms 2 car spaces per large dwelling (>110sqm) or 3 or more bedrooms 1 visitor car space for every 4 dwellings or part thereof.	8 Spaces are provided (2 per dwelling) with one space in each covered space with a stacked space in front. No visitor spaces are provided. A Traffic and Transport referral has been made to determine if the parking variation is satisfactory. The Traffic and Transport referral supports the DA subject to conditions	
Section 21. Subdivision of Land and Buildings	There must be a minimum of three buildings, spaces, or land parcels for strata subdivision.	Strata subdivision is proposed for the four (4) units.	Complies
Section 22 Energy Conservation	New dwellings, are to demonstrate compliance with State Environmental Planning Policy – Building Sustainability Index (BASIX).	The application has been accompanied by a BASIX Certificate and conditions of consent will apply to ensure compliance with the BASIX commitments.	Complies
Section 23 Reflectivity	Provisions relating to the use of reflective materials on the exterior of buildings.	Highly reflective materials are not proposed.	Complies
Section 25. Waste Disposal and Re-use Facilities	Provisions relating to waste management during construction and on-going waste.	Councils Waste Management officer has reviewed the waste management plan and conditions of consent were provided.	Complies

Liverpool Development Control Plan 2008 – Part 3.6 Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones

The proposed development is subject to the LDCP 2008. Part 3.6 of the LDCP 2008 covers controls specifically relating multi dwelling housing in areas zoned R3 or R4. The following key controls are discussed in the following table:

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
Subdivision, Frontage and Lot Size	The minimum lot size for multi dwelling housing is 1,000m^2. Where development pursuant to section 4 is proposed, the minimum lot size shall be 650m^2. The minimum lot width for multi dwelling housing is 22m. Where development pursuant to section 4 is proposed, the minimum lot width shall be 18m.	**Complies** The total site area is 669.1sqm with a site width at the front of 22.5m. Therefore Section 4 of the DCP is applicable.
Site Planning	Site layout should consider, and as far as possible minimise overshadowing, acoustic and visual intrusion on neighbouring and on site dwellings.	**Complies** The proposed dwellings are considered to have been designed to minimise impacts on adjoining properties such that the development will not lead to unsupportable non-compliances with the privacy, overshadowing and solar access controls. Non-compliances with the solar access controls are addressed in more detail within separate sections of this report.
	There must be a direct link from at least one living area to the principal private open space.	**Complies** Each dwelling of the proposal will provide a direct link to the POS from the living rooms which has been demonstrated in the plans.
	The siting of windows of habitable rooms on the first floor shall minimise overlooking to the principal private open space of neighbouring properties.	**Complies** The siting of windows of habitable rooms is considered to have been designed to minimise overlooking to POS of neighbouring properties.
	Stormwater from the site must be able to be drained satisfactorily. Where the site falls away from the street, it may be necessary to obtain an easement over adjoining property to drain water satisfactorily to a Council stormwater system. Where stormwater drains directly to the street, there may also be a need to incorporate on-site detention of stormwater where street drainage is inadequate.	**Complies** This aspect has been reviewed by Council's Land Development Engineer, who has raised no issues subject to conditions.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	The siting of dwellings shall be orientated to maximise solar access to both external courtyards and internal living areas.	**Complies** The siting of the development is orientated to maximise solar access to both external courtyards and internal living areas. Notwithstanding, the solar access to POS non-compliance discuss above in this report.
	Where possible all existing substantial vegetation on site shall be retained.	**Complies** Two (2) trees are being removed and replaced on the site.
	Multi Dwelling Housing is not permitted on cul-se-sac heads or streets with a carriageway width of less than 6.5m.	**Complies** The proposed development is not located on a cul-de-sac head and McGowen Crescent has a carriageway width of 8m.
Townhouse and Villa Development on an 18m Frontage Block	At least two dwellings must have a maximum floor space of 80sqm. • These dwelling must have a maximum of two bedrooms. • These dwellings must have a carport, rather than a garage. This control applies over Section 7 – Car Parking and Access.	**Complies** Two units are proposed with a floor space of less than 80sqm, being: • No.84a: 78.9sqm; and • No.84d: 77.4sqm. **Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
	Dwellings at the rear of the property must not be more than 1 storey high. An attic is permitted. • The rear of the property for Section 4 means all land 15m from the rear property boundary.	**Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
	At least one dwelling should face and address the street.	**Complies** All dwellings are proposed to face and address the street.
	All dwellings built must conform to the Controls listed within this Part.	**Noted** Assessment against the whole of Part 3.6 has been provided.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
Setbacks	Front Setbacks Ground Floor: 4.5m First Floor: 5.5m Classified Roads: 7.0m	**Complies.** Lucas Avenue is not a classified road, therefore the other controls are applicable. The proposal provides: • Ground floor setback – 4.5m; and • First floor setback – 5.5m. The primary building setback is consistent with the requirement however there is a minor encroachment of the balcony into the front setback.
	Garages or Carports must be set back a minimum of 1m behind the main face of the dwelling (see Figure 2). (The main face is the first wall of a habitable room)	**Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
	Verandahs, balconies, eaves and other sun control devices may encroach on the minimum front setback by up to 1m.	**Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
	4. The secondary setback is the longest length boundary.	**N/A**
	Side Setbacks Ground floor with windows to habitable rooms: 4.0m Ground floor without windows to habitable rooms: 0.9m First floor without windows to habitable rooms: 1.2m First floor with windows to habitable rooms and neighbouring POS: 4.0m	**Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
	Rear Setbacks Ground floor without windows to habitable rooms: 4.0m Ground floor with windows to habitable rooms: 4.0m First floor without windows to habitable rooms: 4.5m	**Complies** Rear Ground floor: 4m First floor: 15m

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	First floor with windows to habitable rooms and neighbouring POS: 6.0m	
	Setbacks across internal driveways Buildings shall be setback a minimum of 8m from other buildings across a driveway.	**N/A**
Landscaping	A minimum of 20% of the site area shall consist of a Landscape Area, this may include lawn, deep rooted trees, garden beds and mulched areas	**Complies** Landscaped area– 31% (211.4sqm)
	A minimum unencumbered area of 4 x 5m shall be provided in rear setback to accommodate deep rooted trees.	**Complies** The rear POS areas provide an area of 4x5m that can accommodate deep rooted trees.
Private Open Space	POS required for Dwelling size: Small <65m^2: 30m^2 Medium 65m^2 – 100m^2: 40m^2 Large > 100m^2: 50m^2	**Complies** Private Open Space areas as follows: **Unit** / **GFA (sqm)** / **POS (sqm)** **84a** / 78.6 / 58 **84b** / 85 / 41.6 **84c** / 83.2 / 40.8 **84d** / 77.4 / 48.1
	Areas less than 1.5 m in width does not qualify as Private Open Space.	**Complies** All POS have widths larger than 1.5m and are directly accessible from each dwellings main living area.
	Private Open Space must be directly accessible from the main living area.	
	A minimum of 50% of the Private Open Space area must receive 3 hours of sunlight between 9:00am and 5:00pm on 21 June.	**Non-compliance – acceptable on merit** A full assessment of the non-compliance is provided within the body of the report.
Cut and Fill	Maximum Cut permitted: 500mm Maximum Fill permitted: 750mm	**Complies** Minimal cut and fill are required, the maximum cut at the site is 490mm.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
Building Design and Appearance	Unit/s with a street frontage shall orientate the main entrance and where possible at least one living area towards the street.	**Complies** Main entrances of each unit are orientated towards the street.
	Entry points shall be enhanced/emphasised to all dwellings especially those facing the street.	**Complies** Entry points are considered to be enhanced/emphasised by the unique building design.
	The first floor of the townhouse developments must be no greater than two thirds of the ground floor area.	**Complies** First floors do not exceed 2/3 of ground floor (including the garage) below.
	Building facades shall be articulated and roof form is to be varied to provide visual variety.	**Complies** Façades have been articulated through the stepping of the units and the use of different building materials to create visual interest of the façade.
	Walls shall be a mix of masonry, rendered and or bagged, and painted, lightweight clad and painted and/or flush face brick. Justification will be required for 100% face brick facades or 100% rendered and painted brick and will be assessed on merit.	**Complies** Design incorporates a variety of building materials including face brick, render and cladding.
	Facades can be articulated by: - The use of different materials and detailing and / or - The inclusion of balconies, verandas, pergolas and landscaped beds.	**Complies.** Street façade is articulated using a first-floor balconies.
	A sidewall must be articulated if the wall has a continuous length of over 10 m.	**Complies** Side walls are articulated using various materials and window structures.
	The entrance of each dwelling shall be emphasised.	**Complies** The entrances to each dwelling are emphasised.
	Units built at the rear of the allotment must take into consideration privacy of neighbouring properties. The use of windows with high sill	**N/A**. No 'rear' units are proposed.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	heights should be used to avoid potential privacy issues.	
	Driveways should avoid a 'gun barrel' effect by curving and siting of buildings, which create a driveway form with the divided carriageway separated by soft landscaping.	**N/A** No internal driveways are proposed.
	Attic floor space may be used when it is contained wholly within the roof pitch and will not be counted as a storey provided that the attic space is part of the dwelling unit.	**N/A** No attic floor space is proposed.
	Space used for car parking shall be included as a storey if the ceiling of the car parking level exceeds more than 1m above the natural ground level.	**Noted** Basement carparking is not proposed. Ground floor parking garage is included as a storey.
	The maximum roof pitch shall be 36 degrees.	**Complies** Roof pitch does not exceed 36 degrees.
	Townhouses built on steep or sloping blokes should be built of split-level construction.	**N/A**
	Balconies are not permitted on the first floor of the side and / or rear portion of the dwelling. Balconies may be considered if they address public open space, communal open space and/or private driveways.	**Complies** Proposal provided first floor balconies facing the street only.
	Blank walls in general that address street frontages or public open space are discouraged. Where they are unavoidable building elements or landscaping must be used to break up large expanses of walls. In some cases an anti-graffiti coating will need to apply to the wall to a height of 2 metres.	**Complies** No blank walls are proposed at the frontage or to public open space.
Internal Design	Multi Dwelling Housing located on street boundaries shall have	**Complies**

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	habitable rooms located to the front of the dwelling for security and surveillance to the street.	All incorporates bedrooms which front the street to promote surveillance on the upper level.
	Living rooms should take advantage of northern aspects where possible.	**Complies** All living rooms orientated north where possible. However, given the orientation of the site all living areas are predominately orientated east.
	Access to private open space must be from at least one living room.	**Complies** Provided.
	The internal layout of the dwelling must incorporate cross ventilation.	**Complies** Each dwelling can achieve cross ventilation.
	Bathrooms, ensuites, laundries and walk in wardrobes should be located to the side and the rear of the development.	**Complies** The proposed dwellings incorporate laundry areas near the garages and bathrooms and ensuites are typically oriented to the side and rear of dwellings.
	Each dwelling must provide a minimum storage area of $8m^3$.	**Non-compliance.** The proposal does not explicitly provide sperate internal storage, we recommend a design change is implemented as a condition of consent.
	Locate active use rooms or habitable rooms with windows overlooking communal/public areas (e.g. playgrounds, gardens).	**Complies** Provided.
Car Parking and Access	<u>Internal Driveway and Car Parking layout</u> Refer to Part 1 for requirements for minimum widths for Internal Driveways.	**N/A** No internal driveways provided.
	The extent of paved area for driveways shall be kept to a minimum. Driveways abutting dwellings shall be kept to a minimum.	**Complies** Size of driveways are kept to a minimum where possible.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	Avoid large expanses of driveways, including concentrating double garages adjacent to each other.	Driveways are consolidated to avoid large expanses of paved areas or multiple driveways. One driveway serves 2 units. Areas within the front setback that are not required for driveways are allocated towards landscaping. A Traffic and Transport referral has been made to determine if the parking variation is satisfactory. The Traffic and Transport referral supports the DA subject to conditions.
	Land that is unlikely to be used for manoeuvring shall be used for landscaping or for pedestrian areas and be distinguished by different materials and levels.	
	<u>Basement Car Parking</u> Basement car parking is permitted but will be included as a storey if the ceiling is located more than 1m above the natural ground level. On sites that slope away from the street, underground car parking structures that protrude more than 1m above natural ground level toward the rear are not included as a storey where topographical features warrant and the streetscape is not adversely affected. The car parking area should be adequately obscured from visible sight by screen planting.	**N/A** No basement proposed.
	<u>Access Driveways</u> Driveways to the street shall be kept to a minimum.	**Complies.** Size of driveways are kept to a minimum. Driveways are consolidated to avoid large expanses of paved areas or multiple driveways. One driveway serves 2 units. A Traffic and Transport referral has been made to determine if the parking variation is satisfactory. The Traffic and Transport referral supports the DA subject to conditions.
	Driveways may be permitted to individual dwellings provided that	**N/A**

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	the streetscape is not adversely affected and the application complies elsewhere with the DCP.	
	Kerbs shall be provided along the edge of all internal driveways. All traffic must be able to enter and exit the site in a forward direction.	**N/A** Internal driveways are not proposed.
Landscaping and Fencing	The setback areas of development are to be utilised for canopy tree planting. The landscape design for all development must include canopy trees that will achieve a minimum 8m height at maturity within front and rear setback areas.	**Complies** Proposal provides canopy trees with a mature height of 8m within the front and rear setbacks.
	Landscape planting should be principally comprised of native species to maintain the character of Liverpool and provide an integrated streetscape appearance. Species selected in environmentally sensitive areas should be indigenous to the locality. However, Council will consider the use of deciduous trees in small private open space areas such as courtyards for control of local microclimate and to improve solar access.	**Complies.** The Landscape Plan includes a planting schedule which has been selected from Liverpool Development Control Plan, Appendix 2 - Recommended Plant Species List For Landscaping.
	The landscaping shall contain an appropriate mix of canopy trees, shrubs and groundcovers. Avoid medium height shrubs (600 – 1800mm) especially along paths and close to windows and doors.	**Complies** Provided.
	Landscaping in the vicinity of a driveway entrance should not obstruct visibility for the safe ingress and egress of vehicles and pedestrians.	**Complies** Landscaping does not obstruct visibility.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	Tree and shrub planting alongside and rear boundaries should assist in providing effective screening to adjoining properties. The minimum height of screening to be provided is 2.5 to 3m at maturity.	**Complies** Provided.
	Landscaping on any podium level or planter box shall be appropriately designed and irrigated. Landscaping on podium levels and planter boxes should be accessible from habitable areas of dwellings or elsewhere as appropriate for gardener access in other forms of development.	**N/A**
	A 2m wide landscaped area shall be provided between an internal driveway and a property boundary to provide privacy to the adjoining property and to soften the appearance of the internal driveway.	**Complies** Landscaping is proposed between the two driveways.
	Landscaping shall be provided along the side and rear boundaries to provide privacy for adjoining residents.	**Complies** Provided.
	A maximum of 30% of the front setback is to be paved or sealed, unless the area is used for direct access to a garage, carport or dwelling entry.	**Complies** Landscaping is provided in all areas except those used for driveways, access and waste storage areas.
	Trees adjacent to private open space areas and living rooms should provide summer shade and allow winter sun entry.	**Complies** Tree planting in POS considered appropriate to provide shading.
	Any tree with a mature height over 8m should be planted a minimum distance of 3m from the building or utility services.	**Complies** All trees separated appropriately.
	Areas between a driveway and the windows of a dwelling shall	**Complies**

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	be landscaped to provide privacy for dwellings.	This control is related to more a traditional multi dwelling development.
Amenity and Environmental Impact	<u>Overshadowing</u> Adjoining properties must receive a minimum of three hours of sunlight between 9am and 5pm on 21 June to at least; - One living, rumpus room or the like; and - 50% of the private open space.	**Complies.** As depicted in the shadow diagram produced by the applicant. the dwelling house at the south receives 3 hours of sunlight between 9am and 5pm on 21 June to at least one living, rumpus room or the like and 50% of the private open space.
	<u>Privacy</u> Building siting, window location, balconies and fencing should take account of the importance of the privacy of on-site and adjoining buildings and outdoor spaces.	**Complies** Window sill heights at the property boundary designed to reduce privacy impacts on adjoining properties. Balconies only face the street.
	Windows to habitable rooms should be located so they do not overlook such windows in adjoining properties, other dwellings within the development or areas of private open space.	**Complies** Habitable room windows appropriately located to avoid privacy impacts on adjoining properties.
	Landscaping should be used where possible to increase visual privacy between dwellings and adjoining properties.	**Complies** Landscaping incorporated along boundary to reduce privacy impacts where possible.
	<u>Acoustic Impact</u> Noise attenuation measures should be incorporated into building design to ensure acoustic privacy between on-site and adjoining buildings. Developments in areas adversely impacted upon by rail or traffic related noises must incorporate the appropriate noise and vibration mitigation measures into the design in terms of the site layout, building materials and design, orientation	**N/A** The site is not affected by rail or road noise.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	of the buildings and location of sleeping and recreation areas. Where party walls are provided they must be carried to the underside of the roof and be constructed in accordance with Part F5 of the Building Code of Australia. The proposed buildings must comply with the Environment Protection Authority criteria and the current relevant Australian Standards for noise and vibration and quality assurance.	
Site Services	<u>Letterboxes</u> Letterboxes shall be provided for each dwelling on site, easily accessible from the street, able to be securely locked and provided in accordance with Australia Post's requirements Freestanding letterbox structures should be designed and constructed of materials that relate to the main building. Residential numbering should be attached to the letterbox so that it is clearly visible from the street frontage. Numbers should be 75mm in height, reflective and in contrast to the backing material.	**Complies with conditions** Advisory conditions will be imposed outlining Australia Post requirements.
	<u>Waste Management</u> Waste disposal facilities shall be provided for development. These shall be located adjacent to the driveway entrance to the site. Any structure involving waste disposal facilities shall be located as follows: - Setback 1m from the front boundary to the street. - Landscaped between the structure and the front boundary and adjoining	**Complies with condition** Councils Waste Management officer has reviewed the waste management plan and conditions of consent were provided.

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LDCP 2008 Part 3.6 – Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones		
Control	**Requirement**	**Comment**
	areas to minimise the impact on the streetscape. Not be located adjacent to an adjoining residential property.	
	Frontage works and damage to Council infrastructure - Where a footpath, road shoulder or new or enlarged access driveway is required to be provided this shall be provided at no cost to Council. - Council must be notified of any works that may threaten Council assets. Council must give approval for any works involving Council infrastructure. - Where there are no existing street trees in front of the site and contributions have not been collected for street tree planting it may be a condition of consent that street trees be provided in the footpath area immediately in front of the site.	**Complies with conditions** Footpath and vehicular crossing to be provided as conditions of consent and to be at no cost to Council. Additionally, dilapidation reports will occur before and after works to ensure any damage is rectified.

The proposal is considered to be generally consistent with the key controls outlined in the Liverpool Development Control Plan 2008.

ATTACHMENT 3 – CONDITIONS OF APPROVAL

Council has imposed the following conditions under the relevant planning instruments and policies.

A. THE DEVELOPMENT

Endeavour Energy Requirements

1. The development is to demonstrate compliance with all relevant requirements issued by Endeavour Energy dated 14/05/2024.

Approved Plans

2. Development the subject of this determination notice must be carried out strictly in accordance with the following plans/reports marked as follows, except where modified by the undermentioned conditions.

   (a) Architectural plans, prepared by Monument Design Partnership, Job No. 2314, including the following;

Drawing Title	Drawing Number	Revision	Date
COVER SHEET	DA.00	B	19/04/2024
DEMOLITION PLAN	DA.01	B	19/04/2024
SUBDIVISION PLAN	DA.02	B	19/04/2024
SITE LOCATION PLAN	DA.03	B	19/04/2024
SITE ANALYSIS PLAN	DA.04	B	19/04/2024
GROUND FLOOR PLAN	DA.05	B	19/04/2024
FIRST FLOOR PLAN	DA.06	B	19/04/2024
ROOF PLAN	DA.07	B	19/04/2024
ELEVATIONS	DA.08	B	19/04/2024
SECTIONS	DA.09	B	19/04/2024
SHADOW DIAGRAMS 1	DA.10	B	19/04/2024
SHADOW DIAGRAMS 2	DA.11	B	19/04/2024
SUN PERSPECTIVES 1	DA.12	B	19/04/2024
SUN PERSPECTIVES 2	DA.13	B	19/04/2024
AREA COMPUTATIONS	DA.14	B	19/04/2024
WINDOW | DOOR SCHEDULE	DA.15	B	19/04/2024
MATERIAL | FINISHES SCHEDULE	DA.16	B	19/04/2024
ARCHITECTURAL VISUALISATION 1	DA.17	B	19/04/2024
ARCHITECTURAL VISUALISATION 2	DA.18	B	19/04/2024
ARCHITECTURAL VISUALISATION 3	DA.19	B	19/04/2024
ARCHITECTURAL VISUALISATION 4	DA.20	B	19/04/2024

(b) Stormwater Management Plan; prepared by NY Civil Engineering, Job No. E230548, Issue B, dated 22/04/2024;
(c) BASIX Certificate, Certificate No. 1373464M, prepared by Greenworld Architectural Drafting, dated 23 October 2023;
(d) Waste Management Plan, prepared by Monument Design Partnership, Job No. 2314/WMP, dated March 2024; and
(e) Arboricultural Impact Assessment, prepared by The Ents Tree Consultancy, dated 22 September 2023.

Works at no cost to Council

3. All roadworks, drainage works and dedications, required to effect the consented development shall be undertaken at no cost to Liverpool City Council

Compliance with EP&A Act

4. The requirements and provisions of the *Environmental Planning & Assessment Act 1979* and *Environmental Planning & Assessment Regulation 2021* must be fully complied with at all times.

   Failure to comply with these legislative requirements is an offence and may result in the commencement of legal proceedings, issuing of 'on-the-spot' penalty infringements or service of a notice and order by Council.

National Construction Code

5. In accordance with section 4.16(11) of the *Environmental Planning & Assessment Act 1979* and clause 69 of the *Environmental Planning & Assessment Regulation 2021*, it is a prescribed condition that all building work must be carried out in accordance with the applicable Performance Requirements of the National Construction Code. Compliance with the Performance Requirements can only be achieved by:

   (a) Complying with the Deemed to Satisfy Provisions; or
   (b) Formulating an Alternative Solution, which complies with the Performance Requirements or is shown to be at least equivalent to the Deemed to Satisfy Provision, or a combination of (a) and (b).

B. PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

The following conditions are to be complied with or addressed prior to the issue of a Construction Certificate.

Housing and Productivity Contribution

6. Before the issue of the first strata certificate, the applicant is to make a Housing and Productivity Contribution payment through the NSW Planning Portal.

7. The housing and productivity contribution (HPC) set out in the table below, but as adjusted in accordance with condition 8, is required to be made:

Housing and productivity contribution	Amount
Housing and productivity contribution (base component)	$10,000 per new strata dwelling lot

Transport project component	N/A

8. The amount payable at the time of payment is the amount shown in condition 7 as the total housing and productivity contribution adjusted by multiplying it by:

9.

$$\frac{\textit{highest PPI number}}{\textit{consent PPI number}}$$

where:

highest PPI number is the highest PPI number for a quarter following the June quarter 2023 and up to and including the 2nd last quarter before the quarter in which the payment is made, and

consent PPI number is the PPI number last used to adjust HPC rates when consent was granted, and

June quarter 2023 and **PPI** have the meanings given in clause 22 (4) of the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023*.

If the amount adjusted in accordance with this condition is less than the amount at the time consent is granted, the higher amount must be paid instead.

10. The HPC must be paid before the issue first construction certificate in relation to the development, or before the commencement of any work authorised by this consent (if no construction certificate is required). However, if development is any of the kinds set out in the table below, the total housing and productivity contribution must be paid as set out in the table:

Development	**Time by which HPC must be paid**
Development consisting only of residential subdivision within the meaning of the HPC Order	Before the issue of the first subdivision certificate
High-density residential development within the meaning of the HPC Order for which no construction certificate is required	Before the issue of the first strata certificate
Development that consists only of residential strata subdivision (within the meaning of the HPC Order) or only of residential strata subdivision and a change of use of an existing building	Before the issue of the first strata certificate
Manufactured home estate for which no construction certificate is required	Before the installation of the first manufactured home

In the Table, **HPC Order** means the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023*.

11. The HPC must be paid using the NSW planning portal (https://pp.planningportal.nsw.gov.au/).

12. If the Minister administering the *Environmental Planning and Assessment Act 1979* agrees, the HPC (apart from any transport project component) may be made, instead of as a monetary contribution, in the following ways:
    (a) the dedication or provision of land for the purpose of regional infrastructure in the region in which the development will be carried out,
    (b) the carrying out of works for the purpose of regional infrastructure in the region in which the HPC development will be carried out.

    If the HPC is made partly as a monetary contribution, the amount of the part payable is the amount of the part adjusted in accordance with condition 2 at the time of payment.
13. Despite condition 7, a housing and productivity contribution is not required to be made to the extent that a planning agreement excludes the application of Subdivision 4 of Division 7.1 of the *Environmental Planning and Assessment Act 1979* to the development, or the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023* exempts the development from the contribution. The amount of the contribution may also be reduced under the order, including if payment is made before 1 July 2025.

Section 7.11 Payment (Liverpool Contributions Plan 2018 - Established Areas)

14. As a consequence of this development, Council has identified an increased demand for public amenities and public services. The following payment is imposed in accordance with Liverpool Contributions Plan 2018 - Established Areas as amended.

    The total contribution is **$30,819.00** and will be adjusted at the time of payment in accordance with the contributions plan.

    A breakdown of the contributions payable is provided in the attached payment form.

    The Contributions Plan may be inspected online at www.liverpool.nsw.gov.au. Payment must be accompanied by the attached form (Attachment 3).

Fee Payments

15. Unless otherwise prescribed by this consent, all relevant fees or charges must be paid. Where Council does not collect these payments, copies of receipts must be provided. The following fees are applicable and payable:
    a) Damage Inspection Fee – relevant where the cost of building work is $20,000 or more, or a swimming pool is to be excavated by machinery,
    b) Fee associated with Application for Permit to Carry Out Work Within a Road, Park and Drainage Reserve, and

    These fees are reviewed annually and will be calculated accordingly.

Long Service Levy

16. Before the issue of a Construction Certificate, the long service levy calculated at a rate of 0.25% of the cost of the works on building work having a value of $250,000 or more, as calculated at the date of this consent, must be paid to the Long Service Corporation under the *Building and Construction industry Long Service Payments Act 1986*, section 34, and evidence of the payment is to be provided to the certifier or Council (where a certifier is not required).

Design amendments

17. Before the issue of a construction certificate, the certifier must ensure the construction certificate plans and specifications detail the following required amendments to the approved plans and documents:
    (a) Each dwelling must provide a minimum storage area of 8m3.

    To require minor amendments to the plans endorsed by the consent authority following assessment of the development.

Notification

18. The certifying authority must advise Council, in writing of:
    a) The name and contractor licence number of the licensee who has contracted to do or intends to do the work, or
    b) The name and permit of the owner-builder who intends to do the work.

    If these arrangements are changed, or if a contact is entered into for the work to be done by a different licensee, Council must be immediately informed.

S138 Roads Act – Minor Works in the Public Road

19. Prior to the issue of a Construction Certificate, a Section 138 Roads Act application/s, including payment of fees, shall be lodged with Liverpool City Council, as the Roads Authority for any works required in a public road. These works may include but are not limited to:
    (a) Vehicular crossings (including kerb reinstatement of redundant vehicular crossings),
    (b) Road opening for utilities and stormwater (including stormwater connection to Council infrastructure), or
    (c) Road occupancy or road closures.

    All works shall be carried out in accordance with the Roads Act approval, the development consent including the stamped approved plans, and Liverpool City Council's specifications.

    Note: Approvals may also be required from the Roads and Maritime Service (RMS) for classified roads.

Retaining Walls on Boundary

20. All retaining walls shall be of masonry construction and must be wholly within the property boundary, including footings and agricultural drainage lines. Construction of retaining walls or associated drainage works along common boundaries shall not compromise the structural integrity of any existing structures.

    Where a retaining wall exceeds 600mm in height, the wall shall be designed by a practicing structural engineer and a construction certificate must be obtained prior to commencement of works on the retaining wall.

S138 Roads Act - roadworks requiring approval of civil drawings

21. Prior to the issue of a Construction Certificate for building or subdivision works the Certifying Authority shall ensure that a S138 Roads Act application, including the payment of application and inspection fees, has been lodged with Liverpool City Council (being the Roads Authority under the Roads Act), for provision of 1.5m wide footpath in Lucas Avenue Frontage.
    Engineering plans are to be prepared in accordance with the development consent, Liverpool City Council's Design Guidelines and Construction Specification for Civil Works, Austroad Guidelines and best engineering practice.
    Note: Where Liverpool City Council is the Certifying Authority for the development the Roads Act approval for the above works may be issued concurrently with the Construction Certificate.

On-Site Detention

22. On-Site Detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by NY Civil Engineering, reference number E230548, revision B, dated 22.04.2024.
    The proposed development and stormwater drainage system shall be designed to ensure that stormwater runoff from upstream properties is conveyed through the site without adverse impact on the development or adjoining properties.
    Engineering plans and supporting calculations for the on-site detention system are to be prepared by a suitably qualified person and shall accompany the application for a Construction Certificate.
    Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the on-site detention system has been designed in accordance with Liverpool City Council's Design Guidelines and Liverpool City Council's On-Site Stormwater Detention policy and Technical Specification.

No Loading on Easements

23. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the foundations of proposed structures adjoining the drainage and/ or services easement have been designed clear of the zone of influence.

Dilapidation Report

24. A dilapidation report of all infrastructure fronting the development in McGowen Crescent is to be submitted to Liverpool City Council. The report is to include, but not limited to, the road pavement, kerb and gutter, footpath, services and street trees and is to extend 20m either side of the development.

Products banned under the Building Products (Safety) Act 2017

25. No building products that are banned, or products that are subject to a ban if used in a particular way under the Building Products (Safety) Act 2017 are to be used in the construction of the development.

Driveway/Services – Location

26. Driveway entry points must be located clear of all utility services. It is recommended that discussion be held with the relevant authorities before construction works commence. Council does not accept any responsibility towards these services.

Driveway/Services – Design

27. Driveways are to conform to Council standard requirements for vehicle crossings as detailed in Council's Design and Construction Specifications for Subdivisions (as amended) and as per the requirements in Council's DCP.

Access, Car Parking and Manoeuvring – General

28. The Certifying Authority shall ensure and certify that vehicular access, circulation, manoeuvring, pedestrian and parking areas associated with the subject development have been designed and are in accordance with AS 2890.1, AS2890.2, AS2890.6 and Council's Development Control Plan.

Access, Car Parking and Manoeuvring – Detail

29. The Certifying Authority shall ensure and certify that:
    (a) Off street access and parking complies with AS2890.1,
    (b) Vehicular access and internal manoeuvring have been designed for the longest (B-Double/ Heavy Rigid/ Medium Rigid) vehicle expected to service the development site, in accordance with AS2890.2,
    (c) Sight distance at the street frontage has been provided in accordance with AS 2890.1,
    (d) All vehicles can enter and exit the site in a forward direction, and/or
    (e) Requirements of the Disability Discrimination Act 2002, Disability Standards for Accessible Public Transport and the Guidelines for assessing compliance of bus stops with the Disability Standards for Accessible Public Transport 2002.

Provision of Services

30. An application to obtain a Section 73 Compliance Certificate under the Sydney Water Act 1994, must be lodged with Sydney Water. To facilitate this, an application must be made through an authorised Water Servicing Coordinator. Please refer to the "building and developing" section of Sydney Water's web site at www.sydneywater.com.au, or telephone 13 20 92.
    Following receipt of the application, a 'Notice of Requirements' will detail water and sewer extensions to be built and charges to be paid. Please make early contact with the Coordinator, since building of water/sewer extensions can be time consuming and may impact on other services and building, driveway or landscape design. A copy of the 'Notice of Requirements' must be submitted to the PCA.

31. Written clearance from Endeavour Energy, stating that electrical services have been made available to the development or that arrangements have been entered into for the provision of services to the development must be submitted to the PCA.

32. Prior to the issue of a Construction Certificate, the Principal Certifying Authority shall be satisfied that telecommunications infrastructure may be installed to service the premises which complies with the following requirements of the Telecommunications Act 1997:

a) For a fibre ready facility, the NBN Co's standard specifications current at the time of installation, and
b) For a line that is to connect a lot to telecommunications infrastructure external to the premises, the line shall be located underground.

Unless otherwise stipulated by telecommunications legislation at the time of construction, the development must be provided with all necessary pits and pipes, and conduits to accommodate the future connection of optic fibre technology telecommunications.

Dilapidation Report

33. Prior to the Commencement of Works a dilapidation report of all infrastructure fronting the development in Lucas Avenue is to be submitted to Liverpool City Council. The report is to include, but not limited to, the road pavement, kerb and gutter, footpath, services and street trees and is to extend 10m either side of the development.

Provision of Services – Street Lighting Upgrade

34. The applicant/developer shall consult Council's Traffic Management Section for streetlight upgrade requirement for the site.

C. PRIOR TO WORKS COMMENCING

The following conditions are to be complied with or addressed prior to works commencing on the subject site/s:

Commencement of Building work

35. Building work shall not commence prior to the issue of a Construction Certificate. Building work as defined under Section 1.4 of the EP&A Act means any physical activity involved in the erection of a building and includes but is not limited to, the placement of any site shed/s or builders facilities, site grading, retaining walls, excavation, cutting trenches, installing formwork and steel reinforcement or placing of plumbing lines.

Erosion and sediment controls in place

36. Before any site work commences, the principal certifier or Council (where a principal certifier is not required), must be satisfied the erosion and sediment controls in the erosion and sediment control plan are in place. These controls must remain in place until any bare earth has been restabilised in accordance with the nsw department of housing manual 'managing urban stormwater: Soils and Construction Certificate' (the Blue Book) (as amended from time to time).

Traffic Control Plan

37. Prior to commencement of works, a Traffic Control Plan including details for pedestrian management, shall be prepared in accordance with *AS1742.3 "Traffic Control Devices for Works on Roads"* and the Roads and Traffic Authority's publication *"Traffic Control at Worksites"* and certified by an appropriately accredited Roads and Traffic Authority Traffic Controller.

Traffic control measures shall be implemented during the construction phase of the development in accordance with the certified plan. A copy of the plan shall be available on site at all times.

Note: A copy of the Traffic Control Plan shall accompany the Notice of Commencement to Liverpool City Council."

Construction Traffic Management Plan (CTMP)

38. A construction traffic management plan (CTMP) prepared by a suitably qualified person is to be submitted to and endorsed by Council's Transport Management Section. The CTMP is to be submitted using Assessment of Construction Traffic Management Plan application form. The application is available on Council website and can be lodged online. Comments on the CTMP will be provided and the updated CTMP are to be implemented during construction.

    A copy of the endorsed CTMP and traffic control plans are to be available on the works site for inspection by authorised Council officers.

    Construction shall not commence until the assessed construction traffic management plan has been endorsed. The endorsed CTMP is to be implemented during construction.

Work Zone

39. A Works Zone application is required if on-street parking is affected with commuter parking and there is insufficient off-street parking space.

    A Works Zone Application Form is available on Council website and can be lodged online by attaching all required documents indicated on the application form.

Construction Certificates

40. Any CC that may be issued in association with this development consent must ensure that any certified plans and designs are generally consistent (in terms of site layout, site levels, building location, size, external configuration and appearance) with the approved Development Application plans.

41. Prior to the commencement of any building works, the following requirements must be complied with:
    (a) Construction Certificate must be obtained from the Council or an Accredited Certifier, in accordance with the provisions of the *Environmental Planning & Assessment Act 1979*,
    (b) Where a Construction Certificate is obtained from an Accredited Certifier, the applicant shall advise Council of the name, address and contact number of the Accredited Certifier, in accordance with Section 4.19, 6.6, 6.7, 6.12, 6.13, 6.14 of the Act,
    (c) A copy of the Construction Certificate, the approved development consent plans and consent conditions must be kept on the site at all times and be made available to the Council officers and all building contractors for assessment,
    (d) A Principal Certifying Authority (PCA) must be appointed to carry out the necessary building inspections and to issue an occupation certificate, and

The PCA must advise Council of the intended date to commence work which is the subject of this consent by completing a notice of commencement of building works

(e) or subdivision works form, available from Council's Customer Service Centre. A minimum period of two (2) working days' notice must be given.

Compliance with Home Building Act (if applicable)

42. In the case of residential building work for which the Home Building Act 1989 requires there to be a contract of insurance in force in accordance with Part 6 of that Act, that such a contract of insurance is in force before any building work authorised to be carried out by the consent commences.

Signs on site

43. A sign must be erected in a prominent position on any site on which building work or demolition work is being carried out:
    a) showing the name, address and telephone number of the principal certifier for the work, and
    b) showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and
    c) stating that unauthorised entry to the work site is prohibited.

    Any such sign is to be maintained while the building work or demolition work is being carried out but must be removed when the work has been completed.

    Note: This does not apply in relation to building work or demolition work that is carried out inside an existing building that does not affect the external walls of the building.

Construction Requirements

44. Retaining walls or other approved methods necessary to prevent the movement of excavated or filled ground, together with associated subsoil drainage and surface stormwater drainage measures, shall be designed strictly in accordance with the manufacturers details or by a practising structural engineer. Retaining walls on any boundary are to be of masonry construction.

"DIAL BEFORE YOU DIG"

45. Underground assets may exist in the area that is subject to your application. In the interest of health and safety and in order to protect damage to third party assets please contact Dial before you dig at www.1100.com.au or telephone 1100 before excavating or erecting structures (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contact the Dial before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial before you dig service in advance of any construction or planning activities.

Home Building Act requirements

46. Residential building work within the meaning of the Home Building Act 1989 must not be carried out unless the principal certifier for the development to which the work relates (not being Council) has been given the council written notice of the following information:

a) In the case of work for which a principal contractor is required to be appointed:
   i. The name and licence number of the principal contractor; and
   ii. The name of the insurer by which the work is insured under Part 6 of that Act,

b) In the case of work to be done by an owner-builder:
   i. the name of the owner-builder, and
   ii. if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit.

If arrangements for doing the residential building work are changed while the work is in progress so that the information notified becomes out of date, further work must not be carried out unless the principal certifier for the development to which the work relates (not being the Council) has given the Council written notice of the updated information.

Demolition Works

47. Demolition works shall be carried out in accordance with the following:
    a) Prior to the commencement of any works on the land, a detailed demolition work plan designed in accordance with the Australian Standard AS 2601-2001 – The Demolition of Structures, prepared by a suitably qualified person with suitable expertise or experience, shall be submitted to and approved by Council and shall include the identification of any hazardous materials, method of demolition, precautions to be employed to minimise any dust nuisance and the disposal methods for hazardous materials.
    b) Prior to commencement of any works on the land, the demolition Contractor(s) licence details must be provided to Council.
    c) The handling or removal of any asbestos product from the building/site must be carried out by a SafeWork NSW licensed contractor irrespective of the size or nature of the works. Under no circumstances shall any asbestos on site be handled or removed by a non-licensed person. The licensed contractor shall carry out all works in accordance with SafeWork NSW requirements.

Refuse Disposal

48. Adequate refuse disposal methods and builders storage facilities shall be installed on the site. Builders' wastes, materials or sheds are not to be placed on any property other than that which this approval relates to.

Return of existing bins

49. Prior to commencing demolition or site clearing works, any existing domestic waste bins that have been issued to (insert address), must be returned to Liverpool City Council. Please ring Council on 1300 36 2170 to advise that the bins are empty and ready to be removed, so their removal can be noted on Council's rates system.

Sydney Water

50. Development plans must be processed and approved by Sydney Water.

Refrigerants and destroy refrigerants

51. Prior to any works commencing, any air-conditioning or refrigeration systems fitted to the dwelling or outbuildings to be demolished, must have the refrigerants present in those systems extracted into a durable, air-tight container by a licensed air-conditioning technician. This container and its contents must be sent intact, for secure destruction, to a facility licensed to destroy such refrigerants. Documentary evidence that this has been completed, if indeed these systems are fitted to the dwelling, must be sighted by the Principal Certifying Authority and included as part of the Occupation Certificate documentation.

Toilet Facilities

52. Toilet facilities must be available or provided at the work site and must be maintained until the works are completed at a ratio of one toilet plus one additional toilet for every 20 persons employed at the site. Each toilet must:
    a) be a standard flushing toilet connected to a public sewer, or
    b) have an on-site effluent disposal system approved under *the Local Government Act 1993*, or
    c) be a temporary chemical closet approved under the *Local Government Act 1993*.

Sediment and Erosion Control

53. Prior to commencement of works sediment and erosion control measures shall be installed in accordance with the approved Construction Certificate and to ensure compliance with the *Protection of the Environment Operations Act 1997* and Landcom's publication "Managing Urban Stormwater – Soils and Construction (2004)" – also known as "The Blue Book".
    The erosion and sediment control measures shall remain in place and be maintained until all disturbed areas have been rehabilitated and stabilised.

Road Occupancy Permit

54. Road occupancy and road opening approvals will be required from Council to undertake works within the existing road reserve. The following applications are available on Council's website and can be lodged online attaching all required documents indicated on the application form.
    - Road Occupancy Application Form
    - Road Opening Application Form

Environmental Management

55. Adequate soil and sediment control measures shall be installed and maintained. Furthermore, suitable site practices shall be adopted to ensure that only clean and unpolluted waters are permitted to enter Council's stormwater drainage system during construction/demolition. Measures must include, as a minimum:
    (a) Siltation fencing;
    (b) Protection of the public stormwater system; and
    (c) Site entry construction to prevent vehicles that enter and leave the site from tracking loose material onto the adjoining public place.

Waste Classification and Disposal of Contaminated Soil and Material

56. All soils and material(s), liquid and solid, to be removed from the site must be analysed and classified by an appropriately qualified and certified consultant, in accordance with the Protection of the Environment Operations (Waste) Regulation 2014 and related guidelines, in particular the NSW EPA Waste Classification Guidelines, prior to off-site disposal.
All Waste material(s) must be disposed of at an appropriately licensed waste facility for the specific waste. Receipts for the disposal of the waste must be submitted to the Principal Certifying Authority within 30 days of the waste being disposed of.
All waste must be transported by a contractor licenced to transport the specific waste, and in vehicles capable of carting the waste without spillage, and meeting relevant requirements and standards. All loads must be covered prior to vehicles leaving the site.

D. DURING CONSTRUCTION

The following conditions are to be complied with or addressed during construction:

Implementation of the site management plans

57. While site work is being carried out:
    a) the measures required by the construction site management plan and the erosion and sediment control plan (plans) must be implemented at all times; and
    b) a copy of these plans must be kept on site at all times and made available to Council officers upon request.

Demolition Inspections

58. The following inspections are required to be undertaken by Council in relation to approved demolition works:
    (a) Immediately prior to the commencement of the demolition or handling of any building structure that contains asbestos. The applicant shall also notify the occupants of the adjoining premises and Workcover NSW prior to the commencement of any works. Please note that demolition works are not permitted to commence on site until such time as a satisfactory inspection result is obtained from Council.
    (b) Immediately following completion of the demolition. Please note that proof of appropriate disposal of demolition materials (including asbestos) may be required at this time in accordance with the approved Waste Management Plan.

    To book an inspection with Council, please call 1300 362 170.

Building Inspections

59. The building works must be inspected by the Principal Certifying Authority, in accordance with section 6.5 of the EP&A Act 1979 and Clause 61 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, to monitor compliance with the relevant standards of construction, Council's development consent and the construction certificate.

60. The Principal Certifying Authority must specify the relevant stages of construction to be inspected and a satisfactory inspection must be carried out, to the satisfaction of the Principal Certifying Authority, prior to proceedings to the subsequent stages of construction or finalisation of the works (as applicable).

Identification Survey Report

61. On placement of the concrete, works again shall not continue until the PCA has issued a certificate stating that the condition of the approval has been complied with and that the slab has been poured at the approved levels.

Construction Requirements

62. In the event the development involves an excavation that extends below the level of the base of the footings of a building on adjoining land, the following is to be undertaken at full cost to the developer:
    (a) Protect and support the building, structure or work from possible damage from the excavation, and
    (b) where necessary, underpin the building, structure or work to prevent any such damage.
    (c) a and b above does not apply if the person having the benefit of the development consent owns the adjoining land or the owner of the adjoining land has given consent in writing to that condition not applying.
    (d) Retaining walls or other approved methods necessary to prevent the movement of excavated or filled ground, together with associated subsoil drainage and surface stormwater drainage measures, shall be designed strictly in accordance with the manufacturers details or by a practising structural engineer.
63. The applicant/ builder shall be responsible to report to the Council any damage to Council's footpath and road carriageway as a consequence of demolition or excavation or building activities or delivery/ departure of materials associated with this site. The damage shall be reported to Council as soon as the damage becomes apparent to the builder/ site manager. Arrangements to the satisfaction of Council are to be made for making safe by temporary repairs to the public way until permanent restoration and repair can be organised with Council.

Hours of Construction Work and Deliveries

64. Construction work/civil work/demolition work, including the delivery of materials, is only permitted on the site between the hours of 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturday. No work will be permitted on Sundays or Public Holidays, unless otherwise approved by Council.

Construction Noise and Vibration

Noise and vibration associated with excavation, demolition and construction activities shall comply with the management levels detailed within the 'Interim Construction Noise Guideline' published by the Department of Environment and Climate Change NSW (DECC 2009/265) dated July 2009 and acceptable vibration values prescribed within the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).

All feasible and reasonable noise and vibration mitigation measures shall be implemente

65. All feasible and reasonable noise and vibration mitigation measures shall be implemented and any activities which may exceed the construction noise management levels and vibration criteria shall be identified and managed accordingly.

Craning and Hoardings

66. If the work is likely to cause pedestrian or vehicular traffic in a public area to be obstructed or rendered inconvenient; or if craning of materials is to occur across a public area or road reserve area a construction hoarding must be erected to prevent any substance from, or in connection with the construction site, falling onto a public area as follows:
Such hoarding or barrier must be designed and erected in accordance with Council's guidelines on hoarding construction. Relevant application under the Roads Act approval must be completed and fees paid prior to the construction of a hoarding on Council road reserve area.

67. Lifting or craning materials over a public footway or roadway is not permitted unless a "B" class construction hoarding has been installed in compliance with Work Cover authority requirements.

Security Fence

68. A temporary security fence to WorkCover Authority requirements is to be provided to the property during the course of construction.
Note. Fencing is not to be located on Council's reserve area.

Removal of Dangerous and/or Hazardous Waste

69. All dangerous and/or hazardous material shall be removed by a suitably qualified and experienced contractor licensed by SafeWork NSW. The removal of such material shall be carried out in accordance with the requirements of SafeWork NSW and the material shall be transported and disposed of in accordance with NSW Environment Protection Authority requirements.

Contamination

70. The development, including all civil works and demolition, must comply with the requirements of the Contaminated Land Management Act, 1997, State Environmental Planning Policy (Resilience and Hazards) 2021, and Managing Land Contamination – Planning Guidelines (Planning NSW/EPA 1998).

Imported Fill Material

71. Filling material must be limited to the following:
    a) Virgin excavated natural material (VENM)
    b) Excavated natural material (ENM) certified as such in accordance with Protection of the Environment Operations (Waste) Regulation 2014; and/or
    c) Material subject to a Waste Exemption under Clause 91 and 92 Protection of the Environment Operations (Waste) Regulation 2014 and recognised by the NSW Environment Protection Authority as being "fit for purpose" with respect to the development subject of this application.

Certificates proving that the material imported is ENM or VENM must be provided to the Principal Certifying Authority prior to filling. Certificates are to be provided to Council officers if and when requested.

Fill imported on to the site must be compatible with the existing soil characteristic for site drainage purposes.

Record Keeping of Imported Fill

72. The following records of accepted waste derived fill material must be submitted to the Principal Certifying Authority at the completion of earth works:
    a) the course (including the address and owner of the source site), nature and quantity of all incoming loads including the date, the name of the carrier, and the vehicle registration,
    b) Documentation confirming the results of the waste classification assessment carried out on the fill material used in the development, and
    c) the results of any chemical testing undertaken on fill material.

Unidentified Contamination

73. Any new information which comes to light during remediation, demolition or construction works which has the potential to alter previous conclusions about site contamination and remediation must be notified to Council and the accredited certifier immediately after discovery.

A Section 4.55 Application under the EP&A Act shall be made for any proposed works outside the scope of the approved development consent.

Environmental Controls

74. Erosion and sediment control measures shall remain in place and be maintained until all disturbed areas have been rehabilitated and stabilised.
75. Alterations to the natural surface contours must not impede or divert natural surface water runoff, so as to cause a nuisance to adjoining property owners.
76. All disturbed areas shall be progressively stabilised and/or revegetated so that no areas remain exposed to potential erosion damage for a period of greater than 14 days.
77. Sediment and erosion control measures are to be adequately maintained during the works until the establishment of grass.
78. Vehicular access to the site shall be controlled through the installation of wash down bays or shaker ramps to prevent tracking of sediment or dirt onto adjoining roadways. Where any sediment is deposited on adjoining roadways, it shall be removed by means other than washing. All material is to be removed as soon as possible and the collected material is to be disposed of in a manner which will prevent its mobilisation.

Vegetation - Existing Vegetation

All existing trees and areas of native vegetation not identified for removal on approved plans of the proposed development shall be protected from damage during site works. This Protection shall consist of 1800mm high protective fencing, securely installed beneath the outer canopy of any tree to be retained. Trees may be fenced off in clusters

79. where it is not practical to fence off individual trees. There shall be no storing materials, washing machinery or changes to existing soil levels within the fenced areas.

Air Quality

80. During construction where operations involve excavation, filling or grading of land, or removal of vegetation, including ground cover, the consent holder is to ensure dust is suppressed by regular watering until such time as the soil is stabilised to prevent airborne dust transport. Where wind velocity exceeds five knots the Principal Certifying Authority may direct that such work is not to proceed.

Water Quality

81. All topsoil, sand, aggregate, spoil or any other material shall be stored clear of any drainage line, easement, water body, stormwater drain, footpath, kerb or road surface and there shall be measures in place in accordance with the approved erosion and sediment control plan.

Pollution Control

82. Building operations such as brick cutting, mixing mortar and the washing of tools, paint brushes, form-work, concrete trucks and the like shall not be performed on the public footway or any other locations which may lead to the discharge of materials into Council's stormwater drainage system.
83. The developer is to maintain all adjoining public roads to the site in a clean and tidy state, free of excavated "spoil" material.

Waste Management

84. The Waste Management Plan submitted to and approved by Council and as amended by conditions of consent, must be adhered to at all times throughout all stages of the development. Supporting documentation (receipts/dockets) of waste/recycling/disposal methods carried out, is to be kept and must be produced upon the request of Council or any other authorised officer. Note: Any non-compliance with this requirement will result in penalties being issued.
85. Any asbestos materials encountered during the demolition work, must be removed, handled, wrapped and disposed of in accordance with the relevant legislation, regulations and safe work practices, of the NSW EPA and WorkCover NSW, as current at the time. If over 10m2 of asbestos sheet materials are found on the site, all asbestos works must be carried out by a suitably licensed asbestos contractor. The licenced disposal facility of any asbestos found, must be advised to Council and the PCA.
86. All solid and liquid waste is to be removed from the site by a registered waste contractor.
87. All waste materials generated as a result of the development are to be disposed at a facility licensed to receive such waste.
88. All solid waste stored on site is to be covered at all times.

All demolition, excavation and construction wastes must be separated as they are generated and kept in separate spoil piles, bays, builder's site bins and/or skips. No

89. wastes other than those noted on the approved waste management plan as being re-used on site, are to be left on site after the completion of the works.
90. All lightweight or granular demolition, excavation or construction waste, e.g. wrapping, packaging materials, bags, insulation, sand, soil etc., must be kept fully enclosed at all times to prevent it from becoming displaced by the wind in strong wind conditions or from washing into sewers, storm drains or creeks, or onto adjacent properties or public land during wet weather.
91. While site work is being carried out:
    all waste management must be undertaken in accordance with the waste management plan; and
    upon disposal of waste, records of the disposal must be compiled and provided to the Principal Certifying Authority detailing the following:
    a) The contact details of the person(s) who removed the waste;
    b) The waste carrier vehicle registration;
    c) The date and time of waste collection;
    d) A description of the waste (type of waste and estimated quantity) and whether the waste is to be reused, recycled or go to landfill;
    e) The address of the disposal location(s) where the waste was taken;
    f) The corresponding tip docket/receipt from the site(s) to which the waste is transferred, noting date and time of delivery, description (type and quantity) of waste.

    If waste has been removed from the site under an EPA Resource Recovery Order or Exemption, records in relation to that Order or Exemption must be maintained and provided to the principal certifier and council.

Car Parking Areas

92. Car parking spaces and driveways must be constructed of a minimum two coat finish seal or better.
    All parking spaces must be clear of obstructions and columns, permanently line marked and provided with adequate manoeuvring facilities.
    The design of these spaces must comply with Council's DCP 2008, and Australian Standard 2890.1 Parking Facilities – Off-Street Car Parking.
    All car parking areas are to be appropriately line marked and sign posted in accordance with the Council approved stamped plans.
    All customer/visitor/staff parking areas are to be clearly signposted limiting car parking for customers/visitors/staff only. The applicant is to cover the costs of installation and maintenance of the signage.
    The on-site parking spaces shown in the approved plans must be identified in accordance with A.S.2890.1 Parking Facilities – Off-Street Car Parking.

Directional Signage

93. Directional signage indicating the location of visitor parking, "in" and "out", crossings and directional arrows are to be provided in accordance with the Council approved stamped plans.

External

94. Switchboards for utilities shall not be attached to the street and/or road elevations of the development.

Arboricultural Impact Assessment

95. All recommendations of the approved Arboricultural Impact Assessment, prepared by The Ents Tree Consultancy, dated 22 September 2023 that are required to be implemented during works shall be carried out to the satisfaction of the PCA. This includes, but is not limited to, the works being supervised by an appropriately qualified site Arborist.

Implementation of BASIX commitments

96. While building work is being carried out, the applicant must undertake the development strictly in accordance with the commitments listed in the BASIX certificate(s) approved by this consent, for the development to which the consent applies.

Historic Archaeology

97. As required by the *Heritage Act 1977* in the event that historical relics are encountered/discovered where they are not expected, works must cease immediately and Council and the NSW Heritage Division must be notified of the discovery.

    In the event that archaeological resources are encountered, further archaeological work may be required before works can re-commence, including the statutory requirement under the *Heritage Act 1977* to obtain the necessary approvals/permits from the NSW Heritage Division.

    Note: The *Heritage Act 1977* impose substantial penalty infringements and / or imprisonment for the unauthorised destruction of archaeological resources, regardless of whether or not such archaeological resources are known to exist on the site.

Aboriginal Cultural Heritage – Staff and Contractors

98. All relevant on-site staff and contractors should be made aware of their statutory obligations for heritage under NSW National Parks and Wildlife Act 1974 and the NSW Heritage Act 1977. They are to be informed of what the potential heritage on the site will be and its significance. The site supervisor is to maintain a record of who has completed the heritage induction and this is to be provided to Council prior to Issue of Occupation Certificate.

Aboriginal Cultural Heritage – Unexpected Finds

99. As required by the National Parks and Wildlife Service Act 1974 in the event that Aboriginal cultural heritage objects or deposits are encountered/discovered where they are not expected, works must cease immediately and Council and the Office of Environment and Heritage (OEH) must be notified of the discovery.

    In the event that archaeological resources are encountered, further archaeological work may be required before works can re-commence, including the statutory requirement under the National Parks and Wildlife Service Act 1974 to obtain the necessary approvals/permits from the OEH

Note: The National Parks and Wildlife Service Act 1974 impose substantial penalty infringements and / or imprisonment for the unauthorised destruction of archaeological resources, regardless of whether or not such archaeological resources are known to exist on the site.

Public Domain Works

100. All works within the road reserve, including the approved sign and line making scheme, are to be carried out by the applicant, at no cost to Council, in accordance with the TfNSW/RMS 'Delineation Guidelines'.

Council On Street Assets

101. Council's on-street assets and local road network are to be protected and kept in a serviceable state at all times. At the direction of Council, the applicant/project manager shall undertake remediation works, at no cost to Council and to Council's satisfaction.

Public Domain Works – Street Lighting

102. Street lights are to be installed in accordance with the Endeavour Energy certified plans to their satisfaction.

E. PRIOR TO ISSUE OF OCCUPATION CERTIFICATE

The following conditions are to be complied with or addressed prior to issue an Occupation Certificate.

Occupation Certificate

103. The premises must not be utilised until an Occupation Certificate is issued by the principal certifier.

Certificates

104. Details of critical stage inspections carried out by the principal certifying authority together with any other certification relied upon must be provided to Council with the occupation certificate.
105. The Principal Certifying Authority shall ensure that all compliance certificates required by this development consent are referenced to the condition consent number. The Compliance Certificate is to state that the works as constructed comply fully with the required condition of consent being acted on by the certifier.

Works as executed – General

106. Prior to the issue of an Occupation Certificate, works-as-executed drawings and compliance documentation shall be submitted to the Principal Certifying Authority in accordance with Liverpool City Council's Design Guidelines and Construction Specification for Civil Works.
An original set of works-as-executed drawings and electronic copies on a USB of compliancedocumentation shall also be submitted to Liverpool City Council with

notification of the issue of the Occupation Certificate where Council is not the Principal Certifying Authority.

Liverpool City Council Clearance – Roads Act/Local Government Act

107. Prior to the issue of an Occupation Certificate, the Principal Certifying Authority shall ensure that all works associated with S138 Roads Act approval or S68 Local Government Act approval have been inspected and signed off by Liverpool City Council.

Public Domain Works – Street Lighting

108. The approved street lighting designs are to be implemented along all new and existing streets within the proposed development in accordance with Liverpool City Council standards and to the satisfaction of Council. Endeavour Energy pole numbers and the date poles were energised are to be submitted to Council's Traffic Management Section prior to submitting OC or SC application.
All cost associated with the installation of street lighting shall be borne by the developer.

Stormwater Compliance

109. Prior to the issue of an Occupation Certificate, the Principal Certifying Authority shall ensure that the On-site detention system/s:
    a. Have been satisfactorily completed in accordance with the approved Construction Certificate and the requirements of this consent,
    b. Have met the design intent with regard to any construction variations to the approved design, and
    c. Any remedial works required to been undertaken have been satisfactorily completed.

Details of the approved and constructed system/s shall be provided as part of the Works-As-Executed drawings.

Restriction as to User and Positive Covenant

110. Prior to the issue of an Occupation Certificate a restriction as to user and positive covenant relating to the On-site detention system/s shall be registered on the title of the property.
The restriction as to user and positive covenant shall be in Liverpool City Council's standard wording as detailed in Liverpool City Council's Design and Construction Guidelines and Construction Specification for Civil Works.

Rectification of Damage

111. Prior to the issue of an Occupation Certificate, any damage to Council infrastructure not identified in the dilapidation report, as a result of the development shall be rectified at no cost to Liverpool City Council.
Any rectification works within Lucas Avenue will require a Roads Act application. The application is to be submitted and approved by Liverpool City Council prior to such works commencing.

Footpaths

112. Construction of 1.5m wide by 100mm thick (with one layer of SL72 reinforcing mesh) concrete path paving is to be constructed in front of the development site.

Dilapidation Report

113. Any rectification works required by Council regarding the condition of Council infrastructure shall be undertaken, at full cost to the developer.
The redundant layback is to be removed and the kerb and gutter restored to the Councils standard.

Display of Street Numbers

114. Street numbers must be prominently displayed at the front of the development in a contrasting colour to the building materials and at the front of each individual unit to comply with the Local Government Act 1973, Section 124(8). The number should be a minimum height of 120mm and be visible at night.

Section 73 Sydney Water

115. A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained for submission to the PCA prior to issue of Occupation certificate.

Cladding

116. Prior to issuing an occupation certificate the principal certifier must be satisfied that suitable evidence has been provided to demonstrate that any external wall cladding material and system is consistent with the consent documentation, NCC and relevant Australian Standards.

BASIX

117. Supporting documentation issued by a suitable qualified person who has installed or carried out the works associated with the BASIX commitments shall be submitted to Council.

Waste Receipts

118. Prior to issue of an Occupation Certificate, both the PCA and Council are to be provided with records of all waste transport and disposal dockets, demonstrating that waste materials from the project, have been disposed of at the waste facilities nominated in the approved waste management plan.

Garbage Services

119. Prior to the issue of an Occupation Certificate, if onsite waste and recycling collection is required the following restriction as to user must be registered on the title of the property:
The owner/applicant of any property requiring on site collection of waste and recycling is to enter into a legally binding indemnity with Council to control the access and operation of the waste and recycling service. This shall be inclusive on successive owners in perpetuity. All costs involved are to be borne by the applicant.

The restriction as to user may not be extinguished or altered except with the consent of Liverpool Council.

Landscape

120. Upon completion of the approved landscape works associated with the development and prior to the issue of any OC, an Implementation Report is to be submitted to the PCA attesting to the satisfactory completion of the landscape works in accordance with the approved landscape plan. The report is to be prepared by a suitably qualified person.

F. PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE

The following conditions are to be complied with or addressed prior to issue of a Subdivision Certificate:

Completion of Subdivision Works

121. Prior to the issue of a Subdivision Certificate, the Principal Certifying Authority shall ensure that all subdivision works required by this consent have been satisfactorily completed or that suitable arrangements have been made with Liverpool City Council for any outstanding works.

Stormwater Compliance

122. Prior to the issue of a Subdivision Certificate the Principal Certifying Authority shall ensure that the on-site detention system/s:
    - Have been satisfactorily completed in accordance with the approved Construction Certificate and the requirements of this consent.
    - Have met the design intent with regard to any construction variations to the approved design.
    - Any remedial works required to been undertaken have been satisfactorily completed.

    Details of the approved and constructed system/s shall be provided as part of the Works-As-Executed drawings.

Restriction as to User and Positive Covenant

123. Prior to the issue of a Subdivision Certificate a restriction as to user and positive covenant relating to the:
    (a) On-site detention system/s

    Shall be registered on the title of the property. The restriction as to user and positive covenant shall be in Liverpool City Council's standard wording as detailed in Liverpool City Council's Design and Construction Guidelines and Construction Specification for Civil Works.

Right of Way

124. A reciprocal Right of Way for vehicular access is to be registered over the driveways of Lots 84A-84D on the 88B Instrument, to enable vehicles to traverse the front strata boundary of the adjoining strata lots, being Lots 84A & 84B and Lots 84C & 84D.

Subdivision Compliance

125. Prior to the issue of a Subdivision Certificate the following compliance documentation shall be submitted to the Principal Certifying Authority. A copy of the following documentation shall be provided to Council where Council is not the Principal Certifying Authority:
    a) Work as Executed (WAE) drawings of all civil works. The WAE drawings shall be marked in red on copies of the stamped Construction Certificate drawings signed, certified and dated by a registered surveyor or the design engineer. The Work as Executed drawings shall be prepared in accordance with Council's Design Guidelines. Electronic copies of the WAE shall be provided in PDF format and a DXF format to Council along with two hard copies of the WAE plans; and
    b) Surveyor's Certificate certifying that all pipes and services are located wholly within the property or within appropriate easements and that no services encroach boundaries.

Rectification of Damage

126. Prior to the issue of a Subdivision Certificate, any damage to Council infrastructure not identified in the dilapidation report, as a result of the development shall be rectified at no cost to Liverpool City Council.

    Any rectification works within Lucas Avenue will require a Roads Act application. The application is to be submitted and approved by Liverpool City Council prior to such works commencing.

Linen Plans and 88B Instruments

127. In order to enable a Subdivision Certificate to be issued for submission to the LPI Service, the applicant is required to lodge a separate application along with one (1) original and ten (10) copies of the proposed plan of subdivision and one (1) original and two (2) copies of the proposed 88b instrument (where proposed).
128. The applicant shall pay the standard fee for purpose of subdivision certificate administration of plan checking and release.
129. The following restriction as to user must be placed over proposed Lot (insert Lot numbers). Details shall be submitted with the application for a Subdivision Certificate.
    (a) No Construction Certificate shall be issued for a building on the lot burdened until on site drainage detention has been designed in accordance with Council's On-Site Detention Policy and Construction Specification, and
    (b) No Occupation Certificate for a building shall be issued until the designed on-site detention system has been constructed on the subject lot and a licensed Surveyor prepares a "Work As Executed" plan and is certified as complying with the approved detention design by an appropriate accredited professional engineer.
130. The final plan of subdivision must be supported by an 88B Instrument, approved by Council.The 88B instrument shall properly reflect the requirements of the conditions of

131. development consent, the plans forming part of the consent, and Council's standards, codes and policy's. Part 2 of the 88B instrument shall contain a provision that any easements, right of ways or covenants shall not be extinguished or altered without the written consent of Council.

Dilapidation Report

132. Any rectification works required by Council regarding the condition of Council infrastructure shall be undertaken, at full cost to the developer.

Service Providers

The following documentation is to be provided prior to the release of the subdivision certificate:

a) Written evidence of suitable arrangements with Sydney Water (Section 73 Compliance Certificate) for the supply of water and sewerage services to the development is to be submitted to the PCA prior to the issue of a Subdivision Certificate.

   Council will not issue a Subdivision Certificate unless the method of sewerage disposal is by gravity reticulation mains to either Sydney Water branch and trunk sewers or Sydney Water point of treatment. Council will not accept any temporary facilities to service the site, including pump-out wet-wells.

b) Notification of arrangement for the development from Endeavour Energy shall be submitted to Council.

c) Written certification from the relevant service providers that the telecommunications infrastructure is installed in accordance with:

   i. The requirements of the Telecommunications Act 1997;
   ii. For a fibre ready facility, the NBN Co's standard specifications current at the time of installation; and
   iii. For a line that is to connect a lot to telecommunications infrastructure external to the premises, the line shall be located underground.

Unless otherwise stipulated by telecommunications legislation at the time of construction, the development must be provided with all necessary pits and pipes, and conduits to accommodate the future connections of optic fibre technology telecommunications.

Completion of Public Utility Services

133. Before the issue of the relevant occupation certificate, confirmation must be obtained from the relevant authority that any adjustment or augmentation of any public utility services including gas, water, sewer, electricity, street lighting and telecommunications, required as a result of the development, have been completed and this confirmation must be provided to the principal certifier.

Public Domain Works – Street Lighting

134. The approved street lighting designs are to be implemented along all new and existing streets within the proposed development in accordance with Liverpool City Council standards and to the satisfaction of Council. Endeavour Energy pole numbers and the

date poles were energised are to be submitted to Council's Traffic Management Section prior to submitting the SC application.

All cost associated with the installation of street lighting shall be borne by the developer.

G. CONDITIONS RELATING TO USE

Landscaping

135. Landscaping shall be maintained in accordance with the approved plan, in a healthy state and in perpetuity by the existing or future owners and occupiers of the development.

If any of the vegetation compromising the landscaping dies or is removed, it is to be replaced with vegetation of the same species, and similar maturity as the vegetation which has died or was removed.

Use of Building Intruder Alarm/s

136. Any building intruder alarm/s associated with the development must only be permitted to operate in accordance with Clause 42 of the Protection of the Environment Operations (Noise Control) Regulation 2017.

Waste Collection and Management

137. Waste and recyclable material must be managed in a satisfactory manner, covered at all times and not give rise to offensive odour or encourage pest activity. All solid and liquid waste must be removed regularly from the site by a registered waste contractor. Waste must not be permitted to accumulate near the waste storage bins.

Parking Spaces

138. The following parking spaces should be used solely for the purpose it has been provided:

    a) Unrestricted resident car parking

Car Parking/Loading Provisions – Multi-Dwelling Units

139. A total of eight off street car parking spaces must be provided (two for each unit) in accordance with Council's requirements.

Car Parking Management

140. All parking areas shown on the approved plans must be used solely for this purpose.

Vehicle Access

141. Vehicles entering or leaving the development site should be in forward direction, if practicable.

Council Assets

142. Council's on-street assets should be protected at all times. Any damages should be rectified to Council satisfaction.

143. All waste materials generated as a result of the development are to be disposed at a facility licensed to receive such waste.
144. Sufficient space shall be provided within each dwelling for the storage of a minimum of one day's waste and recycling.

Use of air conditioner/s on residential premises

145. Any air conditioner/s used on the residential premises shall comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and shall not:
    a) emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):
        i. before 8:00am or after 10:00pm on any Saturday, Sunday or public holiday; or
        ii. before 7:00am or after 10:00pm on any other day; or
    b) cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997; or
    c) emit a sound pressure level as measured over a 15 minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

Use of Pump/s on Residential Premises

146. Any pump/s used on the residential premises including but not limited to swimming pool pumps, spa pumps, solar water pumps, rainwater tank pumps and associated equipment must comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and must not:
    a) emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):
        i. before 8:00am or after 8:00pm on any Saturday, Sunday or public holiday; or
        ii. before 7:00am or after 8:00pm on any other day; or
    b) cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997; or
    c) emit a sound pressure level as measured over a 15 minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

Use of Heat Pump Water Heater/s on Residential Premises

147. Any heat pump water heater/s used on the residential premises must comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and must not:
    a) emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):
        i. before 8:00am or after 10:00pm on any Saturday, Sunday or public holiday; or
        ii. before 7:00am or after 10.00pm on any other day; or

b) cause “offensive noise” as defined by the Protection of the Environment Operations Act 1997; or
c) emit a sound pressure level as measured over a 15 minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

H. ADVISORY

(a) Section 4.53 of the EP&A Act provides that unless otherwise stated by a condition of this consent, this consent will lapse if development is not physically commenced within five years of the date of this notice.

(b) Section 8.2 of the EP&A Act provides that an applicant may request, within six (6) months of the date of the determination of the Development Application, that Council review its determination (this does not relate to designated development or Crown development).
An application under Section 8.2 of the EP&A Act cannot be reviewed/determined after 6 months of the date of determination. Therefore, the submission of a Section 8.2 Application must allow sufficient time for Council to complete its review within the prescribed timeframe, including the statutory requirement for public notification.

(c) Section 8.7 of the EP&A Act provides that an applicant who is dissatisfied with the determination of a Development Application, may appeal to the Land and Environment Court within six (6) months of the date of determination, or as otherwise prescribed by the EP&A Act.

(d) Section 8.8 of the EP&A Act provides that an objector who is dissatisfied with the determination of the consent authority to grant consent to a Development Application for Designated Development (including any State significant development that would be designed development but for Section 4.10(2) of the EP&A Act), may, within 28 days after the date on which the application is taken to have been determined, appeal to the Land and Environment Court, against the determination.

(e) The Commonwealth Disability Discrimination Act 1992 may apply to this proposal. Approval of this application does not imply or infer compliance with this Act. Applicants and owners are required to satisfy themselves as to compliance and make their own enquiries to the Human Rights and Equal Opportunity Commission. Attention is also drawn to the provisions of Australian Standard 1428 – Design for Access and Mobility.

(f) The requirements of all authorities including the Environmental Protection Authority and the Work Cover Authority shall be met in regard to the operation of the building.

(g) “DIAL BEFORE YOU DIG”

Underground assets may exist in the area that is subject to your application. In the interest of health and safety and in order to protect damage to third party assets please contact Dial before you dig at www.1100.com.au or telephone 1100 before excavating or erecting structures (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contact the Dial before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual’s responsibility to anticipate and request the nominal location of plant or assets on the

relevant property via contacting the Dial before you dig service in advance of any construction or planning activities.

(h) TELECOMMUNICATIONS ACT 1997 (COMMONWEALTH)
Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the Criminal Code Act 1995 (Cth) and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact Telstra's Network Integrity Team on Phone Number 1800 810 443.

(i) The Liverpool City Council Local Government area soils and ground water may be subject to varying levels of Salinity. Whilst Council may require applicants to obtain Salinity reports relating to some developments, no assessment has been made by Council. Soil and ground water salinity levels can change over time due to varying factors. It is recommended that all applicants make their own independent inquiries as to appropriate protection against the current and future potential affect of Salinity to ensure the ongoing structural integrity of any work undertaken. Liverpool City Council will not accept any liability for damage occurring to any construction of any type affected by soil and or ground water Salinity.

(j) Care shall be taken by the applicant and the applicant's agents to prevent any damage to adjoining properties. The applicant or applicant's agents may be liable to pay compensation to any adjoining owner if, due to construction works, damage is caused to such an adjoining property.

(k) Letter boxes must be provided in accordance with the requirements of Australia Post. In this regard, the developer is required to obtain approval from Australia Post for letter box positioning and dimensions.

(l) The cost of any necessary adjustments to utility mains and services shall be borne by the applicant.

ATTACHMENT 3 – SECTION 7.11 PAYMENT FORM

CONTRIBUTIONS PURSUANT TO SECTION 7.11 OF THE ENVIRONMENTALPLANNING & ASSESSMENT ACT, 1979
Liverpool Contribution Plan 2018 Established Areas

When remitting payment as specified in the Conditions of Consent to the approval, this Form must be submitted with your payment.

These figures have been calculated to the current CPI Quarter and will be adjusted at the time of payment in accordance with the conditions of consent.

APPLICATION NO: DA-640/2023

PROPOSAL: Demolition of existing structures, tree removal, and construction of a multi-dwelling development consisting of 4 multi-dwelling units with strata subdivision

Facilities	Amount ($)	Job No.
Liverpool Contributions Plan 2018 Established Areas		
Community Facilities - works		
Eastern	$2,688	GL.10000001870.10098
District Sporting Fields - works		
Eastern	$9,041	GL.10000001869.10212
District Passive Open Space - works		
Eastern	$5,651	GL.10000001869.10092
Local Passive Open Space - works		
Moorebank	$7,911	GL.10000001869.10100
Transport - Bikeways - works		
Eastern	$968	GL.10000001865.10208
Transport - Traffic management - works		
Eastern	$2,759	GL.10000001865.10214
Drainage - works		
Eastern	$1,345	GL.10000001866.10210
Administration	$455	GL.10000001872.10104
TOTAL	**$30,819**	

----------OFFICE USE ONLY ----------

RECORD OF PAYMENT

Total Amount paid: _____
Date:_____

Receipt No.:_____***Cashier:***_____

Item Number:	**3**
Application Number:	DA-562/2023
Proposed Development:	Demolition of the existing structures and construction of a four-storey residential flat building with 31 dwellings (one x studio, 10 x 1-bedroom, 18 x 2-bedroom and two x 3-bedroom dwellings) and two basement levels. The development includes nine dwellings that would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of State Environmental Planning Policy (SEPP) (Housing) 2021.
Property Address	11, 13 & 15 Woolnough Place Cartwright
Legal Description:	Lots 387 to 389 DP 237249 (three adjoined allotments)
Applicant:	Tone Wheeler
Land Owner:	Obaid Investments Pty Ltd
Cost of Works:	$10,821.543
Recommendation:	Approval, subject to conditions
Assessing Officer:	Edwar Eshow

1. EXECUTIVE SUMMARY

The subject Development Application (DA-562/2023) seeks consent for the *demolition of the existing structures and construction of a four-storey residential flat building with 31 dwellings (one x studio, 10 x 1-bedroom and 18 x 2-bedroom dwellings, two x 3-bedroom) and two basement levels. The development includes nine dwellings that would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of SEPP (Housing) 2021*.

The site is zoned R4 – High Density Residential under Liverpool Local Environmental Plan (LLEP) 2008 and the proposed development is permissible with consent.

The application was notified between 14 November and 29 November 2023 in accordance with the Liverpool City Council Participation Plan 2022. No submissions were received.

The proposed development was required to be reviewed by the Liverpool Design Excellence Panel (DEP). The DEP recommended changes to the original design and subsequently an amended proposal was submitted to Council. The amended proposal is satisfactory and was not considered necessary to re-refer the amended proposal back to the DEP for a second time, as the amended plans indicated that the proposal was revised accordingly. However, conditions of consent would be imposed, to achieve better on-site amenity, the conditions are for the following matters:

- Outdoor furniture and landscaping for the rooftop communal space; and
- Confirmation of a community housing provider (CHP); and
- Improving the relationship between the built form and landscaping); and
- Improve privacy for the three ground units along Woolnough Place, by amending the design of the fence; and
- Improve the solar access, to the living rooms, for units numbered 02, 09, 17 and 25.

The proposed development is generally consistent with the objectives and development standards of LLEP 2008 and the provisions of the Liverpool Development Control Plan (LCDCP 2008. The

proposal is generally consistent with the provisions of SEPP No. 65 – Design Quality of Residential Apartment Development and the design requirements of the Apartment Design Guide (ADG).

SEPP 65 was repealed by section 3 of the *State Environmental Planning Policy Amendment (Housing) 2023* (SEPP Housing), effective from 14 December 2023.

In conjunction with schedule 7A, subsection 8 – General Savings Provisions of the Housing SEPP, the savings provisions for SEPP 65 are relevant to any development by amendment to the SEPP Housing that were lodged prior to 14 December 2023 but determined after that time. The State Government amended the SEPP Housing in March 2024 to allow for the transitional provisions in the SEPP Housing, Chapter 4 to development applications lodged before 14 December 2023 which corrected an anomaly in the transitions from SEPP 65 to SEPP Housing.

The application is referred to the Liverpool Local Planning Panel (LLPP) in accordance with the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consent, endorsed by the Minister for Planning and Public Spaces on 6 March 2024,* as the development falls in the categories of:

> ***Sensitive Development***
> *(b) Development to which State Environmental Planning Policy (Housing) 2021, Chapter 4 (design of residential apartment) applies.*

The application has been assessed pursuant to the provisions of the Environmental Planning and Assessment Act 1979. Based on the assessment of the application, it is recommended that the application be approved, subject to the imposition of conditions.

2. SITE DESCRIPTION AND LOCALITY

2.1 The Site

The subject site incorporates the following three existing residential allotments:

- Lot 387 DP 237249, which is known as No. 11 Woolnough Place, Cartwright; and
- Lot 388 DP 237249, which is known as No. 13 Woolnough Place, Cartwright; and
- Lot 389 DP 237249, which is known as No. 15 Woolnough Place, Cartwright.

The site provides for a dual frontage of approximately 72 metres to the Hoxton Park Road access lane and approximately 37 metres to Woolnough Place. The overall site area is 1724sqm.

The land, across the three subject lots, is relativity flat (being at 20m AHD). Each allotment has a single storey dwelling. Nos 13 and 15 Woolnough Place have detached garages which are accessed from Woolnough Place. Each of the allotments enjoys pedestrian access from both the Hoxton Park Road access lane and Woolnough Place. The vegetation on the subject site includes trees and shrubs scattered across the site and along the southern boundary and grass cover around the existing building curtilages.

An aerial photograph and photographs of the site are provided below.

Figure 1: Aerial view of subject site (outlined in blue).

Site Inspection:

Images from a site inspection on 8 February 2024 are provided in Figures 2-5 below.

Figure 2: Looking, from a westerly position, towards the subject site on Woolnough Place.	
Figure 3: Looking, from an easterly position, towards the subject site on Woolnough Place.	

Figure 4: Looking, from a westerly position, towards the subject site on the Hoxton Park Road access lane.	
Figure 5: Looking, from an easterly position, towards the subject site on the Hoxton Park Road access lane.	

2.2 Site Constraints

Are there any constraints or affectation on the site: - Bushfire - Flooding - Heritage Items - Aboriginal heritage	Three Identified Constraints (see below): • Flood Prone – *Low Flood Risk* • Classified Road - *Classified Road Noise Impact* • Salinity – *High Salinity Potential*

- Environmentally Significant Land - Threatened Species/ Flora/ Habitat/ Critical Communities - Acid Sulphate Soils - Aircraft Noise - Flight Paths - Railway Noise - Road Noise/ Classified Road - Significant Vegetation - Contamination - Salinity	
Are there any restrictions on title?	No restrictions.

2.3 The locality

The site is located within the area of Cartwright, which was based on the Radburn planning model, which is typified by the backyards of homes facing the street and the fronts of homes facing each other over common yards divided by a public laneway. The locality is generally characterised by low density residential development, with surrounding properties predominately being single storey in nature and however there are three 'walk-up' flats to the north of the subject site.

The adjoining properties of the development site are detailed in the following table.

East (side)	Detached residential dwelling a garage.
West (side)	The site is vacant of any dwelling or building.
South (front)	Hoxton Park Road and further south is built up development (mixture of industrial and big box commercial)
North (rear)	Three residential flat buildings (two are three storeys and one is two storey)

To the south of the site is Hoxton Park Road, which contains a Bus Transit Way and further south are industrial developments. The closest waterway to the site is Cabramatta Creek, which is located 620m northwest of the site. An aerial photograph of the locality is provided below:

Figure 6: Locality and location of nearby Land Housing RFBs (two-four storeys) and multi dwellings (highlighted in yellow).

3. BACKGROUND/HISTORY

3.1 Design Excellence Panel

The application was presented to the Liverpool Council Design Excellence Panel (DEP) on 8 February 2024 where the panel supported the proposal, subject to the applicant addressing the matters raised by the panel, and subject to Council's acceptance. The key matters raised by the DEP were as follows:

1. Community Housing Provider and FSR calculation for affordable housing.
2. Design response to Hoxton Park Road – enhance façade, ventilation and solar access but no include balconies.
3. Central stair and planter.
4. Natural light and/or ventilation for bathrooms.
5. External sun-screening devices for the units on the east and western facades.
6. Roof plan to include more PV panels.
7. Ground level landscaping - reduce turf and a stronger connection to country response (more native plants) and winding gravel and informal seating.
8. Floor to floor height – increase height.
9. Glazing to be increased on along southern façade.
10. Communal spaces need to be improved by providing privacy and diversity of spaces.
11. Improve typology of units by providing at least two x 3-bedrooms units.
12. Southern façade needs a significant increase in trees and planting.

The applicant responded to the DEP matters of concern, listed above, and supplied amended architectural plans, which have been reviewed by Council and are considered largely satisfactory except for solar access for four units on the western site of the building (solar access has been assessed and addressed within *Attachment 1- Apartment Design Guide*).

A summary of the DEP's comments, from the February 2024 meeting, with Council's response to each comment are provided in the table below.

Principles (with DEP's comments)	Council's Response
Context	
• The Panel seeks clarity on whether there is a preliminary agreement with a Community Housing Provider who will manage the affordable housing in the development, as required. A letter from the CHP that will manage the affordable dwellings that confirms the future leasing arrangements should be submitted to Council.	• Applicant has yet to provide official documentation confirming that there is a preliminary agreement with a Community Housing Provider. However, conditions of consent would be imposed to ensure the proposed units, for affordable housing, would only be used for affordable housing.
• The Panel acknowledges the challenges of the development being located on the harsh road environment, however, the southern façade's address to Hoxton Park Road is presenting as a harsh design outcome and needs further development. The applicant is to show options that improve façade articulation and appearance to Hoxton Road and allow more southern light to rooms along this facade. Natural ventilation is required, which must be achieved while also protecting residents from undue noise impacts.	• **Changes made:** The southern façade has been improved as the windows have been enlarged, to allow more natural light into the southern units and to improved natural ventilation. The windows are sized to the bedroom proportion on this façade, and all are openable for natural ventilation.
• In addition to the above, the southern façade line is all in one alignment and presenting overly uniform to Hoxton Park Road. The Panel suggests the applicant explore introducing a small indent at the entry way to visually break the expression of the built form to visually read as 2 buildings. The applicant noted that further investigations of the rhythm of the precast panels and central entry panel will be undertaken.	• **Changes made:** An indent feature has been incorporated, along the southern façade line. The building has a four-storey void that connects to the centre lightwell as a way of separating the two buildings
Built Form + Scale	
• The Panel commends the extent of deep soil (30% of the site) enabled by the setbacks proposed and the basement footprint aligning with the building line above. The landscape plan should show a commitment to large trees that can achieve substantial height and canopy.	• **Changes made:** Large trees are indicated on the south side of the building.
• The central stair and planter are currently obscuring the ability to have a view and light through the ground floor entry space of the development. The applicant should explore shifting the stair to create a clearer line of sight. In doing so it is not the Panel's intent to compromise the planting in this area which is supported.	• **Changes made:** The ground level plan has been revised accordingly with the central stair and the planter have been broken up. This would enhance the ability to have a view and light through the ground floor entry space.
Density	
• The FSR according to the LEP is 1:1 for the site and 1.2:1 in the Housing SEPP. The applicant confirmed the proposal exceeds the FSR at 1.4:1 and justified the additional .4 is dedicated to affordable	• **Changes made:** Applicant has reduced the FSR, from 1.4:1, to 1.29:1.

housing (12 affordable apartments out of 32 in the development). The Panel is of the view that the additional 0.2 FSR is not creating negative impact on the context and can be supported. • The Panel appreciates the proposal is comfortably within the height limit and is not maximising height, and notes there is a good opportunity to create more useable communal open space on the rooftop away from the traffic at ground level.	• **Changes made:** The subsequent changes made, in response to the DEP's request to utilise the roof as a communal open space, has meant that the lift overrun does breach the height of 15m however SEPP Housing 2021, under Section 18, does allow a bonus of up to 30%.
Sustainability • The Panel suggests that windows to bathrooms that look over the central atrium could be included (subject to ADG and BCA restrictions) to gain natural light and/or ventilation and reduce reliance on artificial lighting and mechanical systems. • External sun-screening devices are required to be introduced to the east and western facades to provide solar protection. The shading provided on the north façade is supported. • The applicant's efforts to embed ESD principles into the project and proposing above the minimum NatHERS requirements are commended. • The sustainability approach to have exposed concrete internally to improve thermal massing and ESD performance is supported. • The Panel raised concerns the roof plan does not show adequate PV panels that would be typical for this scale of residential development. This should be amended as part of the revised proposal.	• **Changes made:** The sections, for all four storeys, have been revised accordingly to incorporate windows to bathrooms that look over the central atrium. • **Changes made:** Plans have been revised accordingly to include sun-screening devices on eastern and western facades. • **Noted** • **Noted** • **Changes made**: The roof plan has been revised accordingly to substantially include the amount of PV panels.
Landscape • The Panel supports the proposed large trees in the landscaping and emphasises the importance of enabling the trees to reach their maturity in height and canopy as they will improve the amenity of the apartments and serve as a buffer to Hoxton Park Road. • The relationship between the built form and landscape needs further development. The proposal includes strips of turf running into the building edge creating a poor interface. Turf requires long-term maintenance to thrive and will	• **Noted** • **Conditions of Consent:** No plans were revised however conditions of consent would be imposed on the development consent to achieve the outcome sought by the DEP, in relation to improving the

receive limited daylight along the southern area of the site. The Panel recommends a stronger Connecting to Country response. Turf could be replaced with native planting up to the building edges, and with considered species selection the landscaping around the building can become a dense planting and biodiversity zone, (also referred to as an urban micro-forest). The applicant could consider incorporating a winding gravel pathway and informal seating situated in shaded areas away from bedrooms and balconies.	relationship between the built form and the landscape.
• The communal open spaces at ground level do not have sufficient width, are subject to traffic noise, and impact the privacy of the ground level apartments. The Panel recommends utilising the rooftop as communal open space instead. Incorporating elements to enhance functionality, should be considered (e.g., shading and BBQs).	• **Changes made**: The roof plan has been revised accordingly by introducing 459sqm communal open space on the rooftop.
• The proposed central open courtyard and atrium is supported. However, the applicant should investigate continuing the landscaping up onto the rooftop improving the amenity of the rooftop communal space.	• **Noted**
Amenity	
• The architectural drawings submitted show a 3m floor to floor height. However, during the presentation the applicant noted that this will be revised to 3.04m and that this can accommodate the minimum height necessary, as there is an absence of ceiling linings.	• **Changes made:** The cross sections have been revised accordingly with the floor-to-floor height being changed to 3.1m, for all units on levels 1-3, and 3.4m for all units on level 4.
• If a less than 3.2m floor to floor height is proposed, the Panel requires the applicant to provide sections through living, bathroom, and communal corridor spaces to demonstrate how ADG ceiling height compliance will be achieved and also how it will accommodate the required structures and services. Given the development is well under the height limit, an additional allowance for floor-to-floor height is recommended.	
Safety	
• While the Panel acknowledges the challenges of the southern façade including the noise from Hoxton Park Road, it strongly recommends the extent of glazing be increased along this facade to improve passive surveillance of the public footpath.	• **Changes made:** Applicant has made changes to the windows, along the southern façade, widening them from 800mm to 1200mm.
• The applicant requested the opportunity	

to adjust the panel layout for the pre-cast panels on the elevations. In this regard, the Panel is supportive of the applicant submitting amended elevations.	• **Noted**
Housing Diversity + Social Interaction • The applicant advised the apartments will be managed through a Build-To-Rent model. In this regard, the Panel notes the success of the communal spaces needs to allow for multiple resident groups to use the communal spaces independently and concurrently. This will require a COS design which provides a diversity of spaces and some privacy or shielding between each area. • The applicant noted, that given the availability of larger houses and minimal market demand in the area, there are no 3-bedroom apartments proposed within the development. In this regard, the Panel is of the view that 3-bedroom apartments are important to include as they provide more flexibility for people to stay within a residence throughout different stages of their life. The Panel requests that at least two 3-bedroom apartments be included (for example by combing units 3+ 4 and Units 5+6) within the development.	• **Changes made:** The principal communal open space (COS) area has been moved from the ground level to the rooftop. However, conditions of consent would be imposed to improve the functionality and aesthetic quality of the rooftop COS. • **Changes made:** The layout plan, for level 1, has been revised accordingly by introducing two x 3-bedroom units.
Aesthetics • The aesthetics of the southern façade are discussed in Context. • The Panel advises any adjustments to the southern façade is not to include the introduction of balconies as they are not suitable for this frontage of the project. • The applicant notes there will be a significant increase in trees and planting along the southern façade, and this elevation will likely be dominated by greenery once the planting is established. In this regard, the forthcoming architectural and landscape drawings and specifications should confirm the proposed tree planting and landscaping strategy. • The approach to the material and finishes including the sealed natural precast concrete, glass, and a soft green painted and textured feature precast panel on the façade and balcony panels is supported.	• **Noted** • **Noted (no balconies for the southern façade were introduced).** • **Noted** • **Noted**

3.2 Assessment History

Date	Event
22 February 2017	Pre-DA held (13/2017)

2 November 2023	The subject DA lodged
14 November – 29 November 2023	Application notified and no submissions received.
8 February 2024	DEP meeting held
11 April 2024	Request for information (RFI) letter sent to applicant regarding: • DEP comments. • Design matters to address. • Floor Space Ratio clarification. • Community Housing Provider. • ADG matters. • Social Impact Assessment. • Affordable Housing element. • Landscaping and Fencing. • Flood Planning. • Waste management plan. • Traffic (ramp width and turning paths). • Plan of management. • Fire Safety.
16 May 2024	Amended information package submitted.

4. DETAILS OF THE PROPOSAL

The development application seeks approval for the demolition of site structures, tree removal and subsequent construction of a four-storey residential flat building over two levels of basement parking. Details of the proposal are provided as follows:

Element	Proposed
Site Area	1,724m^2
FSR	Site area=1,724m^2 Proposed GFA = 2211.67m^2 + 4m^2 FSR = 1.283:1
Residential Units	Total of 32 residential units. Dwelling mix as follows: The unit mix for affordable housing is: • 3 x 1-bedroom units • 6 x 2-bedroom units The unit mix for non-affordable Housing is: • 1 x studio • 7 x 1-bedroom units • 12 x 2-bedroom units • 2 x 3-bedroom units
Height	Approximately 16.45m to the lift overrun. Approximately 14.145m to the highest point on main roof line
Storeys	Four storeys
Front Setbacks to street boundaries	Ground to Level 4: 6m (from Woolnough Place) and 6m (from Hoxton Park Road)
Side Setback (eastern boundary)	Ground to Level 4: 8.8m (and 7.8m to balcony on southeast corner)

Side Setback (western boundary)	Ground to Level 4: 6m
Car parking spaces	Basement Level 1: 19 Car spaces (1 access + 3 visitor) 5 Tandem Spaces 2 Motorbike spaces 5 Bicycle Spaces (2 horizontal + 3 vertical) Basement Level 2: 14 Car spaces (1 access + 2 visitor) 3 Tandem Car Spaces 5 Motorbike spaces 17 Bicycle spaces

Communal Open Space (COS)

The proposal provides communal open space (COS) at the rooftop and around the building on the ground level of the site. The rooftop COS has an area of 459sqm and the ground level COS, along Hoxton Park Road, has an area of 140sqm, providing a total of 35.4% COS.

Access and Parking

The proposal includes the construction of two basement levels, with access provided from the Hoxton Park Road access laneway at the south-eastern edge of the site. The basement levels include the following:

- 27 residential parking spaces (does not include tandem parking spaces).
- 5 visitor parking spaces.
- Storage.
- 22 bicycle parking spaces.
- 7 motorbike parking spaces.
- Waste storage areas (room for bibs and bulky waste).
- Stormwater pump out tank.

Landscaping

The development incorporates a variety of landscaping throughout the site which includes large and small plantings within deep soil zones and planter boxes on the built form.

Materials and finishes

The proposal's colour scheme is dominated by three main colours: concrete grey, forest canopy (light olive colour) and monument (dark charcoal). The materials, and finishes, are an ensemble pre-cast concrete, Colorbond steel, aluminium, timber, and face brick. These finishes contribute to the contemporary building design and are compatible with other developments within the locality.

Site Servicing Facilities

The proposal has been referred to the utility agencies, and companies, and they have not raised any concerns regarding servicing the subject site. Appropriate conditions of consent would be imposed to ensure that the subject site is serviced as per the requirements of the utility agencies.

Stormwater Management

The DA includes a stormwater management plan that includes basement pump out, on-site detention tanks and discharge to kerb inlet pit in Hoxton Park Road.

Demolition, Tree Removal and Excavation

The proposed development includes demolition of existing three dwellings and associated building structures, removal of seven trees, and excavation for basements.

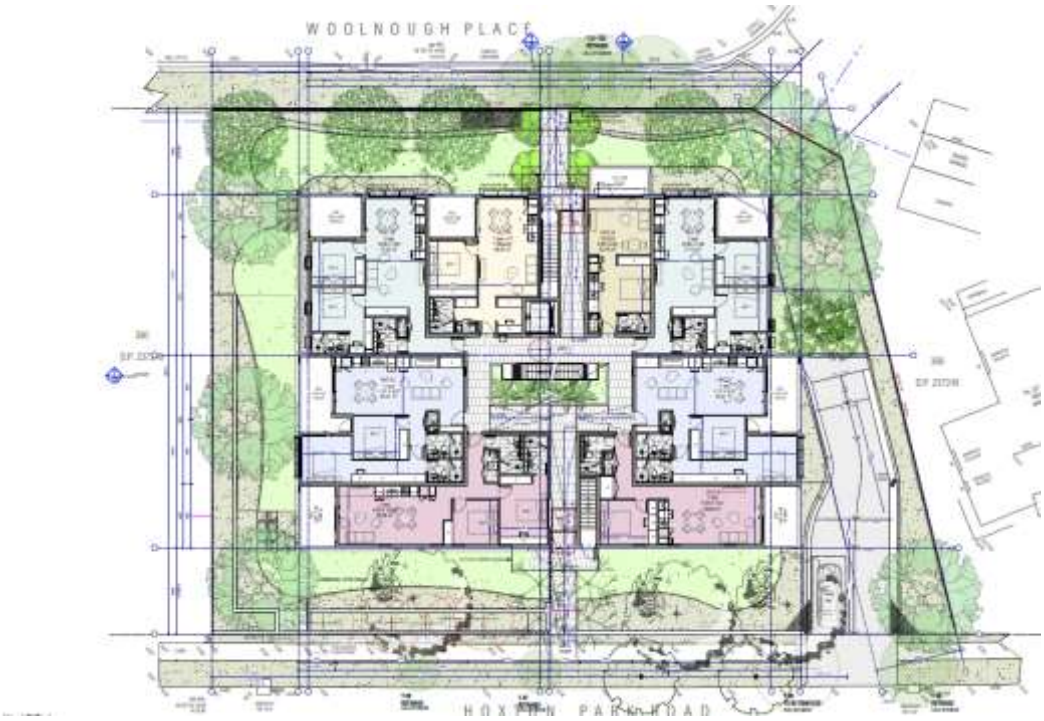

Figure 7: Proposed site plan

Figure 8: North elevation (frontage to Woolnough Place)

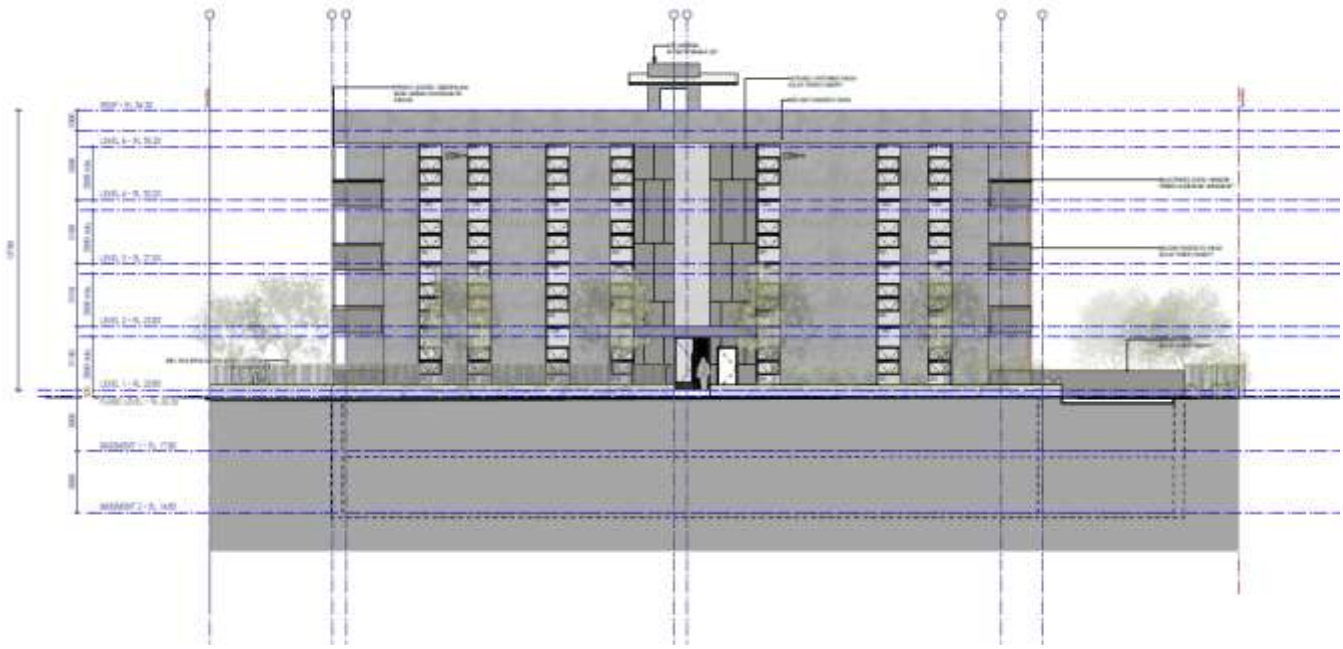

Figure 9: South elevation (frontage to Hoxton Park Road)

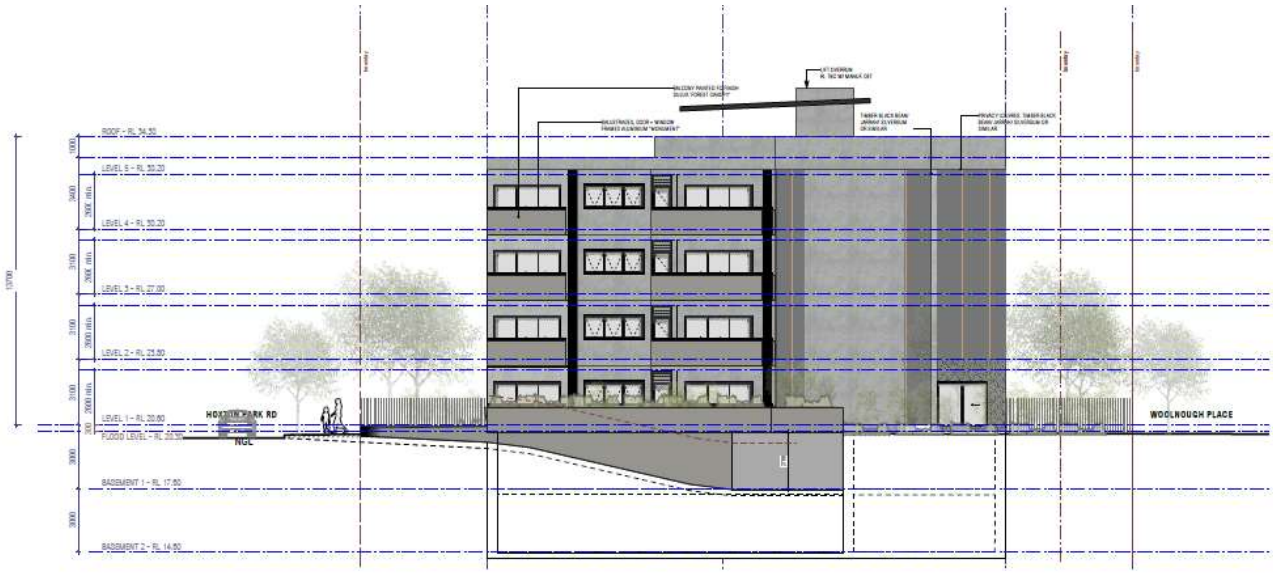

Figure 10: East elevation

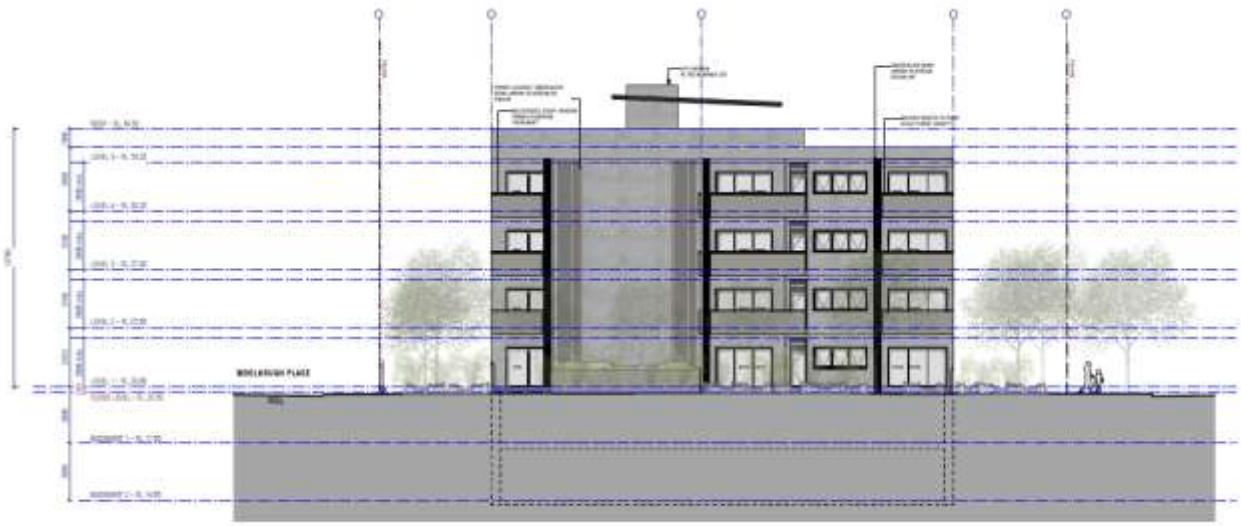

Figure 11: South-West elevation

5. STATUTORY CONSIDERATIONS

5.1 Relevant matters for consideration

The relevant planning instruments/policies/controls applicable to the proposed development are as follows:

Environmental Planning Instruments (EPI's)

- State Environmental Planning Policy (Housing) 2021 – Chapter 2 Affordable Housing.
- State Environmental Planning Policy (Housing) 2021 – Chapter 4 Design of residential apartment development.
- State Environmental Planning Policy (Sustainable Buildings) 2022.
- State Environmental Planning Policy (Resilience and Hazards) 2021.
- State Environmental Planning Policy (Biodiversity and Conservation) 2021.
- State Environmental Planning Policy (Transport and Infrastructure) 2021
- Liverpool Local Environmental Plan 2008.

Development Control Plan

- Liverpool Development Control Plan 2008
  - Part 1: General Controls for All Development; and
  - Part 3.7: Residential Flat Buildings in the R4 Zone (Outside Liverpool City Centre).

Contributions Plans

- Liverpool Contributions Plan 2018 – Established Areas.

6. ASSESSMENT

6.1 Section 4.15(1)(a)(i) – Any Environmental Planning Instrument

(a) State Environmental Planning Policy (Housing) 2021 - Chapter 4 Design of residential apartment development.

The proposal has been evaluated against the provisions of Chapter 4 – Design of residential apartment development which aims to improve the design quality of residential apartment development. Schedule 9 – Design principles for residential apartment development does not contain numerical standards but requires Council to consider the development against 9 key design quality principles; and against the guidelines of the associated Apartment Design Guidelines (ADG). The ADG provides additional detail and guidance for applying the design quality principles outlined in Chapter 4.

The following table provides an assessment from the Applicant's architect of the proposal in accordance with the 9 key design quality principles of Chapter 4, as follows:

Design Quality Principle	Comment
Principle One – Context and Neighbourhood Character	
Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when	The application design addresses context by positioning the building to speak to both Woolnough Place and Hoxton Park Road frontages. Given the street hierarchy, Woolnough Place presents as the primary pedestrian

Design Quality Principle	Comment
combined. It also includes social, economic, health and environmental conditions. *Responding to context involves identifying the desirable elements of an area's existing or future character. Well-designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.* *Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.*	frontage, and Hoxton Park Road for vehicles. The proposal enhances the site's integration with the public domain by elevating pedestrian activity, introducing heightened visual engagement, and improving pedestrian safety through enhanced passive surveillance along Hoxton Park Road and Woolnough Place. The street elevation to Hoxton Park Road is enhanced by being visually divided into two parts to reduce the scale to an apparent two buildings and is further screened by a row of large trees. The envisaged architectural development is not anticipated to yield any significant adverse impacts on surrounding properties.
Design Principle 2 – Built form and scale	
Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings. *Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements.* *Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.*	The proposed building's size aligns appropriately with the street and proposed future neighbouring developments. The four-storey scale ensures it doesn't impose any undue impacts on nearby properties, including concerns about reduced sunlight, privacy infringement, or visual disruption, while adhering to height regulations. A comprehensive solar access analysis indicates that the proposed scale won't unreasonably cast shadows on adjacent sites. Additionally, the building's dimensions blend into the overall streetscape and urban design context, fostering a sense of cohesion and compatibility. The apartment building has been redesigned with the same layout to reduce the footprint size and the floor space ratio (FSR) to less than 1.3:1 and this diminishes the overall bulk and scale.
Design Principle 3 – Density	
Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context. *Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.*	The proposed density and floor space allocation are considered suitable for the site's location for several reasons. Firstly, the availability and capacity of local infrastructure, public transportation, and recreational opportunities are well-matched within the proposed floor space. Additionally, the site's proximity to bus stops on Cartwright Avenue and Hoxton Park Road, along with the presence of nearby quality parks and recreation areas, further supports the chosen density. Importantly, this density choice avoids causing any unreasonable impacts on neighbouring properties, such as overshadowing, privacy intrusion, or visual disruption, as detailed in the Statement of Environmental Effects (SEE).

Design Quality Principle	Comment
	Overall, the development prioritises occupant well-being, offering a high level of amenity, while also addressing the housing demand in the local government area, within an appropriate location.
Design Principle 4 – Sustainability	
Good design combines positive environmental, social and economic outcomes. *Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation*	The architectural approach for the proposed design embraces sustainability, blending eco-awareness and innovative aesthetics. Passive solar design maximises natural light, reducing energy use for environmental sustainability and comfort. Thoughtful thermal massing maintains stable indoor temperatures, reducing heating and cooling needs. Spatial planning and orientation promote cross ventilation, enhancing air circulation. These sustainable practices reflect a commitment to environmental responsibility, enhancing both liveability and aesthetics for occupants.
Design Principle 5 – Landscape	
Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well-designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood. *Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.* *Good landscape design optimises useability, privacy and opportunities for social interaction, equitable access, and respect for neighbours' amenity and provides for practical establishment and long term management.*	The proposed design locates the car parking to the basement levels beneath the apartment building. This allows for ample circulation space for residents on the levels above, illustrated as a central courtyard which would be improved through the planting of native and local species. Generous setbacks on all boundaries increase the extent of landscaping and provide a variety of garden spaces and communal outdoor areas. The street elevation to Hoxton Park Road is enhanced by being screened by a row of large trees and the POS is relocated from ground level to the roof. The garden area at the ground becomes POS to 3-bedroom units. The south area of communal space is for screen planting and trees only.
Design Principle 6 – Amenity	
Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident wellbeing.	The development ensures a high level of amenity for its occupants through thoughtful design considerations. Apartment sizes and room dimensions are practical and appropriate. POSs meet the minimum requirements, and all apartments benefit from natural cross ventilation,

Design Quality Principle	Comment
Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.	exceeding the mandated 60% minimum in the ADG criteria. Solar access has been optimised, with every POS receiving at least two hours of sunlight and additionally, 75% of apartments have living room windows receiving the same solar access. The apartment building has been redesigned with the same layout to provide better solar access to the apartments. Adequate internal storage is available in each apartment, complemented by basement storage access. This comprehensive approach ensures a satisfying living experience for residents.
Design Principle 7 – Safety	
Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety. *A positive relationship between public and private spaces is achieved through clearly defined secure access points and well-lit and visible areas that are easily maintained and appropriate to the location and purpose.*	The nature of the development demands a high level of security for the occupants and two clear secure entries for pedestrians are provided to the building. The open space on level 1 is entered through secure access gates, allowing for air circulation through the centre of the site and a visual connection to the entrances, whilst providing safety and security for the occupants beyond the line of entry to the stairs and lift. Car entry and exit is also made secure by use of a perforated overhead roller door. The design provides additional high levels of surveillance as the apartment's POS has visibility over Woolnough Place and Hoxton Park Road.
Design Principle 8 – Housing Diversity and Social Interaction	
Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets. *Well-designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.* *Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.*	This proposed design is appropriate as it provides a mixture of two-bed, one-bed, and studio residential opportunities in an area with little of this form of development being present. This mixture of apartment sizes and layouts caters to a broad demographic within the community. Furthermore, the development includes 14 affordable dwellings that would remain as such for a minimum of 15 years. These attributes demonstrate a highly positive response to the housing needs of the local community, making it a significant contribution to the area's architectural landscape. The number of apartments under the SEPP (Housing) 2021 is reduced to 30% of FSR and is shown on a separate drawing no. 980. The owner currently has some properties with a CHP and there are ongoing discussions about the CHP being engaged. Those negotiations would complete soon, and Council would be informed.
Design Principle 9 – Aesthetics	
Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design	The proposed development embodies a contemporary and aesthetically appealing design that seamlessly integrates with the evolving character of the locality.

Design Quality Principle	Comment
uses a variety of materials, colours and textures. *The visual appearance of a well-designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.*	This architectural scheme incorporates a diverse range of structural elements, employing a visually captivating design language accentuated by well-suited materials and finishes. The composition of the built environment is thoughtfully attuned to the distinctive attributes of the site and the evolving neighbourhood character. Consequently, it makes a favourable contribution to enhancing the visual allure of Hoxton Park Road and Woolnough Place, enriching the architectural quality of the area and speaking to its natural assets.

Further to the above design quality principles, Clause 149 of SEPP (Housing), Chapter 4 also requires residential apartment development to be designed in accordance with the ADG. The proposed development is generally compliant with the provisions of the ADG and the compliance tables for the ADG can be found within Attachment 1.

Two ADG non-compliances, that do not meet a numerical value, are assessed, and addressed in the table below (taken from *Attachment 1 - Apartment Design Guide*).

4A Solar and Daylight Access		
Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid-winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas	There are 19 units that receive at least 2 hours sunlight between 9am and 3pm during mid-winter to living rooms and private open spaces. This will achieve a compliance rate of 61%. To improve solar access, a condition of consent will be imposed for units 2,9,17 and 25, to move forward, their living room windows, into the Private Open Space by 0.5m. This will achieve a compliance rate of 74%.	Complies by Condition
4E Private Open Space and Balconies		
All apartments are required to have primary balconies as follows: Dwelling Type / Minimum Area / Minimum Depth Studio / 4m² / - 1 bedroom / 8m² / 2m 2 bedroom / 10m² / 2m 3 bedroom / 12m² / 2.4m The minimum balcony depth to be counted as contributing to the balcony area is 1m	All apartments provide the minimum required balcony areas and depths, except for units *2,9,17 and 25*. Units *2,9,17 and 25*, will have the minimum area of 10m2 but will only have a depth of 1.624m The above four units will not have the required minimum depth, for their Private Open Space, because a condition of consent will be imposed to improve their solar access by moving their living room window wall by 500mm into the Private Open Space area.	Considered Acceptable

(b) State Environmental Planning Policy (Housing) 2021

The following table assessment has been provided in relation to the Housing SEPP 2021 (Part 2, Division 1 In-Fill Affordable Housing):

State Environmental Planning Policy (Housing) 2021 Division 1 In-fill affordable housing			
Provision	**Requirement**	**Proposed**	**Comment**
16 Development to which Division applies	Division applies to residential development if: - development permitted with consent under another EPI, and - the percentage of the gross floor area of the development that is to be used for the purposes of affordable housing is at least 20% - for development on land in the Greater Sydney region, Newcastle region or Wollongong region—all or part of the development is within an accessible area	The proposed development is for a residential flat building (RFB) which is a residential development which is permissible in the R4 – High Density Residential zone under LLEP 2008. The percentage of the GFA of the development for affordable housing is 30.234%. The subject site is located approximately 45m from the nearest bus stops along Hoxton Park Road which is serviced by bus routes. The bus service provides frequent services, which are in excess of the amount of services required to deem the site as being within an accessible area.	Complies
17 Floor space Ratio	(1) The maximum floor space ratio for development to which this Division applies is the maximum permissible floor space ratio for residential accommodation on the land plus an additional floor space ratio of— (a) if the maximum permissible floor space ratio is 2.5:1 or less— (i) if at least 50% of the gross floor area of the building resulting from the development will be used for affordable housing—0.5:1, or (ii) if less than 50% of the gross floor area of the building will be used for affordable housing—Y:1, where— AH is the percentage of the gross floor area of the building that is used for affordable housing. Y= AH ÷ 100	LEP FSR maximum= 1.0 *AH= 30.234% (668.67sqm ARH / 1724sqm total GFA) Y= 30.234/100 1.0 + (30.234/100) = 1.302 The permitted FSR is 1.302. Site Area – 1724sqm Proposed FSR- 1.283 To improve solar access, a condition of consent will be imposed for units 2,9,17 and 25, to move forward their living room window wall, into the Private Open Space by 0.5m. This will increase the building's floor area by 8.2m^2. Therefore, the calculation of the FSR once the condition of consent has been complied with will be: LEP FSR maximum= 1.0 *AH= 30.39% (674.85 sqm ARH / 1724sqm total GFA)	Complies

		Y= 30.39/100 1.2:1 + (30.39/100) = 1.302 The permitted FSR is 1.302 Site Area – 1724sqm Proposed FSR- 1.287	
18 Affordable housing requirements for additional building height	(1) This section applies to development that includes residential development to which this division applies if the development— (a) includes residential flat buildings or shop top housing, and (b) does not use the additional floor space ratio permitted under section 16. (2) The maximum building height for a building used for residential flat buildings or shop top housing is the maximum permissible building height for the land plus an additional building height of up to 30%, based on a minimum affordable housing component calculated in accordance with subsection (3). (3) The minimum affordable housing component, which must be at least 10%, is calculated as follows- affordable housing component = additional building height (as a percentage) ÷ 2	Affordable housing component is: 30.234%. 1.45m is the height breach (as percentage=9.6%) 9.6 divided by 2=4.8m The additional building height, for AH, is 4.8m +15m=19.8m The proposed height is=16.45m	Complies
19 Non-discretionary development standards • 1 x studio • 7 x 1 bedroom units • 12 x 2 bedroom units • 2 x 3-bedroom units	**2(a) Site area** Site area – 450sqm	Site area – 1724 sqm	Complies
	2(b) Landscaped area Landscaped - 30% site	Landscaped area– 43% (742sqm)	Complies
	2(c) Deep soil zones Deep soil – 15% site Minimum dimension of 3m If practicable, at least 65% of the deep soil zone is located at the rear of the site	37.4% deep soil area (645.48sqm) Minimum 3m dimension Deep soil landscaping is located mostly in the rear yards which is along the side of the site.	Complies
	2(d) Solar access Living rooms and POS for 70% dwellings receive 3 hours sunlight between 9am and 3pm mid-winter.	Pursuant to the saving provisions of schedule 7A, subsection 8 – General Savings Provisions of the Housing SEPP 2021, this non-discretional development standard is not applicable.	Not applicable Complies with ADG and is a satisfactory outcome

	2(e) ***Parking (for affordable housing)*** 0.4 parking spaces- 1 bedroom dwelling 0.5 parking spaces- 2 bedroom dwelling 1 parking space- 3 or more bedrooms dwelling	3x 1-bedroom x 0.4=2 6x 2-bedroom x 0.5=3 0x 3-bedroom x 1 =0 Requires 5 parking spaces. Applicant has provided a total of 41 parking spaces.	Complies
	2(f) ***Parking (for non-affordable housing)*** 0.4 parking spaces- 1 bedroom dwelling 0.5 parking spaces- 2 bedroom dwelling 1 parking space- 3 or more bedrooms dwelling	3x 1-bedroom x 0.5=4 6x 2-bedroom x 1 =12 0x 3-bedroom x 1.5= 3 Requires 19 parking spaces. Applicant has provided a total of 41 parking spaces.	Complies
	2(g) the minimum internal area, if any, specified in the Apartment Design Guide for the type of residential development.	All proposed unit sizes comply with the minimum requirements under the ADG.	Complies
	2(h) & 2(i) dwelling size (h) for development for the purposes of dual occupancies, manor houses or multi dwelling housing (terraces)—the minimum floor area specified in the Low Rise Housing Diversity Design Guide, (i) if paragraphs (g) and (h) do not apply, the following minimum floor areas— (i) for each dwelling containing 1 bedroom—65m2, (ii) for each dwelling containing 2 bedrooms—90m2, (iii) for each dwelling containing at least 3 bedrooms—115m2 plus 12m2 for each bedroom in addition to 3 bedrooms.	Clause 2(h) does not apply to this development.	Not Applicable
20 Design Requirements	(1) Development consent must not be granted to development for the purposes of dual occupancies, manor houses or multi dwelling housing (terraces) under this division unless the consent authority has considered the Low-Rise Housing Diversity Design Guide, to the extent to which the guide is not inconsistent with this policy.	Subsection (1) does not apply to this development as Chapter 4m of SEPP (Housing) 2021 applies to the proposal.	Not Applicable
	(2) Subsection (1) does not apply	Subsection (1) does not apply to	Complies

	to development to which Chapter 4 applies.	this development as Chapter 4m of the SEPP (Housing) 2021 applies to the proposal.	
	(3) Development consent must not be granted to development to which this Division applies unless the consent authority has considered whether the design of the residential development is compatible with— (a) the desirable elements of the character of the local area, or (b) for precincts undergoing transition—the desired future character of the precinct.	Proposed development complies with this requirement. See discussion below. (1)	Complies. See discussion below (1)
21 Must be used for affordable housing for at least 15 years	(1) Development consent must not be granted under this Division unless the consent authority is satisfied that for a period of at least 15 years commencing on the day an occupation certificate is issued— (a) the affordable housing component of the residential development will be used for affordable housing, and (b) the affordable housing component will be managed by a registered community housing provider. (2) Subsection (1) does not apply to development on land owned by a relevant authority or to a development application made by, or on behalf of, a public authority. (3) In this section— ***affordable housing component***, in relation to development to which this Division applies, means the dwellings used for the purposes of affordable housing in accordance with section 16(1)(b).	A condition of Consent to be imposed to ensure that prior to occupation certificate, a restriction to be registered against the title requiring the following: (a) for 15 years from the date of the issue of the occupation certificate: i. Units 8,9,15,16,17, 23,24,25 & 31 are to be used for the purposes of affordable housing, and ii. all accommodation that is used for affordable housing would be managed by a registered community housing provider.	Complies by condition
22 Subdivision	Land on which development has been carried out under this Division may be subdivided with the consent of the consent authority	Strata subdivision is not proposed as part of the application but is likely to be in the future.	Complies

(1) - Clause 20(3) Character Analysis

SEPP Housing requires the consent authority to take into consideration whether the proposal is compatible with the character of the local area. In these cases, the planning principle in *Project Venture Developments v Pittwater Council* is adopted which poses the following two questions in regard to the character of a locality:

- *Are the proposal's physical impacts on surrounding development acceptable? The physical developments include constraints on the development potential of surrounding sites*
- *Is the proposal's appearance in harmony with the buildings around it and the character of the street?*

The impacts of the subject proposal relate to the proposed height, the bulk and scale of the building in context to the site and the development controls for the desired character of the area. The streetscapes of Woolnough Place, Hoxton Park Road and surrounding streets contain a mixture of residential flat buildings, multi-dwelling housing, single storey and double storey dwelling houses.

The development is an appropriate size and scale for this area which is envisioned to undergo a transition in character and density based upon the existing planning controls for the site and surrounding locality. The application proposes the minimum required street setbacks and building separation, which comply with the minimum required setbacks and separation distances under the ADG and DCP and is consistent with the future envisioned character of the area.

The proposal also intends to retain mature trees, within in the street verge and plant new trees onsite the subject site, this would enhance the existing character and assists in a more visually appealing streetscape design of both Woolnough Place and Hoxton Park Road.

This development is not the first of its kind in the locality to adopt the higher scale planning controls, i.e. four levels, as there are three other developments along Hoxton Park Road that have a similar height and mass. The applicant has considered the future development in the locality and the proposal is deemed to be within the future envisioned bulk and scale for developments. Furthermore, the height exceedance, by 1.2m consisting of the lift overrun, is deemed to be acceptable and does not detract from the visual amenity of the streetscape or create additional bulk which would be out of character with the surroundings.

Whilst it introduces a new type of development within the very immediate surroundings, it is nevertheless compatible with the existing and desired future streetscape. It is also consistent with the desired future character of the areas, as outlined in the DCP and LEP.

The desired or future character of the area can be gathered from the relevant zone objectives and DCP objectives and as such, the proposed development is in harmony with the existing and desired future character of the locality.

(c) State Environmental Planning Policy (Sustainable Buildings) 2022 - BASIX requirements

The application was supported by a BASIX certificate in accordance with the provisions of the SEPP which indicates that the required targets for water, thermal comfort and energy are met by the proposal. In accordance with this policy, all new residential dwellings and those seeking alterations and additions as identified under this policy require a BASIX certificate. The certificate would measure the building sustainability index to ensure dwellings are designed to use less potable water and are responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for houses and units.

A BASIX certificate **(certificate no: 1411468M)** has been submitted for the proposed development. The proposal is satisfactory in relation to water, energy efficiency and thermal comfort.

(d) State Environmental Planning Policy (Resilience and Hazards) 2021

The proposal has been assessed under the relevant provisions of SEPP (Resilience and Hazards) 2021 as the proposal involves a change of use of land with the potential under the SEPP 55 (previous) guidelines to be a site that could be contaminated (*agricultural/horticultural activities)*. Therefore, under the SEPP 55 (previous) guidelines the subject site is identified as a site that could be contaminated.

The objectives of SEPP (Resilience and Hazards) 2021 are:

- *to provide for a state wide planning approach to the remediation of contaminated land.*
- *to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.*

Pursuant to the above SEPP, Council must consider:

- whether the land is contaminated.
- if the land is contaminated, whether it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the proposed use.

Pursuant to Clause 4.6 of SEPP (Resilience and Hazards) 2021, a consent authority is unable to grant development consent unless it has considered whether the land is contaminated and, if so, whether the consent authority is satisfied that the land is suitable in its contaminated state, or can be remediated to be made suitable for the purposes for which the development is proposed to be carried out.

Aerial images from 1983 found on Council's GIS system illustrate the presence of the existing dwellings, which suggests the site has principally been used for residential purposes for at least the past 41 years. A phase 1 preliminary site Investigation (PSI) was also carried out by the applicant which concluded that no further investigation was necessary, and the site is deemed suitable for the proposed use. Pursuant to Clause 4.6 of SEPP (Resilience and Hazards) 2021, Council is also required to undertake a merit assessment of the proposed development and the following table summarises the matters for consideration in determining development application (Clause 4.6).

Clause 4.6 Contamination and remediation to be considered in determining development application	**Comment**
(1) A consent authority must not consent to the carrying out of any development on land unless:	
(a) it has considered whether the land is contaminated, and	A phase 1 PSI was carried out by the applicant which concluded that no further investigation was necessary, and the site is deemed suitable for the proposed use. The application was reviewed by Council's environmental health section, who have advised that the development is satisfactory subject to conditions.
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and	The site is suitable for the proposed development.
(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.	The site is suitable for the proposed development.

Based on the above assessment, there is no evidence to suggest that the land has been or is contaminated and a formal land contamination assessment is not considered to be necessary. It is considered that the proposal is satisfactory for the site and the relevant objectives and provisions of SEPP (Resilience and Hazards) 2021 through the imposition of appropriate conditions of consent relating to any unexpected finds.

(e) State Environmental Planning Policy (Biodiversity and Conservation) 2021

Note: Chapters 7 – 12 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 were repealed on 21 November 2022 relating to the former catchment areas.

The subject land is located within the Georges River catchment and as such SEPP (Biodiversity and Conservation) 2021 - Chapter 6 Water Catchments, applies to the application. The Biodiversity and Conservation SEPP aims to protect the environment of the Georges River catchment by ensuring that water quality impacts are considered. In accordance with the SEPP, when a consent authority determines a development application, the provisions in Part 6.2 - Development in Regulated Catchments are to be considered and consent must not be granted unless the consent authority is satisfied that the matters have been addressed.

Accordingly, a table summarising the matters for consideration in determining development applications (Part 6.2) and compliance with such is provided below.

Part 6.2 – Development in Regulated Catchments	
Division 2 – Controls on development generally	**Comment**
6.6 – Water quality and quantity	Stormwater concept plans were submitted and reviewed by Council's land development engineering section and considered satisfactory subject to conditions.
6.7 – Aquatic ecology	The works are not located on environmentally sensitive land and are unlikely to impact aquatic ecology.
6.8 – Flooding	The site is affected by mainstream and overland flooding and is considered low risk. The Proposal was referred to Council's Flood Engineering which supported the development subject to conditions of consent.
6.9 – Recreation and public access	The development is unlikely to impact on recreational lands or public access to and around foreshores.
6.10 – Total catchment management	Environmental planning consideration through the provisions of LLEP has considered the impact of the residentially zoned land within the catchment.
Division 3 – Controls on development in specific areas	**Comment**
6.11 – Land within 100m of natural waterbody	The site is not within 100m of a natural watercourse.
6.12 – Riverine scenic areas	Not applicable.
6.13 – Hawkesbury-Nepean conservation area sub-catchments	Not applicable.
6.14 – Temporary use of land in Sydney Harbour Catchment	Not applicable.
Division 4 – Controls on development for specific purposes	**Comment**
6.15 – Aquaculture	Not applicable
6.16 – Artificial waterbodies	Not applicable
6.17 – Heavy and hazardous industries	Not applicable
6.18 – Marinas	Not applicable
6.19 – Moorings	Not applicable
6.20 – On-site domestic sewerage systems	Not applicable
6.21 – Stormwater management	Stormwater concept plans were submitted and reviewed by Council's land development engineering section and considered satisfactory subject to conditions.
6.22 – Waste or resource management facilities	Not applicable
6.23 – Demolition on certain land	Not applicable – although demolition is proposed, the land is mapped under the provisions of LLEP.

It is considered that the proposal satisfies the provisions of the SEPP (Biodiversity and Conservation) 2021 subject to appropriate sedimentation and erosion controls during construction. The development would have minimal impact on the Georges River catchment.

(f) State Environmental Planning Policy (Transport and Infrastructure) 2021

The subject site is in proximity to classified roads, being Hoxton Park Road to the south. Therefore, the provisions of the SEPP (Transport and Infrastructure) 2021 are to be considered.

Considerations	Comments
2.119. Development with frontage to classified road	
(1) The objectives of this section are— *(a) to ensure that new development does not compromise the effective and ongoing operation and function of classified roads, and* *(b) to prevent or reduce the potential impact of traffic noise and vehicle emission on development adjacent to classified roads.* *(2) The consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that—* *(a) where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and* *(b) the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of—* *(i) the design of the vehicular access to the land, or* *(ii) the emission of smoke or dust from the development, or* *(iii) the nature, volume or frequency of vehicles using the classified road to gain access to the land, and* *(c) the development is of a type that is not sensitive to traffic noise or vehicle emissions, or is appropriately located and designed, or includes measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development arising from the adjacent classified road*	(1) The proposal was referred to Transport for NSW (TfNSW) and TfNSW did not raise any objections to the proposal and did not provide any conditions (see attachment 7). (2) (a) The proposal will not have direct access into Hoxton Park Road but rather its vehicular access, to the land, will be provided by an access lane which connects into Woolnough Place but runs parallel to Hoxton Park Road (previously mentioned in this report as *Hoxton Park Road access lane*). (b) The proposal has been referred to TfNSW, and Council Traffic and Transport team, and no concerns were raised as to whether the proposed development would adversely affect the safety, efficiency and ongoing operation of Hoxton Park Road. (c) The proposal is of a type that is sensitive to traffic noise. The applicant, as part of the application, provided an acoustic report. Council's EHO officer reviewed the acoustic report and is supportive of the proposal with imposition of conditions of consent, to ameliorate any potential traffic noise.

The proposed development is not considered to be consistent with the relevant provisions of the SEPP (Transport and Infrastructure) 2021.

(g) Liverpool Local Environmental Plan 2008

(i) Zoning

The site is zoned R4 – High Density Residential under LLEP 2008 and an extract of the zoning map is provided in the figure below.

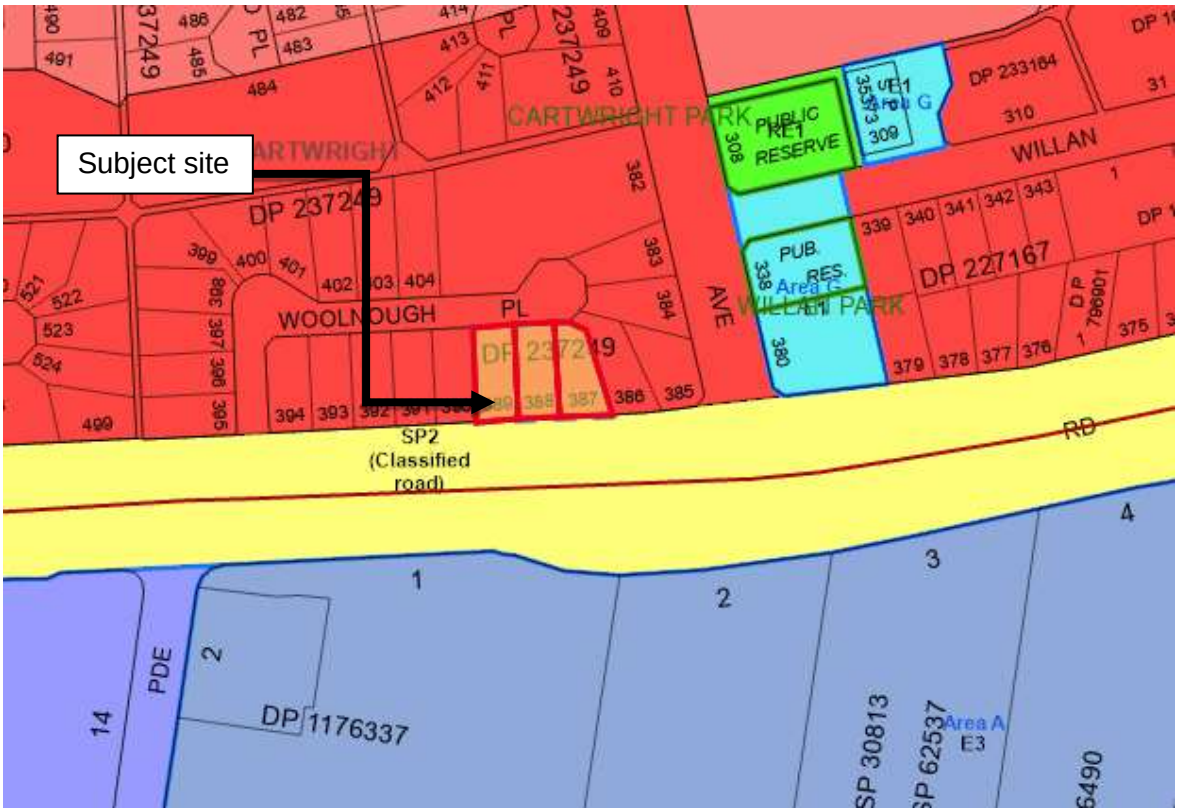

Figure 12: Extract of the LLEP 2008 zoning map

(ii) Permissibility

The proposed development is for a *residential flat building,* which is defined as follows:

Residential flat building *means a building containing 3 or more dwellings but does not include an attached dwelling or multi dwelling housing.*

The proposed development satisfies the definition of a *residential flat building* as it is a building which contains more than three dwellings and is not defined as an attached dwelling or a multi dwelling housing. This form of development is permissible within the R4 High Density Residential zone.

(iii) Objectives of the zone

The objectives of the R4 – High Density Residential zone are as follows:

- *To provide for the housing needs of the community within a high density residential environment.*
- *To provide a variety of housing types within a high density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To provide for a high concentration of housing with good access to transport, services and facilities.*
- *To minimise the fragmentation of land that would prevent the achievement of high density residential development.*

The proposed development would meet and satisfy the above-stated objectives. The building would provide a total of 31 dwellings and the site is in an area identified for urban renewal and transformation, in proximity to transport, services and facilities.

(iv) Principal Development Standards

LLEP 2008 contains provisions which are relevant to the proposal and an assessment of the application against the relative provisions is provided below.

Clause	Provision	Compliance
Clause 2.7 Demolition	The demolition of a building or work may be carried out only with development consent	**Complies** Development consent is sought for the demolition of the existing structures on site and a demolition plan has been submitted.
Clause 4.1 Minimum Subdivision Lot Size	The size of any lot resulting from a subdivision of land is not to be less than 1000m^2.	**N/A** No subdivision is sought, and it is proposed to amalgamate three existing residential lots.
Clause 4.3 Height of Buildings	Maximum height of 15m	**Not Applicable** The proposed maximum height is 16.2m however, SEPP (Housing) 2021 provides for a height bonus when affordable housing is provided for as part of the proposal permitting a maximum building height of 19.8m in this instance.
Clause 4.4 Floor Space Ratio	Maximum FSR of 1:1	**Not Applicable** Refer to SEPP (Housing) 2021 for FSR provisions and the bonuses provided for affordable housing permitting a maximum FSR of 1.514:1. The proposed FSR is 1.283:1.
Clause 4.6 Exceptions to development standards	Provisions relating to exceptions to development standards	**Not Applicable** No Clause 4.6 Exceptions to developments standards has been applied for.
Clause 5.21 Flood Planning	Provisions relating to flood affected land.	**Complies** The site is identified as flood prone land (low risk). The proposal was referred to the Council's Flood Engineer and no objections are raised.
Clause 6.5 Public Utility Infrastructure	Public utility infrastructure must be available	**Complies** The site has or has made suitable arrangements to provide public utility infrastructure.
Clause 7.14 Minimum Building Street Frontage	Development consent must not be granted to development for the purposes of any of the following buildings, unless the site on which the buildings is to be erected has at least one street frontage to a public street (excluding service lanes) of at least 24 metres: - any residential flat building.	**Complies** A street frontage of 52m is provided to Sutton Road and 37m is provided to Woolnough Place.
Clause 7.31 Earthworks	Provisions relating to bulk earthworks	**Complies** No bulk earthworks are proposed other

		than those ancillary to the development being excavation for the proposed basement, which is deemed to be satisfactory for a proposal of this nature.

6.2 Section 4.15(1)(a)(ii) - Any Draft Environmental Planning Instrument

There are no draft EPIs which apply to the development.

6.3 Section 4.15(1)(a)(iii) - Any Development Control Plan

(a) Liverpool Development Control Plan (LDCP) 2008

The proposed development is subject to LDCP 2008, and the proposed subdivision has been assessed under the following parts of the DCP:

- Part 1 of the LDCP 2008, which covers general controls relating to all types of development within the Liverpool LGA.
- Part 3.7: Residential Flat Buildings in the R4 Zone (Outside Liverpool City Centre).

The proposal is consistent with the key controls outlined in LDP 2008 and all relevant compliance tables for LDCP 2008 can be found within Attachment 2. Where variations are sought to the DCP, they can be found in the table below.

LDCP 2008 - Part 1 General Controls for all Development

Control	Provision	Comment
Section 20. Car Parking and Access	<u>Car Parking Controls</u> <u>Residential & Business Zones</u> 1 space per small dwelling (<65sqm) or 1 bedroom 1.5 spaces per medium dwelling (65-110sqm) or 2 bedrooms 2 car spaces per large dwelling (>110sqm) or 3 or more bedrooms 1 visitor car space for every 4 dwellings or part thereof. <u>Bicycles – Residential Flat Buildings</u> Residents: 1 per 2 units, or 1 for every 4 bedrooms (whichever is greater) Visitors: 1 per 10 units	**Considered Acceptable** In accordance with the LDCP, the proposed development would require 42 spaces (including 8 spaces for visitor parking) however the proposal is only providing 41 spaces therefore a shortfall of one parking space. The application was referred to Council's Traffic Section who were satisfied with the application subject to conditions.

LDCP 2008 - Part 3.7: Residential Flat Buildings in the R4 Zone

Control	Provision	Comment
Section 7. Fencing	The maximum height of a front fence is 1.2m. The maximum height of side boundary fencing within the setback to the street is 1.2m	**Considered Acceptable** A 1.8m high palisade fence is being proposed along the Woolnough Place frontage. The height of this fence breaches the fence height standard by 500mm. This is deemed to be acceptable considering that this area is part of the POS for units 3-5, and would provide security and some privacy to the enjoyment

Control	Provision	Comment
		of occupants when utilising the POS. Further, this fence is in line with the existing fence heights along Woolnough Place and would not significantly adversely affect the existing streetscape. However, to address both the privacy (for the three units mentioned above) and streetscape concerns, a condition of consent would be imposed to ensure that the fence, along Woolnough Place, would be composed of both visually permeable and impermeable materials (from the ground level to the height of 1.5m the fence would be made from visually impermeable materials whilst the rest of the fence 300mm would be made from visually permeable materials). As such, the 1.8m fence in this area along the front boundary is satisfactory.
	The front fence may be built to a maximum of 1.8m only if: The primary frontage is situated on a Classified Road.	**Complies** The proposed fence along Hoxton Park Road would have a height of 1.5m (Hoxton Park Road is a classified road).

6.4 Section 4.15(1)(a)(iiia) - Planning Agreements

There are no planning agreements which apply to the development.

6.5 Section 4.15(1)(a)(iv) - The Regulations

The Environmental Planning and Assessment (EP&A) Regulation 2021 requires the consent authority to consider the provisions of the National Construction Code (NCC). Accordingly, appropriate conditions of consent would be imposed where compliance with the NCC is required as well as compliance with the Australian Standards (AS) for demolition works.

6.6 Section 4.15(1)(b) - The Likely Impacts of the Development

(a) Natural Environment

Impacts on the natural environment have been assessed as part of the development application and the retention of a significant tree within the street verge is a positive outcome. The proposal is unlikely to result in any significant adverse impacts on the natural environment surrounding the subject site, or to any endangered and non-endangered species of flora and fauna.

(b) Built Environment

It is considered that the proposed development would not contain significant adverse impacts on the built environment given that it is located within an R4 zoned area which is zoned for high density residential development. Therefore, it is consistent with the current and future character of the locality, especially as the building has been designed to generally comply with the ADG. The design has been able to mitigate potential impacts with adjoining properties whilst at the same time ensuring that the internal amenity for future residents is prioritised and provided to a high standard. As such, the proposed bulk and scale of the development represents a desirable and a good planning outcome for the site.

(c) Social Impacts

The proposed development would have a positive social impact in the area through increasing housing choice in the locality. It would assist in promoting lifestyle choice which is close to services and public transport options as well as local community facilities. It is considered that the proposal is unlikely to generate any unreasonable social impacts on the surrounding area.

(d) Economic Impacts

The short term positive economic impacts development that results from construction spending and employment opportunities generated during the construction phase are generally recognised. Other, long-term benefits should come as the local population increases and they use local shops and services.

6.7 Section 4.15(1)(c) - The Suitability of the Site for the Development

The subject site is suitable for the proposed development. The proposal is generally compliant with the provisions of LLEP 2008, relevant EPIs, the ADG and LDCP 2008, as outlined in this report. The identified variations have been considered and are supported as they do not result in significant adverse impacts to the locality and would not be contrary to the public interest. Overall, the development is considered to satisfy the relevant controls for site selection.

6.8 Section 4.15(1)(d) - Any submissions made in accordance with the Act or the Regulations

(a) Internal Referrals

The following comments have been received from Council's internal departments:

DEPARTMENT	COMMENTS
Land Development Engineering	Supported, subject to conditions
Flooding	Site is flood affected however no concerns are raised subject to conditions of consent.
Building	Supported, subject to conditions
Fire Safety	Substation located close to building and compliance with the Building Code of Australia (BCA) conditions would apply. Endeavour Energy raised no concerns with the application and a condition would apply to ensure no blast walls are proposed.
Environmental Health	Supported, subject to conditions
Landscaping	Supported, subject to conditions
Traffic	Supported, subject to conditions
Waste Management	Supported, subject to conditions
Community	Supported

(b) External Referrals

AGENCY	COMMENTS
Endeavour Energy	No objection, subject to conditions
Sydney Water	No objection, subject to conditions
Transport for NSW	No objections (no conditions provided)

(c) Community Consultation

The Development Application was advertised between 14 November and 29 November 2023 in accordance with Liverpool Community Participation Plan 2022. No submissions were received.

6.9 Section 4.15(1)(e) - The Public Interest

The proposed development is consistent with the zoning of the land and would represent a high quality development for the locality. The development provides additional housing opportunities within close proximity to employment opportunities, services and public transport. Given the assessment undertaken, the proposal would not be contrary to the public interest.

7. DEVELOPMENT CONTRIBUTIONS

A Section 7.11 development contributions is applicable to the proposed development in accordance with the Liverpool Contributions Plan 2018 – Established Areas and the contribution amount would be imposed as a condition of consent.

8. CONCLUSION

The application has been assessed having regard to the provisions of Section 4.15 of the EP&A Act 1979, the EPIs, including applicable SEPPs, LLEP 2008, LDCP 2008, and relevant codes and policies of Council. This assessment has taken into consideration the submitted plans, SEE, all other documentation supporting the application and public submissions, and does not result in any unreasonable impacts on surrounding, adjoining, adjacent and nearby properties subject to conditions. In consideration of the proposal and the merit assessment of the development the proposal is:

- Consistent with the objectives of the R4 - High Density Residential zone of the LLEP 2008.
- Consistent with the objectives of LDCP.
- Consistent with the objectives of the applicable EPI's.
- Consistent with the objectives of the EP& A Act 1979.

9. RECOMMENDATION

That Development Application DA-562/2023 for the demolition of existing structures and construction of a four-storey residential flat building with 31 dwellings (one x studio, 10 x 1 bedroom, eight x 2-bedroom and two x 3-bedroom dwellings) and two basement levels. The development includes nine dwellings that, would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of SEPP (Housing) 2021) be **approved, subject to conditions.**

ATTACHMENTS

1. DA-562-2023 Attachment 1 - Apartment Design Guide
2. DA-562-2023 Attachment 2 - Liverpool Development Control Plan
3. DA-562-2023 Attachment 3 - Architectural Plans and Documents
4. DA-562-2023 Attachment 4 - Design Excellence Panel Minutes
5. DA-562-2023 Attachment 5 - Notice of Determination
6. DA-562-2023 Attachment 6 - Sydney Water Response
7. DA-562-2023 Attachment 7 - TfNSW Response
8. DA-562-2023 Attachment 8 - Endeavour Energy Response
9. DA-562-2023 Attachment 9 - 7.11 Development Contributions

ATTACHMENT 1 – APARTMENT DESIGN GUIDE COMPLIANCE TABLE

Required	Proposed	Compliance
3A Site analysis		
Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context	A detailed site analysis plan has been provided.	Complies
3B Orientation		
Building types and layouts respond to the streetscape and site while optimising solar access within the development Overshadowing of neighbouring properties is minimised during mid-winter. Solar Access to living rooms, balconies and private open spaces of neighbours should be considered. If the proposal will significantly reduce the solar access of neighbours, building separation should be increased beyond the minimums contained in section 3F Visual Privacy Overshadowing should be minimised to the south or downhill by increased upper level setbacks. A minimum of 4 hours of solar access should be retained to solar collectors on neighbouring buildings.	The building type is appropriate for the streetscape. Overshadowing of neighbouring properties is minimised during mid-winter and the proposal is consistent with the future desired character of the area.	Complies
3C Public Domain Interface		
Transition between private and public domain is achieved without compromising safety and security. Amenity of the public domain is retained and, enhanced.	The transition from the public to private domain is made in a way that achieves a safe design with security for the future residents, without compromising on the amenity of the public and private domains.	Complies
3D Communal and public open space		
Communal open space has a minimum area equal to 25% of the site Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid-winter)	The proposal provides 35.4% (or 599m2) of site area for communal open space. The proposal will achieve the percentage requirements for communal open spaces (COS) receiving a minimum 2 hours of mid-winter sun.	Complies

<table>
<tr><th>Required</th><th>Proposed</th><th>Compliance</th></tr>
<tr><td>Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting.

Communal open space should be co-located with deep soil areas.

Where communal open space cannot be provided at ground level, it should be provided on a podium or roof</td><td>It is considered that the design of the rooftop COS could be improved, however this could be resolvable by condition. (By incorporating outdoor furniture and landscaping).</td><td></td></tr>
<tr><td colspan="3">3E Deep soil zones</td></tr>
<tr><td>Deep soil zones are to meet the following minimum requirements:
<table>
<tr><th>Site Area</th><th>Minimum Dimension</th><th>Deep Soil Zone (% site area)</th></tr>
<tr><td>Less than 650m^2</td><td>-</td><td rowspan="4">7%</td></tr>
<tr><td>650m^2 to 1500m^2</td><td>3m</td></tr>
<tr><td>Greater than 1500m^2</td><td>6m</td></tr>
<tr><td>Greater than 1500m^2 with significant tree cover</td><td>6m</td></tr>
</table></td><td>Proposal provides 645.48m^2 of deep soil zone, which is 37.4% of the site area and exceeds the minimum 7% requirement.

The deep soil zones have minimum dimensions of 3m.</td><td>Complies</td></tr>
<tr><td colspan="3">3F Visual Privacy</td></tr>
<tr><td>Minimum separation distances from buildings to the side and rear boundaries are as follows:
<table>
<tr><th>Building Height</th><th>Habitable Rooms and Balconies</th><th>Non Habitable Rooms</th></tr>
<tr><td>Up to 12m (4 storeys)</td><td>6m</td><td>3m</td></tr>
<tr><td>12m to 25m (5-8 storeys)</td><td>9m</td><td>4.5m</td></tr>
</table></td><td>West: 6m up to Level 4,
East: 6m up to Level 4,</td><td>Complies</td></tr>
<tr><td colspan="3">3G Pedestrian Access and Entries</td></tr>
<tr><td>Building entries and pedestrian access connects to and addresses the public domain</td><td rowspan="3">The development site has reasonably clear and defined pedestrian entries, from both Hoxton Park Road and Woolnough Place.</td><td rowspan="3">Complies</td></tr>
<tr><td>Access, entries and pathways are accessible and easy to identify</td></tr>
<tr><td>Large sites provide pedestrian links for access to streets and connection to destinations</td></tr>
<tr><td colspan="3">3H Vehicle Access</td></tr>
<tr><td>Vehicle access points are designed and located to achieve safety, minimise conflicts between pedestrians and vehicles and create high quality streetscapes</td><td>Vehicle access point is considered to be in a satisfactory location and retains a higher quality streetscape with the retention of the existing street tree near the driveway.</td><td>Complies</td></tr>
</table>

Required	Proposed	Compliance
3J Bicycle and Car Parking		
For development in the following locations: - on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or - on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments (GTTGD), or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street	The site is not located within 800m of a railway station, and is therefore subject to the Guide to Traffic Generating Development. *Nine ARH units, 3 x one-bedroom @0.4 and 6 x two-bedroom @0.5 = Total of 4 on-site parking spaces On-site Visitor parking – required 8 Total on-site parking required = 42 spaces – hence shortfall of 1 on-site parking + 1 x service access/removalists. The application was referred to Council's Traffic Section who were satisfied with the application subject to conditions.	Complies with conditions
Parking and facilities are provided for other modes of transport		
Car park design and access is safe and secure		
Visual and environmental impacts of underground car parking are minimised		
Visual and environmental impacts of on-grade car parking are minimised		
Visual and environmental impacts of above ground enclosed car parking are minimised		
4A Solar and Daylight Access		
Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid-winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas	There are 19 units that receive at least 2 hours sunlight between 9am and 3pm during mid-winter to living rooms and private open spaces. This will achieve a compliance rate of 61%. To improve solar access, a condition of consent will be imposed for units 2,9,17 and 25, to move forward, their living room windows, into the Private Open Space by 0.5m. This will achieve a compliance rate of 74%. .	Complies by Condition
A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid-winter	All units are considered to achieve some form of direct sunlight between 9am and 3pm.	Complies
Courtyards, skylights and high-level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms	Noted	Noted

<table>
<tr><th>Required</th><th>Proposed</th><th>Compliance</th></tr>
<tr><td colspan="2">4B Natural Ventilation</td><td></td></tr>
<tr><td>All habitable rooms are naturally ventilated</td><td rowspan="4">All units are able to achieve cross ventilation.</td><td rowspan="4">Complies</td></tr>
<tr><td>The layout and design of single aspect apartments maximises natural ventilation</td></tr>
<tr><td>At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed</td></tr>
<tr><td>Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line</td></tr>
<tr><td colspan="2">4C Ceiling Heights</td><td></td></tr>
<tr><td>Measured from finished floor level to finished ceiling level, minimum ceiling heights are:
<table>
<tr><th colspan="2">Minimum ceiling height</th></tr>
<tr><td>Habitable rooms</td><td>2.7m</td></tr>
<tr><td>Non-habitable</td><td>2.4m</td></tr>
<tr><td>For 2 storey apartments</td><td>2.7m for main living area floor
2.4m for second floor, where its area does not exceed 50% of the apartment area</td></tr>
<tr><td>Attic spaces</td><td>1.8m at edge of room with a 30 degree minimum ceiling slope</td></tr>
<tr><td>If located in mixed use areas</td><td>3.3m from ground and first floor to promote future flexibility of use</td></tr>
</table></td><td rowspan="3">The cross sections have been revised with the floor-to-floor height being changed to 3.1m, for all units on levels 1 to 3, and 3.4m for all units on level 4.

Basement's floor to floor height is 2.7m, except for two parking areas underneath the ramp.</td><td rowspan="3">Complies</td></tr>
<tr><td>Ceiling height increases the sense of space in apartments and provides for well-proportioned rooms</td></tr>
<tr><td>Ceiling heights contribute to the flexibility of building use over the life of the building</td></tr>
<tr><td colspan="2">4D Apartment Size and Layout</td><td></td></tr>
</table>

<table>
<tr><th>Required</th><th>Proposed</th><th>Compliance</th></tr>
<tr><td>Apartments are required to have the following minimum internal areas:

<table><tr><th>Apartment Type</th><th>Minimum Internal Area</th></tr><tr><td>Studio</td><td>35m^2</td></tr><tr><td>1 bedroom</td><td>50m^2</td></tr><tr><td>2 bedroom</td><td>70m^2</td></tr><tr><td>3 bedroom</td><td>90m^2</td></tr></table>
The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m^2 each. A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m^2 each</td><td>All units meet their minimum internal area requirements.</td><td>Complies</td></tr>
<tr><td>Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms</td><td>Habitable rooms are provided with windows of sufficient glass areas.</td><td>Complies</td></tr>
<tr><td>Habitable room depths are limited to a maximum of 2.5 x the ceiling height</td><td>Habitable rooms are generally limited to 2.5 x the ceiling height.</td><td>Complies</td></tr>
<tr><td>In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window</td><td>Kitchens of all units are less than 8m from a window.</td><td>Complies</td></tr>
<tr><td>Master bedrooms have a minimum area of 10m^2 and other bedrooms 9m^2 (excluding wardrobe space)</td><td>All bedrooms are of sufficient size.</td><td>Complies</td></tr>
<tr><td>Bedrooms have a minimum dimension of 3m (excluding wardrobe space)</td><td>Bedrooms of all units have a minimum dimension of 3m.</td><td>Complies</td></tr>
<tr><td>Living rooms or combined living/dining rooms have a minimum width of:
- 3.6m for studio and 1 bedroom apartments
- 4m for 2 and 3 bedroom apartments</td><td>Sufficient widths are provided to living rooms/dining rooms.</td><td>Complies</td></tr>
<tr><td colspan="2">4E Private Open Space and Balconies</td><td></td></tr>
<tr><td>All apartments are required to have primary balconies as follows:

<table><tr><th>Dwelling Type</th><th>Minimum Area</th><th>Minimum Depth</th></tr><tr><td>Studio</td><td>4m^2</td><td>-</td></tr><tr><td>1 bedroom</td><td>8m^2</td><td>2m</td></tr><tr><td>2 bedroom</td><td>10m^2</td><td>2m</td></tr><tr><td>3 bedroom</td><td>12m^2</td><td>2.4m</td></tr></table>
The minimum balcony depth to be counted as contributing to the balcony area is 1m</td><td>All apartments provide the minimum required balcony areas and depths, except for units *2,9,17 and 25*. Units *2,9,17 and 25*, will have the minimum area of 10m2 but will only have a depth of 1.624m

The above four units will not have the required minimum depth, for their Private Open Space, because a condition of consent will be imposed to improve their solar access by moving their living room window wall by 500mm into the Private Open Space area.</td><td>Considered Acceptable</td></tr>
</table>

Required	Proposed	Compliance
For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m^2 and a minimum depth of 3m	Nearly all of the ground floor units, except for two, have access to their own courtyard private open space of greater than 15sqm and a depth of 3m.	Complies
4F Common Circulation and Spaces		
The maximum number of apartments off a circulation core on a single level is eight	Single lift core provided per building. Maximum of 4 units per level are proposed off one lift.	Complies
For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40	Not applicable.	N/A
Daylight and natural ventilation should be provided to all common circulation spaces that are above ground. Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors	The ground level plan has been revised with the central stair and planter have been broken up. This would enhance the ability to have a view and light through the ground floor entry space.	Complies
4G Storage		
In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: Dwelling Type / Storage Size Volume Studio / 4m^3 1 bedroom / 6m^3 2 bedroom / 8m^3 3 bedroom / 10m^3 At least 50% of the required storage is to be located within the apartment.	The proposed development achieves minimum storage requirement as detailed on drawing No. 983.	Complies
4H Acoustic Privacy		
Noise transfer is minimised through the siting of buildings and building layout	The unit layouts have generally aligned like for like uses to ensure acoustic privacy.	Complies
Noise impacts are mitigated within apartments through layout and acoustic treatments		
4K Apartment Mix		
A range of apartment types and sizes is provided to cater for different household types now and into the future	The proposed unit mix is acceptable, as it includes: • 1 x Studio • 10 x 1 bedroom • 18 x 2 bedroom • 2 x 3 bedroom	Complies
The apartment mix is distributed to suitable locations within the building		
4L Ground Floor Apartments		
Street frontage activity is maximised where ground floor apartments are located	The ground floor treatment to the building, including landscaping and fencing will assist in providing an active environment to the street while preserving privacy.	Complies
Design of ground floor apartments delivers amenity and safety for residents		
4M Facades		

Required	Proposed	Compliance
Building facades provide visual interest along the street while respecting the character of the local area	Building façades are articulated and modulated through the use of balconies, varying windows and recessed elements. Ground floor building entries are clearly defined and articulated by the façades.	Complies
Building functions are expressed by the facade		
4N Roof Design		
Roof treatments are integrated into the building design and positively respond to the street	The rooftop is integrated with the building and is designed to positively respond to the streetscape. The roof for the is an acceptable design which includes photovoltaic panels and a communal open space however this space could be improved by utilizing landscaping and outdoor furniture (condition of consent will be imposed).	Complies by Conditions
Opportunities to use roof space for residential accommodation and open space are maximised		
Roof design incorporates sustainability features		
4O Landscape Design		
Landscape design is viable and sustainable	An aesthetically pleasing landscape design has been proposed which corresponds well with the built form. The landscape design is considered appropriate. The DA has been reviewed by Council's Landscape Officer and Urban Design who has raised no objections to the landscape design, subject to conditions.	Complies with conditions
Landscape design contributes to the streetscape and amenity		
4P Planting on Structures		
Appropriate soil profiles are provided	As above. Planting on structures or in planter boxes where required is considered acceptable.	Complies
Plant growth is optimised with appropriate selection and maintenance		
Planting on structures contributes to the quality and amenity of communal and public open spaces		
4Q Universal Design		
Universal design features are included in apartment design to promote flexible housing for all community members	All units, of the proposal are adaptable units in accordance with the Australian Standard *AS 4299-1995 Adaptable Housing*. Additionally, access to common corridors and each unit is wheelchair accessible.	Complies
A variety of apartments with adaptable designs are provided		
Apartment layouts are flexible and accommodate a range of lifestyle needs		
4R Adaptive Reuse		
New additions to existing buildings are contemporary and complementary and enhance an area's identity and sense of place	The DA is for the development of a new building and not the adaptive reuse of an existing building.	N/A
Adapted buildings provide residential amenity while not precluding future adaptive reuse		

Required	Proposed	Compliance
4S Mixed Use		
Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement	The DA does not propose a mixed use development.	N/A
Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents		
4T Awnings and Signage		
Awnings are well located and complement and integrate with the building design	Awnings are integrated with the building design where proposed.	Complies
Signage responds to the context and desired streetscape character	Building address signage could be integrated into the building design.	
4U Energy Efficiency		
Development incorporates passive environmental design.	The proposal is accompanied by a BASIX Certificate. Additionally, photovoltaic panels are indicated to be provided on the rooftop.	Complies
Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer		
Adequate natural ventilation minimises the need for mechanical ventilation		
4V Water Management and Conservation		
Potable water use is minimised	The proposal is accompanied by a BASIX Certificate. The proposal has been reviewed by Council engineer who raised no issues in regard to stormwater subject to conditions.	Complies with conditions
Urban stormwater is treated on site before being discharged to receiving waters		
Flood management systems are integrated into site design		
4W Waste Management		
Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents	Waste storage facilities are provided on basement level 1. The application was referred to Council's Waste Management Section who have indicated that the waste management of the development is considered to be acceptable subject to conditions of consent.	Complies with conditions
Domestic waste is minimized by providing safe and convenient source separation and recycling		
4X Building Maintenance		
Building design detail provides protection from weathering	The development is in accordance with these objectives.	Complies
Systems and access enable ease of maintenance		
Material selection reduces ongoing maintenance costs		

ATTACHMENT 2 – LIVERPOOL DEVELOPMENT CONTROL PLAN 2008 COMPLIANCE TABLES

LDCP 2008 - Part 1 General Controls for all Development

Development Control	Provision	Comment	Complies
Section 2. Tree Preservation	Controls relating to the preservation of trees	The proposed development is retaining nine street trees and removing one whilst it will plant two new street trees, incorporating them into the landscape design. A condition to bond the tree will be made prior to a CC to ensure it is protected and maintained throughout the whole construction process. On the subject site six trees will be removed and will be replaced with new trees. The DA has been reviewed by Council's Landscape Officer who has raised no objections to the landscape design, subject to conditions.	Complies with condition
Section 3. Landscaping and Incorporation of Existing Trees	Controls relating to landscaping and the incorporation of existing trees.	A landscape plan was submitted with the application demonstrating the landscape design for the site. The DA has been reviewed by Council's Landscape Officer who has raised no objections to the landscape design, subject to conditions.	Complies with conditions
Section 4 Bushland and Fauna Habitat Preservation	Controls relating to bushland and fauna habitat preservation	The site is not mapped as containing significant bushland or habitat.	Complies
Section 5. Bush Fire Risk	Controls relating to development on bushfire prone land.	The site is not mapped as bushfire prone land.	N/A
Section 6. Water Cycle Management	Stormwater runoff shall be connected to Council's drainage system by gravity means. A stormwater drainage concept plan is to be submitted.	This aspect has been reviewed by Council's Land Development Engineer, who has raised no issues subject to conditions.	Complies with conditions
Section 7. Development Near a Watercourse	If any works are proposed near a water course, the Water Management Act 2000 may apply, and you may be required to seek	The proposal is not within 40m of a watercourse.	N/A

Development Control	Provision	Comment	Complies
	controlled activity approval from the NSW Office of Water.		
Section 8. Erosion and Sediment Control	Erosion and sediment control plan to be submitted.	An erosion and sediment control plan were submitted. In the event of any approval, the plan would be conditioned.	Complies with conditions
Section 9. Flooding Risk	Provisions relating to development on flood prone land.	The site has been identified as being flood prone land. However, the proposal development has been amended to mitigate potential flood risk. The DA has been reviewed by Council's Flood Engineer who has raised no objections to the landscape design, subject to conditions.	Complies with conditions
Section 10. Contaminated Land Risk	Provisions relating to development on contaminated land.	As per SEPP (Resilience and Hazards) 2021, the site has been deemed suitable for the future use of the land.	Complies
Section 11. Salinity Risk	Provisions relating to development on saline land.	Salinity to comply with the provisions of the BCA.	Complies with conditions
Section 12. Acid Sulphate Soils	Provisions relating to development on acid sulphate soils	The development site is not identified as containing acid sulphate soils.	N/A
Section 13. Weeds	Provisions relating to sites containing noxious weeds.	The site is not identified as containing noxious weeds.	N/A
Section 14. Demolition of Existing Development	Provisions relating to demolition works	Development consent is sought for the demolition of the existing structures on site. A demolition plan has been submitted and conditions will apply for demolition works.	Complies by conditions
Section 15. On Site Sewage Disposal	Provisions relating to OSMS.	OSMS is not proposed. Site is sewered.	N/A
Section 16. Aboriginal Archaeology	An initial investigation must be carried out to determine if the proposed development or activity occurs on land potentially containing an item of aboriginal archaeology.	The development site is not mapped as a potential area containing Aboriginal archaeology.	Complies
Section 17. Heritage and Archaeology	Provisions relating to heritage sites.	The development site is not identified as a heritage item or located within close proximity to a heritage item.	Complies

Development Control	Provision	Comment	Complies
Section 20. Car Parking and Access	Car Parking Controls Residential & Business Zones 1 space per small dwelling (<65sqm) or 1 bedroom 1.5 spaces per medium dwelling (65-110sqm) or 2 bedrooms 2 car spaces per large dwelling (>110sqm) or 3 or more bedrooms 1 visitor car space for every 4 dwellings or part thereof. Bicycles – Residential Flat Buildings Residents: 1 per 2 units, or 1 for every 4 bedrooms (whichever is greater) Visitors: 1 per 10 units	In accordance with the LDCP, the proposed development would require 42 spaces (including 8 spaces for visitor parking) however the proposal is only providing 41 spaces therefore a shortfall of one parking space. The application was referred to Council's Traffic Section who were satisfied with the application subject to conditions.	Considered Acceptable
Section 21. Subdivision of Land and Buildings	Provisions relating to the subdivision of land.	No subdivision proposed.	N/A
Section 22 and Section 23. Water Conservation and Energy Conservation	New dwellings, are to demonstrate compliance with State Environmental Planning Policy – Building Sustainability Index (BASIX).	The application has been accompanied by a BASIX Certificate. The current certificate does not reflect the amended scheme. In the event of an approval, an amended certificate would be conditioned.	Complies with conditions
Section 25. Waste Disposal and Re-use Facilities	Provisions relating to waste management during construction and on-going waste.	Waste storage facilities are provided and Council's Waste Management Section has reviewed the waste management plan and conditions of consent were provided.	Complies with conditions
Section 26. Outdoor Advertising and Signage	Provisions relating to signage.	No signage proposed.	N/A
Section 27. Social Impact Assessment	Provisions relating to social impact.	A Social Impact Comment has been provided for the development. The application was reviewed by Council's Community Planning Section and is considered acceptable.	Complies

LDCP 2008 Part 3.7: Residential Flat Buildings in the R4 Zone

Development Control	Provision	Comment
2. Frontage and Site Area	The minimum lot width is 24m	**Complies** The site has a frontage of 37m along Woolnough Place and 52m along Hoxton Park Road.
3. Site Planning	The building should relate to the site's topography with minimal earthworks, except for basement car parking.	**Complies** The building has been designed to address the topography of the site as well as the frontages to Hoxton Park Road and Woolnough Place.
	Siting of buildings should provide usable and efficient spaces, with consideration given to energy efficiency in the building design.	**Complies** Where possible, ground level private open space, upper level balconies and windows have been orientated to the north to maximise solar access and improve energy efficiency of the building.
	Site layout should provide safe pedestrian, cycle and vehicle access to and from the street.	**Complies** Safe access is provided to the building and parking.
	Siting of buildings should be sympathetic to surrounding development, taking specific account of the streetscape in terms of scale, bulk, setbacks, materials and visual amenity.	**Complies** Whilst the surrounding development is still low density housing in scale, the site is zoned R4, which allows for residential flat buildings, and in this location up to a height of 15m. As such, the proposed development generally complies with these requirements and is considered to be in accordance with the desired future character of the area. Furthermore, the matter of character and context of the site and proposed building has also been considered by the Design Excellence Panel in which they are supportive of the proposal.
	Stormwater from the site must be able to be drained satisfactorily. Where the site falls away from the street, it may be necessary to obtain an easement over adjoining property to drain water satisfactorily to a Council stormwater system. Where stormwater drains directly to the street, there may also be a need to incorporate on-site detention of stormwater where street drainage is inadequate.	**Complies with conditions** Stormwater discharge is proposed to be drained via on-site detention systems to the street. Council's Land Development Engineering Section have reviewed the application and has no objections to the proposal subject to the imposition of conditions of consent.

Development Control	Provision	Comment
	The development will need to satisfy the requirements of State Environmental Planning Policy No 65—Design Quality of Residential Flat Development.	**Complies** As demonstrated within this report, the development generally demonstrates compliance with SEPP 65.
4. Setbacks	Front and Secondary setback: 5.5m	**Complies** Front setback of the main building line is 7m.
	Side and rear setback: < 10m – Side 3m; Rear 8m > 10m – Side 8m; Rear 8m	**Complies** Side and rear setbacks are in accordance with the building separation provisions of the ADG.
5. Landscaped Area and Private Open Space	A minimum of 25% of the site area shall be landscaped area.	**Complies** The development complies with the minimum provisions for landscaping under SEPP (Housing) 2021.
	A minimum of 50% of the front setback area shall be landscaped area.	**Complies** As above. Landscaping provisions comply with the requirements of SEPP (Housing) 2021.
	Optimise the provision of consolidated landscaped area within a site by: - Design of basement and sub-basement car parking, so as not to fully cover the site. - Use of front and side setbacks. - Optimise the extent of landscaped area beyond the site boundaries by locating them contiguous with the landscaped area of adjacent properties.	**Complies** Landscaped areas are generally consolidated within the front, sides and rear setback areas.
	Promote landscape health by supporting for a rich variety of vegetation type and size.	**Complies** The proposed landscape plans have been considered acceptable by the Design Excellence Panel and Urban Design Section and the planting selections and use of species is considered acceptable.
	Increase the permeability of paved areas by limiting the area of paving and/or using pervious paving materials.	**Complies** Paving across the landscaped areas is minimised.
	Provide communal open space, which is appropriate and relevant to the context and the building's setting.	**Complies** Communal open space would be appropriate and relevant to the context and the building's setting.
	Where communal open space is provided, facilitate its use for the desired range of activities by:	**Complies** The communal open space on the rooftop is orientated to receive sun throughout the day and is of a size to allow for a range of uses. The communal

Development Control	Provision	Comment
	- Locating it in relation to buildings to optimise solar access to dwellings. - Consolidating open space on the site into recognisable areas with reasonable space, facilities and landscape. - Designing its size and dimensions to allow for the range of uses it will contain. - Minimising overshadowing. - Carefully locating ventilation duct outlets from basement car parking.	open space achieved compliance with the ADG in terms of size, location, solar access and functionality.
	Locate open space to increase the potential for residential amenity.	**Complies** The communal open space helps to provide good residential amenity.
	Private open space shall be provided for each dwelling. Private open space may be provided as a courtyard for ground floor dwellings or as balconies for dwellings above the ground floor. Private open space areas should be an extension of indoor living areas and be functional in size to accommodate seating and the like. Private open space should be clearly defined for private use	**Complies** Private open space is provided to each unit in accordance with the ADG, including courtyards at ground floor, and balconies on the upper floors.
6. Building Design, Streetscape and Layout	Building Height: 15m	**Considered Acceptable** A maximum height of 16.45m is proposed. SEPP Housing 2021 allows a breach of the height development control when affordable housing is proposed.
Building Appearance and Streetscape	Residential Flat Buildings shall comply with State Environmental Planning Policy No 65 – Design Quality of Residential Flat Development, and should consider the Residential Flat Design Code.	**Complies** The proposal meets the requirements of SEPP 65 and the ADG.
	Building facades shall be articulated and roof form is to be varied to provide visual variety.	**Complies** Articulation and interest are provided to all elevations.
	The pedestrian entrance to the building shall be emphasised.	**Complies** Entry points to the building are visible and emphasised.
	A sidewall must be articulated if the wall has a continuous length of over 14m.	**Complies** Side walls are all articulated.

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	Where possible vehicular entrances to the basement car parking shall be from the side of the building. As an alternative a curved driveway to an entrance at the front of the building may be considered if the entrance is not readily visible from the street	**Complies** The basement driveway is in a suitable location.
	Driveway walls adjacent to the entrance of a basement car park are to be treated so that their appearance is consistent with the basement or podium walls.	**Complies** The entrance to the basement is of the same design and materials as the main building.
	Sensitive design of basement car parking areas can assist in ensuring that podiums and vehicle entry areas do not dominate the overall design of the building or the streetscape and optimise areas for deep soil planting.	**Complies** The basement entry is minimal and does not dominate the front elevation.
	The integration of podium design should be an integral part of the design of the development, and as far as possible should not visibly encroach beyond the building footprint.	**Not applicable** No podium proposed.
	A master antenna shall be provided for any development of more than three dwellings and be located so that it is not visible from the street or any public open space.	**Complies with conditions**
	Consider the relationship between the whole building form and the facade and / or building elements. The number and distribution of elements across a façade determine simplicity or complexity. Columns, beams, floor slabs, balconies, window openings and fenestrations, doors, balustrades, roof forms and parapets are elements, which can be revealed or concealed and organised into simple or complex patterns.	**Complies** The building has been designed with attention to detail, and has been reviewed by the Design Excellence Panel, who support the design and features of the building. The applicant has amended the design of the proposal in accordance with the comments provided by the Panel and the amendments are deemed to satisfy the Panel's comments.
	Compose facades with an appropriate scale, rhythm and proportion, which respond to the building's use and the desired contextual character. This may include but are not limited to:	

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	- Defining a base, middle and top related to the overall proportion of the building. - Expressing key datum lines in the context using cornices, a change in materials or building set back. - Expressing the internal layout of the building, for example, vertical bays or its structure, such as party wall-divisions. - Expressing the variation in floor-to-floor height, particularly at the lower levels. - Articulating building entries with awnings, porticos, recesses, blade walls and projecting bays. - Selecting balcony types which respond to the street context, building orientation and residential amenity. - Cantilevered, partially recessed, wholly recessed, or Juliet balconies will all create different facade profiles. - Detailing balustrades to reflect the type and location of the balcony and its relationship to the façade detail and materials	
	Design facades to reflect the orientation of the site using elements such as sun shading, light shelves and bay windows as environmental controls, depending on the facade orientation.	
	Express important corners by giving visual prominence to parts of the facade, for example, a change in building articulation, material or colour, roof expression or increased height.	
	Co-ordinate and integrate building services, such as drainage pipes, with overall facade and balcony design.	
	Co-ordinate security grills/screens, ventilation louvres and car park entry doors with the overall facade design	
Roof Design	Relate roof design to the desired built form. This may include:	**Complies**

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	- Articulating the roof, or breaking down its massing on large buildings, to minimise the apparent bulk or to relate to a context of smaller building forms. - Using a similar roof pitch or material to adjacent buildings, particularly in existing special character areas or heritage conservation areas. - Minimising the expression of roof forms gives prominence to a strong horizontal datum in the adjacent context, such as an existing parapet line. - Using special roof features, which relate to the desired character of an area, to express important corners.	The roof consists of the communal open space and there are to be photovoltaic panels on the roof as well.
	Design the roof to relate to the size and scale of the building, the building elevations and three-dimensional building form. This includes the design of any parapet or terminating elements and the selection of roof materials.	
	Design roofs to respond to the orientation of the site, for example, by using eaves and skillion roofs to respond to sun access.	
	Minimise the visual intrusiveness of service elements by integrating them into the design of the roof. These elements include lift over-runs, service plants, chimneys, vent stacks, telecommunication infrastructures, gutters, downpipes and signage.	
	Where habitable space is provided within the roof optimise residential amenity in the form of attics or penthouse dwellings.	
Building Entry	Improve the presentation of the development to the street by: - Locating entries so that they relate to the existing street and subdivision pattern, street tree planting and pedestrian access network. - Designing the entry as a clearly identifiable element of the building in the street.	**Complies** All entrances are accessible and in a clearly identifiable location. The applicant has allowed for the building to be entered from the street frontage and visual interest is provided with the entry and landscaping.

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	- Utilising multiple entries-main entry plus private ground floor dwelling entries-where it is desirable to activate the street edge or reinforce a rhythm of entries along a street.	
	Provide as direct a physical and visual connection as possible between the street and the entry	
	Achieve clear lines of transition between the public street, the shared private, circulation spaces and the dwelling unit.	
	Ensure equal access for all	**Complies** Both entrances, from Hoxton Park Road and Woolnough Place, will have very low-rise ramps into the building to ensure equal access to the building. Furthermore, lift provides access within the building.
	Provide safe and secure access by: - Avoiding ambiguous and publicly accessible small spaces in entry areas. - Providing a clear line of sight between one circulation space and the next. - Providing sheltered well-lit and highly visible spaces to enter the building, meet and collect mail.	**Complies** Safe and secure access is provided to the buildings, with clear entry points to the development for pedestrians and vehicles.
	Generally provide separate entries from the street for: - Pedestrians and cars. - Different uses, for example, for residential and commercial users in a mixed-use development. - Ground floor dwellings, where applicable.	**Complies** The proposal provides separate vehicle and pedestrian access points.
	Provide and design letterboxes to be convenient for residents and not to clutter the appearance of the development from the street by: - Locating them adjacent to the major entrance and integrated into a wall, where possible. - Setting them at 90 degrees to the street, rather than along the front boundary.	**Complies** Letterboxes will be located backing onto the communal verandah area in the front setback, 90 degrees to the street (Hoxton Park Road).
Balconies	Balconies may project up to 1m from the façade of a building.	**Complies** Compliance with the ADG is provided for balconies in which minimum depths are

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		required to be achieved and are mostly integrated into the façade. Building separation and setbacks are still maintained and overshadowing and privacy is not exacerbated by the design.
	Balustrades must be compatible with the façade of the building.	**Complies** Balustrades compatible with the façade of the building.
	Ensure balconies are not so deep that they prevent sunlight entering the dwelling below.	**Complies** Balconies of a depth to allow solar access.
	Design balustrades to allow views and casual surveillance of the street.	**Complies** Balconies provide views and surveillance to the street.
	Balustrades on balconies at lower levels shall be of solid construction. Solid or semi solid louvres are permitted.	**Complies** The privacy measures implemented for balconies are of a construction and material which is compatible with the development and allow for privacy and solar access compliance to be achieved.
	Noise attenuation measures on balconies facing a Classified Road should be considered.	**Not applicable** No balconies are proposed along Hoxton Park Road (classified road0.
	Balconies should be located on the street frontage, boundaries with views and onto a substantial communal open space.	**Complies** All the balconies are all on the external facades of the building, with each having a view shaft onto a the ground level communal open space.
	Primary balconies should be: - Located adjacent to the main living areas, such as living room, dining room or kitchen to extend the dwelling living space; - Sufficiently large and well proportioned to be functional and promote indoor/outdoor living. A dining table and two chairs (smaller dwelling) and four chairs (larger dwelling) should fit on the majority of balconies in any development.	**Complies** Balconies are located off main living spaces and are of good sizes and dimensions to be fit for purpose in accordance with the ADG.
	Consider secondary balconies, including Juliet balconies or operable walls with balustrades, for additional amenity and choice in larger dwellings, adjacent to bedrooms or for clothes drying, site balconies off laundries or bathrooms.	**Complies** The 2x three bedroom units on the ground level provide secondary balconies to encourage passive surveillance of the street, however, compliance with the ADG is achieved for the primary balconies in terms of size and solar access.
	Design and detail balconies in response to the local climate and context thereby increasing the	**Complies** Balconies designed in accordance with climate and context requirements.

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	usefulness of balconies. This may be achieved by: - Locating balconies facing predominantly north, east or west to provide solar access. - Utilising sunscreens, pergolas, shutters and operable walls to control sunlight and wind. - Providing balconies with operable screens, Juliet balconies or operable walls/sliding doors with a balustrade in special locations where noise or high winds prohibit other solutions - along rail corridors, on busy roads or in tower buildings - choose cantilevered balconies, partially cantilevered balconies and/or recessed balconies in response to daylight, wind, acoustic privacy and visual privacy.	
	Provide primary balconies for all dwellings with a minimum depth of 2m.	**Complies** All main balconies have minimum width of 2m.
	Ensuring balconies are not so deep that they prevent sunlight entering the dwelling below.	**Complies** All balconies allow for adequate solar access.
	Design balustrades to allow views and casual surveillance of the street while providing for safety and visual privacy. Design considerations may include: - Detailing balustrades using a proportion of solid to transparent materials to address site lines from the street, public domain or adjacent development. Full glass balustrades do not provide privacy for the balcony or the dwelling's interior, especially at night. - Detailing balustrades and providing screening from the public, for example, for a person seated looking at a view, clothes drying areas, bicycle storage or air conditioning units	**Complies** Northern facing balconies provide views and surveillance to the street.
	Operable screens increase the usefulness of balconies by providing weather protection, daylight control and privacy screening.	**Complies** Balconies are consistent with the ADG requirements.

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Daylight Access	Plan the site so that new residential flat development is oriented to optimise northern aspect.	**Complies** The building maximises the northern aspect where possible.
	Ensure direct daylight access to communal open space between March and September and provide appropriate shading in summer.	**Complies** The communal open spaces receive adequate daylight, with the opportunity for shading.
	Optimise the number of dwellings receiving daylight access to habitable rooms and principal windows. Ensure daylight access to habitable rooms and private open space, particularly in winter - use skylights, clerestory windows and fanlights to supplement daylight access.	**Complies** Main rooms and windows receive daylight in accordance with the ADG requirements.
	Promote two-storey and mezzanine, ground floor dwellings or locations where daylight is limited to facilitate daylight access to living rooms and private open spaces.	**Not applicable**
	Ensure single aspect, single-storey dwellings have a northerly or easterly aspect - locate living areas to the north and service areas to the south and west of the development. Avoid south facing dwellings.	**Complies** The number of units receiving direct daylight and sunlight is accordance with the ADG requirements. Additionally, all units have a minimum of two aspects and are able to receive some sunlight during the day.
	Design for shading and glare control, particularly in summer: - Using shading devices, such as eaves, awnings, colonnades, balconies, pergolas, external louvres and planting. - Optimising the number of north-facing living spaces. - Providing external horizontal shading to north-facing windows. - Providing vertical shading to east or west windows.	**Complies with conditions** Balconies are covered by the roof and balcony structure above it allowing for some shading.
	Consider higher ceilings and higher window heads to allow deeper sunlight penetration.	**Complies** Ceilings are in line with the minimum requirements of the ADG.
	On west facing windows, vertical louvre panels or sliding screens protect from glare and low afternoon sun.	**Complies** Balconies are consistent with the ADG requirements.

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	On north facing windows, projecting horizontal louvres admit winter sun while shading summer sun.	**Complies** Balconies are consistent with the ADG requirements.
Internal Design	Minimise the length of common walls between dwellings.	**Complies** Common walls are minimised through the development.
	Basement car parking shall be located beneath the building footprint.	**Complies** Basement car parking is located below the building and provides enough room for the site to comply with deep soil requirements and ensure compliance with parking and manoeuvring.
	Design building layouts to minimise direct overlooking of rooms and private open spaces adjacent to dwellings	**Complies** The building has been designed generally in accordance with the ADG building separation requirements.
	Minimise the location of noise sensitive rooms such as bedrooms adjoining noisier rooms such as bathrooms or kitchens or common corridors and stairwells.	**Complies** Noise generating rooms are clustered where possible.
	Where a site has frontage to a Classified Road, locate bedrooms away from the front of the site.	**Complies on Merit** Development has incorporated glazing to enhance acoustic protection from noise emitting from Hoxton Park Road.
	Where common walls are provided they must be carried to the underside of the roof and be constructed in accordance with Part F5 of the Building Code of Australia.	**Complies**
	Locate active use rooms or habitable rooms with windows overlooking communal/public areas.	**Complies** Habitable rooms overlook open space where possible.
Ground Floor Dwellings	Design front gardens or terraces, which contribute to the spatial and visual structure of the street while maintaining adequate privacy for dwelling occupants. This can be achieved by animating the street edge, for example, by promoting individual entries for ground floor dwellings.	**Complies** The landscaping, which circumvents all around the residential flat building, will provide attractive frontages, to both Hoxton Park Road and Woolnough Place.
	Create more pedestrian activity along the street and articulate the street edge by: - Balancing privacy requirements and pedestrian accessibility. - Providing appropriate fencing, lighting and/ or landscaping to	**Complies** The ground floor treatment to the building, including will assist in providing an active environment to the street.

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	meet privacy and safety requirements of occupants while contributing to a pleasant streetscape. - Utilising a change in level from the street to the private garden or terrace to minimise site lines from the streets into the dwelling for some dwellings. - Increasing street surveillance with doors and windows facing onto the street.	
	Ground floor dwellings are special because they offer the potential for direct access from the street and on-grade private landscape areas. They also provide opportunities for the dwelling building and its landscape to respond to the streetscape and the public domain at the pedestrian scale. Ground floor dwellings also support housing choice by providing accessibility to the elderly and/or disabled and support families with small children. Optimise the number of ground floor dwellings with separate entries and consider requiring an appropriate percentage of accessible units. This relates to the desired streetscape and topography of the site. Provide ground floor dwellings with access to private open space, preferably as a courtyard.	**Complies** Ground floor apartments are designed to be consistent with the provisions of the ADG.
Security	Entrances to buildings should be orientated towards the front of the site and facing the street. The main entrance to dwellings or other premises should not be from rear lanes and should be designed with clear directions and signage.	**Complies** The entrance to the street is oriented appropriately and designed to be clear and visible.
	Blank walls in general that address street frontages or public open space are discouraged. Where they are unavoidable building elements or landscaping must be used to break up large expanses of walls. In some cases an anti-graffiti coating will need to	**Complies** No blank walls are proposed.

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	applied to the wall to a height of 2 metres.	
	Minimise the number of entry points to buildings.	**Complies** The proposed residential flat building will have two entry points however both are clearly defined and identifiable, this would contribute to the causal surveillance opportunities in addition to the balconies already provided.
	Reinforce the development boundary to strengthen the distinction between public and private space by: - Employing a level change at the site and/or building threshold (subject to accessibility requirements). - Signage. - Entry awnings. - Fences, walls and gates. - Change of material in paving between the street and the development	**Complies** The building steps is mostly in line with the streetscape and an array of fencing, landscaping and entry treatment is provided to distinguish the development form the street.
	Optimise the visibility, functionality and safety of building entrances by: - Orienting entrances towards the public street. - Providing clear lines of sight between entrances, foyers and the street. - Providing direct entry to ground level dwellings from the street rather than through a common foyer. - Direct and well-lit access between car parks and dwellings, between car parks and lift lobbies and to all unit entrances.	**Complies** Entrances are noticeable and the access ways are prominent to the streets.
	Improve the opportunities for casual surveillance by: - Orienting living areas with views over public or communal open spaces, where possible. - Using bay windows and balconies, which protrude beyond the main facade and enable a wider angle of vision to the street. - Using corner windows, which provide oblique views of the street. - Providing casual views of common internal areas, such as	**Complies** The upper floor balconies will provide for casual surveillance.

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	lobbies and foyers, hallways, recreation areas and car parks.	
	Minimise opportunities for concealment by: - Avoiding blind or dark alcoves near lifts and stairwells, at the entrance and within indoor car parks, along corridors and walkways. - Providing well-lit routes throughout the development. - Providing appropriate levels of illumination for all common areas. - Providing graded illumination to car parks and illuminating entrances higher than the minimum acceptable standard.	**Complies** The access points are well laid out and are to be well lit, and do not provide opportunities for concealment.
	Control access to the development by: - Making dwellings inaccessible from the balconies, roofs and windows of neighbouring buildings. - Separating the residential component of a development's car parking from any other building use and controlling car park access from public and common areas. - Providing direct access from car parks to dwelling lobbies for residents.	**Complies** Dwellings would be inaccessible from neighbouring buildings. The car park is also to be a secure basement and there is to be direct access from the car park to the lobbies via the lift.
Natural Ventilation	Utilise the building layout and section to increase the potential for natural ventilation. Design solutions may include: - Facilitating cross ventilation by designing narrow building depths and providing dual aspect dwellings, for example, cross through dwellings and corner dwellings. - Facilitating convective currents by designing units, which draw cool air in at lower levels and allow warm air to escape at higher levels, for example, maisonette and two-storey dwellings.	**Complies** Cross ventilation and natural ventilation is in accordance with the ADG requirements.
	Provide narrow building depths to support cross ventilation.	**Complies** Refer to ADG discussion for building depths. Additionally, all units are dual aspect and are cross ventilated.

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	Avoid single-aspect dwellings with a southerly aspect.	**Complies** All units are dual aspect.
Building Layout	The layout of dwellings within a residential flat building should minimise the extent of common walls.	**Complies** Common walls are minimised through the development.
Storage Areas	A secure storage space is to be provided for each dwelling with a minimum volume 8 m3 (minimum dimension 1m2). This must be set aside exclusively for storage as part of the basement or garage. Storage areas must be adequately lit and secure. Particular attention must be given to security of basement and garage storage areas.	**Complies** Storage is provided in accordance with ADG requirements.
7. Landscaping and Fencing	The setback areas are to be utilised for canopy tree planting. The landscape design for all development must include canopy trees that will achieve a minimum 8 m height at maturity within front and rear setback areas.	**Complies** Canopy trees are proposed in the front, side, and rear setbacks.
	Landscape planting should be principally comprised of native species to maintain the character of Liverpool and provide an integrated streetscape appearance. Species selected in environmentally sensitive areas should be indigenous to the locality. However, Council will consider the use of deciduous trees	**Complies** The landscape plan is made up of predominantly native species.
	The landscaping shall contain an appropriate mix of canopy trees, shrubs and groundcovers. Avoid medium height shrubs (600 – 1800mm) especially along paths and close to windows and doors.	**Complies** A mixture of plant types and sizes is proposed.
	Landscaping in the vicinity of a driveway entrance should not obstruct visibility for the safe ingress and egress of vehicles and pedestrians.	**Complies** Minimal landscaping is proposed in the vicinity of the driveway.
	Tree and shrub planting along side and rear boundaries should assist in providing effective screening to adjoining properties.	**Complies** Planting is proposed along the side and rear boundaries.
	Landscaping on any podium level or planter box shall be	**Complies**

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	appropriately designed and irrigated. Landscaping on podium levels and planter boxes should be accessible from habitable areas of dwellings or elsewhere as appropriate for gardener access in other forms of development.	Landscaping with planter boxes have been appropriately designed.
	The development must be designed around significant vegetation on the site. It is important to retain significant vegetation to maintain an existing streetscape and enhance the visual appearance of new dwellings.	**Complies with condiiton** The proposed development will retain nine significant street trees but remove two. A condition to bond the trees will be made prior to a CC to ensure it is protected and maintained throughout the whole construction process.
	Trees adjacent to private open space areas and living rooms should provide summer shade and allow winter sun entry.	**Complies** Canopy trees will provide shade.
	Where landscaping is used to control overlooking, species selected are to be a kind able to achieve privacy within 3 years.	**Not applicable**
	Any tree with a mature height over 8m should be planted a minimum distance of 3m from the building or utility services.	**Complies** Trees are distanced 3m from buildings.

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	Contribute to streetscape character and the amenity of the public domain by: - Relating landscape design to the desired proportions and character of the streetscape. - Using planting and landscape elements appropriate to the scale of the development. - Mediating between and visually softening the bulk of large development for the person on the street. Planting design solutions include: - Trees for shading low-angle sun on the eastern and western sides of a dwelling. - Trees that do not cast a shadow over solar collectors at any time of the year. - Deciduous trees for shading of windows and open space areas in summer. methods. - Providing appropriate drainage. - Design planters to support the appropriate soil depth and plant selection by: - Ensuring planter proportions accommodate the largest volume of soil possible. Minimum soil depths will vary depending on the size of the plant. However, soil depths greater than 1.5 m are unlikely to have any benefits for tree growth. - Providing square or rectangular planting areas rather than long narrow linear areas.	**Complies** An aesthetically pleasing landscape design has been proposed which corresponds well with the built form. The landscape design is considered appropriate and is able to receive the required solar access.

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	Design landscape which contributes to the site's particular and positive characteristics, for example by: - Enhancing habitat and ecology. - Retaining and incorporating trees, shrubs and ground covers endemic to the area, where appropriate. - Retaining and incorporating changes of level, visual markers, views and any significant site elements Design for optimum conditions for plant growth by: - Providing soil depth, soil volume and soil area appropriate to the size of the plants to be established. - Providing appropriate soil conditions and irrigation	**Complies with conditions** An aesthetically pleasing landscape design has been proposed which corresponds well with the built form. The landscape design is considered appropriate and is able to receive the required solar access. The DA has been reviewed by Council's Landscape Officer who have raised no objections to the landscape design, subject to conditions.
Fencing	The maximum height of a front fence is 1.2m. The maximum height of side boundary fencing within the setback to the street is 1.2m	**Considered Acceptable** A 1.8m high palisade fence is being proposed along the Woolnough Place street frontage. The height of this fence breaches the fence height standard by 500mm. This is deemed to be acceptable considering that this area is part of the Private Open Space (POS), for Units 3, 4 and 5, and would provide security and some privacy to the enjoyment of occupants when utilising the POS. Further, this fence is in line with the existing fence heights, along Woolnough Place and consequently will not adversely change the existing streetscape. However, to address both privacy (for the respective three units mentioned above) and streetscape concerns, a condition of consent will be imposed to ensure that the fence, along Woolnough Place, will be composed of both visually permeable and visually impermeable materials (from the ground level to the height of 1.5m the fence will be made from visually impermeable materials whilst the rest of the fence 300mm will be made from visually permeable materials).

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	The front fence may be built to a maximum of 1.8m only if: The primary frontage is situated on a Classified Road.	**Complies** Proposed fence along Hoxton Park Road will have a height of 1.5m (Hoxton Park Road is a Classified Road).
	Fences should not prevent surveillance by the dwelling's occupants of the street or communal areas, be 30% transparent and shall be constructed in masonry, timber, metal pickets and/or vegetation and must be compatible with the proposed design of the dwelling.	**Considered Acceptable** The front fence is of masonry with infill panelling and although it may not be 30% transparent, it will enable privacy to the residents, however be of a height in which passive surveillance could still occur of the streetscape.
	For side walls or fences along the secondary frontage, a maximum height of 1.2m is required for the first 9m measured from the front boundary, the remaining fence / wall may then be raised to a maximum of 1.8m. The secondary setback is the longest length boundary.	**Complies** No secondary frontage
8. Car parking and access	Visitor car parking shall be clearly identified and may not be stacked car parking. Visitor car parking shall be located between any roller shutter door and the front boundary.	**Complies** Visitor car parking provided in accordance with Part 1 of the LDCP 2008.
	Pedestrian and driveways shall be separated.	**Complies** Separate access points are provided.
	Where possible vehicular entrances to the basement car parking shall be from the side of the building. As an alternative a curved driveway to an entrance at the front of the building may be considered if the entrance is not readily visible from the street.	**Complies** Vehicle access from the southern boundary of the site.
	Give preference to underground parking, whenever possible by: - Retaining and optimising the consolidated areas of deep soil zones. - Facilitating natural ventilation to basement and sub-basement car	**Complies** Basement parking proposed.

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	parking areas, where possible. - Integrating ventilation grills or screening devices of car park openings into the facade design and landscape design. - Providing safe and secure access for building users, including direct access to residential dwellings, where possible. - Providing a logical and efficient structural grid. There may be a larger floor area for basement car parking than for upper floors above ground. Upper floors, particularly in slender residential buildings, do not have to replicate basement car parking widths.	
	Where above ground enclosed parking cannot be avoided, ensure the design of the development mitigates any negative impact on streetscape and street amenity by: - Avoid exposed parking on the street frontage. - Hiding car parking behind the building facade. Where wall openings (windows, fenestrations) occur, ensure they are integrated into the overall facade scale, proportions and detail.	**Not applicable** No above ground parking proposed.
	Promote equity by: - Ensuring the main building entrance is accessible for all from the street and from car parking areas. - Integrating ramps into the overall building and landscape design. - Design ground floor dwellings to be accessible from the street, where applicable, and to their associated private open space.	**Complies** Ramp provided to access building.
	Maximise the number of accessible and adaptable dwellings in a building by: - Providing more than one accessible entrance where a development contains clusters of buildings. - Separating and clearly distinguish between pedestrian accessways and vehicle	**Complies** All proposed units are capable of being adaptable units.

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	accessways. - Locating vehicle entries away from main pedestrian entries and on secondary frontages.	
9. Amenity and Environmental Impact	Adjoining properties must receive a minimum of three hours of sunlight between 9am and 5pm on 21 June to at least: - One living, rumpus room or the like; and - 50% of the private open space.	**Complies** The shadow diagrams indicate that the adjoining properties would receive 3 hours of sunlight to 50% of the POS and living rooms between 9.00am and 5.00pm.
	Building siting, window location, balconies and fencing should take account of the importance of the privacy of on site and adjoining buildings and outdoor spaces. Windows to habitable rooms should be located so they do not overlook such windows in adjoining properties, other dwellings within the development or areas of private open space.	**Complies** The building generally complies with the ADG separation requirements.
	Landscaping should be used where possible to increase visual privacy between dwellings and adjoining properties.	**Complies** Appropriate shrubs and tree planting is proposed along the site boundaries.
	Design building layouts to minimise direct overlooking of rooms and private open spaces adjacent to dwellings by: - Balconies to screen other balconies and any ground level private open space. - Separating communal open space, common areas and access routes through the development from the windows of rooms, particularly habitable rooms. - Changing the level between ground floor dwellings with their associated private open space, and the public domain or communal open space. Use detailed site and building design elements to increase privacy without compromising access to light and air by: - Offsetting windows of dwellings in new development and adjacent development windows.	**Complies** The building generally complies with the ADG separation requirements.

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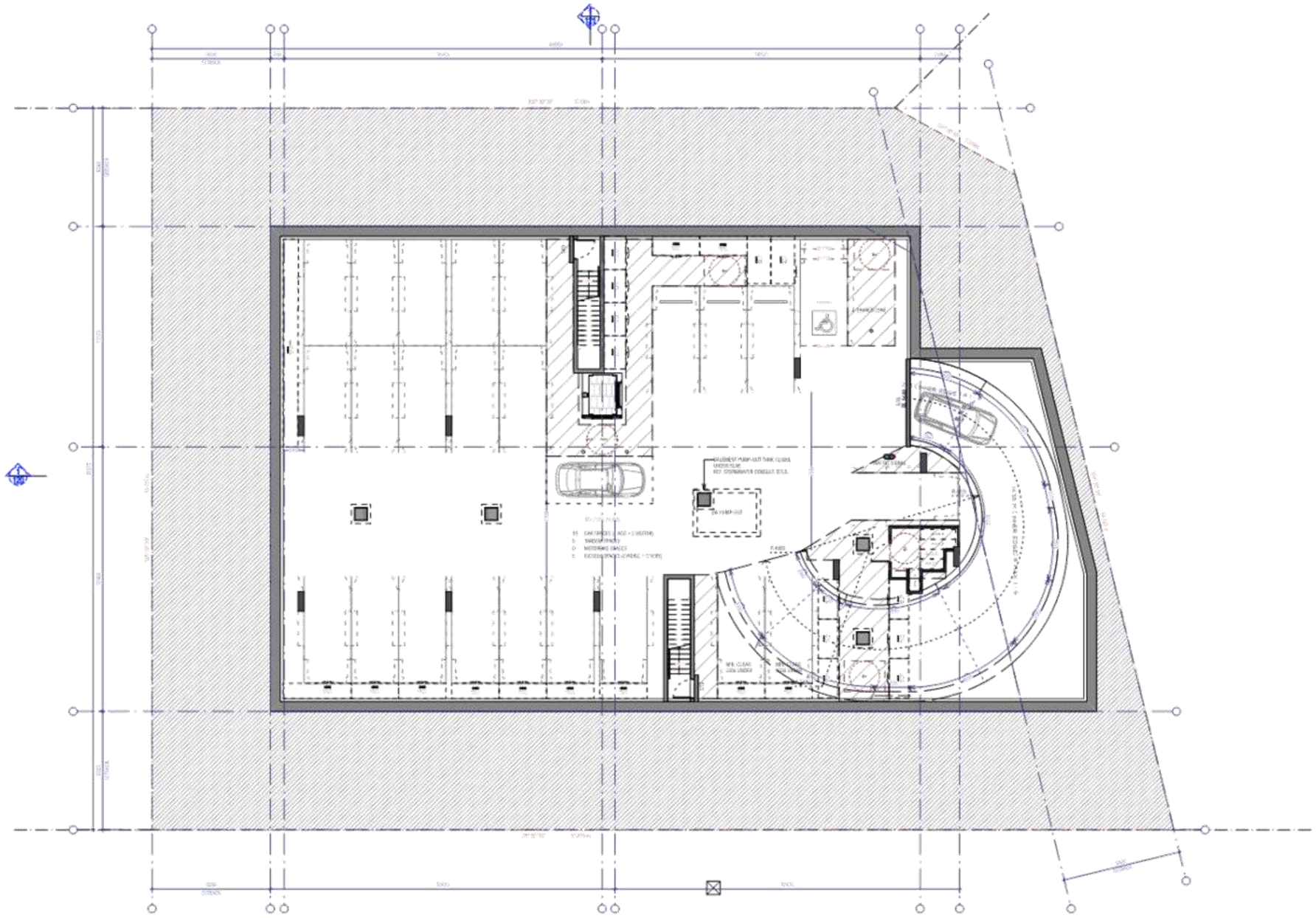
	- Recessed balconies and/or vertical fins between adjacent balconies. - Solid or semi-solid balustrades to balconies - louvres or screen panels to windows and/or balconies.	
	- Fencing. - Vegetation as a screen between spaces. - Incorporating planter boxes into walls or balustrades to increase the visual separation between areas. - Utilising pergolas or shading devises to limit overlooking of lower dwellings or private open space.	
	Noise attenuation measures should be incorporated into building design to ensure acoustic privacy between on-site and adjoining buildings.	**Complies** An acoustic assessment has been provided which recommends how the proposed development can be designed and managed to assist in mitigating acoustic issues for the proposal. The acoustic report was reviewed by Councils Environmental Health department and raised no objection to the acoustic report, subject to conditions.
	Buildings having frontage to a Classified Road or a railway and impacted upon by rail or traffic related noises must incorporate the appropriate noise and vibration mitigation measures into the design in terms of the site layout, building materials and	**Complies with conditions** The subject site is mapped as within proximity to a classified road and conditions of consent will be imposed on the consent to ameliorate potential traffic noise.

Development Control	Provision	Comment
	design, orientation of the buildings and location of sleeping and recreation areas.	
	The proposed buildings must comply with the Environment Protection Authority criteria and the current relevant Australian Standards for noise and vibration and quality assurance.	**Complies with conditions**
	Arrange dwellings within a development to minimise noise transition between dwellings by: - Locating busy, noisy areas next to each other and quieter areas next to other quiet areas, for example, living rooms with living rooms, bedrooms with bedrooms - Using storage or circulation zones within an dwelling to buffer noise from adjacent dwellings, mechanical services or corridors and lobby areas - Minimising the amount of common walls with other dwellings. - Design the internal dwelling layout to separate noisier spaces from quieter spaces by grouping uses within a dwelling - bedrooms with bedrooms and service areas like kitchen, bathroom, and laundry together.	**Complies with conditions** An acoustic assessment has been provided which recommends how the proposed development can be designed and managed to assist in mitigating acoustic issues for the proposal. The acoustic report was reviewed by Councils Environmental Health department and raised no objection to the acoustic report, subject to conditions.
10. Site Services	Letterboxes shall be provided for each dwelling on site, easily accessible from the street, able to be securely locked and provided in accordance with Australia Post's requirements.	**Complies with conditions** Letterboxes will be located adjacent to the main entry at 90 degrees to the street. Advisory conditions to apply regarding compliance with Australia Post requirements.
	Residential numbering should be attached to the letterbox so that it is clearly visible from the street frontage. Numbers should be 75mm in height, reflective and in contrast to the backing material.	**Complies with condition**
	Waste disposal facilities shall be provided for development. These shall be located adjacent to the driveway entrance to the site.	**Complies with conditions** Waste storage facilities are provided on basement level 1. Councils Waste Management officer has reviewed the waste management plan and conditions of consent have been provided.
	Any structure involving waste disposal facilities shall be located as follows:	

Development Control	Provision	Comment
	Setback 1 m from the front boundary to the street. Landscaped between the structure and the front boundary and adjoining areas to minimise the impact on the streetscape. Not be located adjacent to an adjoining residential property.	
	Where a footpath, road shoulder or new or enlarged access driveway is required to be provided this shall be provided at no cost to Council.	**Complies with condition**
	Council must be notified of any works that may threaten Council assets. Council must give approval for any works involving Council infrastructure.	**Complies with condition**
	Where there are no existing street trees in front of the site and contributions have not been collected for street tree planting it may be a condition of consent that street trees be provided in the footpath area immediately in front of the site.	**Complies** Street tree planting is proposed as part of the landscape design for Hoxton Park Road and is satisfactory.



1 **PLAN - BASEMENT 2**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			

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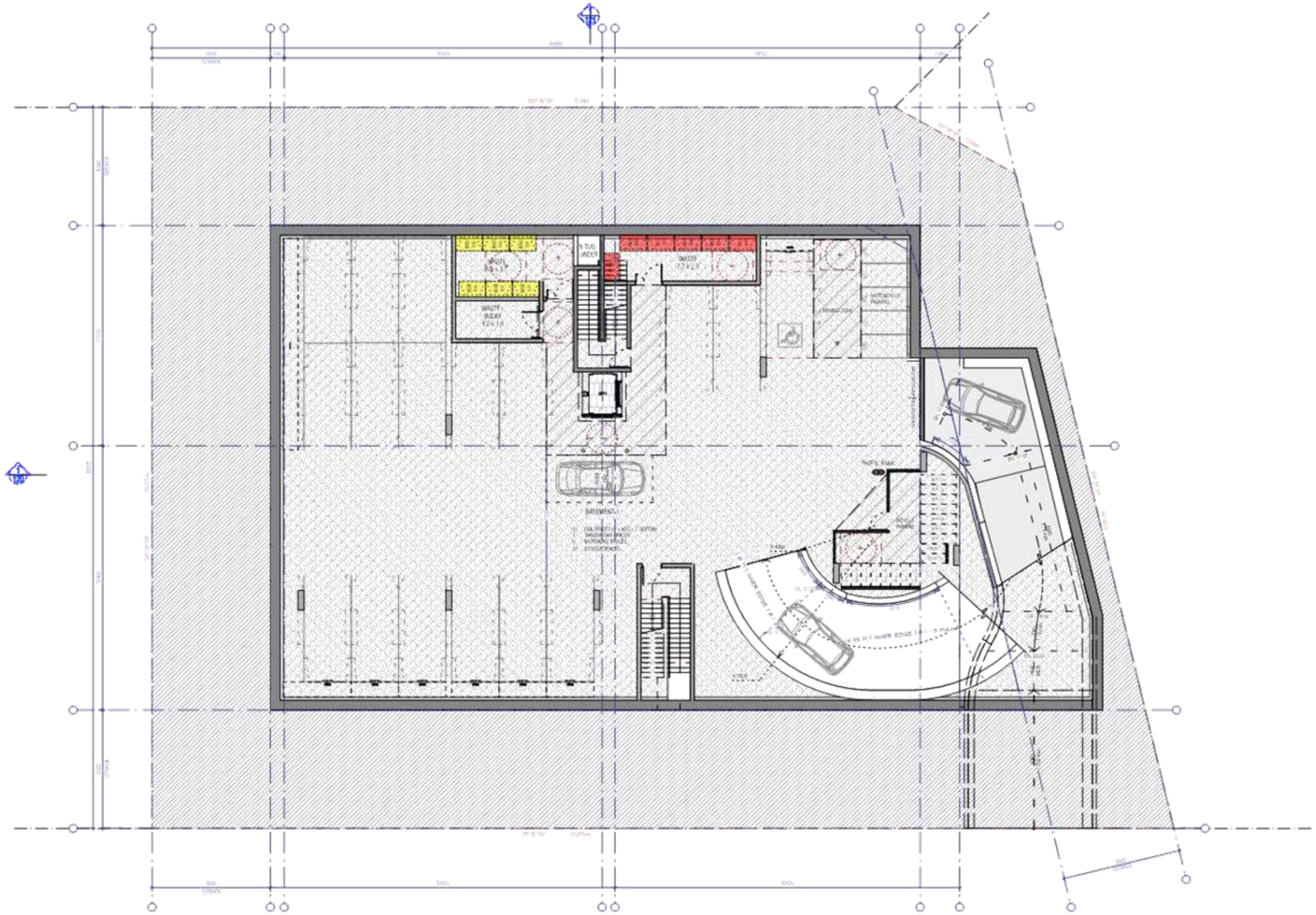
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - BASEMENT 2	DA	1088	101
client	**at**	**drawing**	**chkd / drwn**	**date**	**revision**
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



1 **PLAN - BASEMENT 1**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			
D	28.05.24	RFI issued to council			

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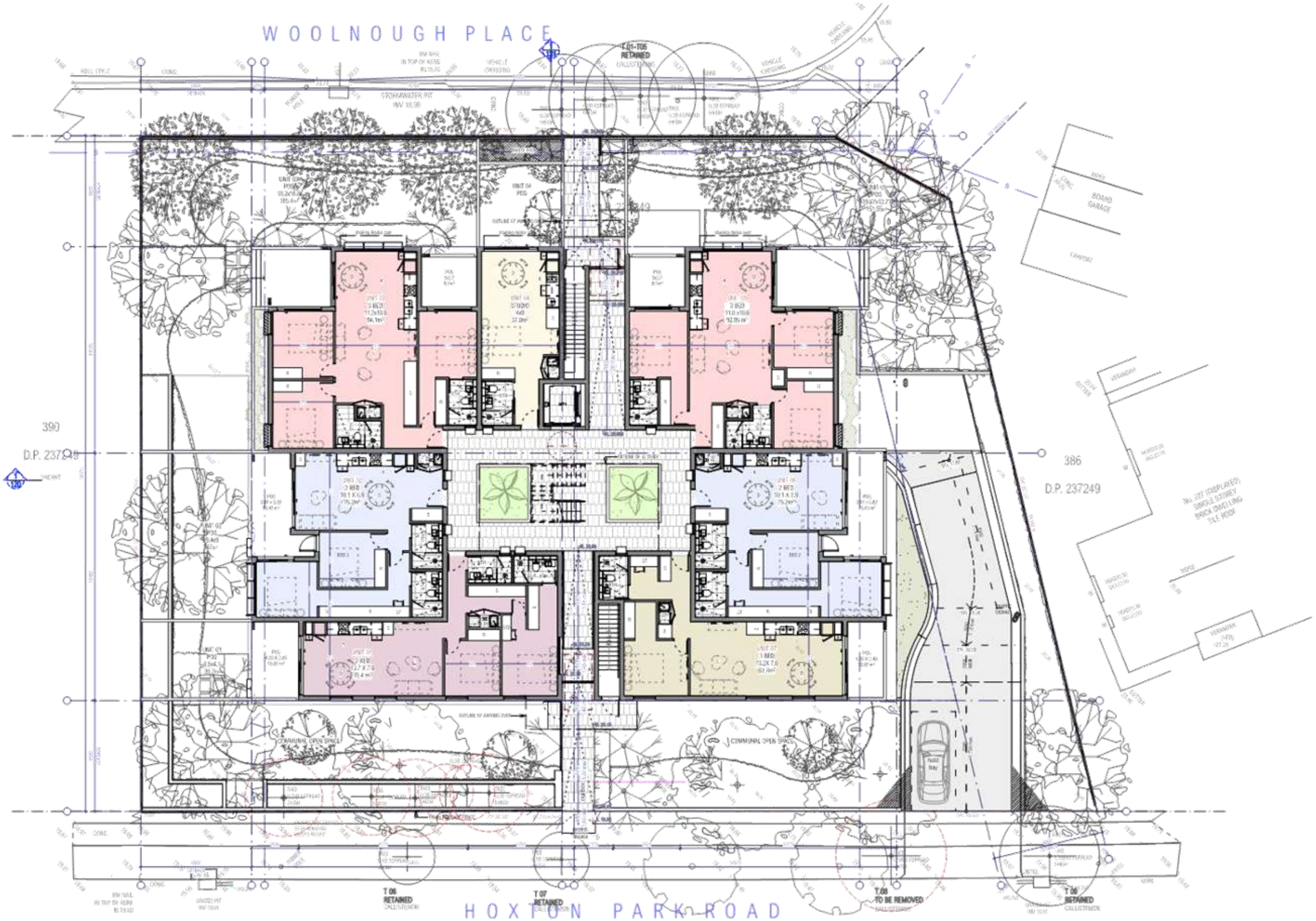
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - BASEMENT 1	DA	1088	102
for/client	**at**	**drawing**	**chkd / drwn**	**date**	**revision**
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	28/05/24	D



1 **PLAN - LEVEL 1**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
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C	16.05.24	RFI issue to council			
D	28.05.24	RFI issued to council			

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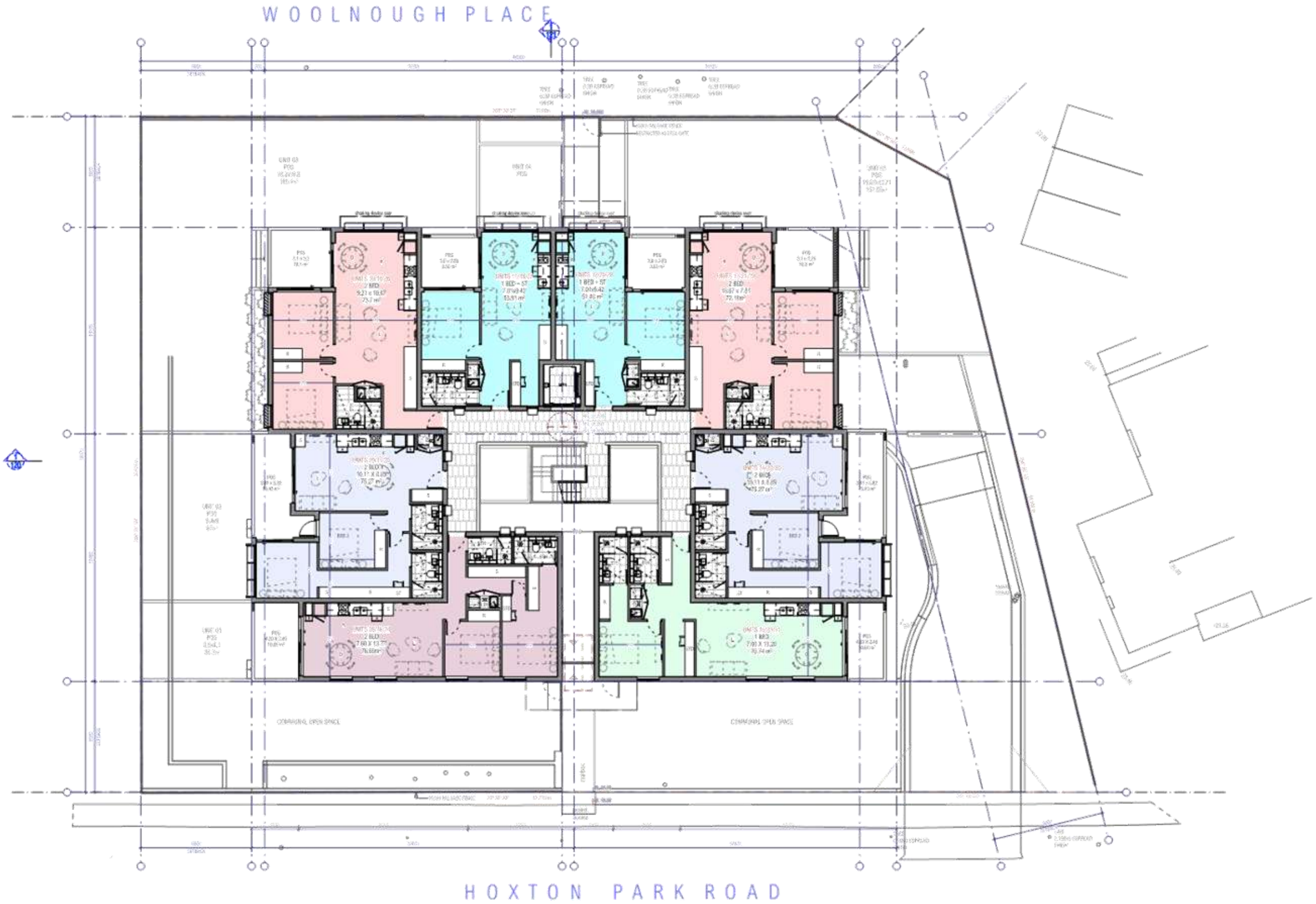
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - LEVEL 1	DA	1088	103
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	28/05/24	D



1 PLAN - LEVEL 2, 3 + 4
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
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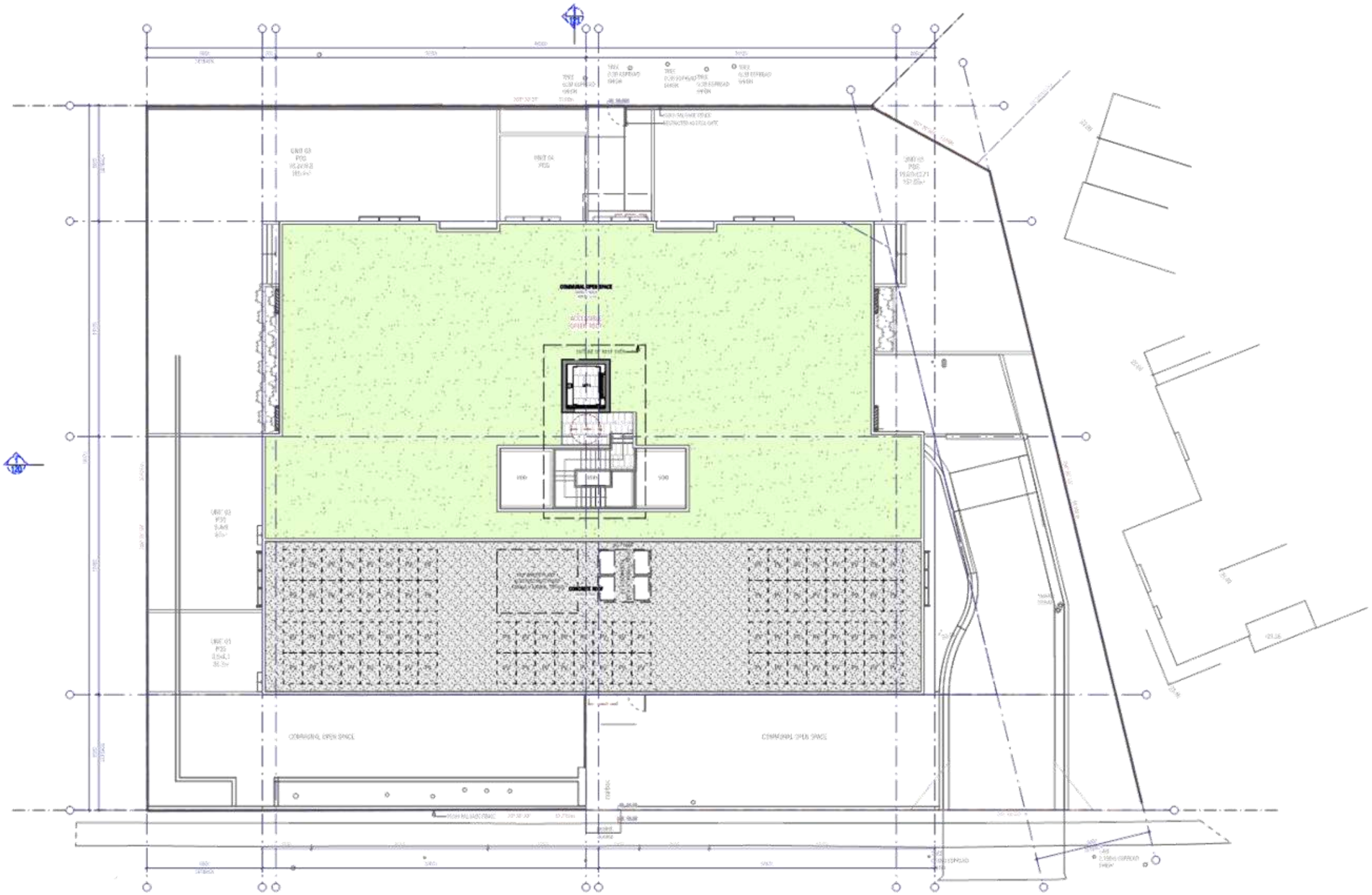
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - LEVEL 2, 3 + 4	DA	1088	104
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



2 **PLAN - LEVEL 5**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
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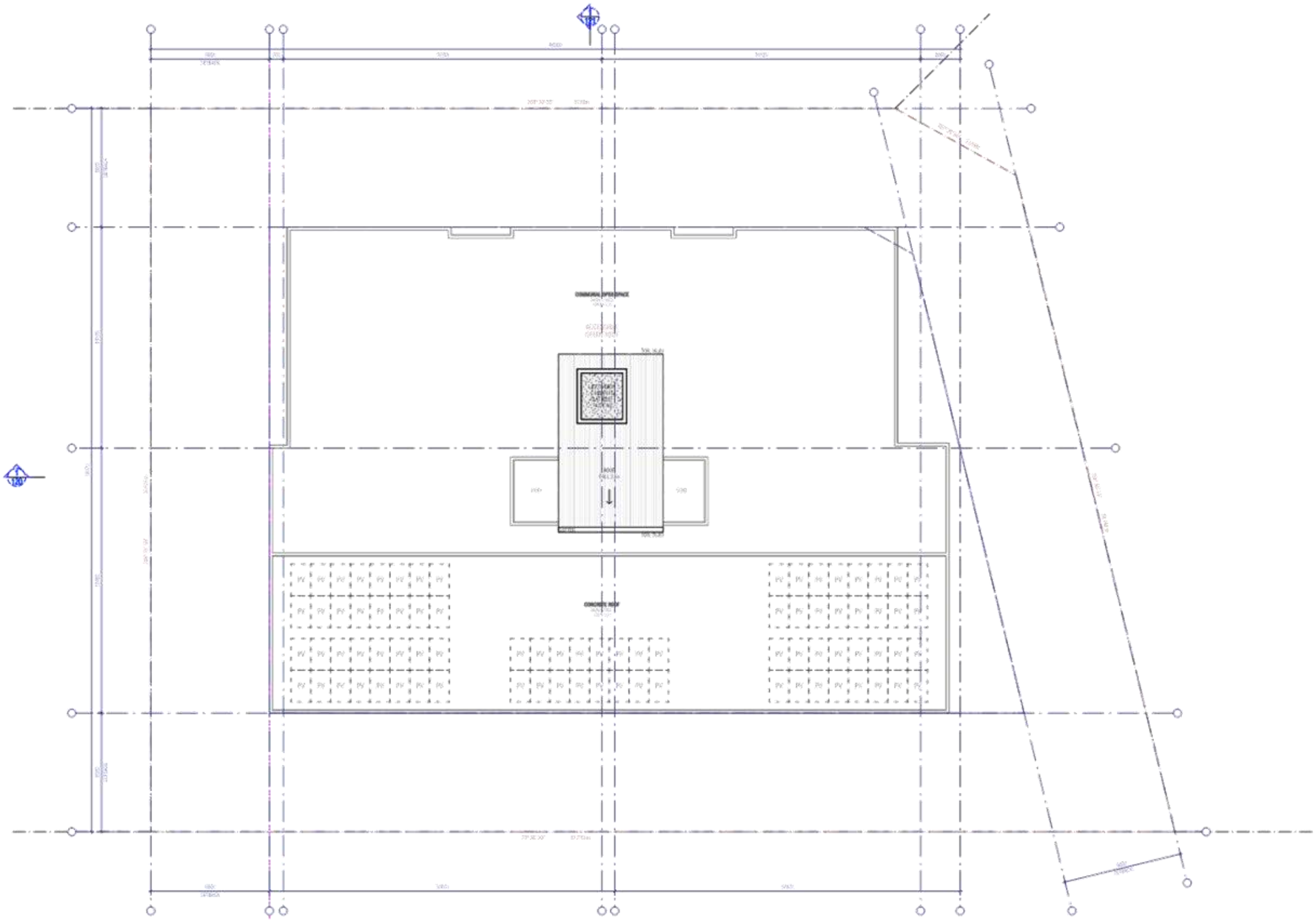
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - LEVEL 5	DA	1088	107
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



1 **PLAN - ROOF**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
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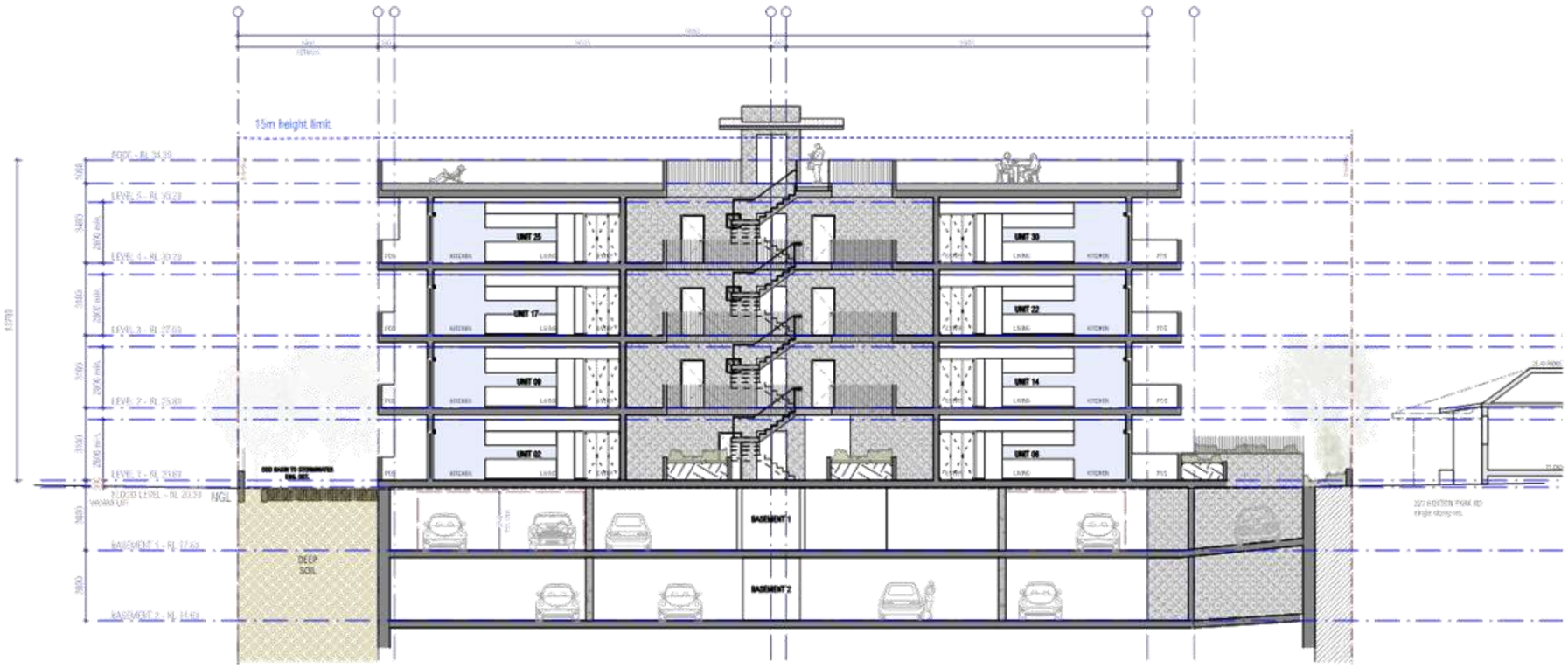
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - ROOF	DA	1088	110
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



1 **SECTION AA**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
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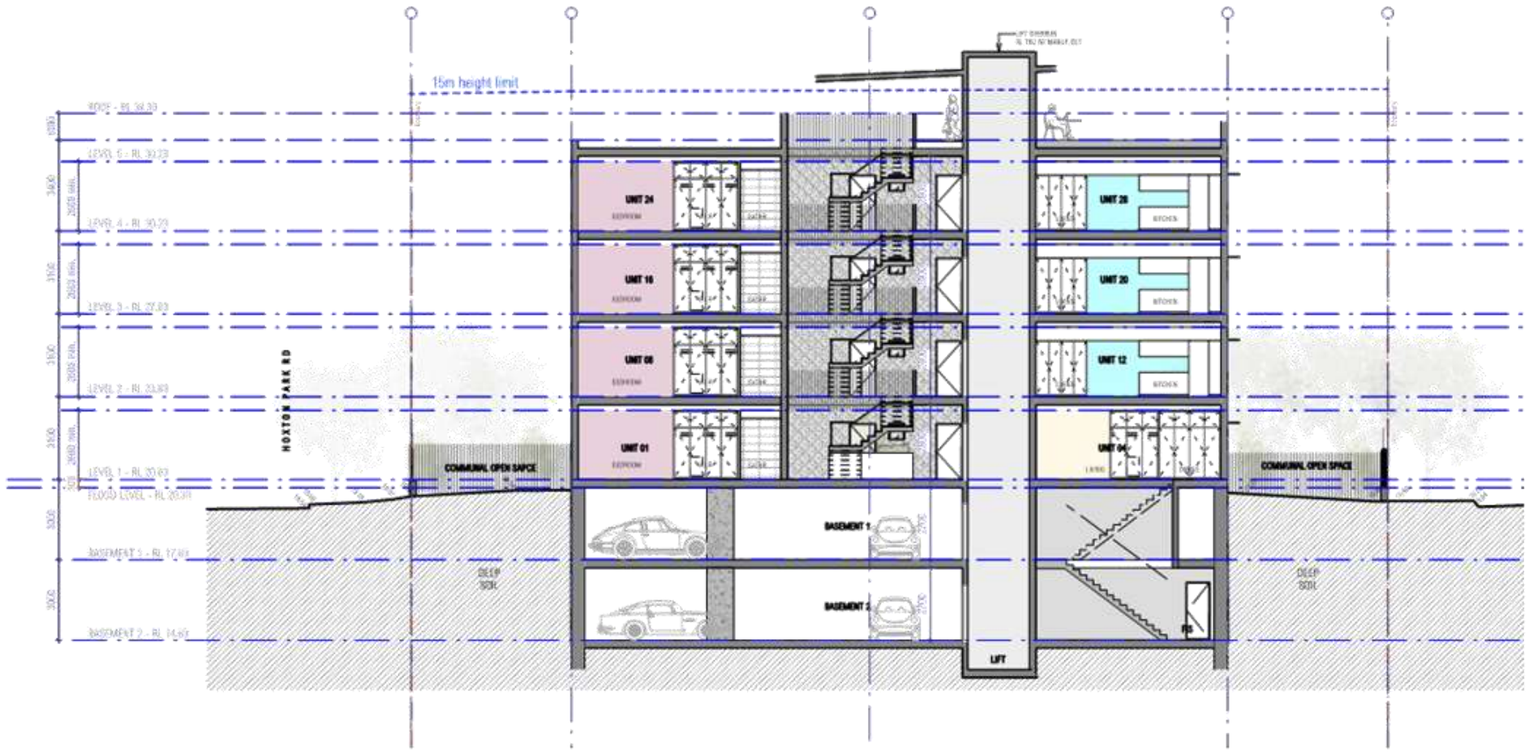
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SECTION - AA	DA	1088	120
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



1 **SECTION - BB**
SCALE: 1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
C	16.05.24	RFI Issue to council			

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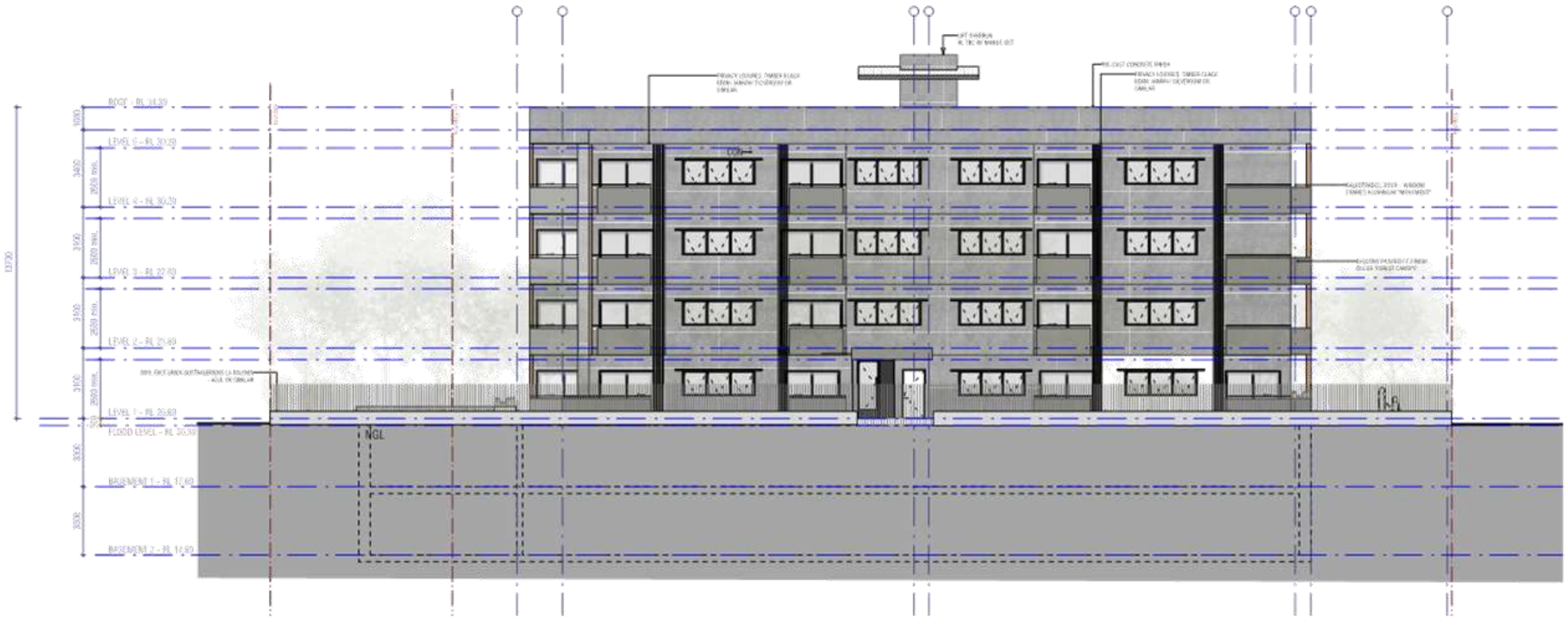
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SECTION - BB	DA	1088	121
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	16/05/24	C



1 **NORTH ELEVATION**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	07.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
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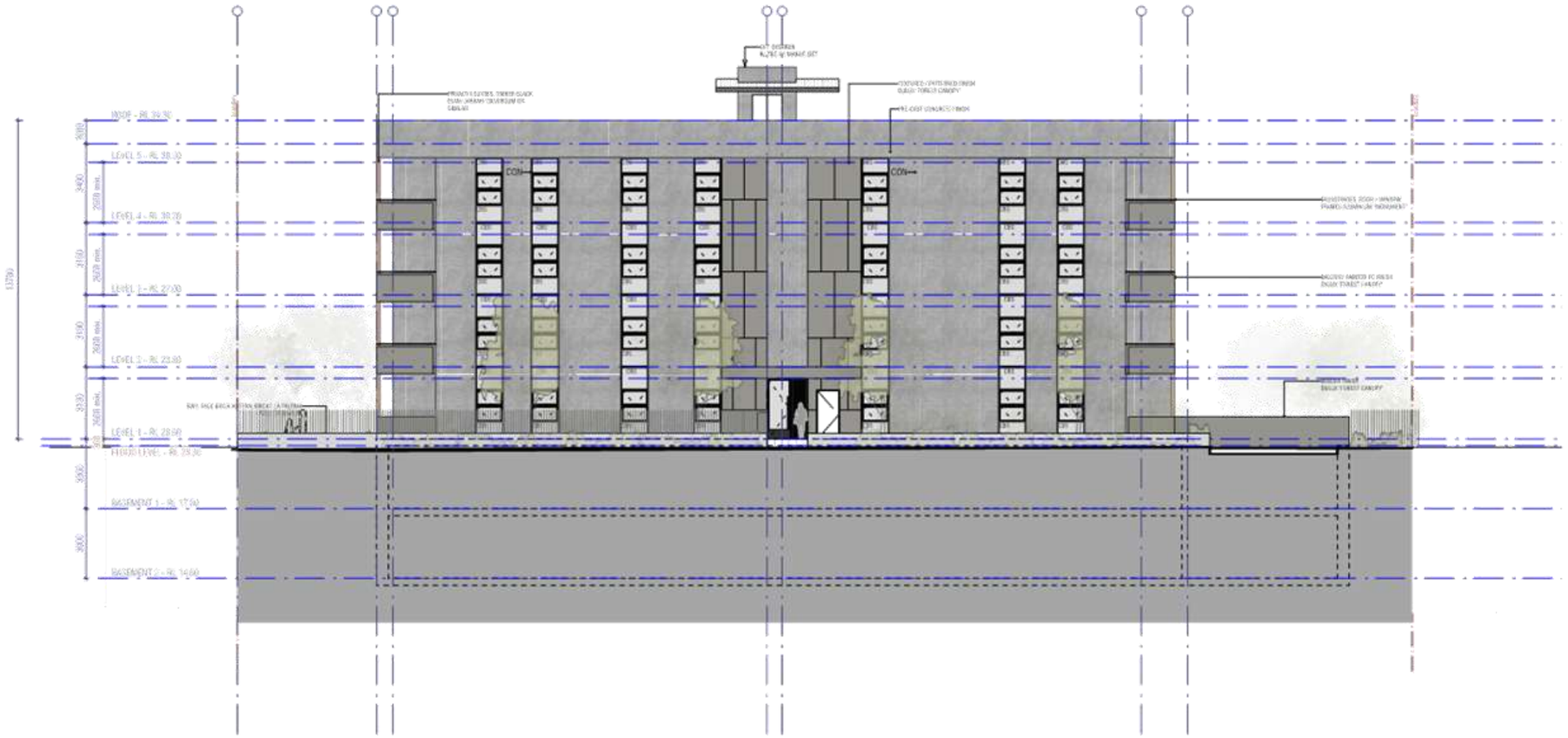
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	NORTH ELEVATION	DA	1088	130
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	C



1 **SOUTH ELEVATION**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	07.07.23	Council, Client, Consultants
B	27.09.23	issue to council			
C	16.05.24	RFI issue to council			

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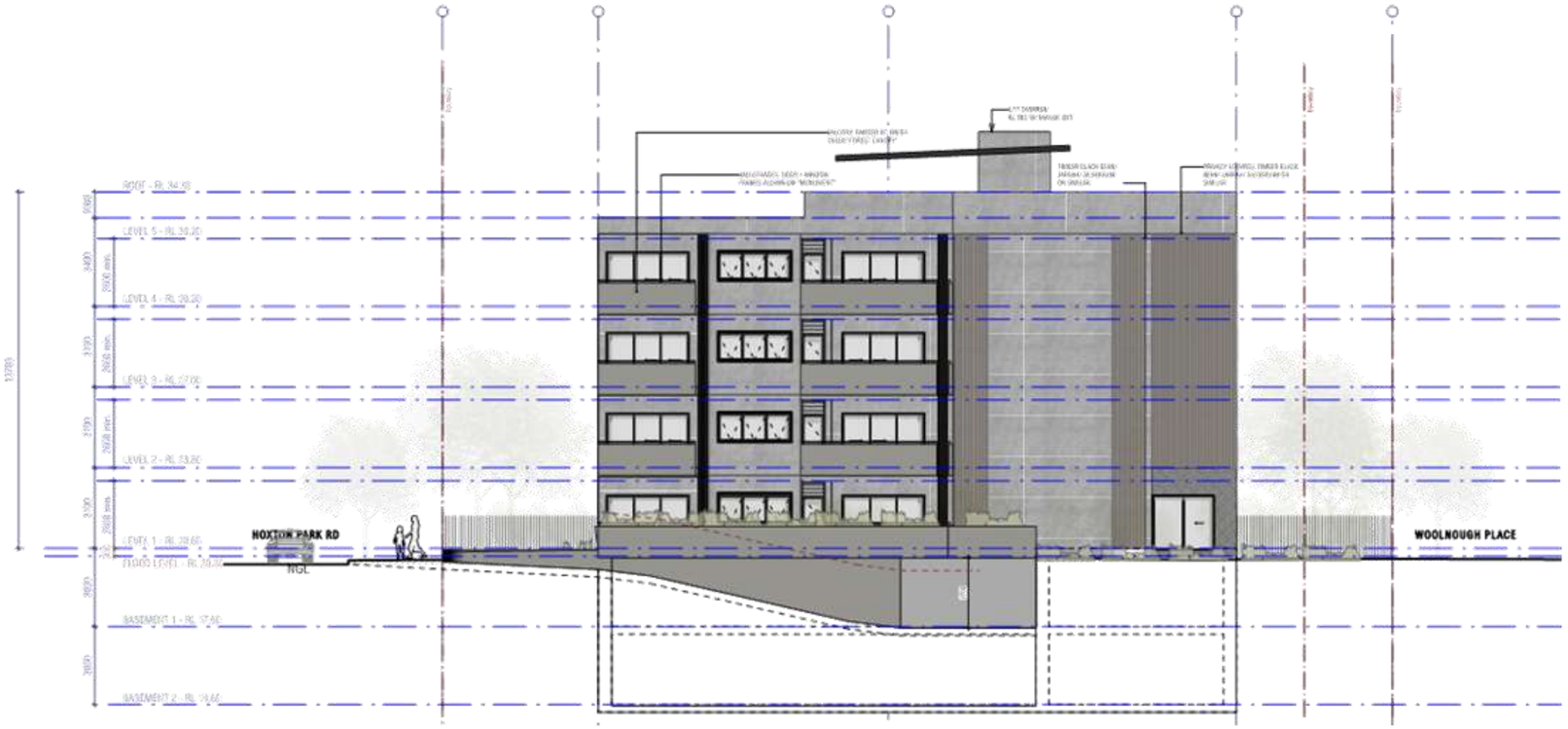
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOUTH ELEVATION	DA	1088	131
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	C



1 **EAST ELEVATION**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	07.07.23	Council, Client, Consultants
B	18.08.23	issued for information			
C	27.09.23	issue to council			
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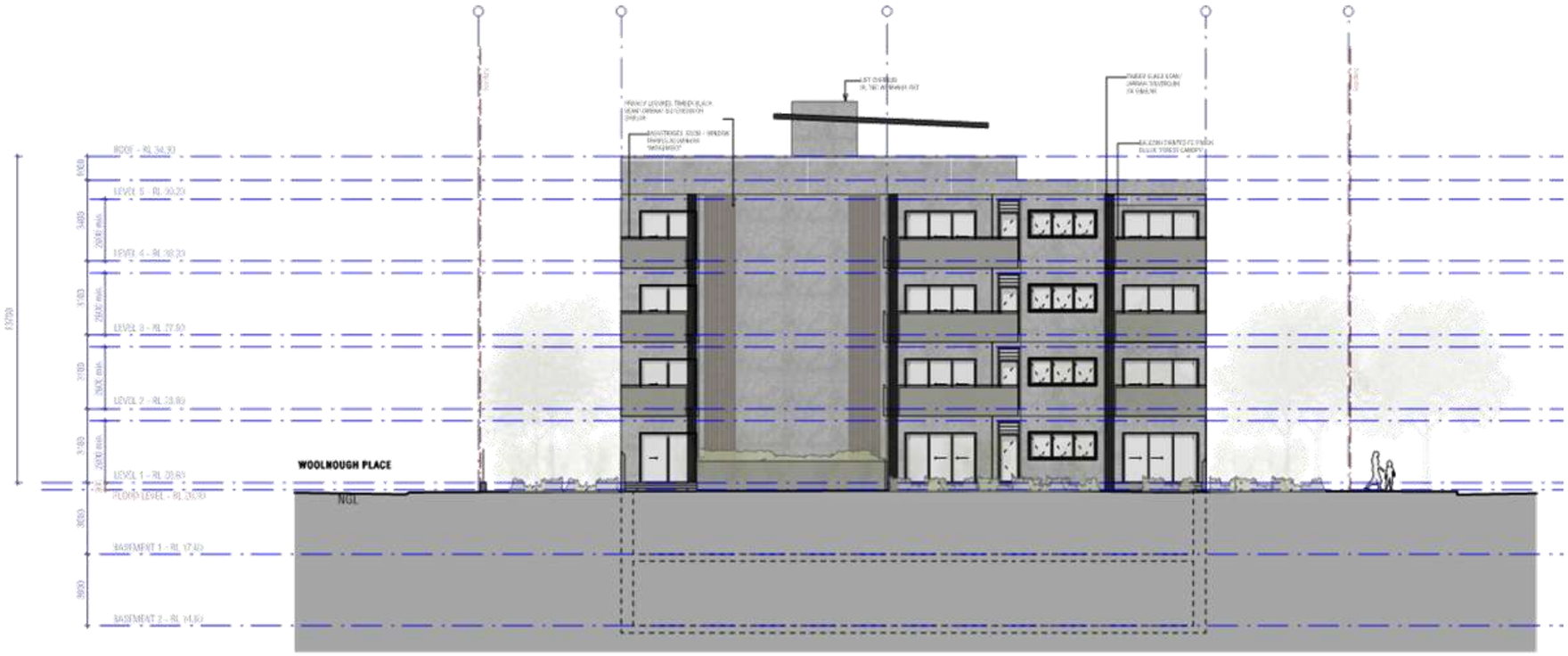
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	EAST ELEVATION	DA	1088	132
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	D



1 **WEST ELEVATION**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	07.07.23	Council, Client, Consultants
B	18.09.23	issued for information			
C	27.09.23	issue to council			
D	16.05.24	RFI Issue to council			

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measurements in mm's unless noted. use figured dimensions. do not scale drawings.
site measure before starting work.
refer all discrepancies to the architect.

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project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	WEST ELEVATION	DA	1088	133
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	D

rev	date	amendment	issue	date	issue to
A	27.09.23	issued to council	1	27.07.23	Council, Client, Consultants
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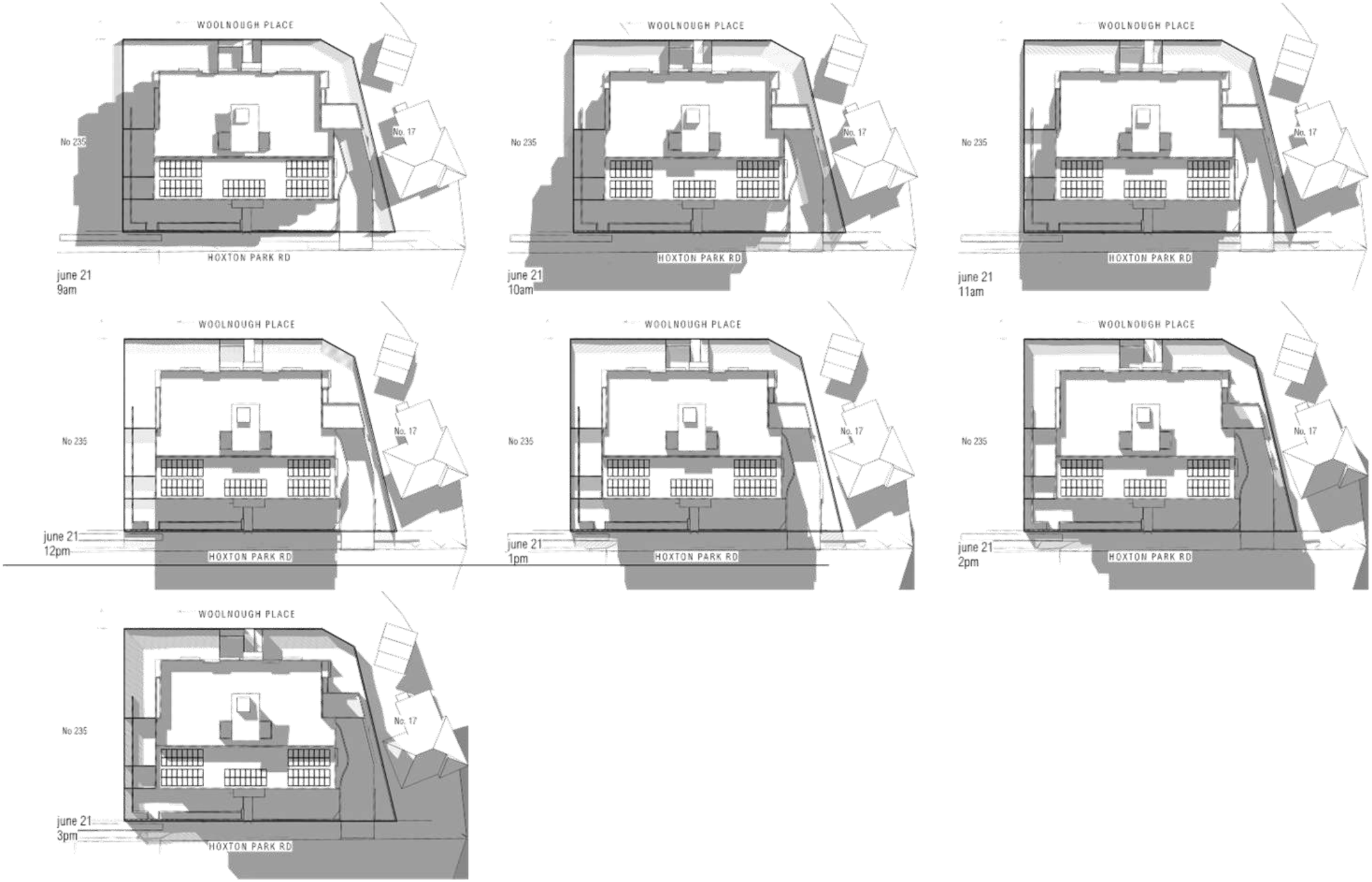
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PERSPECTIVES SHEET 1	DA	1088	910
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	B



rev	date	amendment	issue	date	issue to
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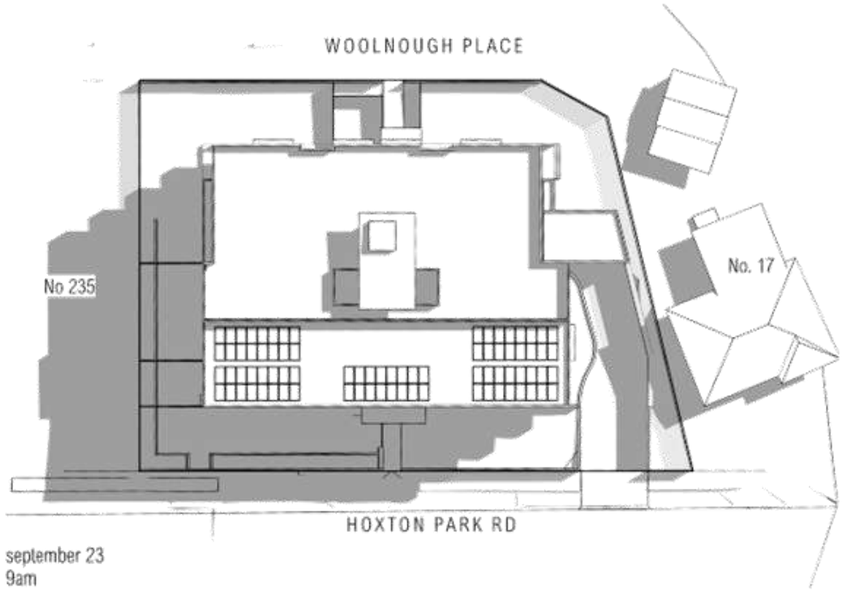
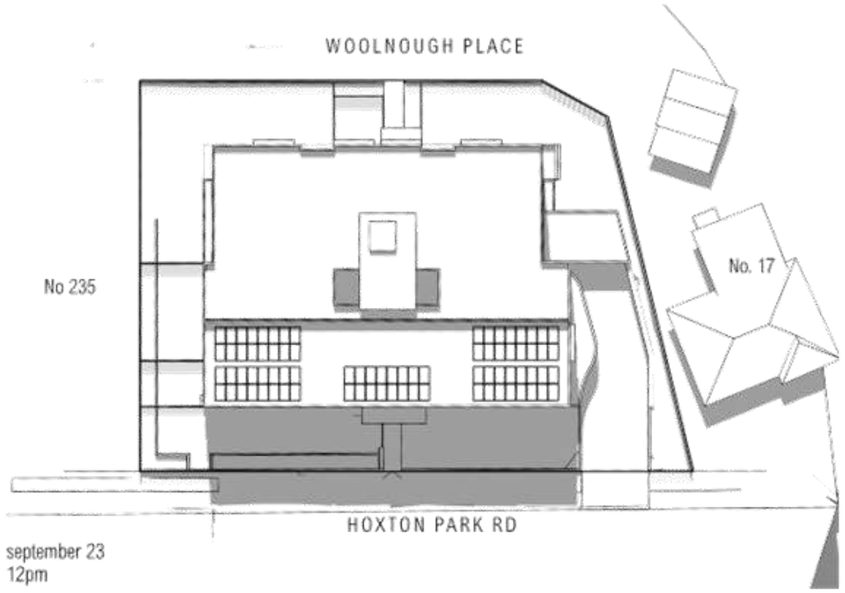
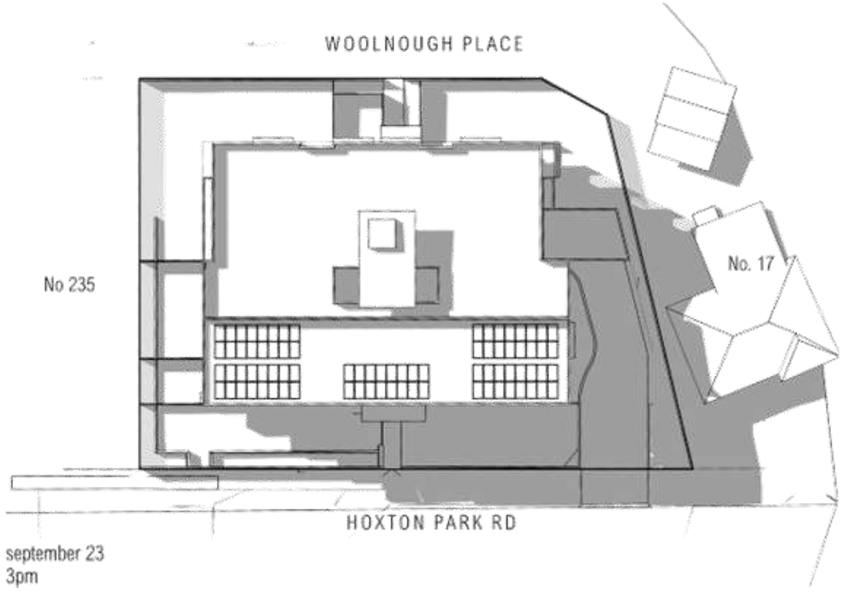
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR IMPACT- JUNE 21	DA	1088	920
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	16/05/24	C







rev	date	amendment
A	07.09.23	issued for information
B	27.09.23	issued to council
C	16.05.24	RFI Issue to council

issue	date	issue to
1	29.07.23	Council, Client, Consultants

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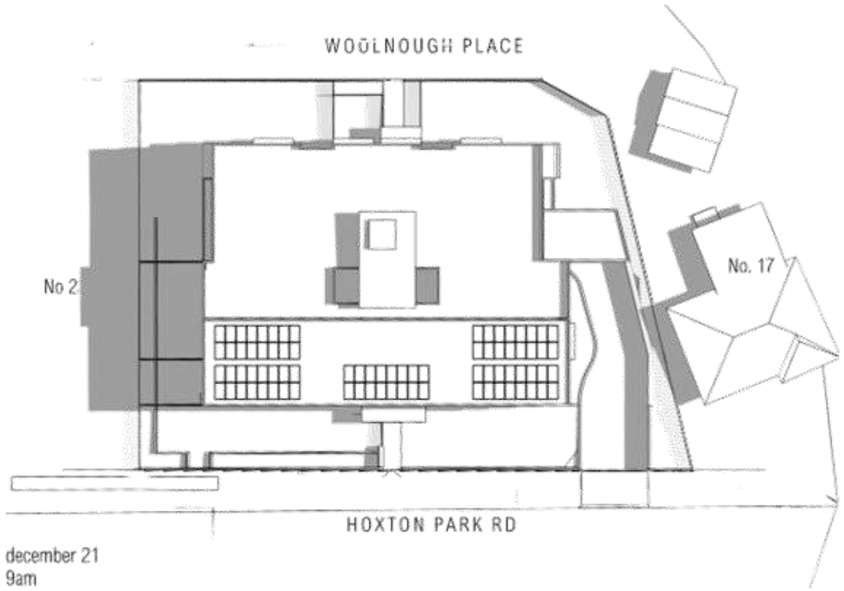
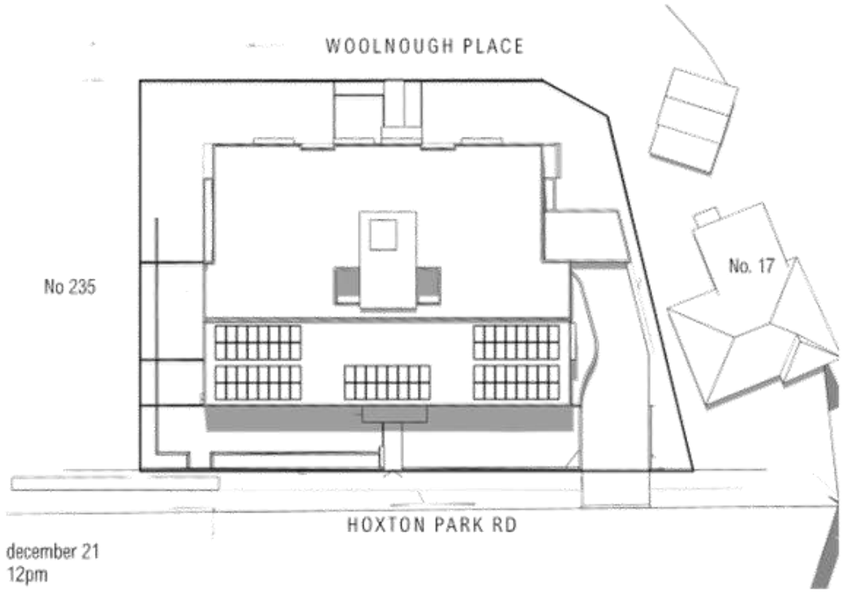
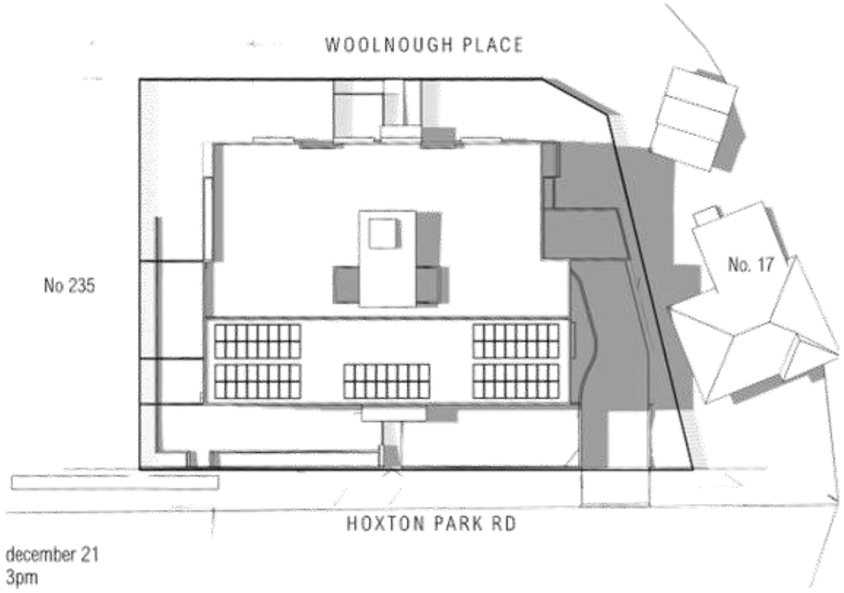
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR IMPACT- SEPT 23	DA	1088	921

for/client	at	drawing	chkd	drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW	TV	16/05/24	C







rev	date	amendment	issue	date	issue to
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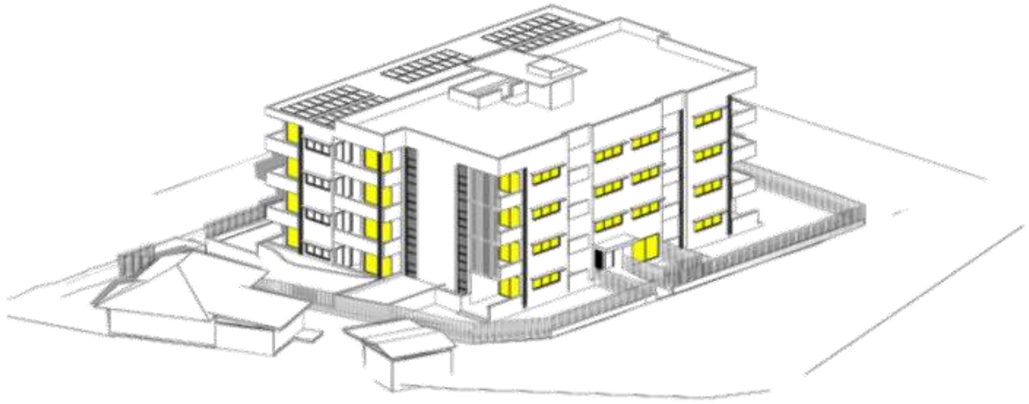
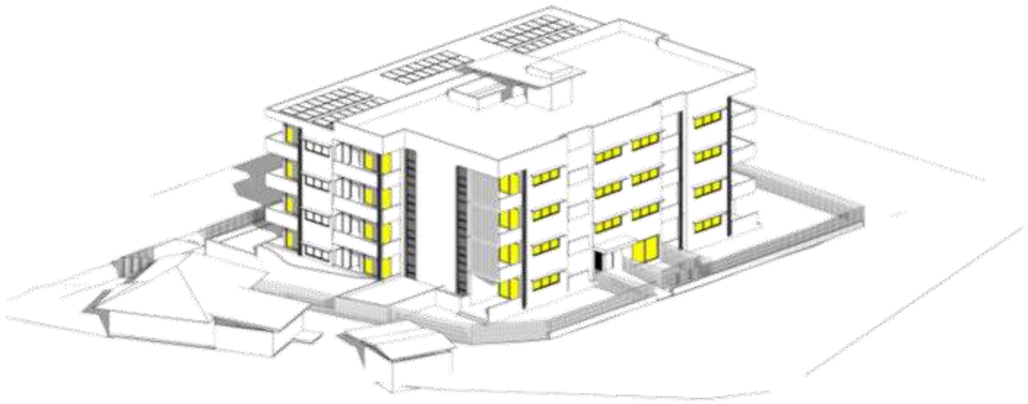
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR IMPACT- DEC 21	DA	1088	922

for/client	at	drawing	chkd	drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW	TV	16/05/24	C



june 21
9am



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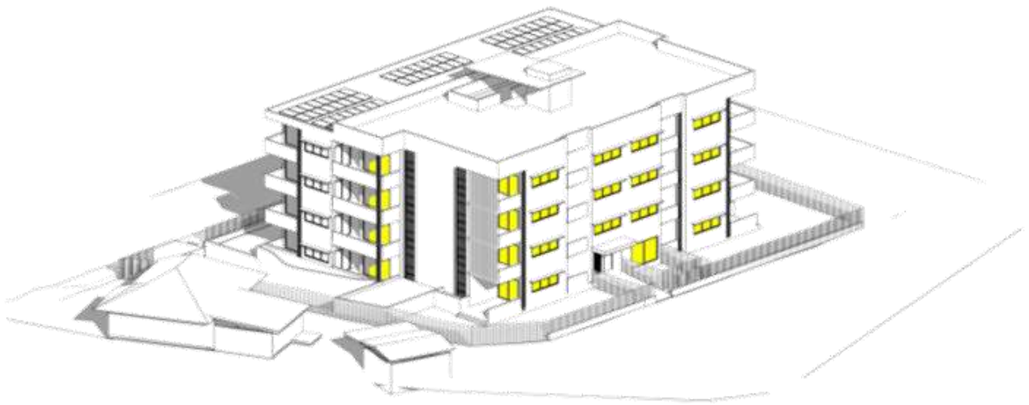

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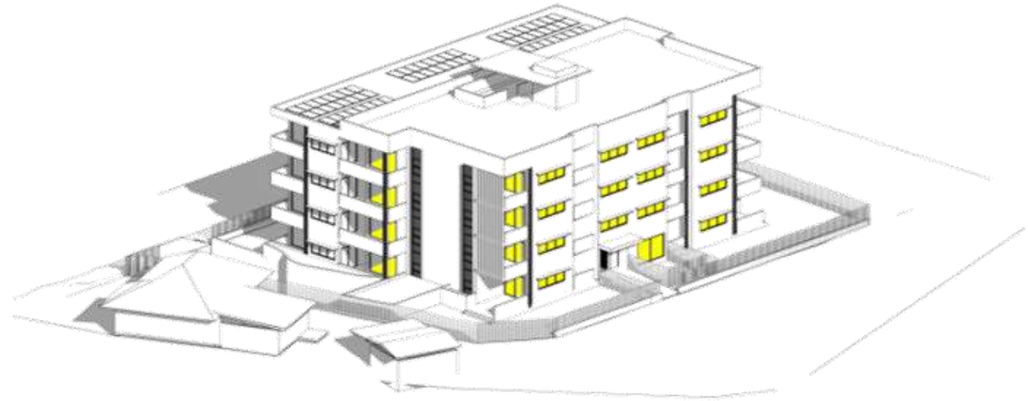

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10:30am

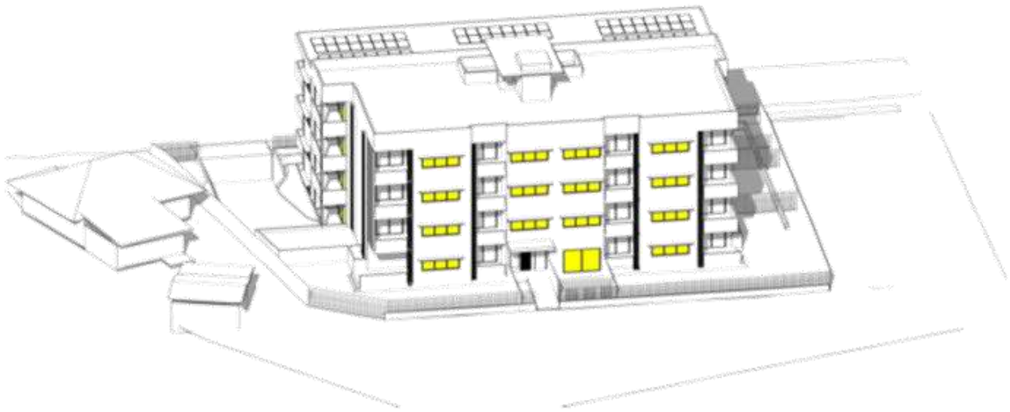
rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI Issue to council			
D	12.06.24	RFI Issue to council			

notes

all work to be carried out in accordance with bca, as codes and conditions of council. measurements in mm's unless noted. use figured dimensions. do not scale drawings. site measure before starting work. refer all discrepancies to the architect.

environa studio
224 riley st surry hills 2010
t: 02 9211 0000
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR ACCESS DIAGRAMS SHEET 1	DA	1088	930
client	**at**	**drawing**	**chkd / drwn**	**date**	**revision**
MR HARITH OBAID	CARTWRIGHT		TW / TV	12/06/24	D



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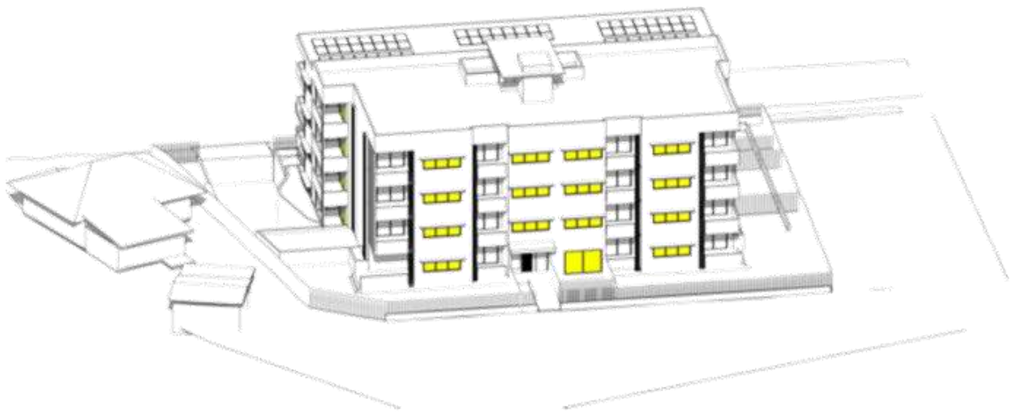
11am



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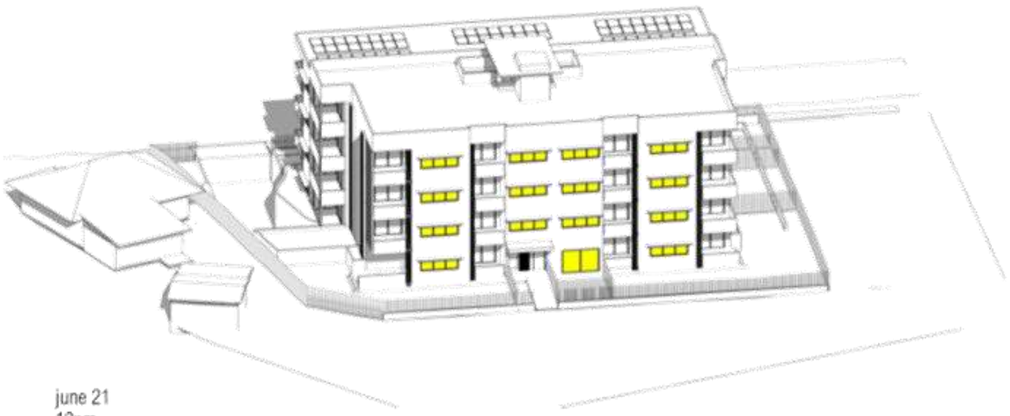

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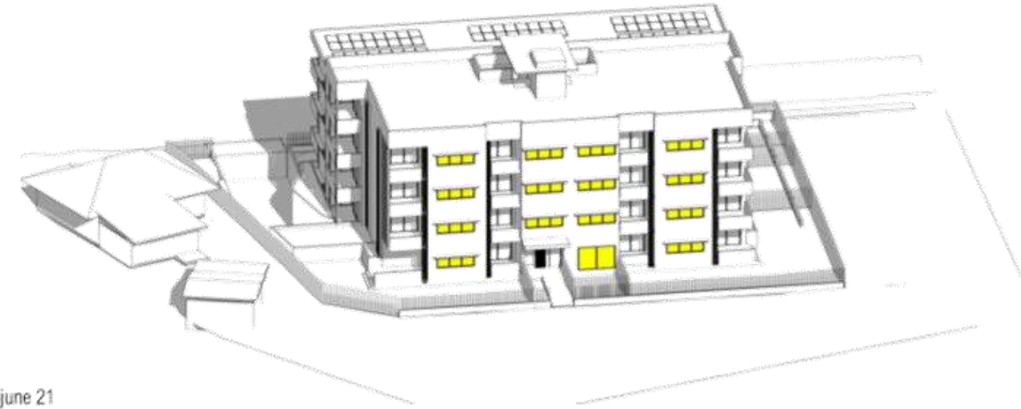
12pm



june 21
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rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			
D	12.06.24	RFI issue to council			

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224 riley st surry hills 2010
t: 02 9211 0000
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR ACCESS DIAGRAMS SHEET 2	DA	1088	931
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	12/06/24	D

june 21
1pm

june 21
1:30pm

june 21
2pm

june 21
2:30pm

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			
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environa studio
224 riley st surry hills 2010
t: 02 9211 0000
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR ACCESS DIAGRAMS SHEET 3	DA	1088	932
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	12/06/24	D

june 21
3pm

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			
D	12.06.24	RFI issue to council			

notes

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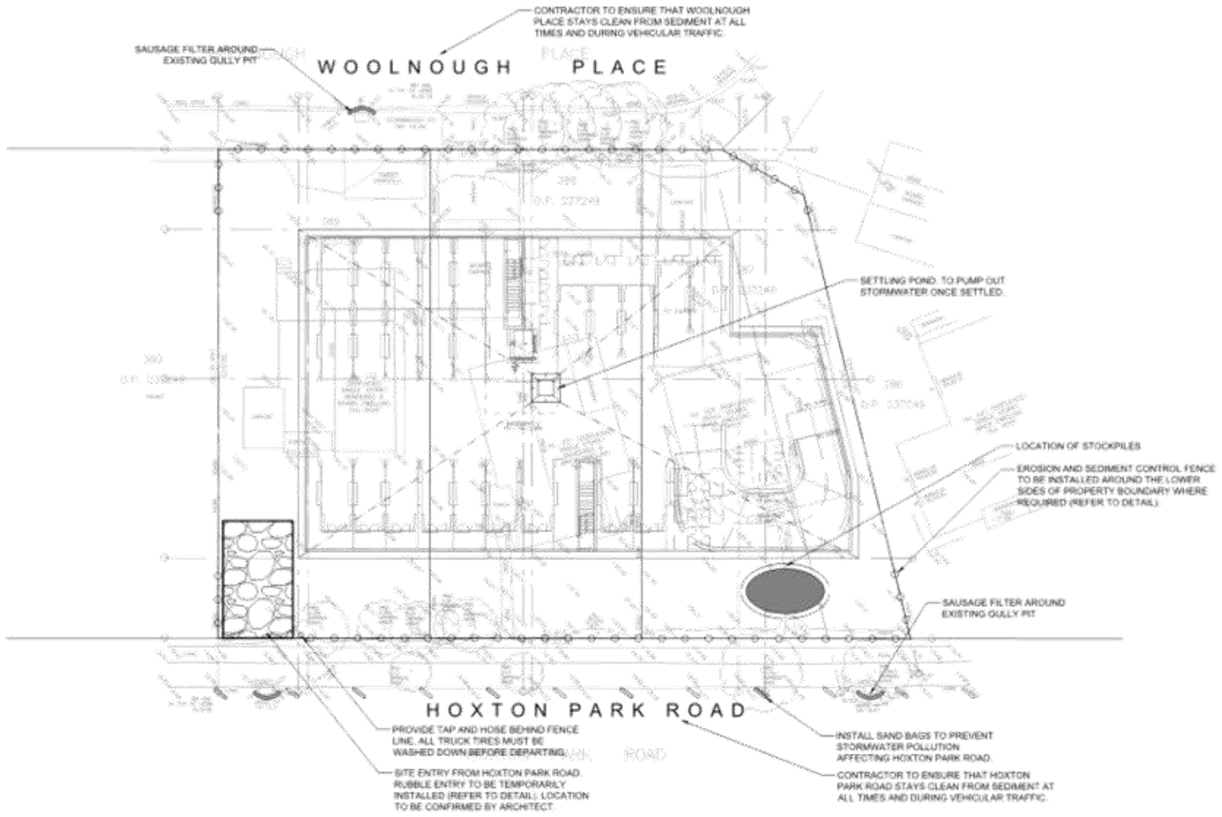
environa studio
224 riley st surry hills 2010
t: 02 9211 0000
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	SOLAR ACCESS DIAGRAMS SHEET 4	DA	1088	933
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT		TW / TV	12/06/24	D



EROSION & SEDIMENTATION CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.
2. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.
3. NO PARKING OR STOCKPILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
4. GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
5. CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

CONSTRUCTION NOTES

FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAT THE LENGTH OF THE INLET PIT

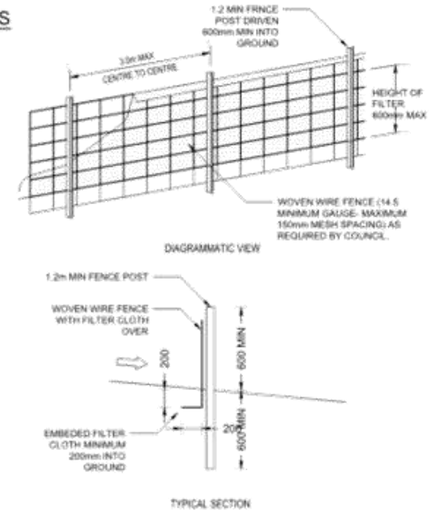
FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL

FORM AN ELLIPTICAL CROSS-SECTION OF THE KERB INLET LEAVING A 100mm GAP AT THE TOP TO ACT AS AN EMERGENCY SPILLWAY

MAINTAIN THE OPENING WITH SPACER BLOCKS

FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER

FIT TO ALL KERB INLETS AT SAG POINTS



SEDIMENT FENCE

NOT TO SCALE

GEOTEXTILE INLET FILTER

GEOTEXTILE INLET FILTER IS PLACED IN EVERY PIT WITHIN THE SITE TO ENSURE THE RUNOFF WATER DURING CONSTUCTION NOT ENTER THE PITS.

GENERAL NOTES

1. THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSION CONTROL. IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURING DEMOLITION, EXCAVATION & CONSTRUCTION PHASES TO ENSURE ADEQUATE PERFORMANCE.
2. ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAMMATIC & INDICATIVE ONLY. ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY ALTER WHEN DETAIL DESIGN WORKS ARE DOCUMENTED.

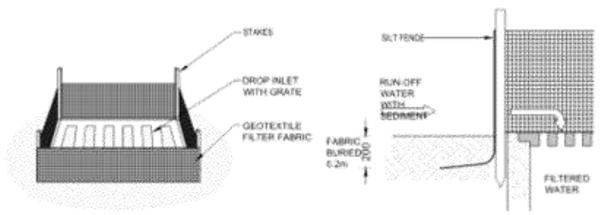
CLAY SOILS

A SYSTEM SHALL BE INSTALLED TO EITHER:

1. TRANSPORT STORMWATER RUNOFF WITH SUSPENDED SOLIDS FROM SITE VIA PUMP TRUCKS.
2. TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997) AND SHALL BE APPROVED BY LOCAL COUNCIL

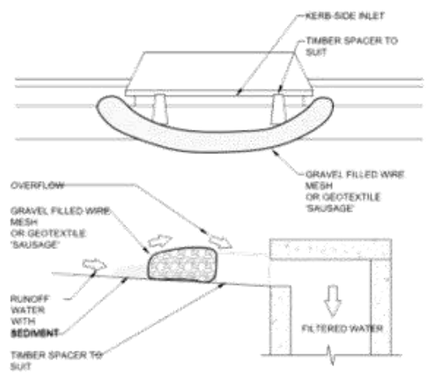
LEGEND

- SEDIMENT FENCE
- STABILISED SITE ACCESS
- SANDBAGS



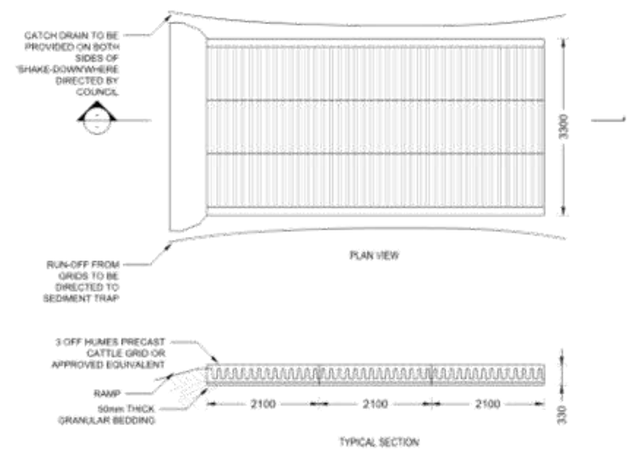
GEOTEXTILE INLET FILTER

NOT TO SCALE



GRAVEL INLET FILTER (SAUSAGE)

NOT TO SCALE



'CATTLE GRID' ALTERNATIVE

TEMPORARY CONSTRUCTION EXIT
NOT TO SCALE

A	PRELIMINARY ISSUE	PE	02.08.23	2
P2	PRELIMINARY ISSUE	PE	28.07.23	1
P1	PRELIMINARY ISSUE	PE	26.07.23	1

Issue: Last revision title | by | Date | Status

Issue: Internal sequence and revision history
1-preliminary 2-development application 3-construction certificate
4-tender 5-construction 6-other

Reference Coordination Drawing

Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MECH			
ELEC			
HYD			
FIRE			
LANDS			
CIVIL			
SURVEY			

ENGINEERS AUSTRALIA MEMBER

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QUALITY CONTROL

DRAWN	PE	DATE	12.07.23
CHECKED	SH	DATE	12.07.23
DESIGNED	PE	DATE	12.07.23
VERIFIED	SH	DATE	12.07.23
APPROVED	SH	DATE	12.07.23

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Scales:
Dm 0 2 4 6 8 10
SCALE 1:200 ON ORIGINAL SIZE

CLIENT
HARRY OBAID

ARCHITECT
environa studio
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t: 02 9211 5092
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A.B.N. 21 118 222 530

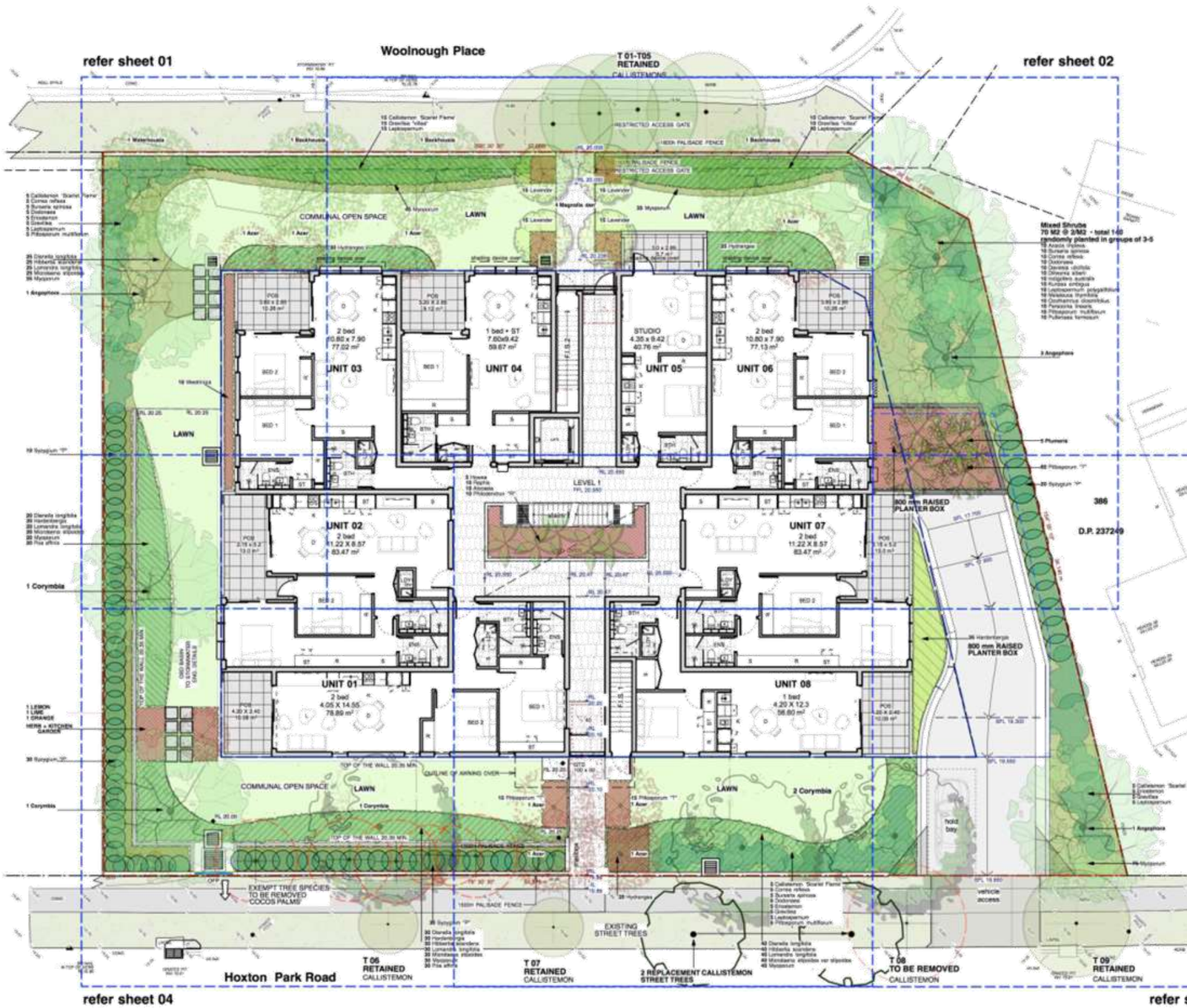
PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
11-15 WOOLNOUGH PLACE,
CARTWRIGHT.

Grid	Datum	Sheet	Scale (at original size)
	A.H.D.	n	AS SHOWN

Drawing Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Drawing Title
EROSION & SEDIMENT CONTROL
PLAN AND DETAILS

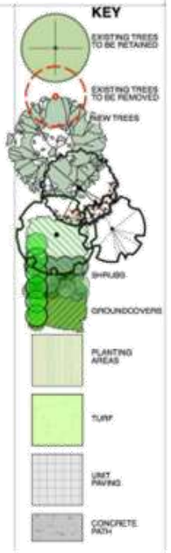
Project No	Drawing No	Revision No
20230040	SW400	A



PLANT SCHEDULE

Woolnough Place

Botanical name	Common name	Hgt	Spa	Qty	Size
Trees					
Acer palmatum	Japanese Maple	6m			100L
Acer 'Senkaki'	Coral Bark Maple	6m			100L
Angophora floribunda	Rough Barked Apple	20M			25L
Backhousia citriodora	Lemon Myrtle	8m			100L
Corymbia gummifera	Red Bloodwood	20M			25L
Citrus (Lemon, Lime, Orange)	Citrus	3m			35L
Howea forsteriana	Kentia Palm	3m			100L
Magnolia denudata	Yulan Magnolia	8m			100L
Plumeria	Frangipani	3m			100L
Tristaniopsis laurina	Water Gum	10m			100L
Waterhousia floribunda	Weeping Lilly Pilly	8m			100L
Shrubs					
Acacia implexa	Hickory Wattle	6mm	1.5L		140m
Azalea 'Red Wing'	Azalea	1.5m	1.5m2		300mm
Callistemon 'Scarlet Flame'		1m	2m2		250mm
Camellia sasanqua 'Early Pearly'	Camellia	1.5m	1.5m2		300mm
Daviesia ulicifolia	Gorse Bitter Pea	2M	1.5m2		140m
Dillwynia sieberi	Parrot Pea	2M	1.5m2		140m
Dodonaea viscosa subsp. cuneata	Hop Bush	2.0mm	1.5L		140m
Eriostemon australasius	Pink Wax Flower	1.5M	1.5m2		140m
Grevillea rosmarinifolia 'Crimson Villea'		1m	1.5m2		200mm
Grevilea juniperina subsp. Juniperina		1.5M	1.5m2		140m
Grevilea sericea	Pink spider flower	2M	1.5m2		140m
Indigophora australis	Australian Indigo	1.5M	1.5m2		140m
Kunzea ambigua	Tick Bush	2M	1.5m2		140m
Hardenbergia 'Meema'		0.75m	3m2		140mm
Hibbertia scandens			5m2		Tube
Hydrangea x macrophylla	Hydrangea	1.5m	2m2		200mm
Lavendula Angustifolia	English Lavender	0.75m	2m2		140mm
Leptospernum "Cardwell"	Weeping tea tree	2m	1.5m2		200mm
Leptospernum "Pacific Beauty"		0.75m	2m2		200mm
Leptospernum polygalifolium	Tantoon	2M	1.5m2		140m
Melaleuca linarifolia	Snow in Summer	2M	1.5m2		140m
Melaleuca thymifolia		1.5M	1.5m2		140m
Ozothamnus diosmaifolius	Rice Flower	1.5M	1.5m2		140m
Persoonia levis		5M	1.5m2		140m
Persoonia linearis		1M	1.5m2		140m
Pultenaea microphylla	Bush Pea	1M	1.5m2		140m
Rhaphiolepis "Snow Maiden"		0.75m	1.5m2		300mm
Rosmarinus officinalis	Rosemary	1.5m	2m2		200mm
Rosmarinus officinalis 'Prostratus'	Creeping Rosemary	0.5m	2m2		200mm
Syzygium Pinnacle		2m	2m2		300mm
Syzygium Resilliance		2m	2m2		300mm
Groundcovers and Climbers					
Blechnum		500mm	5m2		140mm
Dianella caerulea	Blue Flax Lilly	750mm	5m2		140mm
Dianella longifolia		0.6M	5m2		Tube
Doodia aspera	Rasp Fern	750mm	5m2		140mm
Grevillea "Lanigera"		500mm	5m2		150mm
Lomandra 'Katrinus'		1m	6m2		140mm
Lomandra 'Tanika'		500mm	6m2		140mm
Microlaena stipoides	Microlaena		5m2		Tube
Myoporum parvifolium		300mm	4m2		140mm
Pandorea pandorana		0.5M	5m2		tube
Poa Poiformis 'Courtney'		0.5M	5m2		tube
Pandorea jasminoides "White"	Bower of Beauty	100mm	6m2		140mm
Pratia purpurascens		100mm	6m2		140mm
Scaevola 'Purple Fusion'		300mm	4m2		140mm
Zovsia tenuifolia	Korean Temple Grass	200mm	6m2		140mm



revision	description	date
02	DA ISSUE	22-09-2023
01	COORDINATION ISSUE	24-07-2023

client: MR HARITH OBAID

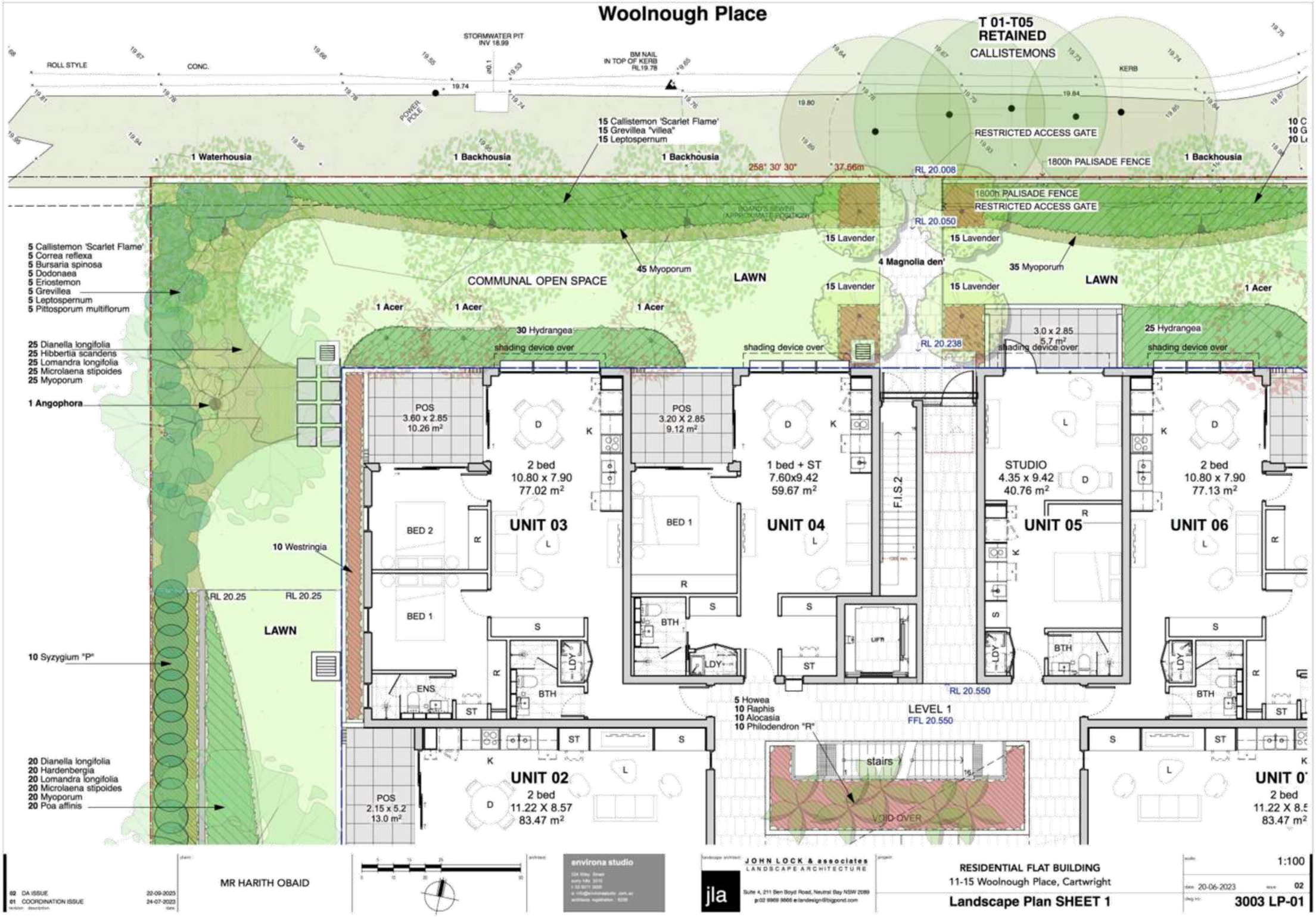
architect: environa studio

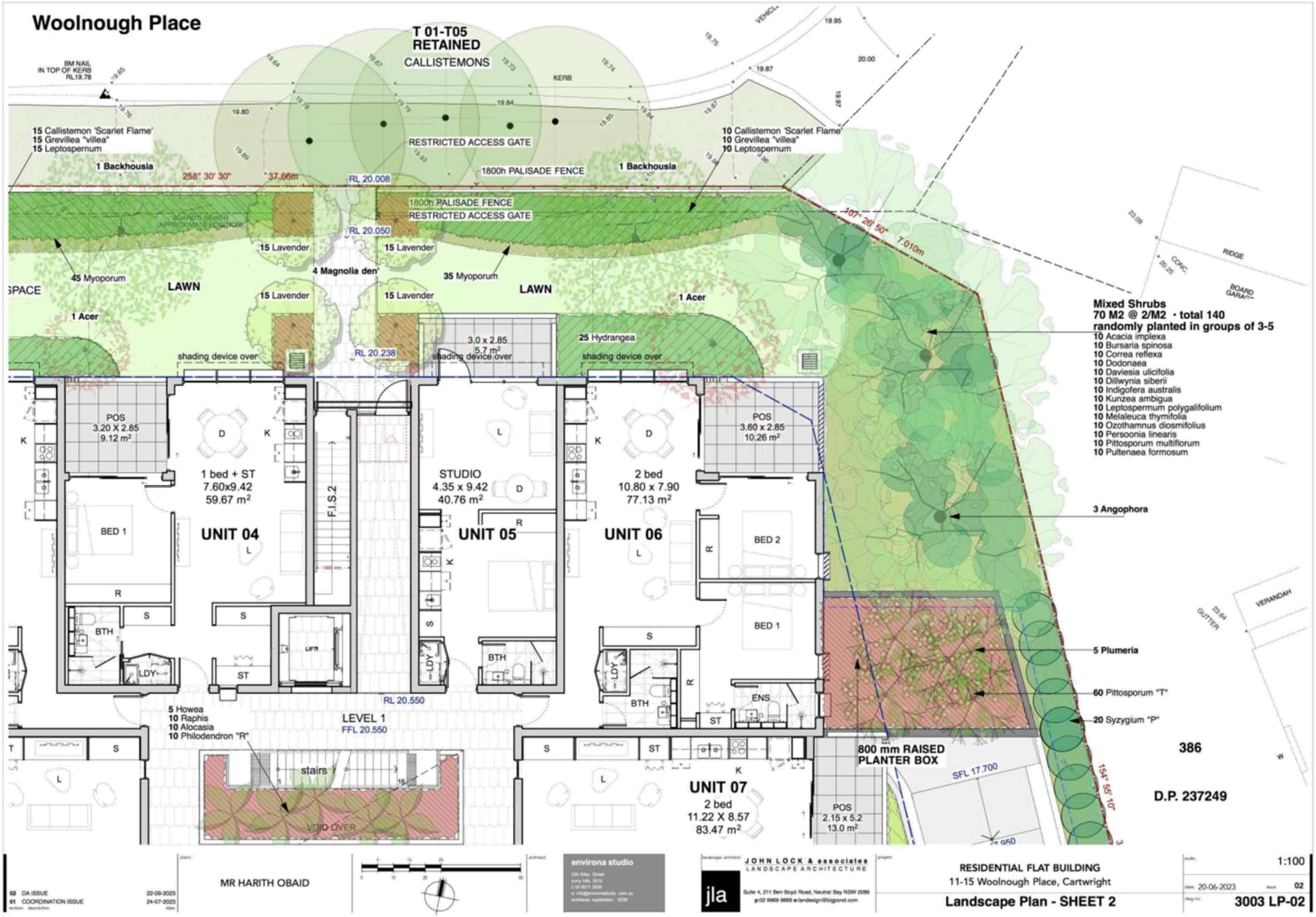
landscape architect: JOHN LOCK & associates LANDSCAPE ARCHITECTURE
jla
Suite 4, 211 Ben Boyd Road, Neutral Bay NSW 2089
p.02 9969 9966 e.landesign@bigpond.com

project: RESIDENTIAL FLAT BUILDING
11-15 Woolnough Place, Cartwright

Landscape Site Plan

scale: 1:200
date: 20-06-2023 issue: 02
dwg no: **3003 LP-00**


Woolnough Place
T 01-T05
RETAINED
CALLISTEMONS
STORMWATER PIT
INV 18.99
BM NAIL
IN TOP OF KERB
RL19.78
ROLL STYLE
CONC.
KERB
POWER POLE
15 Callistemon 'Scarlet Flame'
15 Grevillea "villea"
15 Leptospernum
RESTRICTED ACCESS GATE
1 Waterhousia
1 Backhousia
1 Backhousia
1 Backhousia
258° 30' 30"
37.66m
RL 20.008
1800h PALISADE FENCE
1800h PALISADE FENCE
RESTRICTED ACCESS GATE
RL 20.050
15 Lavender
15 Lavender
4 Magnolia den'
35 Myoporum
5 Callistemon 'Scarlet Flame'
5 Correa reflexa
5 Bursaria spinosa
5 Dodonaea
5 Eriostemon
5 Grevillea
5 Leptospernum
5 Pittosporum multiflorum
COMMUNAL OPEN SPACE
45 Myoporum
LAWN
15 Lavender
15 Lavender
LAWN
1 Acer
1 Acer
1 Acer
1 Acer
30 Hydrangea
shading device over
shading device over
RL 20.238
3.0 x 2.85
5.7 m²
shading device over
25 Hydrangea
shading device over
25 Dianella longifolia
25 Hibbertia scandens
25 Lomandra longifolia
25 Microlaena stipoides
25 Myoporum
1 Angophora
POS
3.60 x 2.85
10.26 m²
2 bed
10.80 x 7.90
77.02 m²
UNIT 03
BED 2
BED 1
POS
3.20 X 2.85
9.12 m²
1 bed + ST
7.60x9.42
59.67 m²
UNIT 04
BED 1
BTH
LDY
ST
F.I.S.2
LIFT
STUDIO
4.35 x 9.42
40.76 m²
UNIT 05
BTH
LDY
2 bed
10.80 x 7.90
77.13 m²
UNIT 06
BTH
LDY
ST
10 Westringia
RL 20.25
RL 20.25
LAWN
10 Syzygium "P"
ENS
ST
BTH
RL 20.550
5 Howea
10 Raphis
10 Alocasia
10 Philodendron "R"
LEVEL 1
FFL 20.550
stairs
VOID OVER
20 Dianella longifolia
20 Hardenbergia
20 Lomandra longifolia
20 Microlaena stipoides
20 Myoporum
20 Poa affinis
POS
2.15 x 5.2
13.0 m²
UNIT 02
2 bed
11.22 X 8.57
83.47 m²
UNIT 0
2 bed
11.22 X 8.5
83.47 m²
02 DA ISSUE 22-09-2023
01 COORDINATION ISSUE 24-07-2023
MR HARITH OBAID
environa studio
JOHN LOCK & associates
LANDSCAPE ARCHITECTURE
jla
Suite 4, 211 Ben Boyd Road, Neutral Bay NSW 2089
RESIDENTIAL FLAT BUILDING
11-15 Woolnough Place, Cartwright
Landscape Plan SHEET 1
1:100
20-06-2023
02
3003 LP-01



revision	description	date
02	DA ISSUE	22-09-2025
01	COORDINATION ISSUE	24-07-2023

client: MR HARITH OBAID

architect: environa studio

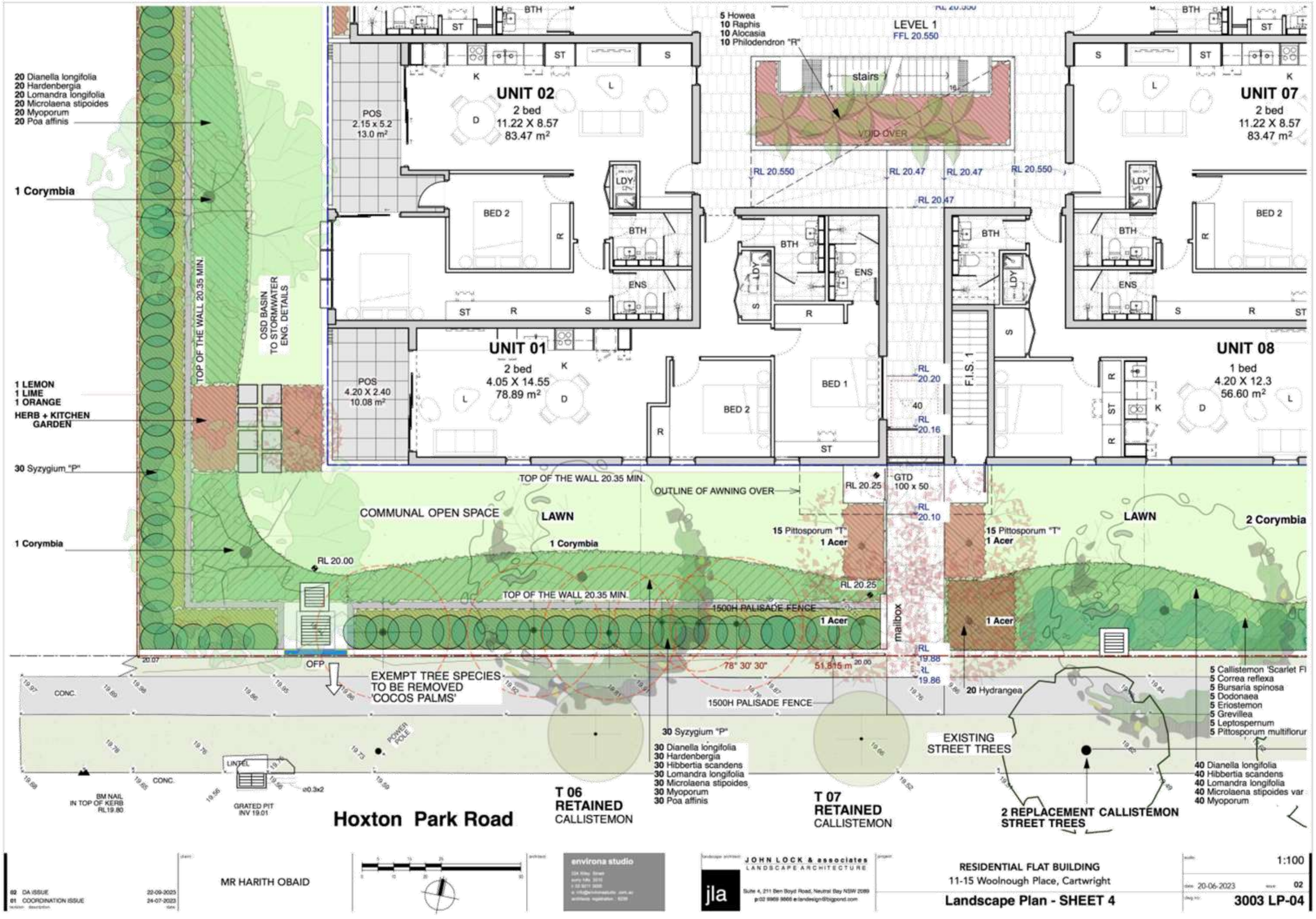
landscape architect: JOHN LOCK & associates LANDSCAPE ARCHITECTURE
Suite 4, 211 Ben Boyd Road, Neutral Bay NSW 2089
p:02 9969 9966 e:landesign@bigpond.com

project: RESIDENTIAL FLAT BUILDING
11-15 Woolnough Place, Cartwright

Landscape Plan - SHEET 2

scale: 1:100
date: 20-06-2023 issue: 02
dwg no: 3003 LP-02

5 Howea
10 Raphis
10 Alocasia
10 Philodendron "R"
LEVEL 1
FFL 20.550
stairs
VOID OVER
RL 20.550
RL 20.47
RL 20.47
RL 20.550
RL 20.47
BTH
ENS
LDY
S
R
BED 1
BED 2
ST
RL 20.20
40
RL 20.16
F.I.S. 1
UNIT 07
2 bed
11.22 X 8.57
83.47 m²
POS
2.15 x 5.2
13.0 m²
BED 2
UNIT 08
1 bed
4.20 X 12.3
56.60 m²
POS
4.20 X 2.40
10.08 m²
K
D
L
800 mm RAISED PLANTER BOX
SFL 17.700
SFL 17.950
SFL 19.300
SFL 19.550
SFL 19.850
20 Syzygium "P"
35 Hardenbergia
800 mm RAISED PLANTER BOX
386
D.P. 237249
154° 55' 10"
34.140 m
HEAD23.35
SILL22.14
HEAD23.30
SILL22.00
GUTTER
OUTLINE OF AWNING OVER
RL 20.25
GTD
100 x 50
RL 20.10
15 Pittosporum "T"
1 Acer
LAWN
2 Corymbia
hold bay
5 Callistemon 'Scarlet Flame'
5 Eriostemon
5 Grevillea
5 Leptospernum
1 Angophora
75 Myoporum
FENCE
1500H PALISADE FENCE
mailbox
RL 19.88
RL 19.86
78° 30' 30"
51.815 m
20 Hydrangea
vehicle access
PATH
POWER POLE
LINTEL
KERB
GRATED PIT
INV 18.91
30 Syzygium "P"
30 Dianella longifolia
30 Hardenbergia
30 Hibbertia scandens
30 Lomandra longifolia
30 Microlaena stipoides
30 Myoporum
30 Poa affinis
EXISTING STREET TREES
5 Callistemon 'Scarlet Flame'
5 Correa reflexa
5 Bursaria spinosa
5 Dodonaea
5 Eriostemon
5 Grevillea
5 Leptospernum
5 Pittosporum multiflorum
40 Dianella longifolia
40 Hibbertia scandens
40 Lomandra longifolia
40 Microlaena stipoides var stipoides
40 Myoporum
T 07
RETAINED
CALLISTEMON
2 REPLACEMENT CALLISTEMON STREET TREES
T 08
TO BE REMOVED
CALLISTEMON
T 09
RETAINED
CALLISTEMON
02 DA ISSUE 22-09-2023
01 COORDINATION ISSUE 24-07-2023
MR HARITH OBAID
environa studio
JOHN LOCK & associates
LANDSCAPE ARCHITECTURE
jla
Suite 4, 211 Ben Boyd Road, Neutral Bay NSW 2089
p:02 9969 9666 e:landesign@bigpond.com
RESIDENTIAL FLAT BUILDING
11-15 Woolnough Place, Cartwright
Landscape Plan - SHEET 3
1:100
20-06-2023
02
3003 LP-03


LEVEL 1
FFL 20.550
UNIT 02
2 bed
11.22 X 8.57
83.47 m²
UNIT 07
2 bed
11.22 X 8.57
83.47 m²
UNIT 01
2 bed
4.05 X 14.55
78.89 m²
UNIT 08
1 bed
4.20 X 12.3
56.60 m²
POS
2.15 x 5.2
13.0 m²
POS
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20 Dianella longifolia
20 Hardenbergia
20 Lomandra longifolia
20 Microlaena stipoides
20 Myoporum
20 Poa affinis
1 Corymbia
TOP OF THE WALL 20.35 MIN.
OSD BASIN
TO STORMWATER
ENG. DETAILS
1 LEMON
1 LIME
1 ORANGE
HERB + KITCHEN
GARDEN
30 Syzygium "P"
1 Corymbia
COMMUNAL OPEN SPACE
LAWN
1 Corymbia
RL 20.00
TOP OF THE WALL 20.35 MIN.
OUTLINE OF AWNING OVER
RL 20.25
GTD
100 x 50
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20.10
15 Pittosporum "T"
1 Acer
15 Pittosporum "T"
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2 Corymbia
RL 20.25
1500H PALISADE FENCE
1 Acer
1 Acer
mailbox
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RL
19.86
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EXEMPT TREE SPECIES
TO BE REMOVED
'COCOS PALMS'
78° 30' 30"
51.815 m
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40 Lomandra longifolia
40 Microlaena stipoides var
40 Myoporum
CONC.
CONC.
POWER POLE
LINTEL
BM NAIL
IN TOP OF KERB
RL19.80
GRATED PIT
INV 19.01
Hoxton Park Road
T 06
RETAINED
CALLISTEMON
T 07
RETAINED
CALLISTEMON
2 REPLACEMENT CALLISTEMON
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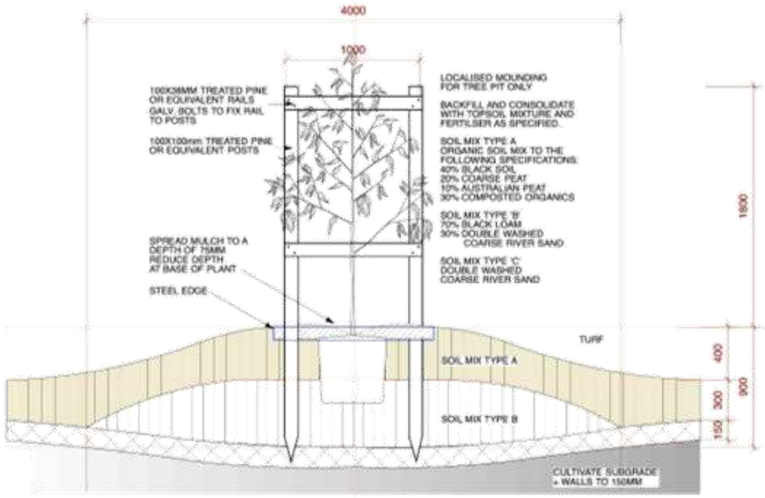

A TREE PLANTING DETAIL
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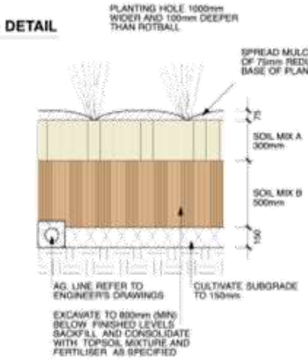

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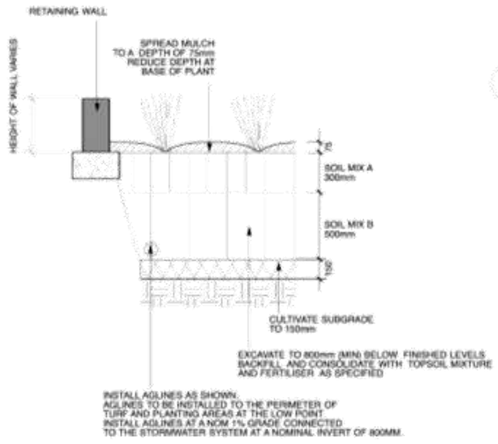

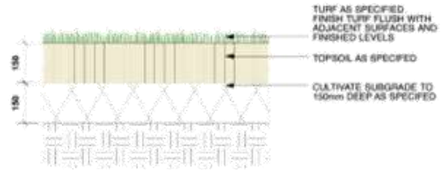

E TURF DETAIL
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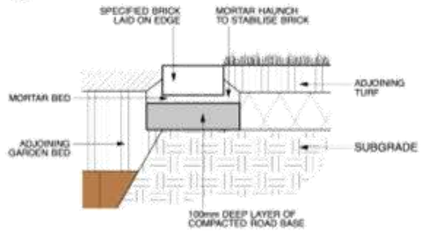

F BRICK EDGE DETAIL
1:10

SPECIFICATION NOTES

SITE PREPARATION / SOIL WORKS
ALL EXISTING TREES MARKED FOR RETENTION SHALL BE PROTECTED FOR THE DURATION OF THE BUILDING WORKS. REMOVE FROM SITE ALL PERENNIAL WEEDS SUCH AS OXALIS, ONION WEED AND THE LIKE.

NO REGRADING IS TO BE CARRIED OUT WITHIN THE DRIPLINE OF THE TREES TO BE RETAINED. WHERE EXCAVATION IS NECESSARY USE HAND METHODS TO AVOID DAMAGE TO THE ROOT SYSTEM. DO NOT CUT ROOTS GREATER THAN 50MM. CUT ROOTS CLEANLY WITH A SAW AND DO NOT SEAL THE WOUND.

TREE PROTECTION
PROTECT ALL EXISTING TREES AS NOTED ON THE DRAWINGS FOR THE DURAND OF THE BUILDING WORKS.

TAKE ALL NECESSARY PRECAUTIONS, INCLUDING THE FOLLOWING.

Tree Protection fence:
INSTALL A TREE PROTECTION FENCES AT THE MAXIMUM RADIUS ALLOWABLE TO ACCOMMODATE THE PROPOSED DEVELOPMENT. MAINTAIN THE FENCE FOR THE DURATION OF THE BUILDING WORKS.

CONSTRUCT THE FENCE 1.8 M HIGH WITH CHAINWIRE MESH ON STEEL POSTS. ALL AREAS WITHIN THE PERIMETER OF THE FENCE ARE TO BE COVERED TO A DEPTH OF 100MM WITH WOODCHIP MULCH.

Temporary Irrigation:
INSTALL A TEMPORARY IRRIGATION SYSTEM TO ALL TREES TO BE RETAINED. INSTALL DRIP EMITTERS ON POLY LATERALS. THE IRRIGATION SYSTEM IS TO BE CONTROLLED BY A GALCON OR SIMILAR AUTOMATIC CONTROLLER.

Harmful materials
DO NOT STORE, STOCKPILE, DUMP OR OTHERWISE REPLACE UNDER OR NEAR TREES, BULK MATERIALS AND HARMFUL MATERIALS INCLUDING OIL, PAINT, WASTE, CONCRETE, CLEANSERS, BOULDERS AND THE LIKE. DO NOT PLACE SPOIL FROM EXCAVATIONS AGAINST TREE TRUNKS, EVEN FOR SHORT PERIODS. PREVENT WIND-BLOWN MATERIALS SUCH AS CEMENT FROM HARMING TREES AND PLANTS.

Damage
PREVENT DAMAGE TO TREE BARK. DO NOT ATTACH STAYS, GUYS AND THE LIKE TO TREES.

Work under trees
DO NOT REMOVE TOPSOIL FROM WITHIN THE DRIP LINE OF TREES UNLESS OTHERWISE SPECIFIED. IF IT IS NECESSARY TO EXCAVATE WITHIN THE DRIP LINE, USE HAND METHODS SUCH THAT ROOT SYSTEMS ARE PRESERVED INTACT AND UNDAMAGED.

Roots:
DO NOT CUT TREE ROOTS EXCEEDING 50 MM DIAMETER UNLESS PERMITTED BY THE SUPERINTENDENT. WHERE IT IS NECESSARY TO CUT TREE ROOTS, USE A CHAIN SAW OR SIMILAR WEAPON SUCH THAT THE CUTTING DOES NOT UNDUALY DISTURB OR ROCK THE REMAINING ROOT SYSTEM. IMMEDIATELY AFTER CUTTING, APPLY AN APPROVED BITUMINOUS FUNGICIDAL SEALANT TO THE CUT SURFACE TO PREVENT THE INCURSION OF ROT OR DISEASE.

Compacted Ground:
AVOID COMPACTION OF THE GROUND UNDER TREES. IF THE GROUND UNDER TREES HAS BEEN UNDULY COMPACTED DURING THE WORK UNDER THE CONTRACT, FOR EXAMPLE BY THE OPERATION OF HEAVY CONSTRUCTIONAL PLANT, LOOSEN THE SOIL BY COPING.

SOIL WORKS

Soil Conditioner
"TERRA-COTTEMP" OR ITS EQUIVALENT IS TO BE INCORPORATED INTO THE PLANTING MEDIUM WHEN PLANTING.

Imported Soil
ALL IMPORTED SOIL TO ACHIEVE THE REQUIREMENTS OF AS4419 - SOILS FOR LANDSCAPING ALL TREE PLANTING HOLES ARE A MINIMUM 1.5 TIMES DIAMETER AND TWICE THE DEPTH OF THE ROOT BALL ALL MULCH IS TO BE FREE OF DELETERIOUS MATERIAL SUCH AS ROCK, SOIL, WEEDS AND STICKS. ACCEPTABLE MULCH - FOREST LITTER OR PINE BARK MULCH

THOROUGHLY CULTIVATE THE SUBSOIL TO A DEPTH OF 150MM. SUPPLY AND INSTALL THE FOLLOWING SOIL MIXES TO THE SPECIFIED DEPTHS.

SOIL DEPTH

- TURF	100MM
- PLANTING	300MM

SOIL MIX A

- BLACK LOAM	60%
- COARSE WASHED RIVER SAND	30%
- ORGANIC MIX COMPOST	10%

- **ORGANIC LAYER 50 MM DEEP**
CULTIVATE A 50MM LAYER OF ORGANIC ADDMIX INTO THE TOP 150MM OF SOILMIX

Addmix composition

- TREATED HARDWOOD SAWDUST	30%
- PINE BARK FINES	40%
- COMPOSTED MANURE	30%

SOIL MIX B
- SITE TOPSOIL IF AVAILABLE

OR IMPORTED MIX OF:

- BLACK LOAM	70%
- COARSE WASHED RIVER SAND	30%

TREE PLANTING AREAS TO BE MOUNDED 300 MM ABOVE THE EXISTING GROUND LINE TO IMPROVE DRAINAGE FROM PLANTING HOLES. TREE HOLES TO BE EXCAVATED 2 TIMES LARGER THAN THE ROOTBALL AND BACKFILLED WITH SOIL MIX AS SPECIFIED ABOVE.

TURFED AREAS
APPLY SHIRLEYS NO17 LAWN FERTILISER TO SOIL, APPLIED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. TURF SHALL BE:

- **Buffalo Sapphire Blue** of 30MM.

DO NOT LET TURF DRY OUT. LIGHTLY TOP DRESS TURF 6 WEEKS AFTER LAYING WITH 10MM IMPORTED TOPSOIL. THATCH TO BE LAID WITH STAGGERED JOINTS ,FLUSH WITH PATHWAY LEVELS.

STEEL GARDEN EDGE
FORM BOXS (AM 100mm STEEL) GARDEN EDGE INSTALLED AS PER MANUFACTURERS SPECIFICATION

SUPPLIER:
Rexco Irrigation Winchelsbury
10 Grea Avenue, Minchinbury, NSW 2770
Phone (02) 9675 5622

MULCH
SUPPLY AND PLACE 75 MM LAYER OF HARDWOOD HORTICULTURAL GRADE MULCH, GRADED IN SIZE 15 MM X 15MM X 15MM. FREE FROM WOOD SLIVERS. SET DOWN 25MM FROM ADJACENT PAVING.

PLANT MATERIALS
ALL PLANTS SHALL BE TRUE TO TYPE, OF HEALTHY GROWTH, DISEASE FREE, NURSERY STOCK AND NOT DISPLAYING RESTRICTED GROWTH PATTERNS. SHOULD THERE BE A REQUIREMENT FOR SUBSTITUTIONS THEY SHALL NOT CHANGED WITHOUT PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT. NO VARIEGATED STRAIN SHALL BE USED. ALLOW FOR SLOW RELEASE FERTILISER TO ALL PLANTS APPLIED AT THE MANUFACTURERS RECOMMENDED RATE TO BE SAME OR SIMILAR TO OSMOCOTE

FERTILIZER:
MIXIS PLANTED AREAS - ALLOW 2 SHIRLEYS SLOW RELEASE KOKO PELLETS PER 5 - 35 LITRE PLANT AND ONE PER 150MM PLANT TURF AREAS - ALLOW SHIRLEYS NO 17 LAWN FERTILIZER OR EQUIVALENT, APPLIED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.

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environa studio
environmental architecture

design verification statement

Project:	**RESIDENTIAL FLAT BUILDING**	Date:	**20 May 2024**
Address:	**11-15 WOOLNOUGH PLACE, CARTWRIGHT**	Project No:	**es1088**
Client:	**OBAID INVESTMENTS PTY LTD**	Stage:	**DA**

Prepared by ***environa studio***, to accompany the Development Application submitted to Liverpool City Council for 11-15 Woolnough Place, Cartwright.

Designed and documented under the direction of Tone Wheeler (architects registration board number 6239), principal of ***environa studio, environmental architecture***.

design quality principles

The objectives of SEPP65 have been addressed throughout the Statement of Environmental Effects and on the drawings. These short responses are intended as a summary.

principle no.1: context and neighbourhood character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.

Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

The Development Application design addresses context by positioning the building to speak to both Woolnough Place and Hoxton Park Road frontages. Given the street hierarchy, Woolnough Place presents as the primary pedestrian frontage, and Hoxton Park Road for the vehicles.

The proposal markedly enhances the site's integration with the public realm by elevating pedestrian activity, introducing heightened visual engagement, and fortifying pedestrian safety through enhanced passive surveillance along Hoxton Park Road and Woolnough Place.

The street elevation to Hoxton Park Rd is enhanced by being visually divided into 2 parts to reduce the scale to an apparent 2 buildings and is further screened by a row of large trees.

The envisaged architectural development is not anticipated to yield any unwarranted repercussions on the surrounding properties.

principle no.2: built form and scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.

Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements.

The Development Application building's size aligns appropriately with the street and proposed future neighbouring developments. The four storey scale ensures it doesn't impose any undue impacts on nearby properties, including concerns about reduced sunlight, privacy infringement, or visual disruption, while adhering to height regulations.

A comprehensive solar access analysis validates that the proposed scale won't unreasonably cast shadows on adjacent sites.

Additionally, the building's dimensions seamlessly blend into the overall streetscape and urban design context, fostering a sense of cohesion and compatibility.
The apartment building has been redesigned with the same layout to reduce the footprint size and the Floor Space Ratio (FSR) to less than 1.3:1 and as a consequence this diminishes the overall bulk and scale.

principle no.3: density

Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.

Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.

The proposed density and floor space allocation are considered suitable for the site's location for several reasons.

Firstly, the availability and capacity of local infrastructure, public transportation, and recreational opportunities are well-matched with the proposed floor space.

Additionally, the site's proximity to bus stops on Cartwright Avenue and Hoxton Park Road, along with the presence of nearby quality parks and recreation areas, further supports the chosen density. Importantly, this density choice avoids causing any unreasonable impacts on neighbouring properties, such as overshadowing, privacy intrusion, or visual disruption, as detailed in the Statement of Environmental Effects.

Overall, the development prioritizes occupant well-being, offering a high level of amenity, while also addressing the housing demand in the local government area, within an appropriate location.

principle no.4: sustainability

Good design combines positive environmental, social and economic outcomes. Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.

The architectural approach for the Development Application design embraces sustainability, blending eco-awareness and innovative aesthetics.

Passive solar design maximizes natural light, reducing energy use for environmental sustainability and comfort. Thoughtful thermal massing maintains stable indoor temperatures, reducing heating and cooling needs. Spatial planning and orientation promote cross ventilation, enhancing air circulation.

These sustainable practices reflect a commitment to environmental responsibility, enhancing both liveability and aesthetics for occupants.

principle no.5: landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.

Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.

Good landscape design optimises useability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity and provides for practical establishment and long term management.

The Development Application design locates the car parking to the basement levels beneath the apartment building. This allows for ample circulation space for residents on the levels above, illustrated as a central courtyard which will be accentuated through the planting of native and local species.

Generous setbacks on all boundaries increase the extent of landscaping and provide a variety of garden spaces and communal outdoor areas.

The street elevation to Hoxton Park Rd is enhanced by being screened by a row of large trees.
The POS is relocated from ground level to the roof. The garden area at ground becomes POS to 3-bedroom houses. The south area of communal space is for screen planting and trees only.

principle no.6: amenity

Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being.

Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.

The development ensures a high level of amenity for its occupants through thoughtful design considerations.

Apartment sizes and room dimensions are practical and appropriate. Private open spaces meet the minimum requirements, and all apartments benefit from natural cross ventilation, exceeding the mandated 60% minimum in the ADG criteria.

Solar access has been optimized, with every private open space receiving at least 2 hours of sunlight. Additionally, 75% of apartments have living room windows receiving the same solar access. The apartment building has been redesigned with the same layout to provide better solar access to the apartments.
Adequate internal storage is available in each apartment, complemented by basement storage access.

This comprehensive approach ensures a satisfying living experience for residents.

principle no.7: safety

Good design optimises safety and security within the development and the public domain. It provides

for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.

A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.

The nature of the development demands a high level of security for the occupants. Two (2) clear secure entries for pedestrians are provided to the building.

The open space on Level 1 is entered through secure access gates, allowing for air circulation through the centre of the site and a visual connection to the entrances, whilst providing safety and security for the occupants beyond the line of entry to the stairs and lift.

Car entry and exit is also made secure by the use of a perforated overhead roller door.

The design provides additional high levels of surveillance as the apartment's Private Open Space has visibility over Woolnough Place and Hoxton Park Road.

principle no.8: housing diversity and social interaction

Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.

Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.

Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.

This Development Application design is appropriate as it provides a mixture of two bed, one bed, and studio residential opportunities in an area with little of this form of development. This assortment of apartment sizes and layouts caters to a broad demographic within the community.

Furthermore, the development includes 14 affordable dwellings that will remain as such for a minimum of 15 years. These attributes collectively demonstrate a highly positive response to the housing needs of the local community, making it a significant contribution to the area's architectural landscape.

The number of apartments under the SEPP (Housing) 2021 is reduced to 30% of FSR and is shown on a separate drawing No. 980. The owner currently has some properties with a CHP and there are ongoing discussions about the CHP being engaged. Those negotiations will complete soon, and council will be informed.

principle no.10: aesthetics

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.

The visual appearance of a well-designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

The proposed development embodies a contemporary and aesthetically appealing design that seamlessly integrates with the evolving character of the locality.

This architectural scheme incorporates a diverse range of structural elements, employing a visually captivating design language accentuated by well-suited materials and finishes. The composition of the built environment is thoughtfully attuned to the distinctive attributes of the site and the evolving neighbourhood character.

Consequently, it makes a favourable contribution to enhancing the visual allure of Hoxton Park Road and Woolnough Place, enriching the architectural quality of the area and speaking to its natural assets.

Tone Wheeler
Architect
NSW ARB 6239

11-15 Woolnough Place, Cartwright – Waste Management Plan

A Submission to Harry Obaid c/o Environa Studio

13 May 2024

MRA Consulting Group

Prepared by

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Version History

Ver	Date	Status	Author	Approver	Signature
0.1		Draft	Harri Mayjor	Louisa McMullan	-
0.2		Review	Louisa McMullan		-
1		Final			

Disclaimer

This report has been prepared by MRA Consulting Group for ArtMade Architects. MRA (ABN 13 143 273 812) does not accept responsibility for any use of, or reliance on, the contents of this document by any third party.

In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of Country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

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Glossary

Terminology	Definition
AS	Australian Standard
DA	Development Application
DC	Development Consent
DECC	Department of Environment and Climate Change
DCP	Development Control Plan
EPA	Environment Protection Authority
Growth Centres SEPP	State Environmental Planning Policy (Sydney Region Growth Centres) 2006
LCC	Liverpool City Council
LDCP	Liverpool Development Control Plan 2008
LLEP	Liverpool Local Environmental Plan 2008
LGA	Local Government Area
MGB	Mobile Garbage Bin
MSW	Municipal Solid Waste (also referred to as domestics or residential waste)
WMP	Waste Management Plan
WNDCP	Waste Not Development Control Policy
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

1 Introduction

MRA Consulting Group (MRA) was engaged by Environa Studios to prepare a Waste Management Plan (WMP) related to the proposed development at 11-15 Woolnough Place, Cartwright in Sydney's South-West, NSW. The site is situated in the Liverpool City Council (LCC) Local Government Area (LGA).

This WMP addresses the requirements of the Consent Authority (Council) and conforms to the following reference documents:

- The Liverpool Local Environment Plan 2008 (LLEP)
- The Liverpool Development Control Plan 2008 (LDCP).
- NSW EPA (2019) Better Practice Guidelines for Resource Recovery in Residential Developments.

The LDCP (2008) provides the following objectives for waste management:

- To minimise waste produced during demolition and construction of new development and maximise resource recovery.
- To ensure waste management for the end use of the development is designed to provide satisfactory amenity for occupants and provide appropriately designed collection systems.
- To minimise ongoing waste to landfill and maximise recycling of ongoing waste.

2 Background

2.1 Location and Project Description

The subject site is located at 11-15 Woolnough Place, Cartwright and is identified as Lot 389 in DP237249, Lot 388 in DP237249 and Lot 387 in DP237249. The subject site has an approximate area of 1,724m². The site is situated at the end of Woolnough Place with Hoxton Park Road to the South.

The surrounding area is predominately residential to the north characterised by low scale double storey single dwellings (**Error! Not a valid bookmark self-reference.**), medium and high residential dwellings and commercial areas to the south.

The proposed development is for the construction of a four-storey residential flat dwelling including:

- Two-level basement carpark;
- Four storey residential flat dwelling (31 dwellings); and
- Sitewide landscaping.

Figure 1: Depicts location of the proposed area

Source: SixMaps.

2.2 Zoning and Use

The site is zoned as R4 – High Density Residential.

The objectives of the zone are (LLEP 2008):

- To provide for the housing needs of the community within a high density residential environment.
- To provide a variety of housing types within a high density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To provide for a high concentration of housing with good access to transport, services and facilities.
- To minimise the fragmentation of land that would prevent the achievement of high density residential development.

Figure 2: Zoning Map featuring Site and Surrounds

Source: NSW ePlanning Spatial Viewer, 2024.

2.3 Assumptions

This report is a WMP, forming part of the development documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the final reference/indicative design set for the development plan from the project architect Environa Studio (7/05/2024);
- The NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments (2019)* and the Liverpool DCP outlines waste generation rates and services available for new developments which have been considered in the preparation of this report; and
- This WMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

3 Demolition and Construction Waste

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) wastes. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

Waste storage during construction operations will involve some stockpiling and separation of reusable material, as well as placement of skip bins for the separation of construction materials for recycling (see Appendix C). A skip bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Skip bins may require alternative placement across construction operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

A waste storage area shall be designated by the demolition and construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons.

Waste management principles, management measures and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

3.1 Demolition

Demolition works at the site will involve the removal of three existing residential dwellings, a pergola, two metal sheds and two garages to make way for the proposed development. Table 1 outlines the expected waste generation through constructions works at the subject site.

Table 1: Demolition waste material by volume

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Concrete	100 – 120m^3	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Brick and Pavers	30 – 40m^3	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Tiles (roof)	100 - 110m^3	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing

					and recycling for recovered aggregate products.
Timber	10 - 20m^3	✓	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing.
Metals	<5m^3	✓	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Plasterboard	<5m^3	✓	✓	✓	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: plasterboard recovery and recycling.
Garden organics (Vegetation)	<30m^3	✓	✓	-	Minimal garden organic waste from landscaping. Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Residual waste (general refuse)	<5m^3	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/ special waste	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste be found at the site.

3.2 Construction

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

Table 2: Construction material density and waste percentage

Building waste material	Tones per m³	Waste as % of the total material ordered
Bricks	1	5-10%
Concrete	2.4	3-5%
Tiles	0.75	2-5%
Timber	0.5	5-7%
Plasterboard	-	5-20%
Ferrous metal	2.4	-

The proposed development will include the construction of a four storey structure on a site area of 1,724m², with the following development features:

- Two-level basement carpark;
- Four storey residential flat dwelling (31 apartments); and
- Sitewide landscaping.

Table 3 outlines the expected waste generation resulting from proposed construction works at the site.

Table 3: Construction waste material by volume

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Excavation material	3,500 – 4,000m³	✓	✓	-	On site: testing (if necessary) for contamination and stockpiling of material for reuse as fill material. Reused on site for backfilling or landscaping where possible. C&D processor: reuse/ recycling of VENM and ENM Landfill if contaminated.
Brick and pavers	10 – 20m³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).

Concrete	20 – 30m^3	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Metals (Ferrous and Non-Ferrous)	5m^3	✓	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Timber (Treated and Untreated)	10 - 15m^3	✓	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse. C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing.
Plasterboard	Minor	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse.
Floor Coverings	20 - 30m^3	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Garden organics (Vegetation)	Minor	✓	✓	-	Minimal garden organic waste from landscaping. Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.

Residual waste (general refuse)	<5m³	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/ special waste	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste be found at the site.

3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings (Table 4).

Table 4: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractor	The following are local skip bin operators for consideration in the management of excavation and construction waste for the site: • Bins-Go-Go • Skip Bins Online • Ninja Skip Bins • ACE Skip & Waste Or another supplier as elected by the building contractor.
Principal Off-Site Recycler	The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site: • Cleanaway Kemps Creek Resource Recovery Facility; • Greencliffe Resource Recovery Facility; • Eastern Creek Waste Management Centre; and • Blaxland Waste Management Facility Or another appropriate facility as elected by the waste management contractor.
Principal Licensed Landfill Site	• Cleanaway Erskine Park Landfill Or other appropriate facility as elected by the waste management contractor.

3.4 Site documentation

This WMP will be retained on-site during the excavation and construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers). Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of collections;

- Description of waste and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

4 Operational Waste Management

4.1 Overview

Operational waste management requirements of the site arise as a result of the daily activities as a residential flat building with 31 apartments. The site will be serviced by site staff and/or site cleaners who will be responsible for the daily collection of waste and its disposal in the bins allocated for collection by a waste service provider (WSP).

Waste management strategies related to site operations have been established according to the documents outlined in the DCP and NSW EPA guidelines. Waste generation for the operational phase of the development will be addressed in applying waste generation rates outlined Section 4.2 for the site. Bin requirements and waste storage areas are defined with reference to waste generation rates and are addressed in Section 4.3.

Building management and/or site cleaning staff will maintain waste storage and management areas located on the ground level, for use by the residents. Site waste management responsibilities are outlined in Section 5.

The following space calculations are based off the mobile garbage bin (MGB) dimensions sourced from Liverpool council's *Waste Management Services For Residential Flat Buildings and Multi Dwelling Housing – Fact Sheet* (Table 5).

Table 5: MGB capacity and footprint

Bin Capacity (L)	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m^2)
140	920	640	535	0.27
240	1,060	730	580	0.42
360	1,116	904	670	0.61
660	**1,210**	**780**	**1,420**	**1.16**
1,100	1,310	1,088	1,196	1.31

Source: Waste Management Services For Residential Flat Buildings and Multi Dwelling Housing – Fact Sheet

4.2 Waste Generation

This WMP relies on waste generation rates derived from the Liverpool Development Control Plan (2008). Waste generation rates for the proposed site use is outlined in Table 6.

Table 6: Council waste generation rates

Types of Premises	Garbage	Recycling	Food*
High Density Residential Development	110 litres/week/dwelling	110 litres/week/dwelling	44 litres/week/dwelling

**Food waste generation rates are calculated as a 40% proportion of general waste rates.*

Based on the waste generation rates outlined in the table above, Table 7 outlines the expected waste generation for the ongoing operation of the site as a high-density residential development.

Table 7: Site waste generation

Site use	Waste stream	Generation rate	Weekly waste generated	Bins for collection (weekly)
Residential Development (31 apartments)	General Waste	110 litres/week/dwelling	3,520L	6 x 660L
	Recycling	110 litres/week/dwelling	3,520L	6 x 660L
	Food*	44 litres/week/dwelling	1,408L	3 x 660L

** Food waste generation rates are calculated as a 40% proportion of general waste rates.*

4.3 Waste Storage Requirements

Temporary Waste Storage

Each area will have sufficient space provisioned for the storage of one days' waste generated. This includes separate receptacles for general waste and recycling in all temporary waste storage areas such as kitchen, office, or activity area.

Bin Storage

The waste management and storage areas proposed for the site fulfil waste management requirements, facilitating safe access and manoeuvring of all bins and equipment.

Table 8 below outlines the waste storage requirements and proposed collection frequency for waste streams based on expected waste generation rates at the site.

660L MGB's are recommended for storage of general waste and comingled recycling, based on the waste generation rates and available size of the waste storage area.

Table 8: Waste storage recommendations

Waste stream	Collections per week	Bins required	Space required per bin	Total space requirement*
General Waste	1	6 x 660L	7m^2	26.5m^2
Recycling	1	6 x 660L	7m^2	
Food	1	3 x 660L	3.5m^2	

**Total space requirement includes manoeuvring and clearance area at a rate of bin footprint (m^2) x 1.5*

Based on the above waste generation and storage requirements, a minimum bin storage area of approximately 26.5 m^2 with weekly collections will be required to manage waste streams at the site. The site waste storage area is located on the first basement level and is sufficient for the storage and manoeuvring of required bins (Figure 3).

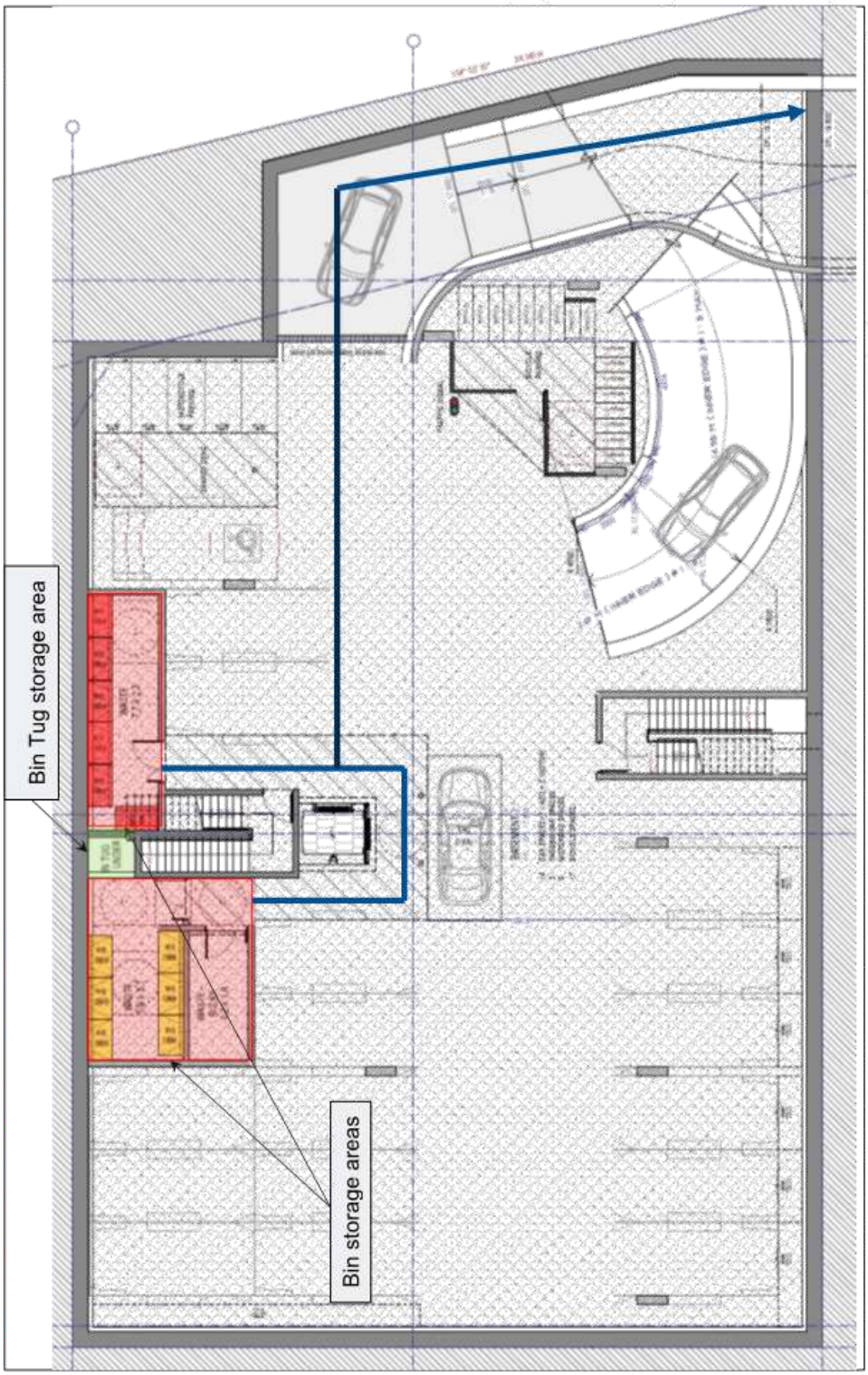
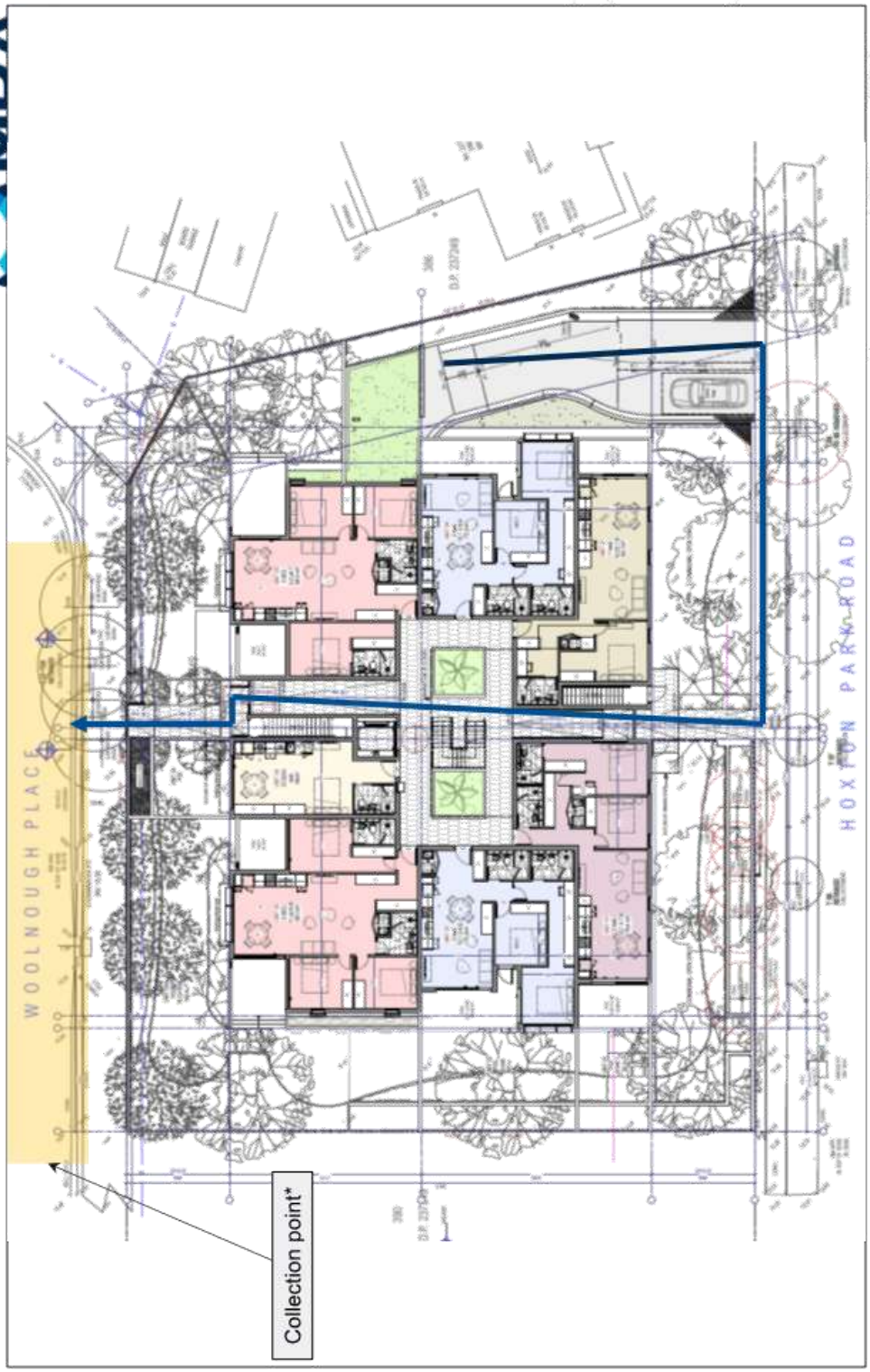


Figure 3: Site waste storage area and collection path



Source: Environa Studio 2024.

4.4 Additional Waste Streams

Site management may elect to include the following collection systems to increase resource recovery onsite. Figure 4 outlines additional waste stream options.

To assist in waste management practices, refer to the waste hierarchy chart (Figure 4).

Figure 4: The waste treatment hierarchy chart

4.4.1 Soft Plastics

Soft plastics cannot be placed in kerbside recycling bins; however, they can still be diverted from landfill. Management can engage a waste service such as Cleanaway to collect soft plastic waste.

4.4.2 Food Waste Processing or Collection

High volumes of food waste may result from operation of the site as a high-density residential dwelling. Food waste going to landfill is a source of damaging greenhouse gases and diverting this waste stream from landfill would not only prevent this, but also reduce costs associated with general waste bin lifts. Many facilities exist in and around Sydney that process food organics waste, producing compost and in some cases electricity (via biogas) while also diverting food waste from landfill.

4.4.3 Garden Waste

It is expected that landscaping at the site will be maintained by an external contractor who will remove all vegetation waste from ongoing maintenance activities.

4.4.4 Bulky Waste Items

The site management will be responsible for arranging timely bulky waste collection by a private waste contractor and therefore the waste storage area is sufficient. The space shall be managed to avoid overspill into the carpark space and access to the lift and stairs.

4.4.5 Problem Wastes

Cooking oil, light globes, paint tins, and cleaning chemicals are all examples of problem wastes which are unable to be disposed of through typical general waste or recycling services. Wastes such as these are to be stored separately from general waste and recycling bins.

Hazardous or special waste is to be stored in accordance with WorkSafe requirements and guidelines produced by the NSW EPA. Large volumes of these sorts of wastes are not expected to occur as a result of building occupation and typical operations.

5 Waste Management Systems

5.1 Collection Method and Loading Areas

The building management are required to enter an agreement with registered waste company or provider for the regular collection of all waste and recyclable material generated from the premises. A copy of the agreement is to be retained on site and produced to an authorized Council officer if requested.

Collection points for the waste service provider (WSP) and areas for handling and loading are as follows:

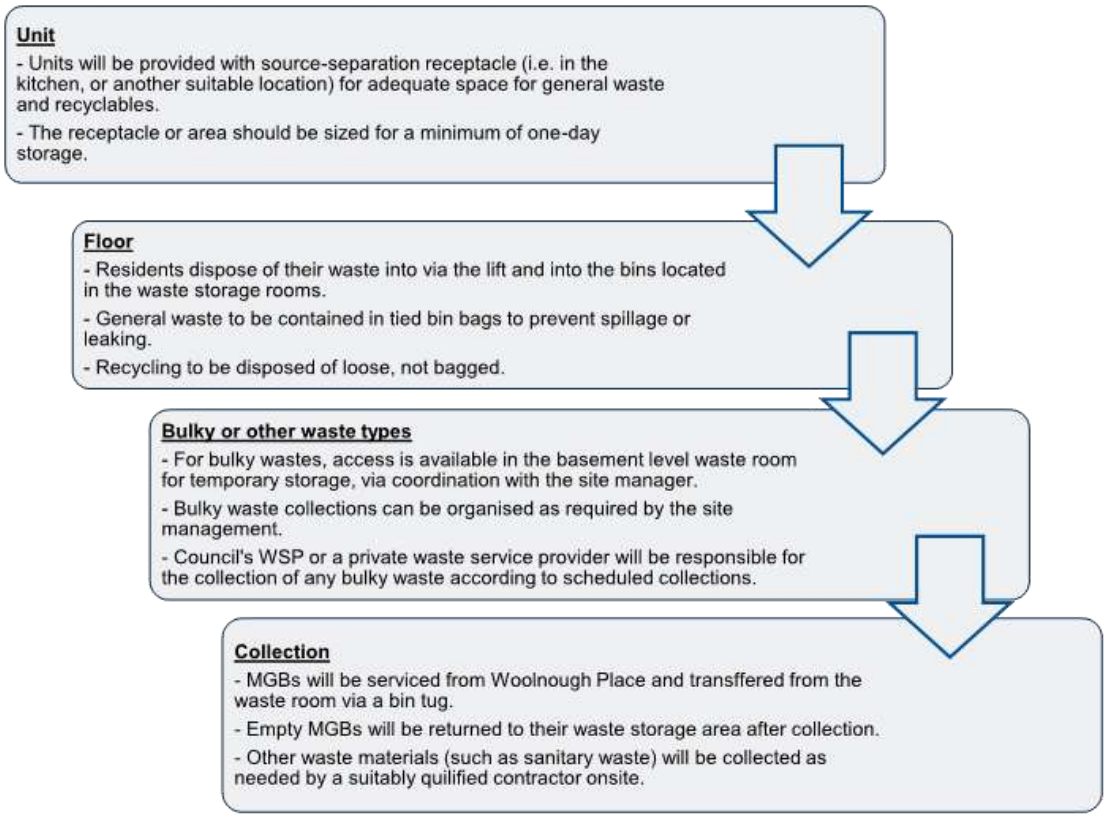
- Collection and loading will occur from Woolnough Place kerbside,
- Clear, safe, accessible and convenient space for handling of MGBs and loading of collection vehicles; and
- Identifiable areas where visitors and workers can recognise and avoid any risk associated with moving vehicles, and bin moving and handling.

Waste and recycling bins are to be stored in the designated waste storage area and will serviced once a week for each waste stream. Bins will be collected by the elected waste service provider utilising rear lift collection vehicle. 660L bins will be required to be transferred approximately 70 m over ground with <7% grade from the waste storage area to the collection point using a bin tug (Appendix B). Bins are expected to require the additional assistive equipment for the safe and efficient transfer of bins due to the transfer route exceeding the 15m guideline in the LDCP (2008).

Centre management will engage with commercial contractors and agree on a suitable waste servicing solution for the site, taking into account waste storage requirements and accessibility.

The below flow chart (Figure 5) outlines the movement of waste from generation to collection.

Figure 5: Waste flow diagram



5.2 Building Waste Management System and Responsibilities

Site staff or cleaners will enact and monitor day to day waste management operations. Should there be any issues that impact on the operational efficiency, safety and suitability of waste management, the site staff will inform management. Operation of the waste management system is the responsibility of building management and site cleaning staff.

Centre management is responsible for:

- Using this waste management plan to inform waste management operations, design and infrastructure;
- Providing educational materials and information to visitors and staff on sorting methods for recycled waste, awareness of waste management procedures for minimisation and recovery;
- Making information available to visitors and workers about waste management procedures;
- Appropriate signage in waste service areas and all waste management areas;
- Using contracts to define the allocation of responsibilities with cleaners and building;
- Holding a valid and current contract with licensed collector(s) for waste and recycling collection and disposal;
- Encouraging waste avoidance and achievement of resource recovery targets;

- Providing operational management for delivery of waste objectives;
- Ensuring regular reinforcement of source separation and effective use of waste facilities; and
- Organising waste, recycling and bulky pick-ups by elected contractor for the building.

Site staff duties include:

- Organising, maintaining and cleaning the waste storage area on a regular basis or as required;
- Arranging access to bins on collection days and to liaise with the WSP for any operational issues;
- Cleaning and exchanging all bins as required;
- Monitoring any vermin and pest issues and arranging appropriate controls (traps or fumigating) and maintenance of doors or other points of potential entry; and
- Management and site staff are also responsible for ensuring that workplace safety requirements according to WorkCover NSW Occupational Health and Safety are upheld.

5.3 Waste Storage Areas

The waste areas will provide centralised storage that has adequate capacity to receive and store the maximum likely generation of waste and recycling between collection times.

With reference to Liverpool Council and other relevant development controls regarding waste management, waste management rooms should have the following minimum requirements:

- Floors must be finished in a smooth even surface.
- well ventilated and screened to a minimum height of 1.5m by a structure and landscaping.
- Construction materials are to be compatible with the proposed development and adjoining development.
- be sufficiently open and well-lit to allow safe use after dark.
- A hose cock for hosing the garbage bin bay and a sewered drainage point are to be provided in or adjacent to the bin storage area. The drainage point should have a fine grade drain cover sufficient to prevent coarse pollutants from entering the sewer. If the hose cock is located inside the bin storage bay it is not to protrude into the space indicated for the placement of bins.
- Responsibility for cleaning of all waste storage areas should be determined when designing the system and clearly stated in the waste management plan.
- Sufficient space must be allocated within the bin bays to allow for access to all required bins by residents and waste collectors, as well as manoeuvring of bins within the bay and for the removal and return of bins by the waste collector.

5.4 Signage

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia, 1994).

Signage will be designed to consider language and non-English speaking backgrounds, vision impairment and accessibility. Illustrative graphics must form a minimum 50% of the area of the signage. Signage is to be prominently posted in the waste room indicating:

- Details regarding acceptable recyclables;
- Recyclables are to be decanted loose (not bagged)
- No standing and danger warnings apply to the area surrounding the waste storage area;
- Contact details for arranging the disposal of bulky items;
- The area is to be kept tidy.

Standard signage requirements and guidance for application apply (see).

5.5 Prevention of Pollution and Litter Reduction

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials), building management and the site cleaning staff will also be responsible for:

- Maintenance of open and common site areas;
- Ensuring waste areas are well maintained and kept clean;
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content (paints, e-waste, fluorescent tubes);
- Taking action to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or other work.

6 References

Environment Protection and Heritage Council (2018) National Waste Policy: Less Waste, More Resources. Available at: http://www.nepc.gov.au/system/files/resources/906a04da-bad6-c554-1d0d-45216011370d/files/wastemgt-rpt-national-waste-policy-framework-less-waste-more-resources-print-ver-200911.pdf.

NSW EPA (2012) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, Australian Standards and Statutory Requirements.

NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

NSW EPA (2016) Recycling Signs, Posters and Symbols. Available at: http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

NSW EPA (2019) NSW Better Practice Guide for Resource Recovery in Residential Developments, Australian Standards and Statutory Requirements.

Liverpool Growth Centre Precincts Development Control Plan 2021

Liverpool Development Control Plan (LDCP) 2008.

Liverpool Local Environmental Plan (LLEP) 2008.

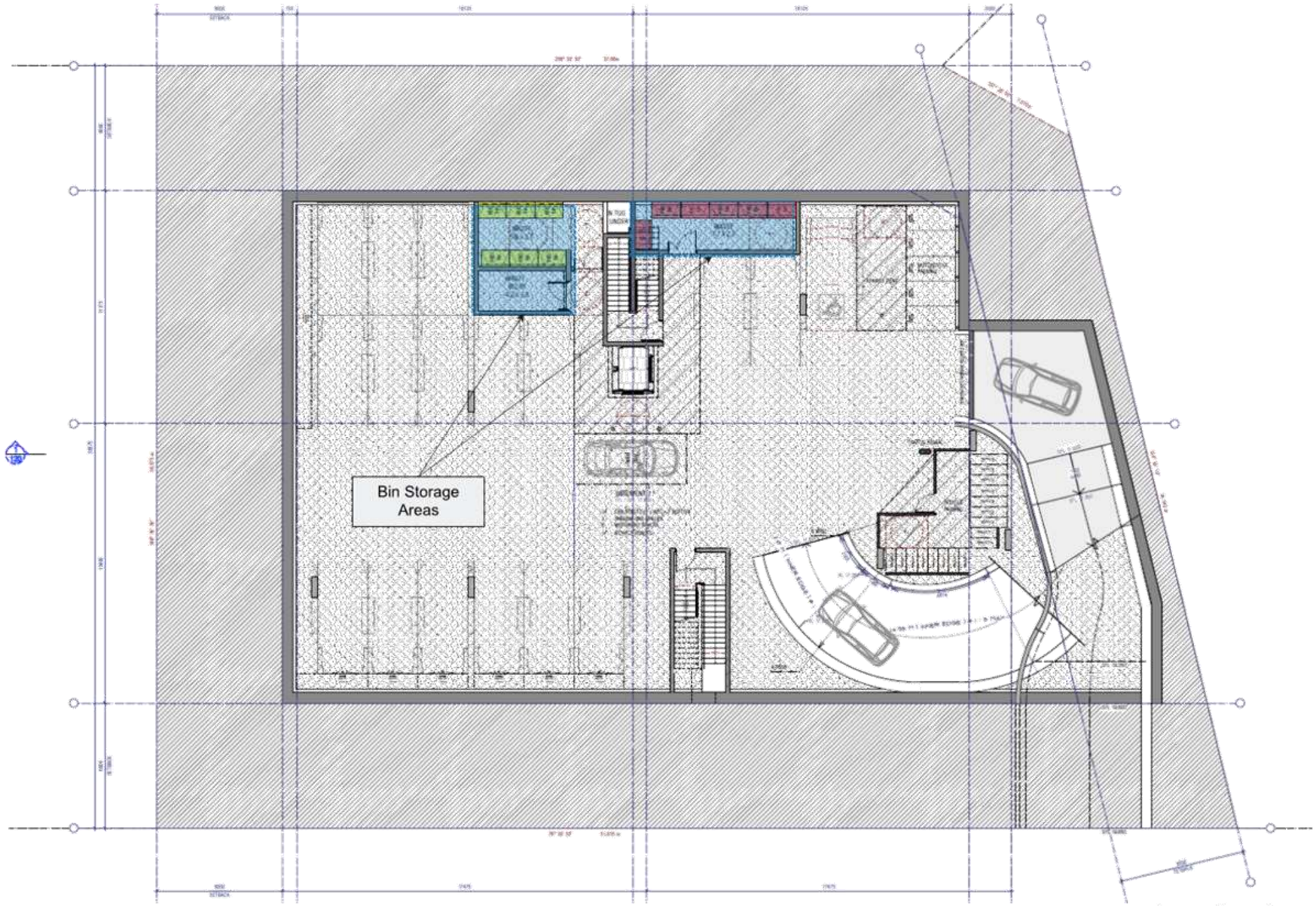
Liverpool Fact Sheet -Waste Management Services for Residential Flat Buildings 2021 Final (1)

Standards Australia (1994) AS 1319: Safety signs for the occupational environment, Homebush, NSW: Standards Australia.

Standards Australia (2008) AS 4123 Mobile waste containers.

WorkCover (2011) Managing Work Environment Facilities Code of Practice.

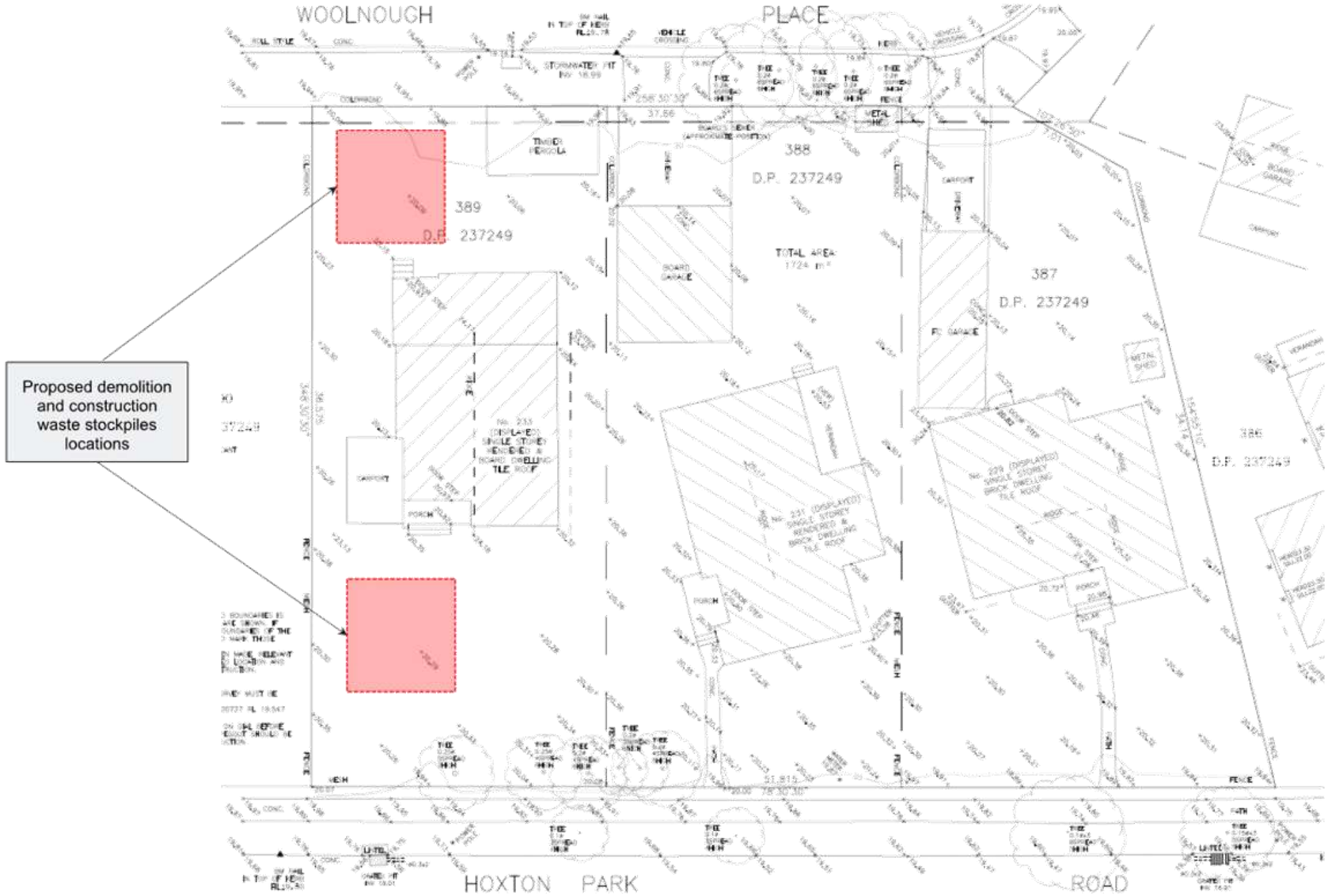
Appendix A Proposed Site Plans



Source: Environa Studios 2024.

Appendix B Bin Tug

Appendix C Site Demolition Plans



Source: Environa Studios, 2024

Appendix D Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW Office of Environment and Heritage (NSW OEH, 2008b).

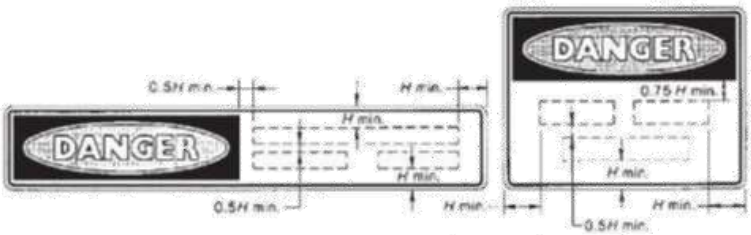
Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016), in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia, 2008).

Safety Signs

The design and use of safety signs for waste and recycling areas and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling area where appropriate.

(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS



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MRA Consulting Group

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 1411468M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Wednesday, 27 September 2023
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW GOVERNMENT | Planning, Industry & Environment

Project summary	
Project name	11-15 Woolnough Place, Cartwright
Street address	11-15 Woolnough Place Cartwright 2168
Local Government Area	Liverpool City Council
Plan type and plan number	deposited DP237249
Lot no.	389
Section no.	-
No. of residential flat buildings	1
No. of units in residential flat buildings	32
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 35	Target 35

Certificate Prepared by
Name / Company Name: Efficient Living Pty Ltd
ABN (if applicable): 82116346082

Description of project

Project address	
Project name	11-15 Woolnough Place, Cartwright
Street address	11-15 Woolnough Place Cartwright 2168
Local Government Area	Liverpool City Council
Plan type and plan number	deposited DP237249
Lot no.	389
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	32
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	1724
Roof area (m²)	795
Non-residential floor area (m²)	-
Residential car spaces	40
Non-residential car spaces	-

Common area landscape		
Common area lawn (m²)	400.0	
Common area garden (m²)	350.0	
Area of indigenous or low water use species (m²)	350.0	
Assessor details		
Assessor number	10035	
Certificate number	HR-EPBFE0-01	
Climate zone	28	
Ceiling fan in at least one bedroom	Yes	
Ceiling fan in at least one living room or other conditioned area	Yes	
Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 35	Target 35

Description of project

The tables below describe the dwellings and common areas within the project

Residential flat buildings - Building1, 32 dwellings, 4 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1	2	76.4	0.0	0.0	0.0
6	2	73.1	0.0	0.0	0.0
11	2	74.6	0.0	0.0	0.0
16	2	86.9	0.0	0.0	0.0
21	1	56.6	0.0	0.0	0.0
26	2	81.0	0.0	0.0	0.0
31	2	80.9	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2	2	81.0	0.0	0.0	0.0
7	2	80.9	0.0	0.0	0.0
12	1	57.4	0.0	0.0	0.0
17	2	76.4	0.0	0.0	0.0
22	2	73.1	0.0	0.0	0.0
27	2	74.6	0.0	0.0	0.0
32	2	86.9	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
3	2	74.5	0.0	0.0	0.0
8	1	55.7	0.0	0.0	0.0
13	1	56.6	0.0	0.0	0.0
18	2	81.0	0.0	0.0	0.0
23	2	80.9	0.0	0.0	0.0
28	1	57.4	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
4	1	57.3	0.0	0.0	0.0
9	2	76.4	0.0	0.0	0.0
14	2	73.1	0.0	0.0	0.0
19	2	74.6	0.0	0.0	0.0
24	2	86.9	0.0	0.0	0.0
29	1	56.6	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
5	1	39.6	0.0	0.0	0.0
10	2	81.0	0.0	0.0	0.0
15	2	80.9	0.0	0.0	0.0
20	1	57.4	0.0	0.0	0.0
25	2	76.4	0.0	0.0	0.0
30	2	73.1	0.0	0.0	0.0

Description of project

The tables below describe the dwellings and common areas within the project

Common areas of unit building - Building1

Common area	Floor area (m²)	Common area	Floor area (m²)	Common area	Floor area (m²)
Car park area	1498.0	Lift car (No.1)	-	Garbage rooms	28.0
Plant or service room	17.0	Bicycle storage rooms	44.0	Hallway/lobby	202.0

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy
2. Commitments for multi-dwelling houses
3. Commitments for single dwelling houses
4. Commitments for common areas and central systems/facilities for the development (non-building specific)
    - (i) Water
    - (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for Residential flat buildings - Building1

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 star	no	-	4 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	central water tank (no. 1)	See central systems	See central systems	-	yes	-	-	-
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
1, 5, 9, 16, 17, 24, 25, 32	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
3, 6, 11, 14, 19, 22, 27, 30	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
All other dwellings	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	1-phase airconditioning EER 3.0 - 3.5	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	induction cooktop & electric oven	-	no	3 star	-	2 star	-	-

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✔		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✔	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔
(i) The applicant must show on the plans accompanying the development application for the proposed development, the locations of ceiling fans set out in the Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1	56.1	18.5
2	54.4	14.1
3	28.9	18.8
4	29.5	21.7
5	13.7	28.9
6	25.3	17.2

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
7	49.4	14.8
8	60.6	17.2
9	33.8	21.4
10	32.4	15.2
11	14.3	21.4
12	13.4	21.9
13	27.2	12.2
14	12.3	20.2
15	26.5	15.4
16	35.1	21.6
17	31.9	20.8
18	33.0	15.2
19	14.9	20.9
20	14.2	21.4
21	13.2	12.6
22	13.0	20.1
23	27.1	15.5
24	26.7	21.6
25	50.8	26.0
26	53.4	18.7
27	30.5	24.4
28	30.1	25.2
29	34.5	17.4
30	28.7	23.7
31	47.8	19.9
All other dwellings	50.7	26.3

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Fire sprinkler system (No. 2)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Car park area	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	No
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	No
Garbage rooms	ventilation exhaust only	-	light-emitting diode	motion sensors	No
Plant or service room	ventilation supply only	thermostatically controlled	light-emitting diode	manual on / manual off	No
Bicycle storage rooms	ventilation supply only	time clock or BMS controlled	light-emitting diode	motion sensors	No
Hallway/lobby	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	No

Central energy systems	Type	Specification
Central hot water system (No. 1)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (a) Piping external to building: R0.6 (~25 mm); (b) Piping internal to building: R0.6 (~25 mm)
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 6

4. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

Central energy systems	Type	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 14.0 peak kW

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).

TRAFFIC IMPACT ASSESSMENT

11–15 Woolnough Place, Cartwright

PREPARED FOR:
Obaid Investment Pty Ltd

REFERENCE:
0743r01v04

DATE:
23/05/2024

TRAFFIC IMPACT ASSESSMENT

11–15 Woolnough Place, Cartwright

Prepared for: Obaid Investment Pty Ltd

ABN: 99 162 811 878

Reference: 0743r01v04

Date: 23/05/2024

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Revision History

VERSION	DATE	PREPARED	REVIEWED	APPROVED	SIGNED
01	26/07/2023	Jay Wu	Ben Midgley	Paul Corbett	Original Signed
02	27/09/2023	Jay Wu	Ben Midgley	Paul Corbett	Original Signed
03	14/05/2024	Hayden Calvey	Hayden Calvey	Paul Corbett	Original Signed
04	23/05/2024	Hayden Calvey	Hayden Calvey	Paul Corbett	

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Appendix A Architectural Drawings

Appendix B Swept Path Analysis Drawings

1. Introduction

1.1. Overview

PDC Consultants has been commissioned by Obaid Investment Pty Ltd to undertake a traffic impact assessment of a Development Application (DA) relating to the proposed mixed affordable rental housing (ARH) and residential development for the site at 11–15 Woolnough Place, Cartwright. Specifically, the DA proposes the demolition of the existing buildings and construction of a four-storey residential development consisting of:

- Nine ARH units, which include 3 one-bedroom and 6 two-bedroom units.
- 22 Non-ARH Residential Flat Building units, which include 1 studio, 7 one-bedroom, 12 two-bedrooms, and 2 three-bedrooms units. Basement levels parking accommodating a total of 41 car parking spaces.
- 6.3-metre-wide entry / exit driveway onto Hoxton Park Road.

Having regard for the above, it is evident that development is not of a scale that requires referral of the DA to Transport for New South Wales (Transport), under the provisions of the State Environmental Planning Policy (Transport & Infrastructure) 2021.

The site is located in the Liverpool local government area (LGA) and the proposed development has been assessed in accordance with the Liverpool Development Control Plan 2008 and Local Environmental Plan 2008. In addition to Council's planning controls, the development has also been assessed in accordance with the SEPP Housing 2021.

1.2. Structure of this Report

This report documents the findings of our investigations in relation to the anticipated traffic and parking impacts of the proposed development and should be read in the context of the Statement of Environmental Effects (SEE), prepared separately. The remainder of this report is structured as follows:

- Section 2: Describes the site and existing traffic and parking conditions in the locality.
- Section 3: Describes the proposed development.
- Section 4: Assesses the parking requirements of the development.
- Section 5: Assesses the traffic impacts of the development.
- Section 6: Discusses the proposed access and internal design arrangements.
- Section 7: Presents the overall study conclusions.

1.3. References

In preparing this report, reference has been made to the following guidelines / standards:

- Liverpool Local Environmental Plan 2008 (LLEP 2008).
- Liverpool Development Control Plan 2008 (LDCP 2008).
- Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area, 2013 (Integrated Public Transport Planning Guidelines 2013).
- Connected Liverpool 2040: Local Strategic Planning Statement (LSPS 2040).
- State Environmental Planning Policy (Transport & Infrastructure) 2021 (SEPP T&I 2021).
- State Environmental Planning Policy (Housing) 2021 (SEPP Housing 2021).
- Australian Standard AS 2890.1-2004, Part 1: Off-street car parking (AS 2890.1).
- Australian Standard AS 2890.3-2015, Part 3: Bicycle parking (AS 2890.3).
- Australian Standard AS 2890.6-2021, Part 6: Off-street parking for people with disabilities(AS 2890.6).
- RMS Guide to Traffic Generating Development 2002 (RMS Guide).
- RMS Technical Direction TDT 2013/04a - Guide to Traffic Generating Developments, Updated Traffic Surveys (RMS Guide Update).

2. Existing Conditions

2.1. Location and Site

The site is located at 11–15 Woolnough Place, Cartwright, being approximately 3.5 kilometres southwest of Liverpool Railway Station and 30 kilometres southwest of the Sydney CBD. The site is comprised of three lots, formally identified as Lot 387, Lot 388 and Lot 389 of DP 237249. The site is generally rectangular in configuration with a total area of approximately 1,724 m^2.

The site has two street frontages, being Hoxton Park Road to the south and Woolnough Place to the north, having lengths of approximately 40 metres and 51 metres respectively. The western boundary boarders a vacant land and the eastern boundary borders a neighbouring residential dwelling, having lengths of approximately 36 metres and 41 metres respectively.

The site currently accommodates three residential dwellings with individual vehicle accesses provided onto Woolnough Place. **Figure 1** and **Figure 2** provide an appreciation of the site's location in both a local and broad context respectively.

2.2. Road Network

The road hierarchy in the vicinity of the site is shown by **Figure 2**, with the following roads considered noteworthy depicted in **Table 1**.

Table 1: Road Network

	HOXTON PARK ROAD (MAJOR)	WOOLNOUGH PLACE	HOXTON PARK ROAD (LOCAL ROAD)
ROAD CLASSIFICATION	Classified state (MR 681)	Local	Local
ROAD ALIGNMENT	East–West	Northeast–Southwest	East–West
CONNECTING SUBURBS/ INTERSECTING ROAD	East Hume Highway West Cowpasture Road	Northeast Ends in a cul-de-sac Southwest Hoxton Park Road	Runs parallel to Hoxton Park Road (Major) to provide vehicle accesses to multiple properties.
SPEED ZONING	60 km/h	50 km/h	50 km/h
NO. TRAFFIC LANES	Two lanes of traffic in each direction	One lane of traffic in each direction	One lane of traffic in each direction
APPROXIMATE ROAD WIDTH	25 metres	6 metres	7.2 metres
KERBSIDE PARKING	No	Yes	Yes
KERBSIDE PARKING RESTRICTIONS	No Stopping along both kerbsides	Unrestricted along both kerbsides	Unrestricted (northern kerbside) No Parking (southern kerbside)
FORMS SITE FRONTAGE	No	Yes	Yes

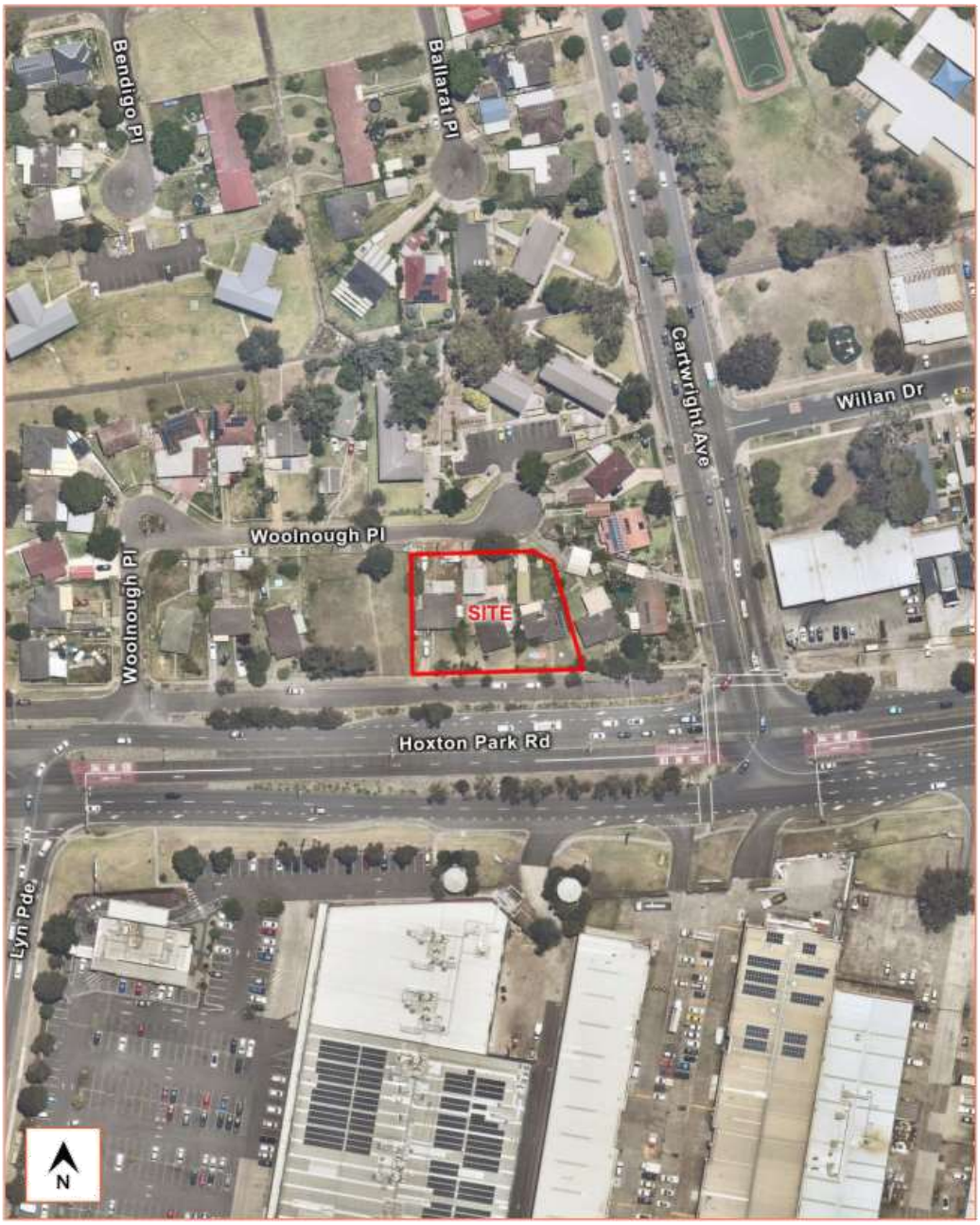


Figure 1: Site Plan

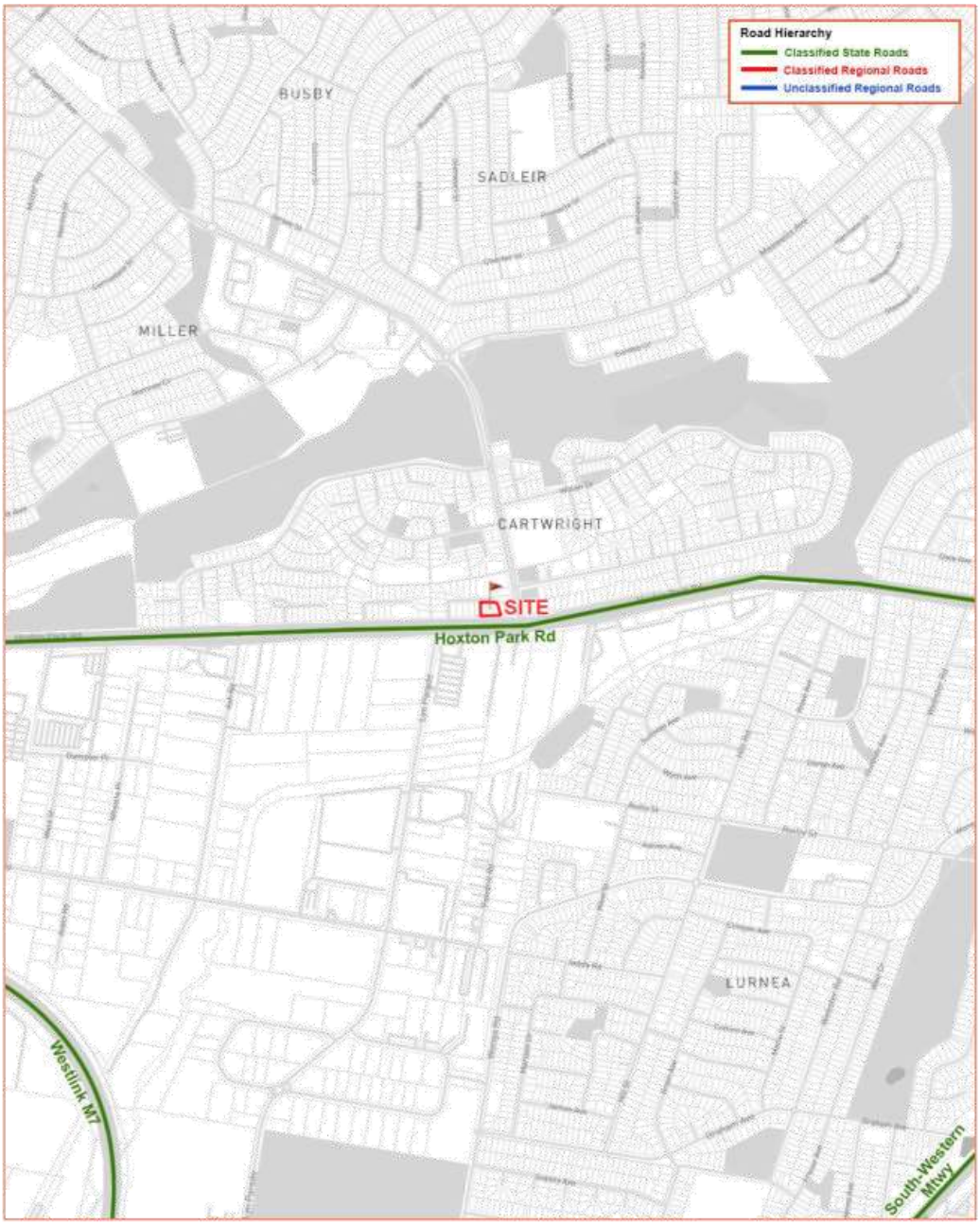


Figure 2: Location & Road Hierarchy Plan

2.3. Public & Active Transport

2.3.1. Rail Services

The Integrated Public Transport Planning Guidelines 2013 states that the walking catchment for metropolitan railway stations includes all areas within an 800-metre radius of a station. It can be seen from **Figure 3** that Liverpool Railway Station is located approximately 3.5kilometres northeast of the site and hence, falls outside the typical walking catchment area. Notwithstanding, it is considered that a proportion of residents and visitors of the proposed development would still access Liverpool Railway Station for journeys to and from the site, via a multi-modal trip.

Liverpool Railway Station is serviced by three railway lines, being the T2 Inner West & Leppington Line, the T3 Bankstown Line and the T5 Cumberland Line. **Table 2** shows the notable town centres that are accessible along T2, T3 and T5 lines and the average service headways during peak and off-peak periods.

Table 2: Rail Services

RAILWAY LINE	NOTABLE TOWN CENTRES ALONG LINE	AVERAGE HEADWAY
T2 Inner West & Leppington Line	Leppington, Liverpool, Cabramatta, Parramatta, Clyde, Homebush, Strathfield, Ashfield, Redfern & Sydney CBD	Weekdays: 10-15 minutes Weekends: 15 minutes
T3 Bankstown Line	Liverpool, Lidcombe, Birrong, Bankstown, Sydenham, Redfern & Sydney CBD	Weekdays: 7-30 minutes peak / 30 minutes off peak Weekends: 30 minutes all day
T5 Cumberland Line	Leppington, Liverpool, Cabramatta, Parramatta, Schofields & Richmond	Weekdays: 30 minutes Weekends: 30 minutes

2.3.2. Bus Services

The Integrated Public Transport Planning Guidelines 2013 states that the walking catchment for metropolitan bus services includes all areas within a 400-metre radius of a bus stop. As can be seen from **Figure 3**, the site is situated within 100 metres of bus stops operating along Hoxton Park Road and Cartwright Avenue. In addition, the site is located approximately 500 metres east of bus stops located along the Liverpool–Parramatta Transitway, which is a continuous series of bus-only lanes providing frequent and efficient transportation between Liverpool and Parramatta. As stipulated in the LSPS 2040, it is the intention that this Transitway will be extended in the future to provide services to a wider range of suburbs.

In this regard, residents and visitors of the proposed development would have convenient access to these public bus services. **Table 3** shows the notable town centres that are accessible via these bus services and the average service headways during peak and off-peak periods.

Table 3: Bus Services

ROUTE NO.	ROUTE (TO / FROM)	ROUTE DESCRIPTION	AVERAGE HEADWAY
802	Liverpool to Parramatta via Guildford West	Via Cartwright, Miller, Bonnyrigg, Fairfield, Guildford West, Merrylands	Weekdays: 30 minutes Weekends: 30 minutes on Saturdays / 1 hour on Sundays
803	Liverpool to Miller (Loop Service)	Via Cartwright	Weekdays: 11 Services Only Weekends: No Services
804	Liverpool to Parramatta via Fairfield West	Via Ashcraft, Busby, Miller, Hinchinbrook, Green Valley, Bonnyrigg Heights, Greenfield Park, Wakeley, Fairfield West, Fairfield, Merrylands	Weekdays: 30 minutes all days Weekends: 30 minutes on Saturdays / Sundays
853	Carnes Hill to Liverpool	Via Middleton Grange, Hoxton Park, Cartwright	Weekdays: 30 - 60 minutes Weekends: 1 hour
854	Carnes Hill to Liverpool	Via West Hoxton, Horningsea Park, Hoxton Park, Cartwright	Weekdays: 30 minutes Weekends: 1 hour
857	Narellan to Liverpool	Via Smeaton Grange, Gledswood Hills, Catherine Field, Horningsea Park, Carnes Hill, Casula	Weekdays: 2 – 3 hours Weekends: 6 Services Only on Saturdays / 3 Services Only on Sundays
865	Casula Mall to Liverpool	Via Lurnea	Weekdays: 30-60 minutes Weekends: 1 hour on Saturdays / 2 hours on Sundays
T80	Liverpool to Parramatta via T-way	Via Cartwright, Miller, Bonnyrigg, St Johns Park, South Wentworthville, Mays Hill	Weekdays: 10 minutes Weekends: 15 minutes

2.3.3. Cycle Network

Figure 3 shows that the site has excellent access to the local bicycle network with the on-road cycle paths provided to the south and east of the site, along Hoxton Park Road and Cartwright Avenue respectively. These cycle paths provide connections to the wider bicycle network.

2.4. Existing Traffic Generation

As discussed in Section 2.1 of this report, the site currently accommodates three residential dwellings. The RMS Guide Update recommends application of a peak period traffic generation rate of 0.95 trips per dwelling during the 7–9am (AM) peak period and 0.99 trips per dwelling during the 4–6pm (PM) peak period. Application of these rates to the three existing dwellings results in the following traffic generation:

- 3 vehicle trips / hour (1 in, 2 out), during the AM peak period.
- 3 vehicle trips / hour (2 in, 1 out), during the PM peak period.

The above assumes a 20% inbound and 80% outbound distribution during the AM peak period noting that residents would typically depart the site for work in the morning, and vice versa for the weekday PM peak period.

Notwithstanding, it is considered that the most relevant use of the above is to determine the net change in traffic generation as a result of the proposed development, as is discussed in Section 5.1 of this report.

Figure 3: Public & Active Transport Services

3. Proposed Development

A detailed description of the proposed development for which approval is now sought, is outlined in the Statement of Environmental Effects prepared separately. In summary, the subject application relates to the demolition of all existing buildings and construction of a four-storey ARH development consisting of:

- Nine ARH units, which include 3 one-bedroom and 6 two-bedroom units.
- 22 Non-ARH Residential Flat Building units, which include 1 studio, 7 one-bedroom, 12 two-bedrooms, and 2 three-bedrooms units. Basement levels parking accommodating a total of 41 car parking spaces.
- 6.3-metre-wide entry / exit driveway onto Hoxton Park Road.

The parking and traffic implications arising from the proposed development are discussed in Sections 4 and 5, respectively. A copy of the relevant architectural drawings, prepared by environa studio, are also included in **Appendix A**.

4. Parking Requirements

4.1. Car Parking

The LDCP 2008 does not stipulate a car parking rate for In-fill Affordable Housing and accordingly, the parking requirements of the units have been assessed in accordance with the requirements of SEPP Housing 2021 Clause 18(2)(f) and Clause 18(2)(g) of the SEPP Housing 2021 outlines the following car parking rates for ARH units:

(2) The following are non-discretionary development standards in relation to the carrying out of development to which this Division applies—:

(f) for a development application made by a social housing provider for development on land in an accessible area—

(i) for each dwelling containing 1 bedroom—at least 0.4 parking spaces, or

(ii) for each dwelling containing 2 bedrooms—at least 0.5 parking spaces, or

(iii) for each dwelling containing at least 3 bedrooms— at least 1 parking space,

(g) if paragraph (f) does not apply—

(i) for each dwelling containing 1 bedroom—at least 0.5 parking spaces, or

(ii) for each dwelling containing 2 bedrooms—at least 1 parking space, or

(iii) for each dwelling containing at least 3 bedrooms—at least 1.5 parking spaces,

It is acknowledged that above SEPP Housing 2021 requirement was amended in November 2023, however as the DA was lodged prior to this amendment, the assessment is based on the SEPP Housing 2021 at the time of lodgement.

In the case of assessing the car parking requirements for the RFB component, reference is made to the LCDCP 2008 Part 1 as follows:

Multi dwelling housing

1 space per small dwelling (<65 m^2) or 1 bedroom

1.5 spaces per medium dwelling (65-110 ,^{2}) or 2 bedrooms

2 spaces per large dwelling (> 110m^2) or 3 or more bedrooms

1 visitor car space for every 4 dwellings or part there of

Table 4 shows the car parking requirement and the proposed provision in response.

Table 4: Residential Car Parking Requirement & Provision

RESIDENTIAL	TYPE	SCALE	PARKING RATE	REQUIREMENT	PARKING PROVISION
ARH units	One-bedroom	3	0.5 spaces / dwelling	1.5	41
	Two-bedroom	6	1 spaces / dwelling	6	
RFB units	Studio	1	1 spaces / dwelling	1	
	One-bedroom	7	1 spaces / dwelling	7	
	Two-bedroom	12	1.5 space / dwelling	18	
	Three-bedroom	2	2 spaces / dwelling	4	
	Visitor	22	1 space / 4 dwellings	5.5	
			Total	***43***	***41***

It is evident from **Table 4** that the development requires a minimum of 43 car spaces. In response, the development provides 41 car spaces and therefore reflects a numeric shortfall of two car parking spaces. This shortfall, however, is a result of the visitor car parking requirement of which two car spaces can be adequately accommodated within the service road on Hoxton Park Road or at the rear on Woolnough Place.

Visitor car parking demand typically peaks on weekday evenings and weekends and is generally sporadic. The provision for a reduce on-site provision of visitor parking is unlikely to adverse neighbouring properties or traffic flow in the area. As an example, the frontage on Hoxton Park Road is approximately 45 metres (account for the proposed driveway) such that up to seven on-street car spaces could be utilised before extending across neighbouring properties. The use of up to five to six space on-street spaces for visitors (as required under the DCP) will be wholly contained within the frontage length and not adversely impact the residential amenity of neighbouring sites.

4.2. Accessible Car Parking

Consultation with the Applicant's access consultant has confirmed that the development is required to provide two accessible parking spaces on-site. In response, two accessible parking spaces are provided within the Basement 1 and Basement 2 car park. The accessible car parking provision is therefore considered to be acceptable.

4.3. Motorcycle Parking

Neither the LDCP 2008 or the SEPP Housing 2021 policies stipulate a rate for the provision of motorcycle parking for In-fill Affordable Housing developments and accordingly, the proposed development is not required to provide any motorcycle parking on-site.

A rate of one motorcycle space per 25 car spaces for the non-ARH units and one motorcycle space per five ARH units is considered to be an adequate provision. This results in two motorcycle spaces for non-ARH and two motorcycles for ARH units, being a total of four motorcycle spaces. In response, the proposed development provides five motorcycle spaces on Basement 1.

4.4. Bicycle Parking

SEPP Housing 2021 does not provide any bicycle parking rates for In-fill Affordable Housing and therefore, the proposed development is not required to provide any bicycle parking on-site. Nonetheless, reference has been made to the residential flat building bicycle parking rates stipulated under LDCP 2008, to provide a conservative assessment of the bicycle parking provision. **Table 5** shows the bicycle parking requirement for the units and the proposed provision in response, if assessed against the LDCP 2008.

Table 5: Residential Bicycle Parking Requirement & Provision

TYPE	NO.	NO. OF BEDROOM	LDCP 2008 RATE	LDCP 2008 REQUIREMENT	PARKING PROVISION
Resident	31	52	1 space / 2 units or 1 space / 4 bedroom, whichever is greater	16	22
Visitor	31	-	1 space / 10 units	3	
			Total	***19***	***22***

It is evident from **Table 5** that the development would require a minimum of 19 bicycle parking spaces if assessed against the requirements under LDCP 2008. In response, the development provides 22 bicycle parking spaces with security level B within the basement car parking areas. The bicycle parking provision is therefore considered acceptable and will ensure that all bicycle parking demands are accommodated on-site.

4.5. Service Vehicle Parking

Neither the SEPP Housing 2021 nor LDCP 2008 policies stipulate a rate for the provision of service vehicle parking for In-fill Affordable Housing developments. In any event, given the use and moderate scale of the proposed development, it is expected that it would generate infrequent demand for service vehicle parking. Accordingly, it is considered acceptable that the development does not provide any on-site service vehicle parking, with any minor and infrequent demands to be accommodated by the existing on-street parking spaces located along Woolnough Place and Hoxton Park Road at the site frontage, or within the on-site car parking space for any vehicles up to and including a B99 Design Vehicle (including a UTE and small van).

Additionally, it is considered appropriate that the waste collection of the development be undertaken on-street along Woolnough Place by Council's waste truck. To facilitate this, the on-site manager shall be responsible for transferring bins from the bin room to the kerbside prior to collection being undertaken by Council's contractors. The on-site caretaker shall then promptly return the bins to the bin room following collection. This arrangement is considered acceptable and will ensure that waste can be collected safely and efficiently, whilst also being consistent with other comparable developments in the area.

5. Traffic Impacts

5.1. Trip Generation

Neither the RMS Guide nor RMS Guide Update policies include specific traffic generation rates for ARH developments. Reference was therefore made to the medium-density residential trip rates outlined in the RMS Guide, noting that the traffic generation of the ARH development would be somewhat comparable to a medium-density residential development. The same rate is also applied to the non-ARH units within the development.

The RMS Guide recommends application of a peak period traffic generation rate of 0.4 to 0.5 trips / dwelling / hour and 0.5 to 0.65 trips / dwelling / hour during the AM and PM peak periods, for residential apartments with two or less bedrooms and with three or more bedrooms in a medium-density residential building respectively. Application of an average rate of 0.45 trips / hour and 0.6 trips / hour to the proposed 31 units, results in the following peak period traffic generation:

- 14 vehicle trips / hour (3 in, 11out), during the AM peak period.
- 14 vehicle trips / hour (11 in, 3 out), during the PM peak period.

The above assumes a 20% inbound / 80% outbound split during the AM peak period noting that most residents would leave for work in the weekday morning, and vice versa for the weekday PM peak period.

The above is not a net increase in traffic generation, as it does not take into consideration the generation of the existing development. In this regard, the net increase in traffic generation as a result of the proposed development is expected to be as follows:

- 11 vehicle trips / hour (2 in, 9out), during the AM peak period.
- 11 vehicle trips / hour (9 in, 2 out), during the PM peak period.

5.2. Traffic Impacts

The proposed development will result in a net increase in traffic generation of 11 vehicle trips / hour during both the weekday AM and PM peak periods. This equates to one additional vehicle trip every five minutes and thirty seconds which will have negligible impacts on the performance of the external road network and accordingly, no external improvements will be required to facilitate the development.

Furthermore, computer modelling techniques available to analyse intersection performances are not sensitive to such small changes in traffic volumes and hence, such an assessment is not considered to be required. The traffic impacts of the proposed development are therefore considered acceptable.

6. Design Aspects

6.1. Access

With 41 car parking spaces of User Class 1A, the proposed development requires a Category 1 Driveway under Table 3.1 of AS 2890.1, being a combined entry and exit driveway of width 3.0 metres to 5.5 metres. In response, the development proposes a combined entry and exit driveway of width 6.3 metres onto Hoxton Park Road, and therefore complies with the requirements of AS 2890.1.

The proposed arrangements have also been assessed using swept path analysis which confirms compliance with AS 2890.1, and that the proposed access arrangements will operate safely and efficiently. The results of this analysis are included in **Appendix B** for reference.

In summary, the proposed access arrangements are considered acceptable and comply with the relevant requirements of AS 2890.1.

6.2. Internal Design

The proposed internal parking arrangements comply with the relevant requirements of AS 2890.1 and AS 2890.3 and AS 2890.6, with the following design aspects considered noteworthy:

6.2.1. Driveway / Ramp

- The driveway has a maximum grade of 5% (1 in 20) for the first 7.0 metres inside the property boundary and this complies with the requirements of Clause 3.3 of AS 2890.1.
- The Level 1–Basement 1 vehicular ramp has a maximum grade of 25% (1 in 4) with 2.0 metre transitions of 12.5% (1 in 8) provided at both ends, thereby satisfying Clause 2.5.3 of AS 2890.1.
- The Level 1–Basement 1 ramp has a width of 5.5 metres between kerbs for the first 6 metres inside the property boundary, and gradually narrows down to 3.6 metres wide between kerbs on the ramp. The Level 1 – Basement 1 vehicular ramp will therefore accommodate one-lane, two-way traffic flow as demonstrated by the swept path analysis results included in **Appendix B**, complies with AS 2890.1 and is considered acceptable. The one-lane, two-way ramp complies with AS 2890.1 and is considered appropriate in the circumstances given the tidal nature and low traffic generation of the development.
- Along the inside edge, the vehicle circulation ramps between Basement 1 and Basement 2 has a maximum grade of 20% (1 in 5) with 2.0 metre transitions of 12.5% (1 in 8) at both ends, thereby satisfying Clause 2.5.3 of AS 2890.1.
- The Basement 1–Basement 2 ramp have a minimum width of 3.6 metres between kerbs, with 0.5m wide kerb provided along the outside edge of the ramp and 0.3m wide kerbs provided along the inside edge. The

Basement 1–Basement 2 will accommodate one-lane, two-way traffic flow as demonstrated by the swept path analysis results in **Appendix B**.

- Due to the one-lane, two-way vehicle ramps and constrained intervisibility from one end of the ramp to the other, the use of traffic signals is required to manage the internal vehicle circulation within the basement levels. In this regard, the architectural plans, provided in **Appendix A**, show that traffic signals will be provided at the vehicle access and within the basement levels to manage traffic flow and ensure that vehicle movements occur safely and efficiently.

6.2.2. Parking Modules

- All car parking spaces are provided in accordance with the User Class 1A requirements of AS 2890.1, having a minimum space width of 2.4 metres and length of 5.4 metres, with a minimum aisle width of 5.8 metres.
- The tandem car parking spaces will be designated to the residents of the same unit, ensuring that the car parking area operate efficiently and safely.
- The accessible car parking spaces are provided with a minimum space width of 2.4 metres and length of 5.4 metres, with a minimum aisle width of 6.1 metres. Additionally, these spaces are located immediately adjacent to a 2.4-metre-wide and 5.4-metre-long shared area, thereby satisfying the requirements of AS 2890.6.
- All walls / columns are located outside of the space design envelope, as required under Figure 5.2 of AS 2890.1.
- A 1.0 metre blind aisle extension has been provided beyond the last parking spaces, in accordance with Figure 2.3 of AS 2890.1.

6.2.3. Head Heights

- A minimum clear head height of 2.2 metres is required above all traffic circulation and car parking areas in accordance with Clause 5.3.1 of AS 2890.1.
- A minimum clear head height of 2.5 metres is required above all accessible car parking spaces and shared areas, in accordance with Clause 2.4 of AS 2890.6.

6.2.4. Other Design Aspects

- A 2.5 metre by 2.0 metre visual splay is provided on the exit sides of the driveway at the property boundary, in accordance with Figure 3.3 of AS 2890.1.
- All bicycle parking spaces are provided as Security Level B facilities, in accordance with AS 2890.3.
- All motorcycle spaces are provided in accordance with Clause 2.4.7 of AS 2890.1.

- All residential car parking spaces will be allocated to particular on-site residents and accordingly, there would never be an instance when a resident would enter the car park and not be able to park within their designated parking space. This on-site management measure negates the need for a turning bay within the basement.

In summary, the internal parking arrangements have been designed in accordance with AS 2890.1, AS 2890.3 and AS 2890.6. Any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

6.3. Traffic Signal System

Traffic flow at the vehicle access and along the vehicular ramp will be managed using traffic signals. As shown by the architectural drawings included in **Appendix A**, traffic signals will be provided at the following locations:

- A traffic signal will be provided at the vehicle access facing inbound motorist in the waiting bay.
- Traffic signals will be provided within each basement level, facing outbound motorists in the waiting bays.

The traffic signal provided at the vehicle access would be configured in a 'passive green' state such that vehicles entering the site would always be given a green signal on arrival. This will ensure that entering motorists would generally not experience any delays, minimising the potential for any on-street queuing to occur. Conversely, the signals provided in the car park would be in a 'passive red' state.

The traffic signals will remain in the above state at all times and would only change in the event that a driver sought to exit the site from the car park. In this instance, the following would occur:

Step 1: The exiting driver would exit their parking space and manoeuvre into a waiting bay located on the basement levels, which will be fitted with a sensor / loop detector. Upon manoeuvring into the waiting bay, the car would be detected and trigger the traffic signal at the vehicle access to a 'red' state, with no change to the traffic signals in the car park. Accordingly, at this time, all traffic signals would be 'red'.

Step 2: After a safety delay period of approximately 30 seconds, the traffic signals in the car park would change to 'green' and remain in this state for a period of approximately 60 seconds whilst the driver exits the site. During this period the signal at the access would remain 'red'.

Step 3: The signals in the car park would then revert to 'red', with no change to the traffic signal at the access which would remain 'red'. Accordingly, at this time, all traffic signals would be 'red'.

Step 4: After a safety delay period of approximately 60 seconds, the signals would revert to their passive state whereby the signal at the access would change to 'green' and the signals in the car park would remain 'red'. The signals would remain in this passive state until a motorist seeks to exit the site and at such time, the signals would again follow Steps 1-4.

The proposed traffic signal system is considered acceptable for the management of the vehicle access and the basement level. It is also common practice for small-moderate scale developments such as that proposed which are provided with one-lane, two-way ramps and generate minimal and tidal traffic volumes during peak periods.

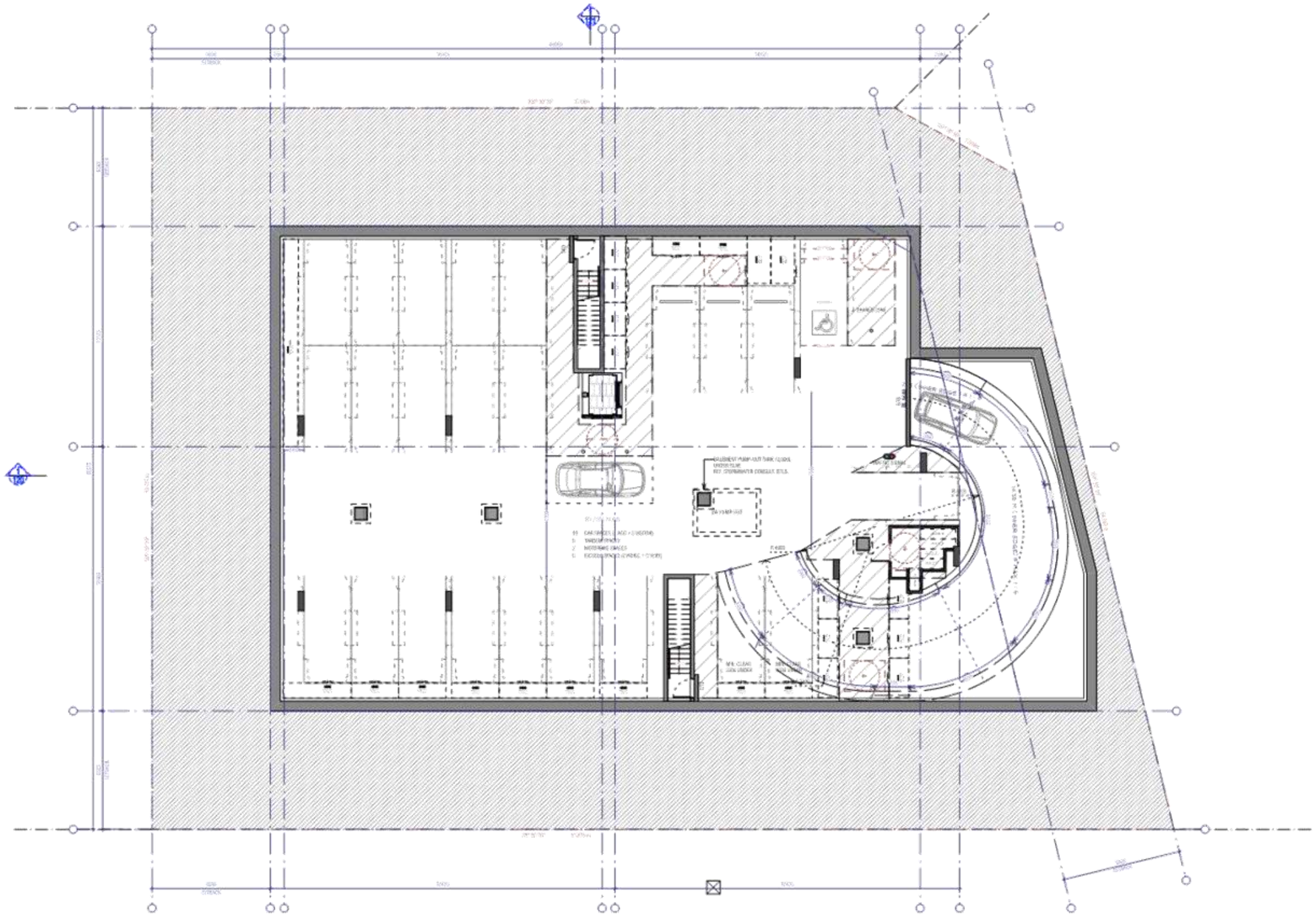
7. Conclusions

In summary:

- PDC Consultants has been commissioned by the Client, Obaid Investment Pty Ltd to undertake a traffic impact assessment of a DA relating to a proposed ARH development at 11–15 Woolnough Place, Cartwright. The DA proposes the demolition of all existing buildings and construction of a four-storey residential development with the following characteristics:
    - Nine ARH units, which include 3 one-bedroom and 6 two-bedroom units.
    - 22 Non-ARH Residential Flat Building units, which include 1 studio, 7 one-bedroom, 12 two-bedrooms, and 2 three-bedrooms
    - Basement level parking accommodating a total of 41 car parking spaces.
    - 6.3 metre entry and exit driveway onto Hoxton Park Road.
- The traffic generation assessment confirms that the development will generate a net increase in traffic generation of 11 vehicle trips / hour during the weekday AM and PM peak periods. This equates to one additional vehicle trip every five minutes and thirty seconds which will have negligible impacts on the performance of the external road network and accordingly, no external improvements will be required to facilitate the development. The traffic impacts of the proposed development are therefore considered acceptable.
- The development requires 43 car parking spaces under the SEPP Housing 2021 and Councils DCP. In response, the development provides a total of 41 car parking spaces representing a numeric shortfall of two car spaces. The shortfall is made up of visitor parking, such that this shortfall is considered negligible,
- Visitor car parking demand typically peaks on weekday evenings and weekends and is generally sporadic. The provision for a reduce on-site provision of visitor parking is unlikely to adversely impact neighbouring properties or traffic flow in the area. As an example, the frontage on Hoxton Park Road is approximately 45 metres (account for the proposed driveway) such that up to seven on-street car spaces could be utilised before extending across neighbouring properties. The use of up to five to six space on-street spaces for visitors (as required under the DCP) will be wholly contained within the frontage length and not adversely impact the residential amenity of neighbouring sites.
- The proposed access and internal parking arrangements comply with the relevant requirements of AS 2890.1, AS 2890.3 and AS 2890.6. Any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

It is therefore concluded that the proposed development is supportable on traffic planning grounds.

Appendix A



1 **PLAN - BASEMENT 2**
1:200 @ A3

WIP - 09/05/24

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issued to council			

notes
all work to be carried out in accordance with bca, as codes and conditions of council. measurements in mm's unless noted. use figured dimensions. do not scale drawings. site measure before starting work. refer all discrepancies to the architect.

environa studio
224 riley st surry hills 2010
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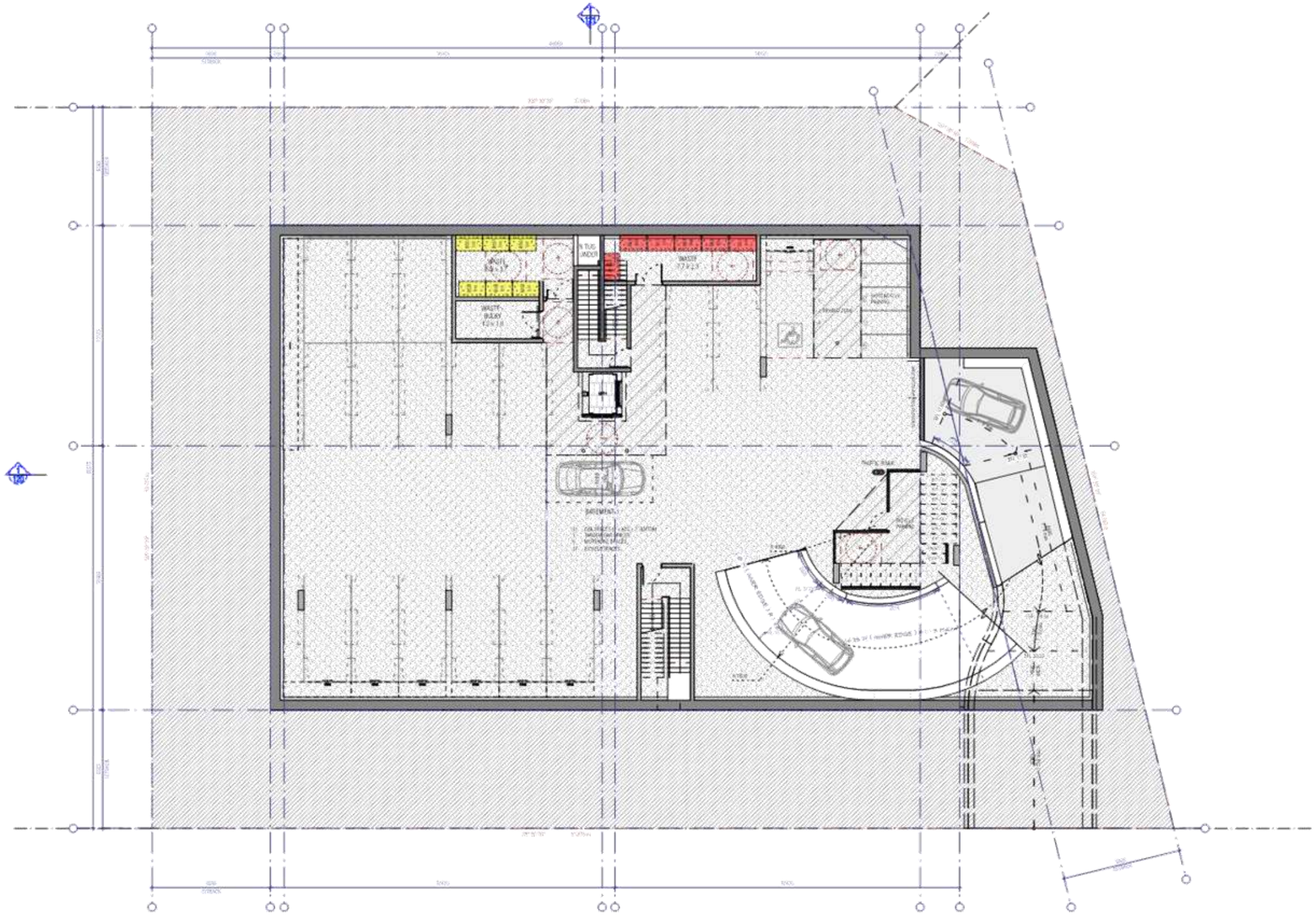
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - BASEMENT 2	DA	1088	101
client	**at**	**drawing**	**chkd / drwn**	**date**	**revision**
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	09/05/24	B



1 **PLAN - BASEMENT 1**
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rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	27.07.23	Council, Client, Consultants
B	27.09.23	issued to council			
C	16.05.24	RFI issue to council			

notes
all work to be carried out in accordance with bca, as codes and conditions of council. measurements in mm's unless noted. use figured dimensions. do not scale drawings. site measure before starting work. refer all discrepancies to the architect.

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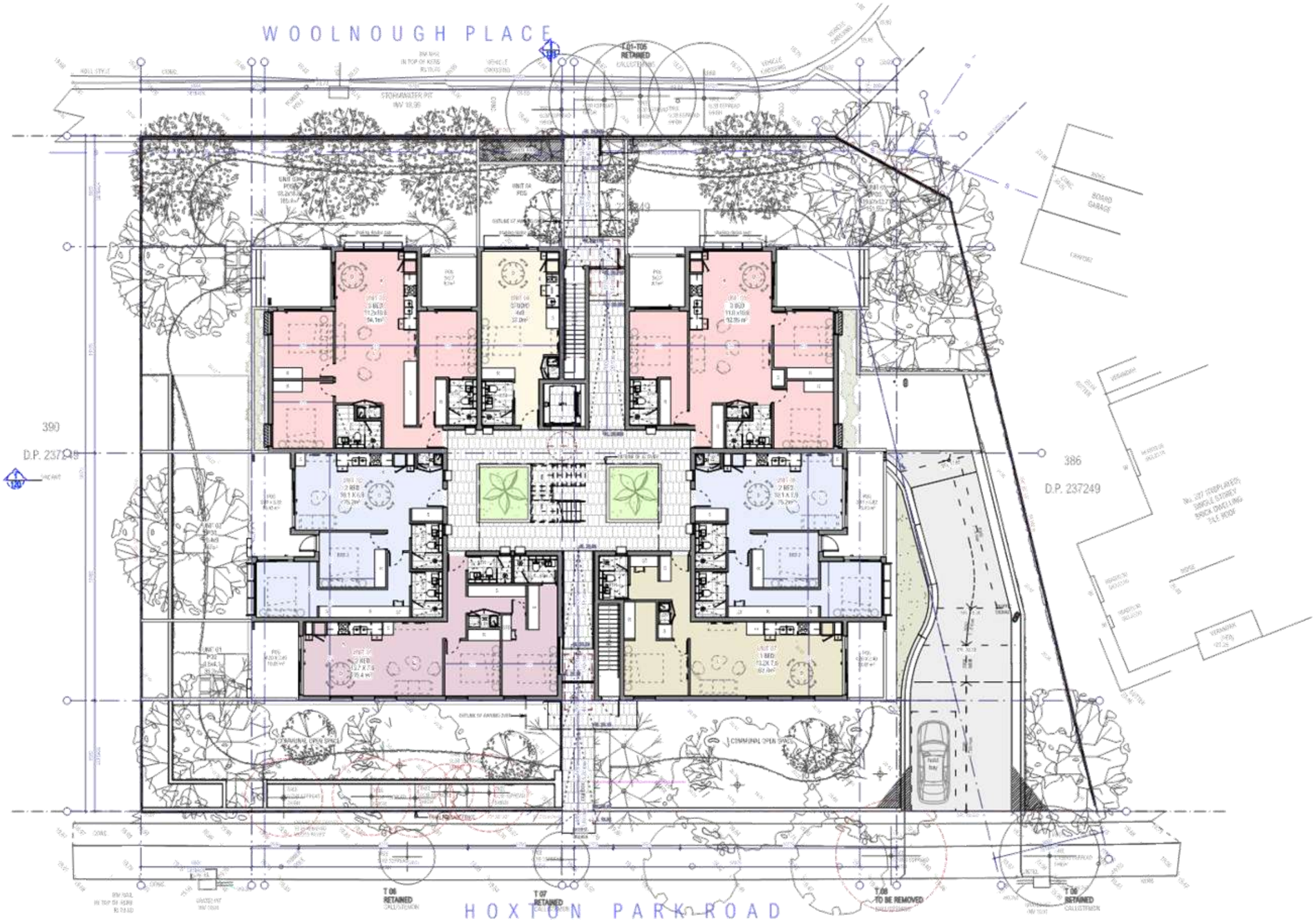
project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - BASEMENT 1	DA	1088	102
for/client	at	drawing	chkd / dwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	22/05/24	C



1 **PLAN - LEVEL 1**
1:200 @ A3

rev	date	amendment	issue	date	issue to
A	07.09.23	issued for information	1	22.07.23	Council, Client, Consultants
B	27.03.24	issued to council			
C	16.05.24	RFI Issue to council			

notes
all work to be carried out in accordance with bca, as codes and conditions of council. measurements in mm's unless noted. use figured dimensions. do not scale drawings. site measure before starting work. refer all discrepancies to the architect.

environa studio
224 riley st surry hills 2010
t: 02 9211 0000
w: www.environastudio.com.au
architects registration number 6239

project	location	drawing	stage	project no.	dwg no.
RESIDENTIAL FLAT BUILDING	11-15 WOOLNOUGH PLACE	PLAN - LEVEL 1	DA	1088	103
for/client	at	drawing	chkd / drwn	date	revision
MR HARITH OBAID	CARTWRIGHT	GENERAL ARRANGEMENT PLANS	TW / TV	22/05/24	C

Appendix B

No.	Date	Description

Swept Path Key
- Vehicle Wheel Path
- Vehicle Body Envelope
- 300mm Vehicle Clearance

North

Drawing Prepared By

PDC Consultants
Level 14, 100 William Street
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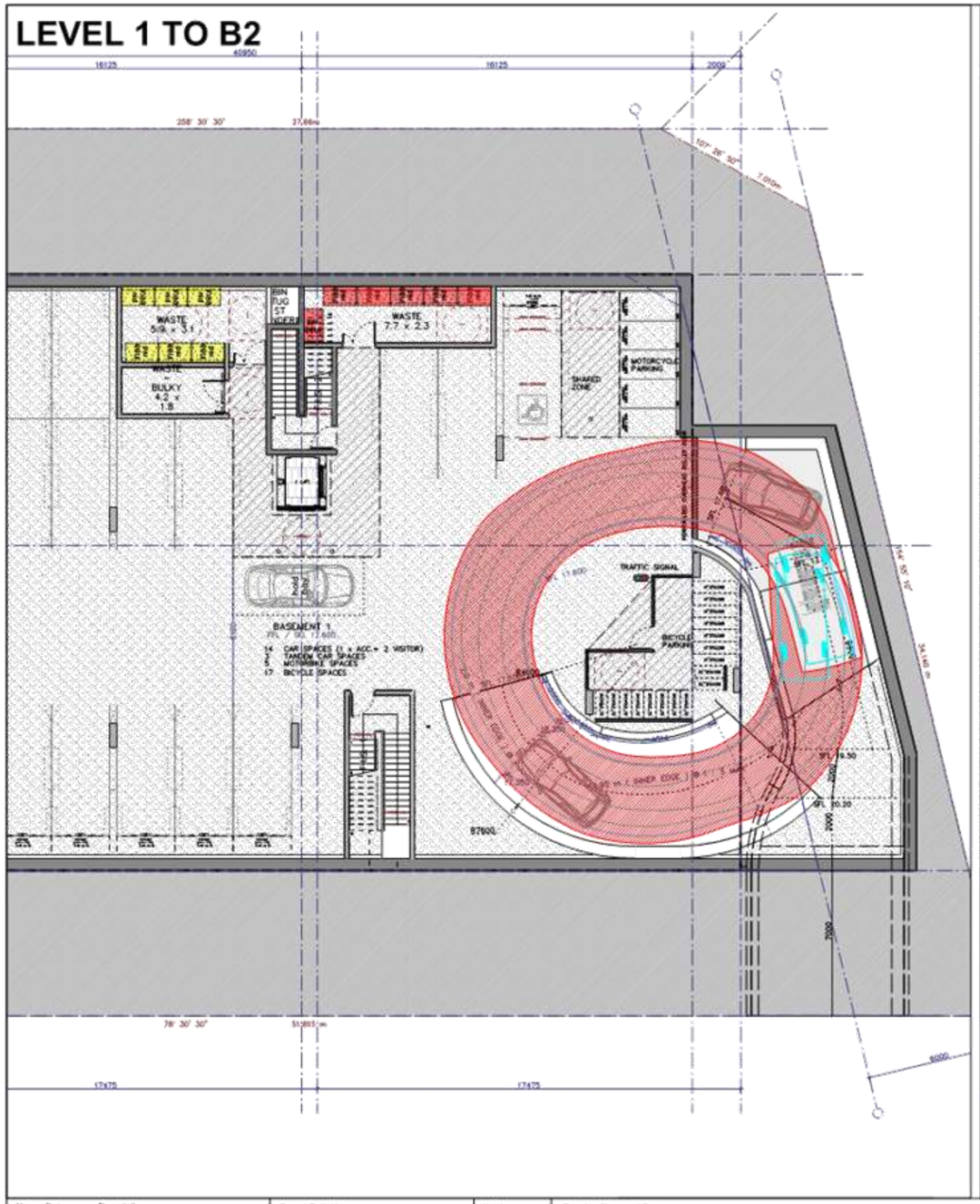
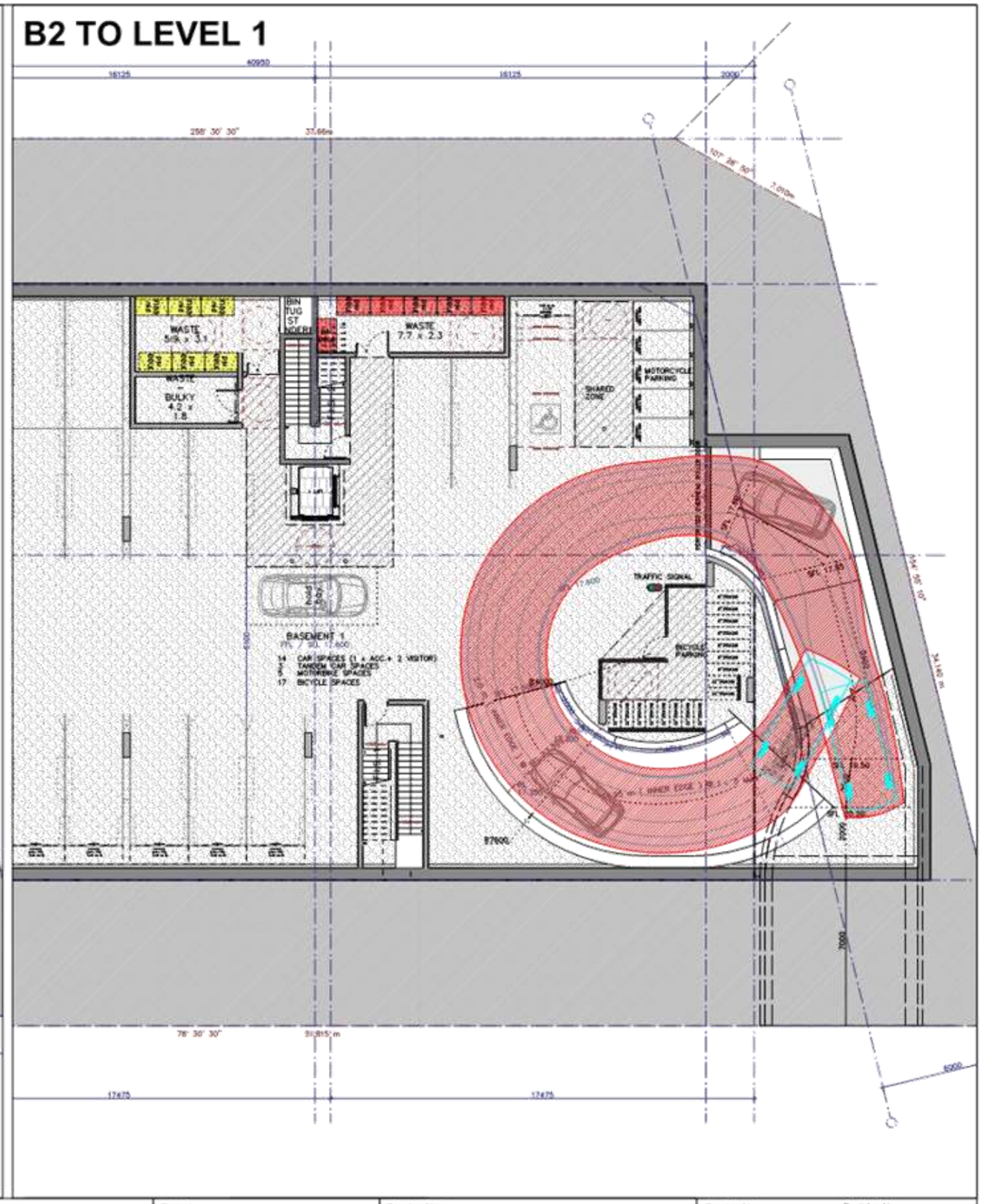
Project 11-15 Woolnough Place, Cartwright	Drawing Title Level 1 Plan B99 & B85 Swept Path Analysis Basement Ramp Entry & Exit Movements	Drawing No. SK.001	Revision No. -
		Drawn By JW	Date 23/05/2024
Project No 0743	Sheet Status NOT FOR CONSTRUCTION	Scale 1:200 @ A3	





No.	Date	Description

Swept Path Key
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North

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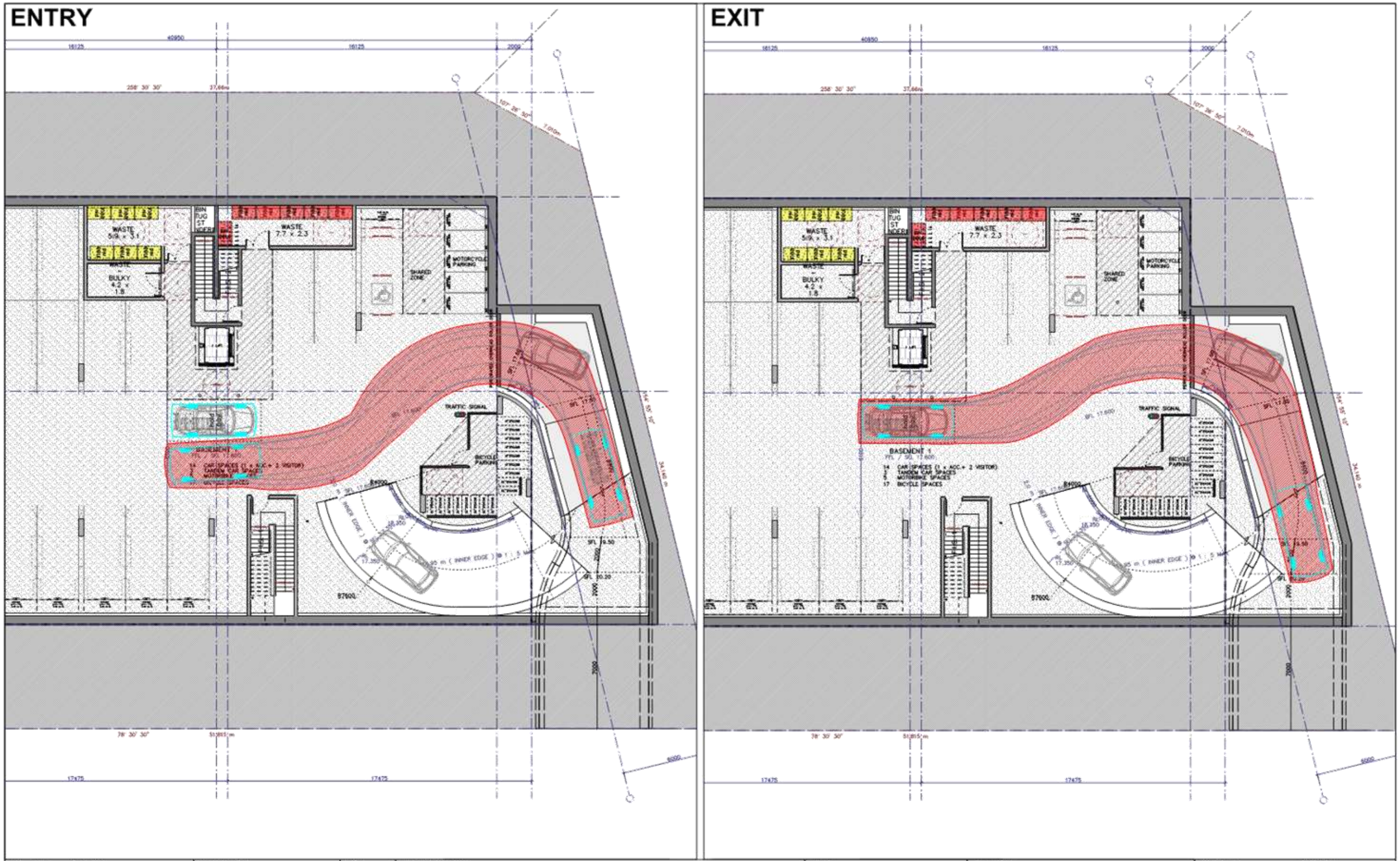
Project 11-15 Woolnough Place, Cartwright	Drawing Title Basement 01 Plan B99 Swept Path Analysis Vehicle Circulation Between Basement Levels	Drawing No. SK.002	Revision No. -
		Drawn By JW	Date 23/05/2024
Project No 0743	Sheet Status NOT FOR CONSTRUCTION	Scale 1:200 @ A3	



No.	Date	Description

Swept Path Key
- Vehicle Wheel Path
- Vehicle Body Envelope
- 300mm Vehicle Clearance

North

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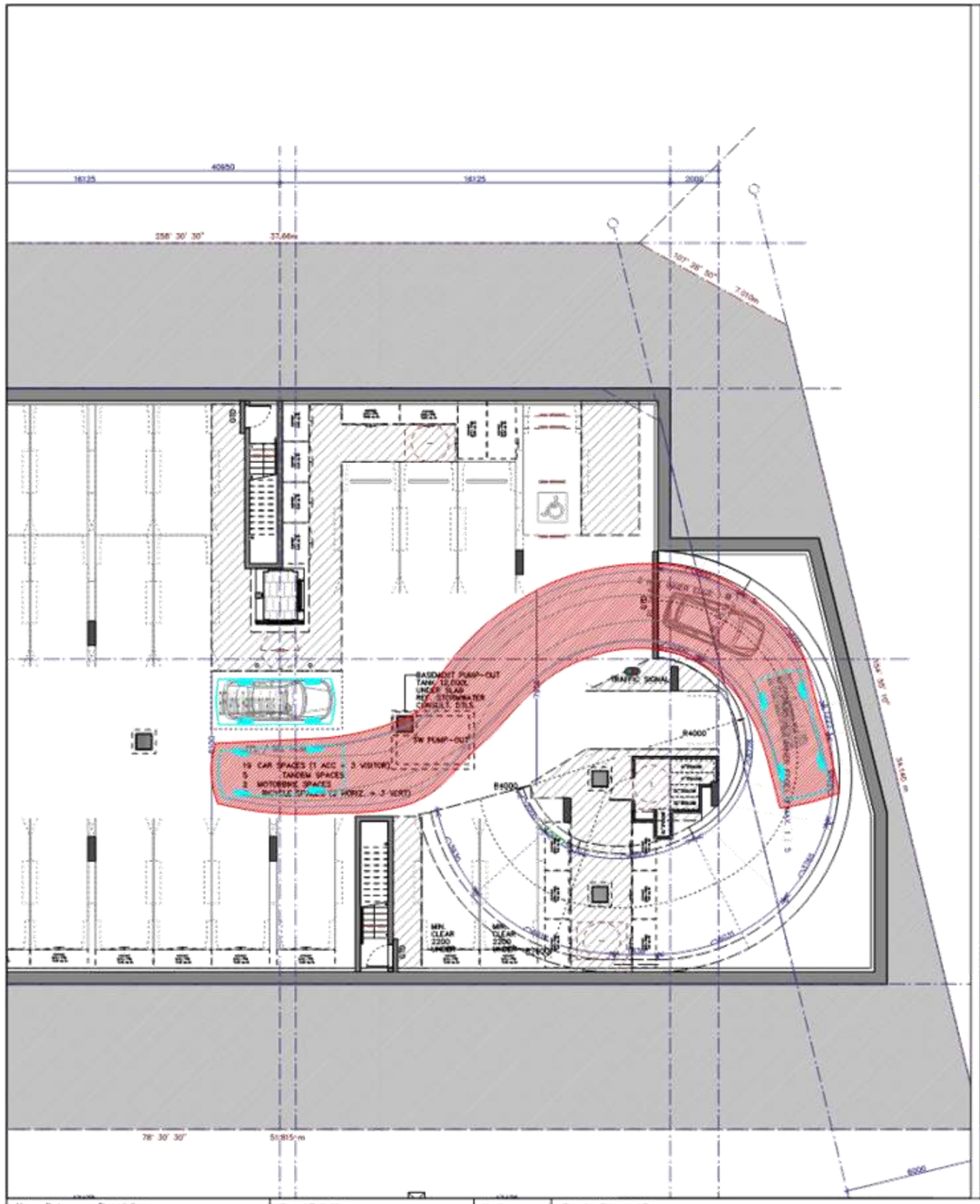
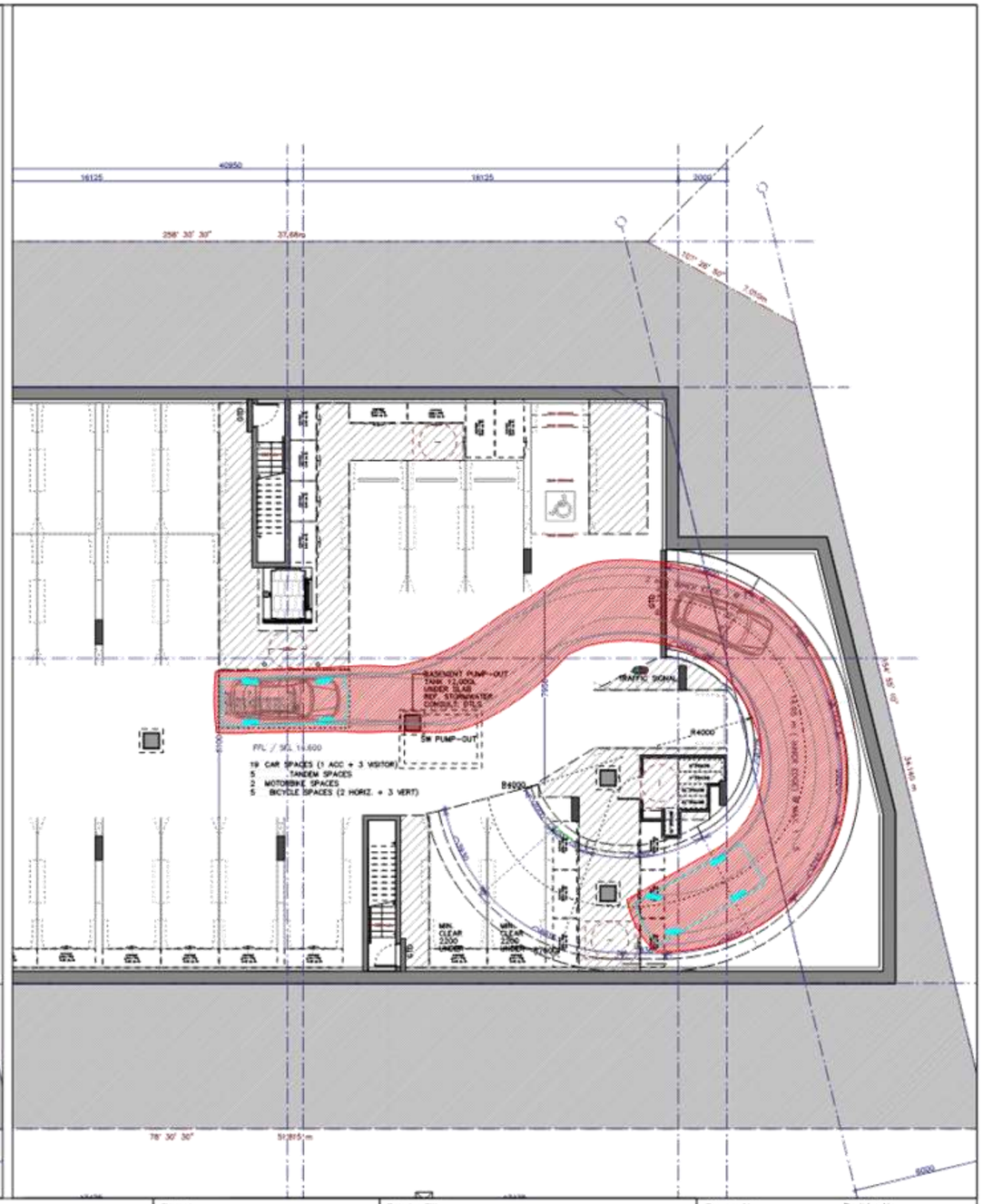
Project 11-15 Woolnough Place, Cartwright	Drawing Title Basement 01 Plan B85 & B99 Swept Path Analysis Basement 01 Entry & Exit Movements	Drawing No. SK.003	Revision No. -
		Drawn By JW	Date 23/05/2024
Project No 0743	Sheet Status NOT FOR CONSTRUCTION	Scale 1:200 @ A3	





No.	Date	Description

Swept Path Key
- Vehicle Wheel Path
- Vehicle Body Envelope
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Project 11-15 Woolnough Place, Cartwright	Drawing Title Basement 02 Plan B85 & B99 Swept Path Analysis Basement 02 Entry & Exit Movements	Drawing No. SK.004	Revision No. -
		Drawn By JW	Date 23/05/2024
Project No 0743	Sheet Status NOT FOR CONSTRUCTION	Scale 1:200 @ A3	

11 - 15 WOOLNOUGH PLACE, CARTWRIGHT
DA ACOUSTIC REPORT
FOR
MR HARITH OBAID
C/- ENVIRONA STUDIO

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Job No	Ref.	Issue	Date	Prepared	Checked	Authorised
2276/6	23344	B	14/09/2023	Joel West	Warwick West	Warwick West

11 - 15 WOOLNOUGH PLACE, CARTWRIGHT
DA ACOUSTIC REPORT
FOR
MR HARITH OBAID
C/- ENVIRONA STUDIO

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11 - 15 WOOLNOUGH PLACE, CARTWRIGHT
DA ACOUSTIC REPORT
FOR
MR HARITH OBAID
C/- ENVIRONA STUDIO

1.PROJECT DESCRIPTION

1.1.REPORT TO SUPPORT DEVELOPMENT APPLICATION

This Acoustic Report has been prepared for the Development Application for the development of 11 - 15 Woolnough Place, Cartwright.

The report is aimed at addressing noise from the district and noise created at site.

As can be seen within this report the project is expected to meet relevant council requirements without difficulty.

1.2.REFERENCE DOCUMENTATION

The report is based on the details given in the following set of documents:

1. Environa Studio Architectural Drawings

1.3.DESCRIPTION OF THE SITE

The proposed site consists of an existing heritage listed building which is proposed to have minor interior alterations and new rear garage and studio.

Photo of site.

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The existing site and surrounding area can be seen in the Google Aerial Photo below:

Google Aerial Photograph ,

1.4.CLOSEST SENSITIVE RECEIVERS

The closest sensitive receivers to this site are the buildings immediately adjacent to the site as identified below and shown on the Google aerial photo above.

The neighbouring closest sensitive receiver has been indentified below:

- Location #1, Residential properties adjacent at 17 Woolnough Place.
- Location #2, Residential properties adjacent at 26 Woolnough Place.
- Location #3, Residential properties opposite at 235 Hoxton Park Rd.

1.5.DISTRICT BACKGROUND NOISE

District background noise in the immediate location of the proposed site is dominated by road traffic noise & commercial noise.

Other noise in the area is mechanical services noise in the form of air conditioning and ventilation fans serving the surrounding areas.

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1.6.TRAFFIC NOISE AT PROJECT LOCATON

The most dominant background noise for this project is road traffic noise from local roads.

1.7.PROPOSED HOURS OF OPERATION

As the proposed use is a living studio the proposed hours of operation would be constant.

2.NOISE CRITERIA

2.1.LIVERPOOL CITY COUNCIL DCP

Within the Liverpool City Council DCP the internal noise criteria has not been quantified. Due to this we have nominated the internal noise criteria in accordance with AS2107 & SEPP requirements due to the proximity to Hoxton Park Road.

Noise Criteria as follows:

- *Sleeping Area (22:00-07:00) - 35dB*
- *Living Areas (24 Hours) - 40dB*

2.2.NOISE POLICY FOR INDUSTRY

The Noise Policy For Industry 2017 documents the requirements for determining the Noise Trigger Level and Sleep Disturbance.

2.3.STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT AND INFRASTRUCTURE) 2021

The State Environmental Planning Policy 2021 under clause 2.120 states the following:

(1) This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—

(a) residential accommodation,

(b) a place of public worship,

(c) a hospital,

(d) an educational establishment or centre-based child care facility.

(2) Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.

(3) If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—

(a) in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,

(b) anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

2.4.STATE ENVIRONMENTAL PLANNING POLICY (EXEMPT AND COMPLYING DEVELOPMENT CODES) 2008

Subdivision 3 - Air Conditioning within the SEPP 2008 documents the acoustic criteria for Air Conditioning to be as follows;

(f1) be designed so as not to operate—

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(i) during peak time—at a noise level that exceeds 5 dB(A) above the ambient background noise level measured at any property boundary, or

(ii) during off peak time—at a noise level that is audible in habitable rooms of adjoining residences, and

2.5.CODE AS2107

The indoor mechanical services sound levels nominated in the code AS 2107, 2000, titled 'Acoustics, Recommended design sound levels and reverberation times for building interiors' is used for the areas not covered by the City's DCP as set out in the Table below:

Table 1; Recommended internal design sound levels L_{Aeq}-dB(A)

	AS 2107 Satisfactory ❶	**AS 2107 Maximum ❷**	**Selected Req.**
- Bedrooms	30 dB(A)	40 dB(A)	**35 ❸**
- Living Areas	35 dB(A)	45 dB(A)	**40 ❸**
- Toilets & Bathrooms, Hallways	45	55	**55**
- Car park	55	65	**65**

❶ *AS 2107 Satisfactory; regarded as appropriate in areas of major roads*

❷ *AS 2107 Maximum; regarded as level where most people become dissatisfied*

❸ *DCP Controls 35 dB(A) @ 1 Hour reputable maximum for the night period with windows closed*

3.NOISE MEASUREMENTS

3.1.DISTRICT BACKGROUND NOISE MONITORING LOCATION AND TIME

The fifteen minute continuous L_{Aeq}, L_{A90}, and L_{A1} descriptor background noise monitoring was carried out at the rear of site between 11:30 AM 18/08/202. and 25/08/2023 11:15 AM.

The log of the results of background noise monitoring for the roof are shown in Appendix 1. Raw data is available upon request.

3.1.1.Monitoring, Calibration and Calculation Procedures

In accordance with the procedures laid out in AS 1055.1 field calibration check of the environmental noise logger was carried out immediately prior to and at completion of monitoring sessions and instrument was found to be within the specified limits.

A microphone wind-guard was in place for the full duration of the monitoring and so no correction factor required.

The 15 minute L_{Aeq} and L_{A90}, log results were down loaded and single figure L_{A90} representative values calculated using Microsoft Excel software in accordance with the procedures given in the INP for the day(7AM to 6 PM), the evening period, (6 PM to 10 PM) and the night time period, (10PM to 7 AM) and single figure L_{Aeq} over the days monitored.

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3.1.2.Environmental Conditions During Monitoring

Temperatures on site were between 10 to 30°C for the logging period.

Metrological data including temperature, barometric pressure, wind speed at site were not outside the recommendations of AS 1055 and INP and so the L_{A90} measurements are considered valid

The resulting $L_{A\,90}$ log averages over the period monitored was then used to determine the Intrusiveness Criteria. The resulting $L_{A\,Eq}$ log averages over the period monitored was then calculated and used to determine the Amenity Criteria. The Project Specific Noise Level for the site was determined as the lesser of the Intrusiveness and Amenity Criteria.

4.NOISE POLICY FOR INDUSTRY

4.1.EXTERNAL NOISE LEVEL DETERMINATION IN ACCORDANCE WITH NOISE POLICY FOR INDUSTRY 2017 - NOISE TRIGGER LEVEL

4.1.1.Single Figure Results

The Noise Policy for Industry 2017(NPFI) requires:

- Intrusiveness Criteria be determined by calculating the Rated Background Levels **(RBL)** over the days monitored. We used the 5 days of 15 minute noise logging at site found in Appendix 1 to determine the background, the LA90 background noise logged result reflected a reliable background level. Being measured adjacent to Closest Sensitive Receiver #1.
- The Project Trigger Noise Level or external noise criteria for the project is determined as the lesser of the Intrusiveness and Amenity Criteria for the site for each period of the day.

Table 2; Noise Monitoring Results - Front of Site

Period times	**Day (0700 to 1800)**	**Evening (1800 to 2200)**	**Night (2200 to 0700)**
RBL $L_{A90\ 15\ min}$-❶	55.2	53.4	44.7
Intrusiveness Criteria $L_{AEq\ 15\ min}$ RBL + 5	60	58	50
Project Amenity Noise Level at Closest Sensitive receivers $L_{AEq\ 15\ min,\ (Suburban}$ Table 2.2 NPFI)	60	50	45
Selected Project Trigger Level	60	50	45
Project Trigger adjacent to closest residence	60	50	45
$L_{AEq\ 15\ min,}$ day period Local Road Traffic	60-5+3=58❷	50-5+3=48❷	45-5+3=43❷
Industrial Noise Trigger Level(PSNL) $L_{AEq\ 15\ min}$ =stricter of Intrusiveness and Amenity Criteria $_R$	**58**	**48**	**43**

❶ *RBL at Boundary LA90 T=15 min from Appendix 1 results*

❷ *Site Noise, Additional 3 dB added to LAEq T=15 min measured value from Appendix 1 results*

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4.1.2.Project Trigger Noise Level for this Project

The PTNL based on unattended noise logging over the period is therefore taken as **58 dB(A**) in the day period, **48 dB(A)** in the evening period and **43 dB(A)** in the night period which are required to be measured as a $L_{AEq,\ t=15\ min}$ descriptor.

4.2.SLEEP DISTURBANCE

The noise policy for industry under section 2.5 - Maximum Noise Level Event Assessment states the following:

The potential for sleep disturbance from maximum noise level events from premises during the night-time period needs to be considered. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.
Where the subject development/premises night-time noise levels at a residential location exceed:

- $L_{Aeq,15min}$ *40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or*
- L_{AFmax} *52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,*

As the internal calculated noise levels are within the 35dB(A) the criteria is met.

5.DETERMINATION OF CONSTRUCTION REQUIREMENTS

5.1.CALCULATIONS OF BUILDING ATTENUATION WORKS USING AS 3671

The calculation method to determine the attenuation of facade elements is given in AS 3671; 1989 which uses the 9 hour log average for the night period as the basis for design.

Table 3: Summary of Traffic Noise For Each Facade

Road Traffic Noise Monitored $L_{Aeq,\ -}$	Day $L_{Aeq,\ T=15hr}$	Night $L_{Aeq,\ T=9hr}$
Road Traffic Noise $L_{Aeq,\ South\ Facade}$	62.9 dB(A)	61.3dB(A)
Road Traffic Noise $L_{Aeq,\ East\ \&\ West\ Facade\ South}$ (Calculated)	57.3dB(A)	55.7dB(A)
Road Traffic Noise $L_{Aeq,\ East\ \&\ West\ Facade\ North}$ (Calculated)	55dB(A)	53.4dB(A)

5.2.REQUIRED TRAFFIC NOISE REDUCTION

5.2.1.Construction Category

Code AS 3671 defines Road Traffic Noise Reduction(TNR) as the difference between the appropriate $L_{Aeq,\ T}$ monitored and the appropriate internal or "receiving" room background level L_{Arec} and values for this site are shown in the Table below:

Table 4; Recommended background design sound levels L_{Aeq}-dB(A)

Face, Location & Use of Space in the Building	$L_{Aeq,\ T}$ ❶	L_{Arec} ❷	TNR (❶-❷)	Construction Category ❸
Bedroom South Facade	61.3 dB(A)	35 dB(A)	**26**	Category 3
Habitable South Facade	61.3 dB(A)	40 dB(A)	**21**	Category 2
Bedroom Side South Facade	55.7 dB(A)	35 dB(A)	**21**	Category 2
Habitable Side South Facade	55.7 dB(A)	40 dB(A)	**16**	Category 2

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Bedroom Side North Facade	53.4 dB(A)	35 dB(A)	**18**	Category 2
Habitable Side North Facade	53.4 dB(A)	40 dB(A)	**13**	Category 2

❶ *Night period repeatable maximum LAeq value*

❷ *Recommended internal level from DCP*

❸ *Construction 1, 2, & 3 Categories defined in AS 3671 as, Category 1 is TRN=< 10, Category 2 is TRN>10 ,<=25 and Category 3 TNR >25, <=35, Category 4 > 36*

5.3.SEPP 2007 ASSESSMENT

As the site is located on a >20,000 daily vehicle road an assessment of vehicle noise must be carried out. SEPP 2007 requires the criteria of 35db(A) at any time, therefore the average over 9 Hrs is not applicable. Instead we have used Maximum 1Hr measurements.

Table 5: Summary of Traffic Noise For Each Facade

Road Traffic Noise Monitored $L_{Aeq,\ -}$	**Day $L_{Aeq,\ T=1hr\ Max}$**	**Night $L_{Aeq,\ T=1hr\ Max}$**
Road Traffic Noise $L_{Aeq,\ South\ Facade}$	**69 dB(A)**	**69dB(A)**
Road Traffic Noise $L_{Aeq,\ East\ \&\ West\ Facade\ South}$ (Calculated)	**63dB(A)**	**63dB(A)**
Road Traffic Noise $L_{Aeq,\ East\ \&\ West\ Facade\ North}$ (Calculated)	**61dB(A)**	**61dB(A)**

5.3.1.Construction Category

Code AS 3671 defines Road Traffic Noise Reduction(TNR) as the difference between the appropriate $L_{Aeq,\ T}$ monitored and the appropriate internal or "receiving" room background level L_{Arec} and values for this site are shown in the Table below:

Table 6; Recommended background design sound levels L_{Aeq}-dB(A)

Face, Location & Use of Space in the Building	$L_{Aeq,\ T}$ ❶	L_{Arec} ❷	**TNR (❶-❷)**	**Construction Category ❸**
Bedroom South Facade	69 dB(A)	35 dB(A)	**34**	Category 3
Habitable South Facade	69 dB(A)	40 dB(A)	**29**	Category 3
Bedroom Side South Facade	63 dB(A)	35 dB(A)	**28**	Category 3
Habitable Side South Facade	63 dB(A)	40 dB(A)	**23**	Category 2
Bedroom Side North Facade	61 dB(A)	35 dB(A)	**26**	Category 3
Habitable Side North Facade	61 dB(A)	40 dB(A)	**21**	Category 2
Bedroom North Facade	61 dB(A)	35 dB(A)	**26**	Category 3
Habitable North Facade	61 dB(A)	40 dB(A)	**21**	Category 2

❶ *Night period repeatable maximum LAeq value*

❷ *Recommended internal level from DCP*

❸ *Construction 1, 2, & 3 Categories defined in AS 3671 as, Category 1 is TRN=< 10, Category 2 is TRN>10 ,<=25 and Category 3 TNR >25, <=35, Category 4 > 36*

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5.4.EXTERNAL BUILDING DESIGN REQUIREMENTS

The construction requirements to satisfy the Acoustic Criteria, determined according to the methods set out in AS 3671 are shown in the table below. We note that the greater TNR per each facade has been selected as the criteria as each room is a combined bedroom/habitable room and therefore the greater TNR is required:

Table 7; Calculated Traffic Noise Wall Attenuation for each Facade

Face, Location all levels & Use of Space in the Building	TNR	*TNAc Requirement*	*Rw equivalent*
Bedroom South Facade	**34**	37	40
Habitable South Facade	**29**	24	27
Bedroom Side South Facade	**28**	28	31
Habitable Side South Facade	**23**	20	23
Bedroom Side North Facade	**26**	29	32
Habitable Side North Facade	**21**	16	19
Bedroom North Facade	**26**	26	29
Habitable North Facade	**21**	16	19

Table 8; Calculated Traffic Noise Window& Sliding Door Attenuation

Face, Location all levels & Use of Space in the Building	TNR	*TNAc Requirement*	*Rw equivalent*
Bedroom South Facade - Window	**34**	27	30
Habitable South Facade - Window	**29**	26	29
Bedroom Side South Facade - Window & Sliding Door	**28**	26	29
Habitable Side South Facade - Window & Sliding Door	**23**	20	23
Bedroom Side North Facade - Window	**26**	20	23
Bedroom Side North Facade - Sliding Door	**26**	29	32
Habitable Side North Facade	**21**	18	21
Bedroom North Facade - Sliding Door	**26**	29	32
Habitable North Facade - Window	**21**	18	21

Note: Attenuation results must be recalculated once exact final window dimensions are confirmed typically during CC stage if window sizes vary from DA drawings.

5.5.EXAMPLES OF COMPLYING CONSTRUCTION

Using the above calculated required attenuation figures we have nominated possible complying construction combinations. We note that the below combinations have been prepared as an example and the project is not required to use the exact nominated

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combinations. The only criteria for construction combinations is the calculated Rw attenuation addressed above. Acoustic data below has been sourced from AWS Whitepaper publication.

Table 9; Example Complying Combinations

Item	Combination	Combination Attenuation	Required Attenuation
Sliding Door	6.38Lam ATF792,793	~30-32Rw	32Rw
Sliding Door	10.38Lam ATF794	~35Rw	32Rw
Sliding Door	6.5Vlam Hush 4867-19	~32Rw	32Rw
Sliding Window	6.38Lam ATF813	~30-32Rw	30Rw
Walls	CSR5026(a)	41Rw	40Rw
Roof	CSR 862 (a)	37Rw	34Rw

We recommend that during the construction stage our acoustic report is provided to the window manufacturer to ensure that the installed products meet the calculated attenuation.

5.6.MECHANICAL SUPPLY OF OUTSIDE AIR

In the event that the Project Trigger Noise Level calculated internally meets the councils DCP requirements then the use of natural openings for the supply of outside air is permitted.

The assessment has been carried out in the below table:

Table 10; Calculated Internal Noise Levels

Room	Internal Noise Level Day/ Night	Criteria	Compliance
Bedroom	51-59dB(A)	35 dB(A) Night	No
Habitable Room	51-59dB(A)	40 dB(A) 24 Hours	No

Based on the above we recommend that mechanical supply of outside air is provided due to the requirement of external windows to be shut.

6.NOISE FROM PROPOSED DEVELOPMENT

6.1.SOURCES OF NOISE FROM SITE

6.1.1.Mechanical Services Noise

Mechanical Services that may be generated at site will include the following:

- Bathroom exhaust
- Air Conditioning with outdoor air /ventilation

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6.2.MECHANICAL SERVICES NOISE LEVELS

6.2.1.Internal Noise levels from Building Plant

The DA drawings do not include any details of the proposed mechanical Services proposed to be installed. Therefore the internal noise levels produced by the mechanical services plant on site that includes the bathroom exhaust fans, air conditioning units /ventilation fans shall comply with the levels given for the nominated spaces as listed in Table 1.

6.2.2.External Noise levels from Building Plant

The DA drawings do not include any details of the proposed mechanical Services to be installed, therefore we are unable to evaluate this equipment to determine compliance. In order to meet compliance the external noise levels produced by the mechanical services plant on site which includes the bathroom exhaust fans, air conditioning units /ventilation fans must comply with the Project Trigger Noise level requirement for the building which is given in table 2.

6.2.3.Noise Levels From Domestic Air Conditioning Systems

The DA Drawings do not detail air conditioning systems serving each unit so specific acoustic design cannot be given for individual plant. We recommend that the mechanical engineer is provided with this acoustic report to ensure the design can be carried out to meet requirements set out by this acoustic report for the SEPP 2008.

7. FINAL COMMENTS AND RECOMMENDATIONS

7.1.FINAL COMMENTS

As can be seen above we expect this project to require potential Acoustic glazing due to the proximity of Hoxton Park Road, however we note that the calculated attenuation performance should be easily achievable.

We also note that due to the levels of background noise levels we expect mechanical supply of outside air to be required due to windows and sliding doors being closed to achieve internal noise criteria.

7.2.RECOMMENDATIONS

We recommend that post demolition monitoring is carried out on a vacant site to confirm and verify calculated distance attenuation noise levels without any physical obstructions.

End of Report

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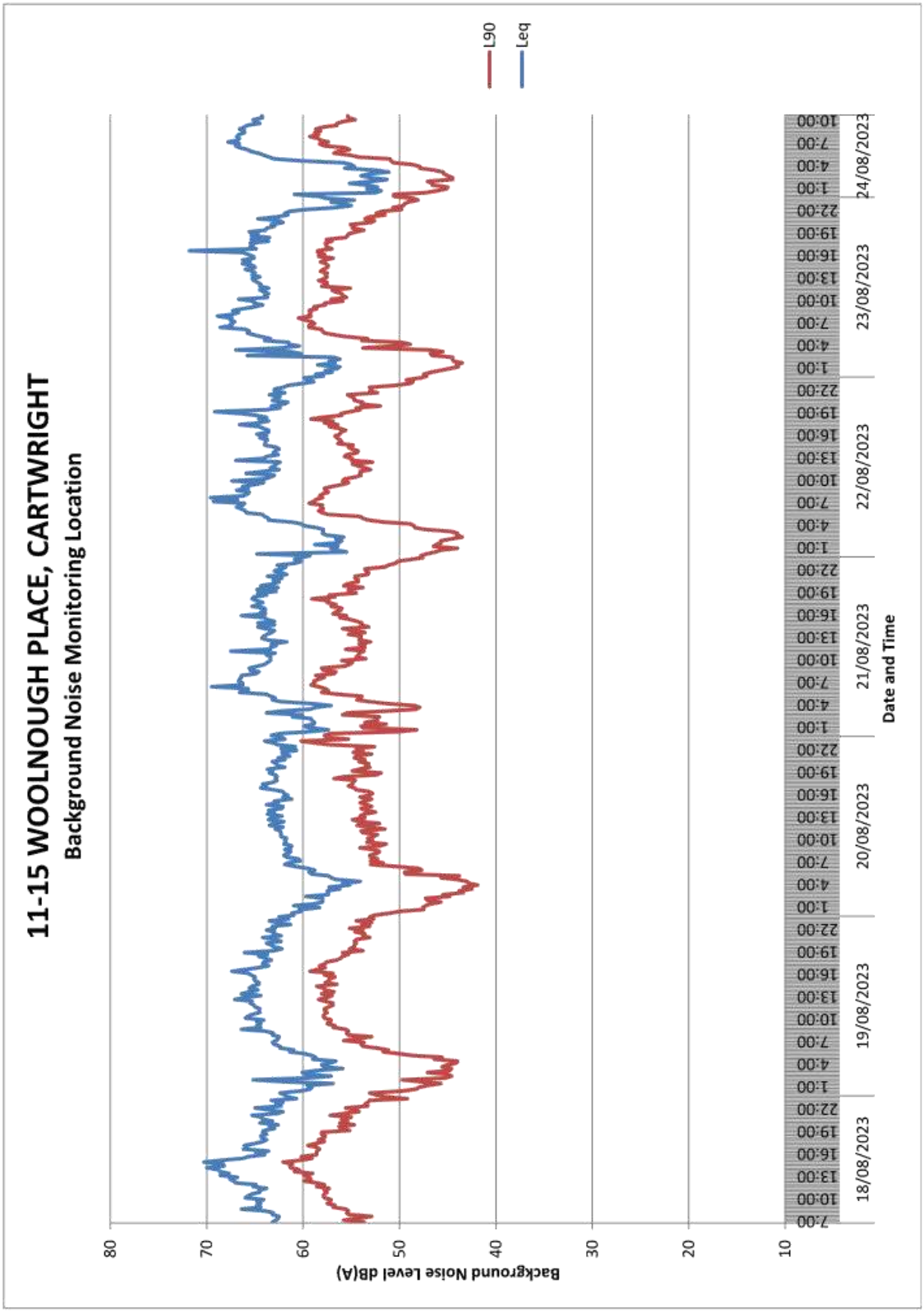
11-15 WOOLNOUGH PLACE, CARTWRIGHT
Background Noise Monitoring Location
L90
Leq
Background Noise Level dB(A)
80
70
60
50
40
30
20
10
Date and Time
18/08/2023
19/08/2023
20/08/2023
21/08/2023
22/08/2023
23/08/2023
24/08/2023

REDGUM Horticultural
Arboriculture & Horticulture Consultants

REPORT:

A): ARBORICULTURAL IMPACT ASSESSMENT

and

B). TREE MANAGEMENT PLAN
(Trees to be retained and protected)

11-15 Woolnough Place, Cartwright NSW

Prepared 27 April 2023
Our Ref. 8724

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1.0 PREFACE

Redgum Horticultural has prepared this report for Environa Studio (*the architect*), on behalf of Obeid Investment Pty Ltd *(the applicant)*, C/- 11-15 Woolnough Place, Cartwright NSW. Mr. Neville Shields *(the author)* attended 11-15 Woolnough Place, Cartwright NSW (*the site*), on 24 March 2023 and the trees and their growing environment were examined. The site is subject to a Development Application, this report and any works recommended herein that require approval from the consenting authority, forms part of that Development application. This report takes into consideration the trees within the site and within five metres of the common boundary affected by the development.

2.0 INTRODUCTION

The land is situated in the Liverpool City Council (*the Council)* Local Government Area (*LGA*) and the trees are protected under Councils' Local Environmental Plan (LEP) & Development Control Plan (DCP) 2008. The Council is the consenting authority for development works on the site. This report involves 9 trees (*the trees*), as indicated on Site Plan A - Survey of Subject Trees (Appendix C) and considers the removal of one (1) tree and the retention of eight (8) trees situated within the adjacent road reserves. The trees will be considered as 1 stand to encompass all trees within and immediately adjacent to the site, where appropriate, as marked on Appendix C, Survey of Subject Trees. ***Tree Protection Zone*** **(TPZ)** fences or works are marked on Appendix F, Trees to be Retained and Tree Protection Zones.

The site is comprised of three residential blocks where the existing structures are to be demolished and are to be replaced with a proposed residential development with basement parking. As part of the Landscape Plan where appropriate, the tree cover on the site will be enhanced by planting with advanced specimens/s of appropriate tree species for the space available above and below ground being soil volumes available and to prevent future conflict between trees and built structures.

The proposed building design and its configuration and infrastructure were arrived at prior to the undertaking of an arboricultural assessment of the trees on the site to determine their significance by Redgum Horticultural.

Setbacks for the new works and associated infrastructure should provide sufficient space to protect the existing growing environments both above and below ground for trees to be retained, and so that trees within the property and on adjoining properties will not be adversely affected. The proposed design has considered the spatial requirements for the trees to be retained based on the information available or provided at the time of compiling this report, and those areas to be protected will be discussed further. The Summary lists the general condition of trees and a summary of works in Table 1.0. In section 7.0 each individual tree is described in greater detail including protective or remedial works. Tree maintenance works including pruning, removal or transplantation are detailed in section 14.0.

3.0 SUMMARY

This report considers 9 trees, situated within the adjacent road reserves with Trees 1, 2, 3, 4, 5, 6, 7 & 9 to be retained and protected and Tree 8 is recommended to be removed. For Trees 1, 2, 3, 4, 5, 6 & 7, the alignment of the development is sufficiently setback to not affect these specimens. Tree 9, the alignment of the driveway will be a minor encroachment to this specimen. The section of the driveway within the TPZ of this specimen is to be constructed to Council specifications using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on its stability with piers to be dug by hand with non-motorised machinery to further assist in its protection. Selective pruning of this specimen will be required to clear access over the proposed driveway with works to be undertaken by a qualified arborist.

Where boundary fences within the tree protection zone of the retained specimens are to be installed, they are to be constructed using tree sensitive excavation and construction techniques such as post and rail construction with suspended panels to reduce any impact on the stability of retained trees, with posts to be dug by hand using non-motorised machinery to further assist in the protection of the trees.

If associated infrastructure (pipe works) is to be installed within the Tree Protection Zone of any retained specimen, they are to be installed by hand with non-motorised machinery. If structural roots are found within the trench, they are to be left intact and dug around retaining this specimen's structural integrity with works to be undertaken in consultation with the project arborist.

There will be no impact to Tree 1, 2, 3, 4, 5, 6 & 7 with a minor encroachment for Tree 9 which are to be retained and protected as per AS 4970 (2009) Section 3. Any excavations within the Tree Protection Zone must be supervised and certified by the Project Arborist in accordance with AS4970 (2009) and as per discussion points in section 14 in part B of this report. Any excavations must be supervised and certified by the Project Arborist in accordance with AS4970 (2009).

Documentation Referenced for the Preparation of this Report.

Architectural Plan Set – Project No. 1088, Issue D, Date 23 February 2023
Revision 1 – Existing / Demolition Plan – dwg. no. 903
Revision 2 - Location Plan – dwg. No. 030, Section AA – dwg. no. 120
Revision 4 - Basement Plan, 1 & 2 – dwg. no. 101 & 102,
Revision 4 - Plan – Level 1, 2, 3, 4 & Roof – dwg. no. 103, 104, 105, 106 & 110
Environa Studio, 224 Riley Street, Surry Hills NSW 2010 T: 02 9211 0000

Civil Works Plan Set – not assessed.
Landscape Plan Set – not assessed.
Stormwater Plan Set – not assessed.

4.0 AIMS

Part A: (AIA) Arboricultural Impact Assessment

4.1 Detail the condition of the trees or large shrubs on the site or on adjoining sites where such trees or large shrubs may be affected by the proposed works, by assessment of individual specimens or stands.

4.2 Provide as an outcome of the visual tree assessment (VTA), the following: a description of the trees or large shrubs, observations made, discussion of the effects the location of the proposed building works may have on the trees or large shrubs and make recommendations required for remedial or other works to the trees or large shrubs, if and where appropriate.

Part B: (TPP) Tree Protection Specification & Tree Protection Plan

4.3 Provide a detailed specification for remedial works or protection measures for their retention in a safe and healthy condition, or a condition not less than that at the time of initial inspection for this report, or in a reduced but sustainable condition due to the impact of the development but ameliorated through tree protection measures able to be applied, and will consider the location and condition of the trees or large shrubs in relation to the proposed building works, or recommend removal and replacement where appropriate.

4.4 Determine from the assessment the works or measures required to ameliorate the impact upon the trees or large shrubs to be retained, by the proposed building works or future impacts the trees or large shrubs may have upon the new building works if and where appropriate, or the benefits of removal and replacement if appropriate for the medium to long term safety and amenity of the site.

5.0 OBJECTIVES

Part A: Arboricultural Assessment Report

5.1 Assess the condition of the subject trees.
5.2 Determine impact of development on the subject trees.
5.3 Provide recommendations for retention or removal of the subject trees.

Part B: Tree Protection Plan

5.3 Provide recommendations for retention or removal of the subject trees or large shrubs.

6.0 METHODOLOGY (This Methodology where utilised is applied to both Parts A and B).

6.1 The method of assessment of tree/s applied is adapted from the principles of visual tree assessment undertaken from the ground, which considers:

- Tree health and subsequent stability, both long and short term
- Sustainable Retention Index Value (SRIV) Version 4 (IACA 2010) ©
- Hazard potential to people and property
- Amenity values
- Habitat values
- Significance

6.2 This assessment is undertaken using standard tree assessment criteria for each tree based on the values above and is implemented as a result of at least one comprehensive and detailed site inspection to undertake a visual tree assessment from the ground of each individual tree, or stand of trees, or a representative population sample. Any dimensions recorded as averages, or by approximation are noted accordingly.

6.3 This report adopts Australian Standard AS4970 2009 *Protection of trees on development sites* as a point of reference and guide for the recommended minimum setbacks (Table 2 – Part B) from the centre of a tree's trunk to development works and the distances may be increased or decreased by the author in accordance with AS4970 – Section 3.3.4 as a result of other factors providing mitigating circumstances or constraints as indicated by but not restricted to the following:

1. Condition of individual trees,
2. Tolerance of individual species to disturbance,
3. Geology e.g., physical barriers in soil, rock floaters, bedrock to surface
4. Topography e.g., slope, drainage,
5. Soil e.g., depth, drainage, fertility, structure,
6. Microclimate e.g., due to landform, exposure to dominant wind,
7. Engineering e.g., techniques to ameliorate impact on trees such as structural soil, gap graded fill, lateral boring,
8. Construction e.g., techniques to ameliorate impact on trees such as pier and beam, bridge footings, suspended slabs,
9. Root mapping,
10. Physical limitations - existing modifications to the environment and any impact to tree/s by development e.g., property boundaries, built structures, houses, swimming pools, road reserves, utility services easements, previous impact by excavation, or construction in other directions, soil level changes by cutting or filling, existing landscaping works within proximity, modified drainage patterns,
11. Extraneous factors e.g., potential future impacts from development on adjoining land when the tree is located on or near to a property boundary.

6.4 Trees in groups may be referred to as stands and a stand may exclusively contain specimens to be either retained or removed or a combination of both. A stand may be used to discuss all the trees on a given site to expedite their assessment or refer to trees growing proximate to one another or within a defined space. Stands may be comprised by mass boundary or screen plantings, to form a group of the same or a mixture of taxa. Each stand is considered as a single unit with each component tree assessed and expressed in tabular form or indicated by a given percentage as a population sample of each stand. Where it is appropriate for a stand of trees to be retained in full or part, the location and setback of Tree Protection Zone fences or works, are prescribed to provide for the preservation of the stand or selected component trees, in a condition not less than that at the time of initial inspection for its incorporation into the landscape works for the site, or in a reduced but sustainable condition due to the impact of the development but ameliorated through tree protection measures.

6.5 The meanings for terminology used herein are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009. An extract from the IACA Dictionary forms a glossary of terms included as Appendix E.

Table 1.0 General condition and Schedule of works of trees or large shrubs. Trees described in greater detail in section 7.0.

Tree No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead	Description of work to be done
1	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
2	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
3	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
4	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
5	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
6	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
7	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*
8	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	F	Remove and replace with new plantings as per Landscape Plan - *Road reserve specimen*
9	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road reserve specimen*

7.0 TREE ASSESSMENT – 7.1 - Assessment of a stand of Trees

Tree No.	*Genus & Species* Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour / LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SR/V Age, Vigour, Condition / Index Rating www.isaca.org.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation N= north R = South E= East W=West				Crown Cover % / Crown Density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated. / Trunk Orientation other than R = radial, e.g., N/S g = ground	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR). No. & distribution e.g., R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
1	*Callistemon viminalis*	M	GV	G	MGVG – 10	C	6	3	3	3	3	80	200#@g	5/R	1	NO	NO	G	2
	'Dawson River'				1			N	S	E	W	80	R	ST					1
	Dawson River Weeper	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
2	*Callistemon viminalis*	M	GV	G	MGVG – 10	C	6	3	3	3	3	80	200#@g	5/R	1	NO	NO	G	2
	'Dawson River'				1			N	S	E	W	80	R	ST					1
	Dawson River Weeper	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
3	*Callistemon viminalis*	M	GV	G	MGVG – 10	C	6	3	3	3	3	80	200#@g	5/R	1	NO	NO	G	2
	'Dawson River'				1			N	S	E	W	80	R	ST					1
	Dawson River Weeper	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
4	*Callistemon viminalis*	M	GV	G	MGVG – 10	C	6	3	3	3	3	80	200#@g	1/R	1	NO	NO	G	2
	'Dawson River'				1			N	S	E	W	80	R	ST					1
	Dawson River Weeper	Comments: Trunk erect, straight, gradually tapering & continuous, crown excurrent. - *Road reserve specimen*																	
5	*Callistemon viminalis*	M	GV	G	MGVG – 10	C	6	3	3	3	3	80	200#@g	5/R	1	NO	NO	G	2
	'Dawson River'				1			N	S	E	W	80	R	ST					1
	Dawson River Weeper	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
6	*Callistemon citrinus*	M	GV	F	MGVF – 9	D	4	1.5	1.5	1.5	1.5	60	100	1/R	1	NO	NO	P	2
	'Kings Park Special'				2			N	S	E	W	60	R	ST					2
	Kings Park Bottlebrush	Comments: Trunk erect, straight, gradually tapering & continuous, crown excurrent. - *Road reserve specimen*																	
7	*Callistemon citrinus*	M	GV	G	MGVG – 10	D	4	1.5	1.5	1.5	1.5	60	100#@g	5/R	1	NO	NO	G	2
	'Kings Park Special'				1			N	S	E	W	60	R	ST					1
	Kings Park Bottlebrush	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
8	*Callistemon citrinus*	M	GV	F	MGVF – 9	D	5	1	2.5	1.5	1.5	70	100x3#@g	5/R	1	NO	NO	P	2
	'Kings Park Special'				2			N	S	E	W	70	R	ST					2
	Kings Park Bottlebrush	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	
9	*Callistemon citrinus*	M	GV	F	MGVF – 9	D	5	1	2	1	3	70	100x3#@g	5/R	1	NO	NO	F	2
	'Kings Park Special'				2			N	S	E	W	70	R	ST					1
	Kings Park Bottlebrush	Comments: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical. - *Road reserve specimen*																	

Observations

7.2 The site has a stand of young and mature, planted endemic and non-locally indigenous taxa within the current proposal. The proposed design requires the retention and protection of eight (8) specimens within the adjacent road reserves as they are considered significant for their contribution as landscape elements to the property and the retention of these trees allows them as components of the current curtilage to be transferred to the new proposal, maintaining elements of a continuous landscape, providing a more harmonious integration and transition of the use of the land.

Tree Significance

7.3 Significant Trees as established by the Rating System for Tree Significance – IACA Stars (2010), Appendix A.

Significance Scale
1 – High
2 – Medium
3 – Low

Significance Scale	1	2	3
Redgum Tree No.		1, 2, 3, 4, 5, 6, 7, 8, 9	

Tree Retention Value

7.4 See Appendix A for Retention Value Matrix.

Retention Value
High – Priority for Retention
Medium – Consider for Retention
Low – Consider for Removal
Remove - Priority for Removal

Retention Value	High Priority for Retention	Medium Consider for Retention	Low Consider for Removal	Remove Priority for Removal
Redgum Tree No.	1, 2, 3, 4, 5, 7, 9	6, 8		

7.5 AS4970 (2009) section 3, 3.3.3 requires the Project Arborist to demonstrate that where a retained tree is subject to a major encroachment (>10% of area of TPZ) it can be protected to remain viable.

7.6 Tree 1, 2, 3, 4 & 5 *Callistemon viminalis 'Dawson River'* - Dawson River Weeper, these road reserve specimens were found in good condition & vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setback of 2.4 metres (m) from centre of trunk (COT), the setback for the proposed development adjacent to these specimens is estimated at 8.0m from COT, which is not an encroachment into the TPZ by the proposed development. The alignment of the proposed development is sufficiently setback to not impact these specimens.*

7.7 Tree 6 & 7 *Callistemon citrinus 'Kings Park Special'* - Kings Park Bottlebrush, these road reserve specimens were found in good and fair condition & good vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a TPZ setback of 2.0m from COT, the setback for the proposed development adjacent to these specimens is estimated at 8.0m with the entry pathway estimated at 2.5m from COT, which is not an encroachment into the TPZ by the proposed development. The alignment of the proposed development is sufficiently setback to not impact these specimens.*

7.8 Tree 9 *Callistemon citrinus 'Kings Park Special'* - Kings Park Bottlebrush, this road reserve specimen was found in fair condition & good vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a TPZ setback of 2.0m radial from COT, the setback for the proposed driveway adjacent to this specimen is estimated at 1.8m from COT, which is an estimated 1.8% encroachment into the TPZ by the proposed development.*

Demolition and Tree Removal/s

7.9 Tree 8 is to be removed as it is located within the site in a position where it cannot be retained due to the proposed building footprints and associated infrastructure where encroachment will have an adverse impact on its roots and crown for viability and stability.

- Tree 8: *Callistemon citrinus 'Kings Park Special'* - Kings Park Bottlebrush; located within the Hoxton Park Road verge and positioned where the structural root zone is within the proposed driveway envelope. If this current proposed design is approved, then this road reserve specimen with poor form cannot be retained and is recommended to be replaced as part of the proposed landscape works.

7.10 Removal of a tree within 6 m of a tree to be retained should be undertaken only by cutting down such a tree without damaging the trees to be retained, and by grinding out its stump. Where possible the structural roots of 20 mm diameter or greater of the tree to be cut down should not be removed, to minimise soil disturbance and to reduce the impact on the roots of any tree to be retained nearby. Where structural roots are to be removed, this should be undertaken manually by the use of non-motorised hand tools after the stump has been ground out when such roots are often easier to locate from the site of the stump from which they have been severed.

Specific - Tree works – Post Construction

7.11 Trees to be removed are to be replaced with advanced specimens being mindful of the space limitations of the new use of the site. The advanced trees should be situated in areas along the boundaries of the site. The planting in these locations will provide the maximum benefit to the surrounding properties by screening views to and from the site and the plantings included in the proposed landscape plan. The replacement trees will be situated in positions where they may grow to maturity unhindered and will not conflict with built structures or utility services and in greater numbers than the trees removed should provide a net increase in the local amenity.

8.0 CONCLUSION

One (1) tree is nominated for removal and replacement with species in accordance with the associated Landscape documentation for the development. The eight (8) trees to be preserved will be retained and protected through the implementation of adequate measures for their integration into the development by the application of appropriate technology as detailed in this report. Where appropriate, the Landscape Plan will include planting with new trees including street tree/s.

The recommendations made in this report are subject to approval by the consent authority.

9.0 RECOMMENDATIONS

9.1 Trees 1, 2, 3, 4, 5, 6, 7 & 9 are to be retained in situ within the adjacent road reserves and are to be protected as detailed in 7.5 – 7.8 and Section 14 of part B of this report. Tree protection fences, or works, to be situated in accordance with *Site Plan B - Trees to be Retained and Tree Protection Zones* (Appendix F). *See Tree Protection Plan for additional protection measures for the management of retained specimens.*

9.2 Tree 8 is recommended for removal, subject to approval from the consent authority, with tree work to be undertaken in accordance with 7.9 - 7.10 and Section 13 of Part B of this report.

9.3 Each of the replacement are to be a vigorous specimen with a straight trunk, gradually tapering and continuous, crown excurrent, symmetrical, with roots established but not pot bound in a volume container or approved similar and be maintained by an appropriately qualified and experienced landscape contractor for up to one (1) year after planting, or as appropriate.

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& Arboricultural Association UK - 2021

DISCLAIMER
The author and Redgum Horticultural take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modification/s to its growing environment either above or below ground contrary to our advice.

REFERENCES

1. Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.
2. IACA 2005, Sustainable Retention Index Value, *Institute of Australian Consulting Arboriculturists*, Australia, www.iaca.org.au .
3. Standards Australia 2007, *Australian Standard 4373 Pruning of amenity trees*, Standards Australia, Sydney, Australia.
4. Standards Australia 2009, *Australian Standard 4970 Protection of trees on development sites*, Standards Australia, Sydney, Australia.
5. Safe Work Australia, *Guide to Managing Risk from Tree Trimming and Removal Works*.

Appendix A

IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) ©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system using structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria

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1. High Significance in landscape

- The tree is in good condition and good vigour.
- The tree has a form typical for the species.
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age.
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered Ecological Community or listed on Councils Significant Tree Register.
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity.
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values.
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour.
- The tree has form typical or atypical of the species.
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area.
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour.
- The tree has form atypical of the species.
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

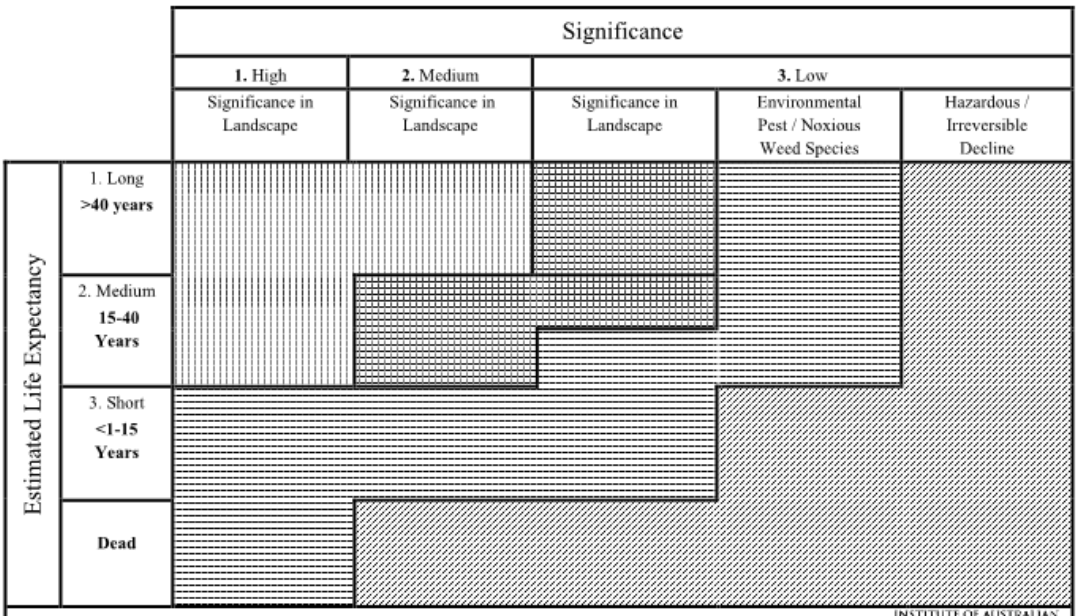
Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g., hedge.

Table 1.0 Tree Retention Value - Priority Matrix.



Legend for Matrix Assessment

	Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 *Protection of trees on development sites*. Tree sensitive construction measures must be implemented e.g., pier and beam etc if works are to proceed within the Tree Protection Zone.
	Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however, their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

Appendix B

Matrix - Sustainable Retention Index Value (S.R.I.V.) ©

Version 4, 2010

Developed by IACA – Institute of Australian Consulting Arboriculturists www.iaca.org.au

The matrix is to be used with the value classes defined in the Glossary for Age / Vigour / Condition.
An index value is given to each category where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	Good Vigour & Fair Condition (GVF)	Good Vigour & Poor Condition (GVP)	Low Vigour & Good Condition (LVG)	Low Vigour & Fair Condition (LVF)	Low Vigour & Poor Condition (LVP)
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium – Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
(Y) Young	YGVG - 9 Index Value 9 Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height <5 m. High potential for future growth and adaptability. Retain, move or replace.	YGVF - 8 Index Value 8 Retention potential - Short – Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Medium-high potential for future growth and adaptability. Retain, move or replace.	YGVP - 5 Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Low-medium potential for future growth and adaptability. Retain, move or replace.	YLVG - 4 Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Medium potential for future growth and adaptability. Retain, move or replace.	YLVF - 3 Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	YLVP - 1 Index Value 1 Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height <5 m. Low potential for future growth and adaptability.
(M) Mature	MGVG - 10 Index Value 10 Retention potential -Medium - Long Term.	MGVF - 9 Index Value 9 Retention potential - Medium Term. Potential for longer with improved growing conditions.	MGVP - 6 Index Value 6 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVG - 5 Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVF - 4 Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVP - 2 Index Value 2 Retention potential - Likely to be removed immediately or retained for Short Term.
(O) Over-mature	OGVG - 6 Index Value 6 Retention potential - Medium - Long Term.	OGVF - 5 Index Value 5 Retention potential - Medium Term.	OGVP - 4 Index Value 4 Retention potential - Short Term.	OLVG - 3 Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions.	OLVF - 2 Index Value 2 Retention potential - Short Term.	OLVP - 0 Index Value 0 Retention potential - Likely to be removed immediately or retained for Short Term.

Appendix C

Survey of Subject Tree/s

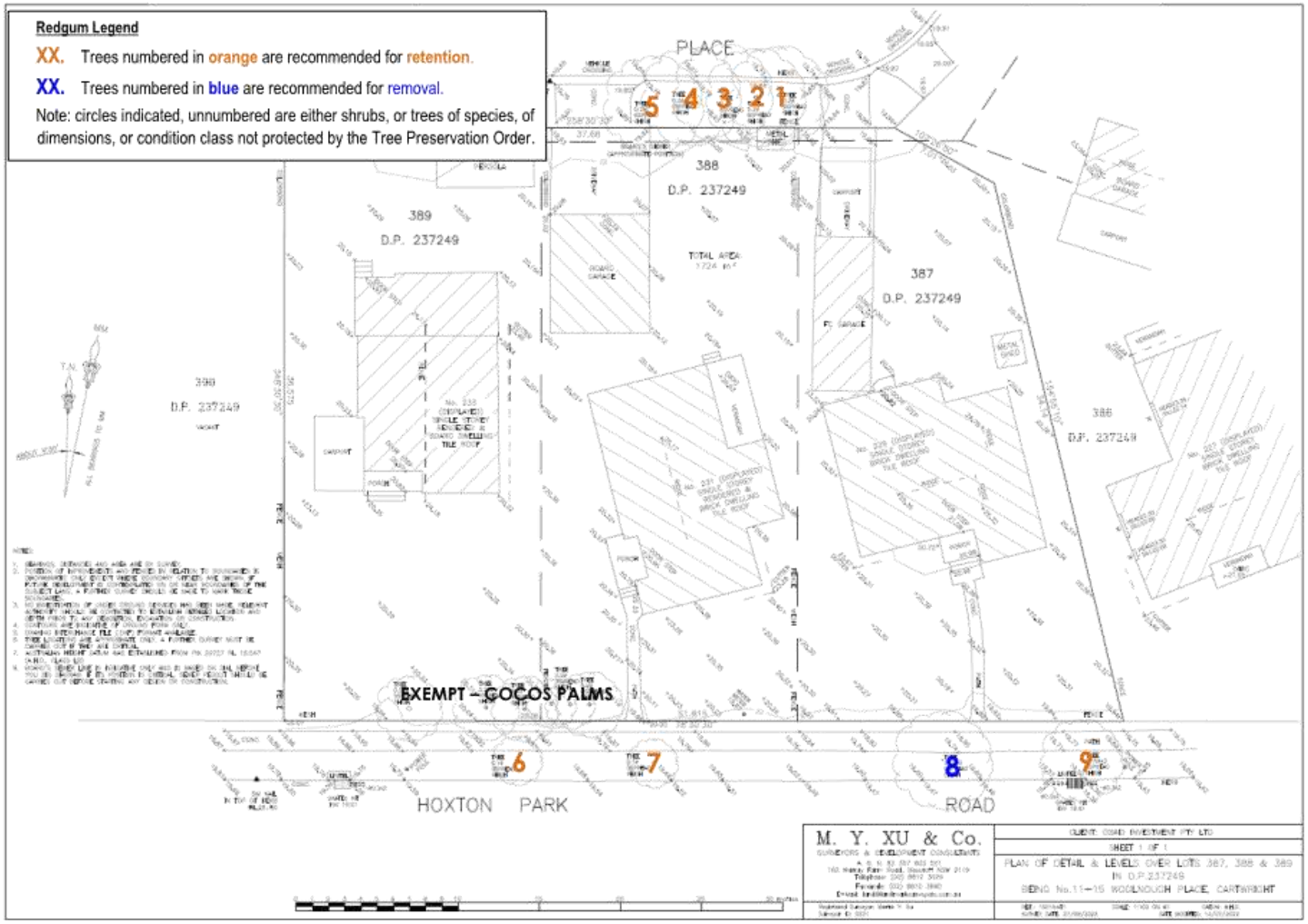
Trees the subject of this report are marked on the plans in the following appendices and are numbered as listed below.

Redgum Tree No.	*Genus and species*	Common name	Recommendation
1	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
2	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
3	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
4	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
5	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
6	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*
7	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*
8	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Remove and replace – *Street tree*
9	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*

Appendix C

Site Plan A - Survey of Subject Trees

This report has relied upon the following plan/s and documents which have been reproduced from electronic transmission and no longer to original scale.



REDGUM Horticultural
Arboriculture & Horticulture Consultants

Part B:
TREE PROTECTION PLAN
(Trees to be retained and protected)

for

11-15 Woolnough Place, Cartwright NSW

Prepared 27 April 2023
Our Ref. 8724

10.0 PREFACE

Retention of Significant Tree/s within the continual landscape of a development is recommended to minimise the impact of the built landscape within the overall local amenity. This section of the report highlights the required specifications within the Tree Protection Plan (Tree Management Plan) and is to be read in conjunction with Part A: Arboricultural Impact Assessment of this report.

11.0 INTRODUCTION

11.1 This section of the report provides the specification/s for all tree/s to be retained (on subject site) as detailed in Part A – Arboricultural Impact Assessment.

11.2 The trees to be retained are indicated on the Site Plan - Survey of Subject Trees to be retained & Tree Protection Zones. The minimum setback for protective fencing from development works per tree to be retained is summarised in Table 1.0. Tree Protection Specifications including - Site maintenance, Site Arboricultural service, Periodic inspections, Mulching, Irrigation, Weed control / suppression, Provision of services.

11.3 Tree maintenance works including pruning, removal or transplantation are detailed in section 2.0. Works for Tree Protection on Construction Sites are detailed in section 3.0 and Tree Protection Zones a Standard Procedure as detailed in section 13.0 to be applied, or further detailed, or additional or alternative works added where appropriate.

12.0 METHODOLOGY

This Methodology where utilised is applied to both Part A – Arboricultural Impact Assessment and B – Tree Protection Plan.

12.1 The method of assessment of tree/s applied is adapted from the principles of visual tree assessment undertaken from the ground, which considers:

- Tree health and subsequent stability, both long and short term
- Sustainable Retention Index Value (SRIV) Version 4 (IACA 2010) ©
- Hazard potential to people and property
- Amenity values
- Habitat values
- Significance

12.2 This assessment is undertaken using standard tree assessment criteria for each tree based on the values above and is implemented as a result of at least one comprehensive and detailed site inspection to undertake a visual tree assessment from the ground of each individual tree, or stand of trees, or a representative population sample. Any dimensions recorded as averages, or by approximation are noted accordingly.

13.0 PRUNING STANDARDS

13.1 Any pruning recommended in this report is to be to the Australian Standard® AS4373 *Pruning of amenity trees* and conducted in accordance with the NSW Work Cover Authority Code of Practice, Tree Work, 2007.

13.2 All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or Tree Management Order (TMO), or Tree Preservation Order (TPO).

13.3 Tree maintenance work is specialised and in order to be undertaken safely to ensure the works carried out are not detrimental to the survival of a tree being retained, and to assist in the safe removal of any tree, should be undertaken by a qualified arboriculturist with appropriate competencies recognised within the Australian Qualification Framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

14.0 SUMMARY: Tree Management Plan

This Tree Protection Plan recommends; Trees 1, 2, 3, 4, 5, 6, 7 & 9 are located within the adjacent road reserves and are to be retained and protected for the duration of development consent. For Trees 1, 2, 3, 4, 5, 6 & 7, the alignment of the development is sufficiently setback to not affect these specimens. Tree 9, the alignment of the driveway will be a minor encroachment to this specimen. The section of the driveway within the TPZ of this specimen is to be constructed to Council specifications using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on its stability with piers to be dug by hand with non-motorised machinery to further assist in its protection. Selective pruning of this specimen will be required to clear access over the proposed driveway with works to be undertaken by a qualified arborist.

Discussion

14.1 *AS4970 (2009) section 3, 3.3.3 requires the Project Arborist to demonstrate that where a retained tree is subject to a major encroachment (>10% of area of TPZ) it can be protected to remain viable.*

14.2 Tree 1, 2, 3, 4 & 5 *Callistemon viminalis 'Dawson River'* - Dawson River Weeper, these road reserve specimens were found in good condition & vigour at time of assessment.

- *Trees viability to development; these specimens are not impacted by the proposed development. The project arborist is to certify the installation of protection measures as per D/A conditions prior to commencement of works and to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development. These specimens should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setback of 2.4 metres (m) from centre of trunk (COT), the setback for the proposed development adjacent to these specimens is estimated at 8.0m from COT, which is not an encroachment into the TPZ by the proposed development. The alignment of the proposed development is sufficiently setback to not impact these specimens.*

14.3 Tree 6 & 7 *Callistemon citrinus 'Kings Park Special'* - Kings Park Bottlebrush, these road reserve specimens were found in good and fair condition & good vigour at time of assessment.

- *Trees viability to development; these specimens are not impacted by the proposed development. The project arborist is to certify the installation of protection measures as per D/A conditions prior to commencement of works and to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development. The specimens should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a TPZ setback of 2.0m from COT, the setback for the proposed development adjacent to these specimens is estimated at 8.0m with the entry pathway estimated at 2.5m from COT, which is not an encroachment into the TPZ by the proposed development. The alignment of the proposed development is sufficiently setback to not impact these specimens.*

14.4 Tree 9 *Callistemon citrinus 'Kings Park Special'* - Kings Park Bottlebrush, this road reserve specimen was found in fair condition & good vigour at time of assessment.

- *Trees viability to development; this specimen is impacted by the proposed development. The project arborist is to certify the installation of protection measures as per D/A conditions prior to commencement of works and to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development. The specimen should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a TPZ setback of 2.0m radial from COT, the setback for the proposed driveway adjacent to this specimen is estimated at 1.8m from COT, which is an estimated 1.8% encroachment into the TPZ by the proposed development.*

The alignment of the driveway will be a minor encroachment to this specimen. The section of the driveway within the TPZ of this specimen is to be constructed to Council specifications using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on its stability with piers to be dug by hand with non-motorised machinery to further assist in its protection. Selective pruning of this specimen will be required to clear access over the proposed driveway with works to be undertaken by a qualified arborist.

Where boundary fences within the tree protection zone of the retained specimens are to be installed, they are to be constructed using tree sensitive excavation and construction techniques such as post and rail construction with suspended panels to reduce any impact on the stability of retained trees, with posts to be dug by hand using non-motorised machinery to further assist in the protection of the trees.

If associated infrastructure (pipe works) is to be installed within the Tree Protection Zone of any retained specimen, they are to be installed by hand with non-motorised machinery. If structural roots are found within the trench, they are to be left intact and dug around retaining this specimen's structural integrity with works to be undertaken in consultation with the project arborist.

There will be no impact to Tree 1, 2, 3, 4, 5, 6 & 7 with a minor encroachment for Tree 9 which are to be retained and protected as per AS 4970 (2009) Section 3. Any excavations within the Tree Protection Zone must be supervised and certified by the Project Arborist in accordance with AS4970 (2009) and as per discussion points in section 14 in part B of this report. Any excavations must be supervised and certified by the Project Arborist in accordance with AS4970 (2009).

General – Tree Protection works – Prior to Demolition

14.5 *Milestone* – Prior to demolition works, a site arborist shall be appointed to supervise all tree protection procedures detailed in this specification. The Site Arborist shall have a minimum level 5 AQF qualification in Arboriculture. Milestones are to be adhered to throughout the duration of this development and all relevant documentation is to be submitted to the local authority.

14.6 The Tree Protection Zone for each tree/s is to be incorporated into the construction works for the site and the protection fencing or works to be situated as indicated on the Appendix F – Tree Protection Plan. The setbacks from building works on the side closest to each tree are to be carried out as indicated in Table 2.0, and Tree Protection Zones be constructed as described here and detailed in Appendix D. The trees will be sustained within the constraints of the modifications to the site by the proposed development works.

14.7 Trees 1, 2, 3, 4, 5, 6, 7 & 9 are to be retained and protected and incorporated into the landscape works for the site, and Tree Protection Zone fencing to be marked accordingly on the Landscape Plan, where appropriate and installed prior to any demolition or construction.

14.8 Ground protection - If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. These measures may be applied to root zones beyond the TPZ.

14.9 Where applicable, any excavation for the establishment of a batter slope or benching for reasons of safety and to comply with Work Cover Authority safety regulations should be restricted as far as is safely possible near to trees to be retained to prevent root damage. If the excavations cannot be undertaken near to vertical the stability of these trees and their long-term viability may be compromised and their retention in a safe and healthy condition jeopardized and they may need to be revised and possibly removed.

Specific - Tree Protection Works - Prior to Demolition and Tree Removal

14.10 All other trees/shrubs; prior to demolition and tree removal works these tree/s are to be placed within a Tree Protection Zone with protective fencing and maintained and retained until the completion of all building works. Protective fencing is to be installed as shown in Appendix F - Tree Protection Plan.

- *The Protective fencing where required may delineate the **Tree Protection Zone (TPZ)** and should be situated as determined by the project arborist in accordance with AS4970 Protection of trees on development sites, Section 4, 4.3. "Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing" or similar.*
- *Tree Protection signage is to be attached to each **TPZ** and displayed from within the development site in accordance with AS4970 2009 Protection of trees on development sites.*
- *The area of the Tree Protection Zone to be mulched to a depth of 100 mm with organic material being 75% leaf litter and 25% wood, and this being composted material preferably from the same genus and species of tree as that to where the mulch is to be applied, i.e., species-specific mulch where possible. The depth of mulch and type as indicated, to be maintained for the duration of the project. Where deep excavation will expose the soil profile to drying out the root plate is to be protected by pegging jute matting across the ground surface 2 m back from the edge of the profile and 2 m down the face of the profile and is to be in one continuous sheet or layers up to 5 mm thick and overlapped 300 mm and pegged. Pegs are to be a minimum length of 200 mm and spaced at 500 mm increments in a grid pattern. Once installed mulch is to be placed on top of the jute matting previously described.*

14.11 There is to be no storage of materials, rubbish, soil, equipment, structures or goods of any type to be kept or placed within 5 metres from the trunk or within the dripline of any tree for the duration of the development. This will ensure protection of the tree/s to be retained on or adjacent to site.

14.12 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens prior to demolition to inspect tree protection measures to monitor that they have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

Demolition and Tree Removal/s

14.13 Removal of a tree within 6 m of a tree to be retained should be undertaken only by cutting down such a tree without damaging the trees to be retained, and by grinding out its stump. Where possible the structural roots of 20 mm diameter or greater of the tree to be cut down should not be removed, to minimise soil disturbance and to reduce the impact on the roots of any tree to be retained nearby. Where structural roots are to be removed this should be undertaken manually by the use of non-motorised hand tools after the stump has been ground out when such roots are often easier to locate from the site of the stump from which they have been severed.

14.14 Ground protection in accordance with AS4970 section 4, 4.5.3 may require steel plates to protect the ground surface from compaction to protect roots between the stages of demolition and construction.

Specific - Tree Protection works – During Demolition

14.15 Demolition of landscape structures: the demolition of walls, driveways retaining walls, paths, and pools etc. within 6 m of a tree to be retained should be undertaken manually using hand tools. Where a driveway is to be demolished being of concrete strip or slab type construction, it should be undertaken by working from the end of the driveway closest to the building back towards the street by utilising the driveway as a stable platform to prevent soil compaction. Where a concrete slab driveway passes less than 1 m from the base of a tree and the area beneath the driveway is to be undisturbed and incorporated into the landscape works for the site, the volume of space previously occupied by the driveway must be replaced with local top soil from the site or otherwise a loamy sand, to replace the mass of the concrete on the root plate which may be critical to the ballast and centre of mass for the stability of the tree. If the tree becomes unstable immediately contact the project arborist.

Specific - Tree Protection works – Post Demolition and Prior to Construction

14.16 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens prior to construction in relation to tree protection measures to monitor that they have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

14.17 Location of underground utilities within a Tree Protection Zone of a retained specimen.
Any utility services to be situated underground within the TPZ are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >20 mm diameter). To prevent soil compaction and root damage these works should be conducted with non-motorised hand tools, air knife or directional drilling.

14.18 Re-grading of site near retained trees; Grading &/or re-grading of sites/slopes within Tree Protection Zones or near retained specimens is to be undertaken **only** if at all, after consultation with the Project Arborist. This is to protect all structural roots systems from damage or compaction from machinery.

14.19 Placement of relocatable buildings; consideration should be given to tree sensitivity such as the buildings being placed on pier and beam or skids construction as they are to be positioned on their driplines within the Tree Protection Zone (TPZ). The area of the Tree Protection Zone under the buildings is to be mulched to a depth of 200 mm (*if installed on skids*) with organic material to further reduce compaction. The mulch is to be composted material, i.e., species-specific mulch. Alternatively, if installed on a pier & beam construction, piers are to be undertaken manually by using non-motorised hand tools to determine the location of first order and lower order structural roots with a diameter of 20 mm (*structural woody roots*) or greater, without damaging them.

Specific - Tree Protection works – During Construction

14.20 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens during construction in relation to tree protection measures to monitor that they have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

14.21 Where any structural roots (roots with a diameter of greater than >20 mm) encountered by excavation are to be pruned and it is to be undertaken with clean sharp pruning tools, with a final cut to undamaged wood to prevent infestation by pathogens and assist continued root growth and undertaken in consultation with the Consulting Arboriculturist. Tree Protection Zone fences are to be maintained during these works. Ground protection in accordance with AS4970 section 4, 4.5.3 may require steel plates to protect the ground surface from compaction to protect roots between the stages of demolition and construction.

14.22 All Tree Protection Zones of retained trees are to be monitored for the duration of the construction phase of the development. The three main areas requiring monitoring are *mulching* - mulch must be maintained to a depth of 50–100 mm using material that complies with AS 4454. Where the existing landscape within the TPZ is to remain unaltered (e.g., garden beds or turf) mulch may not be required, *watering* - soil moisture levels should be regularly monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ. An above-ground irrigation system could be installed and maintained by a competent individual and *weeding* - weeds should be removed by hand without disturbing soil or should be controlled with weedicide.

14.23 Trees to be removed are to be replaced with advanced specimens being mindful of the space limitations of the new use of the site. The advanced trees should be situated in areas along the boundaries of the site. The planting in these locations will provide the maximum benefit to the surrounding properties by screening views to and from the site and the plantings included in the proposed landscape plan. The replacement trees will be situated in positions where they may grow to maturity unhindered and will not conflict with built structures or utility services and in greater numbers than the trees removed should provide a net increase in the local amenity.

Specific - Tree Protection works – Post Construction

14.24 *Milestone* - At completion of construction work the Site/Project Arborist should carry out an assessment of all trees retained &/or affected by works. This assessment is to document any required on-going remedial care needed to ensure viable retention of trees affected. Documentation is to be submitted to the consenting authority.

15.0 CONCLUSION

One (1) tree is nominated for removal and replacement with species in accordance with the associated Landscape documentation for the development. The eight (8) trees to be preserved will be retained and protected through the implementation of adequate measures for their integration into the development by the application of appropriate technology as detailed in this report. Where appropriate, the Landscape Plan will include planting with new trees including street tree/s.

It is often a consequence of redevelopment, and subject to the nature of the proposed land use that some or all the trees present on the site prior to that redevelopment may be required to be removed and replaced with new tree plantings in different locations. This may be dependent upon the type of development and its design constraints and the requirements of the local planning instruments and any Landscape Design Codes if existing. Where tree removal is required for this development, it is considered that those trees identified within this report are not sustainable within the context of the proposed development. Where tree retention has been considered, those trees are expected to survive the redevelopment process and remain stable and viable. The retention and protection of existing trees on site is a significant aspect of the development process, allowing those trees as components of the current curtilage to be transferred to the new development for incorporation into the landscaping works for the site. The retention of some or all the existing trees contributes to the preservation of local amenity, screening of views to and from the site, and a balance to the scale and bulk of buildings, while maintaining elements of a continuous landscape, providing a more harmonious integration and transition of the use of the land.

If all the recommendations and procedures detailed herein are adhered to, some or all the trees the subject of this report will continue or will be replaced with more appropriate plantings in suitable locations or enhanced by additional new plantings and will grow to develop as important landscape components providing elements of long-term amenity for the property and its owners or occupants, and the local community.

The recommendations made in this report are subject to approval by the consent authority.

As a renewable and dynamic natural resource, the urban tree and the growing environment essential for its survival must be understood and carefully managed to balance its needs with those of people. It is crucial that as required: this resource be planned for, planted, nurtured, protected, maintained and replaced, to ensure appropriateness and suitability of new plantings and trees retained, for safety and viability, so that it remains vital, and is sustainable in continuity.

16.0 RECOMMENDATIONS – Retention.

16.1 Trees 1, 2, 3, 4, 5, 6, 7 & 9 are to be retained in situ within the adjacent road reserves and are to be protected as detailed in 14.2 - 14.24 of Part B of this report. Tree protection fences or works, to be located in accordance with *Site Plan B – Trees to be Retained and Tree Protection Zones* (Appendix F).

16.2 Where Tree Protection Zone fences are to be moved or relocated this must be undertaken in consultation with the Consultant Arboriculturist for the project to ensure that tree protection is maintained. If the fences are relocated areas are to be mulched in accordance with 14.10 of this report to reduce compaction to the root system of the retained specimens.

16.3 To minimise damage to retained crowns, all Tree Protection Zones are to be adhered to. This must be undertaken in consultation with the Consultant Arboriculturist for the project to ensure that tree protection is maintained. Minor pruning may be required if damage occurs, work to undertaken in accordance with section 4 of this report.

16.4 *Milestone/s* - Project/Site arborist is to inspect/assess all retained specimens prior to Demolition and Tree Removal, Post Demolition, Prior to Construction during Construction and on completion in relation to trees protected and the protection measures have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

16.5 Any work to be undertaken within Tree Protection Zones is to be undertaken in accordance with 16.2 of this report.

16.6 Tree removal near retained specimens is to be undertaken in accordance with 14.13 of this report.

16.7 There is to be no storage of materials, rubbish, soil, equipment, structures or goods of any type to be kept or placed within 5 metres from the trunk or within the dripline of any tree for the duration of the development. This will ensure protection of the tree/s to be retained on or adjacent to site.

16.8 Each of the replacement are to be a vigorous specimen with a straight trunk, gradually tapering and continuous, crown excurrent, symmetrical, with roots established but not pot bound in a volume container or approved similar and be maintained by an appropriately qualified and experienced landscape contractor for up to one (1) year after planting or as appropriate.

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DISCLAIMER
The author and Redgum Horticultural take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modification/s to its growing environment either above or below ground contrary to our advice.

Appendix D

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the tree protection zones of the selected trees.

3.1 Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5)."

3.2 Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

TPZ = DBH x 12

where

DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.

3.3.5 Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

SRZ radius = $(D \times 50)^{0.42} \times 0.64$

where

D = trunk diameter, in metres, measured above the root buttress.

Note: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m.

Appendix E

Glossary

From

Dictionary for Managing Trees in Urban Environments by Draper BD and Richards PA 2009, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Age of Trees

Age Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as *Young*, *Mature* and *Over-mature* (British Standards 1991, p. 13, Harris *et al*, 2004, p. 262).

Young Tree aged less than <20% of life expectancy, *in situ*.

Mature Tree aged 20-80% of life expectancy, *in situ*.

Over-mature Tree aged greater than >80% of life expectancy, *in situ,* or *senescent* with or without reduced *vigour*, and declining gradually or rapidly but irreversibly to death.

Condition of Trees

Condition A tree's *crown form* and growth habit, as modified by its *environment* (aspect, suppression by other trees, soils), the *stability* and *viability* of the *root plate*, trunk and structural branches (first (1st) and possibly second (2nd) order branches), including structural defects such as wounds, cavities or hollows, *crooked* trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with *vigour,* and it is possible for a tree to be of *normal vigour* but in *poor condition*. Condition can be categorized as *Good Condition*, *Fair Condition*, *Poor Condition* and *Dead*.

Good Condition Tree is of good habit, with *crown form* not severely restricted for space and light, physically free from the adverse effects of *predation* by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from or contributed to by vigour.

Fair Condition Tree is of good habit or *misshapen*, a form not severely restricted for space and light, has some physical indication of *decline* due to the early effects of *predation* by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the *environment* essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from or contributed to by vigour.

Poor Condition Tree is of good habit or *misshapen*, a form that may be severely restricted for space and light, exhibits symptoms of advanced and *irreversible decline* such as fungal, or bacterial infestation, major die-back in the branch and *foliage crown*, *structural deterioration* from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local *environment* that would normally be sufficient to provide for its basic survival if in *good* to *fair* condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and *predation* by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from or contributed to by vigour.

Senescent / Moribund Advanced state of decline, dying or nearly dead.

Dead Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms.
Processes
Photosynthesis via its foliage crown (as indicated by the presence of moist, green or other coloured leaves).
Osmosis (the ability of the root system to take up water).
Turgidity (the ability of the plant to sustain moisture pressure in its cells).
Epicormic shoots or *epicormic strands* in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a *lignotuber*).
Symptoms
Permanent leaf loss.
Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots).
Abscission of the *epidermis* (bark desiccates and peels off to the beginning of the sapwood).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site or having been taken away from a site prior to site inspection.

Branch

Branch An elongated woody structure arising initially from the trunk to support leaves, flowers, fruit and the development of other branches. A branch may itself fork and continue to divide many times as successive *orders of branches* with the length and taper decreasing incrementally to the *outer extremity* of the *crown*. These may develop initially as a gradually tapering continuation of the *trunk* with minimal division as in a *young* tree or a tree of *excurrent habit*, or in a *sapling*, or may arise where the trunk terminates at or some distance from the *root crown*, dividing into *first order branches* to form and support the *foliage crown*. In an *acaulescent* tree, branches arise at or near the *root crown*. Similarly, branches may arise from a *sprout mass* from damaged *roots*, *branches* or *trunk*.

Orders of branches the marked divisions between successively smaller branches (James 2003, p. 168) commencing at the initial division where the trunk terminates on a *deliquescent* tree or from *lateral* branches on an *excurrent* tree. Successive branching is generally characterised by a gradual reduction in branch diameters at each division, and each gradation from the trunk can be categorised numerically, e.g., first order, second order, third order etc. (See Figure 21.)

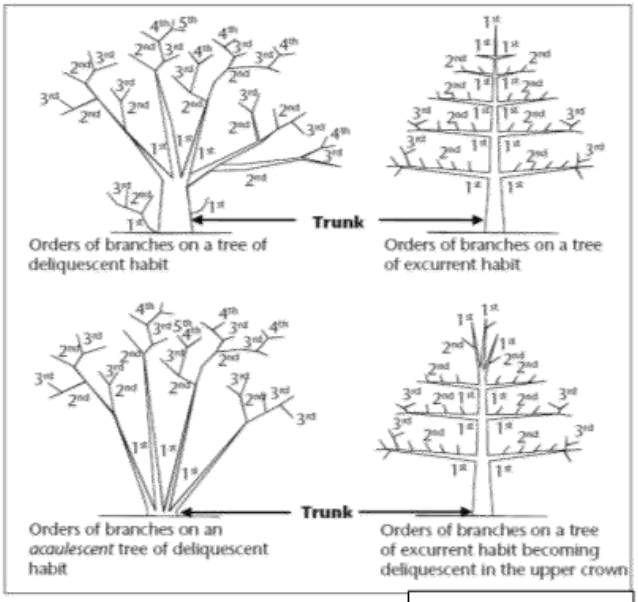


Figure 21 Orders of branches

Crown

Canopy 1. Of multiple trees, the convergence, or merging in full or part, of the crowns of two or more trees due to their proximity, or where competition for light and space available in a forest environment is limited as each tree develops forming a continuous layer of foliage. 2. Used as a plural for crown. 3. Sometimes synonymously used for crown (USA).

Crown Of an individual tree all the parts arising above the trunk where it terminates by its division forming branches, e.g., the branches, leaves, flowers and fruit; or the total amount of foliage supported by the branches. The crown of any tree can be divided vertically into three sections and can be categorised as *lower crown*, *mid crown* and *upper crown* (Figure 8). For a *leaning* tree these can be divided evenly into crown sections of one-third from the *base* to *apex*. The volume of a crown can be categorised as the *inner crown*, *outer crown* and *outer extremity of crown*.

Lower crown the *proximal* or lowest section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Mid crown* and *Upper crown*.

Mid crown the middle section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Lower crown* and *Upper crown*.

Upper crown the *distal* or highest section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Mid crown* and *Lower crown*.

Crown Projection (CP) Area within the *dripline* or beneath the lateral extent of the *crown* (Geiger 2004, p. 2). See also *Crown spread* and *Dripline*.

Dripline A line formed around the edge of a tree by the lateral extent of the *crown*. Such a line may be evident on the ground with some trees when exposed soil is displaced by rain shed from the crown. See also *Crown Projection*.

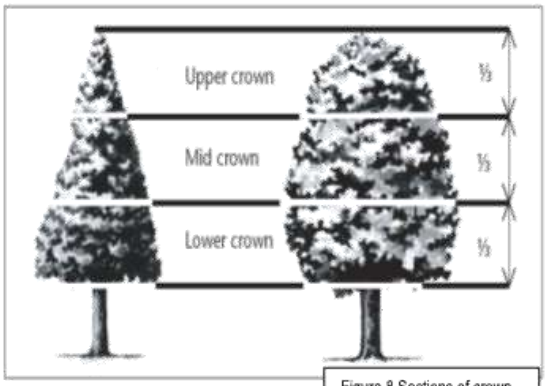


Figure 8 Sections of crown.

Crown Form of Trees

Crown Form The shape of the crown of a tree as influenced by the availability or restriction of space and light, or other contributing factors within its growing environment. Crown Form may be determined for tree shape and habit generally as *Dominant*, *Codominant*, *Intermediate*, *Emergent*, *Forest* and *Suppressed*. The habit and shape of a *crown* may also be considered qualitatively and can be categorized as *Good Form* or *Poor Form*.

Good Form Tree of *typical* crown shape and habit with proportions representative of the taxa considering constraints such as origin e.g. indigenous or exotic, but does not appear to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, or cultural practices such as lopping and competition for space and light.

Poor Form Tree of *atypical* crown shape and habit with proportions not representative of the species considering constraints and appears to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, cultural practices such as lopping and competition for space and light; causing it to be *misshapen* or disfigured by disease or vandalism.

Crown Form Codominant Crowns of trees restricted for space and light on one or more sides and receiving light primarily from above e.g., constrained by another tree/s or a building.

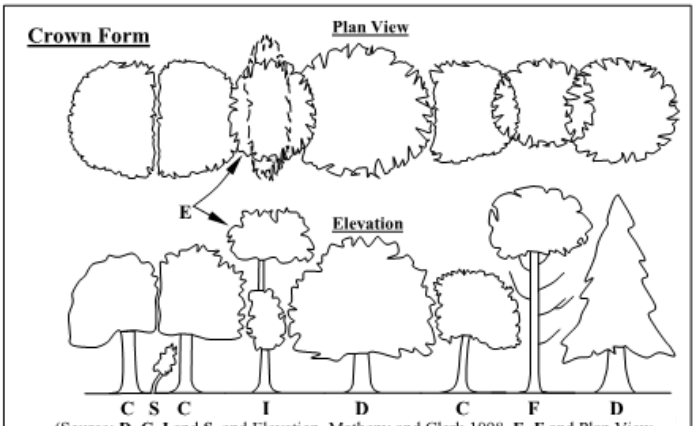
Crown Form Dominant Crowns of trees generally not restricted for space and light receiving light from above and all sides.

Crown Form Emergent Crowns of trees restricted for space on most sides receiving most light from above until the *upper crown* grows to protrude above the canopy in a stand or forest environment. Such trees may be *crown form dominant* or transitional from *crown form intermediate* to *crown form forest* asserting both *apical dominance* and *axillary dominance* once free of constraints for space and light.

Crown Form Forest Crowns of trees restricted for space and light except from above forming tall trees with narrow spreading crowns with foliage restricted generally to the top of the tree. The trunk is usually erect, straight and continuous, tapering gradually, crown often excurrent, with first order branches becoming structural, supporting the live crown concentrated towards the top of the tree, and below this point other first order branches arising radially with each *inferior* and usually temporary, divergent and ranging from horizontal to ascending, often with internodes exaggerated due to competition for space and light in the *lower crown*.

Crown Form Intermediate Crowns of trees restricted for space on most sides with light primarily from above and on some sides only.

Crown Form Suppressed Crowns of trees generally not restricted for space but restricted for light by being *overtopped* by other trees and occupying an understorey position in the canopy and growing slowly.



(Source: **D**, **C**, **I** and **S**, and Elevation, Matheny and Clark 1998, **E**, **F** and Plan View,

Deadwood

Deadwood Dead branches within a tree's crown and considered quantitatively as separate to *crown cover* and can be categorised as *Small Deadwood* and *Large Deadwood* according to diameter, length and subsequent *risk* potential. The number of dead branches on a tree can be categorized as *Low Volume Deadwood*, *Medium Volume Deadwood* and *High-Volume Deadwood*. See also *Dieback*.

Deadwooding Removing of dead branches by *pruning*. Such pruning may assist in the prevention of the spread of *decay* from *dieback* or for reasons of safety near an identifiable target.

Small Deadwood A dead branch up to 10mm diameter and usually <2 metres long, generally considered of low-risk potential.
Large Deadwood A dead branch >10mm diameter and usually >2 metres long, generally considered of high-risk potential.
High Volume Deadwood High Volume Deadwood Where >10 dead branches occur that may require *removal*.
Medium Volume Deadwood Where 5-10 dead branches occur that may require *removal*.
Low Volume Deadwood Where <5 dead branches occur that may require *removal*.

Dieback

Dieback The death of some areas of the *crown*. Symptoms are leaf drop, bare twigs, dead branches and tree death, respectively. This can be caused by root damage, root disease, bacterial or fungal canker, severe bark damage, intensive grazing by insects, *abrupt changes* in growth conditions, drought, water-logging or over-maturity. Dieback often implies reduced *resistance, stress* or *decline* which may be temporary. Dieback can be categorized as *Low Volume Dieback*, *Medium Volume Dieback* and *High-Volume Dieback*.

High Volume Dieback Where >50% of the *crown cover* has died.
Medium Volume Dieback Where 10-50% of the *crown cover* has died.
Low Volume Dieback Where <10% of the *crown cover* has died. See also *Dieback*, *High Volume Dieback* and *Medium Volume Dieback*.

Epicormic shoots

Epicormic Shoots Juvenile shoots produced at branches or trunk from *epicormic strands* in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be as a result of *stress* or *decline*. Epicormic shoots can be categorized as *Low Volume Epicormic Shoots*, *Medium Volume Epicormic Shoots* and *High Volume Epicormic Shoots*.

High Volume Epicormic Shoots Where >50% of the *crown cover* is comprised of live *epicormic shoots*.
Medium Volume Epicormic Shoots Where 10-50% of the *crown cover* is comprised of live *epicormic shoots*.
Low Volume Epicormic Shoots Where <10% of the *crown cover* is comprised of live *epicormic shoots*.

General Terms

Cavity A usually shallow void often localized initiated by a *wound* and subsequent *decay* within the trunk, branches or roots, or beneath bark, and may be enclosed or have one or more opening.

Decay Process of degradation of wood by microorganisms (Australian Standard 2007, p. 6) and fungus.

Hazard The threat of danger to people or property from a tree or tree part resulting from changes in the physical condition, growing environment, or existing physical attributes of the tree, e.g., included bark, soil erosion, or thorns or poisonous parts, respectively.

Included bark 1. The bark on the inner side of the *branch union* or is within a concave *crotch* that is unable to be lost from the tree and accumulates or is trapped by *acutely divergent* branches forming a *compression fork*. 2. Growth of bark at the interface of two or more branches on the inner side of a branch union or in the crotch where each branch forms a branch collar, and the collars roll past one another without forming a graft where no one collar is able to subsume the other. Risk of failure is worsened in some taxa where branching is *acutely divergent* or *acutely convergent* and ascending or erect.

Hollow A large void initiated by a *wound* forming a *cavity* in the trunk, branches or roots and usually increased over time by *decay* or other contributing factors, e.g., fire, or fauna such as birds or insects e.g., ants or termites. A hollow can be categorized as an *Ascending Hollow* or a *Descending Hollow*.

Risk The random or potentially foreseeable possibility of an episode causing harm or damage.

Significant Important, weighty or more than ordinary.

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or *in situ*, or contribution as a component of the overall landscape for *amenity* or aesthetic qualities, or *curtilage* to structures, or importance due to uniqueness of taxa for species, subspecies, variety, *crown form*, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as *remnant vegetation*, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Substantial A tree with large dimensions or proportions in relation to its place in the landscape.

Sustainable Retention Index Value (SRIV) A visual tree assessment method to determine a qualitative and numerical rating for the viability of urban trees for development sites and management purposes, based on general tree and landscape assessment criteria using classes of *age*, *condition* and *vigour*. SRIV is for the professional manager of urban trees to consider the tree *in situ* with an assumed knowledge of the *taxon* and its growing environment. It is based on the physical attributes of the tree and its response to its environment considering its position in a matrix for age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property. This also factors the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. SRIV is supplementary to the decision made by a tree management professional as to whether a tree is retained or removed (IACA - Institute of Australian Consulting Arboriculturists 2005).

Visual Tree Assessment (VTA) A visual inspection of a tree from the ground based on the principle that, when a tree exhibits apparently superfluous material in its shape, this represents repair structures to rectify *defects* or to reinforce weak areas in accordance with the *Axiom of Uniform Stress* (Mattheck & Breloer 1994, pp. 12-13, 145). Such assessments should only be undertaken by suitably competent practitioners.

Leaning Trees

Leaning A tree where the *trunk* grows or moves away from upright. A lean may occur anywhere along the *trunk* influenced by a number of contributing factors e.g., genetically predetermined characteristics, competition for space or light, prevailing winds, aspect, slope, or other factors. A *leaning* tree may maintain a *static lean* or display an increasingly *progressive lean* over time and may be hazardous and prone to *failure* and *collapse*. The degrees of leaning can be categorized as *Slightly Leaning*, *Moderately Leaning*, *Severely Leaning* and *Critically Leaning*.

Slightly Leaning A leaning tree where the trunk is growing at an angle within 0°-15° from upright.
Moderately Leaning A leaning tree where the trunk is growing at an angle within 15°-30° from upright.
Severely Leaning A leaning tree where the trunk is growing at an angle within 30°-45° from upright.
Critically Leaning A leaning tree where the trunk is growing at an angle greater than $>45^{o}$ from upright.
Progressively Leaning A tree where the degree of *leaning* appears to be increasing over time.
Static Leaning A leaning tree whose lean appears to have stabilized over time.

Periods of Time

Periods of Time The life span of a tree in the urban environment may often be reduced by the influences of encroachment and the dynamics of the environment and can be categorized as *Immediate*, *Short Term*, *Medium Term* and *Long Term*.

Immediate An *episode* or occurrence, likely to happen within a twenty-four (24) hour period, e.g., tree failure or collapse in full or part posing an imminent danger.
Short Term A period of time less than <1 – 15 years.
Medium Term A period of time 15 – 40 years.
Long Term A period of time greater than >40 years.

Roots

First Order Roots (FOR) Initial woody roots arising from the *root crown* at the base of the *trunk*, or as an *adventitious root mass* for structural support and *stability*. Woody roots may be buttressed and divided as a marked gradation, gradually tapering and continuous or tapering rapidly at a short distance from the root crown. Depending on soil type these roots may descend initially and not be evident at the root crown or become buried by changes in soil levels. Trees may develop 4-11 (Perry 1982, pp. 197-221), or more first order roots which may radiate from the trunk with a relatively even distribution, or be prominent on a particular aspect, dependent upon physical characteristics e.g. leaning trunk, *asymmetrical* crown; and constraints within the growing *environment* from topography e.g. slope, soil depth, rocky outcrops, exposure to predominant wind, soil moisture, depth of *water table* etc.

Orders of Roots The marked divisions between woody roots, commencing at the initial division from the base of the trunk, at the *root crown* where successive branching is generally characterised by a gradual reduction in root diameters and each gradation from the trunk and can be categorized numerically, e.g., *first order roots*, second order roots, third order roots etc. Roots may not always be evident at the *root crown*, and this may be dependent on species, age class and the growing environment. Palms at maturity may form an adventitious root mass.

Root Plate The entire root system of a tree generally occupying the top 300-600mm of soil including roots at or above ground and may extend laterally for distances exceedingly twice the height of the tree (Perry 1982, pp. 197-221). Development and extent are dependent on water availability, soil type, *soil depth* and the physical characteristics of the surrounding landscape.

Root Crown Roots arising at the base of a trunk.

Zone of Rapid Taper The area in the *root plate* where the diameter of *structural roots* reduces substantially over a short distance from the *trunk*. Considered to be the minimum radial distance to provide structural support and *root plate* stability. See also *Structural Root Zone (SRZ)*.

Structural Roots Roots supporting the infrastructure of the *root plate* providing strength and *stability* to the tree. Such roots may taper rapidly at short distances from the *root crown* or become large and woody as with gymnosperms and dicotyledonous angiosperms and are usually 1st and 2nd order roots or form an *adventitious root mass* in monocotyledonous angiosperms (palms). Such roots may be crossed and grafted and are usually contained within the area of *crown projection* or extend just beyond the *dripline*.

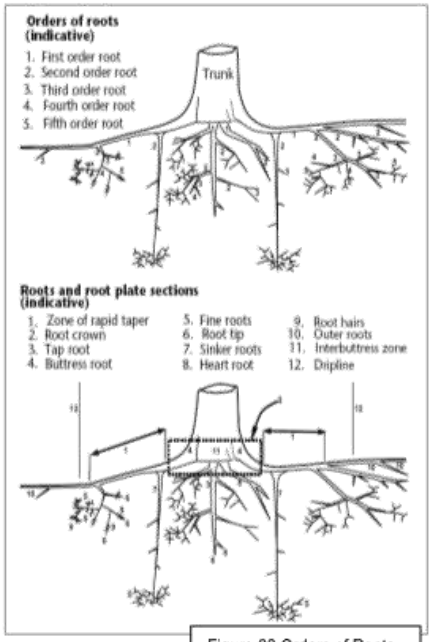


Figure 22 Orders of Roots.

Symmetry

Symmetry Balance within a *crown*, or *root plate*, above or below the *axis* of the trunk of branch and foliage, and root distribution respectively and can be categorized as *Asymmetrical* and *Symmetrical*.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage *crown* or *root plate* around the vertical *axis* of the trunk. This may be due to *Crown Form Codominant* or *Crown Form Suppressed* as a result of natural restrictions e.g., from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the *foliage crown* around the vertical *axis* of the trunk. This usually applies to trees of *Crown Form Dominant* or *Crown Form Forest*. An example of an expression of this may be crown symmetrical.

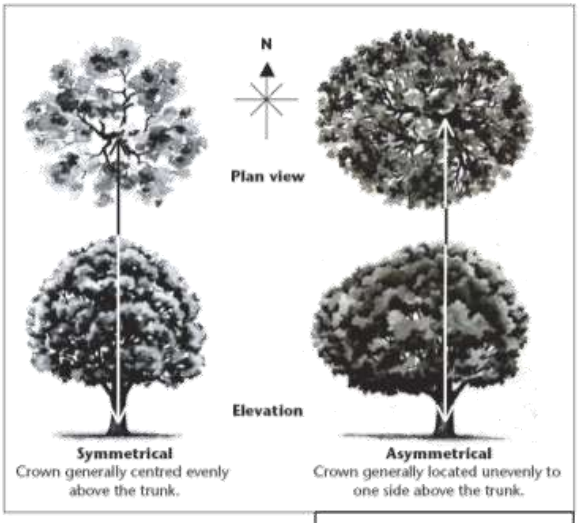


Figure 27 Symmetry within crown

Trunk

Trunk A single stem extending from the *root crown* to support or elevate the *crown*, terminating where it divides into separate *stems* forming *first order branches*. A trunk may be evident at or near ground or be absent in *acaulescent* trees of *deliquescent* habit or may be continuous in trees of *excurrent* habit. The trunk of any *caulescent* tree can be divided vertically into three (3) sections and can be categorized as *Lower Trunk*, *Mid Trunk* and *Upper Trunk*. For a *leaning* tree these may be divided evenly into sections of one third along the trunk.

Acaulescent A *trunkless* tree or tree growth forming a very short *trunk*. See also *Caulescent*. (See Fig. 21)

Caulescent Tree grows to form a *trunk*. See also *Acaulescent*. (See Fig. 21)

Lower trunk Lowest, or *proximal* section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Mid trunk* and *Upper trunk*.

Mid trunk A middle section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Lower trunk* and *Upper trunk*.

Upper trunk Highest, or *distal* section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Lower trunk* and *Mid trunk*.

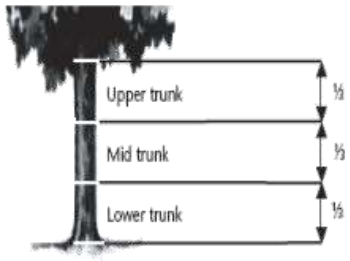


Figure 28 Trunk sections.

Diameter at Breast Height (DBH) Measurement of trunk width calculated at a given distance above ground from the base of the tree often measured at 1.4 m. The trunk of a tree is usually not a circle when viewed in cross section, due to the presence of *reaction wood* or *adaptive wood*, therefore an average diameter is determined with a *diameter tape* or by recording the trunk along its narrowest and widest axes, adding the two dimensions together and dividing them by 2 to record an average and allowing the orientation of the longest axis of the trunk to also be recorded. Where a tree is growing on a lean the distance along the top of the trunk is measured to 1.4m and the diameter then recorded from that point perpendicular to the edge of the trunk. Where a *leaning* trunk is *crooked* a vertical distance of 1.4m is measured from the ground. Where a tree branches from a trunk that is less than 1.4m above ground, the trunk diameter is recorded perpendicular to the length of the *trunk* from the point immediately below the base of the flange of the *branch collar* extending the furthest down the trunk, and the distance of this point above ground recorded as *trunk* length. Where a tree is located on sloping ground the DBH should be measured at halfway along the side of the tree to average out the angle of slope. Where a tree is *acaulescent* or *trunkless* branching at or near ground an average diameter is determined by recording the radial extent of the trunk at or near ground and noting where the measurement was recorded e.g., at ground.

Vigour

Vigour Ability of a tree to sustain its life processes. This is independent of the *condition* of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g., *dormant*, deciduous or semi-deciduous trees. Vigour can be categorized as *Normal Vigour, High Vigour*, *Low Vigour* and *Dormant Tree Vigour*.

Normal Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the *typical* growth of leaves, *crown cover* and *crown density*, branches, roots and trunk and *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour *Accelerated growth* of a tree due to incidental or deliberate artificial changes to its growing *environment* that are seemingly beneficial, but may result in *premature aging* or failure if the favourable conditions cease, or promote *prolonged senescence* if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous *pollarding* practices over the life of the tree.

Low Vigour Reduced ability of a tree to sustain its life processes. This may be evident by the *atypical* growth of leaves, reduced *crown cover* and reduced *crown density*, branches, roots and trunk, and a deterioration of their functions with reduced *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

Appendix F

Survey of Subject Tree/s

Trees the subject of this report are marked on the plans in the following appendices and are numbered as listed below.

Redgum Tree No.	*Genus and species*	Common name	Recommendation
1	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
2	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
3	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
4	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
5	*Callistemon viminalis 'Dawson River'*	Dawson River Weeper	Retain and protect – *Street tree*
6	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*
7	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*
8	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Remove and replace – *Street tree*
9	*Callistemon citrinus 'Kings Park Special'*	Kings Park Bottlebrush	Retain and protect – *Street tree*

Table 2.0 This table only applies to trees being retained. Tree Protection Zone fencing locations as measured from the centre of each tree and the recommended distances for the side closest to the building construction works e.g., excavation (see explanatory notes below). Tree Protection Zone fences and setbacks where applicable are indicated in Appendix F.

1. Redgum Tree No.	2. Structural Root Zone **SRZ (DARB)** From centre of trunk (COT) Diameter Above Root Buttress AS4970 2009 Section 3, 3.3.5 (see Appendix D) where applicable (Minimum 1.5 metres)	3. Trunk Diameter at Breast Height **DBH** 1.4m above ground, AS4970 2009, or mm or m above ground where indicated. # = average. g = ground	4. Tree Protection Zone (TPZ) = **12 x DBH** From centre of trunk (COT) in metres AS4970 2009Section 3 (See Appendix D) (Minimum 2.0 metres)	5. Proposed distance of tree protection fence/works on the side closest to building construction[2], in metres by Redgum Horticultural.
1	1.7	200# @g	2.4	2.4
2	1.7	200# @g	2.4	2.4
3	1.7	200# @g	2.4	2.4
4	1.7	200	2.4	2.4
5	1.7	200# @g	2.4	2.4
6	1.5 #25	100	2.0 #22	2.0
7	1.5 #25	100# @g	2.0 #22	2.0
9	1.6	170 (100x3# @g)	2.0	1.8 (1.8% driveway)

Descriptors for modified setbacks as per above table.

1 Special condition apply to protect the roots of trees generally.
2 Additional protective fencing information is detailed in attached plans.
3 Acceptable due to the good relative tolerance of the species to development impacts.
4 Range of setbacks for the trees at each end of a linear stand are to be calculated if required.
5 Acceptable as fence located at a substantial distance beyond dripline or may also include the location of a smaller tree in proximity to a larger tree to be retained and the smaller tree being protected well within the protective fencing for that larger tree.
6 Acceptable due to additional special protection works, see Section 5.0 for this tree.
7 Acceptable as pre-existing site conditions were conducive to having restricted the development of root growth in this direction.
8 Street tree with protective fencing of minimal width to allow for pedestrian access along road reserve.
9 Acceptable as tree transplanted reducing the area of the root zone.
10 Acceptable as not effected by development works.
11 Young trees not expected to have established a substantially expansive root system and able to re-establish or modify growth to be sustainable due to age and good vigour.
12 Set back prescribed by the consent authority.
13 Acceptable as tree growing on a lean and encroachment on compression wood side where root growth is of reduced structural importance.
14 Acceptable as root mapping has indicated extent of structural woody roots with a diameter of 20 mm or more.
15 Acceptable as a specimen of palm taxa tolerant of encroachment.
16 Acceptable as excavation on down slope or across slope side of tree.
17 Acceptable as encroachment into growing area below ground minor, with one corner of building or excavation works extending to within the radius of the dripline.
18 Acceptable as encroachment by pier, including screw piles, with minimal disturbance.
19 Acceptable as encroachment above grade without excavation or sub-base compaction.
20 Acceptable as located within 0.5 m from edge of dripline.
21 Acceptable as encroachment with gap graded fill that can accommodate gaseous exchange between roots/soil and the atmosphere and ongoing root growth.
22 Minimum setback 2 m, AS4970 (2009) section 3, 3.2.
23 Maximum setback 15 m, AS4970 (2009) section 3, 3.2.
24 Tree is a palm, other monocot, cycad or tree fern TPZ is to be 1 m outside crown projection AS4970 (2009) section 3, 3.2.
25 Minimum Structural Root Zone (SRZ) for trees less than 0.15 m diameter is 1.5 m, AS4970 (2009) section 3, 3.5.

Explanatory notes for Table 2.0.

This table is based upon Australian Standard AS4970 2009 *Protection of trees on development sites*, Section 3 Determining the protection zone of the selected trees (see Appendix D), where the approved building works should be no closer, including excavation, than the dimensions stated above.

"3.3 Variations to the TPZ

3.3.2 Minor Encroachment - *If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.*

3.3.3 Major Encroachment

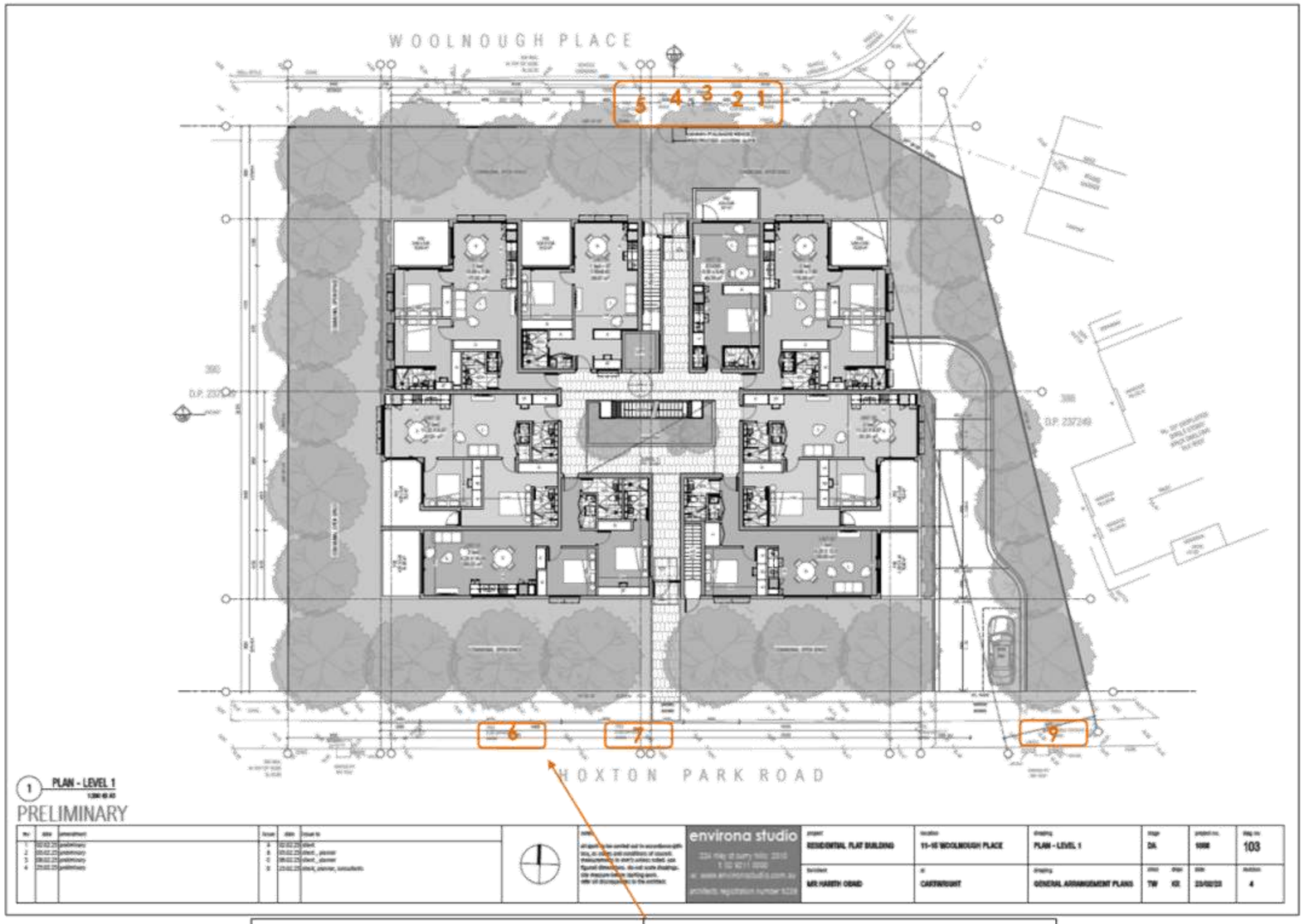
If the proposed encroachment is greater than 10% of the area of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ."

Appendix F

Site Plan B - Survey of Trees to be Retained and Tree Protection Plan

Plan reproduced by email and further reduced by electronic scanning and no longer to original scale. For other tree protection measures see sections 5.0 and 7.0.

All Tree Protection Zones are to be measured on site.



Redgum Legend

- ***Tree Protection Zone (TPZ),*** fencing with setbacks as indicated, or other protection measures or works as indicated.
- ***Tree Protection Zone,*** area of special protection measures or works outside of fenced area.
- Relocated ***Tree Protection Zone,*** area of special protection measures or works outside of fenced area once construction commences.
- XX Tree numbers – trees to be retained only. Subject trees represented by the approximate location of the trunk.

Indicative location of Tree Protection fencing which is to be measured on site and positioned along the Tree Protection Zone, excavation zone or proposed building footprint and to remain installed for the duration of the development. Installation of boundary fences within rootzone to be of pier and beam construction. All works to be carried out within the Tree Protection area after works commences is to be undertaken in consultation with site arboriculturist.

GROUND TECHNOLOGIES

Geotechnical Testing Services

Ground Technologies Pty Ltd
ABN 25 089 213 294
PO Box 1121 Green Valley NSW 2168
Ph: (02) 8783 8200 Fax: (02) 8783 8210
Email: lab@groundtech.com.au

GTE1224 – Stage 1 Contamination Assessment
1 June 2017

Client: Milan Ozegovic
c/- Algorry Zappia & Associates
E-mail: milan@minicreteconcrete.com.au

RE: STAGE 1 CONTAMINATION ASSESSMENT **at Nos.11-15 Woolnough Avenue, Cartwright**

This letter presents a Stage 1 Contamination report on the inspection and testing services associated with the contamination assessment undertaken at the above project.

Should you have any questions related to this report please do not hesitate to contact the undersigned.

For and on behalf of
Ground Technologies Pty Ltd

A. Bennett
Senior Geotechnical Engineer

GROUND TECHNOLOGIES

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Appendices

Appendix A – Search results of EPA Contaminated Land Register
Appendix B – Search of POEO register of licensed and delicensed premises

GROUND TECHNOLOGIES

EXECUTIVE SUMMARY

Ground Technologies Pty Ltd have undertaken a Stage 1 Contamination Report as requested on Nos.11-15 Woolnough Place, Cartwright. It is understood that the proposed works will comprise the construction of a five storey apartment building with one level of basement level car parking. The basement level car park will extend across the majority of the building envelope to a depth of approximately 3.0m below existing ground surface levels.

The objective of the Stage 1 Contamination Report was to ascertain whether the site presents a risk to human health and/or the environment arising from any past/present activities at the site or neighbouring properties. The following scope of work was conducted:

- Desktop Study of the following to assist in identification of potential contamination issues:
  - Data from Environment Protection Authority
  - Data from the Protection of the Environment Operations Public Register (POEO)
- Review of soils and geological maps.
- Review of aerial photography
- Site Inspection by a Geotechnical Engineer to ascertain current activities, and any visible signs of contamination.

The conclusions of this Contamination Report are as follows:

- Historical research shows the site has always been used for residential purposes.
- The site is in a long established residential area. A review of aerial photography suggests that the neighbouring properties are residential and not considered to have posed a risk for potential contamination to the site. The commercial sites are separated by Hoxton Park Road and considered to pose little to no environmental risk. No industrial facilities are in the vicinity of the subject site.
- A search of the NSW EPA Contaminated Land Management record of notices revealed that there were no notices issued to the subject site. No history of dangerous manufacturing utilizing heavy chemicals or metals was documented.
- The site is in a region of no known acid sulphate soils

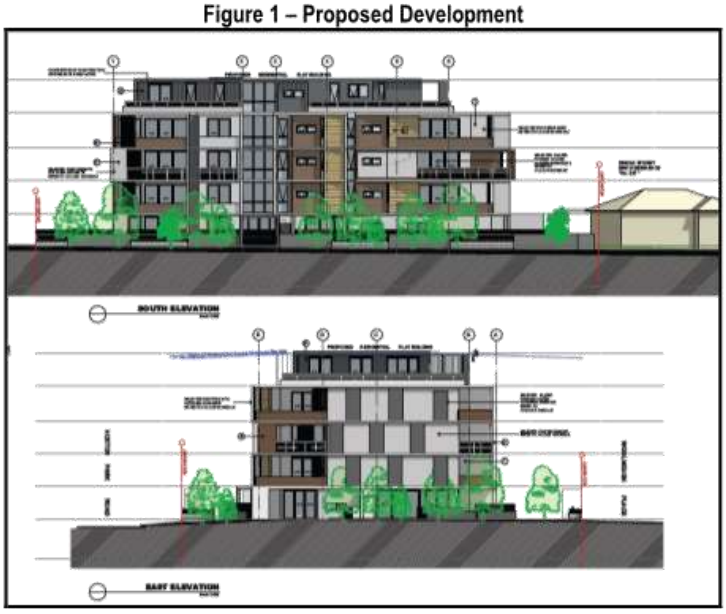
The site is suitable for development for "residential" use. No remediation action plan is required.

GROUND TECHNOLOGIES

1.0 INTRODUCTION

Ground Technologies Pty Ltd have undertaken a Stage 1 Contamination Report as requested on Nos.11-15 Woolnough Place, Cartwright. It is understood that the proposed works will comprise the construction of a five storey apartment building with one level of basement level car parking. The basement level car park will extend across the majority of the building envelope to a depth of approximately 3.0m below existing ground surface levels.

Figure 1 – Proposed Development



2.0 SCOPE OF WORK

The following scope of work was conducted:

- Desktop Study of the following to assist in identification of potential contamination issues:
  - Data from Environment Protection Authority
    - Scheduled premises
    - Section 35 notices
    - Unhealthy building land sites
    - Sites which are likely contaminated and not contaminated
  - Data from the Protection of the Environment Operations Public Register (POEO)
- Review of soils and geological maps.
- Review of aerial photography
- Site Inspection by a Geotechnical Engineer to ascertain current activities, and any visible signs of contamination.
- Preparation of the Stage1 Contamination Report.

GROUND TECHNOLOGIES

3.0 SITE DESCRIPTION

Table 1 - Summary of Site Details

Site Address	11-15 Woolnough Place, Cartwright
Council Area	Liverpool City Council
Lot / DP	Lots 387-389 DP237249

Figure 2 – Site Location

The subject site is the combination of three existing residential parcels of land, all with frontages to Hoxton Park Road and Woolnough Place. The combined site is near irregular in shape and measures approximately 52m wide along the Hoxton Park Road frontage, 38m wide along the Woolnough Place frontage and is up to approximately 37m deep. The site covers an area of approximately 1740m^2 and is relatively flat.

No.11 Woolnough Place contains a single storey weatherboard house located centrally within the property. The front and rear yards are predominately grass covered. No.13 Woolnough place contains a single storey brick house located centrally within the property and a fibro garage along the Woolnough Place frontage. The front and rear yards are predominately grass covered. No.15 Woolnough Place contains a single storey brick house located centrally within the property with a fibro garage and car port along the Woolnough Place frontage. The front and rear yards are predominately grass covered. The surrounding sites contain residential houses of similar construction and a commercial precinct is located on the opposite side of Hoxton Park Road.

Photograph 1 – No.15

Photograph 2 – No.13

Photograph 3 – No.11

GROUND TECHNOLOGIES

4.0 SITE HISTORY

In order to ascertain the site history, a documentary review of past and present land use at the subject site and the surrounding area has been undertaken as follows:

4.1 Aerial Photographs:

A review of Historical Aerial Photographs was undertaken in order to provide a greater insight into the site history.

1947 – In 1947 the site appears to be undeveloped land. The surrounding properties appear to be vacant. No commercial or industrial properties could be observed within the region. The subject site is highlighted in figure 3.

Figure 3 – Aerial Photograph from 1947 showing Approximate Location of Site

1965 – In 1965 the cartwright subdivision is being created and the subject sites being developed. No commercial or industrial properties could be observed within the region. The subject site is highlighted in figure 4.

Figure 4 – Aerial Photograph from 1965 showing Location of Site

GROUND TECHNOLOGIES

1985 – In 1985, the cartwright subdivision is completed and in use for residential purposes. The commercial precinct has commenced construction on the southern side of Hoxton Park Road. The subject site is highlighted in figure 5.

Figure 5 – Aerial Photograph from 1985 showing Location of Site

2016 – In 2016, no significant changes can be observed within the cartwright subdivision and it is still in use for residential purposes. The commercial precinct has been finished on the southern side of Hoxton Park Road. The subject site is highlighted in figure 6.

Figure 6 – Aerial Photograph from 2016 showing Location of Site

GROUND TECHNOLOGIES

4.2 Search of Contaminated Land Management Register (NSW EPA):

A summary of the search of the NSW EPA Contaminated Land Management record of notices for the Cartwright area can be found in Appendix A. No notices have been issued within the suburb.

4.3 Search of Protection of the Environment Operations Public Register (POEO) of Licensed and Delicensed Premises:

A search of the POEO public register of licensed and delicensed premises provided the details of zero (0) licenses issued in the Cartwright area (see Appendix B).

5.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

A site investigation was conducted on the 23rd of May January 2017. The field observations are summarised in the table below:

Table 2 – Summary of Field Observations

Parameter	Observation
Visible observations on soil contamination	No visible evidence of contamination was observed. No staining of the soils or odours were documented.
Signs of plant stress	None observed.
Signs of Agriculture	None observed. No visible indicators of tilled land
Presence of drums, fill or waste materials	None observed. No visible indicators of underground fuel tanks (bowsers or venting pipes)
Presence of fill	No significant filling was observed.

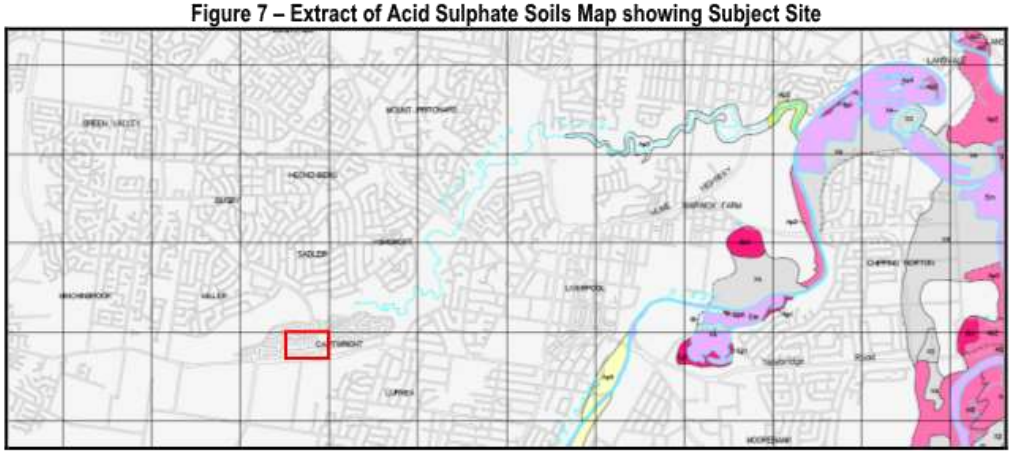
6.0 SITE GEOLOGY

The 1:100,000 scale Geological Series Map of the Penrith region indicates that the subject site is underlain by an Alluvial profile (Qpn) and generally comprises medium grained sand, silt and clay.

7.0 ACID SULPHATE SOILS

The Department of Land and Water Conservation Acid Sulphate Soils Map (Liverpool) indicates that the site is in an area of no known acid sulphate soils.

Figure 7 – Extract of Acid Sulphate Soils Map showing Subject Site



GROUND TECHNOLOGIES

8.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions of this Contamination Report are as follows:

- Historical research shows the site has always been used for residential purposes.
- The site is in a long established residential area. A review of aerial photography suggests that the neighbouring properties are residential and not considered to have posed a risk for potential contamination to the site. The commercial sites are separated by Hoxton Park Road and considered to pose little to no environmental risk. No industrial facilities are in the vicinity of the subject site.
- A search of the NSW EPA Contaminated Land Management record of notices revealed that there were no notices issued to the subject site. No history of dangerous manufacturing utilizing heavy chemicals or metals was documented.
- The site is in a region of no known acid sulphate soils

The site is suitable for development for "residential" use. No remediation action plan is required.

REFERENCES:

Geological Series Sheet 9130 (EDITION 1) 1983, Map of the Sydney region, scale 1:100,000

Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites. NSW Environment Protection Authority (EPA) 2000.

Managing Land Contamination: Planning Guidelines SEPP55 – Remediation of Land - Department of Urban Affairs and Planning and Environment Protection Authority (DUAP and EPA) 1998.

National Environment Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council 1999.

APPENDIX A

SEARCH RESULTS OF EPA CONTAMINATED LAND REGISTER

Healthy Environment, Healthy Community, Healthy Business

NSW EPA

Home | Protecting your environment | For business and industry | About the NSW EPA | Media and information | Contact us

Home Contaminated land Record of notices

Search results

Your search for: Suburb: CARTWRIGHT

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

APPENDIX B

SEARCH OF POEO REGISTER OF LICENSED AND DELICENSED PREMISES

Healthy Environment, Healthy Community, Healthy Business

NSW EPA

Home | Protecting your environment | For business and industry | About the NSW EPA | Media and information | Contact us

Home > Environment protection licences > POEO Public Register > Search for licences, applications and notices

Search results

Your search for: **General Search** with the following criteria

Suburb - CARTWRIGHT

returned 0 result

LIVERPOOL CITY COUNCIL

Minutes

MINUTES OF DESIGN EXCELLENCE PANEL MEETING
Thursday the 8th of February 2024

DEP PANEL MEMBERS PRESENT:

Lee Hillam	Chairperson	DunnHillam Architects
David Moir	Panel Member	Moir Landscape Architecture
Ian Armstrong	Panel Member	DesignInc

APPLICANT REPRESENTATIVES:

Tone Wheeler	Principal Architect	Environa Studio
Carl Robinson	Project Architect	Environa Studio
Natasha Margetic	Project Administrative Assistant	Environa Studio

OBSERVERS:

Amanda Merchant	Panel Support Officer	Liverpool City Council
Joshua Walters	Convenor/Acting Senior Urban Designer	Liverpool City Council
Edwar Eshow	Development Assessment Planner	Liverpool City Council
Greg Samardzic	Team Leader Development Assessment	Liverpool City Council

ITEM DETAILS:

Item Number: 3

Application Reference Number: DA-562/2023

Property Address: 11, 13 & 15 Woolnough Place, Cartwright NSW 2168

Council's Planning Officer: Edwar Eshow

Applicant: Obaid Investments Pty Ltd

Proposal: Demolition of the existing structures & construction of a four-storey residential flat building with 32 dwellings (1 x studio, 8 x 1 bedroom and 23 x 2-bedroom dwellings) & two basement levels. The development includes 14 dwellings that would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of SEPP 2021.

Meeting Venue: Microsoft Teams Meeting

1.0 WELCOME, ATTENDANCE, APOLOGIES AND OPENING

The Chairperson introduced the Panel and Council staff to the Applicant Representatives. Attendees signed the Attendance Registration Sheet.

The Liverpool Design Excellence Panel's (the Panel), comments are to assist Liverpool City Council in its consideration of the Development Application.

LIVERPOOL CITY COUNCIL

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The absence of a comment under any of the principles does not necessarily imply that the Panel considers the particular matter has been satisfactorily addressed, as it may be that changes suggested under other principles will generate a desirable change.

All nine design principles must be considered and discussed. Recommendations are to be made for each of the nine principles, unless they do not apply to the project. If repetition of recommendations occur, these may be grouped together but must be acknowledged.

2.0 DECLARATIONS OF INTEREST

Nil.

3.0 PRESENTATION

The applicant presented their proposal for DA-562/2023 - 11, 13 & 15 Woolnough Place, Cartwright NSW 2168.

4.0 DEP PANEL RECOMMENDATIONS

The nine design principles were considered by the panel in discussion of the Development Application. These are 1] **Context,** 2] **Built Form + Scale,** 3] **Density,** 4] **Sustainability,** 5] **Landscape,** 6] **Amenity,** 7] **Safety,** 8] **Housing Diversity + Social Interaction,** 9] **Aesthetics.**

The Design Excellence Panel makes the following recommendations in relation to the project:

4.1. Context

- The Panel seeks clarity on whether there is a preliminary agreement with a Community Housing Provider who will manage the affordable housing in the development, as required. A letter from the CHP that will manage the affordable dwellings that confirms the future leasing arrangements should be submitted to Council.
- The Panel acknowledges the challenges of the development being located on the harsh road environment, however, the southern façade's address to Hoxton Park Road is presenting as a harsh design outcome and needs further development. The applicant is to show options that improve façade articulation and appearance to Hoxton Road and allow more southern light to rooms along this facade. Natural ventilation is required, which must be achieved while also protecting residents from undue noise impacts.
- In addition to the above, the southern façade line is all in one alignment and presenting overly uniform to Hoxton Park Road. The Panel suggests the applicant explore introducing a small indent at the entry way to visually break the expression of the built form to visually read as 2 buildings. The applicant noted that further investigations of the rhythm of the precast panels and central entry panel will be undertaken.

4.2. Built Form + Scale

- The Panel commends the extent of deep soil (30% of the site) enabled by the setbacks proposed and the basement footprint aligning with the building line above. The

LIVERPOOL CITY COUNCIL

Minutes

landscape plan should show a commitment to large trees that can achieve substantial height and canopy.

- The central stair and planter are currently obscuring the ability to have a view and light through the ground floor entry space of the development. The applicant should explore shifting the stair to create a clearer line of sight. In doing so it is not the Panel's intent to compromise the planting in this area which is supported.

4.3. Density

- The FSR according to the LEP is 1:1 for the site and 1.2:1 in the Housing SEPP. The applicant confirmed the proposal exceeds the FSR at 1.4:1 and justified the additional .4 is dedicated to affordable housing (12 affordable apartments out of 32 in the development). The Panel is of the view that the additional 0.2 FSR is not creating negative impact on the context and can be supported.
- The Panel appreciates the proposal is comfortably within the height limit and is not maximising height, and notes there is a good opportunity to create more useable communal open space on the rooftop away from the traffic at ground level.

4.4. Sustainability

- The Panel suggests that windows to bathrooms that look over the central atrium could be included (subject to ADG and BCA restrictions) to gain natural light and/or ventilation and reduce reliance on artificial lighting and mechanical systems.
- External sun-screening devices are required to be introduced to the east and western facades to provide solar protection. The shading provided on the north façade is supported.
- The applicant's efforts to embed ESD principles into the project and proposing above the minimum NatHERS requirements are commended.
- The sustainability approach to have exposed concrete internally to improve thermal massing and ESD performance is supported.
- The Panel raised concerns the roof plan does not show adequate PV panels that would be typical for this scale of residential development. This should be amended as part of the revised proposal.

4.5. Landscape

- The Panel supports the proposed large trees in the landscaping and emphasises the importance of enabling the trees to reach their maturity in height and canopy as they will improve the amenity of the apartments and serve as a buffer to Hoxton Park Road.
- The relationship between the built form and landscape needs further development. The proposal includes strips of turf running into the building edge creating a poor interface. Turf requires long-term maintenance to thrive and will receive limited daylight along the southern area of the site. The Panel recommends a stronger Connecting to Country response. Turf could be replaced with native planting up to the building edges, and with considered species selection the landscaping around the building can become a dense planting and biodiversity zone, (also referred to as an urban micro-forest). The applicant could consider incorporating a winding gravel pathway and informal seating situated in shaded areas away from bedrooms and balconies.

LIVERPOOL CITY COUNCIL

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- The communal open spaces at ground level do not have sufficient width, are subject to traffic noise, and impact the privacy of the ground level apartments. The Panel recommends utilising the rooftop as communal open space instead. Incorporating elements to enhance functionality, should be considered (e.g., shading and BBQs).
- The proposed central open courtyard and atrium is supported. However, the applicant should investigate continuing the landscaping up onto the rooftop improving the amenity of the rooftop communal space.

4.6. Amenity

- The architectural drawings submitted show a 3m floor to floor height. However, during the presentation the applicant noted that this will be revised to 3.04m and that this can accommodate the minimum height necessary, as there is an absence of ceiling linings.
- If a less than 3.2m floor to floor height is proposed, the Panel requires the applicant to provide sections through living, bathroom, and communal corridor spaces to demonstrate how ADG ceiling height compliance will be achieved and also how it will accommodate the required structures and services. Given the development is well under the height limit, an additional allowance for floor-to-floor height is recommended.

4.7. Safety

- While the Panel acknowledges the challenges of the southern façade including the noise from Hoxton Park Road, it strongly recommends the extent of glazing be increased along this facade to improve passive surveillance of the public footpath.
- The applicant requested the opportunity to adjust the panel layout for the pre-cast panels on the elevations. In this regard, the Panel is supportive of the applicant submitting amended elevations.

4.8. Housing Diversity + Social Interaction

- The applicant advised the apartments will be managed through a Build-To-Rent model. In this regard, the Panel notes the success of the communal spaces needs to allow for multiple resident groups to use the communal spaces independently and concurrently. This will require a COS design which provides a diversity of spaces and some privacy or shielding between each area.
- The applicant noted, that given the availability of larger houses and minimal market demand in the area, there are no 3-bedroom apartments proposed within the development. In this regard, the Panel is of the view that 3-bedroom apartments are important to include as they provide more flexibility for people to stay within a residence throughout different stages of their life. The Panel requests that at least two 3-bedroom apartments be included (for example by combing units 3+ 4 and Units 5+6) within the development.

4.9. Aesthetics

- The aesthetics of the southern façade are discussed in Context.
- The Panel advises any adjustments to the southern façade is not to include the introduction of balconies as they are not suitable for this frontage of the project.
- The applicant notes there will be a significant increase in trees and planting along the southern façade, and this elevation will likely be dominated by greenery once the

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planting is established. In this regard, the forthcoming architectural and landscape drawings and specifications should confirm the proposed tree planting and landscaping strategy.

- The approach to the material and finishes including the sealed natural precast concrete, glass, and a soft green painted and textured feature precast panel on the façade and balcony panels is supported.

5.0 OUTCOME

The panel have determined the outcome of the DEP review and have provided final direction to the applicant as follows:

The project is supported. Respond to recommendations made by the panel, then the plans are to be reviewed/approved by Council.

ATTACHMENT 5 – CONDITIONS OF APPROVAL

Council has imposed the following conditions under the relevant planning instruments and policies.

A. THE DEVELOPMENT

Approved Plans

1. Development the subject of this determination notice must be carried out strictly in accordance with the following plans/reports marked as follows, except were modified by the undermentioned conditions.

   (a) Architectural plans, prepared by Environa Studio, including the following;

Plan Name	Sheet Number	Issue	Date
Basement 2	101	C	16/05/24
Basement 1	102	D	28/06/24
Floor Plan Level 1	103	D	28/05/24
Floor Plan Level 2, 3, 4	104	C	16/05/24
Layout Plan Level 5	107	C	16/05/24
Layout Plan Roof	110	C	16/05/24
Section -AA	120	C	16/05/24
Section – BB	121	C	16/05/24
North Elevation	130	C	16/05/24
South Elevation	131	C	16/05/24
East Elevation	132	C	16/05/24
West Elevation	133	C	16/05/24
Materials	210	A	27/09/23
Solar Impact – June 21	920	C	16/05/24
Solar Impact – Sept 23	921	C	16/05/24
Solar Impact – Dec 21	922	C	16/05/24
Solar Access Diagrams Sheet	930	D	12/06/24
Solar Access Diagrams Sheet	931	D	12/06/24
Solar Access Diagrams Sheet	932	D	12/06/24
Solar Access Diagrams Sheet	933	D	12/06/24
Existing/Demolition Plan	903	A	23/02/23
Perspective Sheet	910	B	16/05/24

   (b) Erosion and Sediment Control Plan, prepared by SGC Project Number 20230040, including the following;

Plan Name	Drawing No.	Issue	Date
Erosion and Sediment Control Plan	SW400	A	12.07.23

   (c) Landscape plans, prepared by JLA (John Lock and Associates) and Enviro Studio, including the following;

Plan Name	Drawing No.	Issue	Date
Landscape Site Plan	3003 LP-00	02	20/06/2023
Landscape Plan SHEET 1	3003 LP-01	02	20/06/2023
Landscape Plan SHEET 2	3003 LP-02	02	20/06/2023
Landscape Plan SHEET 3	3003 LP-03	02	20/06/2023
Landscape Plan SHEET 4	3003 LP-04	02	20/06/2023
Landscape Details	3003 LP-20	02	20/06/2023

(d) Documents

Report Name	Date	Reference	Prepared by
Design Verification Statement	20 May 2024	-	Enviro Studio
Waste Management Plan	13 May 2023	Revision 1	MRA Consulting Group
BASIX Certificate	27 September 2023	1411468M	Efficient Living Pty Ltd
Traffic Impact Assessment 11-15 Woolnough Place Cartwright	23/05/2024	0743r01v04	PDC Consultants
11-15 Woolnough Place, Cartwright, DA Acoustic Report	14 September 2023	Job No. 2276/6 B 23344	West & Associates Pty Ltd
Arboricultural Impact Assessment and Tree Management Plan	27 April 2023	8724	Redgym Horticultural
Stage 1 Contamination Assessment	1 June 2017	GTE1224	Ground Technologies Pty Ltd

Endeavour Energy Requirements

2. The development is to demonstrate compliance with all relevant requirements issued by Endeavour Energy, issued 17 January 2024 (Attachment 7).

Sydney Water Requirements

3. The development is to demonstrate compliance with all relevant requirements issued by Endeavour Energy, issued 8 February 2024 (Attachment 6).

Comply with EP&A Act

4. The requirements and provisions of the Environmental Planning & Assessment Act 1979 and Environmental Planning & Assessment Regulation 2021, must be fully complied with at all times.

   Failure to comply with these legislative requirements is an offence and may result in the commencement of legal proceedings, issuing of 'on-the-spot' penalty infringements or service of a notice and order by Council.

Prescribed Condition

5. In accordance with section 4.16(11) of the Environmental Planning & Assessment Act 1979 and clause 69 of the Environmental Planning & Assessment Regulation 2021, it is a prescribed condition that all building work must be carried out in accordance with the applicable Performance Requirements of the National Construction Code. Compliance with the Performance Requirements can only be achieved by:

   (a) Complying with the Deemed to Satisfy Provisions; or
   (b) Formulating an Alternative Solution, which complies with the Performance Requirements or is shown to be at least equivalent to the Deemed to Satisfy Provision, or a combination of (a) and (b).

Works at no cost to Council

6. All roadworks, drainage works and dedications, required to effect the consented development shall be undertaken ativerpool City Council.

B. PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

The following conditions are to be complied with or addressed prior to the issue of a Construction Certificate by the Principal Certifying Authority.

Section 7.11 Payment (Liverpool Contributions Plan 2018 – Established Areas)

7. As a consequence of this development, Council has identified an increased demand for public amenities and public services. The following payment is imposed in accordance with Liverpool Contributions Plan 2018 – Established Areas as amended.

   The total contribution is **$301,474** and will be adjusted at the time of payment in accordance with the contributions plan.

   A breakdown of the contributions payable is provided in the attached payment form.

   The Contributions Plan may be inspected online at www.liverpool.nsw.gov.au

   Payment must be accompanied by the attached form (Attachment 2).

Plan Amendments

8. Prior to the issue of a construction certificate, the construction certificate plans are to be amended to demonstrate the following to the satisfaction of the Principal Certifying Authority:

   (a) **Fencing Design**: The proposed 1.8m high fence, along Woolnough Place, will be composed of both visually permeable and visually impermeable materials (from the ground level to the height of 1.5m the fence will be made from visually impermeable materials whilst the rest of the fence 300mm will be made from visually permeable materials).

   (b) **Landscaping**: The submitted landscaping plans shall be amended to achieve the outcomes sought by the Design Excellence Panel. Turf, along the ground level Communal Open Space area, is to be replaced with native planting up to the building edges. The applicant should consider native species that will achieve dense planting and a biodiversity zone, (also referred to as an urban micro-forest); and

   (c) **Rooftop Communal Open Space (COS):** Introduce, to the rooftop and landscaping plans, outdoor furniture and landscaping to the rooftop COS. The outdoor furniture should include functional and aesthetically attractive pieces such as fixed seating, tables, and other suitable structures associated with outdoor dining. The rooftop landscaping should be of a form, bulk, scale, and materials as to be integral and complimentary to the architecture of the building without creating adverse impacts on the structure of the roof (i.e., the roof must be able to support the additional load of the rooftop landscaping).

   (d) **Solar Access:** The wall to the living room, containing large glass windows facing westward and measuring 4170mm in width, shall be moved forward (towards the west) into the Private Open Space area, or balcony, by 500mm for the following units:
      1. Unit 2

2. Unit 9
3. Unit 17
4. Unit 25

(e) **Flood Management:**

1. The building floor level shall be no lower than the 1% AEP flood plus 300mm freeboard (i.e., 20.3m + 0.3m = 20.6m Australian Height Datum).
2. The structure shall be constructed from flood compatible building components below the 1% AEP flood plus 300mm freeboard (i.e., 20.3m + 0.3m = 20.6m Australian Height Datum).
3. The basement shall be protected from inundation of floodwaters for floods up to and including the 1% AEP flood plus 0.1m freeboard (i.e., 20.3m + 0.1m = 20.4m Australian Height Datum).
4. On-site detention (OSD) basin shall be provided to limit the post-development flow to the pre-development level. The basin shall be designed to ensure that peak post-development discharges from the site do not exceed peak pre-development discharges for the 20%, 5%, and 1% AEP storm events.

Access

9. Access must be provided to the building for people with a disability in accordance with the relevant requirements of the Building Code of Australia, Disability (Access to Premises – Buildings) Standard 2010 and Australian Standard – AS1428.1 (2009), Design for Access and Mobility – General requirements for new building work, to the satisfaction of the Certifying Authority.

Site Development Work

10. Site development work in the form of excavation, underpinning or shoring works must not take place, until such time as a CC has been issued.

Fee Payments

11. Unless otherwise prescribed by this consent, all relevant fees or charges must be paid. Where Council does not collect these payments, copies of receipts must be provided. For the calculation of payments such as Long Service Levy, the payment must be based on the value specified with the Development Application/Construction Certificate.

The following fees are applicable and payable:

(a) Damage Inspection Fee – relevant where the cost of building work is $20,000 or more, or a swimming pool is to be excavated by machinery,
(b) Fee associated with Application for Permit to Carry Out Work Within a Road, Park and Drainage Reserve, and
(c) Long Service Levy payment is applicable on building work having a value of $250,000 or more, at the rate of 0.25% of the cost of the works. The required Long Service Levy payment, under the *Building and Construction Industry Long Service Payments Act 1986*, is to be forwarded to the Long Service Levy Corporation or the Council, prior to the issuing of a Construction Certificate, in accordance with Section 6.8 of the *Environmental Planning & Assessment Act 1979*.

These fees are reviewed annually and will be calculated accordingly.

12. All fees associated with a road opening permit required for the connection, extension or amplification of any services within Council's road reserve must be paid to Council and

receipts provided to the Principal Certifying Authority. A separate form must be submitted in conjunction with payment of the fees. The fees include the standard road opening permit fee and any restoration fees that may be required as a result of the works.

Notification

13. The certifying authority must advise Council, in writing of:

    a) The name and contractor licence number of the licensee who has contracted to do or intends to do the work, or
    b) The name and permit of the owner-builder who intends to do the work.

    If these arrangements are changed, or if a contact is entered into for the work to be done by a different licensee, Council must be immediately informed.

S138 Roads Act – Minor Works in the public road

14. Prior to the issue of a Construction Certificate, a Section 138 Roads Act application/s, including payment of fees, shall be lodged with Liverpool City Council, as the Roads Authority for any works required in a public road. These works may include but are not limited to:

    (a) Vehicular crossings (including kerb reinstatement of redundant vehicular crossings),
    (b) Road opening for utilities and stormwater (including stormwater connection to Council infrastructure), or
    (c) Road occupancy or road closures.

    All works shall be carried out in accordance with the Roads Act approval, the development consent including the stamped approved plans, and Liverpool City Council's specifications.

    Note: Approvals may also be required from the Roads and Maritime Service (RMS) for classified roads.

S138 Roads Act – roadworks requiring approval of civil drawings

15. Prior to the issue of a Construction Certificate for building or subdivision works the Certifying Authority shall ensure that a S138 Roads Act application, including the payment of application and inspection fees, has been lodged with Liverpool City Council (being the Roads Authority under the Roads Act), for provision of 1.5m wide footpath on Woolnough Place.
    .
    Engineering plans are to be prepared in accordance with the development consent, Liverpool City Council's Design Guidelines and Construction Specification for Civil Works, Austroad Guidelines and best engineering practice.

    Note: Where Liverpool City Council is the Certifying Authority for the development the Roads Act approval for the above works may be issued concurrently with the Construction Certificate

On-Site Detention

16. On-Site Detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by SGC Consulting Engineers, reference number 20230040, revision A, dated 2/08/2023

The proposed development and stormwater drainage system shall be designed to ensure that stormwater runoff from upstream properties is conveyed through the site without adverse impact on the development or adjoining properties.

Engineering plans and supporting calculations for the onsite detention system are to be prepared by a suitably qualified person and shall accompany the application for a Construction Certificate.

Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the onsite detention system has been designed in accordance with Liverpool City Council's Design Guidelines and Liverpool City Council's On-Site Stormwater Detention policy and Technical Specification.

Stormwater Discharge – Basement Car parks

17. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the stormwater drainage system for the basement car park has been designed in accordance with the requirements for pumped systems in AS3500.3:2003 and Council's Stormwater Drainage Design Specifications for pump out systems for basement carparks.

No loading on easements

18. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the foundations of proposed structures adjoining the drainage and/ or services easement have been designed clear of the zone of influence.

Retaining Walls on Boundary

19. All retaining walls shall be of masonry construction and must be wholly within the property boundary, including footings and agricultural drainage lines. Construction of retaining walls or associated drainage works along common boundaries shall not compromise the structural integrity of any existing structures.

    Where a retaining wall exceeds 600mm in height, the wall shall be designed by a practicing structural engineer and a construction certificate must be obtained prior to commencement of works on the retaining wall.

Dilapidation Report

20. Prior to the issue of a Construction Certificate, a dilapidation report of all infrastructure fronting the development in Hoxton Park Road and Woolnough Place is to be submitted to Liverpool City Council. The report is to include, but not limited to, the road pavement, kerb and gutter, footpath, services and street trees and is to extend 10m either side of the development.

Dilapidation Report Private Property (Excavations)

21. A full dilapidation survey and report on the visible and structural condition of all neighbouring structures within the 'zone of influence' of the required excavations must be submitted to the Certifying Authority for approval prior to the issue of any Construction Certificate. The zone of influence is to be defined as the horizontal distance from the edge of the excavation face to twice the excavation depth.

The dilapidation report and survey is to be prepared by a consulting structural/geotechnical engineer agreed to by both the applicant and the owner of any affected adjoining property. A copy is also to be provided to the affected adjoining property owner/s.

All costs incurred in achieving compliance with this condition shall be borne by the person entitled to act on this Consent.

If access for undertaking the dilapidation survey is denied by an adjoining owner, the applicant must:

(a) Undertake as much as possible the survey from the development site, public areas and/or adjoining private property, and
(b) Demonstrate in writing to the satisfaction of the Principal Certifier that all reasonable steps have been taken to obtain access and advise the affected property owner of the reason for the survey and that these steps have failed.

Note: This documentation is for record keeping purposes only and may be used by the developer or affected property owner to assist in any action required to resolve any dispute over damage to adjoining properties arising from the works. It is in the applicant's and adjoining owner's interest for it to be as full and detailed as possible.

Basement Construction

22. All basement walls must be situated wholly within the boundary of consolidated lots comprising the site, including footings and subsoil drainage lines. Construction of basement walls or associated drainage works along common boundaries shall not compromise the structural integrity of any existing structures. Basement walls shall be designed by a practising structural engineer.

Where it is proposed to provide shoring to support an adjoining property, which involves encroachment of ancillary structural elements onto adjoining land to provide structural support of the shoring via rock anchors or the like, owner's consent for the encroachment from the affected property owner shall be provided with the engineering drawings of the basement wall(s) and any ancillary structural elements, and submitted to the Certifying Authority prior to the issue of a Construction Certificate for commencement of works on the basement walls.

Bond

23. Prior to the issue of any Construction Certificate, a bond is to be lodged with Liverpool City Council for the protection and maintenance of the existing street tree to be retained in Hoxton Park Road, and Woolnough Place, prior to and during the construction works until an Occupation Certificate is issued.

The value of the bond shall be determined and administered in accordance with Liverpool City Council's Bond Policy.

Note: Contact Council's Land Development Section for further information relating to bond requirements.

BASIX

24. Prior to the issue of a Construction Certificate, an amended BASIX Certificate is to be submitted to the PCA.

Cladding

25. For all buildings of Type A and B construction having finishes or claddings other than concrete or masonry, a fire safety report prepared by an accredited C10 fire engineer, must be submitted to the satisfaction of the PCA prior to issue of a construction certificate, demonstrating that the proposed attachments, cladding material and systems for the building complies with the NCC and relevant Australian Standards. The fire safety report is to include evidence of suitability of all proposed external wall cladding materials as per clause A2.2 of the NCC.

Products banned under the Building Products (Safety) Act 2017

26. No building products that are banned, or products that are subject to a ban if used in a particular way under the Building Products (Safety) Act 2017 are to be used in the construction of the development.

Fire Safety Measures

27. A schedule specifying all of the essential fire safety services, which are required for the building, shall be attached to the CC and submitted to Council, in compliance with the provisions of the EP&A Regulation.

28. The substation is to be located so that no blast walls are required as part of the design.

Retaining Walls on Boundary

29. All retaining walls shall be of masonry construction and must be wholly within the property boundary, including footings and agricultural drainage lines. Construction of retaining walls or associated drainage works along common boundaries shall not compromise the structural integrity of any existing structures.

    Where a retaining wall exceeds 600mm in height, the wall shall be designed by a practicing structural engineer and a construction certificate must be obtained prior to commencement of works on the retaining wall.

Access, Car Parking and Manoeuvring

30. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that vehicular access, circulation, manoeuvring, pedestrian and parking areas associated with the subject development are in accordance with AS 2890.1, AS2890.2, AS2890.6 and Liverpool City Council's Development Control Plan.

    The Certifying Authority shall also ensure and certify that a traffic warning system (traffic signal) is provided to govern traffic flow over the narrow sections of the ramp to ensure there is no conflict between oncoming vehicles.

31. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that:

    (a) Off street access and parking complies with AS2890.1,
    (b) Vehicular access and internal manoeuvring have been designed for the longest vehicle expected to service the development site, in accordance with AS2890,

(c) Sight distance at the street frontage has been provided in accordance with AS 2890.1, and
(d) All vehicles can enter and exit the site in a forward direction.
(e) Requirements of the Disability Discrimination Act 2002, Disability Parking.

Traffic and Parking

32. The applicant is to discuss with Council's Traffic Management Section of the traffic requirements prior to undertaking the detailed design of traffic facilities, signs and linemarking in the existing and/or proposed public domain.

Detailed design drawings of the proposed traffic facilities, signs and line markings in the existing and proposed public domain areas are to be submitted to Council for approval using Approval of Traffic Facilities including Signs and Line Marking Schemes Application Form. The application is available on Council website and should be lodged online. The drawings are to be prepared by a suitably qualified person.

33. Works within the public road reserve shall not commence until the design drawings including the associated signs and line marking scheme have been approved.

Prior to the issue of the Construction Certificate or Roads Act approval, the Certifying Authority shall ensure that the recommendations of the RSA have been addressed in the final design.

Construction Traffic Management Plan

34. A construction traffic management plan (CTMP) prepared by a suitably qualified person is to be submitted to and endorsed by Liverpool City Council's Transport Management Section for endorsement. The CTMP is to be submitted via an application form available on Council's website.

A copy of the endorsed CTMP and traffic control plans are to be available on the works site for inspection at any time by an authorised Council officer.

Construction shall not commence until the construction traffic management plan has been endorsed. The endorsed CTMP is to be implemented during construction.

Garbage Services

35. On site collection of waste and recycling must be provided and integrated with the design of high density residential development (RFBs and MUDs). This must comply with the specifications detailed in the *Fact Sheet: Waste Management Services for Residential Flat Buildings and Multi Dwelling Housing.*

Waste Storage Area – Construction

36. All waste management facilities shall comply with the Liverpool Development Control Plan 2008. Prior to the issue of a Construction Certificate, detailed floor and section plans shall be submitted to and approved by the Principal Certifying Authority for the waste storage area/s. The plans shall identify the location of the waste storage area/s and incorporate the following requirements:

(a) Sufficient space for access by residents, storage and easy manoeuvring of bins;
(b) The area is to be fully enclosed and include a solid roof and concrete or cement rendered walls coved to the floor;

(c) A concrete floor graded to an approved sewer connection comprising a sump and galvanised fine grade drain cover sufficient to prevent coarse pollutants from entering the sewer;
(d) Adequate ventilation to the external air by natural or mechanical means;
(e) The door to the room must be tight fitting and self-closing;
(f) A hose cock adjacent to the garbage storage area to facilitate cleaning of bins and the storage area. If the hose cock is located inside the waste storage area, it shall not protrude into the space indicated for the placement of bins;
(g) Sufficient lighting to permit usage at night; and
(h) Should garbage chutes be integrated into the design of the building, operational instructions shall be located prominently next to the chute.

Any modifications to the construction of the waste storage area require Council's prior written Approval.

Waste Storage Area

37. Any bin bays must be:

(a) Provided with mechanical ventilation,
(b) Provided with a hose cock for hosing the garbage bin bay and a sewered drainage point in or adjacent to the bin storage area. The drainage point should have a fine grade drain cover sufficient to prevent coarse pollutants from entering the sewer. If the hose cock is located inside the bin storage bay, it is not to protrude into the space indicated for the placement of bins,
(c) Provided with sufficient light to permit usage at night, and
(d) Allocated with sufficient space within the bin bay to allow for access to all required bins by residents and waste collectors, as well as manoeuvring of bins within the bay and for the removal and return of bins by the waste collector.

Waste Management

38. Prior to issue of a construction certificate, a waste management plan for the development must be prepared and provided to the Principal Certifier. The plan must be provide the following information:
(a) The contact details of the person removing waste; and
(b) The address of the disposal location for the waste.

39. Prior to the issue of a Construction Certificate, the waste management plan is to be amended to state that the removal, handling, wrapping and disposal of asbestos construction materials, or other hazardous materials encountered in the course of demolition works, will fulfil all legislation, regulations and safe work practices that apply in the State of NSW.

Recommendations of Acoustic Report

40. The recommendations provided in the approved acoustic report titled11 - 15 WOOLNOUGH PLACE, CARTWRIGHT DA ACOUSTIC REPORT" (Ref: 2276/6 23344) prepared by Joel West and reviewed by Warwick West for West & Associates Pty Ltd dated 14th September 2023 shall be implemented and incorporated into the design and construction of the development and be shown on plans accompanying the Construction Certificate application.

The construction methodology and plans accompanying the Construction Certificate application shall be assessed and certified in writing by a suitably qualified acoustic consultant to verify conformance with the requirements of the aforementioned acoustic report. The written certification from the suitably qualified acoustic consultant shall be submitted to and approved by the Principal Certifying Authority (PCA) prior to issue of the Construction Certificate.

Note: 'Suitably qualified acoustic consultant' means a consultant who is a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.

Mechanical Plant and Equipment

41. Mechanical plant and equipment shall be selected in consultation with a suitably qualified acoustic consultant in accordance with the recommendations of the approved acoustic report titled 11 - 15 WOOLNOUGH PLACE, CARTWRIGHT DA ACOUSTIC REPORT" (Ref: 2276/6 23344) prepared by Joel West and reviewed by Warwick West for West & Associates Pty Ltd dated 14th September 2023.

Note: 'Suitably qualified acoustic consultant' means a consultant who is a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.

Street Lighting

42. The applicant/developer shall engage the services of an Endeavour Energy accredited ASP Level 3 service provider. The consultant is to lodge Endorsement of Public Lighting Design Application Form. The application is available on Council website and can be lodged online.

This form is to be used to seek Council requirements for upgrading or installing new street lights at all frontages.

Consult Council's Traffic Management Section for streetlight upgrade requirement for infill developments in the existing established areas.

The upgrade shall include undergrounding of existing aerial power lines, communication cables and replacement of existing street light poles with Endeavour Energy approved Macarthur Poles as specified by Council in the public lighting design brief.

Provision of Services

43. The following documentation must be provided before the issue of a construction certificate:

1. Written evidence of suitable arrangements with Sydney Water (Section 73 Compliance Certificate) for the supply of water and sewerage services to the development must be submitted to the certifier before the issue of a Construction Certificate. Council will not issue a Construction Certificate unless the method of sewerage disposal is by gravity reticulation mains to either Sydney Water branch and trunk sewers or Sydney Water point of treatment. Council will not accept any temporary facilities to service the site, including pump-out wet-wells.
2. Notification of arrangement for the development from Endeavour Energy must be submitted to Council.
3. Written certification from the relevant service providers that the telecommunications infrastructure is installed in accordance with:
   i) The requirements of the Telecommunications Act 1997;

ii) For a fibre ready facility, the NBN Co's standard specifications current at the time of installation; and
iii) For a line that is to connect a lot to telecommunications infrastructure external to the premises, the line must be located underground.

Unless otherwise stipulated by telecommunications legislation at the time of construction, the development must be provided with all necessary pits and pipes, and conduits to accommodate the future connections of optic fibre technology telecommunications.

Site works

44. Site development work in the form of excavation, underpinning or shoring works must not take place, until such time as a CC has been issued.

Crime Prevention Through Environmental Design

45. The following Crime Prevention Through Environmental Design principles are to be incorporated into the building.

(a) Back to base alarm systems shall be installed;
(b) Basement parking areas shall be painted a light colour;
(c) CCTV for the ground level, entry/exit points, car parks, lifts and the exterior of the building shall be implemented;
(d) 'Way finding' signage should be utilised at all major interchanges such as lifts and stair wells;
(e) Lighting is required to be designed in accordance with the Australian and New Zealand Lighting Standard AS 1158. A lighting maintenance policy should be established. Security lighting should be installed in and around the building, and such shall not impact on any adjoining premises. The lighting should be vandal resistant, especially external lighting; and
(f) Access to the parking levels of the building shall be controlled via a security controlled device.

Security Access to car park

46. Secure access is to be provided to the basement car park to prevent any unauthorised entry. Details are to be provided with the construction certificate to the satisfaction of the PCA.

Landscaping and Fauna Protection

47. Tree protection measures are to be implemented in accordance with the recommendations of the arborists' report and tree protection plan prepared by Redgum Horticultural dated 27/04/2023.

Construction Environmental Management Plan (CEMP)

48. Prior to issue of a construction certificate, a Construction Environmental Management Plan (CEMP) for the development must be provided to the Principal Certifying Authority for approval. The environmental site management measures must remain in place and be maintained throughout the period of the development. The CEMP must address all environmental aspects of the development's construction phases, and include (where relevant) but not be limited to, the following:

(a) Asbestos Management Plan;

(b) Project Contact Information;
(c) Site Security Details;
(d) Timing and Sequencing Information;
(e) Site Soil and Water Management Plan;
(f) Noise and Vibration Control Plan;
(g) Dust Control Plan;
(h) Air Monitoring;
(i) Odour Control Plan;
(j) Health and Safety Plan;
(k) Waste Management Plan;
(l) Incident management Contingency; and
(m) Unexpected Finds Protocol.

The CEMP must be kept on-site for the duration of the works and must be made available to Council Officers upon request.

C. PRIOR TO WORKS COMMENCING

The following conditions are to be complied with or addressed prior to works commencing on the subject site/s:

Commencement of Building work

49. Building work that involves residential building work (within the meaning of the *Home Building Act 1989*) must not be commenced unless the principal certifier for the development to which the work relates (not being the council) has given the council written notice of the name and licence number of the principal contractor; and the name of the insurer by which the work is insured under Part 6 of that Act.

50. Building work shall not commence prior to the issue of a Construction Certificate. Building work as defined under Section 1.4 of the EP&A Act means any physical activity involved in the erection of a building and includes but is not limited to, the placement of any site shed/s or builders facilities, site grading, retaining walls, excavation, cutting trenches, installing formwork and steel reinforcement or, placing of plumbing lines.

Construction Certificates

51. Any CC that may be issued in association with this development consent must ensure that any certified plans and designs are generally consistent (in terms of site layout, site levels, building location, size, external configuration and appearance) with the approved Development Application plans.

52. Prior to the commencement of any building works, the following requirements must be complied with:

    (a) Construction Certificate must be obtained from the Council or an accredited certifier, in accordance with the provisions of the *Environmental Planning & Assessment Act 1979.*
    (b) Where a Construction Certificate is obtained from an accredited certifier, the applicant shall advise Council of the name, address and contact number of the Accredited Certifier, in accordance with Section 6.6 of the Act.
    (c) A copy of the Construction Certificate, the approved development consent plans and consent conditions must be kept on the site at all times and be made available to the Council officers and all building contractors for assessment.

(d) A principal certifier must be appointed to carry out the necessary building inspections and to issue an occupation certificate; and
(e) The principal certifier must advise Council of the intended date to commence work which is the subject of this consent by completing a notice of commencement of building works or subdivision works form, available from Council's Customer Service Centre. A minimum period of two (2) working days' notice must be given.

Notification/Principal Certifying Authority

53. Written notice of intention shall be given to the owners or the adjoining allotments of land, outlining the particulars of the work, which involves:

(a) Any excavation below the base of the footings of a building on an adjoining allotment of land.
(b) The notice shall be given seven (7) days prior to the commencement of work.

Residential Building Work

54. If arrangements for doing the residential building work are changed while the work is in progress so that the information notified becomes out of date, further work must not be carried out unless the PCA for the development to which the work relates (not being the Council) has given the Council written notice of the updated information.

Demolition Works

55. Demolition works shall be carried out in accordance with the following:

(a) Prior to the commencement of any works on the land, a detailed demolition work plan designed in accordance with the Australian Standard AS 2601- 2001 The Demolition of Structures, prepared by a suitably qualified person with suitable expertise or experience, shall be submitted to and approved by the PCA and shall include the identification of any hazardous materials, method of demolition, precautions to be employed to minimise any dust nuisance and the disposal methods for hazardous materials,
(b) Prior to commencement of any works on the land, the demolition Contractor(s) licence details must be provided to Council, and
(c) The handling or removal of any asbestos product from the building/site must be carried out by a SafeWork NSW licensed contractor irrespective of the size or nature of the works. Under no circumstances shall any asbestos on site be handled or removed by a non-licensed person. The licensed contractor shall carry out all works in accordance with SafeWork NSW requirements.

56. At least one week before demolition work commences, written notice must be provided to council and the occupiers of neighbouring premises of the work commencing. The notice must include:
a) Name
b) address,
c) contact telephone number,
d) licence type and license number of any demolition waste removal contractor and, if applicable, asbestos removal contractor, and
e) the contact telephone number of council and
f) the contact telephone number of SafeWork NSW (4921 2900).

57. Before demolition work commences, all services, such as water, telecommunications, gas, electricity and sewerage, must be disconnected in accordance with the relevant authority's requirements.

58. Before demolition work commences the following requirements, as specified in the approved demolition management plan, must be in place until the demolition work and demolition waste removal are complete:
    1. Protective fencing and any hoardings to the perimeter on the site
    2. Access to and from the site
    3. Construction traffic management measures
    4. Protective measures for on-site tree preservation and trees in adjoining public domain
    5. Onsite temporary toilets
    6. A garbage container with a tight-fitting lid.

59. Before demolition work commences, a hazardous materials survey of the site must be prepared by a suitably qualified person and a report of the survey results must be provided to council at least one week before demolition commences. Hazardous materials include, but are not limited to, asbestos materials, synthetic mineral fibre, roof dust, PCB materials and lead based paint.

    The report must include at least the following information:
    1. the location of all hazardous material throughout the site
    2. a description of the hazardous material
    3. the form in which the hazardous material is found, e.g. AC sheeting, transformers, contaminated soil, roof dust
    4. an estimation of the quantity of each hazardous material by volume, number, surface area or weight
    5. a brief description of the method for removal, handling, on-site storage and transportation of the hazardous materials
    6. identification of the disposal sites to which the hazardous materials will be taken

Site Notice Board

60. A sign must be erected in a prominent position on the premises on which work is to be carried out. The sign is to be maintained during work and removed at the completion of work. The sign must state:

    (a) The name, address and telephone number of the principal certifying authority for the work; and
    (b) The name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours; and
    (c) Unauthorised entry to the premises is prohibited.

Construction Requirements

61. Structural supporting elements or bracing of the building must be designed and certified by a qualified chartered structural engineer having regards to supporting ground conditions.

Site Facilities

62. Toilet facilities must be available or provided at the work site and must be maintained until the works are completed at a ratio of one toilet plus one additional toilet for every 20 persons employed at the site. Each toilet must:

    (a) be a standard flushing toilet connected to a public sewer, or

(b) have an on-site effluent disposal system approved under the Local Government Act 1993, or
(c) be a temporary chemical closet approved under the Local Government Act 1993.

Refuse Disposal

63. Adequate refuse disposal methods and builders storage facilities shall be installed on the site. Builders' wastes, materials or sheds are not to be placed on any property other than that which this approval relates to.

Waste Management

64. Prior to works commencing, any domestic waste bins issued by Liverpool City Council that may be present on the site, must be returned to Council. Please ring 1300 36 2170 to advise of any bins which are empty and ready to be removed – the removal will be noted on Council's rates system.

65. Prior to any works commencing, any air-conditioning or refrigeration systems fitted to the buildings or outbuildings to be demolished, must have the refrigerants present in those systems extracted into a durable, air-tight container by a licensed air-conditioning technician. This container and its contents must be sent intact, for secure destruction, to a facility licensed to destroy such refrigerants. Documentary evidence that this has been completed, if these systems are present, must be sighted by the Principal Certifying Authority and included as part of the Occupation Certificate documentation

Sydney Water

66. Development plans must be processed and approved by Sydney Water.

"DIAL BEFORE YOU DIG"

67. Underground assets may exist in the area that is subject to your application. In the interest of health and safety and in order to protect damage to third party assets please contact Dial before you dig at www.1100.com.au or telephone 1100 before excavating or erecting structures (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contact the Dial before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial before you dig service in advance of any construction or planning activities.

Waste Classification and Disposal of Contaminated Soil and Material

68. Before the issue of a construction certificate, a waste management plan for the development must be prepared and provided to the principal certifier. The plan must be prepared in accordance with;
    i. the Environment Protection Authority's Waste Classification Guidelines as in force from time to time, and
    ii. a development control plan that provides for waste management that applies to the land on which the work or the clearing of vegetation is carried out, and

    The plans shall include the following information at minimum;
    i. the contact details of the person removing waste,
    ii. an estimate of the type and quantity of waste,
    iii. whether waste is expected to be reused, recycled or sent to landfill,

iv. the address of the disposal location for waste.

A copy of the waste management plan must be kept on-site at all times while work approved under the development consent is being carried out.

Sediment & Erosion Control

69. Before the issue of a construction certificate, an erosion and sediment control plan must be prepared by a suitably qualified person in accordance with the following documents and provided to the principal certifier:
    1. Council's relevant development control plan,
    2. the guidelines set out in the NSW Department of Housing manual 'Managing Urban Stormwater: Soils and Construction Certificate' (the Blue Book) (as amended from time to time), and
    3. the 'Do it Right On-Site, Soil and Water Management for the Construction Industry' (Southern Sydney Regional Organisation of Councils and the Natural Heritage Trust) (as amended from time to time).

70. Before any site work commences, the principal certifier, must be satisfied the erosion and sediment controls in the erosion and sediment control plan are in place. These controls must remain in place until any bare earth has been restabilised in accordance with 'Managing Urban Stormwater: Soils and Construction' prepared by Landcom (the Blue Book) (as amended from time to time).

Traffic Management

71. No work or craning shall be undertaken within the adjoining public lands without the prior written consent of Council. In this regard Council may require a Traffic Management Plan to be submitted before giving its approval.

72. Road occupancy and road opening approvals will be required from Council to undertake works within the existing road reserve. The following applications are available on Council's website and can be lodged online attaching all required documents indicated on the application form.

    - Road Occupancy Application Form
    - Road Opening Application Form

    The Road Occupancy permit and Road Opening approval application, is to include Traffic Control Plans including details for pedestrian management, prepared in accordance with AS1742.3 "Traffic Control Devices for Works on Roads" and the Roads and Traffic Authority's publication "Traffic Control at Worksites" and certified by an appropriately accredited Roads and Traffic Authority Traffic Controller.

    The road occupancy permit and road opening approval with approved traffic control measures shall be implemented during construction. A copy of the road occupancy permit and road opening approval shall be available on site at all times. Note: A copy of the road occupancy permit and road opening approval shall accompany the Notice of Commencement to Liverpool City Council.

Work Zone

73. A Works Zone application is required if on-street parking is affected and there is insufficient off-street parking space.

A Works Zone Application Form is available on Council website and can be lodged online by attaching all required documents indicated on the application form.

Traffic Control Plan

74. Prior to commencement of works, a Traffic Control Plan including details for pedestrian management, shall be prepared in accordance with AS1742.3 "Traffic Control Devices for Work's on Road" and the Roads and Traffic Authority publication "Traffic Control at Worksites" and certified by an appropriately accredited Road and Traffic Authority Traffic Controller.

    Traffic control measures shall be implemented during the construction phase of the development in accordance with the certified plan. A copy of the plan shall be available on site at all times.

    Note: A copy of the Traffic Control Plan shall accompany the Notice of Commencement to Liverpool City Council.

Landscaping

75. No known environmental weeds or known invasive plant species shall be included in the landscaping or revegetation. Hygiene practices shall be employed to avoid the spread of invasive plants.

76. Tree protection measures are to be monitored in accordance with the recommendations of the arborists' report and tree protection plan prepared by Redgum Horticultural dated 27/04/2023.

Environmental Management

77. An Environmental Management Plan (EMP) shall be developed and submitted to the Principal Certifying Authority for approval. The EMP shall provide a comprehensive and complete action and implementation plan to ensure that the anthropological and natural environment is not unacceptably impacted upon by the proposal. The EMP shall include but not be necessarily limited to the following measures:

    (a) Measures to control noise emissions from the site;
    (b) Measures to suppress odours and dust emissions;
    (c) Selection of traffic routes to minimise residential noise intrusions;
    (d) Soil and sediment control measures;
    (e) Measures to identify hazardous and industrial wastes and the procedures for removal and disposal including asbestos; and
    (f) Community consultation.

78. Adequate soil and sediment control measures shall be installed and maintained. Furthermore, suitable site practices shall be adopted to ensure that only clean and unpolluted waters are permitted to enter Council's stormwater drainage system during construction/demolition. Measures must include, as a minimum:

    (a) Siltation fencing;
    (b) Protection of the public stormwater system; and
    (c) Site entry construction to prevent vehicles that enter and leave the site from tracking loose material onto the adjoining public place.

D. DURING CONSTRUCTION

The following conditions are to be complied with or addressed during construction:

Waste Management

79. While sit work is being carried out:
    1. all waste management must be undertaken in accordance with the waste management plan; and
    2. upon disposal of waste, records of the disposal must be compiled and provided to the Principal Certifier, detailing the following:
        1. The contact details of the person(s) who removed the waste;
        2. The waste carrier vehicle registration;
        3. The date and time of waste collection;
        4. A description of the waste (type of waste and estimated quantity) and whether the waste is to be reused, recycled or go to landfill;
        5. The address of the disposal location(s) where the waste was taken;
        6. The corresponding tip docket/receipt from the site(s) to which the waste is transferred, noting date and time of delivery, description (type and quantity) of waste.

    If waste has been removed from the site under an EPA Resource Recovery Order or Exemption, records in relation to that Order or Exemption must be maintained and provided to the principal certifier and Council.

Erosion Control

80. Vehicular access to the site shall be controlled through the installation of wash down bays or shaker ramps to prevent tracking of sediment or dirt onto adjoining roadways. Where any sediment is deposited on adjoining roadways is shall be removed by means other than washing. All material is to be removed as soon as possible and the collected material is to be disposed of in a manner which will prevent its mobilisation.

81. While site work is being carried out:
    1. the measures required by the construction site management plan and the erosion and sediment control plan (plans) must be implemented at all times; and
    2. a copy of these plans must be kept on site at all times and made available to Council officers upon request.

Demolition Inspections

82. The following inspections are required to be undertaken by Council in relation to approved demolition works:

    (a) Immediately prior to the commencement of the demolition or handling of any building structure that contains asbestos. The applicant shall also notify the occupants of the adjoining premises and SafeWork NSW prior to the commencement of any works. Please note that demolition works are not permitted to commence on site until such time as a satisfactory inspection result is obtained from Council.
    (b) Immediately following completion of the demolition. Please note that proof of appropriate disposal of demolition materials (including asbestos) may be required at this time in accordance with the approved Waste Management Plan.

To book an inspection with Council, please call 1300 362 170.

Handling of Asbestos during demolition

83. While demolition work is being carried out, any work involving the removal of asbestos must comply with the following requirements:

    (a) Only an asbestos removal contractor who holds the required class of asbestos Licence issued by SafeWork NSW must carry out the removal, handling and disposal of any asbestos material;
    (b) Asbestos waste in any form must be disposed of at a waste facility licensed by the NSW Environment Protection Authority to accept asbestos waste; and
    (c) Any asbestos waste load over 100kg (including asbestos contaminated soil) or 10m² or more of asbestos sheeting must be registered with the EPA online reporting tool WasteLocate.

Building Inspections

84. The building works must be inspected by the Principal Certifying Authority, in accordance with section 6.5 of the EP&A Act 1979 and Clause 61 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, to monitor compliance with the relevant standards of construction, Council's development consent and the construction certificate.

85. The Principal Certifying Authority must specify the relevant stages of construction to be inspected and a satisfactory inspection must be carried out, to the satisfaction of the Principal Certifying Authority, prior to proceedings to the subsequent stages of construction or finalisation of the works (as applicable).

Identification Survey Report

86. The building and external walls are not to proceed past ground floor/reinforcing steel level until such time as the PCA has been supplied with an identification survey report prepared by a registered surveyor certifying that the floor levels and external wall locations to be constructed, comply with the approved plans, finished floor levels and setbacks to boundary/boundaries. The slab shall not be poured, nor works continue, until the PCA has advised the builder/developer that the floor level and external wall setback details shown on the submitted survey are satisfactory.

    In the event that Council is not the PCA, a copy of the survey shall be provided to Council within three (3) working days.

87. On placement of the concrete, works again shall not continue until the PCA has issued a certificate stating that the condition of the approval has been complied with and that the slab has been poured at the approved levels.

Construction Requirements

88. In the event the development involves an excavation that extends below the level of the base of the footings of a building on adjoining land, the following is to be undertaken at full cost to the developer:

    (a) Protect and support the building, structure or work from possible damage from the excavation, and
    (b) where necessary, underpin the building, structure or work to prevent any such damage.

(c) a and b above does not apply if the person having the benefit of the development consent owns the adjoining land or the owner of the adjoining land has given consent in writing to that condition not applying.
(d) Retaining walls or other approved methods necessary to prevent the movement of excavated or filled ground, together with associated subsoil drainage and surface stormwater drainage measures, shall be designed strictly in accordance with the manufacturers details or by a practising structural engineer.

89. The applicant/ builder shall be responsible to report to the Council any damage to Council's footpath and road carriageway as a consequence of demolition or excavation or building activities or delivery/ departure of materials associated with this site. The damage shall be reported to Council as soon as the damage becomes apparent to the builder/ site manager. Arrangements to the satisfaction of Council are to be made for making safe by temporary repairs to the public way until permanent restoration and repair can be organised with Council.

Hours of Construction Work and Deliveries

90. Construction work/civil work/demolition work, including the delivery of materials, is only permitted on the site between the hours of 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturday.

Site work is not to be carried out outside of these times or on public holidays except where there is an emergency, or for urgent work directed by a police officer or a public authority.

Construction Noise and Vibration

91. Noise and vibration associated with excavation, demolition and construction activities shall comply with the management levels detailed within the 'Interim Construction Noise Guideline' published by the Department of Environment and Climate Change NSW (DECC 2009/265) dated July 2009 and acceptable vibration values prescribed within the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).

While site work is being carried out, noise generated from the site must be controlled in accordance with the requirements of the approved noise and vibration management plan.

Complaints Handling

92. Prior to the commencement of Construction and during works, the Applicant must ensure that the following is available for the life of the Development:

(a) a postal address to which written complaints may be sent;
(b) an email address to which electronic complaints may be transmitted; and
(c) a telephone contact line to enable complaints associated with the Development to be registered by the community.

93. A Complaints Handling Register shall be maintained for the duration of construction works at the subject premises. The Complaints Register is to be kept by the Site Manager or other suitable staff members and include the following:

(a) the date and time, where relevant, of the complaint;
(b) the means by which the complaint was made (telephone, mail or email);

(c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
(d) the nature of the complaint;
(e) any action(s) taken in response to the complaint, including any follow-up contact with the complainant; and
(f) if no action was taken in relation to the complaint, the reason(s) why no action was taken.
(g) allocate an individual "complaint number" to each complaint received.

The Complaints Register must be made available for inspection when requested by Liverpool City Council.

Craning and Hoardings

94. If the work is likely to cause pedestrian or vehicular traffic in a public area to be obstructed or rendered inconvenient; or if craning of materials is to occur across a public area or road reserve area a construction hoarding must be erected to prevent any substance from, or in connection with the construction site, falling onto a public area as follows:

Such hoarding or barrier must be designed and erected in accordance with Council's guidelines on hoarding construction. Relevant application under the Roads Act approval must be completed and fees paid prior to the construction of a hoarding on Council road reserve area.

95. Lifting or craning materials over a public footway or roadway is not permitted unless a "B" class construction hoarding has been installed in compliance with Work Cover authority requirements.

Security Fence

96. A temporary security fence to WorkCover Authority requirements is to be provided to the property during the course of construction.

Note. Fencing is not to be located on Council's reserve area.

Removal of Dangerous and/or Hazardous Waste

97. All dangerous and/or hazardous material shall be removed by a suitably qualified and experienced contractor licensed by SafeWork NSW. The removal of such material shall be carried out in accordance with the requirements of SafeWork NSW and the material shall be transported and disposed of in accordance with NSW Environment Protection Authority requirements.

Contamination

98. The development, including all civil works and demolition, must comply with the requirements of the Contaminated Land Management Act, 1997, State Environmental Planning Policy (Resilience and Hazards) 2021, and Managing Land Contamination – Planning Guidelines (Planning NSW/EPA 1998).

99. Filling material must be limited to the following:

(a) Virgin excavated natural material (VENM)
(b) Excavated natural material (ENM) certified as such in accordance with Protection of the Environment Operations (Waste) Regulation 2014; and/or

(c) Material subject to a Waste Exemption under Clause 91 and 92 Protection of the Environment Operations (Waste) Regulation 2014 and recognised by the NSW Environment Protection Authority as being "fit for purpose" with respect to the development subject of this application.

Certificates proving that the material imported is ENM or VENM must be provided to the Principal Certifying Authority prior to filling. Certificates are to be provided to Council officers if and when requested.

Fill imported on to the site must be compatible with the existing soil characteristic for site drainage purposes.

Record Keeping of Imported Fill

100. The following records of accepted waste derived fill material must be submitted to the Principal Certifying Authority at the completion of earth works:

(a) the course (including the address and owner of the source site), nature and quantity of all incoming loads including the date, the name of the carrier, and the vehicle registration,
(b) Documentation confirming the results of the waste classification assessment carried out on the fill material used in the development, and
(c) the results of any chemical testing undertaken on fill material.

Unidentified Contamination

101. Any new information which comes to light during remediation, demolition or construction works which has the potential to alter previous conclusions about site contamination and remediation must be notified to Council and the accredited certifier immediately after discovery.

A Section 4.55 Application under the EP&A Act shall be made for any proposed works outside the scope of the approved development consent.

Environmental Controls

102. Alterations to the natural surface contours must not impede or divert natural surface water runoff, so as to cause a nuisance to adjoining property owners.

103. All disturbed areas shall be progressively stabilised and/or revegetated so that no areas remain exposed to potential erosion damage for a period of greater than 14 days.

104. Sediment and erosion control measures are to be adequately maintained during the works until the establishment of grass.

105. The development, including construction, shall not result in any increase in sediment deposition into any water body, wetland, bushland or environmentally significant land.

106. All existing trees and areas of native vegetation not identified for removal on approved plans of the proposed development shall be protected from damage during site works. This protection shall consist of 1800mm high protective fencing, securely installed beneath the outer canopy of any tree to be retained. Trees may be fenced off in clusters where it is not practical to fence off individual trees. There shall be no storing materials, washing machinery or changes to existing soil levels within the fenced areas.

107. Prior to the removal of each tree (including dead trees), they shall be examined by a qualified ecologist for the presence of hollows or active nests of birds. The removal of trees with hollows or active nests shall be undertaken under the supervision of a qualified and appropriately licenced ecologist, in a manner recommended by the ecologist to minimise potential harm to fauna. Any native fauna encountered shall be relocated by a qualified ecologist, or member of a wildlife rescue organisation, with necessary permits.

Air Quality

108. Dust screens shall be erected and maintained in good repair around the perimeter of the area being remediated for the duration of works and until such time as dust nuisance is unlikely.

109. During construction where operations involve excavation, filling or grading of land, or removal of vegetation, including ground cover, the consent holder is to ensure dust is suppressed by regular watering until such time as the soil is stabilised to prevent airborne dust transport. Where wind velocity exceeds five knots the Principal Certifying Authority may direct that such work is not to proceed.

110. The loading and unloading of all vehicles associated with the development must be undertaken within the property boundary of the premises subject to this consent.

    Measures must be implemented to prevent tracking of sediment by vehicles onto roads.

    Vehicle loads must be covered when entering and exiting the site with material.

111. All activities and operations shall not give rise to air pollution (including odour), offensive noise or pollution of land and/or water as defined under the Protection of the Environment Operations Act 1997.

Major Fill / Earthworks

112. All earthworks shall be undertaken in accordance with AS 3798 and Liverpool City Council's Design Guidelines and Construction Specification for Civil Works. The level of testing shall be determined by the Geotechnical Testing Authority/ Superintendent in consultation with the Principal Certifying Authority.

Drainage Connection

113. Prior to the connection of private drainage to Council's drainage system, an inspection is to be carried out by Liverpool City Council's Development Engineering Unit. A fee will be charged in accordance with Council's adopted Fees and Charges and is to be paid prior to the inspection.

Aboriginal Heritage

114. As required by the *National Parks and Wildlife Service Act 1974* and the *Heritage Act 1977*, in the event that Aboriginal cultural heritage or historical cultural fabric or deposits are encountered/discovered where they are not expected, works must cease immediately and Council and the Heritage Division of the Office of Environment and Heritage (OEH) must be notified of the discovery.

    In the event that archaeological resources are encountered, further archaeological work may be required before works can re-commence, including the statutory requirement under the Heritage Act 1977 to obtain the necessary approvals/permits from the Heritage Division of the OEH.

Note: The *National Parks and Wildlife Service Act 1974* and the *Heritage Act 1977* impose substantial penalty infringements and / or imprisonment for the unauthorised destruction of archaeological resources, regardless of whether or not such archaeological resources are known to exist on the site.

115. In the event that skeletal remains are uncovered, work must cease immediately in that area and the area secured. NSW Police must be contacted and no further action taken until written advice has been provided by the NSW Police. If the remains are determined to be of Aboriginal origin, the Office of Environment and Heritage must be notified by ringing the Enviroline 131 555 and a management plan prior to works re-commencing must be developed in consultation with relevant Aboriginal stakeholders.

Protection of Adjoining Sites

116. In the event that proposed works damages any adjoining land or building on adjoining land, any rectification works are the responsibility of the developer.

Waste Management

117. The Waste Management Plan submitted to and approved by Council, must be adhered to at all times throughout all stages of the development. Supporting documentation (receipts/dockets) of waste/recycling/disposal methods carried out, is to be kept and must be produced upon the request of Council or any other authorised officer.

Note: Any non-compliance with this requirement will result in penalties being issued.

118. Any asbestos materials encountered during the demolition work, must be removed, handled, wrapped and disposed of in accordance with the relevant legislation, regulations and safe work practices, of the NSW EPA and SafeWork NSW, in force at the time. The licenced disposal facility for any asbestos that is found, must be advised to both Council and the PCA.

119. All solid and liquid waste is to be removed from the site by a registered waste contractor.

120. All waste materials generated as a result of the development are to be disposed at a facility licensed to receive such waste.

121. All solid waste stored on site is to be covered at all times. Waste must not be permitted to accumulate near the waste storage bins.

122. All demolition, excavation and construction wastes must be separated as they are generated, and kept in separate spoil piles, bays, builder's skips and/or site bins. No wastes are to go to landfill with all materials to be recycled, as per the construction waste management plan submitted. No waste materials, other than any nominated as being re-used on site, are to be left behind at the completion of the works.

123. All lightweight or granular demolition, excavation or construction waste, e.g. wrapping, packaging materials, bags, insulation, sand, soil etc., must be kept fully enclosed at all times to prevent it from becoming displaced by the wind in strong wind conditions or from washing into sewers, storm drains or creeks, or onto adjacent properties or public land during wet weather.

124. While site work is being carried out:
    1. all waste management must be undertaken in accordance with the waste management plan, and

2. upon disposal of waste, records of the disposal must be compiled and provided to the principal certifier, detailing the following:
   i. The contact details of the person(s) who removed the waste
   ii. The waste carrier vehicle registration
   iii. The date and time of waste collection
   iv. A description of the waste (type of waste and estimated quantity) and whether the waste is to be reused, recycled or go to landfill
   v. The address of the disposal location(s) where the waste was taken
   vi. The corresponding tip docket/receipt from the site(s) to which the waste is transferred, noting date and time of delivery, description (type and quantity) of waste.

If waste has been removed from the site under an EPA Resource Recovery Order or Exemption, records in relation to that Order or Exemption must be maintained and provided to the principal certifier and council

Water Quality

125. During construction the consent holder is to ensure all topsoil, sand, aggregate, spoil or any other material that can be moved by water is stored clear of any drainage line, easement, water body, stormwater drain, footpath, kerb or road surface.

Pollution Control

126. Building operations such as brick cutting, mixing mortar and the washing of tools, paint brushes, form-work, concrete trucks and the like shall not be performed on the public footway or any other locations which may lead to the discharge of materials into Council's stormwater drainage system.

127. The loading and unloading of all vehicles associated with the development must be undertaken within the property boundary of the premises subject to this consent.

Measures must be implemented to prevent tracking of sediment by vehicles onto roads. Vehicle loads must be covered when entering and exiting the site with material.

Ventilation

128. The premises shall be ventilated in accordance with the requirements of the BCA (if using deemed to satisfy provisions: AS 1668, Parts 1 & 2)

129. The design, construction, installation and commissioning of the mechanical ventilation systems(s) serving the premises shall be carried out in accordance with Australian Standard 1668 Parts 1 & 2.

The mechanical exhaust discharge point shall be designed and installed by an appropriately qualified person and shall be positioned to comply with Section 3.7 of Australian Standard 1668 Part 2 – 1991.

Traffic Management

130. If a works zone is required, an application must be made to Council's Traffic and Transport Section. The application is to indicate the exact location required and the applicable fee is to be included. If parking restrictions are in place, an application to have the restrictions moved, will need to be made.

131. Notice must be given to Council's Traffic and Transport Section of any interruption to pedestrian or vehicular traffic within the road reserve, caused by the construction of this development. A Traffic Control Plan, prepared by an accredited practitioner must be submitted for approval, 48 hours to prior to implementation. This includes temporary closures for delivery of materials, concrete pours etc.

132. Applications must be made to Council's Traffic & Transport Section for temporary road closures. The applicant is to include a Traffic Control Plan, prepared by a suitably qualified person, which is to include the date and times of closures and any other relevant information. Applications prepared by a suitably qualified person, are to specify the date and times of proposed closures, traffic control plans, insurances and any other relevant information. This activity may require a seven (7) days advance notice to be installed near the site and/or advertisement in local newspapers and websites to Council's satisfaction.

133. Construction activities affecting adjoining road reserves require submission of a road occupancy application to Council along with traffic control plan/s and public liability insurance. The traffic control plan/s must be prepared by a qualified professional and to be in accordance with the RMS Traffic Control at Worksites Manual, the Austroads Guide to Traffic Management, the RMS Supplements for Austroads Guide to Traffic Management and Australian Standard 1742.

134. All works within the road reserve, including the approved sign and line making scheme, are to be at the applicant cost and all signage is to be in accordance with the TfNSW/RMS 'Delineation Guidelines.

135. Directional signage indicating the location of parking, "in" and "out", crossings and directional arrows are to be provided in accordance with the Council approved stamped plans.

136. Council's on-street assets and local road network are to be protected and kept in a serviceable state at all times. At the direction of Council, the applicant/project manager shall undertake remediation works, at no cost to Council and to Council's satisfaction.

Street Lighting

137. Street lights are to be installed in accordance with the Endeavour Energy certified plans to their satisfaction.

Car Parking Areas

138. Car parking spaces and driveways must be constructed of a minimum of two coat finish seal or better. The spaces must be clear of obstructions and columns, permanently line marked and provided with adequate manoeuvring facilities. The design of these spaces must comply with Council's DCP 2008, and Australian Standard 2890.1 Parking Facilities – Off Streetcar Parking.

    All car parking areas to be appropriately line marked and sign posted in accordance with the approved plans. All resident/visitor parking areas are to be clearly signposted limiting car parking for residents/visitors only. The applicant is to cover the costs of installation and maintenance of the signage.

    The on-site parking spaces shown in the approved plans must be identified in accordance with A.S.2890.1 Parking Facilities – Off-Streetcar Parking.

Termite Protection

139. To protect the buildings from subterranean termite, termite barriers must be installed in accordance with AS 3660.1 to the underside and penetrations of the concrete slab floor. In addition a durable notice must be permanently fixed inside the metre box indicating:

    (a) The method of protection;
    (b) The date of installation of the system;
    (c) Where a chemical barrier is used, its life expectancy as listed on the National Registration Authority label;
    (d) The need to maintain and inspect the system on a regular basis

    Certification from a licensed pest controller shall be submitted to the PCA certifying that the termite protection system installed complies with AS3660.1.

Construction Environmental Management Plan (CEMP)

140. The CEMP requirements must remain in place, adhered to and be maintained throughout the period of the development.

External

141. Switchboards for utilities shall not be attached to the street and/or road elevations of the development.

142. The mailboxes are to be consistent with the design and colours and materials for the development.

143. Photovoltaic panels are to be installed on the roof of the proposed buildings and in accordance with the manufacturers specifications.

144. All pedestrian gateways are to open internally within the property boundary as to not create a potential hazard within the public domain.

Windows

145. The reflectivity index of glass used in the external facade of the building is not to exceed 20%.

146. The windows of all bathrooms, W.C. and ensuites shall be fitted with translucent obscure glazing to the satisfaction of the PCA.

Graffiti

147. A graffiti resistant coating shall be applied to any fences or structures that have frontage to a public area, for example a roadway or public reserve.

Security and Safety

148. Adequate lighting is required at the entrances and main foyers or the building, basement carpark, and mailbox area.

149. Surveillance cameras are required to be installed covering the building entrances and exits and main areas of the car park.

150. The underground car park is required to be locked with access to be provided to residents only.

Vegetation and Landscaping

151. Premium quality organic garden soil shall be incorporated into all planting areas in sufficient quantity to achieve optimum plant growing conditions.

152. Mulch generated from exotic trees or other weed species cleared shall not be used on site. It shall be removed from the site and disposed of appropriately and in accordance with legislative requirements.

153. The appropriate hygiene measures will be undertaken every morning and afternoon to prevent the spread of phytophthora pathogens. Before works commence all earth working tools and the sole of work boots will be sprayed with a seven (7) parts methylated spirits to three (3) parts water ratio. At the end of the day all earth works equipment, vehicle tyres and work boots will be thoroughly cleaned of all excess mud, sludge, and dirt then a final spray of work equipment will be conducted with the pathogen spray to ensure diseases are unable to spread.

154. To minimise the risk of fauna entrapment, digging and trenching shall be undertaken and completed on the same day where possible. If holes, pits, trenches, or other cavities must be left overnight, they will all be covered with secure boards to ensure that fauna does not get trapped. Before commencing work each day, all excavated areas will be inspected and if fauna is encountered a licenced ecologist or wildlife handler will be utilised to safely remove the trapped fauna and relocate it to a suitable location. Works can continue when the fauna has been safely removed.

155. Tree protection measures are to be monitored in accordance with the recommendations of the arborists' report and tree protection plan prepared by Redgum Horticultural dated 27/04/2023.

E. PRIOR TO ISSUE OF OCCUPATION CERTIFICATE

The following conditions are to be complied with or addressed prior to issue of either an Interim or Final Occupation Certificate by the Principal Certifier (PC):

Occupation Certificates

156. The premises must not be utilised until an Occupation Certificate (OC) is issued by the principal certifier.

Public Domain Works – Street Lighting

157. The approved street lighting designs are to be implemented along all new and existing streets within the proposed development in accordance with Liverpool City Council standards and to the satisfaction of Council. Endeavour Energy pole numbers and the date poles were energised are to be submitted to Council's Traffic Management Section prior to submitting OC or SC application.

All cost associated with the installation of street lighting shall be borne by the developer.

Fire Safety Certificate

158. A single and complete *Fire Safety Certificate*, certifying the installation and operation of all of the fire safety measures within the building must be submitted to Council with the *Occupation Certificate*.

Inspections

159. Details of *critical stage* inspections carried out by the principal certifier together with any other certification relied upon must be provided to Council with the occupation certificate.

Certificates

160. The Principal Certifying Authority (Building) and/or the Accredited Certifier (Subdivision) shall ensure that all compliance certificates required by this development consent are referenced to the condition consent number. The Compliance Certificate is to state that the works as constructed comply fully with the required condition of consent being acted on by the certifier.

161. A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be submitted to the PCA.

162. Prior to the issue of an Occupation Certificate, written certification from all relevant service providers that the telecommunications infrastructure is installed in accordance with the requirements of the Telecommunications Act 1997:

    (a) For a fibre ready facility, the NBN Co's standard specifications current at the time of installation, and
    (b) For a line that is to connect a lot to telecommunications infrastructure external to the premises, the line shall be located underground.

    Unless otherwise stipulated by telecommunications legislation at the time of construction, the development must be provided with all necessary pits and pipes, and conduits to accommodate the future connection of optic fibre technology telecommunications

Cladding

163. Prior to issuing an occupation certificate the principal certifier must be satisfied that suitable evidence has been provided to demonstrate that the external wall cladding material and system is consistent with the consent documentation, NCC and relevant Australian Standards.

Liverpool City Council clearance – Roads Act/ Local Government Act

164. Prior to the issue of an Occupation Certificate, the Principal Certifying Authority shall ensure that all works associated with a S138 Roads Act approval or S68 Local Government Act approval have been inspected and signed off by Liverpool City Council.

Works as executed – General

165. Prior to the issue of an Occupation Certificate, works-as-executed drawings and compliance documentation shall be submitted to the Principal Certifying Authority in accordance with Liverpool City Council's Design Guidelines and Construction Specification for Civil Works.

    An original set of works-as-executed drawings and electronic copies on a USB of compliance documentation shall also be submitted to Liverpool City Council with notification

of the issue of the Occupation Certificate where Council is not the Principal Certifying Authority.

Stormwater Compliance

166. Prior to the issue of an Occupation Certificate the Principal Certifying Authority shall ensure that the on-site detention system/s and basement carpark pump-out system:

(a) On-site detention system/s,
(b) Basement Carpark pump-out system:

1. Have been satisfactorily completed in accordance with the approved Construction Certificate and the requirements of this consent,
2. Have met the design intent with regard to any construction variations to the approved design, and
3. Any remedial works required to been undertaken have been satisfactorily completed.

Details of the approved and constructed system/s shall be provided as part of the Works-As-Executed drawings.

Restriction as to User and Positive Covenant

167. Prior to the issue of an Occupation Certificate a restriction as to user and positive covenant relating to the:
(a) on-site detentions system/s; and
(b) basement carpark pump-out system shall be registered on the title of the property.

The restriction as to user and positive covenant shall be in Liverpool City Council's standard wording as detailed in Liverpool City Council's Design and Construction Guidelines and Construction Specification for Civil Works.

Affordable Housing

168. A restriction shall be registered, before the date of issue of the Occupation Certificate (Interim or Final), against the title of the property on which the development is to be carried out, pursuant to Section 88E of the Conveyancing Act 1919, in the following terms:

Terms of the Restriction on Use

The restriction applies for fifteen (15) years from the date of issue of the Occupation Certificate pursuant to Notice of determination of Development Application No. DA-562/2023 issued by Liverpool City Council.

The restrictions are:

(a) Units 8,9,15,16,17, 23,24,25 & 31 will be used for the purposes of affordable housing as defined in State Environmental Planning Policy (Housing) 2021;
(b) All accommodation that is used for affordable housing will be managed by a registered community housing provider;
(c) Name of authority empowered to release, very or modify the above restriction is Liverpool City Council; and

Evidence is to be submitted to Liverpool City Council that restrictions (a) and (b) have been complied with prior to the issue of an Occupation Certificate.

Rectification of Damage

169. Prior to the issue of an Occupation Certificate, any damage to Council infrastructure not identified in the dilapidation report, as a result of the development shall be rectified at no cost to Liverpool City Council.

Rectification works within Hoxton Park Road and Woolnough Place will require a Roads Act application. The application is to be submitted and approved by Liverpool City Council prior to such works commencing.

Dilapidation Report

170. Any rectification works required by Council regarding the condition of Council infrastructure shall be undertaken, at full cost to the developer.

171. At completion of works a survey and report must be undertaken and submitted to the Principal Certifier and affected adjoining property owner/s, commenting on the risk of latent damage (if any) to the existing building caused by the excavation and construction activities.

The report and survey is to be prepared by a consulting structural/geotechnical engineer agreed to by both the applicant and the owner/s of any affected adjoining property. A copy is also to be provided to the affected adjoining property owner/s.

All costs incurred in achieving compliance with this condition shall be borne by the person entitled to act on this Consent.

If access for undertaking the survey is denied by an adjoining owner, the applicant must:

(a) Undertake as much as possible the survey from the development site, public areas and/or adjoining private property.
(b) Demonstrate in writing to the satisfaction of the Principal Certifier that all reasonable steps have been taken to obtain access and advise the affected property owner of the reason for the survey and that these steps have failed.

Note: This documentation is for record keeping purposes only and may be used by the developer or affected property owner to assist in any action required to resolve any dispute over damage to adjoining properties arising from the works. It is in the applicant's and adjoining owner/s interest for it to be as full and detailed as possible.

Land Consolidation

172. All separate lots must be consolidated and the new lot must be registered. The applicant shall provide evidence that the linen plan, for the required lot consolidation, endorsed by Council, has been registered with the NSW Land Registry Services prior to the issue of any OC.

Footpaths

173. Prior to the issue of an occupation certificate, construction of 1.5m wide by 100mm thick (with one layer of SL72 reinforcing mesh) is to be constructed along the site frontage along Hoxton Park Road and Woolnough Place.

Landscape

174. Upon completion of the approved landscape works associated with the development and prior to the issue of any OC, an Implementation Report is to be submitted to the PCA attesting to the satisfactory completion of the landscape works in accordance with the approved landscape plan. The report is to be prepared by a suitably qualified person.

Traffic

175. All road and traffic management works, including required public street lights, directional signage and linemarking, are to be completed to Council's satisfaction.

Recommendations of Acoustic Report

176. Upon completion of works and prior to the issue of any Occupation Certificate, written certification prepared by a suitably qualified acoustic consultant shall be submitted to and approved by the Principal Certifying Authority (PCA). The written certification prepared by the suitably qualified acoustic consultant shall confirm that the development complies with all requirements and recommendations detailed within the approved acoustic report titled 11 - 15 WOOLNOUGH PLACE, CARTWRIGHT DA ACOUSTIC REPORT" (Ref: 2276/6 23344) prepared by Joel West and reviewed by Warwick West for West & Associates Pty Ltd dated 14th September 2023. The acoustic consultant shall confirm that the development or use is capable of operating in accordance with the design criteria.

Note: 'Suitably qualified acoustic consultant' means a consultant who is a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.

Noise & Vibration Control – Residential Basement Car Park

177. Before the issue of an occupation certificate the principal certifier must be satisfied that the proposed garage/security door fitted to the underground car parking entrance must be independently mounted on rubber pads or otherwise installed to prevent noise and transmission of noise through the concrete walls and/or columns.

Access Report

178. A Compliance Certificate or other documentation deemed suitable to the PCA is to be submitted to the PCA prior to the issue of an Occupation Certificate, detailing compliance with the following:

(a) Certification is to be obtained from a qualified access consultant certifying that the building has been constructed to meet the access criteria in accordance with the National Construction Code and Australian Standards and the approved access report and that all recommendations have been adopted.

Design Verification Statement

179. In accordance with the Environmental Planning and Assessment Regulation 2021 and State Environmental Planning Policy (SEPP) 65 "Design Quality of Residential Apartment Development", the subject development must be undertaken or directed by a 'qualified designer' (i.e., a registered architect under the Architects Act). In this regard, a design verification statement shall be submitted to the PCA assessing the development, upon

completion of all works subject of this consent and its accompanying CC. The PCA shall ensure that the statement prepared by the qualified designer provides the following:

(a) A valid and current chartered architect's certificate number (as issued by the Board of Architects of NSW);
(b) That the completed development achieves the design quality of the development as shown in the plans and specifications submitted and approved with the CC, having regard to the design principles set out in Part 2 of SEPP 65.

BASIX

180. Supporting documentation issued by a suitable qualified person who has installed or carried out the works associated with the BASIX commitments shall be submitted to Council.

Display of Street Numbers

181. Street numbers must be prominently displayed at the front of the development in a contrasting colour to the building materials and at the front of each individual unit. The number should be a minimum height of 120mm and be visible at night.

Trade Waste for Vehicle Wash Bay/s

182. Should vehicle washing be proposed within the basement or elsewhere on site, all vehicle washing is to be conducted in designated vehicle wash bay/s which shall be connected to the sewer. The discharge of trade wastewater is to be approved by Sydney Water via a permit or written agreement. No wash water or trade wastewater is to enter the stormwater or creek systems.

Before the issue of any occupation certificate, copies of the plumber's certificate of compliance and the Trade Waste Agreement issued by Sydney Water for installation of the oil/water separator must be submitted to the certifier.

Mechanical Ventilation Certification

183. Alternative ventilation is required to be provided to the habitable rooms of the building to allow for closed windows for acoustic purposes. Upon completion of works and before the issue of any occupation certificate, a Mechanical Ventilation Certificate of Completion and Performance prepared by a professional engineer or other suitably qualified person must be submitted to certifier for their review and approval. The certification must be accompanied by details of the tests carried out in relation to ventilation and acoustics for the building including for the basement carpark and confirm that the systems comply with the approved plans, specifications, Building Code of Australia and Australian Standard AS 1668 Parts 1 and 2.

Waste Management

184. Prior to issue of an Occupation Certificate, all required waste equipment (with the exception of the waste bins themselves), is to be installed and commissioned, and all permanent waste signage necessary is to be installed.

185. Prior to issue of an Occupation Certificate, both the PCA and Council are to be provided with copies of all waste transport and disposal dockets, demonstrating that waste materials associated with the project, have been taken to and recycled at the waste facilities nominated in the approved waste management plan.

186. Prior to the issue of an an Occupation Certificate, the strata by-laws will be drafted in a manner that clearly places the requirement to correctly separate and dispose of waste upon all residents, and ensures that appropriate lawful penalties can be imposed upon any party failing to do so.

187. Before the issue of an occupation certificate:
    1. all refuse, spoil and material unsuitable for use on-site must be removed from the site and disposed of in accordance with the approved waste management plan, and
    2. written evidence of the waste removal must be provided to the satisfaction of the principal certifier.

F. PRIOR TO ISSUE OF A SUBDIVISION CERTIFICATE

188. The following documentation must be provided before the issue of a subdivision certificate:
    (a) Written evidence of suitable arrangements with Sydney Water (Section 73 Compliance Certificate) for the supply of water and sewerage services to the development must be submitted to the certifier before the issue of a Subdivision Certificate. Council will not issue a Subdivision Certificate unless the method of sewerage disposal is by gravity reticulation mains to either Sydney Water branch and trunk sewers or Sydney Water point of treatment. Council will not accept any temporary facilities to service the site, including pump-out wet-wells.

    (b) Notification of arrangement for the development from Endeavour Energy must be submitted to Council.

    (c) Written certification from the relevant service providers that the telecommunications infrastructure is installed in accordance with:
        (i) i) The requirements of the Telecommunications Act 1997;
        (ii) ii) For a fibre ready facility, the NBN Co's standard specifications current at the time of installation; and
        (iii) iii) For a line that is to connect a lot to telecommunications infrastructure external to the premises, the line must be located underground.

    Unless otherwise stipulated by telecommunications legislation at the time of construction, the development must be provided with all necessary pits and pipes, and conduits to accommodate the future connections of optic fibre technology telecommunications.

189. In order to enable a Subdivision Certificate to be issued for submission to the LPI Service, the applicant is required to lodge a separate application along with one (1) original and ten (10) copies of the proposed plan of subdivision and one (1) original and two (2) copies of the proposed 88b instrument (where proposed).

190. The applicant shall pay the standard fee for purpose of subdivision certificate administration of plan checking and release.

191. The final plan of subdivision must be supported by an 88B Instrument, approved by Council. The 88B instrument shall properly reflect the requirements of the conditions of development consent, the plans forming part of the consent, and Council's standards, codes and policy's.

Part 2 of the 88B instrument shall contain a provision that any easements, right of ways or covenants shall not be extinguished or altered without the written consent of Council.

192. Correct notation concerning easements is required. The prepared 88B Instrument should be forwarded initially to Council. The land value of the easement and costs associated with checking the instrument are to be borne by the applicant. Part 2 of the 88B Instrument shall contain a provision that the easement may not be extinguished or altered without the written consent of Council.

193. Prior to the issue of a Subdivision Certificate the following compliance documentation shall be submitted to the Principal Certifying Authority. A copy of the following documentation shall be provided to Council where Council is not the Principal Certifying Authority:

    (a) Work as Executed (WAE) drawings of all civil works. The WAE drawings shall be marked in red on copies of the stamped Construction Certificate drawings signed, certified and dated by a registered surveyor or the design engineer. The Work as Executed drawings shall be prepared in accordance with Council's Design Guidelines. Electronic copies of the WAE shall be provided in PDF format and a DXF format to Council along with two hard copies of the WAE plans; and

    (b) Surveyor's Certificate certifying that all pipes and services are located wholly within the property or within appropriate easements and that no services encroach boundaries; and

    (c) A Geotechnical Report certifying that all earthworks and road formation have been completed in accordance with AS3798 and Council's Design Guidelines and Construction specifications. The report shall include:
        i. Compaction reports for road pavement construction,
        ii. Compaction reports for bulk earthworks and lot regrading,
        iii. Soil classification for all residential lots, and
        iv. Statement of Compliance.

194. Prior to the issue of a Subdivision Certificate a restriction as to user and positive covenant relating to the:
    (a) On-site detention system/s; and
    (b) Basement Carpark pump-out system:

195. Prior to the issue of a Subdivision Certificate the Principal Certifying Authority shall ensure that the:
    (a) On-site detention system/s; and
    (b) Basement Carpark pump-out system:

    1. Have been satisfactorily completed in accordance with the approved Construction Certificate and the requirements of this consent,
    2. Have met the design intent with regard to any construction variations to the approved design, and
    3. Any remedial works required to been undertaken have been satisfactorily completed.

    Details of the approved and constructed system/s shall be provided as part of the Works-As-Executed drawings.

G. CONDITIONS RELATING TO USE

196. Council's on-street assets should be protected at all times. Any damages should be rectified to Council satisfaction.

Car Parking and Basement

197. All parking areas shown on the approved plans must be used solely for this purpose.

198. All line marking and sign posting is to be maintained in good condition at all times, to the satisfaction of Council.

199. Visitor parking spaces must not be allocated, sold or leased to an owner, occupier or any other person or entity. In any strata subdivision, visitor parking spaces must be retained within the common property.

200. All vehicles must enter and exit the site in a forward direction.

201. The operation of the pump system shall not give rise to an equivalent continuous (LAeq) sound pressure level at any point on any residential property greater than 5dB(A) above the existing background LA90 level (in the absence of the noise under consideration.

202. The following parking spaces should be used solely for the purpose it has been provided.

    1. Visitor car parking
    2. Accessible car parking

Affordable Housing

203. Units 8,9,15,16,17, 23,24,25 & 31 are to be used for the purposes of affordable housing for 15 years from the date of issue of the Occupation Certificate. In addition, all accommodation that is used for affordable housing shall be managed by a registered community housing provider.

    Note: *Affordable housing means housing for very low income households, low income households or moderate income households, being such households as are prescribed by the regulations or as are provided for in an environmental planning instrument.* A household is taken to be a very low income household, low income household or moderate income household if the household:

    (a) Has a gross income that is less than 120 per cent of the median household income for the time being for the Greater Sydney (Greater Capital City Statistical Area) (according to the Australian Bureau of Statistics) and pays no more than 30 per cent of that gross income in rent, or

    (b) Is eligible to occupy rental accommodation under the National Rental Affordability Scheme and pays no more rent than that which would be charged if the household were to occupy rental accommodation under that scheme.

204. Prior to each anniversary date for the fifteen-year period, evidence shall be provided to Council by way of letter from a Registered Community Housing provider confirming that the identified Affordable Rental Housing dwellings are managed in accordance with DA-562/2023.

Landscaping

205. Landscaping shall be maintained in accordance with the approved plan, in a healthy state and in perpetuity by the existing or future owners and occupiers of the development. If any of the vegetation comprising the landscaping dies or is removed, it is to be replaced with vegetation of the same species, and similar maturity as the vegetation which has died or was removed.

Use of air conditioner/s on residential premises

206. Any air conditioner/s used on the residential premises shall comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and shall not:

(a) emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):

i. before 8:00am or after 10:00pm on any Saturday, Sunday or public holiday; or
ii. before 7:00am or after 10:00pm on any other day; or

(b) cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997; or
(c) emit a sound pressure level as measured over a 15-minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

Unreasonable Noise and Vibration

207. The proposed use of the premises and/or machinery equipment installed must not give rise to offensive noise so as to interfere with the amenity of the neighbouring properties.

Should an offensive noise complaint be received and verified by Council, an acoustic assessment is to be undertaken by a suitably qualified acoustic consultant and an acoustic report is to be submitted to Council for review. Any noise attenuation recommendations approved by Council must be implemented.

Note: 'Suitably qualified acoustic consultant' means a consultant who is a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.

Noise - Silent Alarm System

208. Any alarm installed on the site is to be "silent back to base" type.

Noise - General

209. Noise associated with the use of the premises, including mechanical plant and equipment, shall not give rise to any one or more of the following:

a) The use of the premises including the cumulative operation of any mechanical plant, equipment, public address system or other amplified sound equipment shall not give rise to the emission of 'offensive noise' as defined by the Protection of the Environment Operations Act 1997.

b) The operation of any mechanical plant, equipment, public address system or other amplified sound equipment installed on the premises shall not cause:

   i. The emission of noise as measured over a 15 minute period ($L_{Aeq\ (15\ minute)}$) that exceeds the $L_{A90\ (15\ minute)}$ background noise level by more than 5 dB(A) when measured at the most affected residential boundary. Modifying factor corrections must be applied for tonal, impulsive, low frequency or intermittent noise in accordance with the NSW Environment Protection Authority's 'Noise Policy for Industry' (2017);
   ii. An internal noise level in any adjoining occupancy that exceeds the recommended design sound levels specified in Australian/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors;
   iii. 'offensive noise' as defined by the Protection of the Environment Operations Act 1997; and
   iv. Transmission of vibration to any place of different occupancy greater than specified in AS 2670.

210. During occupation and ongoing use of the building, all mechanical ventilation system(s) or other plant and equipment that generates noise must be located on the site (including in a soundproofed area where necessary) to ensure the noise generated does not exceed 5dBa above the ambient background noise at the boundary adjacent to any habitable room of adjoining residential premises

Environment

211. The use of the premises shall not give rise to the emission into the surrounding environment of gases, vapours, dusts or other impurities that are a nuisance, injurious or prejudicial to health.

Mail-boxes

212. The mailboxes must not be accessed by universal keys and must each have their own keys for private access.

213. Vegetation must not cover or obstruct natural surveillance to the mailboxes.

Washing on Balconies

214. The hanging of washing, including any clothing, towels, bedding or other article of a similar type on any balcony shall not be visible from any street.

Lighting

215. Illumination of the site is to be arranged in accordance with the requirements and specifications of Australian Standard 4282:1997 so as not to impact upon the amenity of the occupants of adjoining and nearby premises.

Use of Pump/s on Residential Premises

216. Any pump/s used on the residential premises including but not limited to swimming pool pumps, spa pumps, solar water pumps, rainwater tank pumps and associated equipment must comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and must not:
    1. emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):
        i. before 8:00am or after 8:00pm on any Saturday, Sunday or public holiday; or
        ii. before 7:00am or after 8:00pm on any other day; or
    2. cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997; or
    3. emit a sound pressure level as measured over a 15 minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

Environmental Health

217. Any liquid discharge from the air handling system resulting from the operation, maintenance and/or cleaning operations are to be disposed of into the sewer system. Discharge into the stormwater disposal system is not permitted.

218. The operation of the premises operations must not result in the discharge of materials into Council's stormwater drainage system.

219. Any heat pump water heater/s used on the residential premises must comply with the requirements of the Protection of the Environment Operations (Noise Control) Regulation 2017 and must not:
    1. emit noise that is audible within a habitable room in any other residential property (regardless of whether any door or window to that room is open):
        i. before 8:00am or after 10:00pm on any Saturday, Sunday or public holiday; or
        ii. before 7:00am or after 10.00pm on any other day; or
    2. cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997; or
    3. emit a sound pressure level as measured over a 15 minute period (LAeq (15 minute)) at the boundary of any other residential property, at a time other than those specified in (i) and (ii) above, which exceeds the background (LA90 (15 minute)) by more than 5 dB(A).

Waste Management

220. The 12 x 660L bins (6 x 660L red lid general waste and 6 x 660L) recycling must be put on the premises for the storage of any waste that is generated (including for recycling.)

221. All garbage and recyclable materials generated from the premises must be stored wholly within any approved storage area and must not be stored outside the premises (including any public place) at any time.

222. Arrangements must be implemented for the separation of recyclable materials from garbage.

223. Any approved waste storage area must be appropriately maintained to prevent litter and the entry of pests

224. Once the Occupation Certificate has been issued for the new residences, but at least 7 days prior to residents moving in, Council is to be contacted to arrange delivery of the domestic waste bins to these dwellings. Please contact Council on 1300 36 2170 to arrange the delivery of waste bins.

225. Agents of the strata must present waste and recycling bins for emptying to the kerbside of Woolnough Place, with lids fully closed and wheel locks on, no earlier than the afternoon before collection. After emptying, all bins must be removed from the kerbside as soon as possible, and no later than 24 hours after collection, and placed back into bin storage rooms.

226. Waste bin storage rooms and intermediate waste spaces on each level must be kept tidy at all times. Bins must not be stored or allowed to overflow in parking or landscaping areas, and must not obstruct the exits of the buildings.

227. Signage, with a graphic illustrative content of at least 50%, is to be prominently displayed in each waste storage area, or waste service space as appropriate, indicating:

    i. General waste is to be bagged and placed into the waste bins,
    ii. Recyclable materials accepted by Council are to be placed, loose and unbagged within the recycling bins,
    iii. That the area must be kept tidy,

228. The powered bin mover provided by the developer, is to be used on all occasions that bins are required to be moved from waste rooms to the collection point. This piece of equipment must be maintained according to the manufacturer's instructions, and be available in an operable condition when needed. If this equipment breaks down, it must either be repaired promptly, or replaced as needed. The powered bin mover must be operated only by persons who are trained and insured to use it.

229. Building management is responsible for providing education, monitoring and feedback to residents on correct waste performance and use of building waste equipment, and instituting corrective actions to address non-conformance where necessary.

230. Residents must ensure that all materials placed in the yellow-lid recycling bins are acceptable for recycling through that means, and all materials placed in recycling bins must be loose, unbagged and easily separable.

H. ADVISORY

(a) Section 4.53 of the EP&A Act provides that unless otherwise stated by a condition of this consent, this consent will lapse if development is not physically commenced within five years of the date of this notice.

(b) Section 8.2 of the EP&A Act provides that an applicant may request, within six (6) months of the date of the determination of the Development Application, that Council review its determination (this does not relate to designated development or Crown development).

An application under Section 8.2 of the EP&A Act cannot be reviewed/determined after 6 months of the date of determination. Therefore, the submission of a Section 8.2 Application

must allow sufficient time for Council to complete its review within the prescribed timeframe, including the statutory requirement for public notification.

(c) Section 8.7 of the EP&A Act provides that an applicant who is dissatisfied with the determination of a Development Application, may appeal to the Land and Environment Court within six (6) months of the date of determination, or as otherwise prescribed by the EP&A Act.

(d) Section 8.8 of the EP&A Act provides that an objector who is dissatisfied with the determination of the consent authority to grant consent to a Development Application for Designated Development (including any State significant development that would be designed development but for Section 4.10(2) of the EP&A Act), may, within 28 days after the date on which the application is taken to have been determined, appeal to the Land and Environment Court, against the determination.

(e) The Commonwealth Disability Discrimination Act 1992 may apply to this proposal. Approval of this application does not imply or infer compliance with this Act. Applicants and owners are required to satisfy themselves as to compliance and make their own enquiries to the Human Rights and Equal Opportunity Commission. Attention is also drawn to the provisions of Australian Standard 1428 – Design for Access and Mobility.

(f) The requirements of all authorities including the Environmental Protection Authority and the Work Cover Authority shall be met in regard to the operation of the building.

(g) "DIAL BEFORE YOU DIG"

Underground assets may exist in the area that is subject to your application. In the interest of health and safety and in order to protect damage to third party assets please contact Dial before you dig at www.1100.com.au or telephone 1100 before excavating or erecting structures (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contact the Dial before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial before you dig service in advance of any construction or planning activities.

(h) TELECOMMUNICATIONS ACT 1997 (COMMONWEALTH)

Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the Criminal Code Act 1995 (Cth) and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on Phone Number 1800 810 443.

(i) The Liverpool City Council Local Government area soils and ground water may be subject to varying levels of Salinity. Whilst Council may require applicants to obtain Salinity reports relating to some developments, no assessment has been made by Council. Soil and ground water salinity levels can change over time due to varying factors. It is recommended that all applicants make their own independent inquiries as to appropriate protection against the current and future potential affect of Salinity to ensure the ongoing structural integrity of any work undertaken. Liverpool City Council will not accept any liability for damage occurring to any construction of any type affected by soil and or ground water Salinity.

(j) Care shall be taken by the applicant and the applicant's agents to prevent any damage to adjoining properties. The applicant or applicant's agents may be liable to pay compensation to any adjoining owner if, due to construction works, damage is caused to such an adjoining property.

(k) Letter boxes must be provided in accordance with the requirements of Australia Post. In this regard, the developer is required to obtain approval from Australia Post for letter box positioning and dimensions.

(l) The cost of any necessary adjustments to utility mains and services shall be borne by the applicant.

8 February 2024 Our reference: N/A

Edwar Eshow
Liverpool City Council
eshowe@liverpool.nsw.gov.au

RE: Development Application DA-562/2023 at 11-15 Woolnough Place, Cartwright

Thank you for notifying Sydney Water of DA-562/2023 at 11-15 Woolnough Place, Cartwright, which proposes demolition of existing structures and construction of a four-storey residential flat building with 32 dwellings and two basement levels. Sydney Water has reviewed the application based on the information supplied and provides the following Sydney Water requirements to assist in planning the servicing needs of the proposed development.

Sydney Water position:	**No objection – Condition of Consent applies.**
Condition of Consent which applies:	**Section 73 and Building Plan Approval required** See Attachment 1 for recommended wording for Sydney Water conditions to be included in the consent letter.
Additional comments:	
Other information:	This advice is not formal approval of our servicing requirements. Detailed requirements will be provided once the development is referred to Sydney Water for further applications. The Sydney Water DA Referral Information Sheet enclosed contains details on how to make further applications to Sydney Water. A copy of this should be provided to the proponent in conjunction with the development consent.

More requirements can be found in Attachment 1. If you require any further information, please contact the Growth Planning Team at urbangrowth@sydneywater.com.au.

Yours sincerely,

Growth Planning Team
City Growth and Development, Business Development Group
Sydney Water, 1 Smith Street, Parramatta NSW 2150

The advice in this letter has been prepared under Section 78 of the *Sydney Water Act 1994*. This advice is not formal approval of our servicing requirements and is to be forwarded from Council to the Applicant as part of the development application referral process.
Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au
Delivering essential and sustainable water services for the benefit of the community

Attachment 1 – Recommended Development Conditions

Prior to the issue of an Occupation/Subdivision Certificate:

Section 73 Compliance Certificate

A compliance certificate must be obtained from Sydney Water, under Section 73 of the Sydney Water Act 1994. Our assessment will determine the availability of water and wastewater services, which may require extensions, adjustments, or connections to our mains. Make an early application for the certificate, as there may be assets to be built and this can take some time. A Section 73 Compliance Certificate must be obtained before an Occupation or Subdivision Certificate will be issued.

Applications can be made either directly to Sydney Water or through a Sydney Water accredited Water Servicing Coordinator.

Go to the Sydney Water website or call 1300 082 746 to learn more about applying through an authorised WSC or Sydney Water.

Prior to the issue of a Construction Certificate/Complying Development Certificate:

Building Plan Approval

The plans must be approved by Sydney Water prior to demolition, excavation or construction works commencing. This allows Sydney Water to determine if sewer, water or stormwater mains or easements will be affected by any part of your development. Any amendments to plans will require re-approval. Please go to Sydney Water Tap in® to apply.

Sydney Water recommends developers apply for a Building Plan Approval early as to reduce unnecessary delays to further referrals or development timescales.

Tree Planting

Certain tree species placed in proximity to Sydney Water's underground assets have the potential to inflict damage through invasive root penetration and soil destabilisation. Section 46 of the Sydney Water Act specifies what might occur when there is interference or damage to our assets caused by trees.

For any trees proposed or planted that may cause destruction of, damage to or interference with our work and are in breach of the Sydney Water Act 1994, Sydney Water may issue an order to remove that tree or directly remove it and seek recovery for all loss and associated compensation for the removal.

For guidance on types of trees that can cause damage or interference with our assets see Sydney Water webpage Wastewater blockages. For guidance on how to plant trees near our assets, see Diagram 5 – Planting Trees within Sydney Water's Technical guidelines – Building over and adjacent to pipe assets.

Transport for NSW

3 December 2023

TfNSW Reference: SYD23/00240/02

Edwar Eshow
Liverpool City Council
RE: DA-562/2023 | CNR-62473
Locked Bag 7064
Liverpool BC
NSW 1871

4-STOREY RESIDENTIAL FLAT BUILDING PROPOSAL
11-15 WOOLNOUGH PLACE
CARTWRIGHT

Dear Edwar,

Transport for NSW (TfNSW) is in receipt of Council's referral dated 14 November 2023 relevant to the 11-15 Woolnough Place proposal, as referred to TfNSW in accordance with clause 2.119, State Environmental Planning Policy (Transport and Infrastructure) 2021.

Please note TfNSW has not identified any concerns.

Any relevant queries, please contact Zeliha Cansiz, Development Assessment Officer via development.sydney@transport.nsw.gov.au.

Sincerely,

Muriel Maher
Senior Coordinator Land Use Assessment
Planning and Programs
Greater Sydney Division

4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150
PO Box 973 Parramatta CBD NSW 2124
W transport.nsw.gov.au

Development Application and Planning Proposal Review
NSW Planning Portal Concurrence and Referral

Endeavour Energy

Authority	Authority's Reference	Agency Concurrence and Referral	Authority Contact	Authority Notification	Submission Due	Submission Made
Liverpool City Council	DA-562/2023	CNR-62473	Edwar Eshow	17/01/2024	7/02/2024	17/01/2024

Address	Land Title
11 - 15 WOOLNOUGH PLACE CARTWRIGHT 2168	Lots 387, 388 & 389 DP 237249

Scope of Development Application or Planning Proposal

Demolition of the existing structures and construction of a four-storey residential flat building with 32 dwellings (1 x studio, 8 x 1 bedroom and 23 x 2 bedroom dwellings) and two basement levels.

Endeavour Energy's G/Net master facility model indicates:

Within or adjacent to the property the electrical network used in the distribution / supply of electricity are:

Electricity Infrastructure / Apparatus	Statutory allocation (road verge / roadway*)	Easement (or other form of property tenure**)	Protected works***	Freehold (adjoining or nearby)
Overhead Power Lines				
☒ *Low voltage*	☒	☐	☒	☐
☒ *High voltage*	☐	☐	☒	☐
☐ *Transmission voltage*	☐	☐	☐	☐
☒ *Pole / tower*	☒	☐	☒	☐
Underground Cables				
☐ *Low voltage*	☐	☐	☐	☐
☐ *High voltage*	☐	☐	☐	☐
☒ *Transmission voltage*	☐	☐	☒	☐
☐ *Streetlight / pillar*	☐	☐	☐	☐
Substation				
☒ *Pole mounted*	☐	☐	☒	☐
☐ *Padmount*	☐	☐	☐	☐
☐ *Indoor*	☐	☐	☐	☐
☐ *Zone*	☐	☐	☐	☐
☐ *Transmission*	☐	☐	☐	☐
Other:	☐	☐	☐	☐

Low voltage extra low voltage up to 1,000 volts alternating current (a.c.).
High voltage above 1,000 volts a.c and less than 33,000 volts a.c. [33 kilovolts (kV)].
Transmission voltage 33 kV up to 132,000 volts a.c. (132 kV).
*Rights provided in a public road or reserve. The allocation depends on the classification and date of roadway dedication.
** Other form of property tenure includes but is not limited to restriction, covenant, lease, licence etc.
***Protected works under Section 53 'Protection of certain electricity works' of the *Electricity Supply Act 1995* (NSW).
Other: provide detail of electricity infrastructure / apparatus.

POWER together

Endeavour Energy
ABN 11 247 365 823
T 133 718
Level 40-42, 8 Parramatta Square,
10 Darcy Street Parramatta NSW 2150
PO Box 811, Seven Hills NSW 1730
endeavourenergy.com.au

Relevant / applicable clause numbers from Endeavour Energy's standard conditions for Development Application and Planning Proposal Review indicated by ☒ .

Cond-ition	Advice	Clause No.	Issue	Detail
☐	☐	1	Adjoining Sites	Adjoining or nearby development / use should be compatible with the use of Endeavour Energy's sites.
☐	☐	2	Asbestos	Area identified or suspected of having asbestos or asbestos containing materials (ACM) present in the electricity network.
☐	☒	3	Asset Planning	Applicants should not assume adequate supply is immediately available to facilitate their proposed development.
☐	☐	4	Asset Relocation	Application must be made for an asset relocation / removal to determine possible solutions to the developer's requirements.
☒	☐	5	Before You Dig	Before commencing any underground activity the applicant must obtain advice from the Before You Dig service.
☐	☐	6	Bush Fire	Risk needs to be managed to maintain the safety of customers and the communities served by the network.
☐	☐	7	Construction Management	Integrity of electricity infrastructure must be maintained and not impacted by vehicle / plant operation, excessive loads, vibration, dust or moisture penetration.
☐	☐	8	Contamination	Remediation may be required of soils or surfaces impacted by various forms of electricity infrastructure.
☐	☒	9	Demolition	All electricity infrastructure shall be regarded as live and care must be taken to not interfere with any part of the electricity network.
☐	☐	10	Dispensation	If a proposal is not compliant with Endeavour Energy's engineering documents or standards, the applicant must request a dispensation.
☐	☒	11	Driveways	For public / road safety and to reduce the risk of vehicle impact, the distance of driveways from electricity infrastructure should be maximised.
☒	☐	12	Earthing	The construction of any building or structure connected to or in close proximity to the electrical network must be properly earthed.
☐	☐	13	Easement Management	Preference is for no activities to occur in easements and they must adhere to minimum safety requirements.
☐	☐	14	Easement Release	No easement is redundant or obsolete until it is released having regard to risks to its network, commercial and community interests.
☐	☐	15	Easement Subdivision	The incorporation of easements into to multiple / privately owned lots is generally not supported.
☐	☒	16	Emergency Contact	Endeavour Energy's emergency contact number 131 003 should be included in any relevant risk and safety management plan.
☐	☐	17	Excavation	The integrity of the nearby electricity infrastructure shall not be placed at risk by the carrying out of excavation work.
☐	☒	18	Flooding	Electricity infrastructure should not be subject to flood inundation or stormwater runoff.
☐	☐	19	Hazardous Environment	Electricity infrastructure can be susceptible to hazard sources or in some situations be regarded as a hazardous source.
☒	☐	20	Look up and Live	Before commencing any activity near overhead power lines the applicant must obtain advice from the Look Up and Live service.
☐	☐	21	Modifications	Amendments can impact on electricity load and the contestable works required to facilitate the proposed development.
☐	☐	22	Network Access	Access to the electricity infrastructure may be required at any time particularly in the event of an emergency.
☒	☐	23	Network Asset Design	Design electricity infrastructure for safety and environmental compliance consistent with safe design lifecycle principles.

Cond-ition	Advice	Clause No.	Issue	Detail
☒	☐	24	Network Connection	Applicants will need to submit an appropriate application based on the maximum demand for electricity for connection of load.
☐	☒	25	Protected Works	Electricity infrastructure without an easement is deemed to be lawful for all purposes under Section 53 'Protection of certain electricity works' of the *Electricity Supply Act 1995* (NSW).
☐	☒	26	Prudent Avoidance	Development should avert the possible risk to health from exposure to emissions form electricity infrastructure such as electric and magnetic fields (EMF) and noise.
☐	☒	27	Public Safety	Public safety training resources are available to help general public / workers understand the risk and how to work safely near electricity infrastructure.
☐	☒	28	Removal of Electricity	Permission is required to remove service / metering and must be performed by an Accredited Service Provider.
☐	☒	29	Safety Clearances	Any building or structure must comply with the minimum safe distances / clearances for the applicable voltage/s of the overhead power lines.
☐	☐	30	Security / Climb Points	Minimum buffers appropriate to the electricity infrastructure being protected need to be provided to avoid the creation of climb points.
☒	☐	31	Service Conductors	Low voltage service conductors and customer connection points must comply with the 'Service and Installation Rules of NSW'.
☐	☒	32	Solar / Generation	The performance of the generation system and its effects on the network and other connected customers needs to be assessed.
☐	☒	33	Streetlighting	Streetlighting should be reviewed and if necessary upgraded to suit any increase in both vehicular and pedestrian traffic.
☐	☒	34	Sustainability	Reducing greenhouse gas emissions and helping customers save on their energy consumption and costs through new initiatives and projects to adopt sustainable energy technologies.
☐	☐	35	Swimming Pools	Whenever water and electricity are in close proximity, extra care and awareness is required.
☐	☐	36	Telecommunications	Address the risks associated with poor communications services to support the vital electricity supply network Infrastructure.
☒	☐	37	Vegetation Management	Landscaping that interferes with electricity infrastructure is a potential safety risk and may result in the interruption of supply.
Decision				Approve (with conditions)

Environmental Services Team

P 133 718 or (02) 9853 6666
E Property.Development@endeavourenergy.com.au

Level 40-42, 8 Parramatta Square, 10 Darcy Street
Parramatta NSW 2150.

Dharug/Wiradjuri/Dharawal/Gundungurra/Yuin Country

endeavourenergy.com.au |

Endeavour Energy | POWER together

Endeavour Energy respectfully acknowledges the Traditional Custodians on whose lands we live, work, and operate and their Elders past and present.

Reason(s) for Conditions or Objection (If applicable)

- Electricity infrastructure on a site for which there are no easements are regarded as protected works under Section 53 'Protection of certain electricity works' of the *Electricity Supply Act 1995* (NSW) and may be managed as if an easement is in place.

  Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure', Table 1 'Minimum easement widths', sets out the minimum required easements for various types of electricity distribution infrastructure.

  Endeavour Energy's G/Net Master Facility Model indicates that this section of Hoxton Park Road (which has 132 kV transmission underground cables and low voltage and 11 kV high voltage overhead power lines) is not (yet) dedicated as a public road. This could be due to an issue with the current NSW Land Registry Services cadastre and is being checked by Endeavour Energy. Irrespective of the form of property tenure, appropriate safety clearances need to be provided to all types of electricity distribution infrastructure.

- To ensure an adequate connection, the applicant will need to engage an Accredited Service Provider (ASP) of an appropriate level and class of accreditation to assess the electricity load and the proposed method of supply for the development.

- An extension or augmentation of the existing electricity distribution network may be required. Whilst there are distribution substations in the area which are likely to have some spare capacity sufficient to provide for any additional load from the proposed development, it is not unlimited.

  Other factors such as the size and rating / load on the conductors and voltage drop (which can affect the quality of supply particularly with long conductor runs) etc. need to be assessed. However the extent of any works required will not be determined until the final load assessment is completed.

- Any required padmount substation/s will need to be located within the property (in a suitable and accessible location) and be protected (including any associated cabling not located within a public road / reserve) with an appropriate form of property tenure as detailed in the attached copy of Endeavour Energy's 'Land Interest Guidelines For Network Connection'.

  Generally it is the Level 3 Accredited Service Provider's (ASP) responsibility (engaged by the developer) to make sure substation location and design complies with Endeavour Energy's standards the suitability of access, safety clearances, fire ratings, flooding etc. If the substation does not comply with Endeavour Energy's standards, the applicant must request a dispensation.

  For further information please also refer to the attached copies of Endeavour Energy's:

  - Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.
  - Guide to Fencing, Retaining Walls and Maintenance Around Padmount Substations.

- Endeavour Energy's network asset design policy is generally to progressively underground all new urban developments. All new cabling / reticulation infrastructure must be of an underground construction type. Where existing overhead construction is present on or in proximity of the site, it may require undergrounding as the development proceeds.

- The low voltage service conductors and customer connection points must comply with the 'Service and Installation Rules of NSW'.

- The minimum required safety clearances and controls for building and structures (whether temporary or permanent) and working near overhead power lines must be maintained at all times. If there is any doubt whatsoever regarding the safety clearances to the overhead power lines, the applicant will need to have the safety clearances assessed by a suitably qualified electrical engineer / Accredited Service Provider (ASP).

  Even if there is no issue with the safety clearances to the building and structures, consideration must be given to WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006' eg. ordinary persons must maintain a minimum safe approach distance of 3.0 metres to all voltages up to and including 132,000 volts / 132 kilovolt (kV) and includes the following requirements for work near low voltage overhead power / service lines.

TABLE 4

Approach distances for work near low voltage overhead service lines

Ordinary Persons (m)				
Hand held tools	Operation of crane or mobile plant	Handling of metal materials (Scaffolding, roofing, guttering, pipes, etc)	Handling of non-conductive materials (Timber, plywood, PVC pipes and guttering, etc)	Driving or operating vehicle
0.5	3.0	4.0	1.5	0.6

- Driveways should be designed to increase the separation to the any electricity infrastructure on the road verge as much as reasonably possible, with 1 metre recommended and a minimum 300 millimetres clearance required to poles for residential development.

- With above ground / open onsite stormwater detention (OSD) basins in building setbacks placing them closer to the electricity infrastructure on the road verge / roadway and low voltage service conductors, although not likely to be a significant issue / risk, during network fault conditions, ponding water, puddles or wet soil as good conductors of electricity may increase the area the fault voltage is dissipated to. Any metal structures, utilities such as water taps etc. should be located outside of the OSD basin ie. if there is a fault and these are touched it may complete the circuit and cause an electric shock.

- The planting of large / deep rooted trees near electricity infrastructure is opposed by Endeavour Energy. Existing trees which are of low ecological significance in proximity of electricity infrastructure should be removed and if necessary replaced by an alternative smaller planting. The landscape designer will need to ensure any planting near electricity infrastructure achieves Endeavour Energy's vegetation management requirements.

Endeavour Energy's G/Net master facility model.

The advice provided regarding the extent of the electricity infrastructure on or near the site is based on a desk top review of Endeavour Energy's G/Net master facility model. This is a computer based geographic information system which holds the data on and is used to map the electricity network. The location, extent and type of any electricity infrastructure, boundaries etc. shown on the plan is indicative only. In addition it must be recognised that the electricity network is constantly extended, augmented and modified and there is a delay from the completion and commissioning of these works until their capture in the model. It only shows the Endeavour Energy electricity network and does not show electricity infrastructure belonging to other authorities or customers owned electrical equipment beyond the customer connection point / point of supply to the property.

Easement (or other form of property tenure).

Title searches will confirm the current owners of a property and shows any registered interests affecting the property such as an easement. Not all interests eg. short term leases and licences are registered on the title. Not all easements for electricity infrastructure will necessarily benefit Endeavour Energy eg. there may be interallotment / easements appurtenant to the land particularly for low voltage service conductors / customer connections. For further advice please refer to Endeavour Energy's:

- Land Interest Guidelines for Network Connection Works.
- Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

Condition or Advice

With Endeavour Energy's Development Application and Planning Proposal Review process / system the intent of the 'Standard Conditions' being indicated as either a 'Condition' or 'Advice' essentially depends on the risk associated with the matter. If the matter is one that is likely or very likely to be an issue / needed to be addressed by the applicant and may require corrective action, then it is marked as a 'Condition'. If the matter is less likely and the consequences of the applicant not addressing it are lower or can be readily rectified, then it is marked as 'Advice'. If the matter is considered to be not applicable / relevant then it is not marked as either.

For example, the obtaining advice from the Before You Dig service in accordance with the requirements of the *Electricity Supply Act 1995* (NSW) and associated Regulations is a standard / regulatory requirement and will be generally indicated as 'Condition'. If the Site Plan from Endeavour Energy's G/Net Master Facility Model indicates there is no underground electricity infrastructure it will be indicated as 'Advice' as a precaution and in regard to any other underground utilities.

Not all of the matters may be directly or immediately relevant or significant to the Development Application or Planning Proposal. However, Endeavour Energy's preference is to alert proponents / applicants of the potential matters that may arise should development within closer proximity of the existing and/or required electricity infrastructure needed to facilitate the proposed development on or in the vicinity of the site occur. Even if a matter is not indicated a 'Condition' or 'Advice', applicants are encouraged to review all of the 'Standard Conditions' as some matters may not have been evident from the information provided with the Development Application and of which the applicant may have additional knowledge.

Decision

In the NSW Planning Portal for the 'Agency response', as Endeavour Energy is not a concurring authority under the provision of the *Environmental Planning and Assessment Act 1979* (NSW), it does not 'Approve' or 'Refuse' a Development Application in the Portal. It will 'Approve (with conditions)' (which may 'Object' in the submission and detail the matters requiring resolution), or if all the matters in the submission are marked are for 'Advice', the outcome of the assessment will also be 'Advice'.

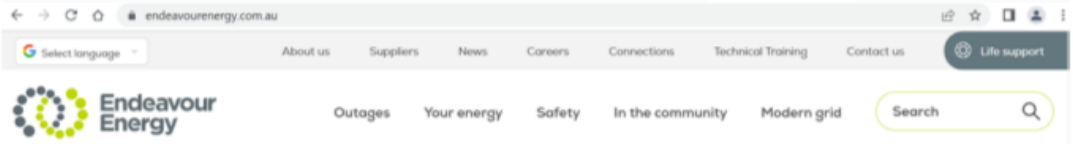
Objection

Endeavour Energy may object to a Development Application if the conditions may substantially impact the proposed development or regarded as a significant risk to the electricity distribution network. Although Council may be able to appropriately condition these matters, Endeavour Energy's recommendation is to address the matters prior to Council granting any consent. This can assist in avoiding the need to later seek modification of an approved Development Application.

Please note Endeavour Energy can only assess the Development Application based on the information provided by the applicant and Council. Due to time and resource constraints it is not possible to refer all development application notifications to the relevant internal stakeholders for review and advice or to request additional information from the applicant or Council. Applicants should be providing proper detailed plans of the electricity infrastructure / easements on or near the site and address the potential impacts of the proposed development thereon in the Statement of Environmental Effects. The provision of inadequate detail may result in Endeavour Energy objecting to the Development Application.

Further Advice

The 'Standard Conditions' include additional advice and contact details and further information is also available on Endeavour Energy's website at https://www.endeavourenergy.com.au/ .



To resolve any objection or to seek further advice the following are the main contacts and can be reached by calling Endeavour Energy via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666. For other matters the contact details are included in Endeavour Energy's standard conditions for Development Application and Planning Proposal Review. Whilst the Environmental Team are able to provide general advice, the resolution / approval of any matter/s rests with the relevant contact related to the matter/s.

Branch / Section	Matters	Email
Customer Network Solutions	Electricity supply or asset relocation who are responsible for managing the conditions of supply with the applicant and their Accredited Service Provider (ASP).	cicadmin@endeavourenergy.com.au
Easements Officers	Easement management or protected works / assets.	Easements@endeavourenergy.com.au
Property	Property tenure eg. the creation or release of easements.	network_property@endeavourenergy.com.au
Field Operations (to the relevant Field Service Centre).	Safety advice for building or working near electrical assets in public areas (including zone and transmission substations).	Construction.Works@endeavourenergy.com.au

Please note Endeavour Energy's above contacts do not have access to the NSW Planning Portal. To resolve any matters direct contact should be made with the responsible contact. This will avoid double handling and possible delays in responding to the applicant / Council.

Accredited Service Providers

The Accredited Service Provider (ASP) scheme accredits organisations to perform contestable work on the NSW electricity distribution network. Contestable works are works that are required for the electricity distribution network provider to supply the load in the power lines where a new or altered connection is being requested.

Endeavour Energy is urging applicants / customers to engage with an ASP prior to finalising plans to in order to assess and incorporate any required electricity infrastructure as well as addressing safety issues such as safety clearances. In so doing the consideration can also be given to its impact on the other aspects of the proposed development. This can assist in avoiding the making of amendments to the plan or possibly the need to later seek modification of an approved development application.

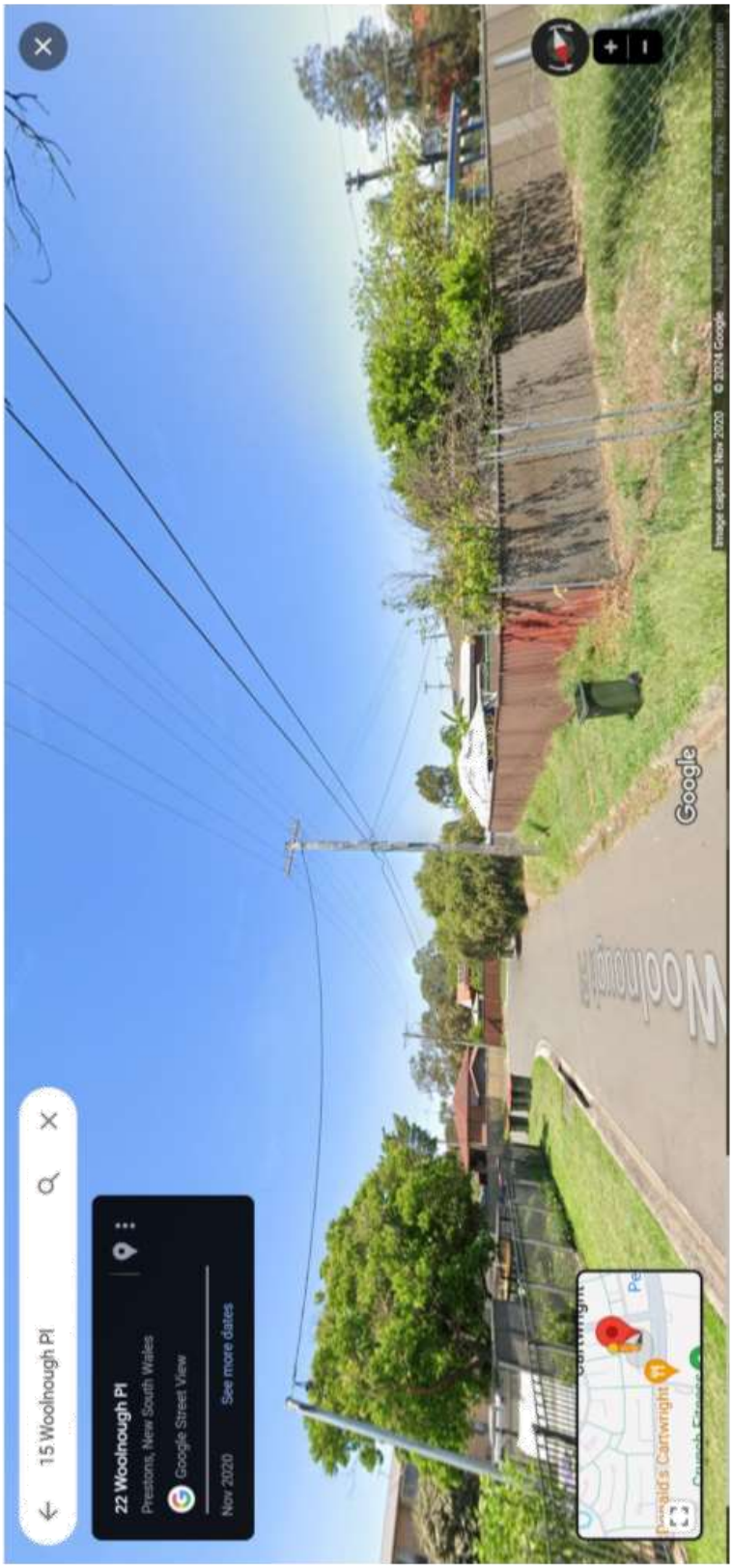
Details of the ASP Scheme which accredits organisations to perform contestable work on the NSW electricity distribution network are available via the following link to the Energy NSW website at https://www.energysaver.nsw.gov.au/get-energy-smart/dealing-energy-providers/installing-or-altering-your-electricity-service .

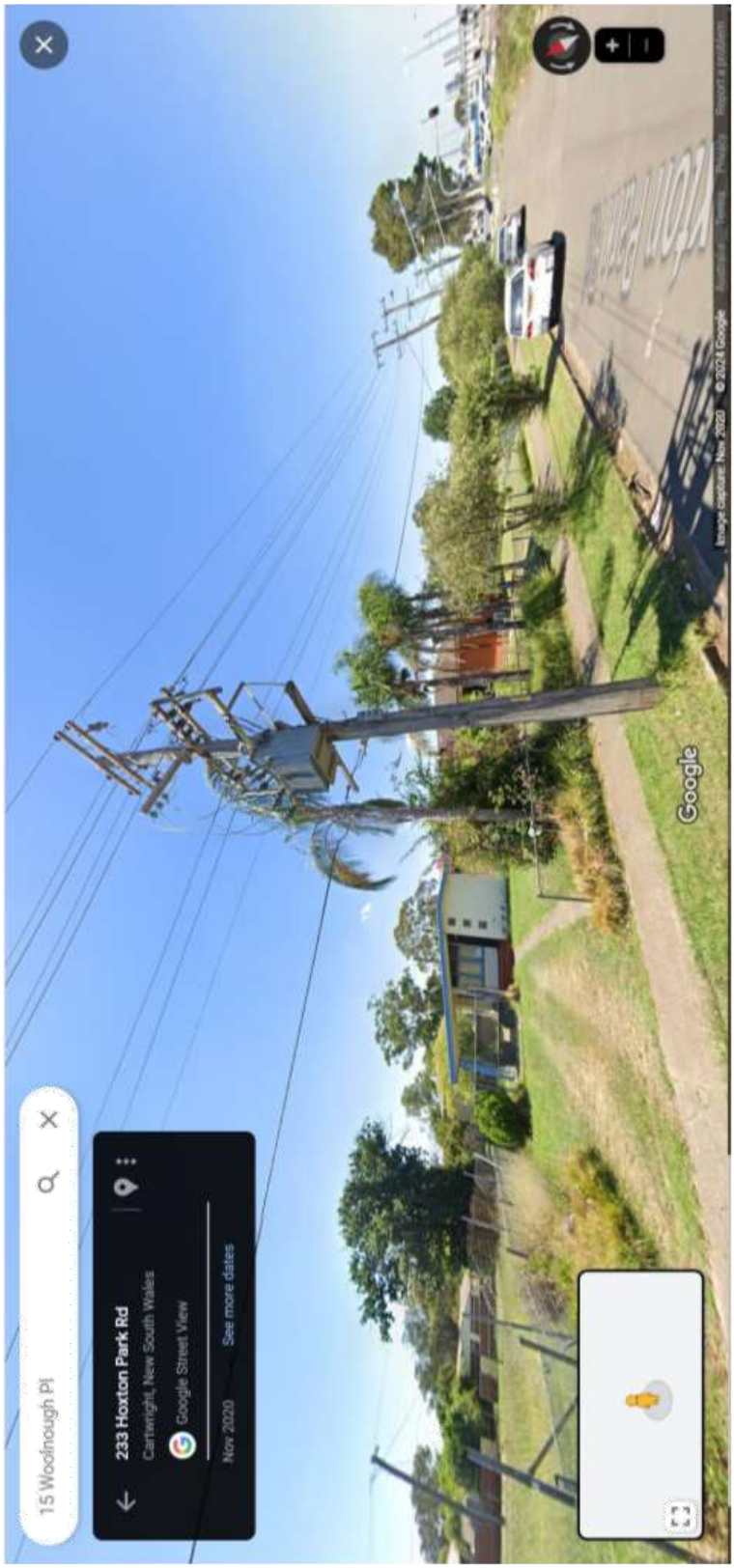
Duty of Care

All individuals have a duty of care they must observe when working in the vicinity of electricity infrastructure. Before you do anything:

1) Contact Before You Dig and Look Up and Live to obtain the details of the electricity infrastructure on or near the site noting they are a guide only to what might be in the area and may not be entirely accurate.
2) Comply with the conditions and consider the advice provided above.
3) If needed contact Endeavour Energy on 133 718 or the contacts provided above for assistance.
4) **DO NOT** attempt any work near electricity infrastructure until all required approvals and safety measures are in place.
5) Proceed only if you have satisfied yourself it is safe.
6) Always remember, even the briefest contact with electricity at any voltage can have serious consequences to a person's health and safety and can be fatal.

Google Maps Street View





Google Maps Street View. Pole mounted substation no. 4382.

ATTACHMENT 9 – SECTION 7.11 PAYMENT FORM

CONTRIBUTIONS PURSUANT TO SECTION 7.11 OF THE ENVIRONMENTALPLANNING & ASSESSMENT ACT, 1979
Liverpool Contribution Plan 2018 Established Areas

When remitting payment as specified in the Conditions of Consent to the approval, this Form must be submitted with your payment.

These figures have been calculated to the current CPI Quarter and will be adjusted at the time of payment in accordance with the conditions of consent.

APPLICATION NO: DA-562/2023

PROPOSAL: Demolition of the existing structures and construction of a four-storey residential flat building with 31 dwellings (one x studio, 10 x 1-bedroom, 18 x 2-bedroom and two x 3-bedroom dwellings) and two basement levels. The development includes nine dwellings that would be used affordable housing for a period of at least 15 years, and managed by a registered community housing provider, in accordance with Part 2, Division 1 'In-fill affordable housing' of State Environmental Planning Policy (SEPP) (Housing) 2021.

Residential			
Facilities		**Amount ($)**	**Job No.**
Liverpool Contributions Plan 2018 Established Areas			
Community Facilities - works			
	Central	$25,897	GL.10000001870.10099
District Sporting Fields - works			
	Central	$87,096	GL.10000001869.10211
District Passive Open Space - works			
	Central	$54,435	GL.10000001869.10093
Local Passive Open Space - works			
	Miller Area	$76,209	GL.10000001869.10096
Transport - Bikeways - works			
	Central	$10,432	GL.10000001865.10207
Transport - Traffic management - works			
	Central	$29,725	GL.10000001865.10213
Drainage - works			
	Central	$13,225	GL.10000001866.10209
Administration		$4,455	GL.10000001872.10104
TOTAL		**$301,474**	
Check average per Lot or Dwelling		**$10,767**	

----------OFFICE USE ONLY ----------

RECORD OF PAYMENT
Total Amount paid: _____
Date:_____

Receipt No.:_____Cashier:_____

Item Number:	**4**
Application Number:	RD-27/2024
Proposed Development:	Review of Determination Application pursuant to Section 8.2 of the EP&A Act 1979 for the review of Refusal Notice DA-99/2023 for the demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front brick fence and associated landscaping.
Property Address	10 Holland Crescent, Casula
Legal Description:	Lot 10, DP 31050
Applicant:	PLANZONE Pty Ltd
Land Owner:	Mr A Tsoutsas, Mrs A Tsoutsas, Mr J Tsoutsa
Cost of Works:	$1,539,407.10
Recommendation:	Refusal
Assessing Officer:	Anna Stephenson

1.EXECUTIVE SUMMARY

Council has received a Review of Development Application (DA No. RD-27/2024) seeking consent for demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front brick fence and associated landscaping at 10 Holland Crescent, Casula.

The original application for the proposal, DA-99/2023, refused on 23 January 2024, sought council consent for demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front brick fence and associated landscaping at 10 Holland Crescent, Casula.

The site is zoned R3 Medium Density Residential pursuant to Liverpool Local Environmental Plan 2008 and the proposed development is permissible with consent.

The development application was notified for a period of 14 days from 14 May 2024 to 29 May 2024 in accordance with the Liverpool City Council Community Participation Plan 2022. No submissions were received during the public consultation period.

The key issues associated with the proposal relate to:

- The proposed development does not comply with the non-discretionary development standard for deep soil zone area and dimensions in Clause 19(2)(c) of State Environmental Planning Policy (Housing) 2021. The applicant has made a written

request to vary this standard under Clause 4.6 of the Liverpool Local Environmental Plan 2008 (LLEP 2008), however this is not supported.

- The proposed development does not comply with the non-discretionary development standard for dwelling size in Clause 19(2)(i) of SEPP (Housing) 2021. No written request has been provided to vary this development standard.

- The proposed development does not comply with Chapter 6 of State Environmental Planning Policy (Biodiversity and Conservation) 2021.

- The proposed development is inconsistent with Sections 3, and 6 of Part 1 of the Liverpool Development Control Plan 2008 (LDCP 2008)

- The proposed development is inconsistent with Sections 3, 6, 7, 9 and 10 of Part 3.6 of the LDCP 2008.

The application is referred to the Liverpool Local Planning Panel (LLPP) in accordance with the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consent, endorsed by the Minister for Planning and Public Spaces,* as the development falls into the category of:

> ***Departure from Development Standards***
> *Development that contravenes a development standard imposed by an Environmental Planning Instrument (EPI) by more than 10% or non-numerical development standards.*

The application has been assessed pursuant to the provisions of the Environmental Planning and Assessment (EP&A) Act 1979. Based on the assessment of the application, it is recommended that the application be **refused**.

2. SITE DESCRIPTION AND LOCALITY

2.1 The locality

The site is located in Casula, in an area characterized by medium-density residential development. The immediate locality consists of a mix of multi-dwelling housing and detached dwellings, located directly west of the Hume Highway. The site adjoins Casula Public School and is nearby to Jardine Park and Casula Shopping Centre.

Figure 1: Locality Surrounding the Proposed Development (Source: Nearmap)

2.2 The site

The subject site is identified as Lot 10 in DP 31050 and is known as 10 Holland Crescent. It is irregular in shape with a frontage of 24.543 metres to Holland Crescent and a depth of 38.71 to 56.998 metres, with a total area of 866.3m².

Currently, the subject site contains a two-storey dwelling with a carport and shed, all of which is proposed to be demolished under this application.

Figure 2: Aerial view of the site (Source: Geocortex)

3. BACKGROUND/HISTORY

- A pre-lodgement meeting was held with Council on 9 February 2022 for a proposed design of 5 two-storey units.
- The original DA was lodged with Council on 27 February 2023, and refused on 23 January 2024. The reasons for refusal included noncompliance with State Environmental Planning Policy (Biodiversity and Conservation) 2021, State Environmental Planning Policy (Housing) 2021, Liverpool Local Environmental Plan 2008 and Liverpool Development Control Plan 2008.
- The subject revie of development application (RD) was lodged with Council on 7 May 2024, including a Clause 4.6 Variation Request for deep soil zones within the site.

4. DETAILS OF THE PROPOSAL

The proposed development consists of the following:

Demolition of the existing two-storey detached dwelling and associated structures, including carport, shed, concrete paving and 3 trees.

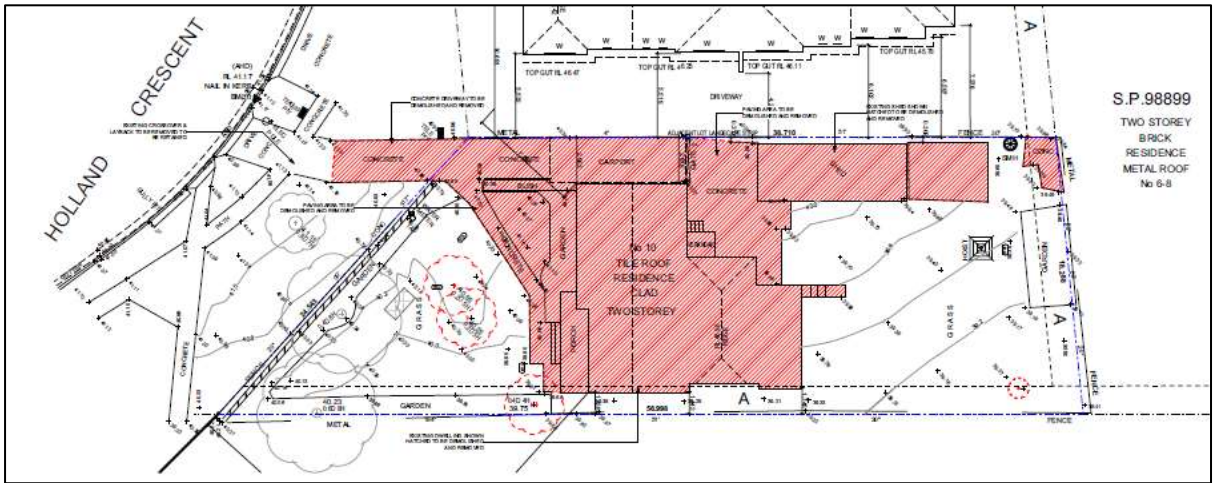


Figure 3: Demolition plan

Construction of a multi-dwelling development consisting of 4 attached townhouses:

- Unit 1:
  - Ground floor: Outdoor parking space, single garage, family room, dining room, kitchen, laundry cupboard, powder room, bedroom (Bed 3) with built-in wardrobe, uncovered alfresco area;
  - First floor: Master bedroom with walk-in wardrobe and ensuite, second bedroom (Bed 02) with built-in wardrobe, bathroom, linen cupboard.
- Unit 2:
  - Ground floor: Single garage, family room, dining room, kitchen, laundry cupboard, powder room, uncovered alfresco area;
  - First floor: 2 bedrooms (Master Bed & Bed 02) with built-in wardrobes, bathroom, linen cupboard.
- Unit 3:
  - Ground floor: Outdoor parking space, single garage, family room, dining room, kitchen, laundry cupboard, powder room, uncovered alfresco area;
  - First floor: 2 bedrooms (Master Bed & Bed 02) with built-in wardrobes, rumpus room, bathroom, linen cupboard.
- Unit 4:
  - Ground floor: Single garage, family room, dining room, kitchen, laundry, powder room, bedroom (Bed 3) with built-in wardrobe, uncovered alfresco area;
  - First floor: Bedroom (Bed 02) with walk-in wardrobe and ensuite, bedroom (Bed 03) with built-in wardrobe, bathroom, linen cupboard.

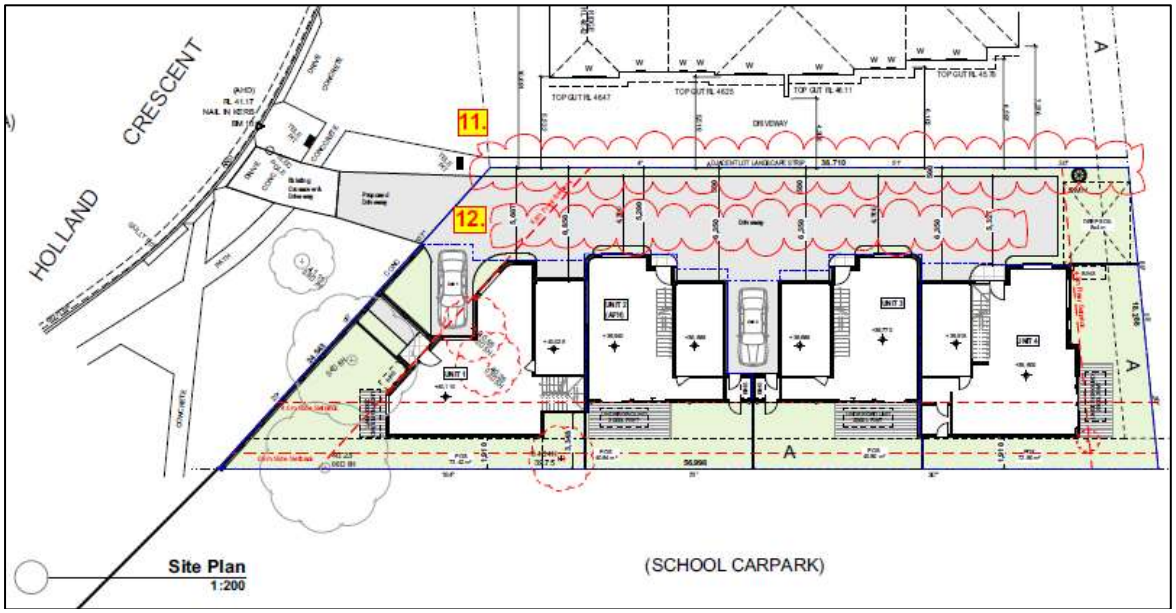


Figure 4: Proposed site plan

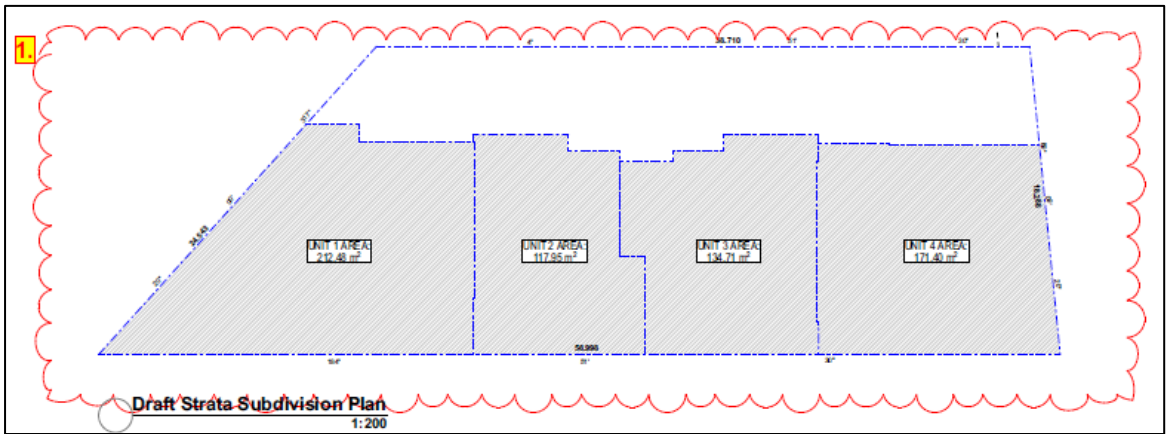


Figure 5: Proposed draft strata subdivision plan

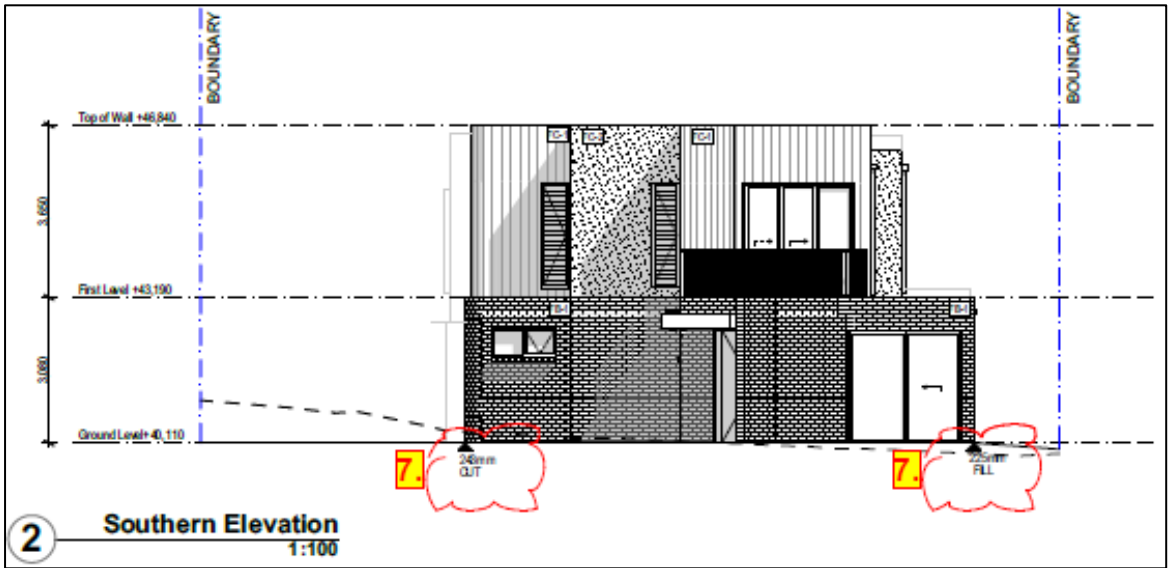


Figure 6: Proposed southern elevation

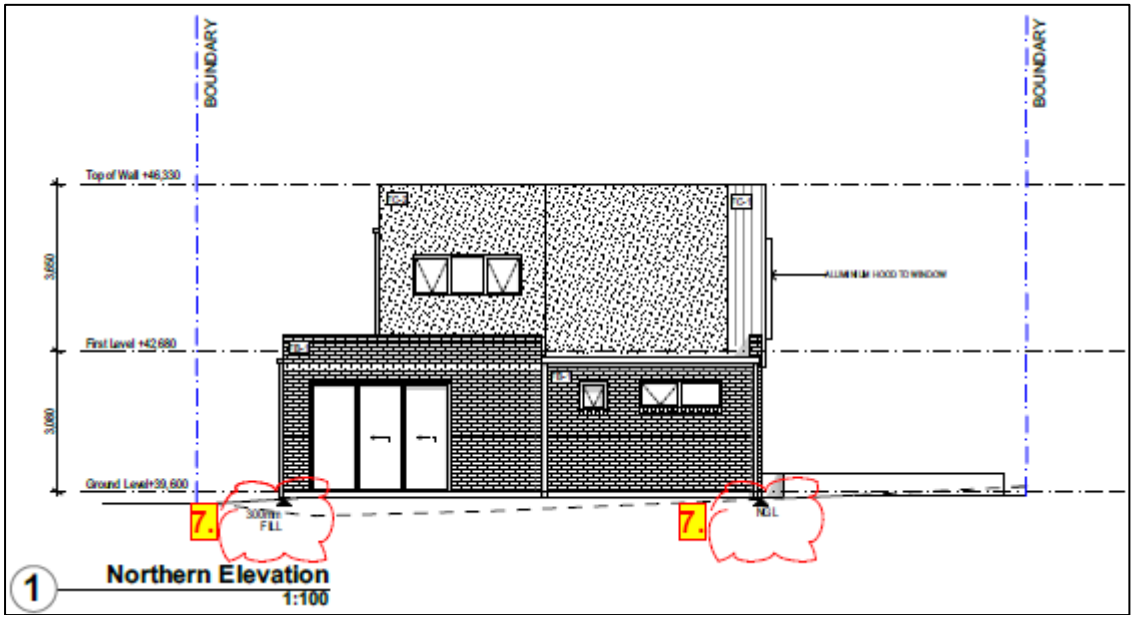


Figure 7: Proposed northern elevation

Figure 8: Proposed western elevation

Figure 9: Proposed eastern elevation

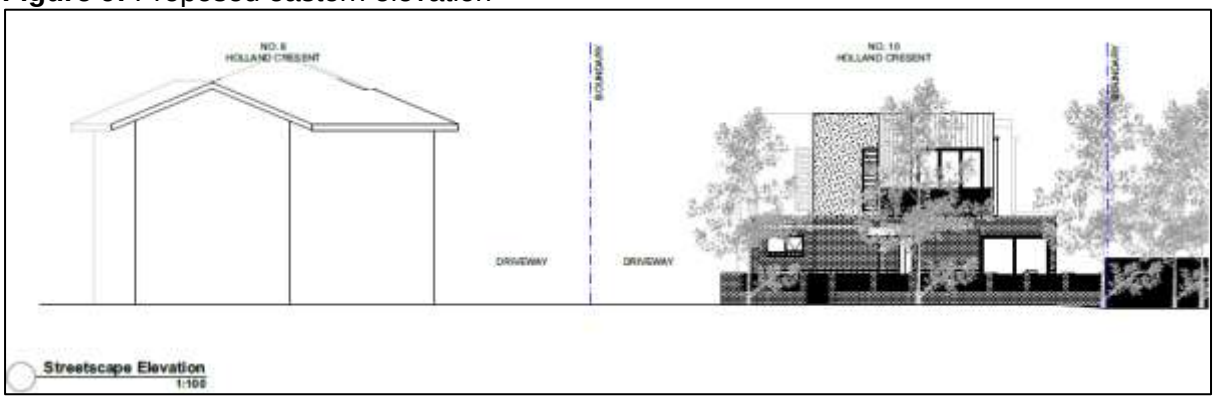


Figure 10: Proposed streetscape elevation

5. STATUTORY CONSIDERATIONS

5.1 Relevant matters for consideration

The relevant planning instruments/policies applicable to the proposed development are as follows:

- State Environmental Planning Policy (Housing) 2021;
- State Environmental Planning Policy (Resilience and Hazards) 2021;
- State Environmental Planning Policy (Biodiversity and Conservation) 2021;
- State Environmental Planning Policy (Sustainable Buildings) 2022;
- Liverpool Local Environmental Plan (LLEP) 2008;
- Liverpool Development Control Plan (LDCP) 2008;
    - Part 1: General Controls for All Development; and
    - Part 3.6: Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones.

<u>Contributions Plans</u>

- Liverpool Contributions Plan 2018 – Established Areas applies to pursuant to Section 7.11 of the EPA & Act.

6. ASSESSMENT

The development application has been assessed in accordance with the relevant matters of consideration prescribed by Section 4.15 Evaluation of the EP&A 1979 and the Environmental Planning and Assessment Regulation 2021, as follows:

6.1 Section 4.15(1)(a)(i) – Any Environmental Planning Instrument

(a) State Environmental Planning Policy (Housing) 2021

The application has been lodged pursuant to *Part 2, Division 1 In-fill affordable housing* of the *State Environmental Planning Policy (Housing) 2021*. The application has been assessed against the relevant provisions in the table below:

Part 2, Division 1 In-fill affordable housing			
Clause	**Requirement**	**Comment**	**Compliance**
15C Development to which division applies	(1) This division applies to development that includes residential development if— (a) the development is permitted with consent under Chapter 3, Part 4 or another environmental planning instrument, and (b) the affordable housing component is at least 10%, and (c) all or part of the development is carried out— (i) for development on land in the Six Cities Region, other than in the City of Shoalhaven local government area—in an accessible area, or (ii) for development on other land—within 800m walking distance of land in a relevant zone or an equivalent land use zone. (2) Affordable housing provided as part of development because of a requirement under another environmental planning instrument or a planning agreement within the meaning of the Act, Division 7.1 is not counted towards the affordable housing component under this division.	(1)(a) The development is permissible with consent under the LLEP 2008. (b) The affordable housing component is 1 of 4 total dwellings, being 25% of the number of dwellings and 21.15% of the total gross floor area (GFA). (c) The site is within an accessible area, being within 400m of a bus stop that receives more than 1 regular bus service per hour. (2) Affordable housing is not required to be provided as part of the development under another EPI or planning agreement; all proposed affordable housing can be counted towards the affordable housing component under this division.	**Complies**
16 Affordable housing requirements for additional floor space ratio	(1) The maximum floor space ratio for development that includes residential development to which this division applies is the maximum permissible floor space ratio for the land plus an	The applicable maximum permissible floor space ratio for the site under the LLEP 2008 is 0.5:1. The site is located on land within Area 2 on the LLEP 2008 Floor Space Ratio Map, so an	**Complies**

	additional floor space ratio of up to 30%, based on the minimum affordable housing component calculated in accordance with subsection (2). (2) The minimum affordable housing component, which must be at least 10%, is calculated as follows— affordable housing component = additional floor space ratio (as a percentage) ÷ 2	actual maximum FSR of 0.55:1 is applicable under the LLEP 2008. The proposed affordable housing component is 21.15%. Therefore, the additional floor space ratio applicable to the site is 0.2115:1, resulting in a total maximum FSR of 0.7615:1. The proposed development has an FSR of 0.4694:1.	
19 Non discretionary development standards— the Act, s. 4.15	(a) a minimum site area of 450m^2	Site has an area of 866.3sqm	**Complies**
	(b) a minimum landscaped area that is the lesser of— (i) 35m^2 per dwelling, or (ii) 30% of the site area	35sqm per dwelling would require 140sqm. 30% of the site area is 259.89sqm. The proposed landscaped area is 259.303sqm, which is in excess of the lower value (140sqm based on 35sqm per dwelling)	**Complies**
	(c) a deep soil zone on at least 15% of the site area, where— (i) each deep soil zone has minimum dimensions of 3m, and (ii) if practicable, at least 65% of the deep soil zone is located at the rear of the site	The submitted plans demonstrate a deep soil zone of 140.56sqm or 16.23%, however these areas overlap considerably with a drainage easement and existing stormwater pipes. Excluding areas impacted by stormwater pipes, and ensuring all areas meet the minimum dimension of 3m, a total of 76.18sqm or 8.79% of the site is proposed to be deep soil zones. The applicant has submitted a Clause 4.6 Variation Request to vary this control, which is discussed below (see LEP section of report).	**Does not comply. 4.6 variation request not deemed acceptable.**
	(d) living rooms and private open spaces in at least 70% of the dwellings receive at least 3 hours of direct solar access between 9am and 3pm at mid-	3/4 living rooms and POS receive sufficient solar access.	**Complies**

<table>
<tr><td></td><td>winter</td><td></td><td></td></tr>
<tr><td></td><td>(e) the following number of parking spaces for dwellings used for affordable housing—
(i) for each dwelling containing 1 bedroom—at least 0.4 parking spaces,
(ii) for each dwelling containing 2 bedrooms—at least 0.5 parking spaces,
(iii) for each dwelling containing at least 3 bedrooms— at least 1 parking space,
(f) the following number of parking spaces for dwellings not used for affordable housing—
(i) for each dwelling containing 1 bedroom—at least 0.5 parking spaces,
(ii) for each dwelling containing 2 bedrooms—at least 1 parking space,
(iii) for each dwelling containing at least 3 bedrooms—at least 1.5 parking spaces</td><td>A total of 4.5 (rounded to 5) parking spaces are required for the development. 6 spaces are provided across the 4 dwellings.</td><td>Complies</td></tr>
<tr><td></td><td>(i) if paragraphs (g) and (h) do not apply, the following minimum floor areas—
(i) for each dwelling containing 1 bedroom—65m^2,
(ii) for each dwelling containing 2 bedrooms—90m^2,
(iii) for each dwelling containing at least 3 bedrooms—115m^2 plus 12m^2 for each bedroom in addition to 3 bedrooms.</td><td><table><tr><th>Unit</th><th>Bedrooms</th><th>Area</th></tr><tr><td>1</td><td>3</td><td>112.88</td></tr><tr><td>2</td><td>2</td><td>86.01</td></tr><tr><td>3</td><td>2</td><td>95.197</td></tr><tr><td>4</td><td>3</td><td>112.579</td></tr></table>Units 1, 2 and 4 do not achieve the required minimum floor areas. No Clause 4.6 variation has been provided for this non-compliance.</td><td>Does not comply. No variation request submitted.</td></tr>
<tr><td>20 Design requirements</td><td>(3) Development consent must not be granted to development under this division unless the consent authority has considered whether the design of the residential development is compatible with—
(a) the desirable elements of the character of the local area, or</td><td>Multi-dwelling housing is considered to be compatible with the desired future character of the area, as it is zoned R3 Medium Density Residential. However, the proposed development is not considered compatible with the desired future character of the area due to several non-</td><td>Not deemed acceptable</td></tr>
</table>

	(b) for precincts undergoing transition—the desired future character of the precinct.	compliances with the SEPP (Housing) 2021 and the LDCP 2008.	
21 Must be used for affordable housing for at least 15 years	(1) Development consent must not be granted to development under this division unless the consent authority is satisfied that for a period of at least 15 years commencing on the day an occupation certificate is issued for the development— (a) the development will include the affordable housing component required for the development under section 16, 17 or 18, and (b) the affordable housing component will be managed by a registered community housing provider.	If the application were to be approved, a condition of consent would be imposed requiring Unit 2 to be managed by a registered community housing provider for at least 15 years following the issue of an occupation certificate.	**Complies with conditions**

(b) State Environmental Planning Policy (Resilience and Hazards) 2021

Pursuant to Clause 4.6 of SEPP (Resilience and Hazards) 2021, a consent authority is unable to grant development consent unless it has considered whether the land is contaminated and, if so, whether the consent authority is satisfied that the land is suitable in its contaminated state, or can be remediated to be made suitable for the purposes for which the development is proposed to be carried out.

Clause 4.6 - Contamination and remediation to be considered in determining development application	**Comment**
(1) A consent authority must not consent to the carrying out of any development on land unless:	
(a) it has considered whether the land is contaminated, and	It is unlikely the land is contaminated as it is an existing residentially zoned allotment.
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and	The land is suitable for the proposed works, and it is unlikely that the land is contaminated, based on Council records
(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.	The land does not require remediation.

Based on the above assessment, the proposal is considered to satisfy the relevant objectives and provisions of SEPP 55, therefore, it is considered that the subject site is suitable for the proposed development.

(c) State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2 Vegetation in non-rural Areas

The subject land is located within the City of Liverpool and in an R3 Medium Density Residential zone and as such Chapter 2 is applicable to the development. The proposal includes the removal of 3 minor trees and 1 shrub, all with development consent. None of this vegetation is deemed to be significant, and as such the proposal is considered acceptable with regards to Chapter 2 of the SEPP (Biodiversity and Conservation) 2021.

Chapter 6 Water Catchments

The subject land is located within the Georges River Catchment and as such Chapter 6 is applicable to the development. This chapter generally aims to protect the environment of river systems, including the Georges River system by ensuring that impacts of future land uses are considered in a state, regional, and local context.

The submitted Civil Engineering Plans have been deemed unsatisfactory by Council's Land Development Engineer.

In accordance with the SEPP, when a consent authority determines a development application, the provisions in Part 6.2 - Development in Regulated Catchments are to be considered and consent must not be granted unless the consent authority is satisfied that the matters have been addressed. Accordingly, a table summarising the matters for consideration in determining development applications (Part 6.2) and compliance with such is provided below.

Part 6.2 Development in Regulated Catchments	
Division 2 Controls on Development Generally	**Comment**
6.6 Water Quality and Quantity	**Does not comply** Council's Land Development Engineering Section are unsupportive of the proposal in regard to stormwater management, as the post-development discharge is greater than the pre-development discharge and there is insufficient information to gauge the impact on the Georges River catchment.
6.7 Aquatic Ecology	This clause is not applicable as there is no aquatic ecology present on site.
6.8 Flooding	The site is not located in a flood plain area.
6.9 Recreation and public access	This proposed development will not adversely affect access to recreation and public access.
6.10 Total catchment management	**Does not comply** Council's Land Development Engineering Section are unsupportive of the proposal in regard to stormwater management and as such the development may impact on the total catchment.

(d) State Environmental Planning Policy – SEPP (Sustainable Buildings) 2022

In accordance with this policy, all new residential dwellings and those seeking alterations and additions as identified under this policy require a BASIX certificate that measures the Building Sustainability Index to ensure dwellings are designed to use less portable water and are responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for houses and units.

BASIX Certificates and NatHERS Certificates have been submitted demonstrating compliance with the SEPP (Sustainable Buildings) 2022. Therefore, the proposal is considered to be satisfactory with regard to water and energy efficiency and thermal comfort.

(e) Liverpool Local Environmental Plan 2008

(i) Zoning

The subject site is zoned R3 Medium Density Residential pursuant to the LLEP 2008. An extract of the zoning map is provided in Figure 11 below.

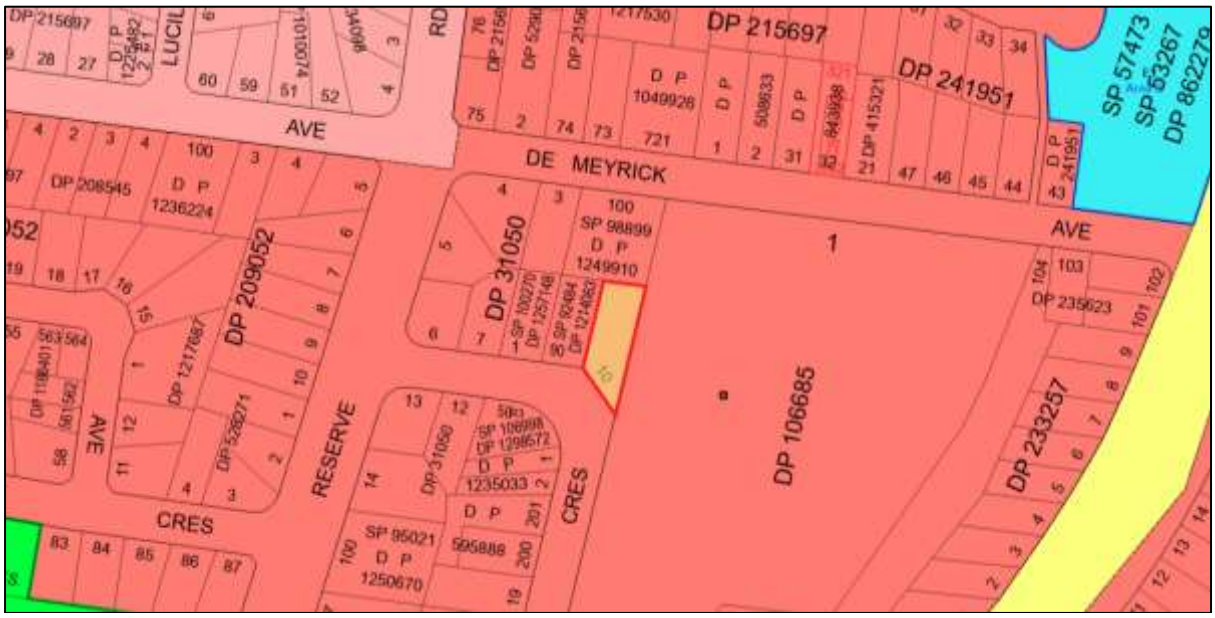


Figure 11: Zoning Map (source: Geocortex)

(ii) Permissibility

The proposed development is defined by the standard instrument as "multi-dwelling housing", which is identified as a permitted land use with consent within the R3 Medium Density Residential Zone under Liverpool Local Environment Plan 2008. Multi-dwelling housing is defined as follows:

> ***multi dwelling housing*** *means 3 or more dwellings (whether attached or detached) on one lot of land, each with access at ground level, but does not include a residential flat building.*

(iii) Objectives of the zone

The objectives of the R3 Medium Density Residential zone are as follows:

- *To provide for the housing needs of the community within a medium density residential environment.*
- *To provide a variety of housing types within a medium density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To provide for a concentration of housing with access to services and facilities.*
- *To provide for a suitable visual transition between high density residential areas and lower density areas.*
- *To ensure that a high level of residential amenity is achieved and maintained.*

The proposal is considered to be inconsistent with the objectives of the zone in that the proposed development would not achieve or maintain a high level of residential amenity due to non-compliance with the applicable minimum floor area requirements imposed under State Environmental Planning Policy (Housing) 2021 for 3 of 4 dwellings, and insufficient private open space for all dwellings.

(iv) Principal Development Standards

LLEP 2008 contains a number of principal development standards which are relevant to the proposal, as detailed below.

<table>
<tr><th>Development Provision</th><th>Requirement</th><th>Proposed</th><th>Comment</th></tr>
<tr><td colspan="4">Part 4 Principal Development Standards</td></tr>
<tr><td>2.7 Demolition</td><td>The demolition of a building or work may be carried out only with development consent</td><td>The proposal includes the demolition of the existing dwelling and associated structures. Appropriate conditions can apply to approval.</td><td>Complies with conditions</td></tr>
<tr><td>4.3 Height of Buildings</td><td>Maximum height of 8.5m</td><td>6.73m proposed.</td><td>Complies</td></tr>
<tr><td>4.4 Floor Space Ratio</td><td>Maximum FSR of 0.55:1 under Clause 4.4(2A). Provisions under the SEPP (Housing) 2021 provide for a maximum FSR of 0.7615:1.</td><td><table><tr><th>Unit</th><th>GF</th><th>FF</th><th>GFA</th></tr><tr><td>1</td><td>65.908</td><td>46.972</td><td>112.88</td></tr><tr><td>2</td><td>47.793</td><td>38.217</td><td>86.01</td></tr><tr><td>3</td><td>47.692</td><td>47.505</td><td>95.197</td></tr><tr><td>4</td><td>68.94</td><td>43.639</td><td>112.579</td></tr></table>Total GFA: 406.666sqm
FSR: 0.4694:1</td><td>Complies</td></tr>
<tr><td>4.6 Exceptions to development standards</td><td>Provisions relating to exceptions to development standards</td><td>See Clause 4.6 Discussion below relating to the variation to the non-discretionary development standard under Clause 19(c) relating to deep soil zones under the SEPP (Housing) 2021.

Further, no 4.6 variation request</td><td>Does not comply</td></tr>
</table>

		was submitted for the variation to the non-discretionary development standard in Clause 19(i) relating to minimum dwelling sizes under SEPP (Housing) 2021. As such, the applicant has not sufficiently demonstrated that compliance with the development standard is unreasonable or unnecessary in the circumstances and that there are sufficient environmental planning grounds to justify contravention of the development standard.	
5.21 Flood Planning	Development is to consider the flood status of the land.	The site is not flood-affected.	**Not Applicable**
6.5 Public Utility Infrastructure	Public utility infrastructure must be available	Public utility infrastructure is available on the site, currently servicing the single dwelling present on the site. If the application were to be approved, conditions of consent would be imposed requiring the applicant to obtain confirmation from service providers that the infrastructure is sufficient to service the proposed development.	**Complies by condition**
7.31 Earthworks	Provisions relating to bulk earthworks	No bulk earthworks are proposed, as the proposed development is generally entirely above ground, with the exception of the rainwater and OSD tanks.	**Complies**

As demonstrated in the above compliance table, the proposed development is inconsistent with the provisions of LLEP 2008, in respect to Clause 4.6 Exceptions to development standards.

<u>Clause 4.6 – Exceptions to development standards</u>

As identified in the compliance table above, the application proposes variations to Clause 19 of the State Environmental Planning Policy (Housing) 2021. However, a Clause 4.6 variation request has only been submitted for Clause 19(c) of this SEPP. This is discussed below.

Variation to Clause 19 Non-discretionary development standards—the Act, s 4.15

Clause 19(2) of the SEPP (Housing) 2021 stipulates that:

"*The following are non-discretionary development standards in relation to the residential development to which this division applies—*
…

(c) a deep soil zone on at least 15% of the site area, where—
(i) each deep soil zone has minimum dimensions of 3m, and
(ii) if practicable, at least 65% of the deep soil zone is located at the rear of the site"
…

While the submitted plans demonstrate a deep soil zone of 140.56sqm or 16.23%, these deep soil zone areas are proposed partially within a drainage easement and overlapping with the position of existing stormwater pipes. The definition of a deep soil zone in the SEPP (Housing) 2021 is defined as follows:

Deep soil zone *means a landscaped area with no buildings or structures above or below the ground.*

Clause 19(c) of the Housing SEPP 2021 is a non-discretionary development standard under the meaning of Section 4.15 of the Environmental Planning and Assessment Act 1979. Clauses (2) and (3) of Section 4.15 specify the following:

(2) Compliance with non-discretionary development standards—development other than complying development If an environmental planning instrument or a regulation contains non-discretionary development standards and development, not being complying development, the subject of a development application complies with those standards, the consent authority—
(a) is not entitled to take those standards into further consideration in determining the development application, and
(b) must not refuse the application on the ground that the development does not comply with those standards, and
(c) must not impose a condition of consent that has the same, or substantially the same, effect as those standards but is more onerous than those standards,
and the discretion of the consent authority under this section and section 4.16 is limited accordingly.
(3) If an environmental planning instrument or a regulation contains non-discretionary development standards and development the subject of a development application does not comply with those standards—
(a) subsection (2) does not apply and the discretion of the consent authority under this section and section 4.16 is not limited as referred to in that subsection, and
(b) a provision of an environmental planning instrument that allows flexibility in the application of a development standard may be applied to the non-discretionary development standard.

Under the provisions of Clause (3)(b) a provision of an EPI allowing flexibility to the application of a development standard may be applied to the non-discretionary development standard. As such, through the provisions of Clause 4.6 of the Liverpool LEP 2008, a variation is able to be considered for the non-compliance with this development standard, in which a written request has been provided by the applicant seeking a variation for the consent authority to consider.

Considering this, the areas which overlap with the position of existing stormwater pipes cannot be considered as deep soil zones. This results in an actual deep soil zone area of 76.18sqm, which represents a numerical variation of 53.765m or 41.38%. It is considered that accepting this position would set an unacceptable precedent in the consideration and application of deep soil zones beyond the circumstances of this proposal.

The objectives and pertinent considerations of Clause 4.6 of the LLEP 2008, as they relate to the subject DA, are as follows:

(1) The objectives of this clause are as follows—

(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,
(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.

(3) Development consent must not be granted to development that contravenes a development standard unless the consent authority is satisfied the applicant has demonstrated that—

(a) compliance with the development standard is unreasonable or unnecessary in the circumstances, and
(b) there are sufficient environmental planning grounds to justify the contravention of the development standard.

The applicant has provided a written Clause 4.6 Variation Request in order to justify the variation to deep soil zone area. The submitted written request to vary Clause 19 to accommodate a reduction in overall deep soil zone area has been assessed against the provisions of Clause 4.6, the objectives of Clause 19 and the objectives of the R3 zone by the applicant. This is discussed below.

Written request addressing why compliance with the development standard is unreasonable or unnecessary in the circumstances of the case and that there are sufficient planning grounds to justify the contravention of the development standard

(a) Compliance with the development standard is unreasonable or unnecessary in the circumstances of the case

The applicant has provided the following comments addressing why compliance with the development standard is unreasonable or unnecessary in this case:

4.2 CLAUSE 4.6(3)(A)

DEMONSTRATE THAT COMPLIANCE WITH THE DEVELOPMENT STANDARD IS UNREASONABLE OR UNNECESSARY IN THE CIRCUMSTANCES.

The following assessment outlines that compliance with the development standard would be unreasonable and unnecessary in the circumstances of the case, particularly referencing the test established in Initial Action Pty Ltd v Woollahra Municipal Council [2018] NSWLEC 118

(the Initial Action case) which confirmed the approach as held in Randwick City Council v Micaul Holdings Pty Ltd [2016] NSWLEC7 (the Micaul case) as follows:

In the Initial Action case, Preston CJ concluded:

- *Clause 4.6(4) of an LEP establishes preconditions that must be satisfied before a consent authority can exercise the power to grant development consent for development that contravenes a development standard.*
- *The first opinion of satisfaction in clause 4.6(4)(a)(i) is whether the clause 4.6 request has adequately addressed the matters required to be demonstrated in clause 4.6(3). Those matters are:*
    - *that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case; and*
    - *that there are sufficient environmental planning grounds to justify contravening the development standard.*
- *The consent authority does not have to directly form the opinion of satisfaction regarding these matters, but only indirectly form the opinion of satisfaction that the written request has adequately addressed these matters.*
- *The second opinion of satisfaction in clause 4.6(4)(a)(ii) is that the proposed development will be in the public interest because it is consistent with the objectives of the particular development standard that is contravened and the objectives for development for the zone in which the development is proposed to be carried out.*
- *The consent authority must be directly satisfied that the clause 4.6 request adequately addresses the matter in clause 4.6(4)(a)(ii), which is not merely that the proposed development will be in the public interest, but that it will be in the public interest because it is consistent with the objectives of the development standard and the objectives for development in the zone.*

Furthermore, this Clause 4.6 Variation Request and the assessment that follows establishes that the objectives of the development standard are achieved notwithstanding non-compliance with the numerical component of the development standard as set out in the 5-part test established in Wehbe v Pittwater Council [2007] NSW LEC 827 (the Wehbe case).

The local surrounding area is mainly characterised by medium density buildings as well as an educational establishment to the east. Immediately to the west of the site at 6 and 8 Holland Crescent, to the north at 6-8 De Meyrick Avenue and opposite to the south at 5 Holland Crescent are multi dwelling housing developments that have been constructed within the past 8 years. The dwellings typically present as 2 storey built forms, some above basement, in a variety of typologies and designs including modern and contemporary buildings.

Of particular note are the immediately adjoining developments at 6 and 8 Holland Crescent that take the form of a row of 2 storey attached dwellings, each with minimal landscaping along the eastern side boundaries alongside driveways and within setbacks. The subject application proposes a 2 storey appearance which is wholly consistent with the approved and constructed 2 storey forms in the immediate context.

Strict compliance with the numerical development standard is unnecessary and unreasonable in this case as the objective of the development standard are achieved, notwithstanding noncompliance with the numerical component of the development standard, in the following ways:

Objective (1): ***The object of this section is to identify development standards for particular matters relating to development for the purposes of***

in-fill affordable housing that, if complied with, prevent the consent authority from requiring more onerous standards for the matters.

*As detailed earlier within this Clause 4.6 request, the reduction in total **"deep soil zone"** for the development is not a true reflection of lost deep soil with a substantial amount of deep soil still achieved on the site totalling 29.2% or 252.77m2 actual deep soil when areas that do not meet the minimum 3 metre dimension requirement are included. Therefore, proposed development and landscaping proposed does not pose any impacts in terms of the development satisfying the **"deep soil zone"** and **"landscaped area"** intentions of the Housing SEPP.*

*The development includes part of the deep soil zone including the use of species with nonaggressive roots located within the "Proposed Easement" for drainage. The use of species with non-aggressive roots within the "Proposed Easement" has been intentionally proposed in order to minimise impacts on the "Proposed Easement", including the underground pipes. As detailed on the pipe location plan and stormwater plans accompanying the application, the easement contains a single stormwater pipe given the width of the easement. Having regard to the stormwater plans accompanying the DA, pipes are located approximately 1 metre below the ground surface which retains a soil depth of approximately 850mm to 900mm within any the **"deep soil zones"** that contain pipes. In the absence of specific controls in Council's own LEP or DCP relating to soil depth requirements for landscaping, the SEPP 65 Apartment Design Guide (ADG) is relied upon to determine appropriate soil depths for various plants and vegetation. Table 5 in Part 4P of the ADG specifies the following minimum soil depth standards for plant types and sizes:*

Table 5 Minimum soil standards for plant types and sizes

Plant type	Definition	Soil volume	Soil depth	Soil area
Large trees	12-18m high, up to 16m crown spread at maturity	150m³	1,200mm	10m x 10m or equivalent
Medium trees	8-12m high, up to 8m crown spread at maturity	35m³	1,000mm	6m x 6m or equivalent
Small trees	6-8m high, up to 4m crown spread at maturity	9m³	800mm	3.5m x 3.5m or equivalent
Shrubs			500-600mm	
Ground cover			300-450mm	
Turf			200mm	

Figure 7: SEPP 65 ADG TABLE 5 IN PART 4P

Having regard to the above, a minimum soil depth of 800mm would be suitable to sustain turf, ground covers, shrubs or even small trees that can reach a mature height of 6-8 metres in height.

*The objective listed in Section 18 of the Housing SEPP does not identify any objectives for **"deep soil zone"** specifically. However as noted by the definition of **"deep soil zone"** reproduced earlier, a **"deep soil zone"** is required to contain **"landscaped area"** which is defined as being a part of the site not occupied by a building, driveway or parking area. The Landscape Plan accompanying the amended application includes turf; tall shrubs including*

Pinnacle Lillypilly, Photinia Red Robin, Grevillea, Tea Tree, Sweet Viburnum in 200mm to 300mm pot sizes; small shrubs including Coastal Rosemary and Indian Hawthorn in 200mm pot sizes; and grass and ground covers including Dwarf Lomandra and Native Violets in 140mm pot sizes all with nonaggressive roots within the easement.

*Furthermore, the reduction in total **"deep soil zone"** for the development is not a true reflection of lost deep soil with a substantial amount of deep soil still achieved on the site totalling 29.2% or 252.77m2 actual deep soil when areas that do not meet the minimum 3 metre dimension requirement are included.*

*Accordingly, the proposal will achieve the required **"landscaped area"** and **"deep soil zone"** and therefore achieve an in-fill affordable housing development that complies with the required standard in accordance with objective (1).*

Council Comments

In response to the applicant's comments listed above, Council has provided the following commentary as to why compliance with deep soil zone requirements is not considered unreasonable or unnecessary in this instance:

- The applicant appears to be arguing that because the built form aligns with existing multi-dwelling developments, compliance with the development standard is not required. However, the deep soil zone development standard does not pertain to built form: though the requirements for landscaping and deep soil do impact upon a development's built form, compliance with built form requirements – or consistency with existing character – does not necessarily indicate compliance with other controls such as landscaping.

- Clause 19(1) should not be taken as the "objective" of the specific development standard contained in Clause 19(2)(c), as it is intended to justify the existence of Clause 19 overall, not the specific numerical standards provided within Clause 19(2). Therefore, there is no explicit objective of the development standard contained in Clause 19(2)(c). Consequently, the tests based on satisfaction of objectives cannot be directly applied in this case.

- Considering the purpose of Clause 19 is to provide minimum standards to prevent more onerous standards being required by other instruments, and considering the scale and context of the site, the standard's requirement of 15% deep soil zone with a minimum dimension of 3m is sufficiently conservative to mean that a significant deviation from the standard (as is proposed) would not fulfil the intention behind imposing a standard for deep soil provision.

- The table referenced in the above justification, Table 5 in Part 4P of the ADG, must be considered in context. Part 4P of the ADG is titled "Planting on structures" and provides guidelines for the provision of landscaping on structures – such as rooftop gardens, green roofs or walls, raised planters or gardens located above basement car parks. Table 5 provides minimum soil standards for plant types and sizes within this context. This is not relevant to the proposed variation, as the ADG specifies that planting on structures is intended to supplement deep soil zones, rather than be deep soil zones. Additionally, minimum soil depths do not reflect the maximum depth to

which roots may reach, therefore providing no guarantee that the stormwater pipes will be undamaged by the proposed planting.

- The proposed development does not propose an alternate design which could potentially increase the level of deep soil on the site, such as a basement carpark, which could reduce the amount of hardstand required across the site and thus, the development standard is not considered to be unreasonable or unnecessary due to the proposed design.

(b) There are sufficient environmental planning grounds to justify contravening the development standard.

The applicant has provided the following comments addressing whether there are sufficient environmental planning grounds to justify contravening the development standard, as follows:

4.2 CLAUSE 4.6(3)(B)

DEMONSTRATE THAT THERE ARE SUFFICIENT ENVIRONMENTAL PLANNING GROUNDS OT JUSTIFY CONTRAVENING THE DEVELOPMENT STANDARD.

Given the development achieves the objectives of the development standard and the objectives of the land use zone, and furthermore complies with the applicable State and Council Planning Policies, the proposal has merit and the contravention of the development standard is justified.

The development achieves a fully compliant built form and the proposal does not cause any increased impacts onto adjoining properties or the public domain.

The development is in the public interest because it is consistent with the objectives of the particular standard as demonstrated earlier, and is consistent with the objectives of the R3 Medium Density Residential zone as follows:

- *The development will provide for the housing needs of the community within the medium density residential environment.*
- *The development will contribute to a variety of housing types within the medium density residential environment.*
- *The development will provide housing within an area with access to services and facilities.*
- *The development will provide housing within an area with access to services and facilities.*
- *The development ensures that a high level of residential amenity is achieved and maintained via the planting along the eastern side and northern rear boundaries that would otherwise be prevented if Council enforces a non-statutory position requiring no landscaping within the easement area.*

The development is sustainable and appropriate for the site and no substantive public benefit would be realized by maintaining and enforcing the development standard.

The proposal achieves the objects of the Environmental Planning and Assessment Act, 1979 (the Act) in the following ways:

- *Section 1.3(a) as the development promotes the social and economic welfare of the community and a better environment by the proper management, development and conservation of natural and other resources that would otherwise be thwarted by enforcing strict compliance with the development standard that would result in less landscaped area in a development that does not otherwise pose any adverse impacts on the site and its surroundings;*
- *Section 1.3(b) as the development facilitates ecologically sustainable development by proposing landscaped areas and deep soil zones within a "Proposed Easement" on the site that is otherwise underutilised and dormant land;*
- *Section 1.3(c) as the development complies with all other development controls with the overall development promoting the orderly and economic use and development of the land by not posing any adverse amenity impacts on adjoining development and the public domain;*
- *Section 1.3(g) as the development achieves a good design and amenity of the built environment, noting that enforcing strict compliance with the development standard would not change the design outcome for the site for the better; and*
- *Section 1.3(h) as the development will be properly constructed.*

For the reasons above and the assessment provided within this request, there are sufficient environmental planning grounds to justify the contravention of the development standard.

Council Comments

In response to the applicant's comments listed above, Council has provided the following commentary as to why there are insufficient planning grounds to justify contravening the development standard in this instance:

- The proposal does not comply with the other standards within the SEPP (Housing) 2021, as well as several controls within the LDCP 2008, rendering the assertions that the proposal "complies with the applicable State and Council Planning Policies" and "achieves a fully compliant built form" invalid.

- The development would not achieve a high level of residential amenity due to the aforementioned non-compliances, which include insufficient floor area and private open space areas. Furthermore, planting trees on top of a stormwater drainage pipe does not contribute to achieving high levels of amenity, as it is likely to result in damage to the pipe, affecting stormwater management on the site and inconveniencing the residents.

- Strict compliance with the development standard would not result in less landscaped area. Rather, more landscaped area would be required to be provided in order to achieve the deep soil zone area of 15%. However, it is accepted that noncompliance with the standard, if this were the sole issue with the proposal, would not cause the development to contravene Clause 1.3(a) of the EP&A Act 1979.

- Proposing planting within an encumbered area is not considered to facilitate ecologically sustainable development, as the proposed planting, being mostly trees

with a mature height of around 6m, would require replacement whenever work is done on the pipes within the easement. Replacing them with mature trees would be economically unfeasible, while non-mature trees would take years to achieve the same height and spread as the removed trees. Additionally, the removal of healthy trees, even if they are subsequently replaced, is generally undesirable from an ecological sustainability perspective, as this would have impacts on the site's ecosystem due to disturbance of soil and roots, as well as displacing any fauna which may occupy or frequent the trees.

- For the above reasons, being non-compliance with several other development standards and controls across instruments, the proposed development is not considered to be orderly and economic use and development of land.

In conclusion, it is recommended that the Clause 4.6 Variation Request for a 41.38% variation to deep soil zone is refused on the basis that compliance with the development standard is not unreasonable or unnecessary in the circumstances, and there are not sufficient environmental planning grounds to justify the contravention of the development standard.

6.2 Section 4.15(1)(a)(ii) - Any Draft Environmental Planning Instrument

There are no draft Environmental Planning Instruments which apply to the development.

6.3 Section 4.15(1)(a)(iii) - Any Development Control Plan

(a) Liverpool Development Control Plan (LDCP) 2008

The proposed development is subject to the Liverpool Development Control Plan 2008 (LDCP) 2008. The proposal has been assessed under the following Parts of the LDCP 2008:

- Part 1 of the LDCP 2008, which covers general controls relating to all types of development within the Liverpool LGA;.
- Part 3.6: Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones.

The proposal is considered to be consistent with the key controls outlined in the Liverpool Development Control Plan 2008. All relevant compliance tables for the LDCP 2008 can be found in Report Attachment 2. Matters where variations to the development controls occur are also provided below.

Part 1 General Controls for all Development			
Control	**Requirement**	**Comment**	**Compliance**

Section 3 – Landscaping and Incorporation of Existing Trees	3.4 Landscape Specifications	While the proposed landscaping broadly complies with the controls in this section, the proposed *Magnolia grandiflora* would be within 2m of a building, and all of the proposed *Syzygium 'Pinnacle'* trees would be located directly above a stormwater pipe, failing to achieve compliance with Control 7 of this section.	**Does not comply**
Section 6 – Water Cycle Management	Consideration of stormwater and drainage	Application has been referred to Council's Land Development Engineer, who advised it is unsatisfactory regarding stormwater and drainage.	**Does not comply**

Part 3.6 Multi Dwelling Housing (Villas and Townhouses) in the R3 and R4 zones			
Control	**Requirement**	**Comment**	**Compliance**
Site Planning	Site layout should consider, and as far as possible minimise, overshadowing, acoustic and visual intrusion on neighbouring and on-site dwellings.	The layout of the built form minimises overshadowing of on-site and adjoining dwellings. However, prior to growth of the proposed landscaping, the rear first floor window of Unit 4 would have privacy impacts on the lot to the rear.	**Does not comply**
	The siting of windows of habitable rooms on the first floor shall minimise overlooking to the principal private open space of neighbouring properties	There is a bedroom window on the first floor of Unit 4 facing the rear, which has a sill height of approx. 1.2m. With the proposed landscaping, this is unlikely to have privacy impacts, however as it would take considerable time for the vegetation to mature, a higher sill height would still be necessary.	**Does not comply**

<table>
<tr><td>Landscaped Area</td><td>A minimum unincumbered area of 4 x 5m shall be provided in rear setback to accommodate deep rooted trees.</td><td>A 4m x 5m unencumbered area is proposed within the rear setback, however it overlaps with the position of the stormwater pipes and as such is not genuinely unencumbered and is limited in its ability to support deep rooted trees. Excluding areas impacted by stormwater pipes, there is no part of the rear setback which would achieve the necessary dimensions.</td><td>Does not comply</td></tr>
<tr><td>Private Open Space</td><td>Each dwelling shall provide a minimum uncovered POS of:
<table>
<tr><th>Dwelling Size</th><th>POS</th></tr>
<tr><td>Small < 65sqm</td><td>30sqm</td></tr>
<tr><td>Medium 65-100sqm</td><td>40sqm</td></tr>
<tr><td>Large > 100sqm</td><td>50sqm</td></tr>
</table></td><td>The proposed private open spaces encompass areas of significant landscaping, which would not be capable of being used for private recreation. As such, the areas occupied by large plantings have been excluded from the below calculations.
<table>
<tr><th>Unit</th><th>GFA</th><th>POS</th></tr>
<tr><td>1</td><td>112.88m^2</td><td>26.173m^2</td></tr>
<tr><td>2</td><td>86.01m^2</td><td>29.977m^2</td></tr>
<tr><td>3</td><td>95.197m^2</td><td>30.259m^2</td></tr>
<tr><td>4</td><td>112.58m^2</td><td>22.794m^2</td></tr>
</table></td><td>Does not comply</td></tr>
<tr><td>Building Design and Appearance</td><td>Units built at the rear of the allotment must take into consideration privacy of neighbouring properties. The use of windows with high sill heights should be considered to avoid potential privacy issues.</td><td>There is a bedroom window on the first floor of Unit 4 facing the rear, which has a sill height of approx. 1.2m. With the proposed landscaping, this is unlikely to have privacy impacts, however as it would take considerable time for the vegetation to mature, a higher sill height would still be necessary.</td><td>Does not comply</td></tr>
</table>

Internal Design	Each dwelling must provide a minimum storage area of $8m^3$.	Insufficient storage demonstrated. It is noted that while there is greater than $8m^3$ of wardrobes and linen cupboards, the purpose of this control in accordance with objective (e) of this section is to provide storage for garden and sports equipment and similar. As such, the wardrobes and linen cupboard are not considered to fulfil this control.	**Does not comply**
Landscaping	Trees adjacent to POS and living rooms should provide summer shade and allow winter sun entry	Proposed trees adjacent to POS and living rooms are evergreen and would severely limit winter sun entry.	**Does not comply**
	Any tree with a mature height over 8m should be planted at least 3m from the building or utility services	Proposed tree to rear is less than 3m from stormwater line. Based on location of sewer manhole, there is likely also conflict with sewer line. Additionally, there is conflict between tree location and proposed stormwater pipes.	**Does not comply**
Privacy	Windows to habitable rooms should be located so they do not overlook such windows in adjoining properties, other dwellings within the development or areas of private open space.	The window of Bed 02 in Unit 4 faces the rear – until the vegetation proposed to the rear boundary matures, this is likely to have privacy impacts on neighbouring dwellings due to a lower sill height (1.2m). There is no overlooking between units within the development.	**Does not comply**

Overall, the proposal does not comply with the key controls outlined in the LDCP 2008.

6.4 Section 4.15(1)(a)(iiia) - Planning Agreements
There are no Planning Agreements which apply to the development.

6.5 Section 4.15(1)(a)(iv) - The Regulations
The Environmental Planning and Assessment Regulation 2021 requires the consent authority to consider the provisions of the BCA and the Safety standards for demolition (AS 2601 – 2001). Accordingly, appropriate conditions of consent will be imposed.

6.6 Section 4.15(1)(b) - The Likely Impacts of the Development

Natural and Built Environment

The proposed development is likely to create a detrimental impact on the natural environment surrounding the subject site, due to insufficient on-site detention to manage stormwater runoff effectively.

The proposed development is likely to create adverse impacts on the surrounding built environment, as it is likely to result in privacy impacts to neighbouring dwellings. However, it is noted that these impacts would be temporary, as the proposed vegetation would eventually obscure neighbouring properties from view of the proposed dwellings' windows.

Social Impacts and Economic Impacts

The proposal would result in a positive economic impact in the locality through the capital investment value of the development but is likely to generate negative social impacts through the provision of inadequate housing with deficient floor area, private open space and privacy impacts.

6.7 Section 4.15(1)(c) - The Suitability of the Site for the Development

The proposal does not comply with the relevant planning controls and the site is not considered to be suitable for the proposed development.

6.8 Section 4.15(1)(d) - Any submissions made in accordance with the Act or the Regulations

(a) Internal Referrals

The following comments have been received from Council's Internal Departments:

DEPARTMENT	COMMENTS
Development Engineer	Objection to the proposal
Landscape Officer	Objection to the proposal
Traffic Engineer	Approval, subject to conditions of consent

Land Development Engineer

The review of determination application has not amended the stormwater plans, as such the proposal still does not comply with Council's requirements in regards to on-site detention (OSD) and cannot be supported in its current form.

Landscape Officer

The review of determination application has not amended the landscape plans, and as such the proposal still does not comply in regards to provision of landscaping and deep soil. Furthermore, an arborist report is required, which must address the tree protection zones of the trees proposed to be retained.

(b) Community Consultation

The development application was notified for a period of 14 days from 14 May 2024 to 29 May 2024 in accordance with the Liverpool City Council Community Engagement Strategy 2022. No submissions were received during the public consultation period.

6.9 Section 4.15(1)(e) - The Public Interest

The proposed development is not considered to be in the public interest.

7. DEVELOPMENT CONTRIBUTIONS

The proposed development is not supported, and contributions are not required in this instance. However, if the application were to be approved, contributions would be imposed in accordance with Liverpool Contributions Plan 2018.

8. CONCLUSION

The application has been assessed having regard to the provisions of Section 4.15 of the EP&A Act 1979, and the Environmental Planning Instruments, including the applicable State Environmental Planning Policies, Liverpool LEP 2008, LDCP 2008, and the relevant codes and policies of Council.

Based on the assessment of the application, it is recommended that the application be refused.

9. RECOMMENDATION

That Development Application DA No RD-27/2024 be **refused**.

ATTACHMENTS

1. Architectural Plans
2. Clause 4.6 variation request
3. Traffic report

10 Holland Cresent, Casula
DEVELOPMENT APPLICATION

Drawing Register

Subset ID and Name	Layout ID	Layout Name	Revision
DA0 Cover Pages			
	DA000	Title Page	B
DA1 Site Series			
	DA100	Site Plan	D
	DA101	Site Analysis Plan	D
	DA102	Demolition Plan	D
DA2 Plans			
	DA200	Ground Floor Plan	D
	DA201	Level 1	D
	DA202	Roof	C
DA3 Elevations & Sections			
	DA300	Elevations	B
	DA301	Elevations	B
	DA302	Sections	B
	DA303	Colours and FInishes Schedule	B
	DA304	Streetscape Elevation	B
DA4 Supporting Drawings			
	DA400	Shadows Analysis	B
	DA401	EOTS - 21 June 9am-12pm	A
	DA402	EOTS - 21 June 1pm-3pm	A
	DA403	Landscape and Deep Soil Calc.	A
	DA404	GFA Calc.	A
	DA405	Cross Ventilation	A
	DA406	Artists Impression	B
	DA407	Artists Impression	B
	DA408	Artists Impression	B
	DA409	Glazing Schedule	B

REVISION CHANGES

1. Draft Strata subdivision plan provided.
2. Updated shadow diagrams to show full impact of shadows and adjacent dwellings.
3. Compliant deep soil zones provided. Confirmed no pipes within easements.
4. Skylights provided to Unit 1 to ensure sufficient solar access.
5. Units 2 & 3 converted to 2 bedroom units under 100m2 in GFA. POS is at least 40m2 and compliant.
6. Unit 1 front POS will be provided with sufficient screening via planting. Refer to amended landscape plans.
7. Cut and Fill measurements provided to elevations.
8. Unit 1 reconfigured to address the street.
9. First floor GFA significantly reduced to bring development closer to compliance with maximum first floor area requirement.
10. Cross ventilation diagram provided to demonstrate compliance.
11. Landscape strip adjacent to driveway increased by 100mm. Unable to achieve 2m wide landscape strip due to driveway width requirement. Please note, adjacent development landscape strip is also under 2m in width.
12. Minimum 5.8m wide aisle provided in front of garages and parking bays in accordance with AS2890.1
13. Unit 1 amended to fully comply with front setback requirements to the ground and first floor.
14. Side and rear setbacks amended to be fully compliant.

DEVELOPMENT SUMMARY

PROJECT: PROPOSED DEMOLITION OF EXISTING DWELLING, ANCILLARY STRUCTURES & TREE REMOVAL CONSTRUCTION OF MULTI DWELLING HOUSING (4 UNITS) WITH GARAGES, FRONT BRICK FENCE AND ASSOCIATED LANDSCAPING

SITE: 10 HOLLAND CRESCENT, CASULA 2170
LOT 10 DP 31050

SITE AREA: 866m^2

FRONTAGE: 18.288m

Builder/Contractor shall verify job dimensions before any job commences
Figured dimensions take precedence over drawings and job dimensions
This drawing is to be read in conjunction with the specifications & drawings of engineers & consultants
Contractor must check underground services before commencing works by contacting Dial Before You Dig
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Rev.	Date	By	Description
P2	7/09/2022		CONSULTANT COORDINATION
P1	10/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2170
Client	Anna, Anthony & John Tsoulisa
Drawing Series	Cover Pages
Drawing Name	Title Page
Date	02.08.2021
Scale	1:3.92, 1:0.56@A2
Drawing Number	DA000
Revision	B

Compliance

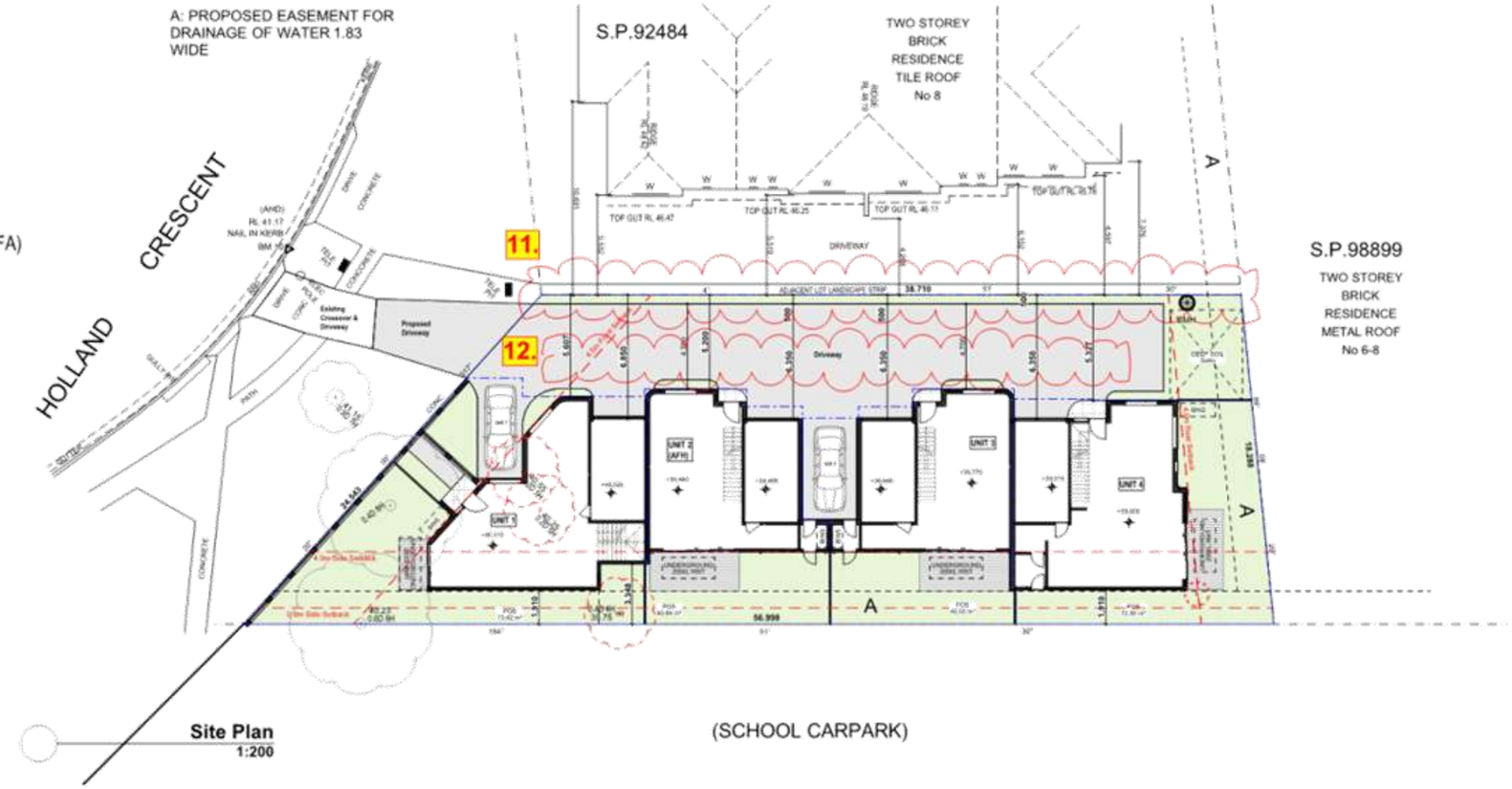
Site Area: 866.28m²

DCP/ LEP

Requirements	Proposed
FSR - 0.75:1 (649.71m²)	0.49:1 (420.64m²)
GFA	Ground - 240.62m² First - 180.02m² (75% of Ground GFA)
Landscape - 20% (173.26m²)	30% (261.28m²)
Deep Soil - 4m x 5m	4m x 5m
POS - 2 Bed - 40m² (1.5m min.) 3 Bed - 50m² (1.5m min.)	Unit 1 - 73.42m² Unit 2 - 40.84m² Unit 3 - 40.50m² Unit 4 - 72.50m²

Housing SEPP

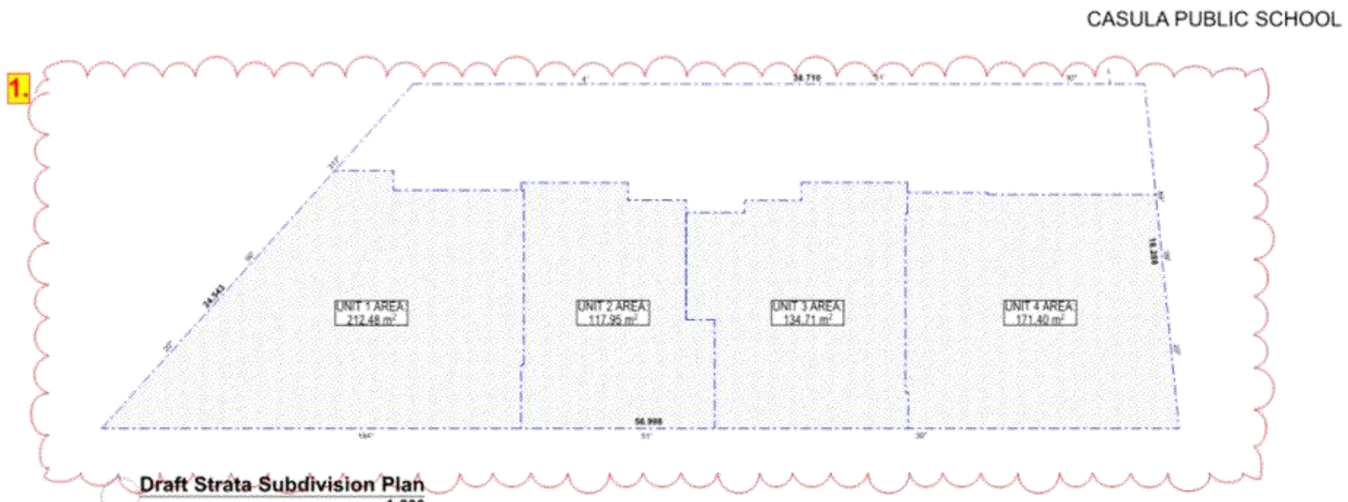
Requirements	Proposed
Landscape - 30% (259.88m²)	30% (261.28m²)
Deep Soil - 15% (129.94m²) (3m min.)	16% (140.56m²) 3.
Carparking - 6 spaces	6 spaces
Min. Area 2 Bed - 90m² 3 Bed - 115m²	 2 Bed - 90.01m² Min. 3 Bed - 115.58m² Min.



Site Plan
1:200

Unit 1 - 3 Bed		Unit 2 - 2 Bed (ARH)		Unit 3 - 2 Bed	
	Area		Area		Area
Ground Floor	67.37	Ground Floor	51.20	Ground Floor	51.20
Level 1	47.69	Level 1	38.81	Level 1	48.59
	115.06 m²		**90.01 m²**		**99.79 m²**

Unit 4 - 4 Bed	
	Area
Ground Floor	70.85
Level 1	44.73
	115.58 m²



Draft Strata Subdivision Plan
1:200

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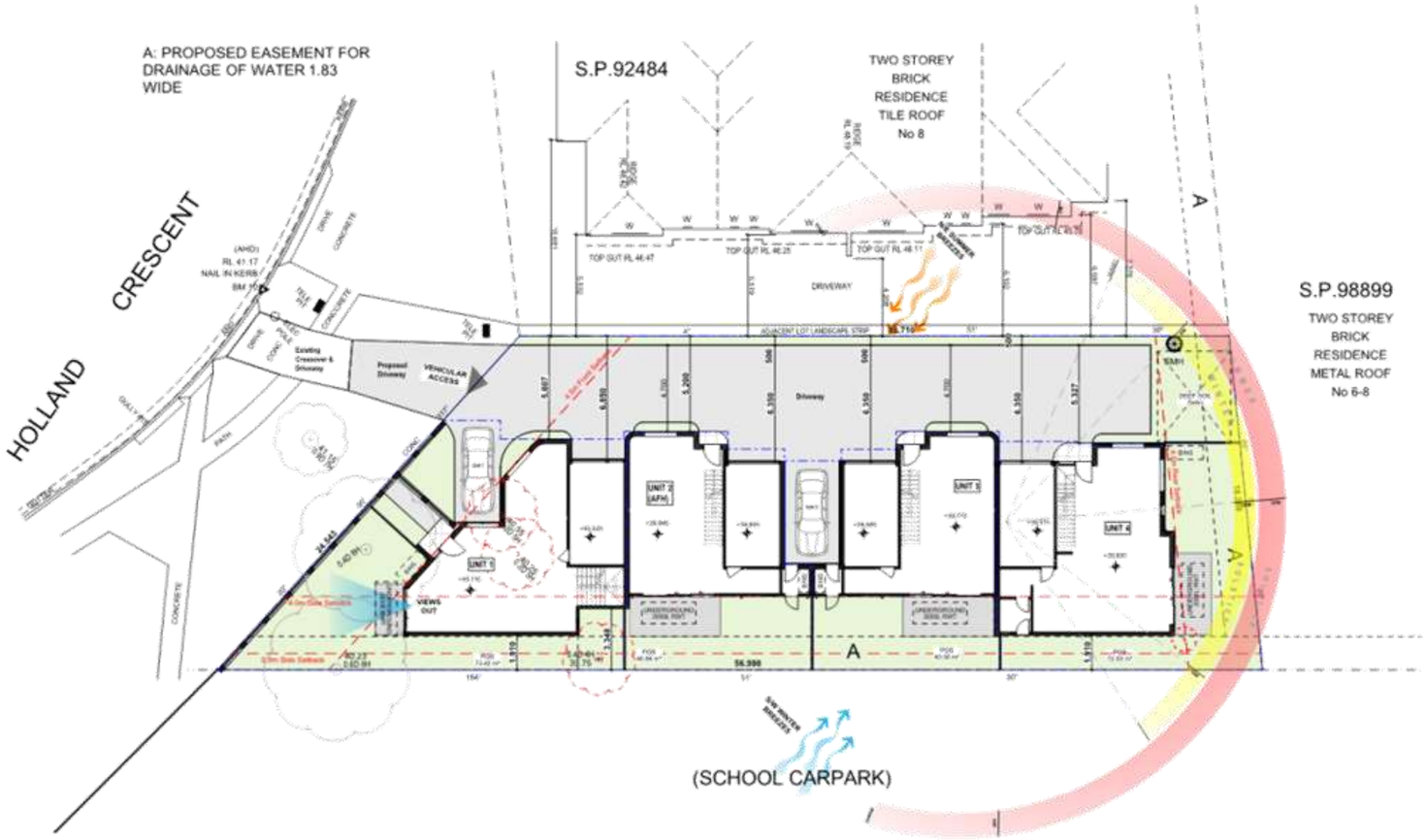
Rev.	Date	By	Description
A	22/11/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	10/09/2023		TRAFFIC AMENDMENTS
D	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsa

Drawing Series	Site Series
Drawing Name	Site Plan
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA100
Revision	D



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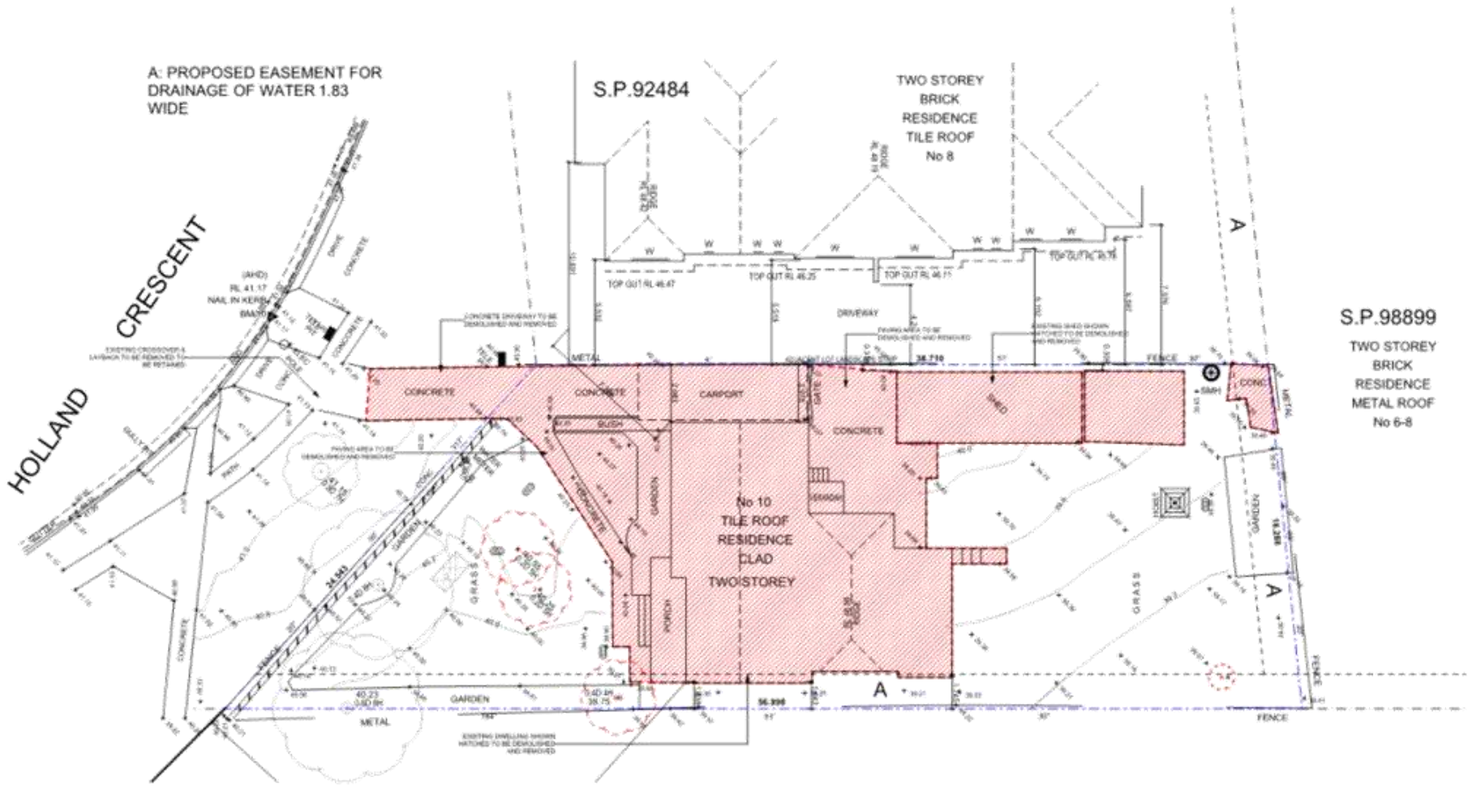
Rev.	Date	By	Description
A	22/11/2022		DEVELOPMENT APPLICATION
B	5/04/2023		REVISED CONSULTANT ISSUE
C	10/04/2023		TRAFFIC AMENDMENTS
D	11/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Site Series
Drawing Name	Site Analysis Plan
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA101
Revision	D



EROSION AND SEDIMENTATION CONTROL NOTES:

1. BUILDER SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE BOUNDARIES.TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (Eg. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND AND EXTENDING 200 BELOW GROUND AND TO EXTENT NOTED.

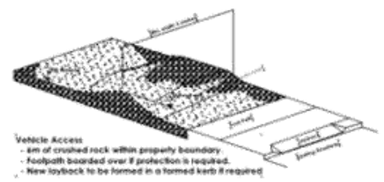
2. EXISTING AND NEW DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL UNTIL PAVEMENTS COMPLETED.

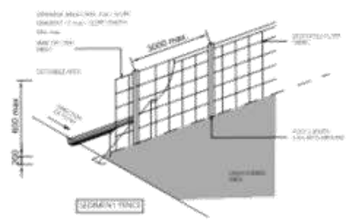
3. NO PARKING OR STOCK PILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.

4. GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.

5. ROOF DRAINAGE IS TO BE CONNECTED TO THE STORMWATER SYSTEM AS SOON AS PRACTICAL.

6. CONSTRUCTION ENTRY / EXIT SHALL BE AS PER DETAIL. BUILDER SHALL ENSURE ALL DROPPABLE SOIL AND SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. BUILDER SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE, DO SO, IN A FORWARD DIRECTION.





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Rev.	Date	By	Description
A	22/9/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	16/09/2023		TRAFFIC AMENDMENTS
D	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Site Series
Drawing Name	Demolition Plan
Date	02.08.2023
Scale	1:200@A2
Drawing Number	DA102
Revision	D

Roof
1:100

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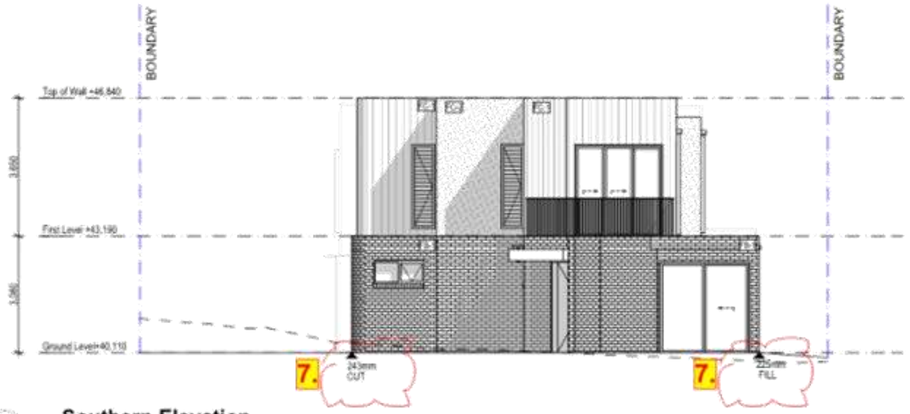
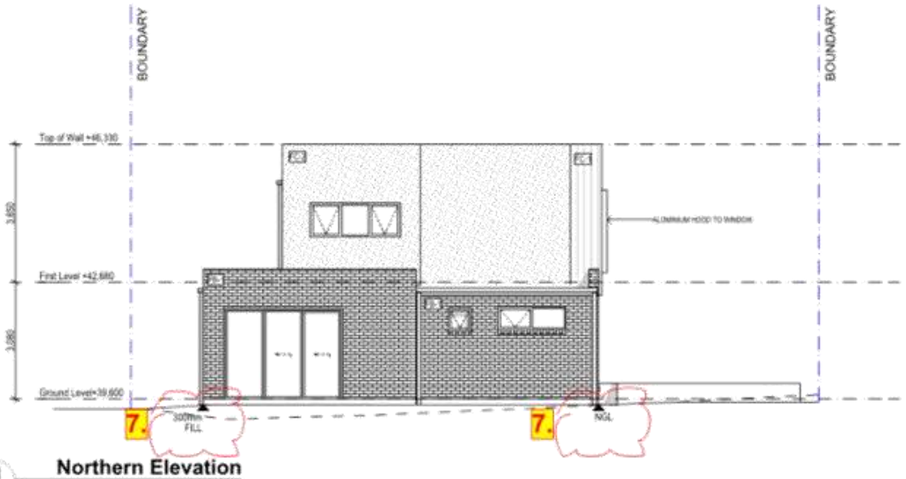
Rev.	Date	By	Description
P1	16/08/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	30/04/2023		TRAFFIC AMENDMENTS
C	11/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Plans
Drawing Name	Roof
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA202
Revision	C



2 **Southern Elevation**
1:100

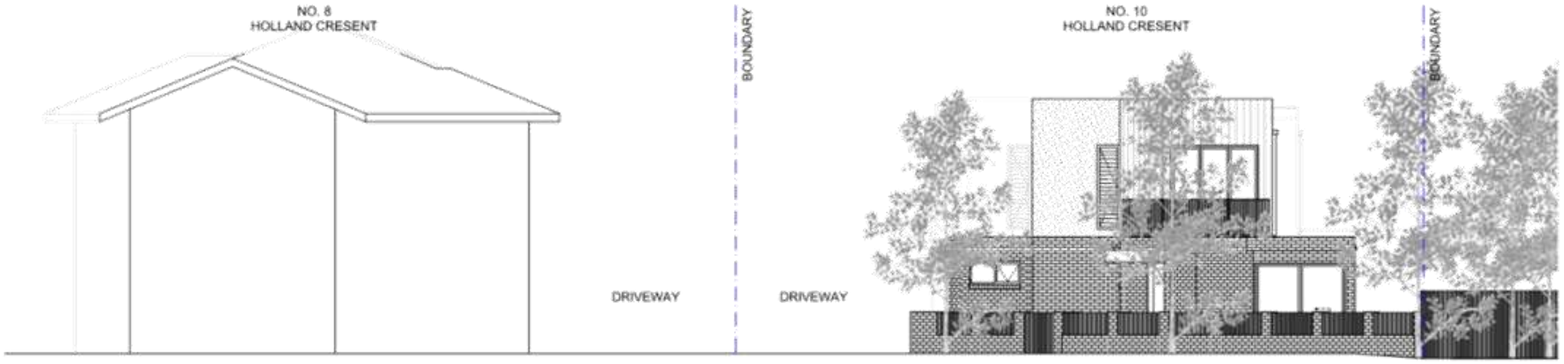


1 **Northern Elevation**
1:100

FACEBRICK
COLOUR: RED/BROWN OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: DARK GREY OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: WHITE



Streetscape Elevation
1:100

TIMBER LOOK ALUMINIUM BATTENS
COLOUR: NATURAL TIMBER LOOK

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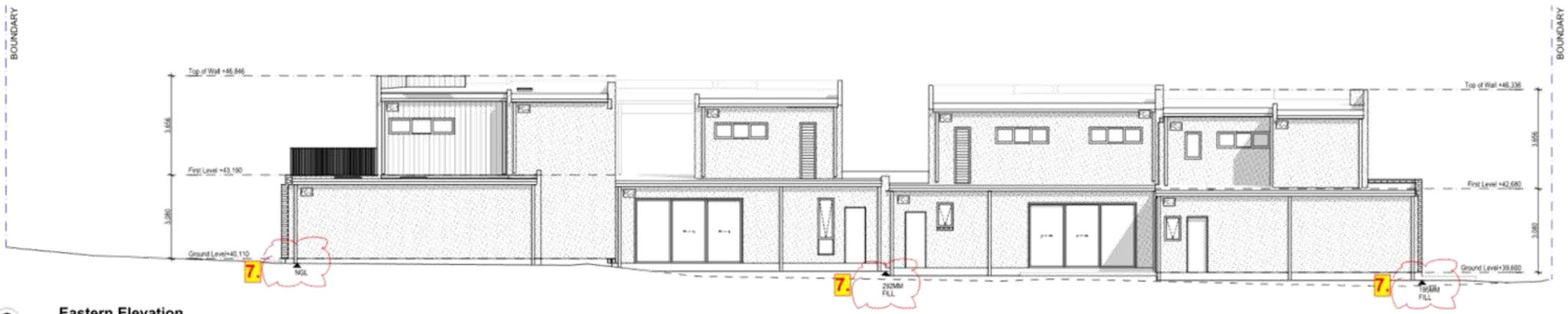
Rev.	Date	By	Description
PE	7/09/2022		CONSULTANT COORDINATION
PS	10/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsia

Drawing Series	Elevations & Sections
Drawing Name	Elevations
Date	02.08.2021
Scale	1:100, 1:1.88, 1:1.36, 1:3.22@A2
Drawing Number	DA300
Revision	B

1 **Western Elevation**
1:100



2 **Eastern Elevation**
1:100

FACEBRICK
COLOUR: RED/BROWN OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: DARK GREY OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: WHITE

TIMBER LOOK ALUMINIUM BATTENS
COLOUR: NATURAL TIMBER LOOK

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Rev.	Date	By	Description
PE	7/09/2022		CONSULTANT COORDINATION
PS	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Elevations
Date	02.08.2021
Scale	1:100, 1:1.88, 1:1.36, 1:3.22@A2

Drawing Number DA301
Revision B

Street Perspective
1:142.86

PAINTED FIBRE CEMENT CLADDING
COLOUR: WHITE

TIMBER LOOK ALUMINIUM BATTENS
COLOUR: NATURAL TIMBER LOOK

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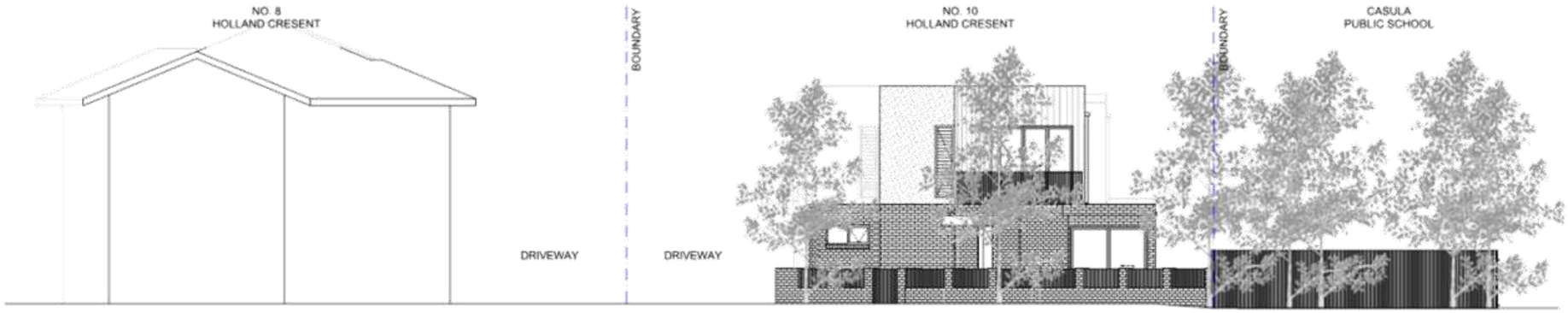
Rev.	Date	By	Description
A	22/07/2022		DEVELOPMENT APPLICATION
B	19/04/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Colours and Finishes Sched
Date	02.08.2021
Scale	1:1.88, 1:1.36, 1:3.22, 1:2.50@A3

Drawing Number DA303
Revision B



Streetscape Elevation
1:100

Builder/Contractor shall verify job dimensions before any job commences

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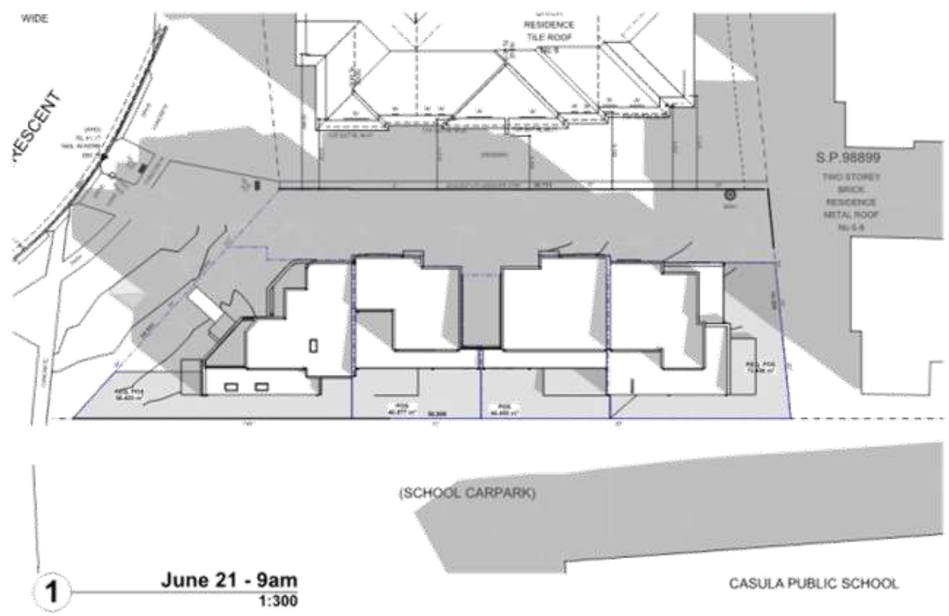
Rev.	Date	By	Description
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/04/2023		RFI AMENDMENTS

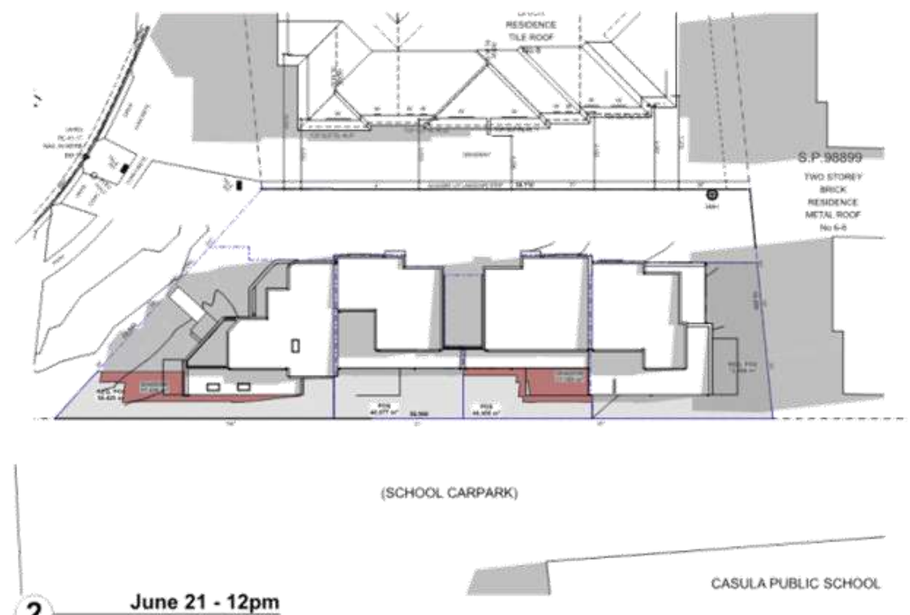
Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Streetscape Elevation
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA304
Revision	B

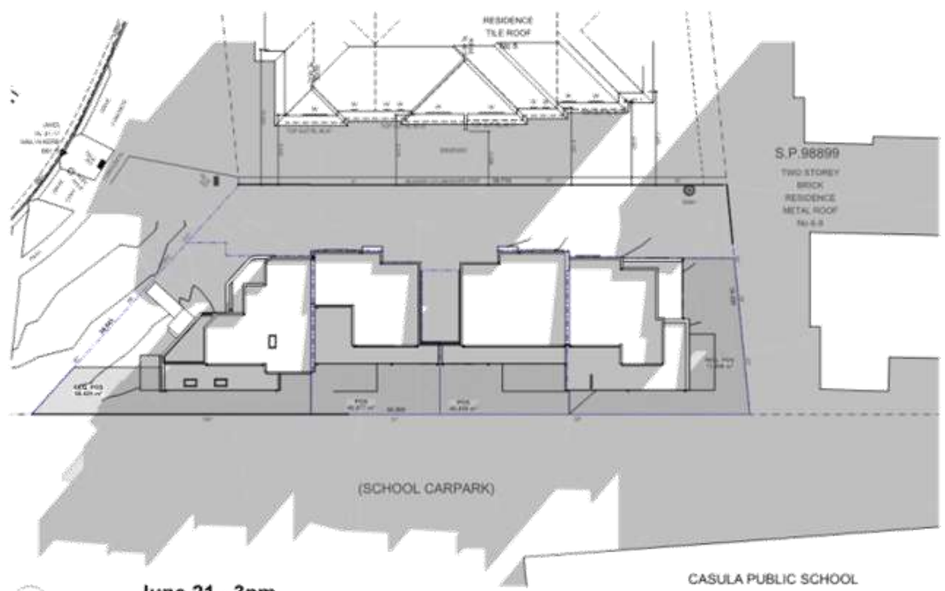
2.



1 June 21 - 9am
1:300



2 June 21 - 12pm
1:300



3 June 21 - 3pm
1:300

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Rev.	Date	By	Description
PE	7/09/2022		CONSULTANT COORDINATION
PS	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	11/09/2023		RFI AMENDMENTS

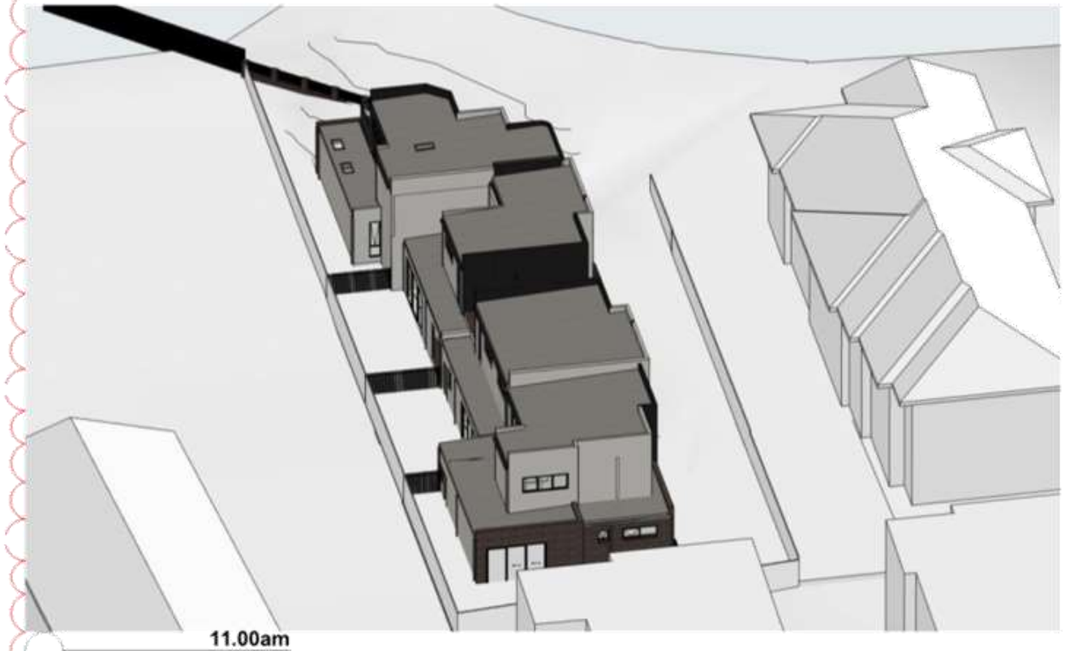
Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsa

Drawing Series	Supporting Drawings
Drawing Name	Shadows Analysis
Date	02.08.2021
Scale	1:300@A2
Drawing Number	DA400
Revision	B

2.

9.00am
1:200

10.00am
1:200



11.00am
1:200

12.00pm
1:200

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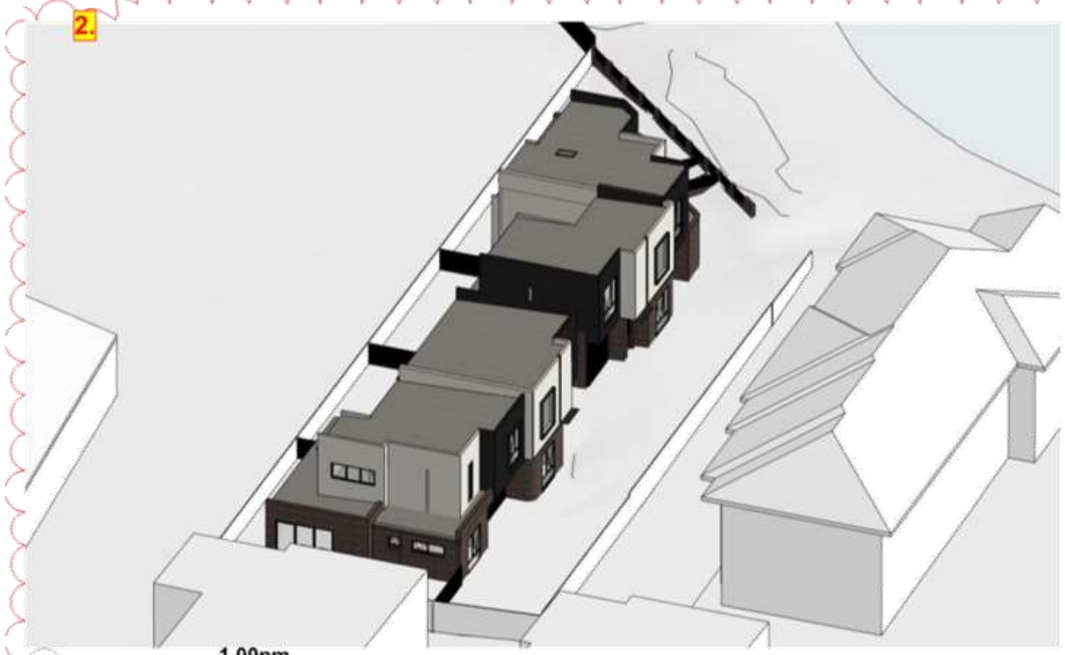
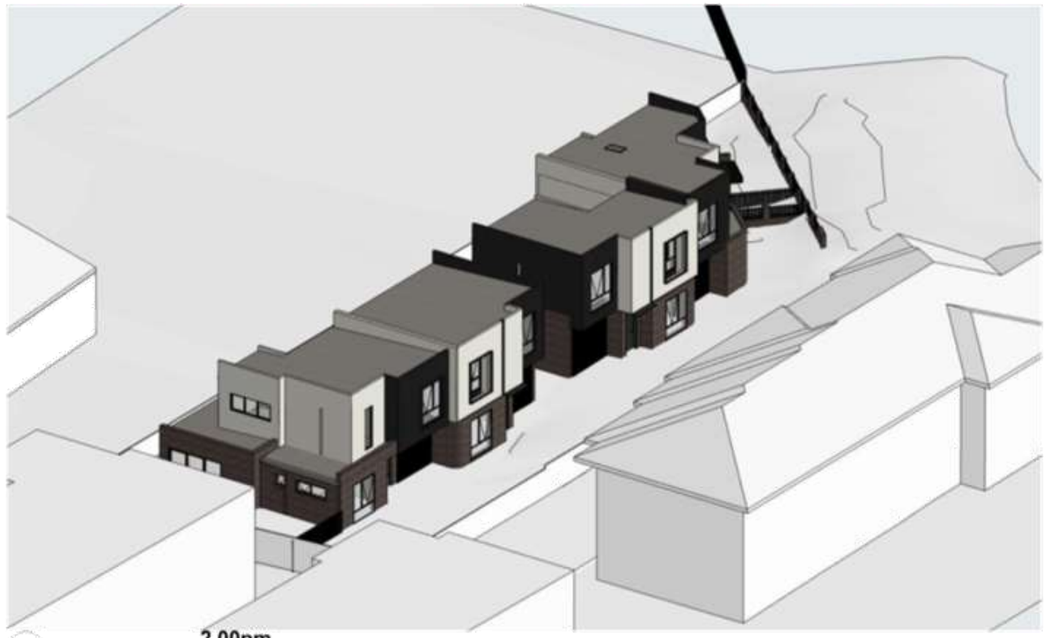
Rev.	Date	By	Description
x	[illegible]		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsa

Drawing Series	Supporting Drawings
Drawing Name	EOTS - 21 June 9am-12pm
Date	02.08.2021
Scale	@A2
Drawing Number	DA401
Revision	A

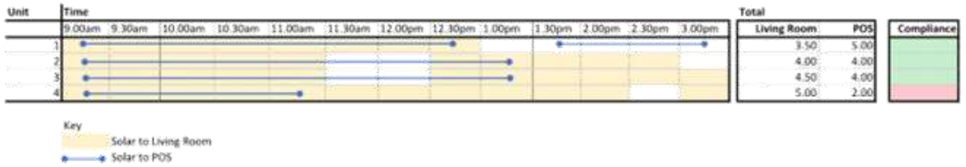


1.00pm
1:200



2.00pm
1:200

3.00pm
1:200



Total		Compliance
Living Room	POS	
3.50	5.00	
4.00	4.00	
4.50	4.00	
5.00	2.00	

Housing SEPP Requirements

Living Rooms and POS in at least 70% of dwellings recieve at least 3 hrs of direct solar acess between 9am and 3pm at mid-winter

70% = 3 dwellings

Proposed

3 dwellings (75%) recieve atleast 3hrs

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Rev	Date	By	Description
A	19.09.2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	EOTS - 21 June 1pm-3pm
Date	02.08.2023
Scale	@A2

Drawing Number DA402
Revision A

Compliance

Site Area: 866.28m²

DCP/ LEP

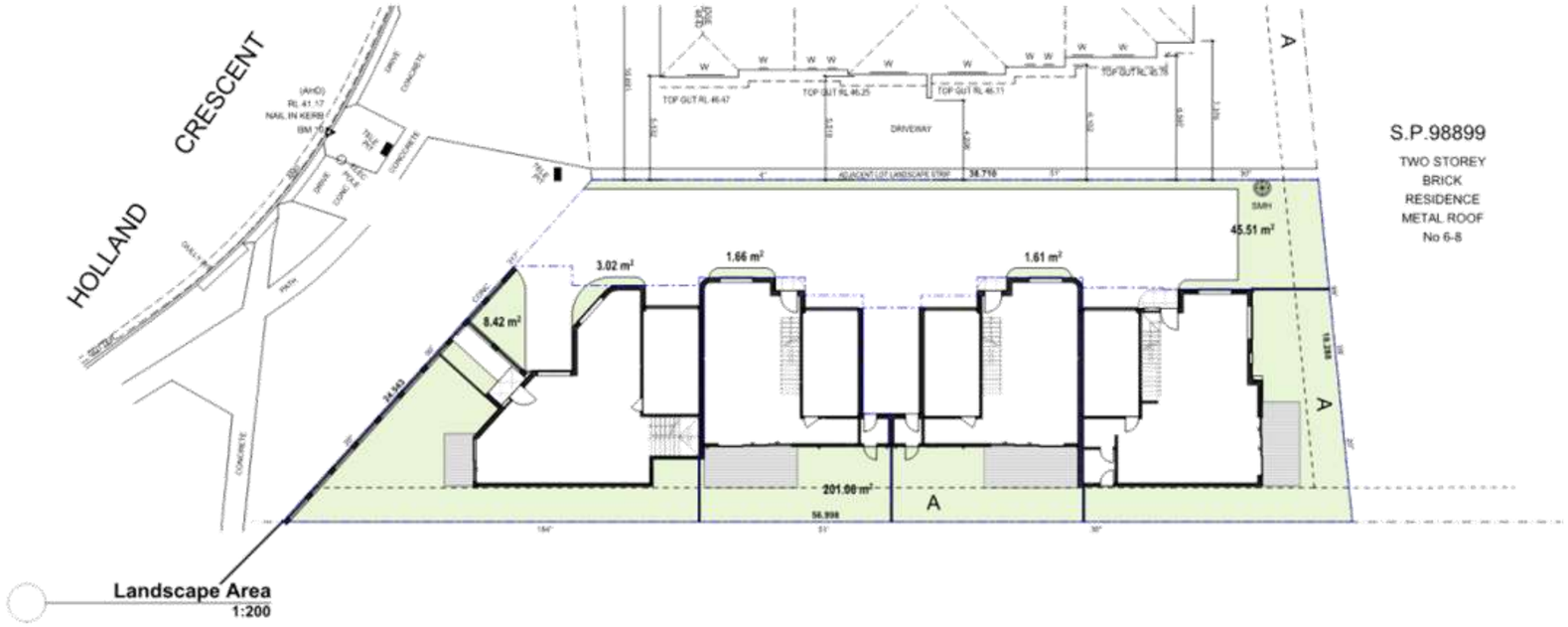
Requirements	Proposed
Landscape - 20% (173.26m²)	30% (261.28m²)

Housing SEPP

Requirements	Proposed
Landscape - 30% (259.88m²)	30% (261.28m²)

Housing SEPP Definition

landscaped area *means the part of the site area not occupied by a building and includes a part used or intended to be used for a rainwater tank, swimming pool or open-air recreation facility, but does not include a part used or intended to be used for a driveway or parking area.*



Landscape Area
1:200

DCP/ LEP

Requirements	Proposed
Deep Soil - 4m x 5m	4m x 5m

Housing SEPP

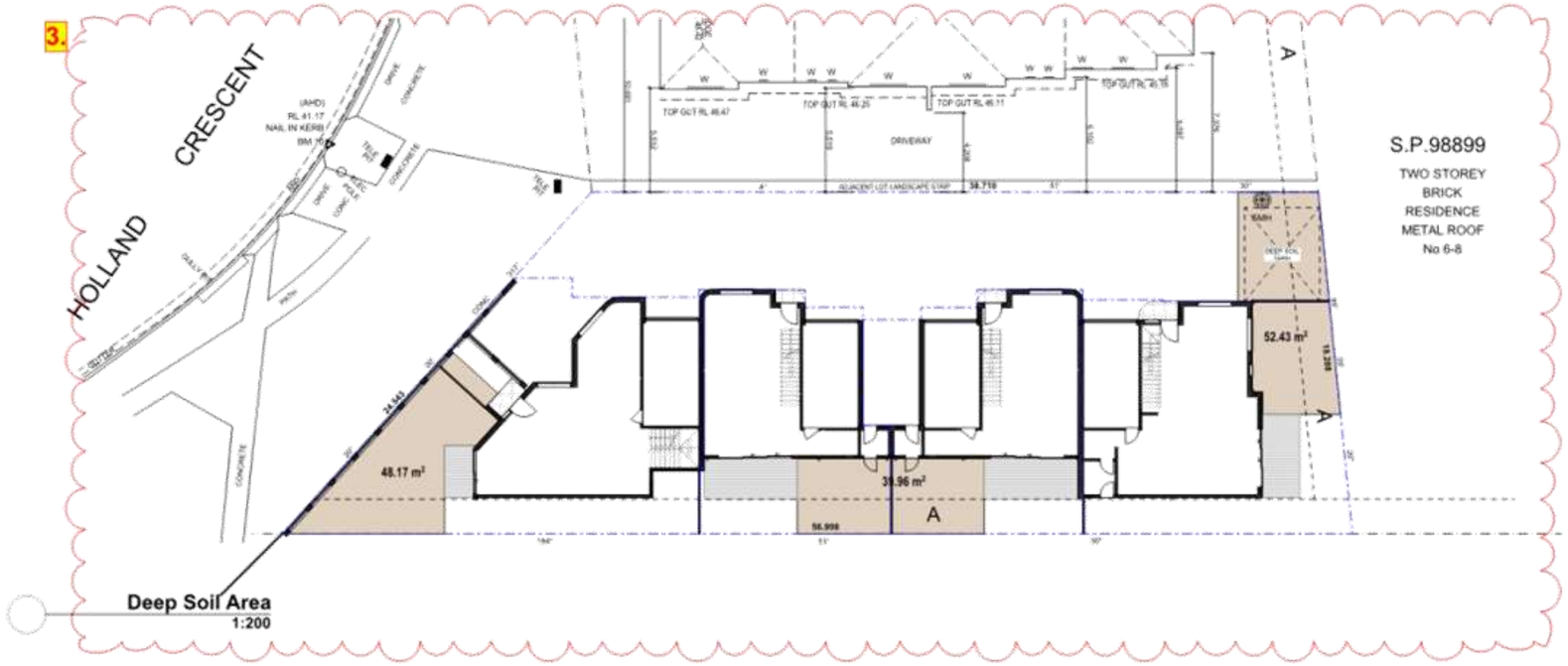
Requirements	Proposed
Deep Soil - 15% (129.94m²) (3m min.)	16% (140.56m²)

3.

Housing SEPP Definition

deep soil zone *means a landscaped area with no buildings or structures above or below the ground.*

3.



Deep Soil Area
1:200

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Rev.	Date	By	Description
D	5/09/2023		REVISED CONSULTANT ISSUE
C	15/09/2023		TRAFFIC AMENDMENTS
A	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Landscape and Deep Soil Ca
Date	02.08.2023
Scale	1:200@A2
Drawing Number	DA403
Revision	A

Builder/Contractor shall verify job dimensions before any job commences
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Rev.	Date	By	Description
P2	7/09/2022		CONSULTANT COORDINATION
P1	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.59@A2

Drawing Number DA406
Revision B

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Rev.	Date	By	Description
P2	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.50@A2
Drawing Number	DA407
Revision	B

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Rev.	Date	By	Description
PE	7/09/2022		CONSULTANT COORDINATION
PS	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.50@A2
Drawing Number	DA408
Revision	B

IES-02 Window Schedule

Element ID	SD01	SD02	SD03	SD04	SD05	W01	W02	W03	W04	W05	W06	W07	W08	W09	W10	W11	W12	W13	W14
View from Side Opposite to Opening Side																			
W x H Size	2,400×2,400	3,151×2,400	4,000×2,400	4,000×2,400	2,333×2,420	600×2,100	1,800×600	1,800×600	1,800×2,100	1,800×2,100	850×2,100	1,800×2,100	1,800×600	600×600	600×900	600×2,100	600×2,100	2,400×600	600×2,220
Sill height	0	0	0	0	350	328	1,828	1,828	300	328	328	328	1,828	1,800	1,500	300	315	1,500	550
Head height	2,400	2,400	2,400	2,400	2,770	2,428	2,428	2,428	2,400	2,428	2,428	2,428	2,428	2,400	2,400	2,400	2,415	2,100	2,770

IES-02 Window Schedule

Element ID	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31
View from Side Opposite to Opening Side																	
W x H Size	600×2,220	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	600×2,220	2,400×900	1,960×600	600×1,000	1,960×600	1,960×600	600×2,220	600×2,220	1,960×600	600×900
Sill height	550	628	628	628	628	458	628	550	1,520	1,500	1,100	1,500	1,500	-120	-65	1,555	1,168
Head height	2,770	2,770	2,770	2,770	2,770	2,600	2,770	2,770	2,420	2,100	2,100	2,100	2,100	2,100	2,155	2,155	2,068

1 Glazing Schedule

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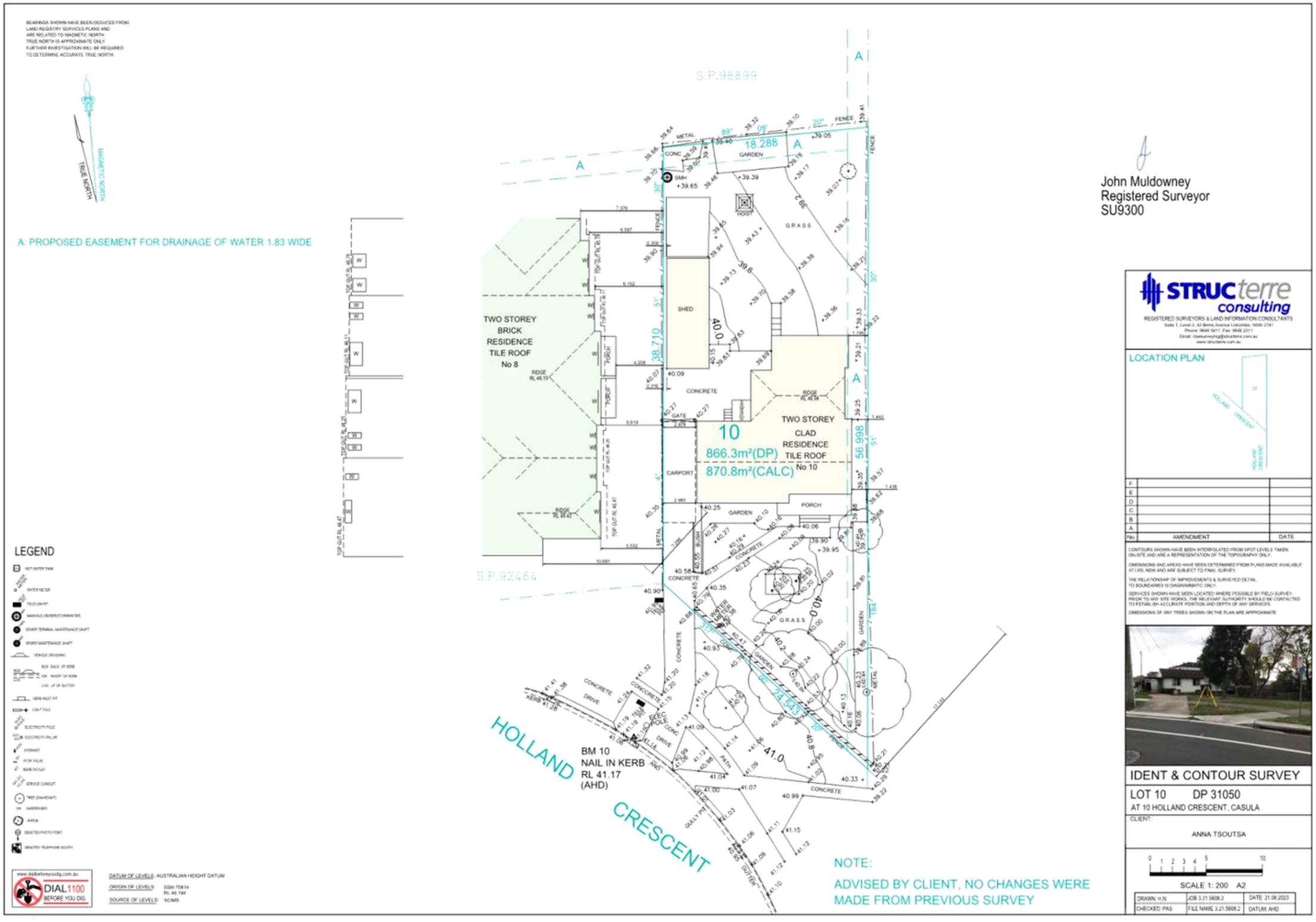
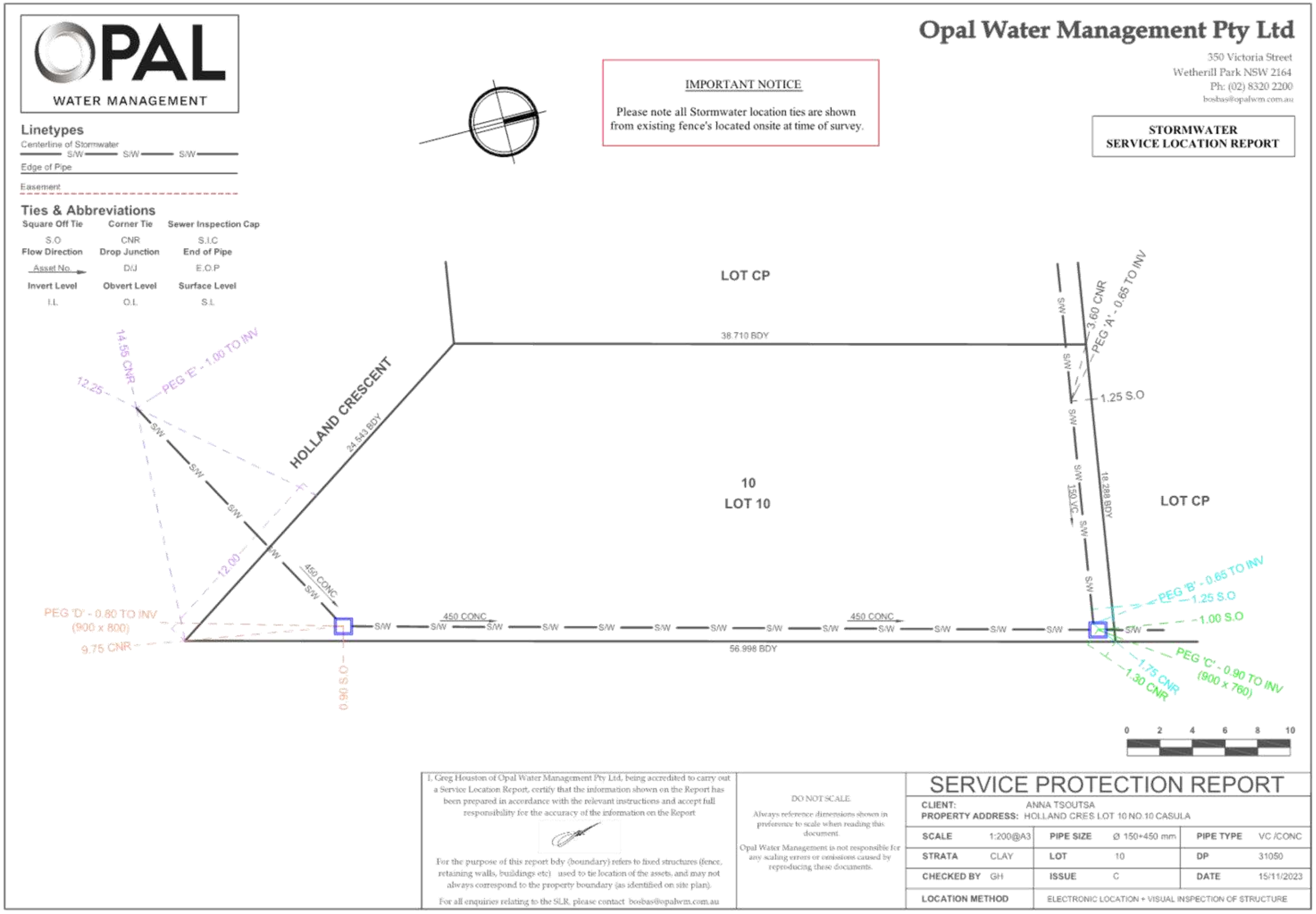
Evan Nguyen 11281 (NSW)

Rev.	Date	By	Description
H	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	19/09/2023		RFI AMENDEMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoutsia

Drawing Series	Supporting Drawings
Drawing Name	Glazing Schedule
Date	02.08.2021
Scale	1:1@A2
Drawing Number	DA409
Revision	B


BEARINGS SHOWN HAVE BEEN DEDUCED FROM LAND REGISTRY SERVICES PLANS AND ARE RELATED TO MAGNETIC NORTH
TRUE NORTH IS APPROXIMATE ONLY
FURTHER INVESTIGATION WILL BE REQUIRED TO DETERMINE ACCURATE TRUE NORTH
TRUE NORTH
MAGNETIC NORTH
A: PROPOSED EASEMENT FOR DRAINAGE OF WATER 1.83 WIDE
S.P.96809
S.P.92484
TWO STOREY BRICK RESIDENCE TILE ROOF No 8
10
866.3m²(DP)
870.8m²(CALC)
TWO STOREY CLAD RESIDENCE TILE ROOF No 10
SHED
CARPORT
PORCH
GARDEN
GRASS
CONCRETE
HOLLAND CRESCENT
BM 10
NAIL IN KERB
RL 41.17
(AHD)
LEGEND
DIAL 1100 BEFORE YOU DIG
DATUM OF LEVELS: AUSTRALIAN HEIGHT DATUM
ORIGIN OF LEVELS: SSM 70814 RL 46.194
SOURCE OF LEVELS: SCIMS
NOTE:
ADVISED BY CLIENT, NO CHANGES WERE MADE FROM PREVIOUS SURVEY
John Muldowney
Registered Surveyor
SU9300
STRUCterre consulting
REGISTERED SURVEYORS & LAND INFORMATION CONSULTANTS
LOCATION PLAN
AMENDMENT
DATE
CONTOURS SHOWN HAVE BEEN INTERPOLATED FROM SPOT LEVELS TAKEN ON-SITE AND ARE A REPRESENTATION OF THE TOPOGRAPHY ONLY.
DIMENSIONS AND AREAS HAVE BEEN DETERMINED FROM PLANS MADE AVAILABLE ATLRS, NSW AND ARE SUBJECT TO FINAL SURVEY.
THE RELATIONSHIP OF IMPROVEMENTS & SURVEYED DETAIL TO BOUNDARIES IS DIAGRAMMATIC ONLY.
SERVICES SHOWN HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. PRIOR TO ANY SITE WORKS, THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ESTABLISH ACCURATE POSITION AND DEPTH OF ANY SERVICES.
DIMENSIONS OF ANY TREES SHOWN ON THE PLAN ARE APPROXIMATE
IDENT & CONTOUR SURVEY
LOT 10 DP 31050
AT 10 HOLLAND CRESCENT, CASULA
CLIENT:
ANNA TSOUTSA
SCALE 1: 200 A2
DRAWN: H.N
JOB 3.21.5608.2
DATE 21.09.2023
CHECKED: PAS
FILE NAME 3.21.5608.2
DATUM: AHD


OPAL
WATER MANAGEMENT
Linetypes
Centerline of Stormwater
S/W
Edge of Pipe
Easement
Ties & Abbreviations
Square Off Tie
S.O
Corner Tie
CNR
Sewer Inspection Cap
S.I.C
Flow Direction
Asset No.
Drop Junction
D/J
End of Pipe
E.O.P
Invert Level
I.L.
Obvert Level
O.L.
Surface Level
S.L.
Opal Water Management Pty Ltd
350 Victoria Street
Wetherill Park NSW 2164
Ph: (02) 8320 2200
bosbas@opalwm.com.au
IMPORTANT NOTICE
Please note all Stormwater location ties are shown from existing fence's located onsite at time of survey.
STORMWATER
SERVICE LOCATION REPORT
LOT CP
38.710 BDY
HOLLAND CRESCENT
24.543 BDY
10
LOT 10
LOT CP
18.288 BDY
56.998 BDY
450 CONC
150 VC
14.55 CNR
12.25
PEG 'E' - 1.00 TO INV
12.00
PEG 'D' - 0.80 TO INV
(900 x 800)
9.75 CNR
0.96 S.O
3.60 CNR
PEG 'A' - 0.65 TO INV
1.25 S.O
PEG 'B' - 0.65 TO INV
1.25 S.O
1.00 S.O
PEG 'C' - 0.90 TO INV
(900 x 760)
1.75 CNR
1.30 CNR
0 2 4 6 8 10
I, Greg Houston of Opal Water Management Pty Ltd, being accredited to carry out a Service Location Report, certify that the information shown on the Report has been prepared in accordance with the relevant instructions and accept full responsibility for the accuracy of the information on the Report
For the purpose of this report bdy (boundary) refers to fixed structures (fence, retaining walls, buildings etc) used to tie location of the assets, and may not always correspond to the property boundary (as identified on site plan).
For all enquiries relating to the SLR, please contact bosbas@opalwm.com.au
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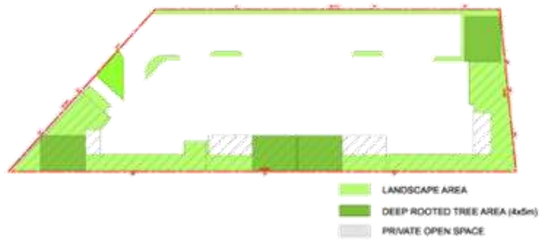
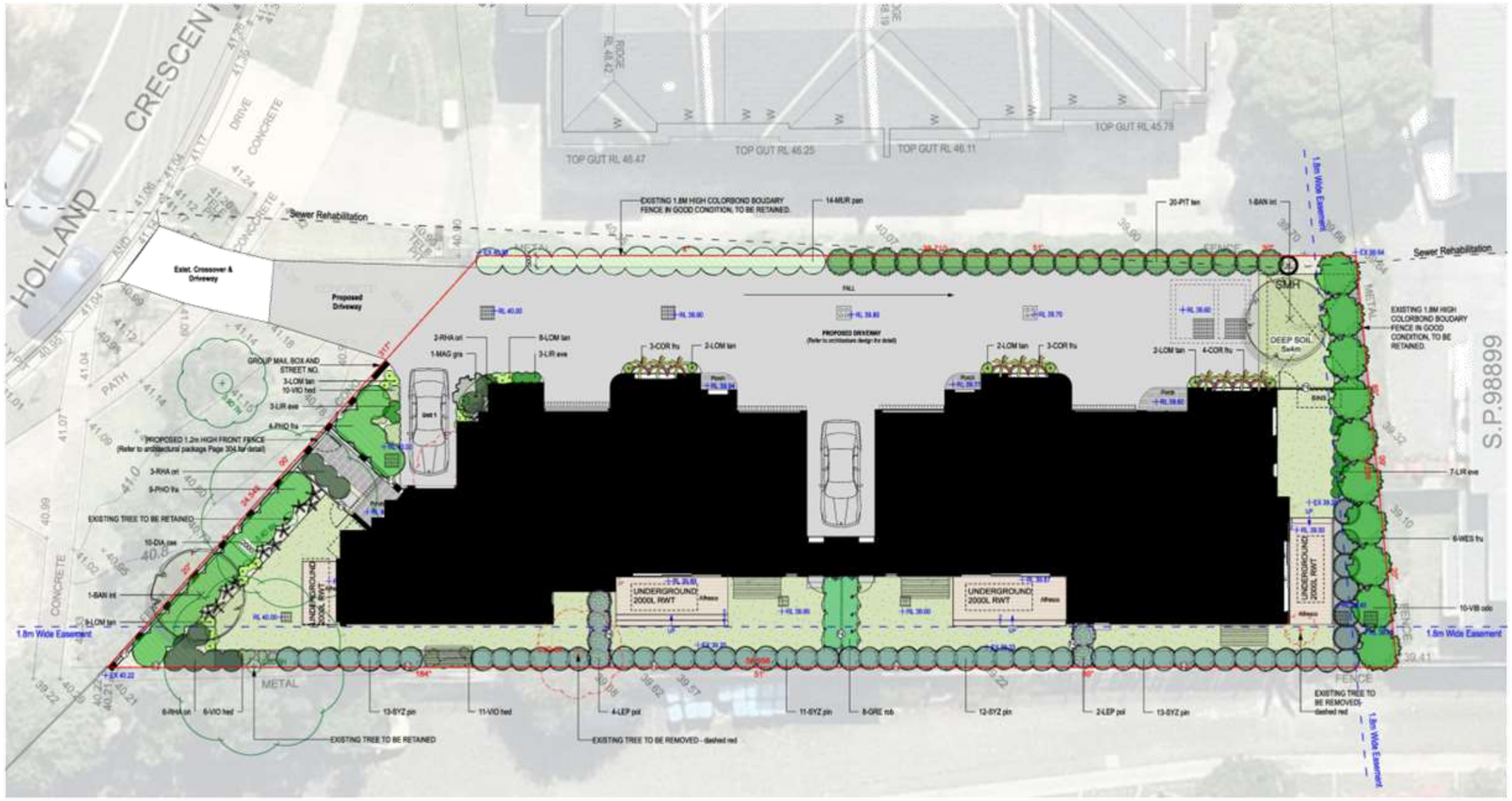
SERVICE PROTECTION REPORT
CLIENT: ANNA TSOUTSA
PROPERTY ADDRESS: HOLLAND CRES LOT 10 NO 10 CASULA
SCALE 1:200@A3
PIPE SIZE Ø 150+450 mm
PIPE TYPE VC /CONC
STRATA CLAY
LOT 10
DP 31050
CHECKED BY GH
ISSUE C
DATE 15/11/2023
LOCATION METHOD
ELECTRONIC LOCATION + VISUAL INSPECTION OF STRUCTURE

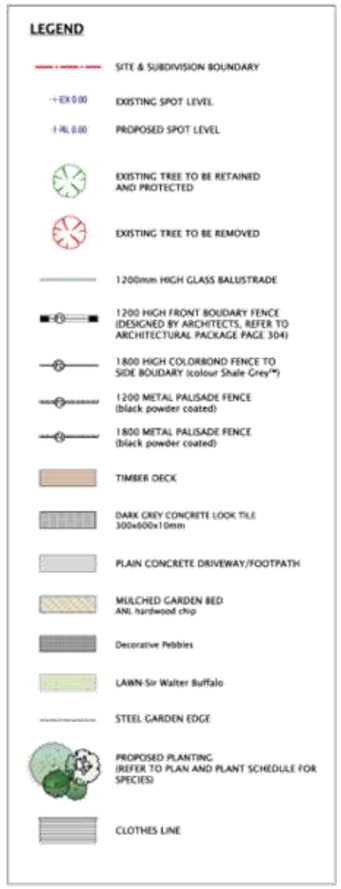
LANDSCAPE PLAN FOR DA

LOT 10 DP 31050
10 HOLLAND CRESENT, CASULA, NSW 2179



SITE AREA		TOTAL 866.28 sq m		
	REQUIRED	REQUIRED	PROPOSED	COMPLY
LANDSCAPED AREA	Minimum 20% of the site area	173.26 sq m	260.92 sq m	YES
DEEP ROOTED TREE AREA	4x5m		Unit 1: 5 x 4m Unit 2:5 x 4m Unit 3:5 x 4m Unit 4:4 x 5m	YES
PRIVATE OPEN SPACE	Unit 1 & Unit 4: 50sqm Unit 2 & Unit 3: 40sqm (Minimum 1.3m)		Unit 1: 73.42 sqm Unit 2:40.86 sqm Unit 3:40.48 sqm Unit 4:72.34 sqm	YES
TREE PLANTING	At front and back gardens (mature height of 8m)		2	YES





1 LANDSCAPE PLAN_GROUND FLOOR
Scale: 1:100

0 5 10 M

APRIL DESIGN
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PROJECT
10 HOLLAND CRESENT, LOT 10 DP 31050, CASULA
CLIENT
Anna Anthony & John Tsoutsa

PROJECT NO. **2023 - 300**
STATUS **D.A**
DRAWN: BT
CHECK: AY
DATE: 20/09/2023
COUNCIL: CITY OF LIVERPOOL
SCALE 1:100 @ A1

REV	DATE	ISSUE
A	09/10/2022	DRAFT FOR REVIEW
B	18/11/2022	FOR SUBMISSION
C	13/09/2023	DRAFT FOR COORDINATE
D	20/09/2023	FOR SUBMISSION

SHEET NO. **LP01**
LANDSCAPE PLAN GROUND FLOOR
REVISION NO. **D**

PLANT PALETTE

Plant Schedule

ID	Qty	Common Name	Botanical Name	Mature Height	Mature Spread	Pot Size
TREE						
BAN int	2	Coastal Banksia	*Banksia integrifolia*	12m	6m	75lt
MAG gra	1	Magnolia Teddy Bear	*Magnolia grandiflora 'Teddy Bear'*	3m	2.5m	25lt
TALL SHRUB						
COR fru	10	Cordyline Rubra	*Cordyline fruticosa 'Rubra'*	1.8m	1.2m	200mm
GRE rob	8	Grevillea	*Grevillea 'Robyn Gordon'*	2m	1m	200 mm
LEP pol	6	Tea Tree	*Leptospermum polygalifolium*	3m	2m	200 mm
MUR pan	14	Orange Jasmine	*Murraya paniculata*	3m	1.2m	300 mm
PHO fra	13	Photinia Red Robin	*Photinia x fraseri 'Red Robin'*	2.5m	1.5m	200mm
PIT ten	20	Pittosporum 'hedge'	*Pittosporum tenuifolium*	3m	1.2m	300 mm
SYZ pin	49	Pinnacle Lillypilly	*Syzygium 'Pinnacle'*	6m	1m	300 mm
VIB odo	10	Sweet Viburnum	*Viburnum odoratissimum*	3m	2.5m	200 mm
SMALL SHRUB						
RHA ori	11	Indian Hawthorn	*Rhaphiolepis 'Oriental Pearl'*	1m	1m	200mm
WES fru	6	Coastal Rosemary	*Westringia fruticosa*	1.2m	1.2m	200 mm
GROUNDCOVER						
VIO hed	27	Native Violets	*Viola hederacear*	0.3m	0.4m	140mm
GRASS						
DIA cae	10	Blue Flax Lily	*Dianella caerulea*	0.7m	0.7m	140mm
LIR eve	13	Giant Lilyturf	*Liriope 'Evergreen Giant'*	0.6m	0.6m	140mm
LOM ten	28	Dwarf Lomandra	*Lomandra 'Tanika'*	0.5m	0.5m	140mm

LANDSCAPE SPECIFICATION

1. SITE PREPERATION
Area is to be free of weeds and debris before the commencement of any landscape works. Weeds are to be sprayed with Glyphosate soloution, leaving adequate time for the them to die off prior to removal. Final levels and grades are to be determined by a onsite inspection by the landscape contractor. The landscape plan is to be used as an indication only.

2. LAWN AREAS
Excavate all areas to be turfed to 100mm below required finished levels. Do not excavate within 1500mm of the trunk of any existing tree to be retained. Ensure that all surface water runoff is directed towards the inlet pits, kerbs etc, and away from buildings. Ensure that no pooling or ponding will occur. Install 100mm depth of imported topsoil. Just prior to laying turf, spread 'Sir Launcher' fertiliser at the recommended rate. Lay turf rolls closely butted. Fill any small gaps with topsoil. Water thoroughly. Use Sir Walter Buffalo.

3. GARDEN AREAS
Ensure that mass planting areas have been excavated to 250mm below finished levels. Supply and install 250mm of premium garden mix. Topsoil Shall be either imported topsoil or stockpiled site topsoil (if suitable ie, no clay). Install 75mm depth of organic Eucalyptus Mulch.

4. SHRUB PLANTING
Plants should in good health and free of pests and diseases. An adequate size hole should be dug with the plant placed in the hole ensuring that the top of the pot is at the same height of the ground. Leave mulch free from around the base of the plants. Water well after planting.

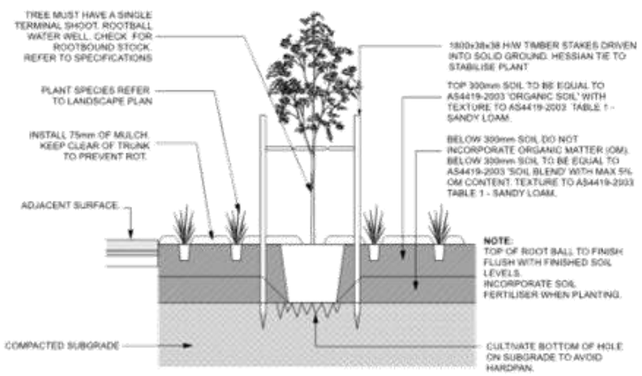
5. TREE PLANTING
Trees should be in good health and free of pests and diseases. The hole is to be dug to a depth and radius, twice the size of the rootball of the tree. Water the bottom of the hole to ensure that the natural soil is moist. The roots should be teased to ensure that they dont grow in a circlular direction around the tree. The tree is to be planted so that the base of the tree is level with the top of the ground. Backfill with a mixture of imported soil and natural soil, or imported soil only. Mulch should be kept clear of the base to prevent collar rot. Water well after planting.

6. CONCRETE DRIVEWAY
Concrete pathways are to be installed to a minimum depth of 100mm and include reinforcement. Concrete areas are to conform to relevant Australian standards.

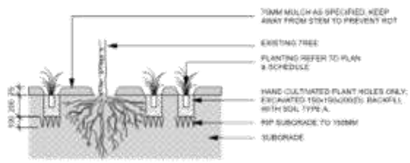
7. GARDEN EDGING
Garden edging is to be installed to all garden beds where no divide exists between garden and lawn areas. Use steel edge or similar. The pavers are to be laid on a minimum of 40mm of mortar, with no mortar joint between the pavers.

8.EXISTING TREES
Existing tree to be remained in accordance with AS 4970-2009.

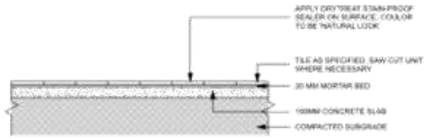
LANDSCAPE DETAILS



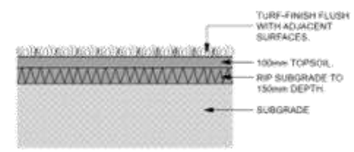
D01 TREE AND MASS PLANTING
SCALE 1 : 25 @ A1



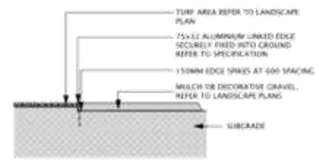
D02 TYPICAL SPOT PLANTING DETAILS
SCALE 1 : 25 @ A1



D03 TILE ON CONCRETE SLAB
SCALE 1 : 25 @ A1



D04 TURF GRASS
SCALE 1 : 25 @ A1



D05 TYPICAL ALUMINIUM EDGING
SCALE 1 : 25 @ A1

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PROJECT
10 HOLLAND CRESENT, LOT 10 DP 31050, CASULA
CLIENT
Anna Anthony & John Tsoutsa

PROJECT NO. **2023 - 300**
STATUS **D.A**
DRAWN: BT
CHECK: AY
DATE: 20/09/2023
COUNCIL: CITY OF LIVERPOOL
SCALE AS SHOWN @ A1

REV	DATE	ISSUE
A	09/10/2022	DRAFT FOR REVIEW
B	18/11/2022	FOR SUBMISSION
C	13/09/2023	DRAFT FOR COORDINATE
D	20/09/2023	FOR SUBMISSION

SHEET NO. **LP02**
PLANT SCHEDULE & LANDSCAPE DETAILS & SPECIFICATIONS
REVISION NO. **D**

STORMWATER MANAGEMENT PLAN
PROPOSED MULTI DWELLING
No.10 HOLAND CRESCENT, CASULA

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7. THE CONTRACTOR SHALL TAKE ALL DUE CARE TO USE THE ABSOLUTE MINIMUM AREA FOR CONSTRUCTION AND THAT NO UNDUE DAMAGE IS DONE TO THE EXISTING VEGETATION.
8. THE CONTRACTOR SHALL COMPLY WITH CONDITIONS, AND SPECIFICATION OF COUNCIL AND ALL ACTS OF THE NSW EPA.
9. THE CONTRACTOR SHALL TAKE ALL REASONABLE CARE TO PROTECT EXISTING SERVICES. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
10. ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING WORK.
11. SUITABLE WARNING SIGNS AND BARRICADES ARE TO BE PROVIDED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS AND AS DIRECTED BY THE RELEVANT AUTHORITY.
12. SERVICES SHOWN ARE INDICATIVE ONLY FROM AVAILABLE INFORMATION AND THE TIME OF SITE INVESTIGATION (IF ANY). THE BUILDER IS TO NOTIFY ENGINEER OF ANY DISCREPANCIES QUOTED ON THIS PLAN.
13. RESTORE ALL TRAFFIC AREAS TO PRE EXISTING CONDITION. FOR ALL SURFACES OTHER THAN IN TRAFFIC AREAS RESTORE DISTURBED SURFACES TO PRE-EXISTING CONDITION AND COMPACT AS SPECIFIED.
14. RESTORE ALL AUTHORITY OWNED AREAS TO COUNCIL AND/OR AUTHORITY STANDARD AND SPECIFICATION.
15. THE WORK AS CONSTRUCTED WORKS SHALL BE INSPECTED BY THE ENGINEER, MINIMUM 48 HOURS NOTICE SHALL BE PROVIDED FOR ALL INSPECTION REQUESTS.
16. THE DESIGN PLANS HEREIN ARE SUBJECT TO COUNCIL APPROVAL PRIOR TO CONSTRUCTION.
17. WORK AS CONSTRUCTED DRAWINGS TO BE REQUESTED AND RECEIVED IN CAD/DWG FILE TYPE AND HARD COPY 'RED LINE' MARKUP FROM CONSTRUCTOR FOR VERIFICATION AND CERTIFICATION.

ROOF STORMWATER DRAINAGE NOTES:

1. ALL DOWN PIPES TO BE MINIMUM DN90 OR 100x50MM FOR GUTTERS SLOPE 1:100 AND STEEPER AS PER AS 3500.3 - 3.7.6
2. ALL ROOF GUTTERS TO HAVE OVERFLOW PROVISION IN ACCORDANCE WITH AS 3500.3 AND SECTIONS 3.5.3, 3.7.5 AND APPENDIX G OF AS 3500.3.
3. ALL DOWNPIPES TO BE FITTED VERTICALLY TO THE SOLE OF EAVES GUTTERS, RAINHEAD AND/OR SUMP.
4. ALL DOWNPIPES TO DRAIN INTO RAINWATER TANK AND OR PIT PRIOR TO DISCHARGE OFFSITE UNLESS PRIOR APPROVAL IS OBTAINED FROM COUNCIL IN WRITING OR NOTED OTHERWISE ON THIS PLAN.
5. ALL EAVES GUTTERS TO BE SIZED FOR ARI 20 - AS PER AS 3500.3 - 3.5 AND APPENDIX H.
6. ROOF DRAINAGE INSTALLATION TO BE IN ACCORDANCE TO AS 3500.3 SECTION 4.

STORMWATER DRAINAGE NOTES:

PIPE SIZE:

1. THE MINIMUM PIPE SIZE SHALL BE:
   - 1.1. DN90 FOR ALL DOWNPIPES;
   - 1.2. DN100 WHERE THE LINE ONLY RECEIVES ROOF STORMWATER RUNOFF, OR;
   - 1.3. DN100 WHERE THE LINE RECEIVES RUNOFF FROM PAVED OR UNPAVED AREAS.

PIPE GRADE:

1. THE MINIMUM PIPE GRADE SHALL BE:
   - 1.1. FOR DN100 - DN150 - 1.00%
   - 1.2. FOR DN225 - 0.50%
   - 1.3. FOR DN300 - 0.45%
   - 1.4. FOR DN375 - 0.35%

STANDARD COVER:

1. MINIMUM PIPE COVER FOR PVC PIPES SHALL BE AS PER AS 3500.3 TABLE 6.2.5:
   - 1.1. NOT SUBJECT TO VEHICULAR LOADING:
     - 1.1.1. WITHOUT PAVEMENT SINGLE DWELLINGS - 100mm
     - 1.1.2. WITHOUT PAVEMENT OTHER THAN SINGLE DWELLINGS - 300mm
     - 1.1.3. WITH PAVEMENT (BRICK/PAVERS) AND/OR UNREINFORCED CONCRETE - 100mm
   - 1.2. SUBJECT TO VEHICULAR LOADING:
     - 1.2.1. ROADS (SEALED) - 600mm
     - 1.2.2. ROADS (UNSEALED) - 750mm
     - 1.2.3. OTHER THAN ROADS (WITH PAVEMENT) - 100mm
     - 1.2.4. OTHER THAN ROADS (WITHOUT PAVEMENT) - 450mm

PIPE INSTALLATION

1. PIPES AND FITTINGS FOR STORMWATER DRAINAGE SHALL BE AS FOLLOWS:
   - 1.1. FOR PIPE SIZES UP TO DN225 - PVC WITH SOLVENT WELDED JOINTS (IN GROUND).
   - 1.2. FOR PIPE SIZES GREATER THAN DN225 - RCP WITH RUBBER RING JOINTS
   - 1.3. FOR LARGER PIPE DEPTHS AS SPECIFIED IN AS 3500.3 - RCP WITH RUBBER RING JOINTS.
   - 1.4. FOR PIPES AND FITTINGS FOR SUBSOIL DRAINAGE SHALL BE SLOTTED PVS WITH SOLVENT WELDED JOINTS MINIMUM DN150.
2. FOR GRATED DRAINS SHALL BE MINIMUM DN150 IN NON-TRAFFICABLE ZONES AND DN225 IN TRAFFICABLE ZONES.
3. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURING RECOMMENDATIONS AND:
   - 3.1. AS 3725-1989 - LOADS ON BURIED CONCRETE PIPES
   - 3.2. AS 2566 - 1986 - BURIED FLEXIBLE PIPELINES
   - 3.3. AS 1597.2 - 1996 - PRECAST REINFORCED CONCRETE BOX CULVERTS
   - 3.4. AS 3500 - 1990 NATIONAL PLUMBING AND DRAINAGE CODE - PART 2 SANITARY PLUMBING AND SANITARY DRAINAGE - SYDNEY WATER REQUIREMENTS.
4. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.

CONNECTIONS TO STORMWATER SYSTEMS UNDER BUILDINGS:

IN ACCORDANCE WITH AS 3500.3 SECTION 9.2

CONNECTIONS TO COUNCIL STORMWATER SYSTEMS:

CONNECTION TO COUNCIL STORMWATER SYSTEM TO BE IN ACCORDANCE TO LOCAL COUNCIL DCP AND STANDARDS. NO CONNECTIONS TO BE MADE UNTIL PROPER PERMIT/APPROVALS ARE OBTAINED FROM LOCAL COUNCIL IN WRITING.

WARNING:

EXISTING SERVICES SHOWN ON THESE PLANS ARE NOT GUARANTEED COMPLETE OR CORRECT AND FURTHER INFORMATION IS REQUIRED FROM THE RELEVANT AUTHORITY AND FIELD INVESTIGATION AND ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

LEGEND

SURFACE INLET PIT		GRATED TRENCH DRAIN	
SURFACE INLET PIT (WITH ENVIROPOD 200 MICRON)		ABSORPTION TRENCH	
ACCESS GRATE (WITH GROSS POLLUTANT TRAP)		PROPOSED ROOF GUTTER FALL	
450 SQUARE INTERVAL	450 X 450	PROPOSED DOWNPIPE SPREADER	SP
GRATE LEVEL = 75.50	SL 75.50	STORMWATER PIPE 100mm DIA. MIN. UNO	
INVERT LEVEL = RL 75.20	IL 75.20	SUBSOIL PIPE	
PROPOSED DOWNPIPE 90mm DIA. OR 100mm x 50mm MIN.	DP 90	EXISTING STORMWATER PIPE	
		INSPECTION RISER	IR
NATURAL GROUND FINISHED DESIGN LEVEL	× 10.00	RAINWATER HEAD	RWH

STORMWATER PIT/STRUCTURES NOTES:

PIT SIZES AND DEPTHS:

1. PIT SIZES WILL BE AS FOLLOWS:

DEPTH (mm)	MIN. PIT SIZE (mm)
UP TO 450	350x350
450 – 600	450x450
600 – 900	600x600
900 – 1200	600x900
1200+	900x900 (WITH STEP IRONS)

PIT DESIGNS:

1. TRENCH DRAINS: CONTINUOUS TRENCH DRAINS ARE TO BE MIN. DN150 AND MIN. 100mm DEPTH. THE BARS OF THE GRATE ARE TO BE PARALLEL TO THE DIRECTION OF SURFACE FLOW.
2. STEP IRONS: PITS BETWEEN 1.2m AND 6m ARE TO HAVE STEP IRONS IN ACCORDANCE WITH AS 1657. FOR PITS GREATER THAN 6m OTHER MEANS OF ACCESS MUST BE PROVIDED.
3. PLASTIC/PVC PITS: PVC PITS WILL ONLY BE PERMITTED IF THEY ARE MAX. 450x450 AND MAX. 450mm DEPTH AS WELL AS BEING HEAVY DUTY.
4. IN-SITU PITS: IN-SITU PITS ARE TO BE CONSTRUCTED ON A CONCRETE BED OF AT LEAST 150mm THICK. THE WALLS ARE TO BE DESIGNED TO MEET THE MINIMUM REQUIREMENTS OF CLAUSE 4.6.3 OF AS 3500.4. PITS DEEPER THAN 1.8m SHALL BE CONSTRUCTED WITH REINFORCED CONCRETE.
5. GRATES: GRATES ARE TO BE GALVANIZED STEEL GRID TYPE. GRATES ARE TO BE OF HEAVY-DUTY TYPE IN AREAS WHERE THEY MAY BE SUBJECT TO VEHICLE LOADING.

INSTALLATION NOTES:

1. ALL PIPES INTO PITS TO BE CUT FLUSH WITH PIT WALL.
2. ALL PITS THAT ARE INSTALLED AT GREATER THAN 600mm DEEP TO BE MIN. 600x600 PIT.
3. GRATED COVERS ON PITS GREATER THAN 600mm TO BE HINGED.
4. BASE OF PIT TO BE SAME LEVEL OF INVERT OF OUTLET.
5. OUTLET PIPE FROM ANY PIT TO BE 20mm LOWER THAN INLET PIPE/S

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	B	NZ	UPDATED ARCHITECTURAL PLANS	14.09.2023

DRAWING TITLE: DETAILS, NOTES & LEGEND

PROJECT TITLE: PROPOSED MULTI DWELLING No.10 HOLLAND CRESCENT CASULA

SHEET SIZE	A3	JOB REFERENCE	E220501
DESIGNED	MR	DRAWING No.	D1
CHECKED	NZ		
ISSUE	B	No. IN SET	8
SCALE	-		

AREA CALCULATIONS		
TOTAL SITE AREA	870.8	m²
EXISTING DEVELOPMENT		
ROOF AREA	218.0	m²
PAVED AREA	91.1	m²
DRIVEWAY AREA	17.2	m²
IMPERVIOUS AREA	326.300000	m²
TOTAL IMPERVIOUS AREA PERCENTAGE	37.471291	%
PROPOSED DEVELOPMENT		
PROPOSED ROOF AREA	332.6	m²
PROPOSED PAVED AREA	50.6	m²
PROPOSED DRIVEWAY AREA	226.3	m²
TOTAL IMPERVIOUS AREA	609.500000	m²
TOTAL IMPERVIOUS AREA PERCENTAGE	69.993110	%

RAINWATER RE-USE TANK - BELOW GROUND RWT (PER DWELLING)

(AS PER BASIX REQUIREMENTS)

SIZE: 2,000 LITRES (MIN)
TANK BY "ASC TANKS" OR SIMILAR
(2950L x 1160W x 630H)
INSTALL TO MANUFACTURES SPECIFICATIONS, AS3500 AND COUNCIL REQUIREMENTS

- FOR RE-USE AS SPECIFIED BY BASIX CERTIFICATE
- ENSURE TOP OF TANK IS MIN 1.0m BELOW ROOF GUTTERS TO ENSURE SUFFICIENT HEAD FOR THE SYSTEM
- TANK TO BE INSTALLED BY LICENSED PLUMBER IN ACCORDANCE WITH AS/NZS 3500:2003 AND NSW CODE OF PRACTICE PLUMBING AND DRAINAGE 2006

OSD CALCULATION SUMMARY

STORM (AEP)	1%	20%
PRE-DEVELOPMENT STATE PSD (L/s)	42	27
POST DEVELOPMENT OSD DISCHARGE (L/s)	36	24
POST DEVELOPMENT (L/s) (BYPASSING OSD)	5	3
OSD VOLUME (m^3)	1.9	0.8

THEREFORE POST DEVELOPMENT DISCHARGE LIMITED TO PREDEVELOPED STATE IN ANY STORM EVENT UP TO AND INCLUDING 1% AEP

DRAINAGE PIPE LEGEND

- EXISTING STORMWATER PIPE
- DRAINAGE PIPES TO RAINWATER TANK
- DRAINAGE PIPES VIA GRAVITY
- CHARGED DRAINAGE PIPES
- 65mm DIA CLASS 12 PUMP LINE

NOTE: ALL IN GROUND PIPES TO BE 100mm DIA PVC UNO

INSPECTION RISER (IR)

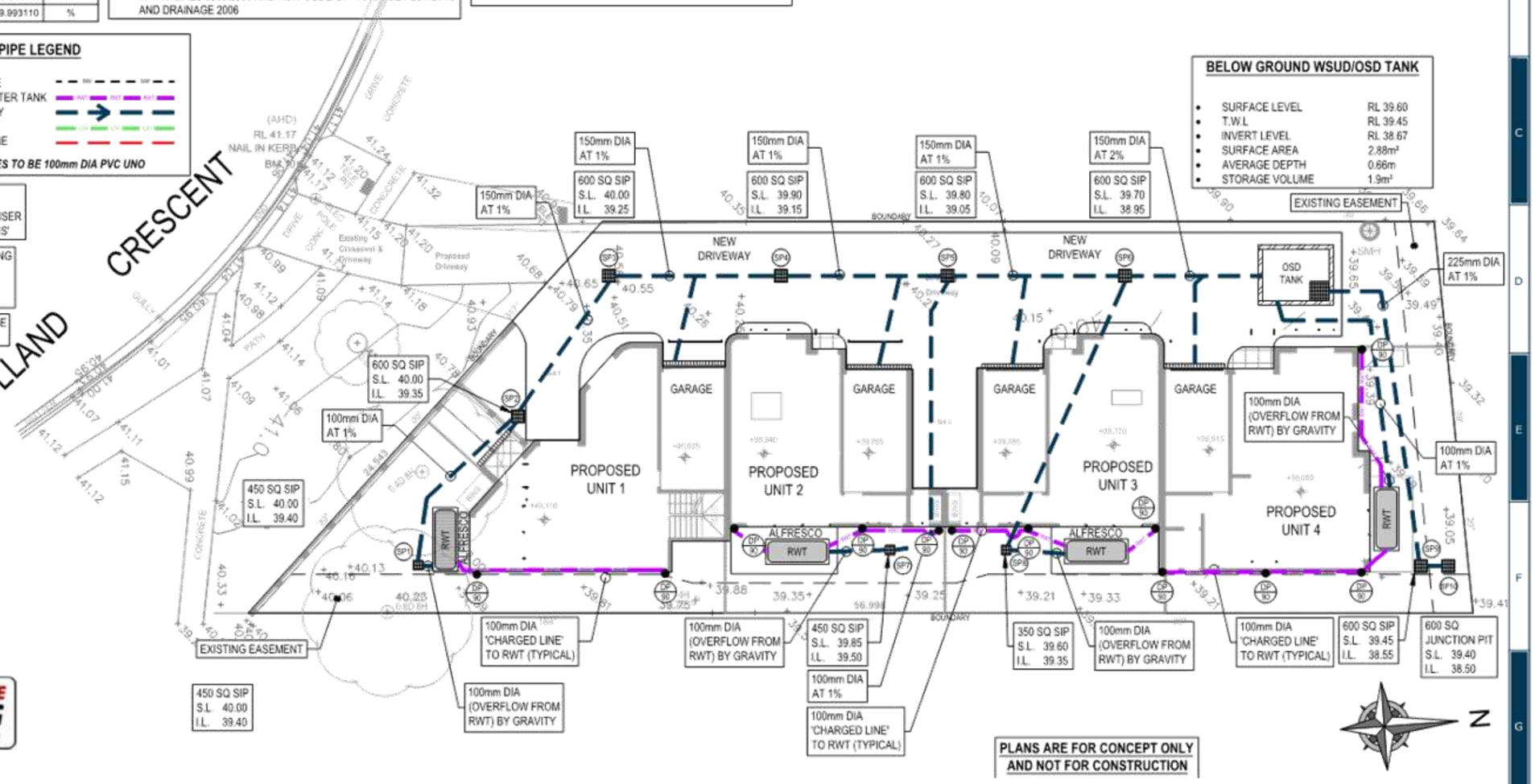
PROVIDE 'SCREW CAP' INSPECTION RISER AT LOWEST POINT OF 'CHARGED LINES'

NOTE: ENSURE ANY PROPOSED PAVING IS GRADED SO THAT IT IS NOT IMPACTING ADJOINING PROPERTIES.

NOTE: ALL GRATED DRAINS ARE TO BE 200mm WIDE UNO

BELOW GROUND WSUD/OSD TANK

SURFACE LEVEL	RL 39.60
T.W.L	RL 39.45
INVERT LEVEL	RL 38.67
SURFACE AREA	2.88m²
AVERAGE DEPTH	0.66m
STORAGE VOLUME	1.9m³



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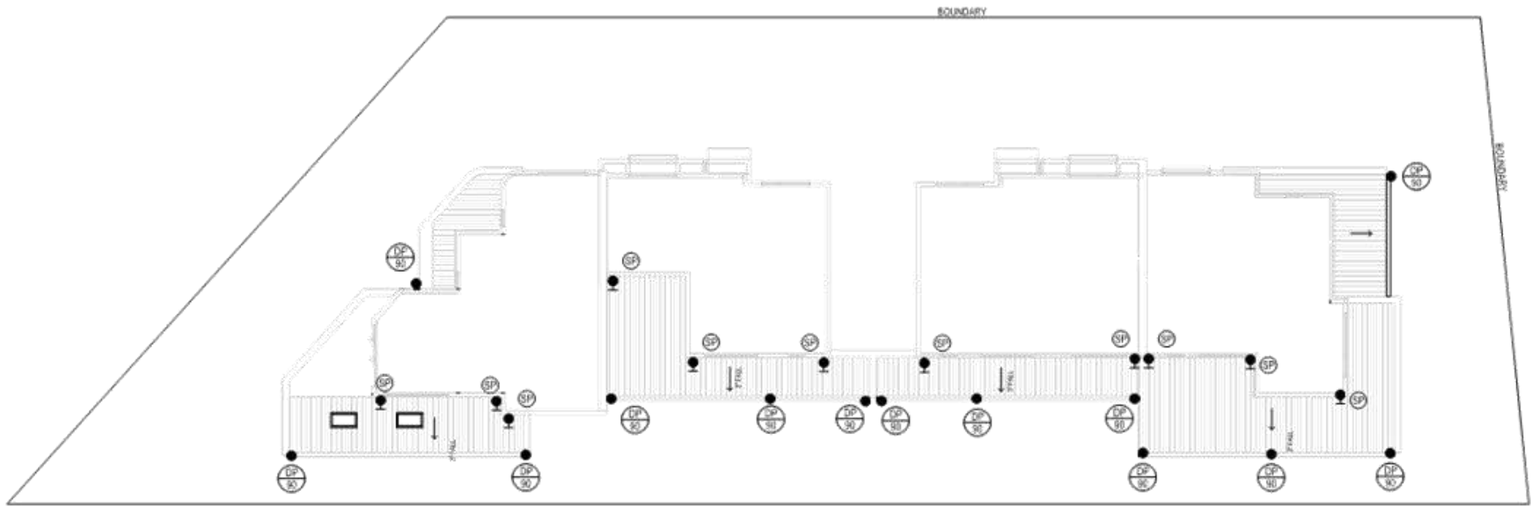
DRAWING TITLE: STORMWATER MANAGEMENT PLAN

PROJECT TITLE: PROPOSED MULTI DWELLING No.10 HOLLAND CRESCENT CASULA

SHEET SIZE	A3	JOB REFERENCE	E220501
DESIGNED	MR	DRAWING No.	D2
CHECKED	NZ		
ISSUE	B	No. IN SET	8
SCALE	1:200		



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DRAWING TITLE
STORMWATER MANAGEMENT
FIRST FLOOR

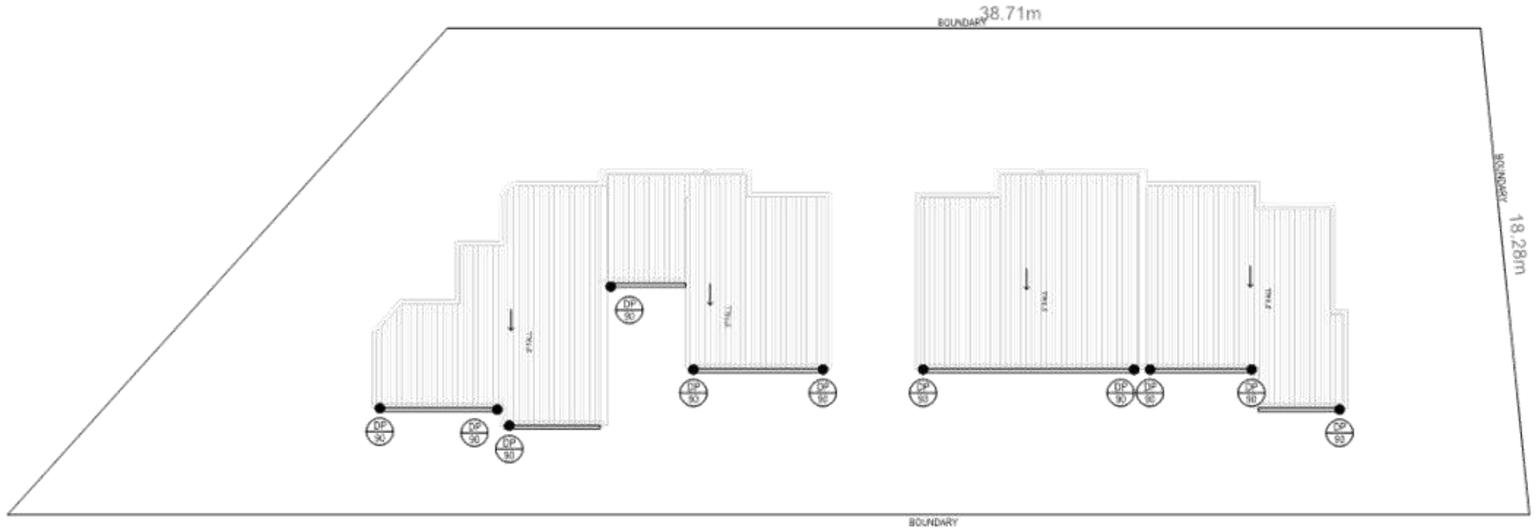
PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

SHEET SIZE	A3
DESIGNED	MR
CHECKED	NZ
ISSUE	B
SCALE	1:200
JOB REFERENCE	E220501
DRAWING No.	D3
No. IN SET	8

ROOF DRAINAGE

- GUTTERING - CROSS SECTIONAL AREA OF GUTTER TO BE GREATER THAN 8500mm²
- DOWN PIPES - 90mm DIA PVC OR COLORBOND

NOTE: ROOF DESIGNED TO 5% AEP INTENSITY 135 mm/hr



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	B	NZ	UPDATED ARCHITECTURAL PLANS	14.09.2023

DRAWING TITLE
STORMWATER MANAGEMENT
ROOF PLAN

PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

SHEET SIZE	A3
DESIGNED	MR
CHECKED	NZ
ISSUE	B
SCALE	1:200

JOB REFERENCE E220501

DRAWING No. D4

No. IN SET 8

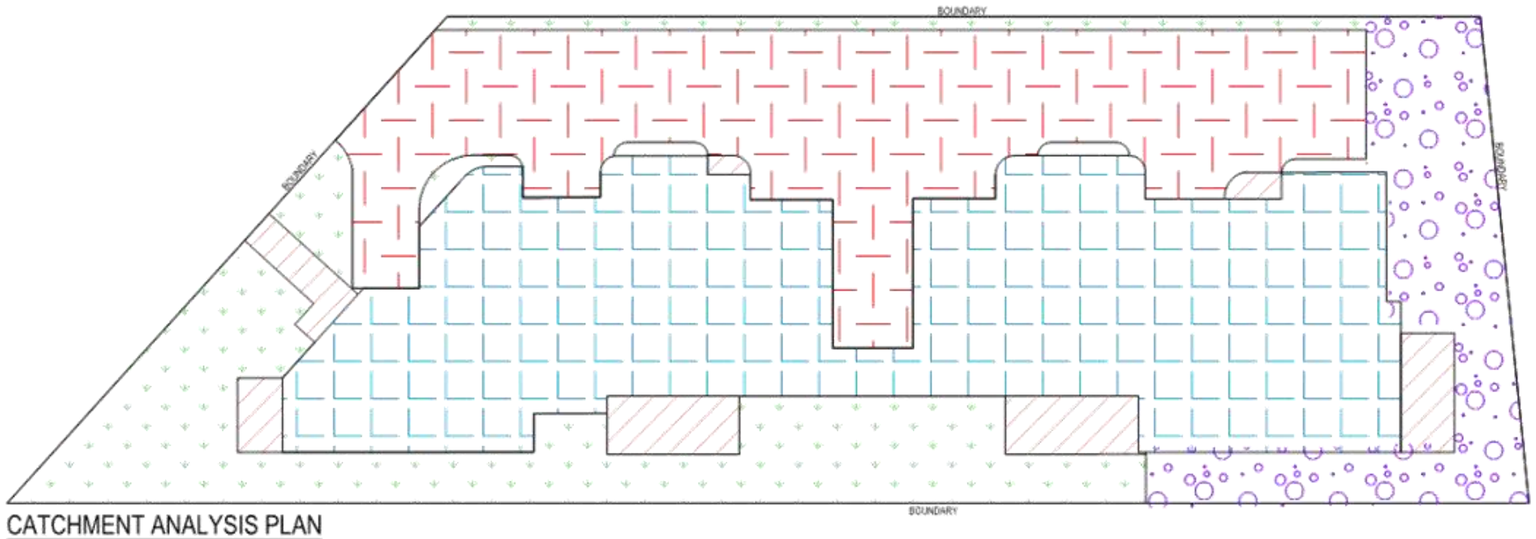
DRIVEWAY AREA = 226.3m^2 TO OSD

LANDSCAPE AREA = 174.9m^2 TO OSD

PAVED AREA = 45.2m^2 TO OSD

ROOF AREA = 332.7m^2 TO RAINWATER TANK AND OSD

BYPASS LANDSCAPE AREA = 91.3m^2 TO BYPASS



CATCHMENT ANALYSIS PLAN
1:200

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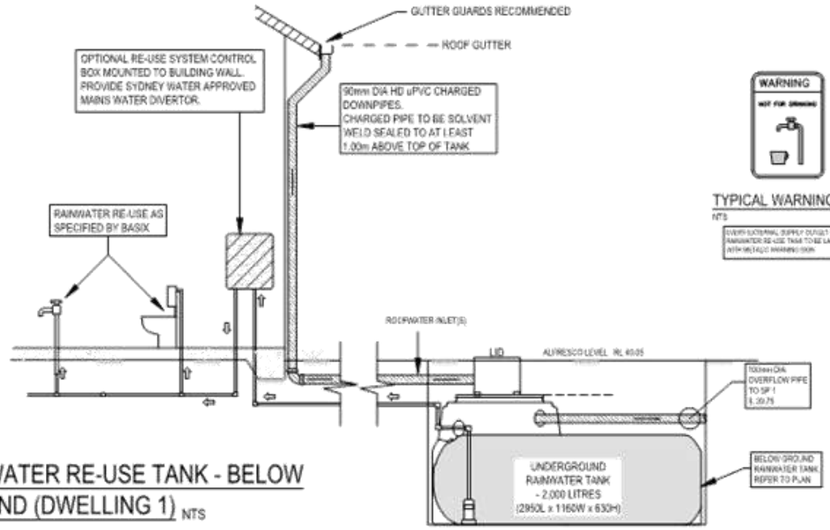
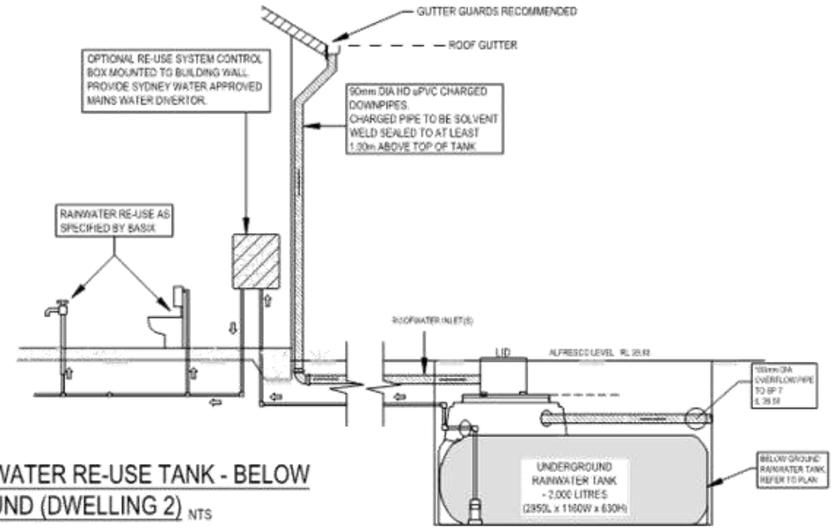
DRAWING TITLE
CATCHMENT ANALYSIS PLAN

PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

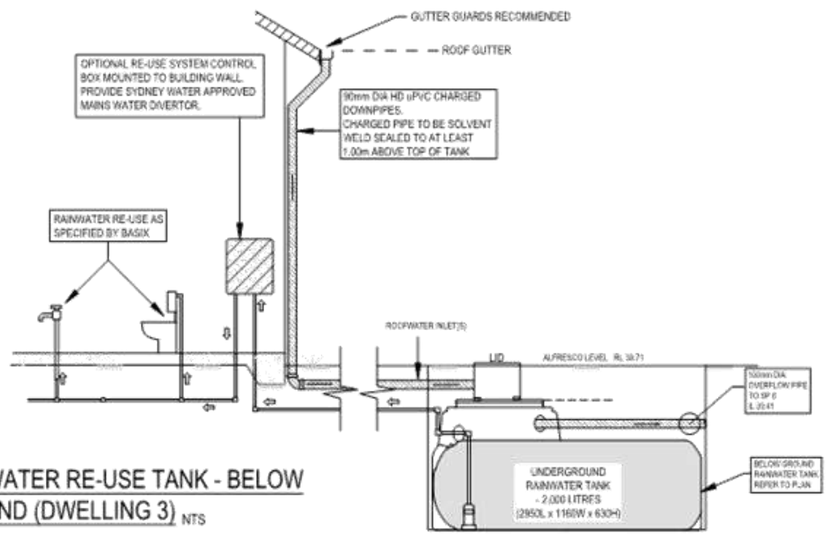
SHEET SIZE	A3
DESIGNED	MR
CHECKED	NZ
ISSUE	B
SCALE	1:200
JOB REFERENCE	E220501
DRAWING No.	D5
No. IN SET	8



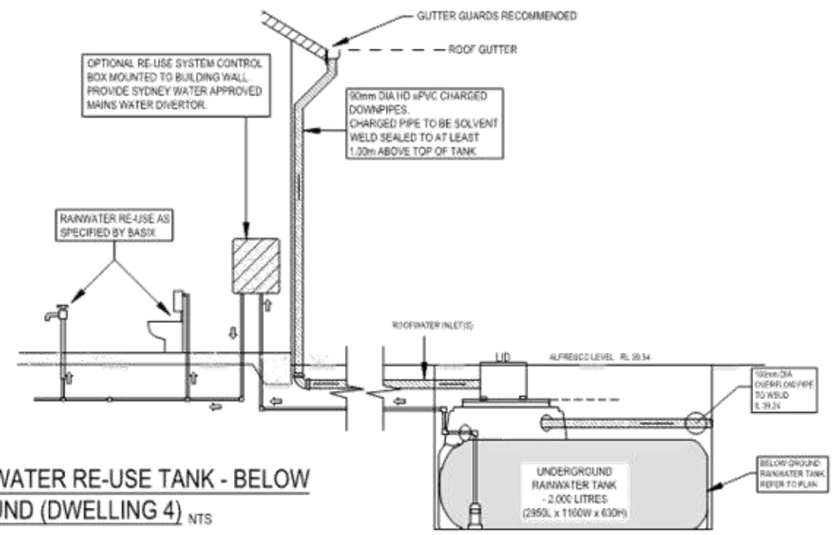
RAINWATER RE-USE TANK - BELOW GROUND (DWELLING 1) NTS



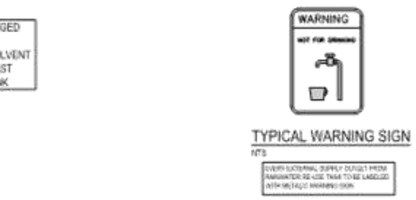
RAINWATER RE-USE TANK - BELOW GROUND (DWELLING 2) NTS



RAINWATER RE-USE TANK - BELOW GROUND (DWELLING 3) NTS



RAINWATER RE-USE TANK - BELOW GROUND (DWELLING 4) NTS



TYPICAL WARNING SIGN
NTS

EVERY SUBSURFACE SUPPLY OUTLET FROM RAINWATER RE-USE TANK TO BE LABELLED WITH METALIC WARNING SIGN

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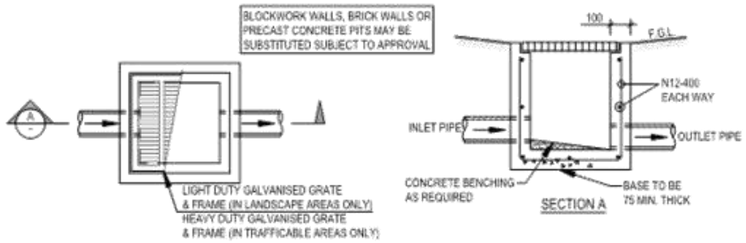
DRAWING TITLE
STORMWATER DETAILS

PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

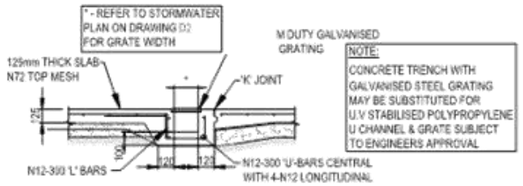
SHEET SIZE	A3	JOB REFERENCE	E220501
DESIGNED	MR	DRAWING No.	D6
CHECKED	NZ		
ISSUE	B	No. IN SET	8
SCALE	AS NOTED		



TYPICAL PIT (SIP)

NTS

NOTE:
ALL PROPOSED SITE PITS ARE TO BE CONSTRUCTED IN CONCRETE CAST IN SITU. PLASTIC OR BRICK PITS ARE NOT ACCEPTABLE. HOWEVER, COUNCIL MAY CONSIDER PRE-CAST UNITS IF THE UNITS ARE PLACED ON A SOLID BASE OF GRAVEL OR CONCRETE OF 75mm THICK AND BACKFILL UP TO HALF THE DEPTH OF THE PIT SURROUND WITH CONCRETE.



GRATED DRAIN

NTS

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DRAWING TITLE
STORMWATER DETAILS

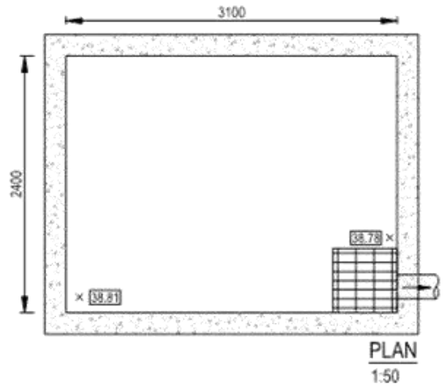
PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

SHEET SIZE	A3
DESIGNED	MR
CHECKED	NZ
ISSUE	B
SCALE	AS NOTED

JOB REFERENCE E220501

DRAWING No. D7

No. IN SET 8



PLAN
1:50

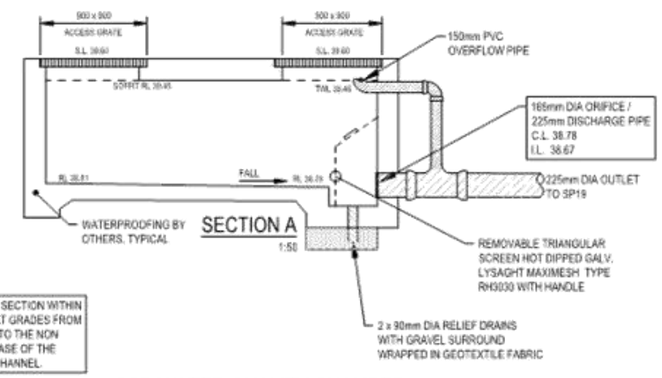
CORNERS: SQUARE
COLOUR: ETCHED AND FILLED BLACK LEGEND ON NATURAL SILVER BACKGROUND
MATERIAL: ALUMINIUM 0.9mm MILL

OSD PLAQUE
NTS

ON-SITE DETENTION
WARNING SIGN
NTS

NOTE:-
1 - SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION OF EACH DETENTION BASIN.

COLOURS:-
TRIANGLE AND 'WARNING' - RED
WATER - BLUE
FIGURE AND OTHER LETTERING - BLACK



SECTION A
1:50

CREATE A V-TYPE CHANNEL SECTION WITHIN THE BASE OF THE TANK THAT GRADES FROM THE TOP END OF THE TANK TO THE NON RETURN FLAP VALVE. THE BASE OF THE TANK TO GRADE TO THE V-CHANNEL.

OSD/WATER QUALITY CHAMBER

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DRAWING TITLE
OSD/WSUD DETAILS

PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

SHEET SIZE A3
DESIGNED MR
CHECKED NZ
ISSUE B
SCALE AS NOTED

JOB REFERENCE
E220501

DRAWING No.
D8

No. IN SET
8

DUST CONTROL:

- NOTE: DURING EXCAVATION, DEMOLITION AND CONSTRUCTION, ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT DUST FROM AFFECTING THE AMENITY OF THE NEIGHBORHOOD.

THE FOLLOWING MEASURES MUST BE ADOPTED:

1. PHYSICAL BARRIERS SHALL BE ERECTED AT RIGHT ANGLES TO PREVENT WIND DIRECTION OR SHALL BE PLACED AROUND OR OVER DUST SOURCES TO PREVENT WIND OR ACTIVITY FROM GENERATING DUST.
2. EARTHWORKS AND SCHEDULING ACTIVITIES SHALL BE MANAGED TO COINCIDE WITH THE NEXT STAGE OF DEVELOPMENT TO MINIMISE THE AMOUNT OF TIME THE SITE IS LEFT TO CUT OR EXPOSED.
3. ALL MATERIALS SHALL BE STORED OR STOCKPILED AT THE BEST LOCATIONS.
4. THE GROUND SURFACE SHOULD BE DAMPENED SLIGHTLY To PREVENT DUST FROM BECOMING AIRBORNE BUT SHOULD NOT BE WET TO THE EXTENT THAT RUN-OFF OCCURS.
5. ALL VEHICLES CARRYING SOIL OR RUBBLE TO OR FROM THE SITE SHALL AT ALL TIMES BE COVERED TO PREVENT THE ESCAPE OF DUST.
6. ALL EQUIPMENT WHEELS SHALL BE WASHED BEFORE EXISTING THE SITE USING MANUAL OR AUTOMATED SPRAYERS AND DRIVE - THROUGH WASHING BAYS.
7. GATES SHALL BE CLOSED BETWEEN VEHICLE MOVEMENTS SHALL BE FITTED WITH SHADE CLOTH.
8. CLEANING OF FOOTPATHS AND ROADWAYS SHALL CARRIED OUT DAILY.
9. ALL BUILDERS REFUSE, SPOIL AND/OR MATERIAL UNSUITABLE FOR USE IN LANDSCAPE AREAS SHALL BE REMOVED FROM SITE ON COMPLETION OF THE BUILDING WORKS.

NOTES:

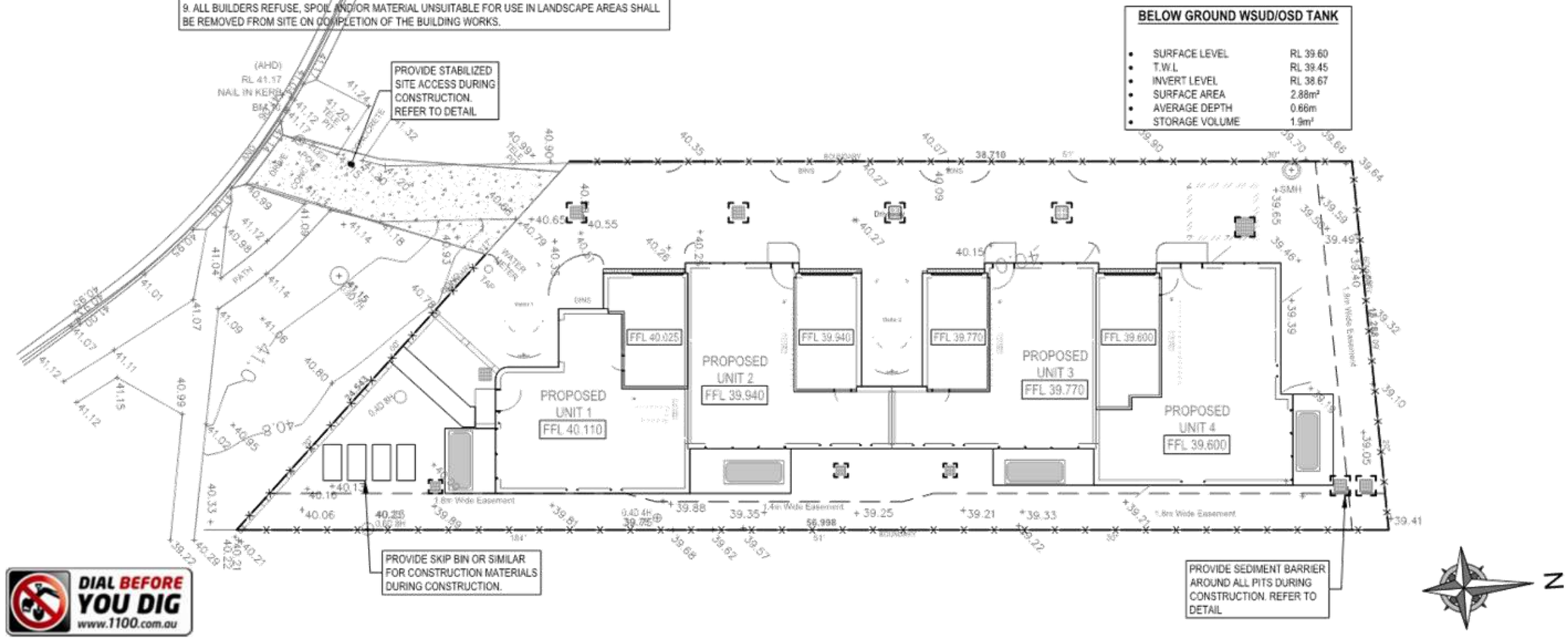
1. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER IN ACCORDANCE WITH COUNCIL REQUIREMENTS.
2. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
3. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
4. ROADS AND FOOTPATH TO BE SWEPT DAILY AS REQUIRED BY COUNCIL.
5. IF YOU DO NOT COMPLY WITH COUNCIL REQUIREMENTS & DOCUMENTATION, YOU MAY BE LIABLE TO PROSECUTION FROM GOVERNMENT AUTHORITIES .

LEGEND:

- UNDISTURBED VEGETATION
- SEDIMENT FENCE
- STOCK PILES
- STABILIZED SITE ACCESS
- MESH & GRAVEL INLET FILTER
- WATER DIVERSION
- STORMWATER PIT WITH SEDIMENT BARRIER

BELOW GROUND WSUD/OSD TANK

SURFACE LEVEL	RL 39.60
T.W.L	RL 39.45
INVERT LEVEL	RL 38.67
SURFACE AREA	2.88m²
AVERAGE DEPTH	0.66m
STORAGE VOLUME	1.9m³



NY CIVIL ENGINEERING

APPROVED BY	REVISION	DRAWN	DESCRIPTION	DATE
NADER ZAKI MIEAust CPEng NER	A	MR	ISSUED FOR DA	16.11.2022
	B	NZ	UPDATED ARCHITECTURAL PLANS	14.09.2023

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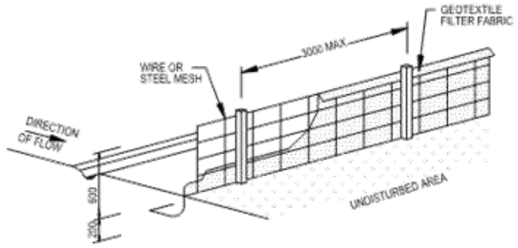
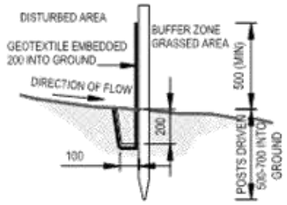
DRAWING TITLE
SEDIMENT CONTROL PLAN

PROJECT TITLE
PROPOSED MULTI DWELLING
No.10 HOLLAND CRESCENT
CASULA

SHEET SIZE	A3	JOB REFERENCE	E220501
DESIGNED	MR	DRAWING No.	D9
CHECKED	NZ		
ISSUE	B	No. IN SET	8
SCALE	1:200		



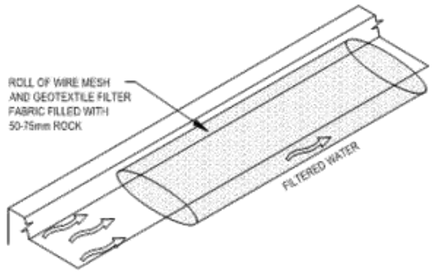


SEDIMENT FENCE DETAIL

NTS

CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENTS AREA OF ANY ONE SECTION. THE CATCHMENTS AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.5m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

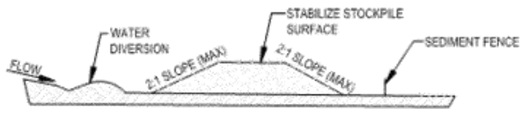


MESH AND GRAVEL FILTER

NTS

CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm(h) x 400mm(w).
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

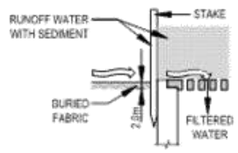


STOCKPILE

NTS

NOTE:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METERS FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILIZE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (LOW FLOW) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METERS ON THE DOWNSLOPE.

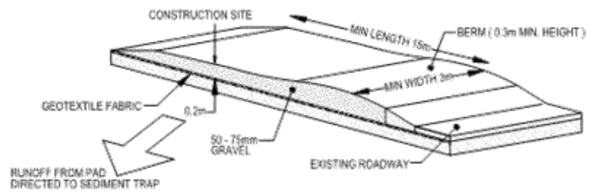


SEDIMENT BARRIER AROUND PIT

NTS

CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES
2. FOLLOW STRAW FILTER AND SEDIMENT FENCE FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.



STABILIZED SITE ACCESS

NTS

CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASED OR 30mm AGGREGATE
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILD ALIGNMENT AND AT LEAST 3 METERS WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILIZED ACCESS, CONSTRUCT A HUMP IN THE STABILIZED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

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APPROVED BY	REVISION	DRAWN	DESCRIPTION	DATE
NADER ZAKI MIEAust CPEng NER	A	MR	ISSUED FOR DA	16.11.2022
	B	NZ	UPDATED ARCHITECTURAL PLANS	14.09.2023

DRAWING TITLE: SEDIMENT CONTROL DETAILS

PROJECT TITLE: PROPOSED MULTI DWELLING No.10 HOLLAND CRESCENT CASULA

SHEET SIZE	A3	JOB REFERENCE	E220501
DESIGNED	MR	DRAWING No.	D10
CHECKED	NZ		
ISSUE	B	No. IN SET	8
SCALE	AS NOTED		

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 1748380M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Tuesday, 21 May 2024
To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.

NSW GOVERNMENT

Project summary	
Project name	10 Holland Crescent, Casula (ncc 2022)
Street address	10 HOLLAND CRESCENT CASULA 2170
Local Government Area	LIVERPOOL
Plan type and plan number	Deposited Plan DP31050
Lot no.	10
Section no.	-
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	4
No. of single dwelling houses	0

Project score		
Water	✔ 40	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 73	Target 70
Materials	✔ -22	Target n/a

Certificate Prepared by
Name / Company Name: BONNEFIN CONSULTING PTY LTD
ABN (if applicable): 95164564210

Description of project

Project address	
Project name	10 Holland Crescent, Casula (ncc 2022)
Street address	10 HOLLAND CRESCENT CASULA 2170
Local Government Area	LIVERPOOL
Plan type and plan number	Deposited Plan DP31050
Lot no.	10
Section no.	-
Project type	
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	4
No. of single dwelling houses	0
Site details	
Site area (m²)	866.28
Roof area (m²)	320
Non-residential floor area (m²)	-
Residential car spaces	5
Non-residential car spaces	-

Common area landscape	
Common area lawn (m²)	60.80
Common area garden (m²)	0.00
Area of indigenous or low water use species (m²)	-
Assessor details and thermal loads	
Assessor number	10056
Certificate number	0008238970
Climate zone	28

Project score		
Water	✔ 40	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 73	Target 70
Materials	✔ -22	Target n/a

Description of project

The tables below describe the dwellings and common areas within the project

Multi-dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1	3	106	20.9	77.00	-
2	2	78	26.4	30.00	-
3	2	87.5	26.4	29.50	-
4	3	99	30	64.00	-

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling housing
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Performance

2. Commitments for common areas and central systems/facilities for the development (non-building specific)
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carriedout. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for multi-dwelling housing

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 4.5 but <= 6 L/min)	4 star	4 star	4 star	-	-	-	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	Individual water tank (No. 1)	Tank size (min) 2000.00 liters	To collect run-off from at least: 50.00 square metres of roof area;	yes	yes	no	no	no
All dwellings	No alternative water supply	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	
(j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system.	✔	✔	✔

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous - 5 star	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
1	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1	yes

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
2	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	2	yes
3	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	2	yes
All other dwellings	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	1-phase airconditioning - non ducted / 6 star (average zone)	3	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	gas cooktop & electric oven	-	-	no	yes

	Alternative energy		
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)	Photovoltaic collector installation	Orientation inputs
All dwellings	-	-	-

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✔		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✔	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
1	37.9	21.4	59.300
2	32.9	25.9	58.800
3	29.6	30	59.600
All other dwellings	29	29	58.000

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground (m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
1	82.9	3.4	3.4	18.00	no
2	67.1	2.1	2.1	18.00	no
3	67.1	2.2	2.2	17.00	no

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground (m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
All other dwellings	87.4	4.9	4.9	18.00	no

	Floor types									
	Concrete slab on ground				Suspended floor above enclosed subfloor			Suspended floor above open subfloor		
Dwelling no.	Area (m²)	Insulation	Low emissions option	Dematerialisation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
1	82.9	fibreglass batts or roll	-	conventional slab	concrete - suspended, frame: timber - untreated softwood	3.4	fibreglass batts or roll	particle board, frame: timber - untreated softwood	3.4	fibreglass batts or roll
2	67.1	-	-	conventional slab	particle board, frame: timber - untreated softwood	2.1	fibreglass batts or roll	particle board, frame: timber - untreated softwood	2.1	fibreglass batts or roll
3	67.1	-	-	conventional slab	concrete - suspended, frame: timber - untreated softwood	2.2	-	particle board, frame: timber - H2 treated softwood	2.2	fibreglass batts or roll
All other dwellings	87.4	-	-	conventional slab	concrete - suspended, frame: timber - untreated softwood	4.9	-	particle board, frame: timber - untreated softwood	4.9	-

	Floor types										
	First floor above habitable rooms or mezzanine			Suspended floor above garage			Garage floor				
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Low emissions option	Dematerialisation
1	particle board, frame: timber - untreated softwood	49.4	fibreglass batts or roll	-	18.00	-	concrete slab on ground, frame: timber - untreated softwood	17.36	fibreglass batts or roll	-	conventional slab
2	particle board, frame: timber - untreated softwood	42.8	fibreglass batts or roll	-	18.00	-	concrete slab on ground	17.67	-	none	conventional slab
3	particle board, frame: timber - untreated softwood	52.4	fibreglass batts or roll	-	17.00	-	concrete slab on ground, frame: timber - untreated softwood	17.67	-	-	conventional slab
All other dwellings	particle board, frame: timber - untreated softwood	44.9	-	-	18.00	-	concrete slab on ground	17.67	-	none	conventional slab

	External walls							
	External wall type 1				External wall type 2			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
1	framed (fibre cement sheet or boards), frame : timber - untreated softwood	81.5	fibreglass batts or roll	none	brick veneer, frame : timber - untreated softwood	36.7	fibreglass batts or roll	none
2	framed (fibre cement sheet or boards), frame : timber - untreated softwood	72.5	fibreglass batts or roll	none	brick veneer, frame : timber - untreated softwood	35.40	fibreglass batts or roll	none

	External walls							
	External wall type 1				External wall type 2			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
3	framed (fibre cement sheet or boards), frame : timber - untreated softwood	64.5	fibreglass batts or roll	none	brick veneer, frame : timber - untreated softwood	35.40	fibreglass batts or roll	none
All other dwellings	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	50.6	fibreglass batts or roll	none	brick veneer, frame : timber - H2 treated softwood	55.7	fibreglass batts or roll	none

	External walls							
	External wall type 3				External wall type 4			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
1	cavity brick, frame : timber - untreated softwood	14.1	fibreglass batts or roll	none	-	-	-	-
All other dwellings	-	-	-	-	-	-	-	-

	Internal walls								
	Internal walls shared with garage			Internal wall type 1			Internal wall type 2		
Dwelling no.	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation
1	plasterboard, frame: timber - untreated softwood	22.28	fibreglass batts or roll	plasterboard, frame: timber - untreated softwood	67.02	fibreglass batts or roll	cavity brick wall, frame: timber - untreated softwood	28.9	fibreglass batts or roll
2	-	-	-	plasterboard, frame: timber - untreated softwood	68.2	fibreglass batts or roll	cavity brick wall, frame: timber -	33	fibreglass batts or roll

	Internal walls								
	Internal walls shared with garage			Internal wall type 1			Internal wall type 2		
Dwelling no.	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation
							untreated softwood		
3	plasterboard, frame: timber - untreated softwood	22.06	fibreglass batts or roll	plasterboard, frame: timber - untreated softwood	51.94	-	cavity brick wall, frame: timber - untreated softwood	40.6	fibreglass batts or roll
All other dwellings	plasterboard, frame: timber - untreated softwood	22.55	fibreglass batts or roll	plasterboard, frame: timber - untreated softwood	84.45	-	cavity brick wall, frame: timber - untreated softwood	35.7	fibreglass batts or roll

	Ceiling and roof								
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
4	-	-	-	-	-	-	framed - metal roof, frame: timber - H2 treated softwood	98	-
All other dwellings	-	-	-	-	-	-	framed - metal roof, frame: timber - H2 treated softwood	74	-

	Glazing type			Frame types				
Dwelling no.	Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
1	-	24	-	24	-	-	-	-
2	-	24.9	-	24.9	-	-	-	-
3	-	25.3	-	25.3	-	-	-	-

	Glazing type			Frame types				
Dwelling no.	Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
All other dwellings	-	24.2	-	24.2	-	-	-	-

2. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

Central energy systems	Type	Specification
Other	-	-

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).

Nationwide House Energy Rating Scheme®
Multiple Class 1 dwellings Summary
NatHERS® Certificate No. 0008238970

Generated on 14 May 2024 using BERS Pro v5.1.7 (3.22)

Property

Address	10 Holland Crescent, Casula , NSW , 2170
Lot/DP	Lot 10 DP 31050
NatHERS Climate Zone	28 Richmond

Accredited assessor

Name	Jamie Bonnefin
Business name	Certified Energy
Email	jobs@certifiedenergy.com.au
Phone	1300 443 674
Accreditation No.	10056

Assessor Accrediting Organisation

HERA

Verification

To verify this certificate, scan the QR code or visit hstar.com.au/QR/Generate?p=KOPfgVZvg . When using either link, ensure you are visiting hstar.com.au

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) [MJ/m²/p.a.]	Cooling load (load limit) [MJ/m²/p.a.]	Total load [MJ/m²/p.a.]	Star Rating	Whole of Home Rating
0009449463	1	37.9 (N/A)	21.4 (N/A)	59.3	7	0
0009449489	2	32.9 (N/A)	25.9 (N/A)	58.8	7.1	0

Summary of all dwellings (continued)

Certificate number and link	Unit Number	Heating load (load limit) [MJ/m²/p.a.]	Cooling load (load limit) [MJ/m²/p.a.]	Total load [MJ/m²/p.a.]	Star Rating	Whole of Home Rating
0009449471	3	29.6 (N/A)	30.0 (N/A)	59.7	7	0
0009449497	4	29.0 (N/A)	29.0 (N/A)	58.0	7.1	0

Explanatory notes

About this ratings

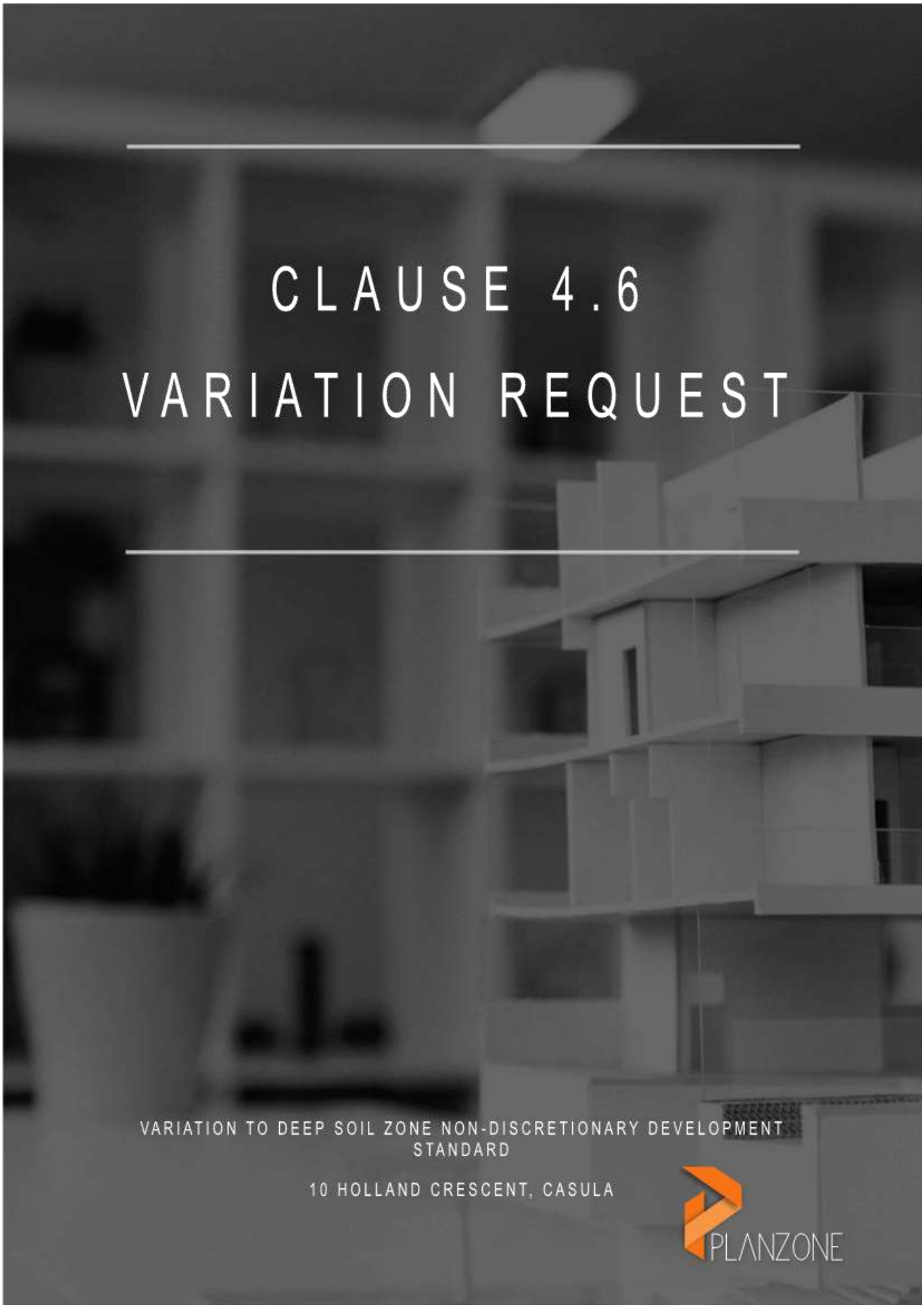
Individual unit ratings are listed in the 'Summary of all dwellings' section of this Certificate.
NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the energy loads and societal cost. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy production and storage to estimate the homes societal cost .
For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

Accredited Assessors

For high quality NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.
Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.
Licensed assessors in the Australian Capital Territory (ACT) can produce assessments for regulatory purposes only, using endorsed software, as listed on the ACT licensing register.
Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in certificates is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.
The predicted annual energy use, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.
Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.
Not all assumptions made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.



CLAUSE 4.6 VARIATION REQUEST

VARIATION TO DEEP SOIL ZONE NON-DISCRETIONARY DEVELOPMENT STANDARD

10 HOLLAND CRESCENT, CASULA

PLANZONE

PLANZONE

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1 INTRODUCTION

This Clause 4.6 Variation Request has been prepared to accompany the Development Application (DA) to Liverpool City Council seeking consent for demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front brick fence and associated landscaping at 10 Holland Crescent, Casula.

The Clause 4.6 Variation Request relates to the ***"deep soil zone"*** non-discretionary development standard prescribed under Chapter 2, Part 2, Division 1, Section 18(2)(d) of *State Environmental Planning Policy (Housing) 2021* (the Housing SEPP), which states that:

> *(d) a deep soil zone on at least 15% of the site area, where—*
> *(i) each deep soil zone has minimum dimensions of 3m, and*
> *(ii) if practicable, at least 65% of the deep soil zone is located at the rear of the site*

It is noted that the development standard refers to defined terms ***"deep soil zone"*** which in itself refers to the defined term ***"landscaped area"*** which are as follows:

> ***deep soil zone*** *means a landscaped area with no buildings or structures above or below the ground.*

> ***landscaped area*** *means the part of the site area not occupied by a building and includes a part used or intended to be used for a rainwater tank, swimming pool or open-air recreation facility, but does not include a part used or intended to be used for a driveway or parking area.*

The development includes part of the ***"deep soil zone"*** located within the noted "Proposed Easement" for drainage that is 1.83 metres wide that burdens the depth of the site along its eastern boundary and the width of the site along its northern boundary, as highlighted on the Survey and Landscape Plans below:

FIGURE 1: SURVEY PLAN

FIGURE 2: LANDSCAPE PLAN

The proposed development includes deep soil zones and landscaped areas within the "Proposed Easement" including the use of species with non-aggressive roots in order to minimise impacts on the "Proposed Easement". Notwithstanding this, Council has indicated that a ***"deep soil zone"*** is not supported over any easement area and that the nominated ***"deep soil zone"*** areas on the plans would not meet the requirements of a ***"deep soil zone"*** due to a structure being immediately underground.

It is acknowledged that there is a single existing pipe within the "Proposed Easement" that has been located and marked on the Service Protection Report prepared by Opal Water Management that accompanies the amended plans submitted for the application and partly reproduced below:

FIGURE 3: SERVICE INSPECTION REPORT

An overlay of the deep soil plan and the Service Protection Report plan is provided below which shows the impacted areas of the ***"deep soil zone"*** in the development:

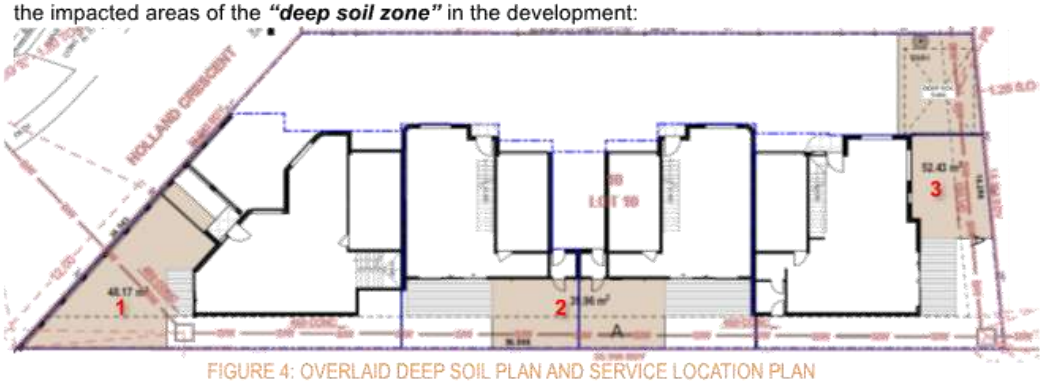

FIGURE 4: OVERLAID DEEP SOIL PLAN AND SERVICE LOCATION PLAN

Deep soil area 2 marked on the above figure has a depth of 9.97 metres. Whilst the existing 450mm pipe within the eastern easement would therefore only affect 4.49m^2 of deep soil area, the centreline of the pipe is positioned 750mm from the eastern boundary as detailed on the Service Protection Report. With the addition of the remaining 225mm pipe width, a total deep soil width of 975mm is therefore potentially affected along the eastern boundary ***"deep soil zone"*** noted as Area 2 in the above figure given that areas with dimensions of less than 3 metres are excluded. Deep soil area 2 marked on the above figure has a depth of 9.97 metres, which would therefore result in a technical loss of 9.72m^2 of ***"deep soil zone"*** in this area.

A total deep soil width of 450mm is potentially affected within the front setback deep soil area noted as Area 1 in the above figure which has a depth of 4.95 metres. This would therefore result in a technical loss of 2.23m^2 of ***"deep soil zone"*** in this area. The sides on either side of the pipe remain more than 3 metres in dimension and therefore remain otherwise unaffected by the pipe.

Deep soil area 3 marked on the above figure has a depth of 11.9 metres. Whilst the existing 150mm pipe within the eastern easement would therefore only affect 1.79m^2 of deep soil area, the centreline of the existing 150mm diameter pipe within the eastern easement is positioned 1.25 metres from the northern boundary as detailed on the Service Protection Report. With the addition of the remaining 75mm pipe width, a total deep soil width of 2 metres is potentially affected along the northern boundary ***"deep soil zone"*** noted as Area 3 in the above figure. Deep soil area 3 marked on the above figure has a depth of 11.9 metres, which would therefore result in a technical loss of the entire 52.43m^2 of ***"deep soil zone"*** in this area based on the dimension requirement.

Overall, the development would consequently result in a reduced ***"deep soil zone"*** area of 140.56m^2 - 9.72m^2 (Area 1) - 2.23m^2 (Area 2) - 52.43m^2 (Area 3) = 76.18m^2 and therefore technically only achieving 8.8% ***"deep soil zone"***.

Notwithstanding this, the existence of a single pipe that has a 450mm (eastern) and 150mm (northern) diameter as noted on the above will have minimal impacts in terms of the development satisfying the ***"deep soil zone"*** and ***"landscaped area"*** definitions of the Housing SEPP because the pipes themselves, being the physical structures underground, are located at a depth of approximately 1 metre below the ground surface as detailed on the stormwater plans accompanying the DA. Therefore, the selection of species with non-aggressive roots would minimise impacts on the "Proposed Easement" and still allow for deep soil "***landscaped area"*** to be achieved within the easement and therefore satisfy the objective of the development standard.

Furthermore, the reduction in total ***"deep soil zone"*** for the development is not a true reflection of lost deep soil with a substantial amount of deep soil still achieved on the site totalling 29.2% or 252.77m^2 actual deep soil when areas that do not meet the minimum 3 metre dimension requirement are included.

This request has been prepared having regard to the matters for consideration prescribed in Clause 4.6 in the LEP and demonstrates that compliance with the development standard is unreasonable and unnecessary in the circumstances of the case, and that there are sufficient environmental planning grounds to justify contravening the development standard.

It is noted that Section 18(2)(d) of the Housing SEPP is not excluded from consideration under Clause 4.6(8) in the LEP. The variation request has also been prepared having regard to the findings and decisions in various case law including:

- *Wehbe v Pittwater Council [2007] NSW LEC 827;*
- *Four2Five Pty Ltd v Ashfield Council [2015] NSWLEC 1009;*
- *Randwick City Council V Micaul Holdings Pty Ltd [2016] NSWLEC 7;*
- *Initial Action v Woollahra Municipal Council [2018] NSWLEC 118;*
- *Brigham v Canterbury-Bankstown Council [2018] NSWLEC 1406;*
- *Turland v Wingercarribee Shire Council [2018] NSWLEC 1511;* and
- *Rebel MH Neutral Bay Pty Ltd v North Sydney Council [2019] NSWCA 130.*

This Clause 4.6 Variation Request meets the objectives of Clause 4.6(1) in the LEP:

> *(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,*
> *(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.*

and demonstrates for the purpose of Clause 4.6(3) in the LEP:

> *(a) compliance with the development standard is unreasonable or unnecessary in the circumstances, and*
> *(b) there are sufficient environmental planning grounds to justify the contravention of the development standard.*

2 REVIEW OF CASE LAW

The main principles adopted by the Land and Environment Court of NSW (L&EC) in considering Clause 4.6 variation requests to development standards have been established in the proceedings of *Wehbe v Pittwater Council [2007] NSW LEC 827* and *Randwick City Council v Micaul Holdings Pty Ltd [2016] NSWLEC 7*.

The relevant principles of those proceedings are as follows:

2.1 WEHBE V PITTWATER COUNCIL [2007] NSW LEC 827

In these proceedings, Justice Preston set out the following five ways in which compliance with a development standard could be established as being unreasonable or unnecessary:

1. *Are the objectives of the development standard are achieved notwithstanding non-compliance with the standard;*
2. *Is the underlying objective or purpose not relevant to the development with the consequence that compliance is unnecessary;*
3. *Would the underlying objective or purpose be defeated or thwarted if compliance was required with the consequence that compliance is unreasonable;*
4. *Has the development standard been virtually abandoned or destroyed by the Council's own actions in granting consents departing from the standard; or*
5. *Is "the zoning of particular land" "unreasonable or inappropriate" so that "a development standard appropriate for that zoning was also unreasonable or unnecessary as it applied to that land".*

2.2 RANDWICK CITY COUNCIL V MICAUL HOLDINGS PTY LTD [2016] NSWLEC 7

In these proceedings, Preston CJ approved the following four stage test to ensure that the Court was satisfied that the variation request should be granted:

1. *That compliance with the development standard must be unreasonable or unnecessary in the circumstances of the case;*
2. *That there are sufficient environmental planning grounds to justify contravening the development standard;*
3. *That the applicant's written request has adequately addressed the matters required to be demonstrated by subclause (3); and*
4. *That the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out.*

3 SITE & PLANNING CONTEXT

ADDRESS:	10 Holland Crescent, Casula	
LEGAL DESCRIPTION:	Lot 10 in DP 31050	
SITE AREA:	866.28m² (by survey)	
DIMENSIONS:	**BOUNDARY**	**DIMENSION**
	Front (Southern):	24.543 metres
	Rear (Northern):	18.288 metres
	Side (Western):	38.710 metres
	Side (Eastern):	56.998 metres
ORIENTATION:	The site is situated on the north-eastern corner of Holland Crescent, Casula as shown in Figure 3.	
LOCATION MAP:		

FIGURE 5: LOCATION MAP

AERIAL MAP:

FIGURE 6: AERIAL PHOTO

EXISTING IMPROVEMENTS:	The subject site contains a 2 storey dwelling with detached shed.
EXISTING VEGETATION:	The subject site contains several trees and vegetation positioned towards the front southern boundary.
SURROUNDS:	The local surrounding area is characterised by medium density residential dwellings to the north, south and west and Casula Public School to the east.
PAST USES AND DEVELOPMENT HISTORY:	The subject site is known to have always been used for residential development.

The subject DA seeks consent for the demolition of existing structures, construction of a multi-dwelling development consisting of four (4) attached townhouses, garages, front brick fence and associated landscaping at 10 Holland Crescent, Casula. The development remains defined as ***'multi dwelling housing'*** pursuant to the definitions contained in the LEP:

> "***multi dwelling housing*** *means 3 or more dwellings (whether attached or detached) on one lot of land, each with access at ground level, but does not include a residential flat building.*"

A detailed description of the proposed development has been provided within the Statement of Environmental Effects (SEE) accompanying the DA and should be referred to in conjunction with this request.

4 CLAUSE 4.6 VARIATION REQUEST & ASSESSMENT

1. ***What is the name of the environmental planning instrument that applies to the land?***

   State Environmental Planning Policy (Housing) 2021

2. ***What is the zoning of the land?***

   The site is zoned R3 Medium Density Residential.

3. ***What are the objectives of the zone?***

   - *To provide for the housing needs of the community within a medium density residential environment.*
   - *To provide a variety of housing types within a medium density residential environment.*
   - *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
   - *To provide for a concentration of housing with access to services and facilities.*
   - *To provide for a suitable visual transition between high density residential areas and lower density areas.*
   - *To ensure that a high level of residential amenity is achieved and maintained.*

4. ***What is the development standard being varied?***

   Deep Soil Zone

5. ***What clause is the development standard listed in the environmental planning instrument?***

   Chapter 2, Part 2, Division 1, Section 18(2)(d) of *State Environmental Planning Policy (Housing) 2021*

6. ***What are the objectives of the development standard?***

   (1) The object of this section is to identify development standards for particular matters relating to development for the purposes of in-fill affordable housing that, if complied with, prevent the consent authority from requiring more onerous standards for the matters

7. ***What is the numeric value of the development standard?***

   15% (129.94m^2 and minimum 3 metre dimensions)

8. ***What is proposed numeric value of the development standard?***

   8.8% (76.18m^2)

9. ***What is the percentage variation proposed?***

   N/A

4.1 CLAUSE 4.6(3)(A)

DEMONSTRATE THAT COMPLIANCE WITH THE DEVELOPMENT STANDARD IS UNREASONABLE OR UNNECESSARY IN THE CIRCUMSTANCES.

The following assessment outlines that compliance with the development standard would be unreasonable and unnecessary in the circumstances of the case, particularly referencing the test established in *Initial Action Pty Ltd v Woollahra Municipal Council [2018] NSWLEC 118* (the Initial

Action case) which confirmed the approach as held in *Randwick City Council v Micaul Holdings Pty Ltd [2016] NSWLEC7* (the Micaul case) as follows:

In the Initial Action case, Preston CJ concluded:

- *Clause 4.6(4) of an LEP establishes preconditions that must be satisfied before a consent authority can exercise the power to grant development consent for development that contravenes a development standard.*
- *The first opinion of satisfaction in clause 4.6(4)(a)(i) is whether the clause 4.6 request has adequately addressed the matters required to be demonstrated in clause 4.6(3). Those matters are:*
  - *that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case; and*
  - *that there are sufficient environmental planning grounds to justify contravening the development standard.*
- *The consent authority does not have to directly form the opinion of satisfaction regarding these matters, but only indirectly form the opinion of satisfaction that the written request has adequately addressed these matters.*
- *The second opinion of satisfaction in clause 4.6(4)(a)(ii) is that the proposed development will be in the public interest because it is consistent with the objectives of the particular development standard that is contravened and the objectives for development for the zone in which the development is proposed to be carried out.*
- *The consent authority must be directly satisfied that the clause 4.6 request adequately addresses the matter in clause 4.6(4)(a)(ii), which is not merely that the proposed development will be in the public interest, but that it will be in the public interest because it is consistent with the objectives of the development standard and the objectives for development in the zone.*

Furthermore, this Clause 4.6 Variation Request and the assessment that follows establishes that the objectives of the development standard are achieved notwithstanding non-compliance with the numerical component of the development standard as set out in the 5-part test established in *Wehbe v Pittwater Council [2007] NSW LEC 827* (the Wehbe case).

The local surrounding area is mainly characterised by medium density buildings as well as an educational establishment to the east. Immediately to the west of the site at 6 and 8 Holland Crescent, to the north at 6-8 De Meyrick Avenue and opposite to the south at 5 Holland Crescent are multi dwelling housing developments that have been constructed within the past 8 years. The dwellings typically present as 2 storey built forms, some above basement, in a variety of typologies and designs including modern and contemporary buildings.

Of particular note are the immediately adjoining developments at 6 and 8 Holland Crescent that take the form of a row of 2 storey attached dwellings, each with minimal landscaping along the eastern side boundaries alongside driveways and within setbacks. The subject application proposes a 2 storey appearance which is wholly consistent with the approved and constructed 2 storey forms in the immediate context.

Strict compliance with the numerical development standard is unnecessary and unreasonable in this case as the objective of the development standard are achieved, notwithstanding non-compliance with the numerical component of the development standard, in the following ways:

Objective (1): ***The object of this section is to identify development standards for particular matters relating to development for the purposes of in-fill affordable housing that, if complied with, prevent the consent authority from requiring more onerous standards for the matters.***

As detailed earlier within this Clause 4.6 request, the reduction in total ***"deep soil zone"*** for the development is not a true reflection of lost deep soil with a substantial amount of deep soil still achieved on the site totalling 29.2% or 252.77m² actual deep soil when areas that do not meet the minimum 3 metre dimension requirement are included. Therefore, proposed development and landscaping proposed does not pose any impacts in terms of the development satisfying the ***"deep soil zone"*** and ***"landscaped area"*** intentions of the Housing SEPP.

The development includes part of the deep soil zone including the use of species with non-aggressive roots located within the "Proposed Easement" for drainage. The use of species with non-aggressive roots within the "Proposed Easement" has been intentionally proposed in order to minimise impacts on the "Proposed Easement", including the underground pipes. As detailed on the pipe location plan and stormwater plans accompanying the application, the easement contains a single stormwater pipe given the width of the easement. Having regard to the stormwater plans accompanying the DA, pipes are located approximately 1 metre below the ground surface which retains a soil depth of approximately 850mm to 900mm within any the ***"deep soil zones"*** that contain pipes. In the absence of specific controls in Council's own LEP or DCP relating to soil depth requirements for landscaping, the SEPP 65 Apartment Design Guide (ADG) is relied upon to determine appropriate soil depths for various plants and vegetation. Table 5 in Part 4P of the ADG specifies the following minimum soil depth standards for plant types and sizes:

Table 5 Minimum soil standards for plant types and sizes

Plant type	Definition	Soil volume	Soil depth	Soil area
Large trees	12-18m high, up to 16m crown spread at maturity	150m³	1,200mm	10m x 10m or equivalent
Medium trees	8-12m high, up to 8m crown spread at maturity	35m³	1,000mm	6m x 6m or equivalent
Small trees	6-8m high, up to 4m crown spread at maturity	9m³	800mm	3.5m x 3.5m or equivalent
Shrubs			500-600mm	
Ground cover			300-450mm	
Turf			200mm	

FIGURE 7: SEPP 65 ADG TABLE 5 IN PART 4P

Having regard to the above, a minimum soil depth of 800mm would be suitable to sustain turf, ground covers, shrubs or even small trees that can reach a mature height of 6-8 metres in height.

The objective listed in Section 18 of the Housing SEPP does not identify any objectives for ***"deep soil zone"*** specifically. However as noted by the definition of ***"deep soil zone"*** reproduced earlier, a ***"deep soil zone"*** is required to contain ***"landscaped area"*** which is defined as being a part of the site not occupied by a building, driveway or parking area. The Landscape Plan accompanying the amended application includes turf; tall shrubs including Pinnacle Lillypilly, Photinia Red Robin, Grevillea, Tea Tree, Sweet Viburnum in 200mm to 300mm pot sizes; small shrubs including Coastal Rosemary and Indian Hawthorn in 200mm pot sizes; and grass and ground covers including Dwarf Lomandra and Native Violets in 140mm pot sizes all with non-aggressive roots within the easement.

Furthermore, the reduction in total ***"deep soil zone"*** for the development is not a true reflection of lost deep soil with a substantial amount of deep soil still achieved on the site totalling 29.2% or 252.77m^2 actual deep soil when areas that do not meet the minimum 3 metre dimension requirement are included.

Accordingly, the proposal will achieve the required ***"landscaped area"*** and ***"deep soil zone"*** and therefore achieve an in-fill affordable housing development that complies with the required standard in accordance with objective (1).

4.2 CLAUSE 4.6(3)(B)

DEMONSTRATE THAT THERE ARE SUFFICIENT ENVIRONMENTAL PLANNING GROUNDS TO JUSTIFY CONTRAVENING THE DEVELOPMENT STANDARD.

Given the development achieves the objectives of the development standard and the objectives of the land use zone, and furthermore complies with the applicable State and Council Planning Policies, the proposal has merit and the contravention of the development standard is justified.

The development achieves a fully compliant built form and the proposal does not cause any increased impacts onto adjoining properties or the public domain.

The development is in the public interest because it is consistent with the objectives of the particular standard as demonstrated earlier, and is consistent with the objectives of the R3 Medium Density Residential zone as follows:

- The development will provide for the housing needs of the community within the medium density residential environment.
- The development will contribute to a variety of housing types within the medium density residential environment.
- The development will provide housing within an area with access to services and facilities.
- The development ensures that a high level of residential amenity is achieved and maintained via the planting along the eastern side and northern rear boundaries that would otherwise be prevented if Council enforces a non-statutory position requiring no landscaping within the easement area.

The development is sustainable and appropriate for the site and no substantive public benefit would be realised by maintaining and enforcing the development standard.

The proposal achieves the objects of the *Environmental Planning and Assessment Act, 1979* (the Act) in the following ways:

- Section 1.3(a) as the development promotes the social and economic welfare of the community and a better environment by the proper management, development and conservation of natural and other resources that would otherwise be thwarted by enforcing strict compliance with the development standard that would result in less landscaped area in a development that does not otherwise pose any adverse impacts on the site and its surroundings;
- Section 1.3(b) as the development facilitates ecologically sustainable development by proposing landscaped areas and deep soil zones within a "Proposed Easement" on the site that is otherwise underutilised and dormant land;
- Section 1.3(c) as the development complies with all other development controls with the overall development promoting the orderly and economic use and development of the land by not posing any adverse amenity impacts on adjoining development and the public domain;

- Section 1.3(g) as the development achieves a good design and amenity of the built environment, noting that enforcing strict compliance with the development standard would not change the design outcome for the site for the better; and
- Section 1.3(h) as the development will be properly constructed.

For the reasons above and the assessment provided within this request, there are sufficient environmental planning grounds to justify the contravention of the development standard.

4.3 CLAUSE 4.6(4)

CONSENT AUTHORITY MUST KEEP A RECORD OF ITS ASSESSMENT CARRIED OUT UNDER SUBCLAUSE (3).

This is an administrative matter for the Council.

4.4 CLAUSE 4.6(6)

EXCLUDED SUBDIVISION.

The application does not relate to subdivision of land.

4.5 CLAUSE 4.6(8)

EXCLUDED DEVELOPMENT AND CLAUSES.

The application of Clause 4.6 to the development standard is not precluded by the operation of Clause 4.6(8) of the LEP.

5 CONCLUSION

Having regard to the assessment of the proposal and Clause 4.6 Variation Request, the proposed development achieves the objectives of the development standard and the objectives of the land use zone, notwithstanding the suggested contravention of the development standard by Council. Therefore, compliance with the development standard is unnecessary and unreasonable in these circumstances.

For the reasons provided within this request, there are sufficient environmental planning grounds to justify contravention of the development standard. This request has appropriately demonstrated that the proposed development will be in the public interest because it is consistent with the objectives of the development standard that is contravened and the objectives for development of the zone in which the development is proposed to be carried out.

This Clause 4.6 Variation Request has been prepared in accordance with the requirements of Clause 4.6 of the LEP and has had regard to the findings of the various case law mentioned and discussed throughout. Accordingly, the Local Planning Panel can exercise its power to grant development consent for the development that contravenes the development standard.

For the reasons outlined within this request, the subject variation is worthy of Council's support.

Proposed Multi Dwelling Townhouses - 10 Holland Crescent, Casula

Parking & Traffic Impact Assessment Report

P2004

Prepared for
LVLD Architects

12 September 2023

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Appendix A Development Plans

Appendix B B85 Vehicle Swept Path Analysis

1 Introduction

1.1 Background

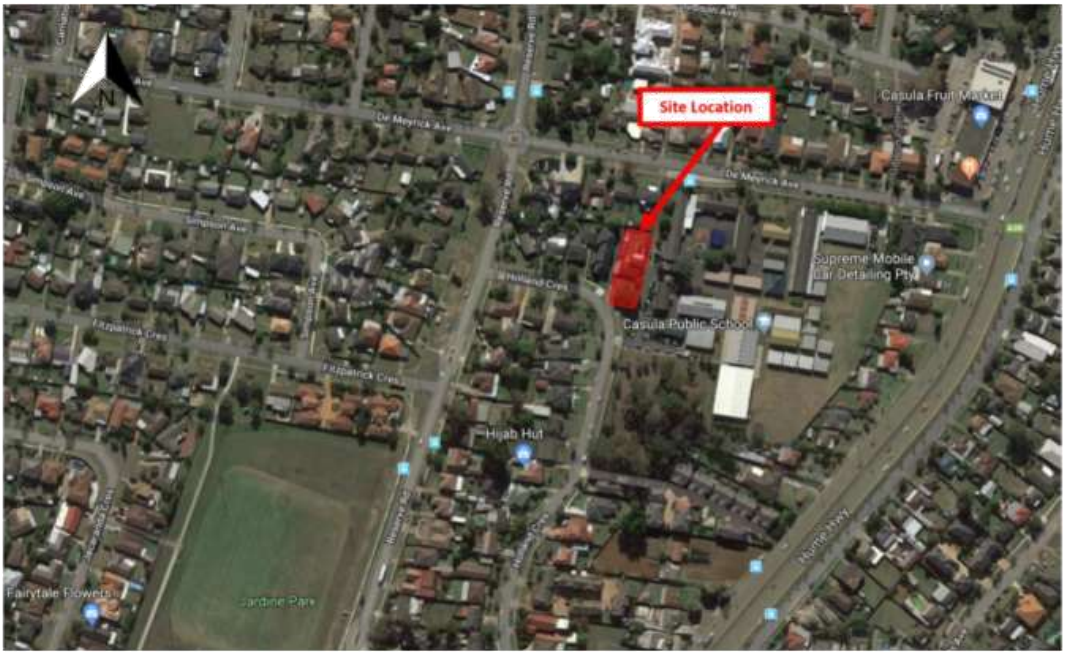
Greys Consulting has been engaged by LVLD Architects to prepare a Traffic and Parking Impact Assessment (TIA) report to support developer's application to construct a four townhouse unit development through subdivision of the existing lot at 10 Holland Crescent, Casula.

The plans for the proposed development, which were assessed for this Traffic and Parking Impact Assessment report, are as follows:

- Site Plan
- Ground Floor Plan

The subject site is shown in Figure 1.1.

Figure 1-1 Subject Site Area



Source: Google Maps

1.2 Proposed Development

The proposed development comprises four (4) town houses located within the Medium Density Residential (R2) Land Use of Liverpool Council LGA based on Liverpool Council Land and Environment Planning Maps 2008.

The development plans show one access driveway via Holland Crescent for the proposed townhouses. The site area is 871sqm with a road frontage of 26m to Holland Crescent.

Off-street garage spaces have been provided at ground level according to the proposed development layouts.

Detailed development layout plans are attached at **Appendix A**.

1.3 Scope of Work

The following works have been undertaken as part of this study:

- summary of the site's traffic generation and any impacts on the surrounding intersections;
- assessment of the site access location and form in accordance with Liverpool Council DCP (General Control for all developments) and AS2890.1 requirement;
- assessment of the car parking provision in accordance with Liverpool Council DCP 2008 (General Control for all Developments Chapter 20) and RTA Guide to Traffic Generating Developments requirements;
- assessment of the parking layout in accordance with AS2890.1 requirement;
- a review of public transport accessibility and facilities within proximity to the site.
- assess on-site statutory car parking requirements of the proposed development based on parking rates stipulated in Liverpool Council DCP 2008 (General Control for all Developments Chapter 20) and RTA Guide to Traffic Generating Developments (2002) document;
- provide advice to the design team on the parking supply, site access and general layout;
- propose site access / egress arrangements with commentary on suitability and visibility requirements in line with Australian Standards; and
- provide a traffic impact assessment report for submission to Liverpool Council in accordance with the outcomes of the above tasks to support the proposed DA.

1.4 Reference Documents

The following documents have been reviewed and referenced in this report:

> Chapter 20 (General Control of All Developments) of Liverpool Council DCP 2008;

> Guide to Traffic Generating Developments (RTA, 2002);

> AS_NZS2890.1-2004 Parking Facilities-Off Street Car Parking; and

> Development Plans provided by the Architect.

2 Existing Conditions

2.1 Surrounding Road Network

2.1.1 Key Roads

Details of the immediate road network surrounding the proposed development site is shown in Table 2.1.

Table 2-1 Surrounding Road Network

Road Name	Jurisdiction	Hierarchy	No. Lanes	Divided	Speed Limit	Comments
Holland Crescent	Liverpool Council	Local Street	2	No	50km/h	*Local Residential Street*
De Meyrick Avenue	Liverpool Council	Local Street	2	No	50km/h	*Local Residential Collector Road*
Reserve Road	Liverpool Council	Local Street	2	No	50km/h	*Local Residential Street*
Hume Highway	TfNSW	Arterial Highway	6	Yes	60km/h	*State Controlled Road*

The existing road network surrounding the development at 10 Holland Crescent, Casula consists of:

- Holland Crescent (Local Road)
- De Meyrick Avenue (Local Road)
- Reserve Road
- Hume Highway

The main traffic corridor in the vicinity of the subject site is Hume Highway which is classified as a State Road and can be accessed via De Meyrick Avenue.

2.1.2 Hume Highway

An RMS State Controlled Road that generally runs in a north-south direction and connects Summer Hill to Liverpool. In the vicinity of the site, the Hume Highway generally consists of three traffic lanes in either direction. The road is subject to 60 km/h speed zoning.

2.1.3 Reserve Road

A local road that runs in a north-south direction. It provides direct vehicular access to the subject site. Reserve Road is a two-lane, two-way delineated road with unrestricted kerbside parking along both directions. The road has a posted speed limit of 50km/h. Connected footpaths are provided on both sides of Reserve Road in the vicinity of the site.

2.1.4 Holland Crescent

A local road that runs in a north-south direction. Holland Crescent is a one-lane, one-way road with partially restricted kerbside parking in both directions alongside Casula Public School frontage. The road has a posted speed limit of 50km/h. A 40km/h school zone speed limit is in operation during school times. Connected footpath is provided on both sides of Holland Crescent.

2.1.5 De Meyrick Avenue

A local collector road that runs in an east-west direction. De Meyrick Avenue is a two-lane, two-way road with unrestricted kerbside parking in both directions. De Meyrick Road extends between Hume Highway and Lurnea High School west of M5 Motorway. The road has a posted speed limit of 50km/h. Connected footpath is provided on both sides of De Meyrick Avenue.

Table 2-2 Road Classifications

Road Classification	Description
Arterial Road	This is typically a main road carrying more than 15,000 vehicles per day and over 1,500 vehicles per hour in the peak period. They carry traffic from one region to another, forming principal avenues of communication for metropolitan traffic movements.
Sub-Arterial Road	This is typically a secondary road carrying between 5,000 and 20,000 vehicles per day, and over 500 to 2,000 vehicles per hour in the peak period. They carry traffic from one sub-region to another forming secondary inter-regional transport links.
Collector Road	This is typically a minor road carrying between 2,000 and 10,000 vehicles per day, and over 250 to 10,000 vehicles per hour in the peak period. They provide a link between local areas and regional roads, carrying low traffic volumes. At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
Local Road	This is typically a local street carrying less than 2,000 vehicles per day and 250 vehicles per hour in the peak period. They provide immediate access to individual houses and carry low volumes of traffic.

Source: RMS Functional Classification of Roads

Figure 2-1 Study Area Land Use Plan

Source: Liverpool Council LEP 2008 Maps

2.2 Existing Traffic Controls

Key features of the existing traffic controls which apply to the road network in the vicinity of the site are:

- a 50 km/h *SPEED LIMIT* in Local Roads;
- All surrounding intersections are controlled by giveway priority; and
- The De Meyrick Avenue/Hume Highway Intersection is controlled by Traffic Lights

2.3 Public Transport

2.3.1 Bus Routes

There are five bus routes currently providing public transport access via five bus stops located near the proposed development. Important bus routes and their frequencies are summarised in **Table 2-3**.

Five (5) bus stops are conveniently located at on Reserve Road and De Meyrick Avenue. The Bus Stops are serviced by the following route(s):

Table 2-3 Bus Services

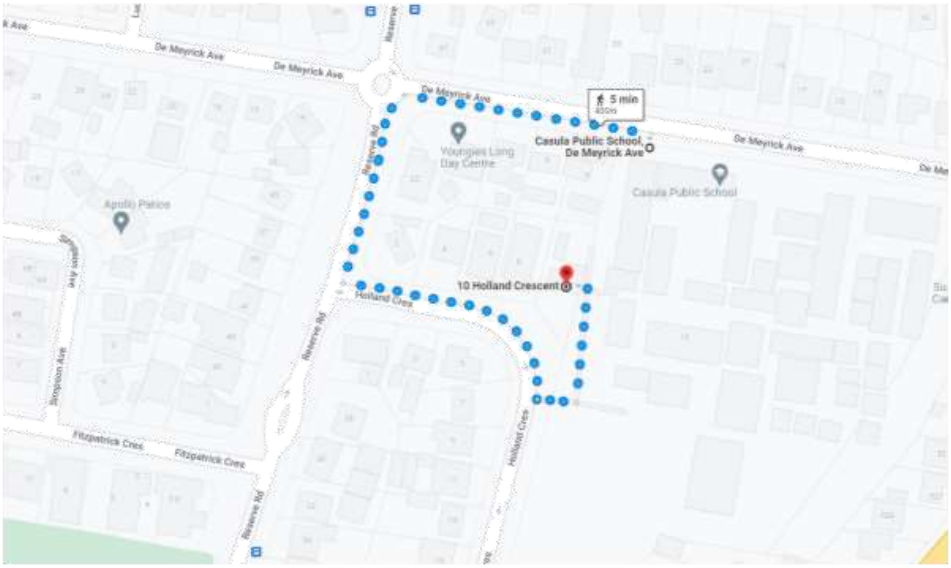
Route	Description	Operator	Frequency	
			Weekday Peak	Weekday Off-Peak
851	Carnes Hill Marketplace to Liverpool via Cowpasture Rd	Sydney Buses	Every 20 Minutes	Every 60 Minutes
852	Carnes Hill Marketplace to Liverpool via Greenway Dr & Cowpasture Rd	Sydney Buses	Every 20 Minutes	Every 60 Minutes
856	Bringelly to Liverpool	Sydney Buses	Every 180 Minutes	
857	Narellan to Liverpool	Sydney Buses	Every 30 Minutes	Every 60 Minutes
870	Campbelltown to Liverpool	Sydney Buses	Every 30 Minutes	Every 60 Minutes

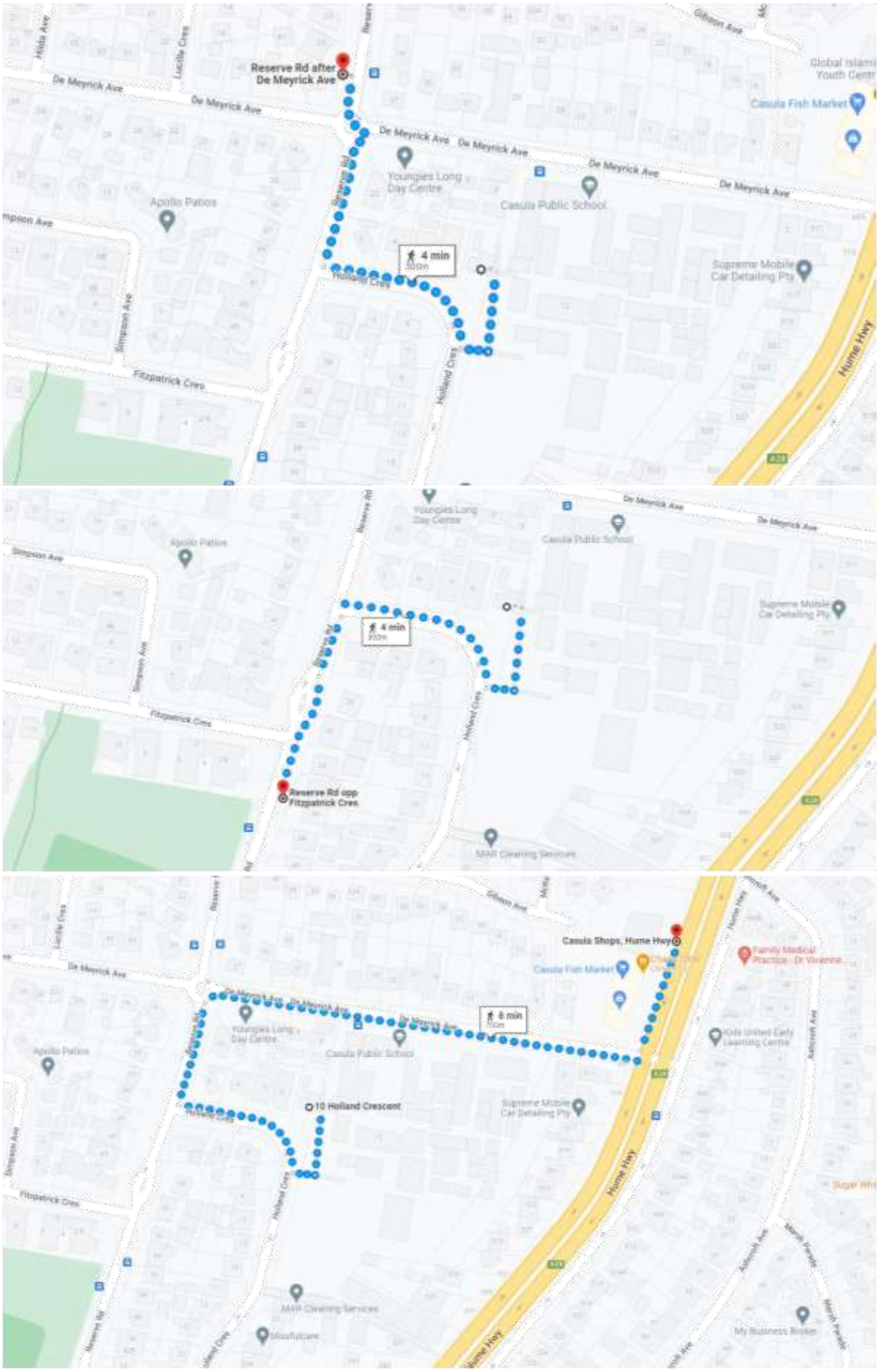
Source: http://www.transport.nsw.gov.au/

Bus time schedules show an average of 30 minute travel time to Liverpool Station.

The bus stops surrounding the site are presented in Figure 2-2.

Figure 2-2 Walking Distance to Public Transport (Bus) from the proposed Development





Source: Google maps

2.4 Pedestrian Infrastructure

Connected footpaths with proper access and connectivity is provided from the proposed development to public transport services.

2.5 Existing Car Parking Context

2.5.1 Car Parking Restrictions

2.5.1.1 Holland Crescent

Holland Crescent and at the vicinity of the proposed development has no parking restriction on both sides of the road. The unrestricted parking policy looks appropriate according to the low turnover of parking manoeuvres in the neighbourhood due to adjacent low/medium density residential land use.

3 Parking Assessment

This section investigates the proposed parking provisions against the statutory requirements applicable for the subject development. A car park design review has also been undertaken to ensure compliance of the proposed design against the minimum standards stipulated in the Liverpool Council DCP, RTA Guidelines and the Australian Standards.

3.1 Proposed Car Parking Supply

The parking rates were obtained from car parking requirements for multi dwelling houses set out in the Liverpool Council Development Control Chapter A.

The car parking rates adopted to calculate the amount of car parking spaces required are tabulated in **Table 3-1** below.

A total of 6 car spaces are provided. Detailed parking calculations are depicted in **Table 3-1**.

Table 3-1 Proposed Car Parking Supply

Type	Liverpool Council DCP	SEPP 2021 – Infill Housing
4X Dwellings 3-Bedroom	8 Spaces	6 Spaces
1 additional space for every four dwellings	1 Space	NA
Total Spaces Required (Rounded Up)	9 Spaces	6 Spaces
Spaces Provided	6	

As summarised in the table above, the proposed parking provision complies with SEPP 2021 – Infill Housing.

3.2 Parking Layout

The proposed parking spaces of town houses 1 to 4 provide access to Holland Crescent 5.5m driveway.

3.2.1 Car Park Dimensions

The minimum dimensions required for the car park are shown in **Table 3-2**:

Table 3-2 Car Parking and Garage Dimensions

Parking Space Width	Parking Space Length	Aisle Width
3.0m	5.5m	5.2-6.3m

The garage space dimensions of the design plans provided to Greys Consulting have been confirmed to be in accordance to AS 2890.1-2004.

3.2.2 The Access Driveway and Internal Circulation

Parking layout plans were interrogated for compliance with requirements of AS2890.1 for off-street parking provision. A swept path analysis was undertaken using AutoTURN for a B85 vehicle access/egress to/from the proposed garage spaces. The proposed garage spaces are generally designed in accordance with the requirements stipulated in AS2890.1 for off-street parking spaces.

Width of the proposed driveways off Holland Crescent has been designed to accommodate a passenger car swept paths for entry and exit in accordance with AS 2890.1-2004.

The swept path analysis diagrams are attached in **Appendix B**.

4 Proposed Development

4.1 Development Traffic Generation

An indication of the traffic generation potential of the development proposal is provided by reference to the Roads & Maritime Services Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002).

The RMS Guidelines are based on extensive surveys of a wide range of landuses and nominate the following traffic generation rates which are applicable to the development proposal.

Application of the above traffic generation rates to the various components outlined in the development proposal yields a traffic generation potential of approximately 5 peak hour vehicle trips as set out in the table below:

Table 4-1 Peak Hour Development Traffic Generation

Land Use	Generation Rate	GFA/No. Units	Total Trips
Residential Dwellings	0.85 peak hour vehicle trips	4	3.4
Total Trips Generated (rounded)			**4**

The projected future level of traffic activity should however, be offset or discounted by the level of traffic activity which could reasonably be expected to have been generated by the previous uses of the site, in order to determine the net increase in the traffic generation potential of the site as a consequence of the development proposal.

Application of the "residential" traffic generation rate nominated in the RMS Guidelines of 0.85 peak hour vehicle trip for the existing residential dwelling on the site yields a traffic generation potential of approximately 1 peak hour vehicle trips.

Accordingly, it is likely that the proposed development will result in an increase in the traffic generation potential the site of approximately 4 vph as set out below:

Table 4-2 Projected Net Increase in Peak Hour Traffic Generation Potential

Land Use	Generation Rate
Projected Future Traffic Generation Potential	5 vph
Existing Traffic Generation Potential (Estimated)	1 vph
Total Trips Generated	3 vph

Projected increase in traffic activity as a consequence of the development proposal is minimal and will clearly not have any unacceptable traffic implications in terms of negatively impacting surrounding road network capacity.

5 Summary and Conclusions

Greys Consulting was engaged by 8 Squared Architects to prepare a traffic impact and parking assessment in support of a development application for a proposed six townhouses development at 10 Holland Crescent, Casula, NSW. The proposed development was assessed in accordance with the Liverpool Council DCP, RMS Guidelines to Trip Generating Development and the AS 2890.1 Series. The assessment outcomes are as follows:

> An investigation of the public transport available was undertaken revealing several bus routes frequently passing near the subject site providing access to important destinations in the vicinity area Transport Hubs.

> No SIDRA intersection assessment was required due to trivial number of projected trip generation from the subject development which does not warrant SIDRA modelling at this stage.

> The proposed parking layout and access ramp is designed in accordance to AS 2890.1-2004.

> As part of this report, a parking layout assessment was also undertaken. The proposed development provides a total of 6 parking spaces on the provided design plans inclusive of 2 Visitor spaces. The parking provision complies with SEPP 2021 – Infill Housing requirements. it is considered that the proposed provision of 6 car spaces will satisfy the actual parking demands likely to be generated by the development proposal and in the circumstances, it is concluded that the proposed development will not have any unacceptable parking implications.

> The investigation of the public transport options revealed a reasonable level of bus and train accessibility to the site. Given these factors, and the results of the high-level intersection and mid-block analysis, it is clear that this development is sustainable in transport terms, with acceptable impacts on the local transport network.

Appendix A – Development Plans

10 Holland Cresent, Casula

DEVELOPMENT APPLICATION

Drawing Register

Subset ID and Name	Layout ID	Layout Name	Revision
DA0 Cover Pages			
	DA000	Title Page	B
DA1 Site Series			
	DA100	Site Plan	D
	DA101	Site Analysis Plan	D
	DA102	Demolition Plan	D
DA2 Plans			
	DA200	Ground Floor Plan	D
	DA201	Level 1	D
	DA202	Roof	C
DA3 Elevations & Sections			
	DA300	Elevations	B
	DA301	Elevations	B
	DA302	Sections	B
	DA303	Colours and FInishes Schedule	B
	DA304	Streetscape Elevation	B
DA4 Supporting Drawings			
	DA400	Shadows Analysis	B
	DA401	Landscape and Deep Soil Calc.	03
	DA402	GFA Calc.	03
	DA403	Cross Ventilation	01
	DA404	Artists Impression	B
	DA405	Artists Impression	B
	DA406	Artists Impression	B
	DA407	Glazing Schedule	B

REVISION CHANGES

1. Draft Strata subdivision plan provided.
2. Updated shadow diagrams to show full impact of shadows and adjacent dwellings.
3. Compliant deep soil zones provided. Confirmed no pipes within easements.
4. Skylights provided to Unit 1 to ensure sufficient solar access.
5. Units 2 & 3 converted to 2 bedroom units under 100m2 in GFA. POS is at least 40m2 and compliant.
6. Unit 1 front POS will be provided with sufficient screening via planting. Refer to amended landscape plans.
7. Cut and Fill measurements provided to elevations.
8. Unit 1 reconfigured to address the street.
9. First floor GFA significantly reduced to bring development closer to compliance with maximum first floor area requirement.
10. Cross ventilation diagram provided to demonstrate compliance.
11. Landscape strip adjacent to driveway increased by 100mm. Unable to achieve 2m wide landscape strip due to driveway width requirement. Please note, adjacent development landscape strip is also under 2m in width.
12. Minimum 5.8m wide aisle provided in front of garages and parking bays in accordance with AS2890.1
13. Unit 1 amended to fully comply with front setback requirements to the ground and first floor.
14. Side and rear setbacks amended to be fully compliant.

DEVELOPMENT SUMMARY

PROJECT: PROPOSED DEMOLITION OF EXISTING DWELLING, ANCILLARY STRUCTURES & TREE REMOVAL CONSTRUCTION OF MULTI DWELLING HOUSING (4 UNITS) WITH GARAGES, FRONT BRICK FENCE AND ASSOCIATED LANDSCAPING

SITE: 10 HOLLAND CRESCENT, CASULA 2170
LOT 10 DP 31050

SITE AREA: 866m^2

FRONTAGE: 18.288m

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Rev.	Date	By	Description
~~A~~	~~01/06/2022~~		~~PRELIMINARY PLANS~~
P3	7/06/2022		CONSULTANT COORDINATION
P3	16/06/2022		CONSULTANT COORDINATION
A	22/06/2022		DEVELOPMENT APPLICATION
B	02/08/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2170
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Cover Pages
Drawing Name	Title Page
Date	02.08.2023
Scale	1:3.92, 1:0.56@A2
Drawing Number	DA000
Revision	B

Compliance

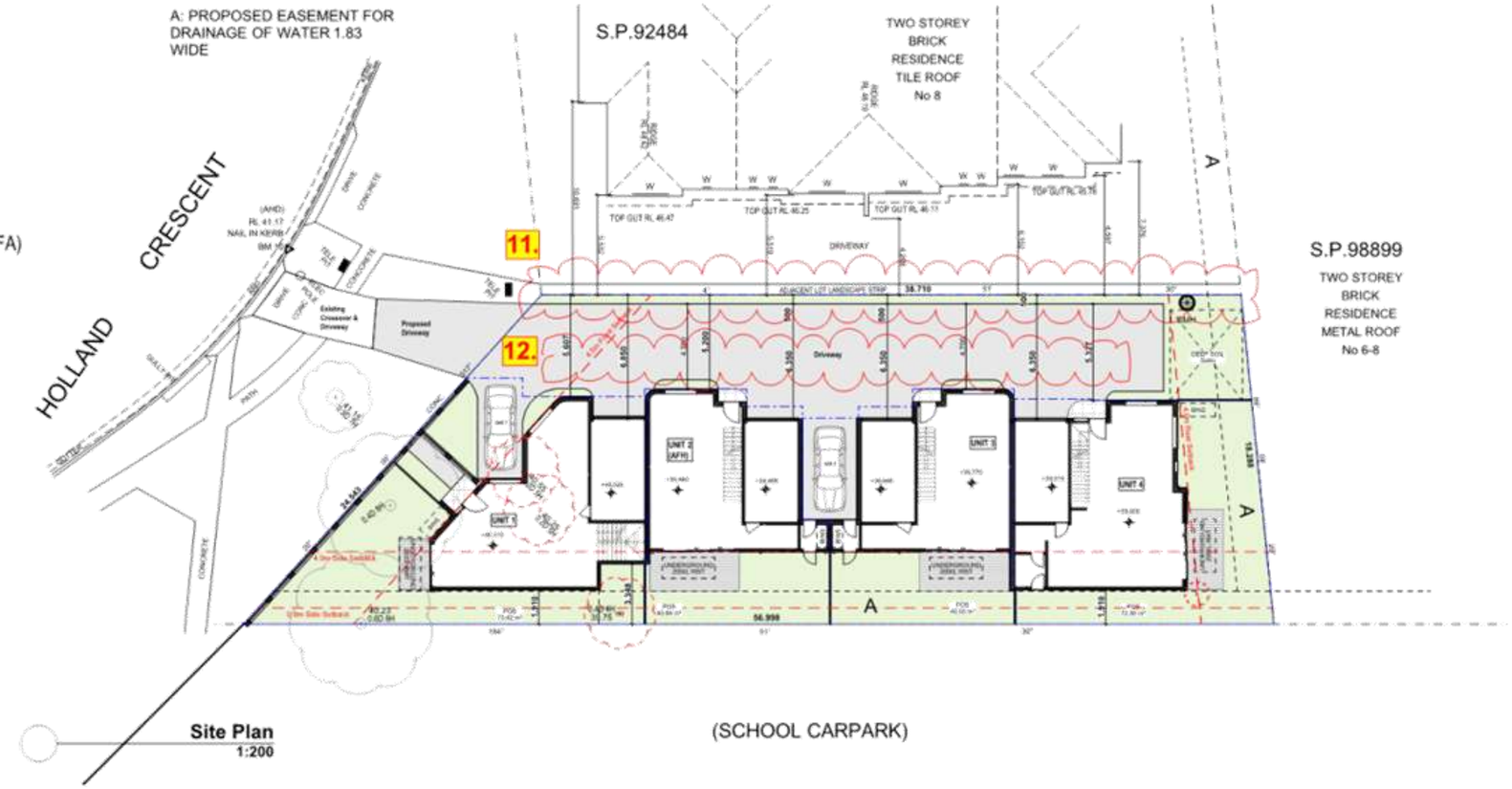
Site Area: 866.28m²

DCP/ LEP

Requirements	Proposed
FSR - 0.75:1 (649.71m²)	0.48:1 (419.85m²)
GFA	Ground - 240.23m² First - 179.62m² (75% of Ground GFA)
Landscape - 20% (173.26m²)	30% (261.28m²)
Deep Soil - 4m x 5m	4m x 5m
POS - 2 Bed - 40m² (1.5m min.) 3 Bed - 50m² (1.5m min.)	Unit 1 - 73.42m² Unit 2 - 40.84m² Unit 3 - 40.50m² Unit 4 - 72.50m²

Housing SEPP

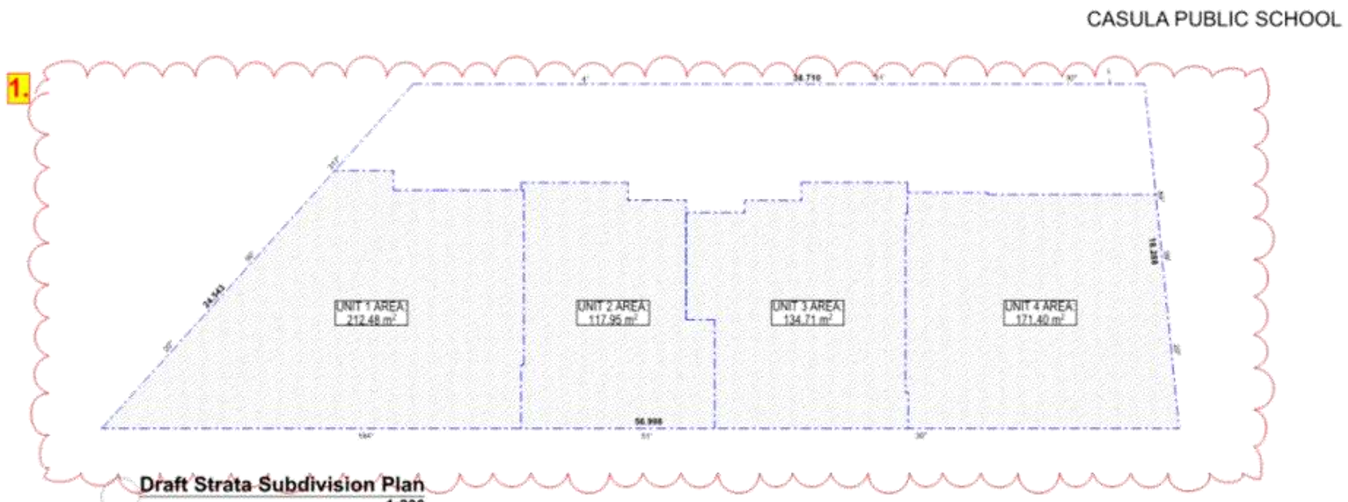
Requirements	Proposed
Landscape - 30% (259.88m²)	30% (261.28m²)
Deep Soil - 15% (129.94m²) (3m min.)	16% (140.56m²) 3.
Carparking - 6 spaces	6 spaces
Min. Area 2 Bed - 90m² 3 Bed - 115m²	2 Bed - 90.01m² Min. 3 Bed - 115.58m² Min.



Site Plan
1:200

Unit 1 - 3 Bed		Unit 2 - 2 Bed (ARH)		Unit 3 - 2 Bed	
	Area		Area		Area
Ground Floor	66.98	Ground Floor	51.20	Ground Floor	51.20
Level 1	47.49	Level 1	38.81	Level 1	48.59
	114.47 m²		**90.01 m²**		**99.79 m²**

Unit 4 - 4 Bed	
	Area
Ground Floor	70.85
Ground Floor	117.95
Ground Floor	134.71
Ground Floor	171.40
Ground Floor	212.48
Level 1	44.73
	752.12 m²



Draft Strata Subdivision Plan
1:200

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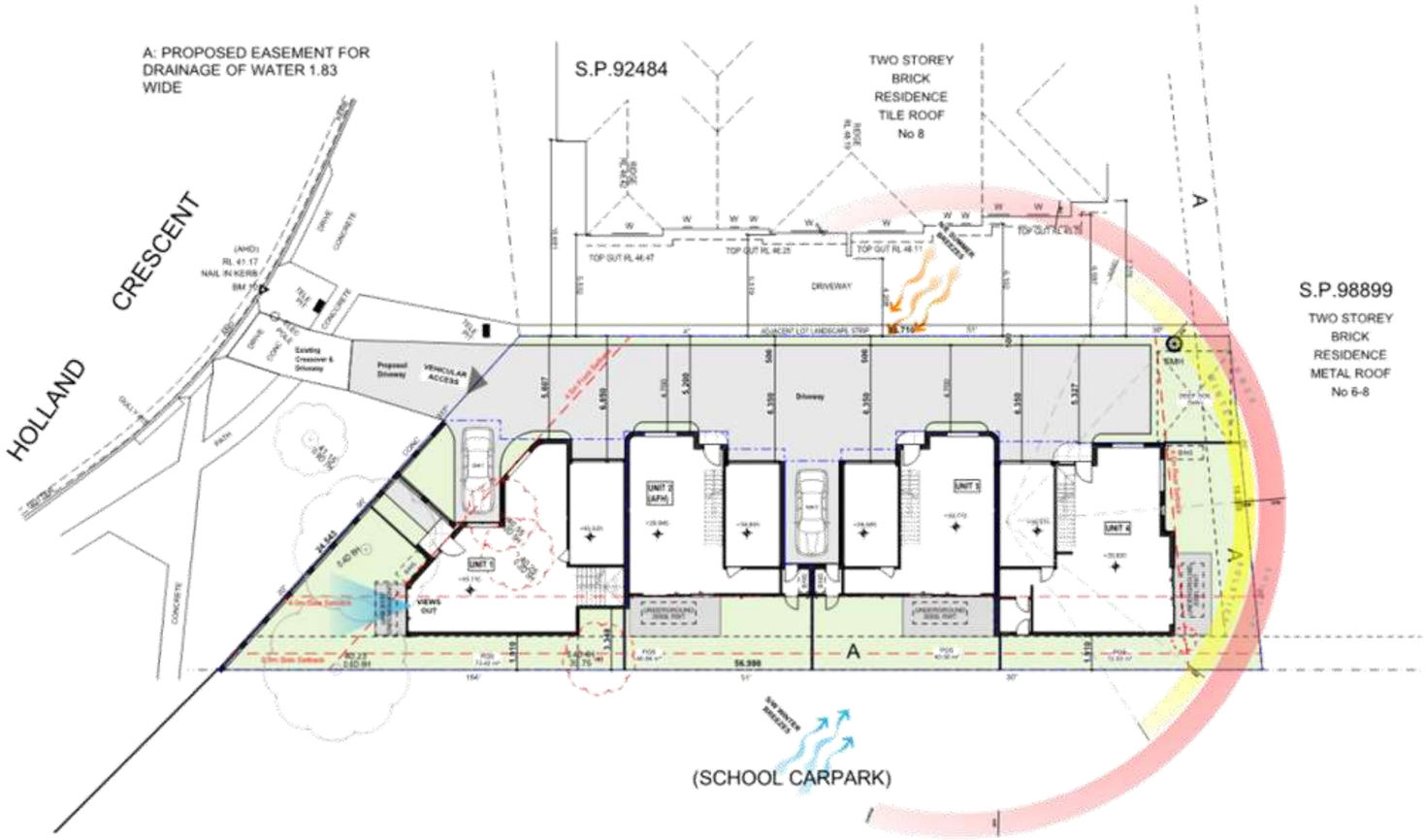
Rev	Date	By	Description
P3	8/09/2022		CONSULTANT COORDINATION
P4	16/09/2022		CONSULTANT COORDINATION
A	23/9/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	15/09/2023		TRAFFIC AMENDMENTS
D	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Site Series
Drawing Name	Site Plan
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA100
Revision	D



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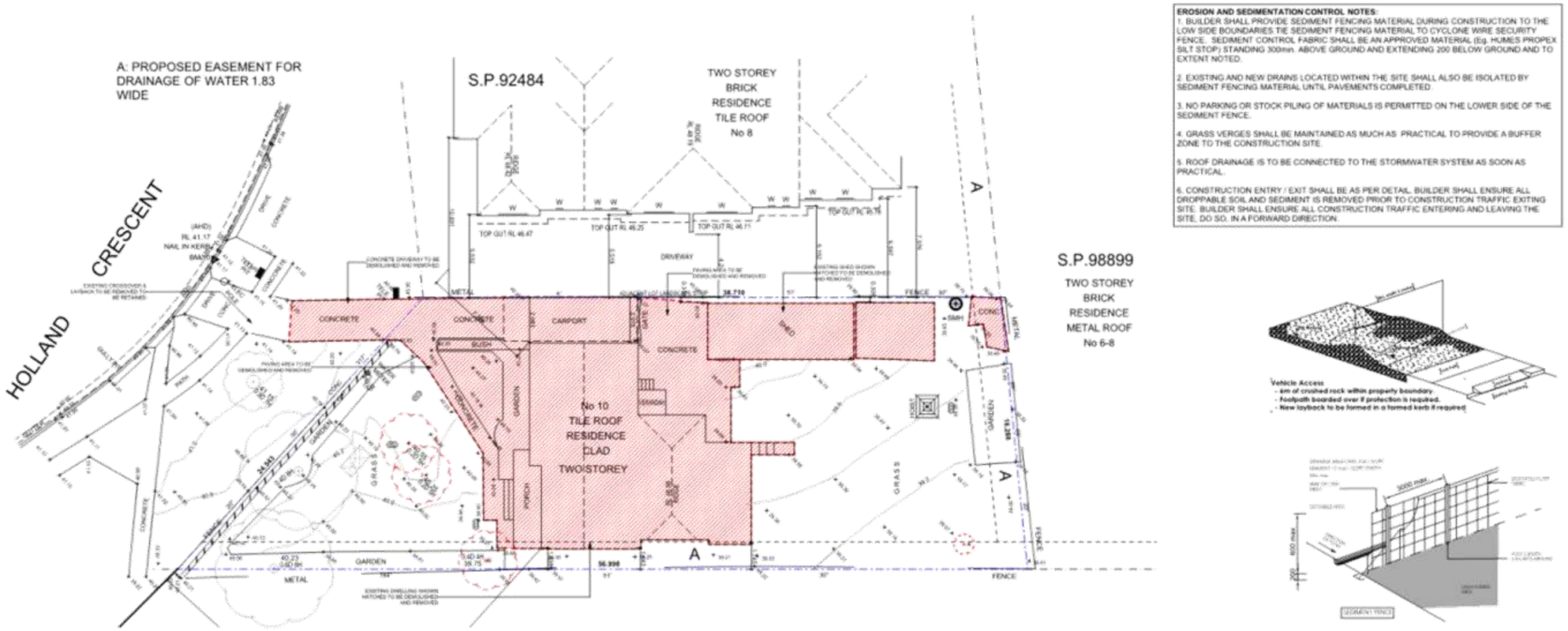
Rev	Date	By	Description
A	20/10/2022		DEVELOPMENT APPLICATION
B	5/05/2023		REVISED CONSULTANT ISSUE
C	10/09/2023		TRAFFIC AMENDMENTS
D	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Site Series
Drawing Name	Site Analysis Plan
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA101
Revision	D



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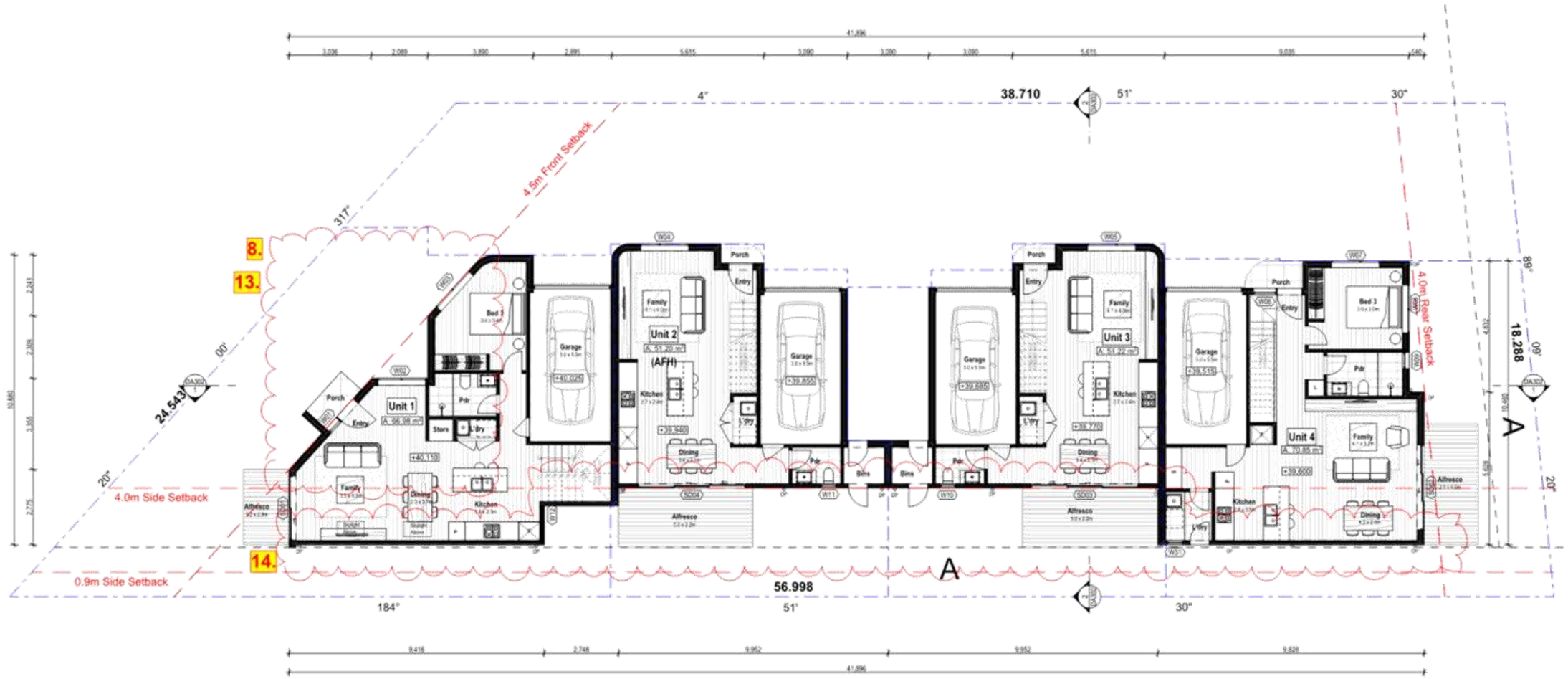
Rev	Date	By	Description
A	22/5/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	15/09/2023		TRAFFIC AMENDMENTS
D	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Site Series
Drawing Name	Demolition Plan
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA102
Revision	D



Ground Floor
1:100

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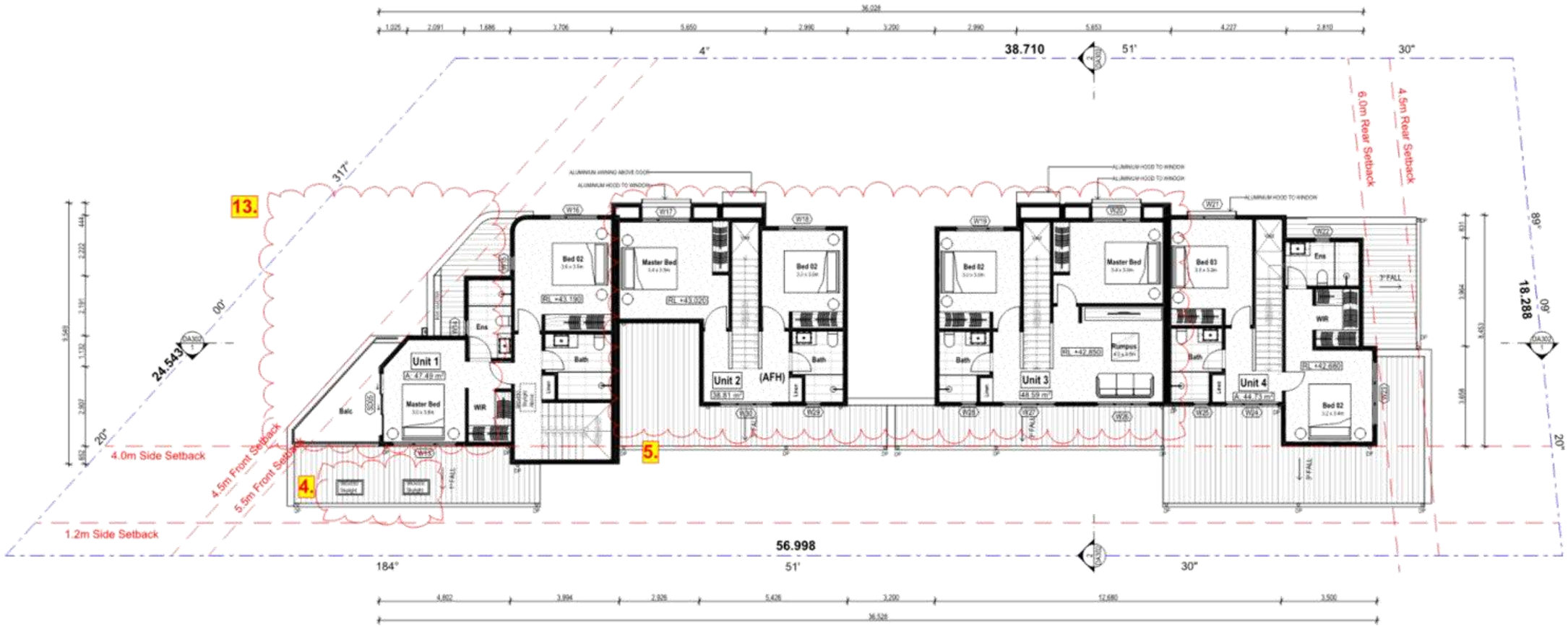
Rev.	Date	By	Description
P3	8/09/2022		CONSULTANT COORDINATION
P4	16/09/2022		CONSULTANT COORDINATION
A	23/09/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	11/09/2023		TRAFFIC AMENDMENTS
D	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2170
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Plans
Drawing Name	Ground Floor Plan
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA200
Revision	D



Level 1
1:100

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Rev	Date	By	Description
~~A~~	~~11/08/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	5/09/2023		REVISED CONSULTANT ISSUE
C	15/09/2023		TRAFFIC AMENDMENTS
D	12/03/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Plans
Drawing Name	Level 1
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA201
Revision	D

Roof
1:100

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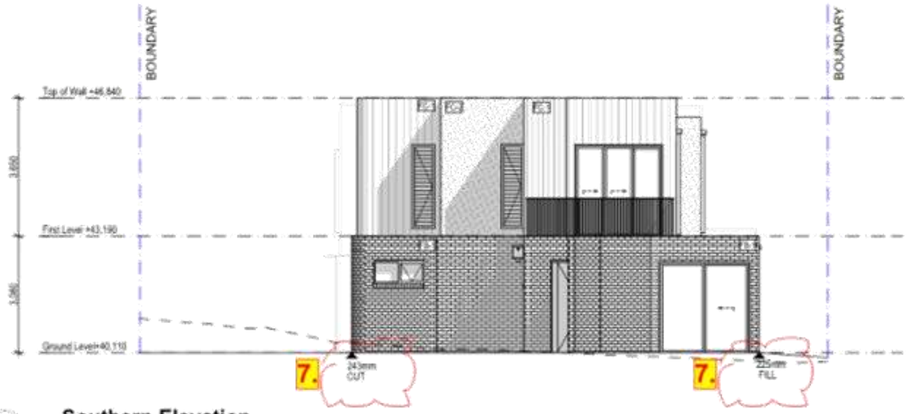
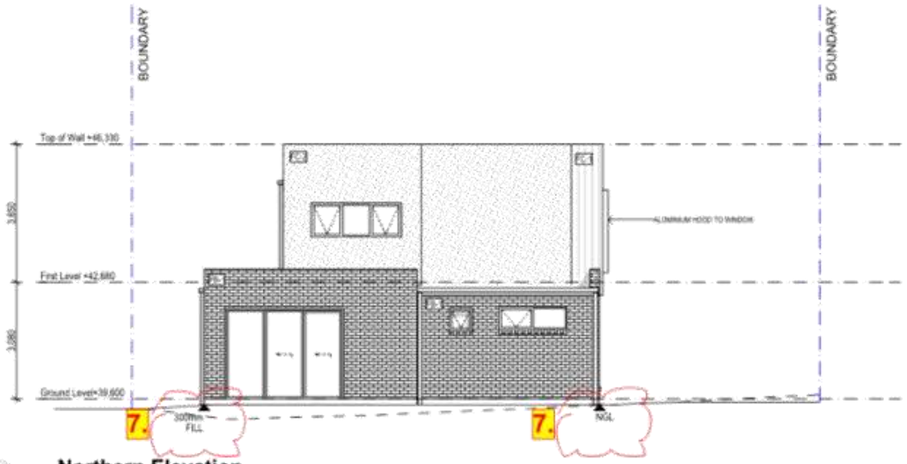
Rev	Date	By	Description
~~A~~	~~01/09/2022~~		~~PRE-LODGEMENT PLANS~~
B1	7/09/2022		CONSULTANT COORDINATION
B3	16/09/2022		CONSULTANT COORDINATION
A	22/09/2022		DEVELOPMENT APPLICATION
B	15/09/2023		TRAFFIC AMENDMENTS
C	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Plans
Drawing Name	Roof
Date	02.08.2023
Scale	1:100@A2
Drawing Number	DA202
Revision	C



2 **Southern Elevation**
1:100

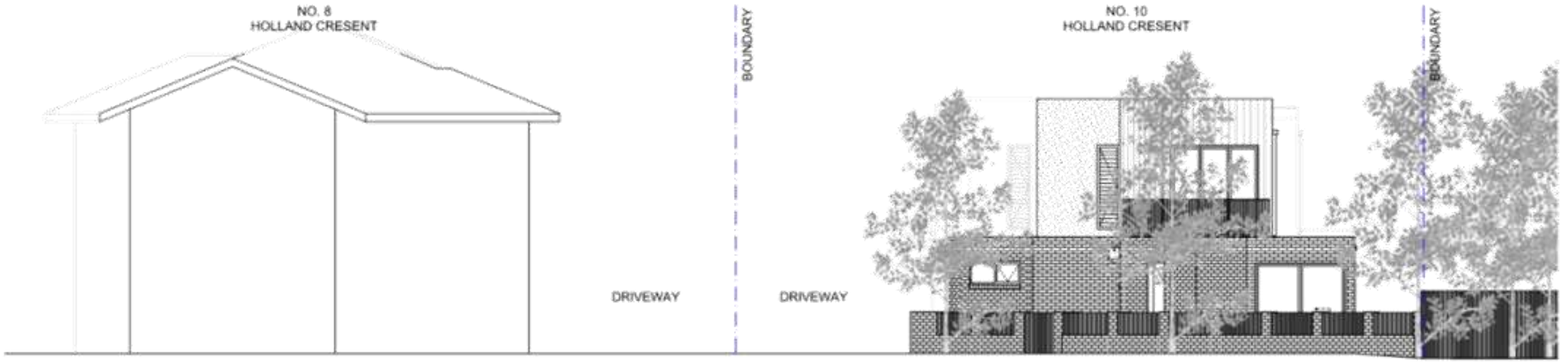


1 **Northern Elevation**
1:100

FACEBRICK
COLOUR: RED/BROWN OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: DARK GREY OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: WHITE



Streetscape Elevation
1:100

TIMBER LOOK ALUMINIUM BATTENS
COLOUR: NATURAL TIMBER LOOK

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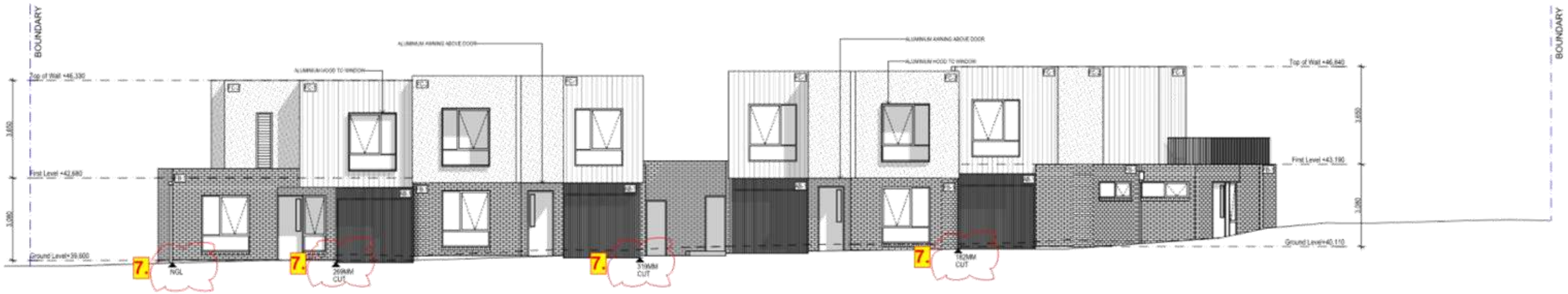
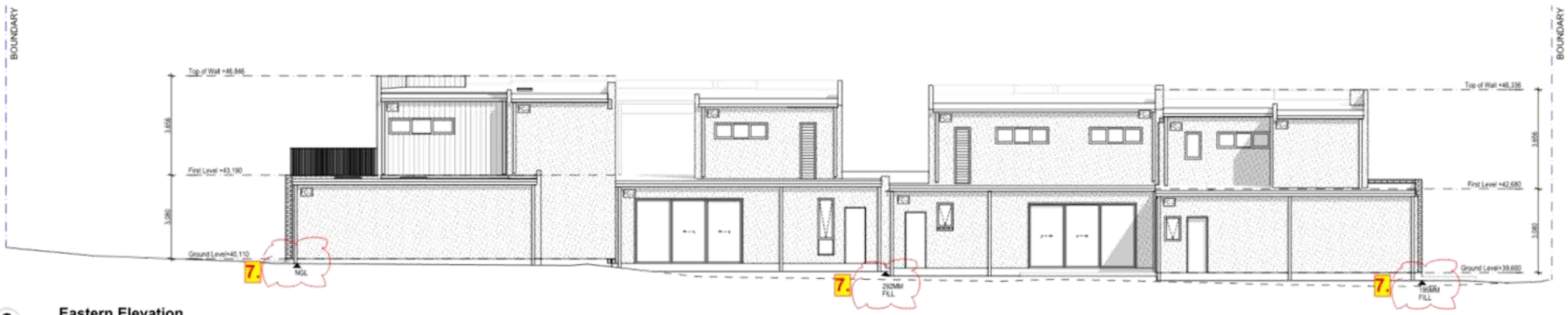
Rev	Date	By	Description
~~A~~	~~11/04/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	12/04/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulsa

Drawing Series	Elevations & Sections
Drawing Name	Elevations
Date	02.08.2021
Scale	1:100, 1:1.88, 1:1.36, 1:3.22@A2
Drawing Number	DA300
Revision	B



1 Western Elevation
1:100



2 Eastern Elevation
1:100

FACEBRICK
COLOUR: RED/BROWN OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: DARK GREY OR SIMILAR

PAINTED FIBRE CEMENT CLADDING
COLOUR: WHITE

TIMBER LOOK ALUMINIUM BATTENS
COLOUR: NATURAL TIMBER LOOK

Builder/Contractor shall verify job dimensions before any job commences

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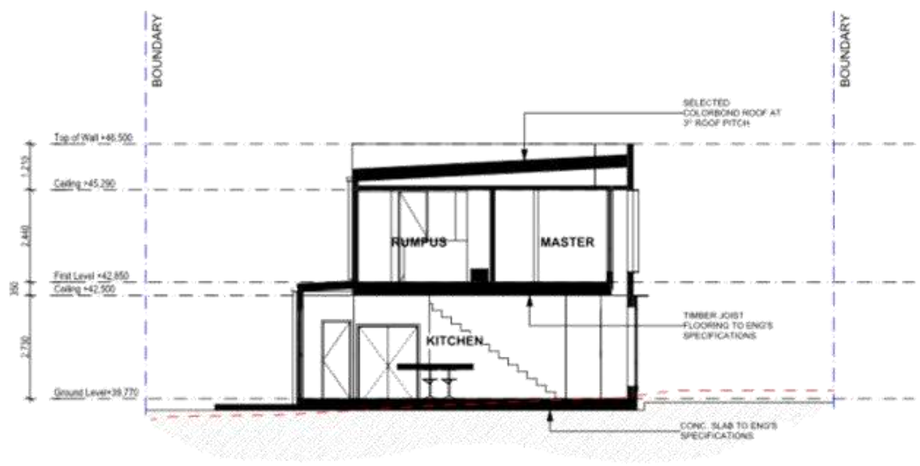
Rev	Date	By	Description
~~A~~	~~01/06/2022~~		~~PRELIMINARY PLANS~~
P2	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Elevations
Date	02.08.2021
Scale	1:100, 1:1.88, 1:1.36, 1:3.22@A2
Drawing Number	DA301
Revision	B

1 SECTION 1:100



2 SECTION 1:100

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Rev.	Date	By	Description
~~A~~	~~01/06/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/9/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Sections
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA302
Revision	B

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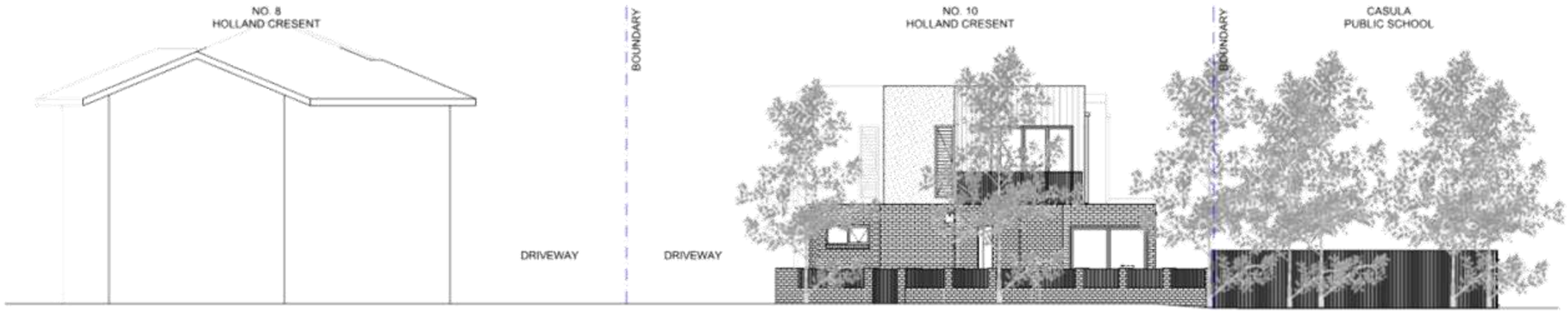
Rev	Date	By	Description
A	22/03/2022		~~DEVELOPMENT~~ APPLICATION
B	11/04/2022		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2170
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Colours and Finishes Sched.
Date	02.08.2021
Scale	1:1.88, 1:1.36, 1:3.22, 1:2.50@A2
Drawing Number	DA303
Revision	B



Streetscape Elevation
1:100

Builder/Contractor shall verify job dimensions before any job commences

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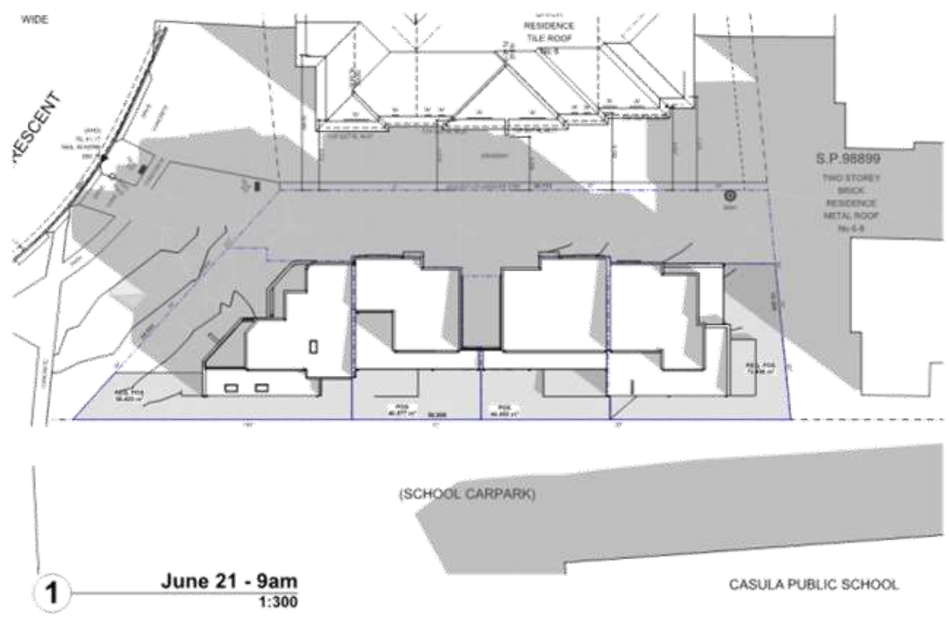
Rev	Date	By	Description
A	22/11/2022		~~DEVELOPMENT~~ APPLICATION
B	13/04/2023		RFI AMENDMENTS.

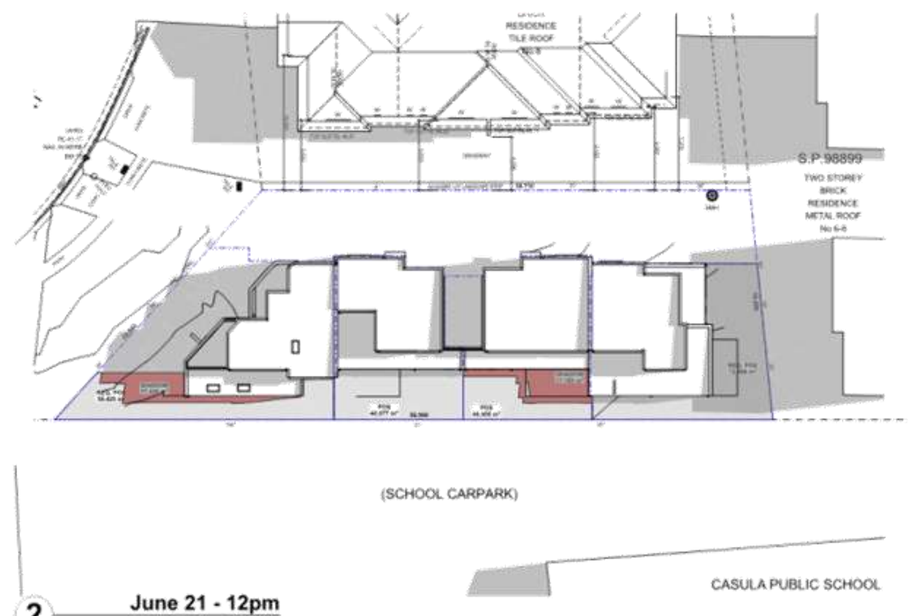
Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Elevations & Sections
Drawing Name	Streetscape Elevation
Date	02.08.2021
Scale	1:100@A2
Drawing Number	DA304
Revision	B

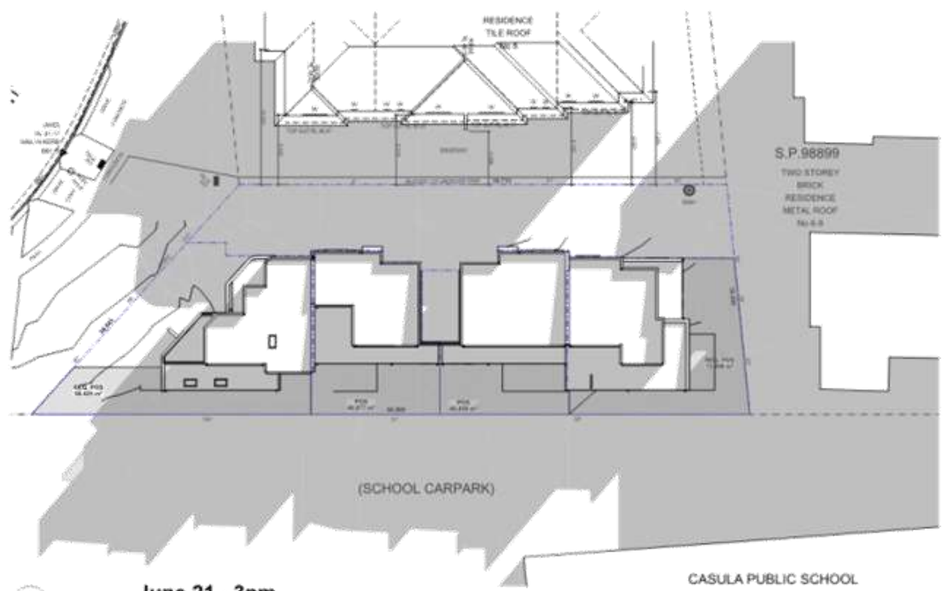
2.



1 June 21 - 9am
1:300



2 June 21 - 12pm
1:300



3 June 21 - 3pm
1:300

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Rev	Date	By	Description
~~A~~	~~23/06/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Shadows Analysis
Date	02.08.2021
Scale	1:300@A2
Drawing Number	DA400
Revision	B

Compliance

Site Area: 866.28m²

DCP/ LEP

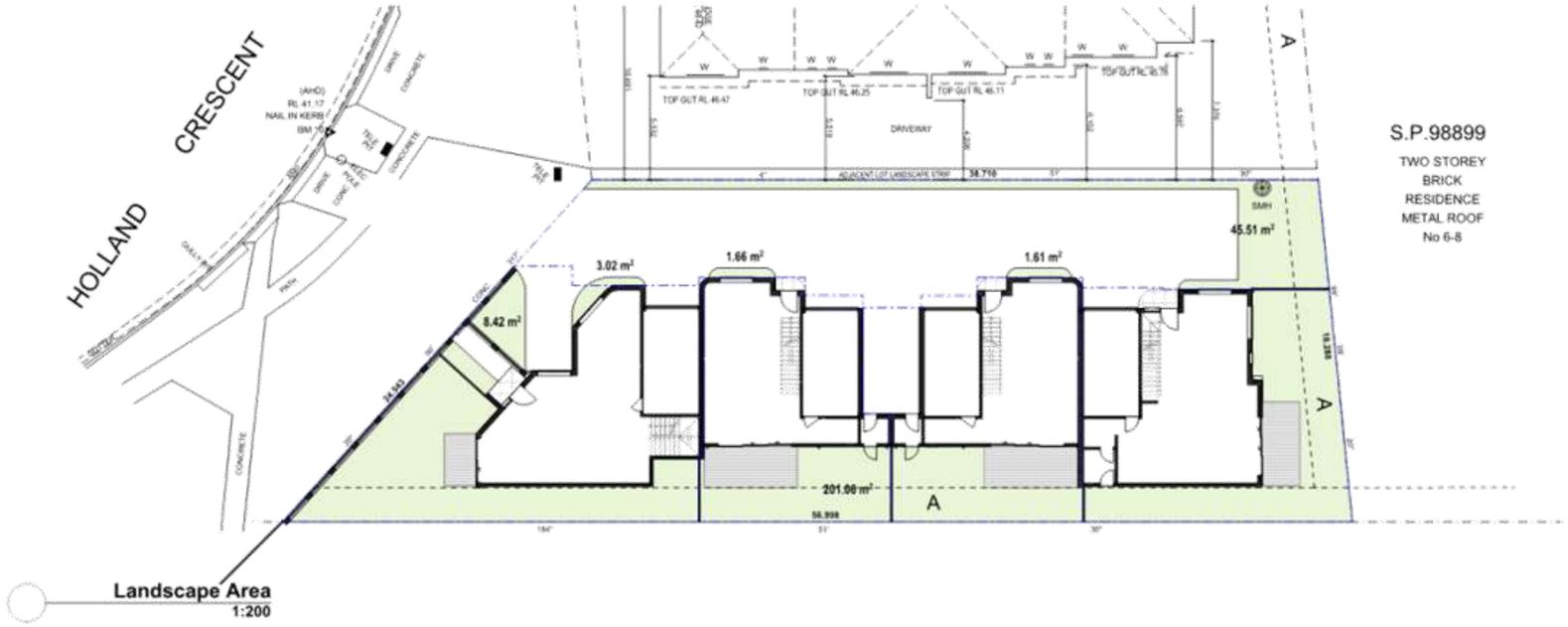
Requirements	Proposed
Landscape - 20% (173.26m²)	30% (261.28m²)

Housing SEPP

Requirements	Proposed
Landscape - 30% (259.88m²)	30% (261.28m²)

Housing SEPP Definition

landscaped area *means the part of the site area not occupied by a building and includes a part used or intended to be used for a rainwater tank, swimming pool or open-air recreation facility, but does not include a part used or intended to be used for a driveway or parking area.*



Landscape Area
1:200

DCP/ LEP

Requirements	Proposed
Deep Soil - 4m x 5m	4m x 5m

Housing SEPP

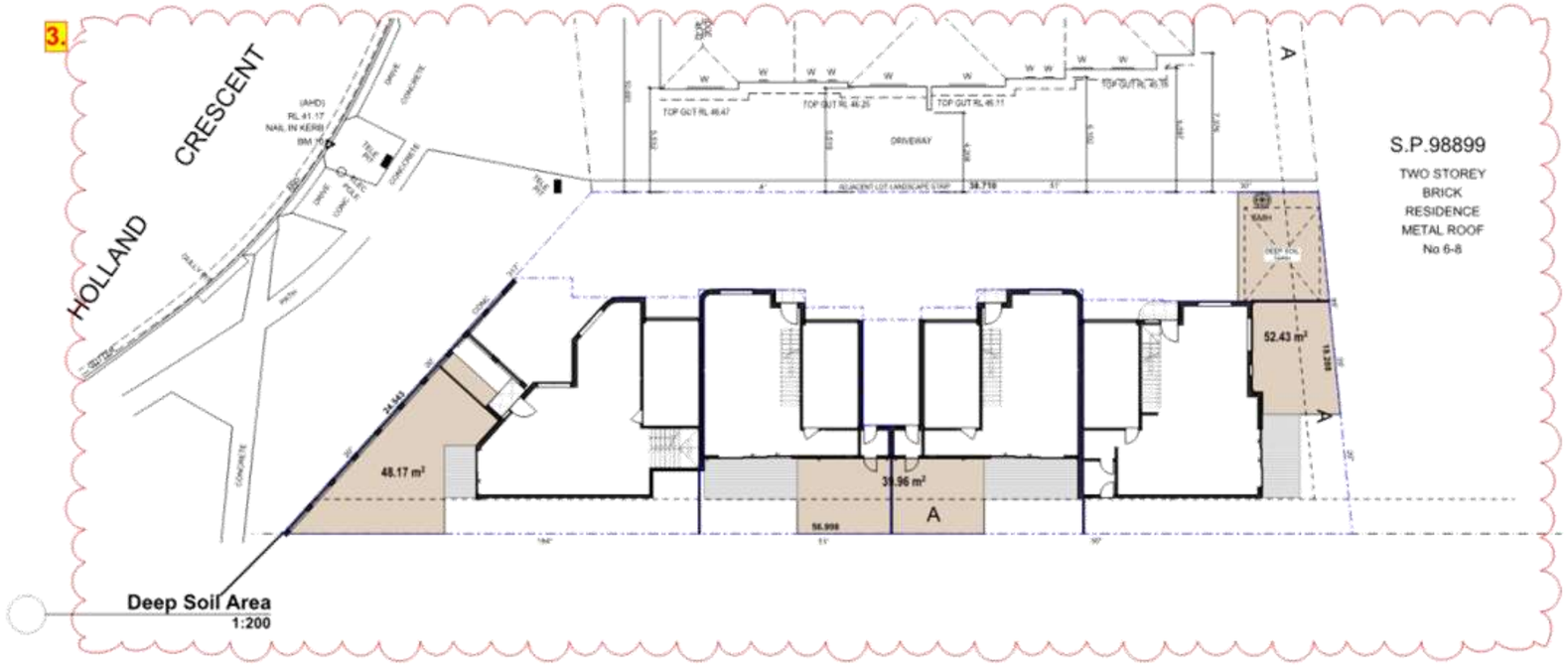
Requirements	Proposed
Deep Soil - 15% (129.94m²) (3m min.)	16% (140.56m²)

3.

Housing SEPP Definition

deep soil zone *means a landscaped area with no buildings or structures above or below the ground.*

3.



Deep Soil Area
1:200

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Evan Nguyen 11281 (NSW)

Rev	Date	By	Description
01	5/09/2023		REVISED CONSULTANT ISSUE
02	15/09/2023		TRAFFIC AMENDMENTS
03	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

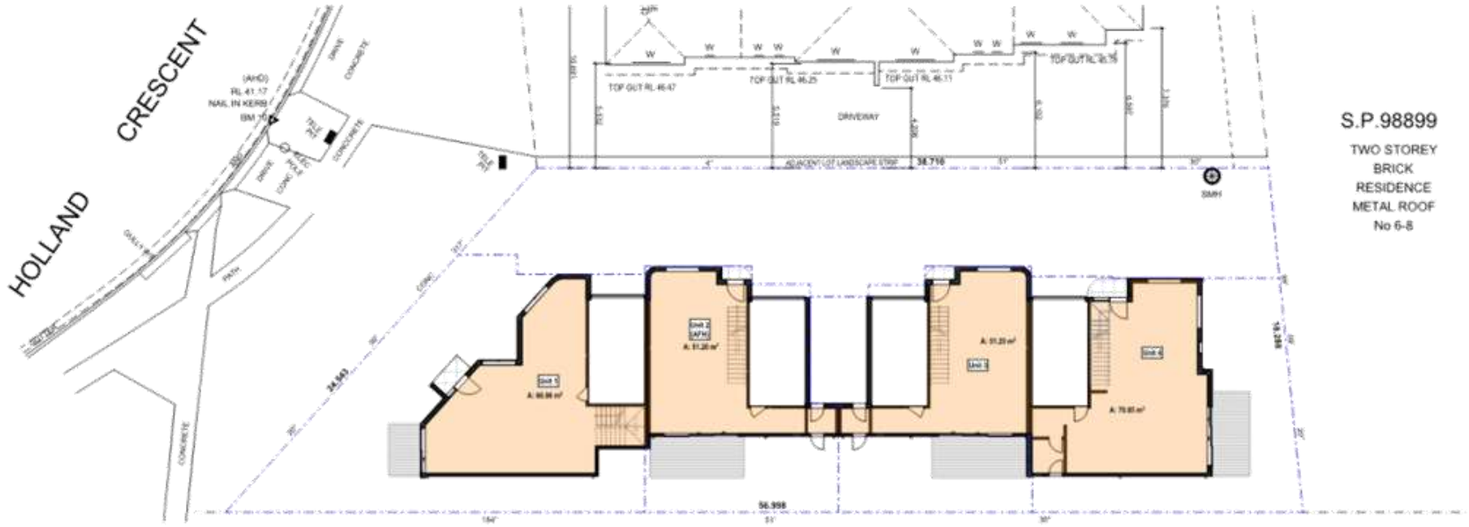
Drawing Series	Supporting Drawings
Drawing Name	Landscape and Deep Soil Ca
Date	02.08.2023
Scale	1:200@A2
Drawing Number	DA401
Revision	03

Site Area: 866.28m²

DCP/ LEP Requirements	Proposed
FSR - 0.75:1 (649.71m²)	0.48:1 (419.85m²)
GFA	Ground - 240.23m² First - 179.62m² (75% of Ground GFA)

Unit 1 - 3 Bed		Unit 2 - 2 Bed (ARH)		Unit 3 - 2 Bed	
	Area		Area		Area
Ground Floor	66.98	Ground Floor	51.20	Ground Floor	51.20
Level 1	47.49	Level 1	38.81	Level 1	48.59
	114.47 m²		**90.01 m²**		**99.79 m²**

Unit 4 - 4 Bed	
	Area
Ground Floor	70.85
Ground Floor	117.95
Ground Floor	134.71
Ground Floor	171.40
Ground Floor	212.48
Level 1	44.73
	752.12 m²



Ground Floor GFA
1:200

Level 1 GFA
1:200

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Rev	Date	By	Description
01	5/09/2023		REVISED CONSULTANT ISSUE
02	10/09/2023		TRAFFIC AMENDMENTS
03	12/09/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulsa

Drawing Series	Supporting Drawings
Drawing Name	GFA Calc.
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA402
Revision	03

Site Area: 866.28m²

DCP/ LEP

Requirements	**Proposed**
FSR - 0.75:1 (649.71m²)	0.48:1 (419.85m²)
GFA	Ground - 240.23m² First - 179.62m² (75% of Ground GFA)

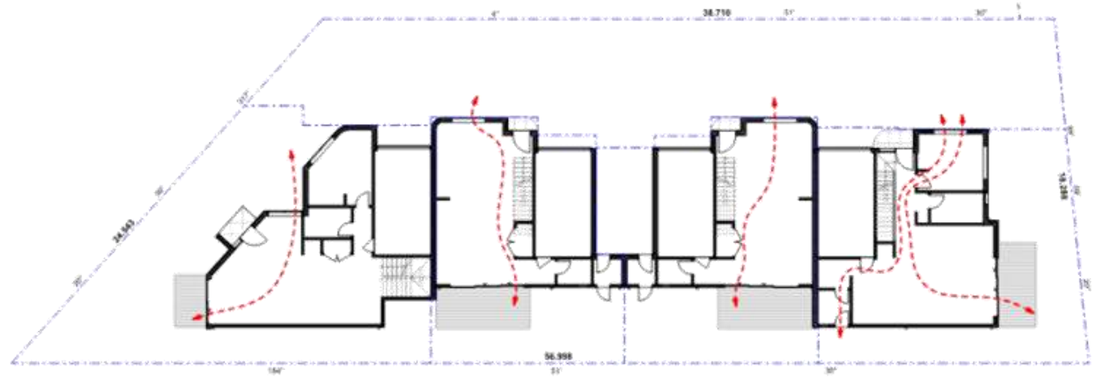
Unit 1 - 3 Bed	
	Area
Ground Floor	66.98
Ground Floor	47.49
Ground Floor	70.85
Ground Floor	**114.47 m²**
Ground Floor	117.95
Ground Floor	134.71
Ground Floor	171.40
Ground Floor	212.48
Level 1	44.73
	752.12 m²

Unit 2 - 2 Bed (ARH)	
	Area
Ground Floor	51.20
Level 1	38.81
	90.01 m²

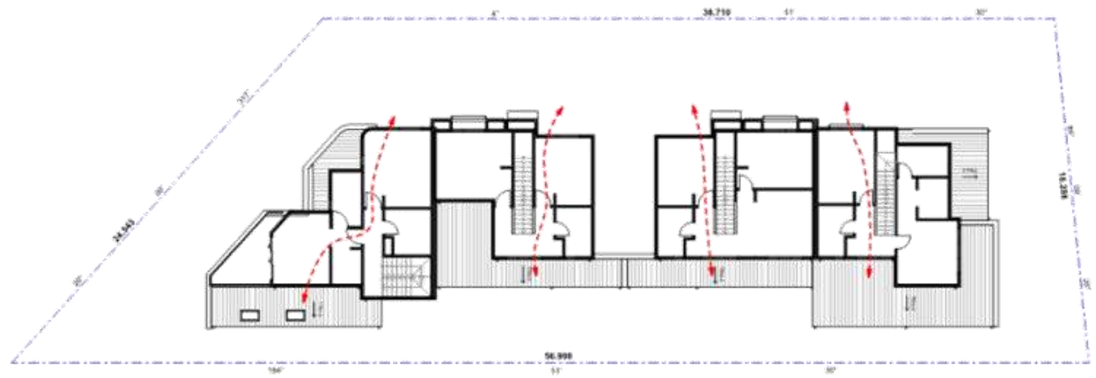
Unit 3 - 2 Bed	
	Area
Ground Floor	51.20
Level 1	48.59
	99.79 m²

Unit 4 - 4 Bed	
	Area
Level 1	47.49
Level 1	70.85
	118.34 m²

10.



Ground Floor Cross Ventilation
1:200



Level 1 Cross Ventilation
1:200

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Rev	Date	By	Description
~~A~~	~~12/06/2023~~		~~RFI SUBMISSION~~

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulsa

Drawing Series	Supporting Drawings
Drawing Name	Cross Ventilation
Date	02.08.2021
Scale	1:200@A2
Drawing Number	DA403
Revision	01

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Rev	Date	By	Description
~~A~~	~~11/04/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.50@A2
Drawing Number	DA404
Revision	B

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Rev	Date	By	Description
~~A~~	~~11/06/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
A	22/11/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.50@A2
Drawing Number	DA405
Revision	B

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Rev	Date	By	Description
~~A~~	~~01/06/2022~~		~~PRELIMINARY PLANS~~
P3	7/09/2022		CONSULTANT COORDINATION
P3	16/09/2022		CONSULTANT COORDINATION
6	22/11/2022		DEVELOPMENT APPLICATION
B	12/01/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulisa

Drawing Series	Supporting Drawings
Drawing Name	Artists Impression
Date	02.08.2021
Scale	1:2.59@A2
Drawing Number	DA406
Revision	B

IES-02 Window Schedule

Element ID	SD01	SD02	SD03	SD04	SD05	W01	W02	W03	W04	W05	W06	W07	W08	W09	W10	W11	W12	W13	W14
View from Side Opposite to Opening Side																			
W x H Size	2,400×2,400	3,151×2,400	4,000×2,400	4,000×2,400	2,333×2,420	600×2,100	1,800×600	1,800×600	1,800×2,100	1,800×2,100	850×2,100	1,800×2,100	1,800×600	600×600	600×900	600×2,100	600×2,100	2,400×600	600×2,220
Sill height	0	0	0	0	350	328	1,828	1,828	300	328	328	328	1,828	1,800	1,500	300	315	1,500	550
Head height	2,400	2,400	2,400	2,400	2,770	2,428	2,428	2,428	2,400	2,428	2,428	2,428	2,428	2,400	2,400	2,400	2,415	2,100	2,770

IES-02 Window Schedule

Element ID	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31
View from Side Opposite to Opening Side																	
W x H Size	600×2,220	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	1,800×2,142	600×2,220	2,400×900	1,960×600	600×1,000	1,960×600	1,960×600	600×2,220	600×2,220	1,960×600	600×900
Sill height	550	628	628	628	628	458	628	550	1,520	1,500	1,100	1,500	1,500	-120	-65	1,555	1,168
Head height	2,770	2,770	2,770	2,770	2,770	2,600	2,770	2,770	2,420	2,100	2,100	2,100	2,100	2,100	2,155	2,155	2,068

1 Glazing Schedule

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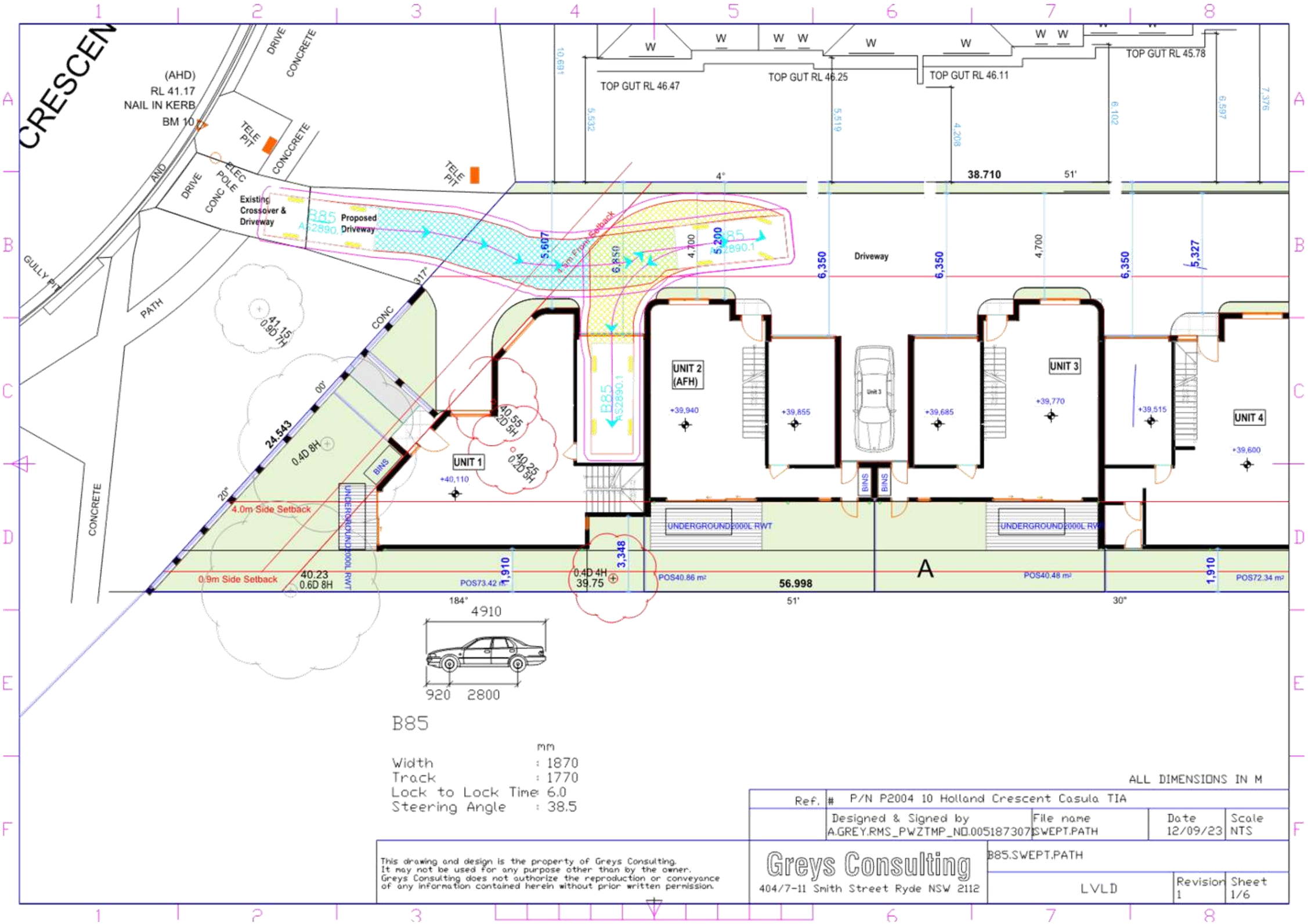
Rev	Date	By	Description
D	8/09/2022		~~CONSULTANT~~ COORDINATION
A	22/6/2022		DEVELOPMENT APPLICATION
B	12/04/2023		RFI AMENDMENTS

Project Name	10 Holland Crescent
Project Number	21002
Project Address	10 Holland Crescent Casula NSW 2179
Client	Anna, Anthony & John Tsoulsa

Drawing Series	Supporting Drawings
Drawing Name	Glazing Schedule
Date	02.08.2021
Scale	1:1@A2
Drawing Number	DA407
Revision	B

Appendix B – B85 Vehicle Swept Path Analysis


CRESCEN
(AHD)
RL 41.17
NAIL IN KERB
BM 10
TELE PIT
CONCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
Proposed Driveway
GULLY PT
PATH
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TOP GUT RL 45.78
38.710
Driveway
4.0m Front Setback
4.0m Side Setback
0.9m Side Setback
24.543
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
BINS
UNDERGROUND 2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
184°
51'
30"
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time : 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
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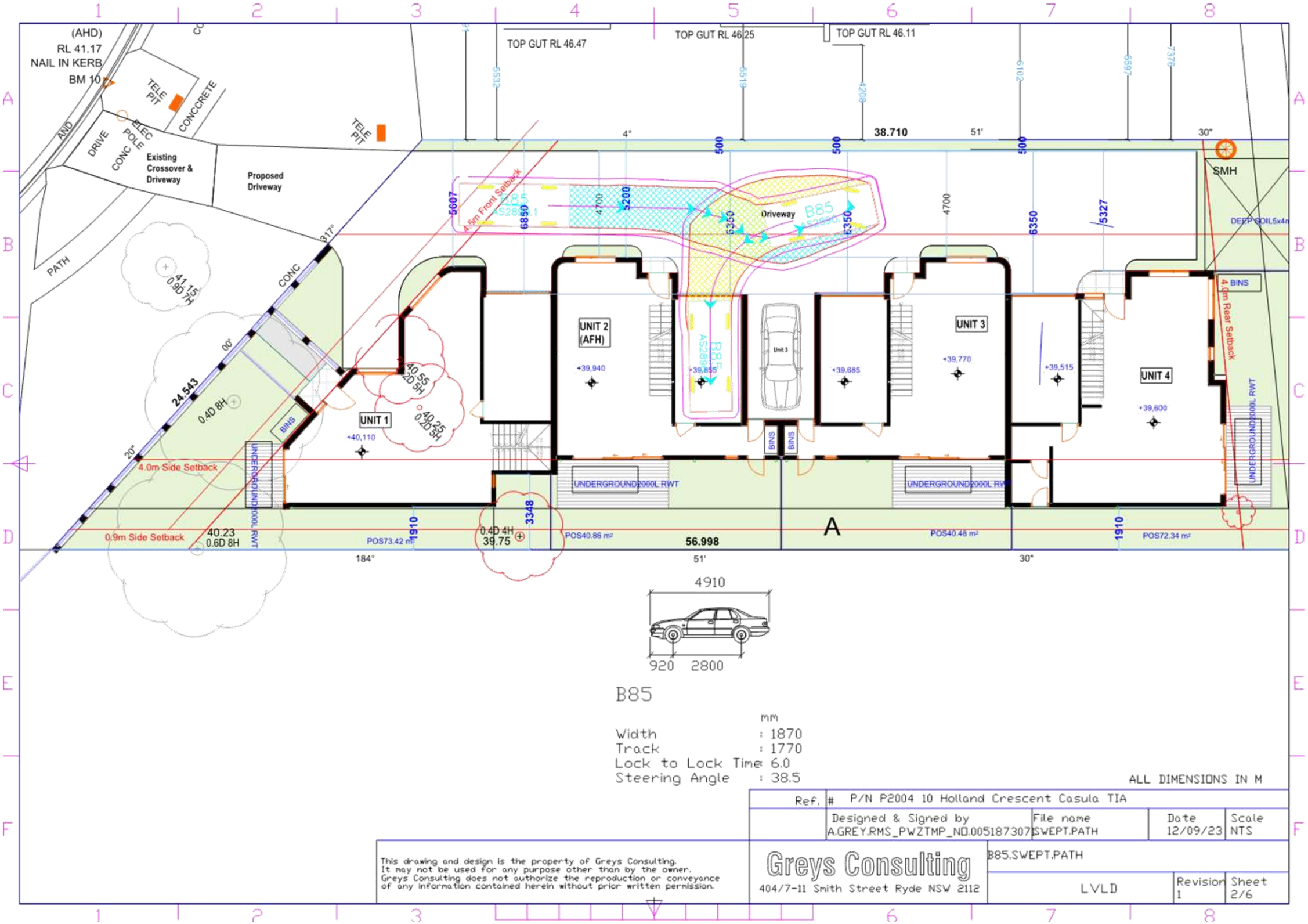
Sheet 1/6


(AHD)
RL 41.17
NAIL IN KERB
BM 10
TELE PIT
CONCCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
Proposed Driveway
PATH
CONC
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
38.710
SMH
DEEP SOIL5x4m
4.5m Front Setback
Driveway
B85
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
BINS
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
24.543
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
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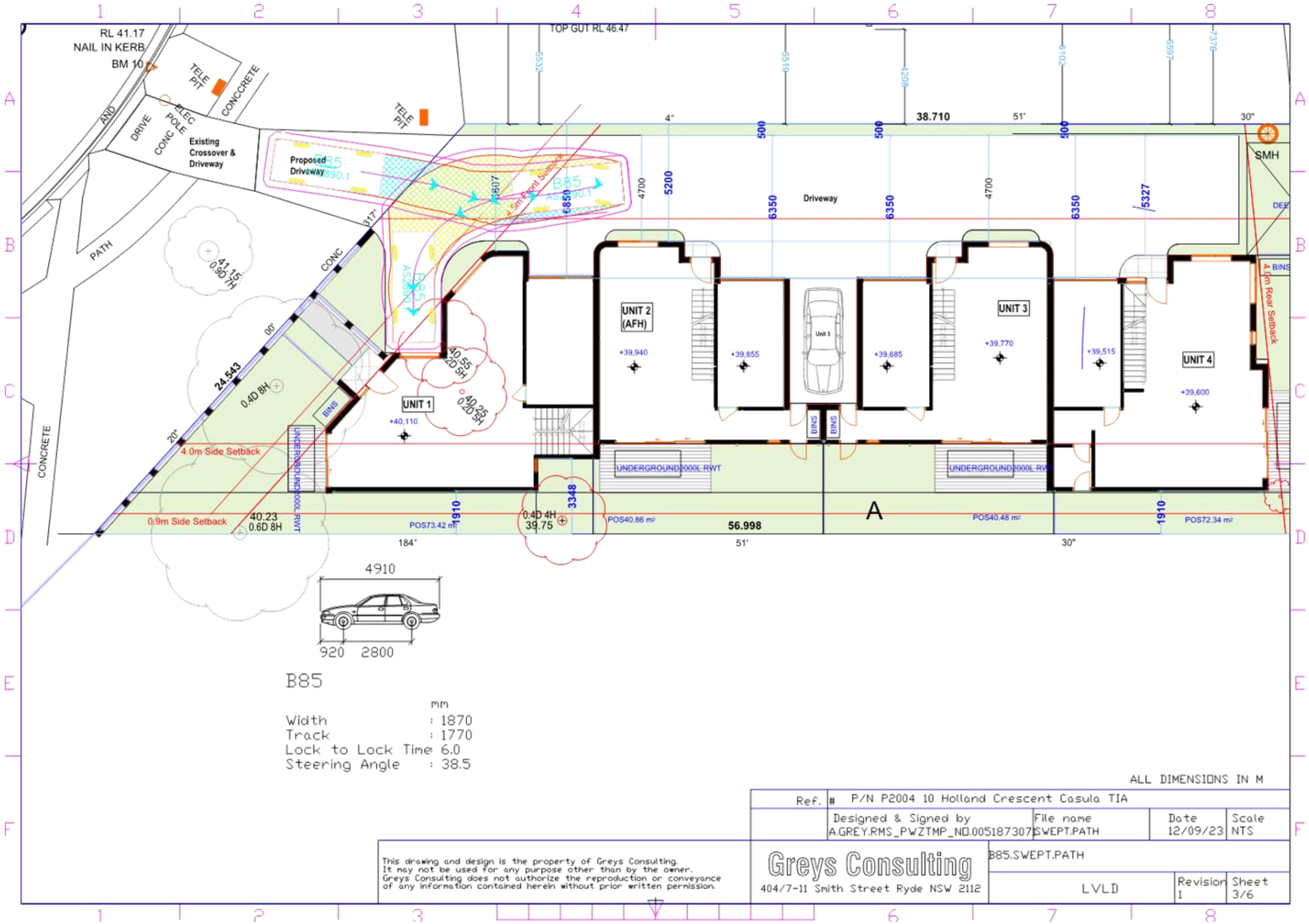
RL 41.17
NAIL IN KERB
BM 10
TELE PIT
CONCCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
PATH
CONCRETE
Proposed Driveway
TOP GUT RL 46.47
38.710
Driveway
SMH
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
+40,110
+39,940
+39,855
+39,685
+39,770
+39,515
+39,600
BINS
4.0m Side Setback
0.9m Side Setback
4.0m Rear Setback
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
24.543
184'
51'
30"
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
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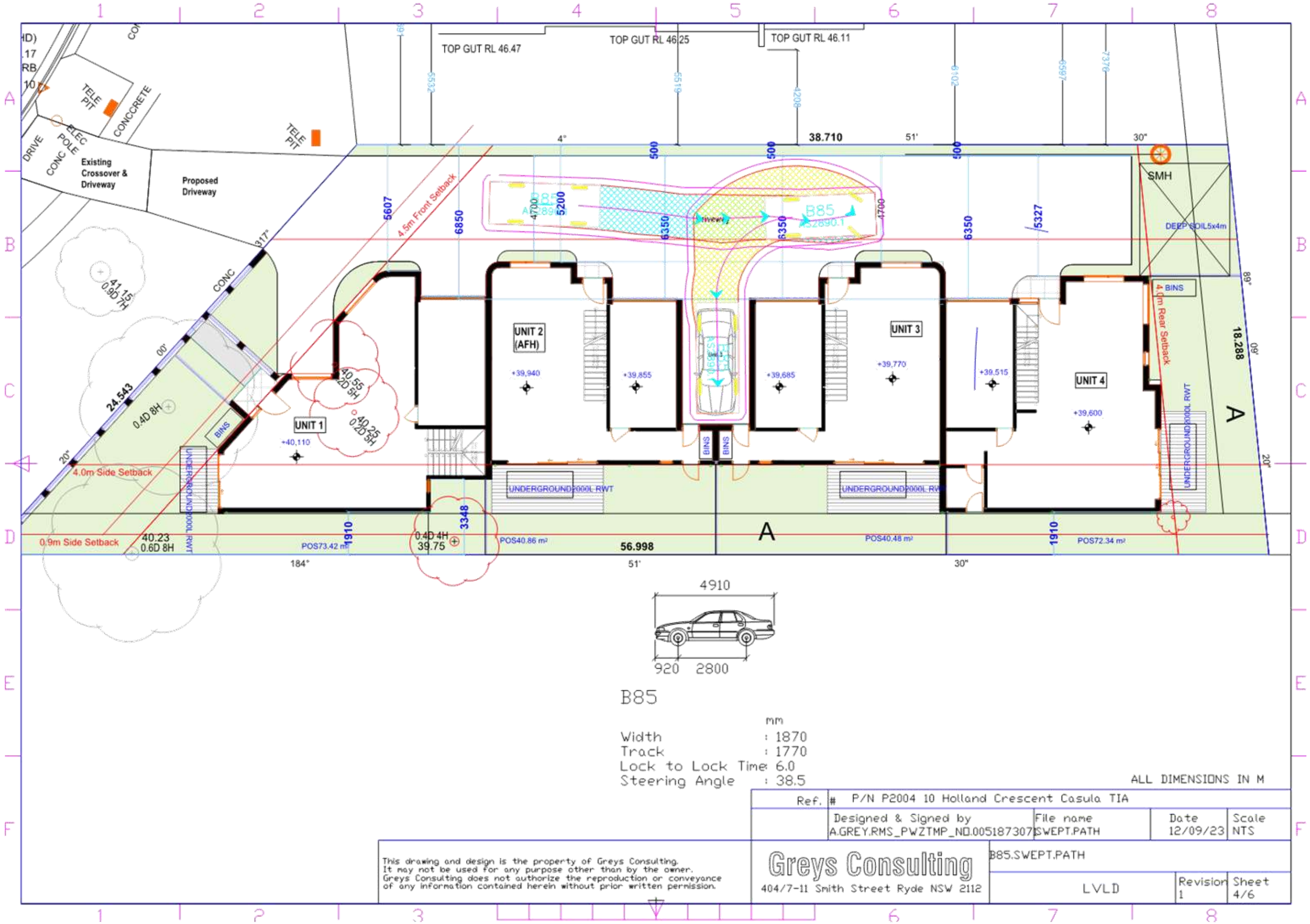
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
38.710
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
SMH
DEEP SOIL5x4m
BINS
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
24.543
18.288
56.998
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
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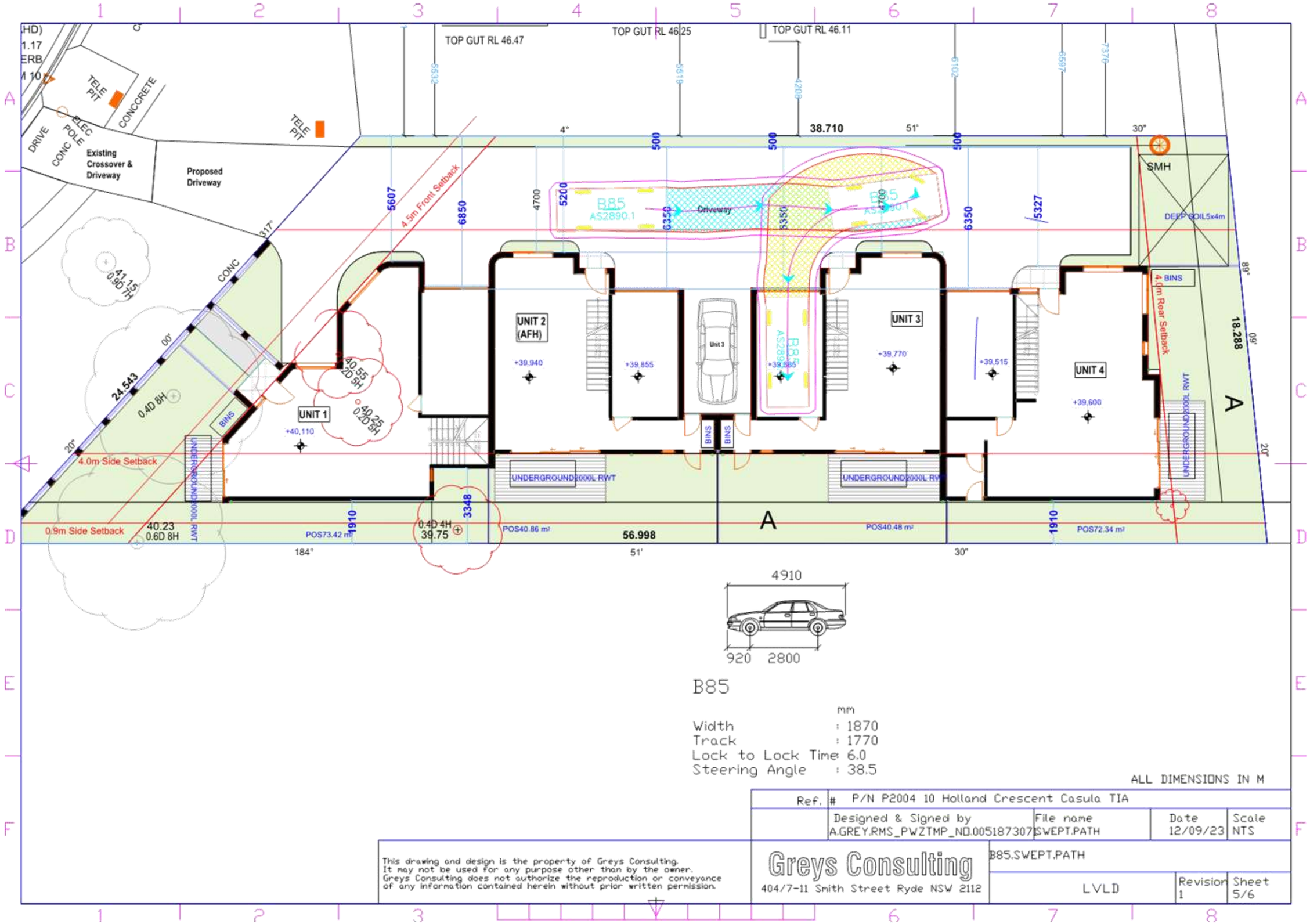
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TELE PIT
CONCCRETE
ELEC POLE
DRIVE
CONC
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
38.710
SMH
DEEP SOIL5x4m
Driveway
B85
AS2890.1
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
+40,110
+39,940
+39,855
+39,770
+39,515
+39,600
BINS
UNDERGROUND2000L RWT
4.0m Rear Setback
18.288
24.543
4.0m Side Setback
0.9m Side Setback
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
39.75
184°
51'
30"
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_NO.005187307
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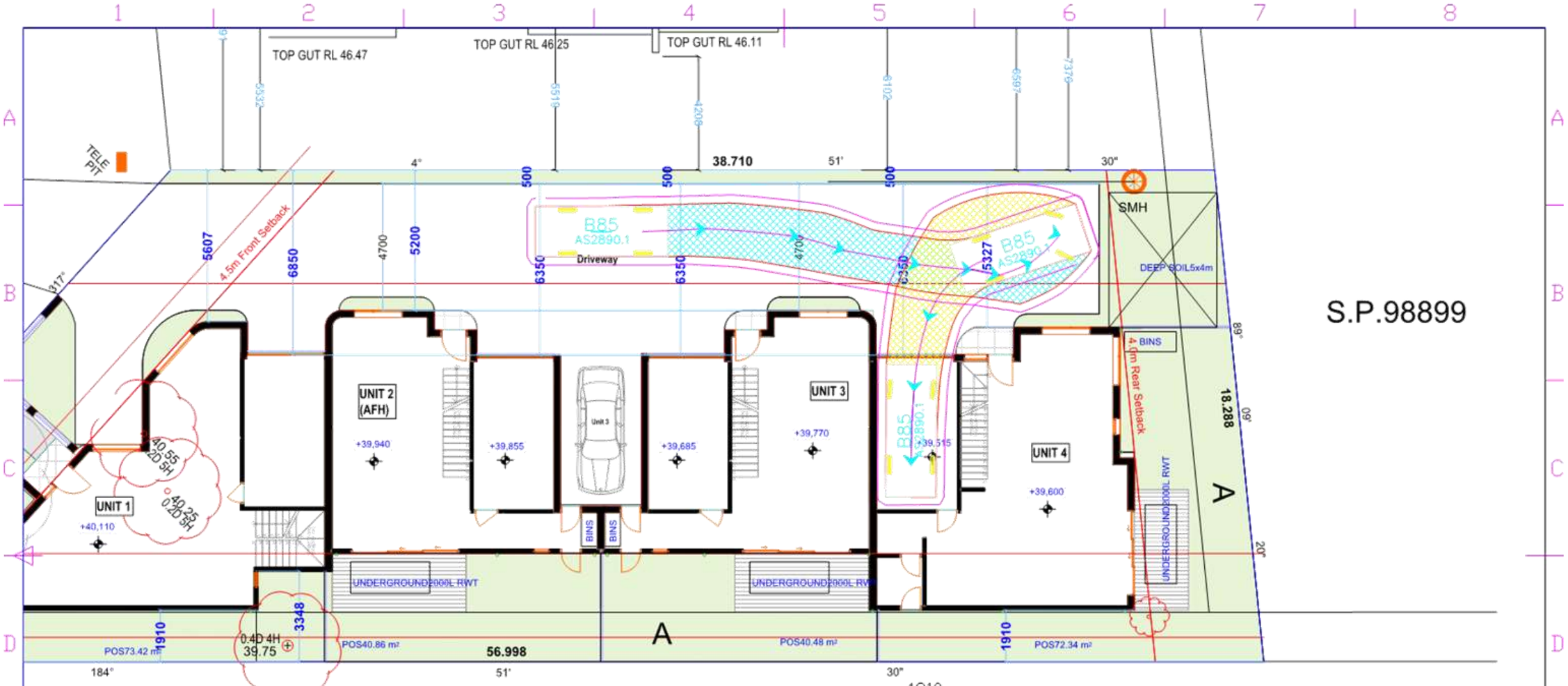

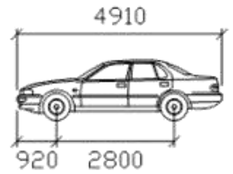

B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 38.5

ALL DIMENSIONS IN M

Ref. #	P/N P2004 10 Holland Crescent Casula TIA			
	Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307	File name SWEPT.PATH	Date 12/09/23	Scale NTS

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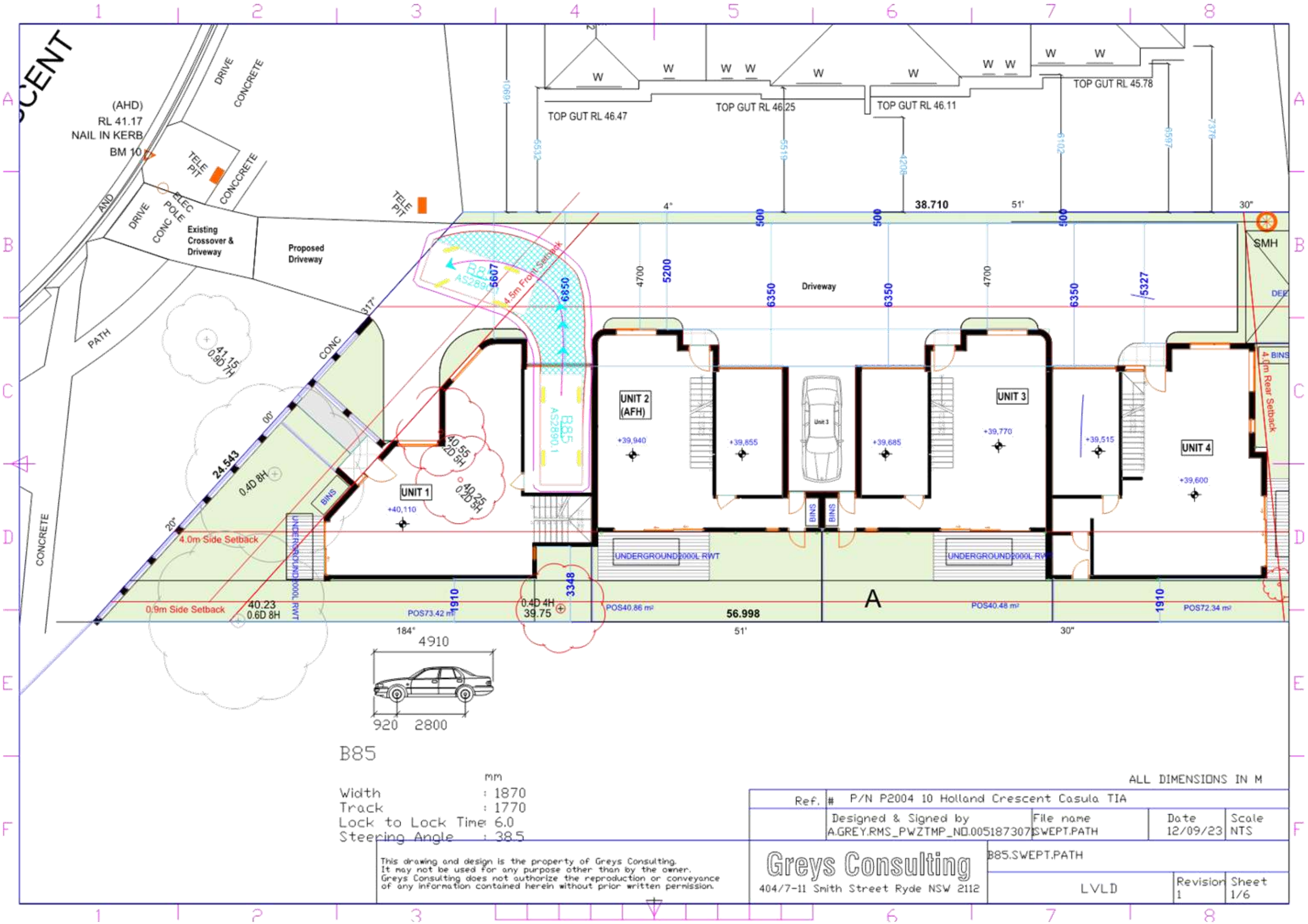
B85.SWEPT.PATH

LVLD	Revision 1	Sheet 1/6


(AHD)
RL 41.17
NAIL IN KERB
BM 10
TELE PIT
CONCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
Proposed Driveway
PATH
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TOP GUT RL 45.78
38.710
Driveway
SMH
4.5m Front Setback
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
BINS
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
40.23
0.6D 8H
0.4D 8H
39.75
24.543
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
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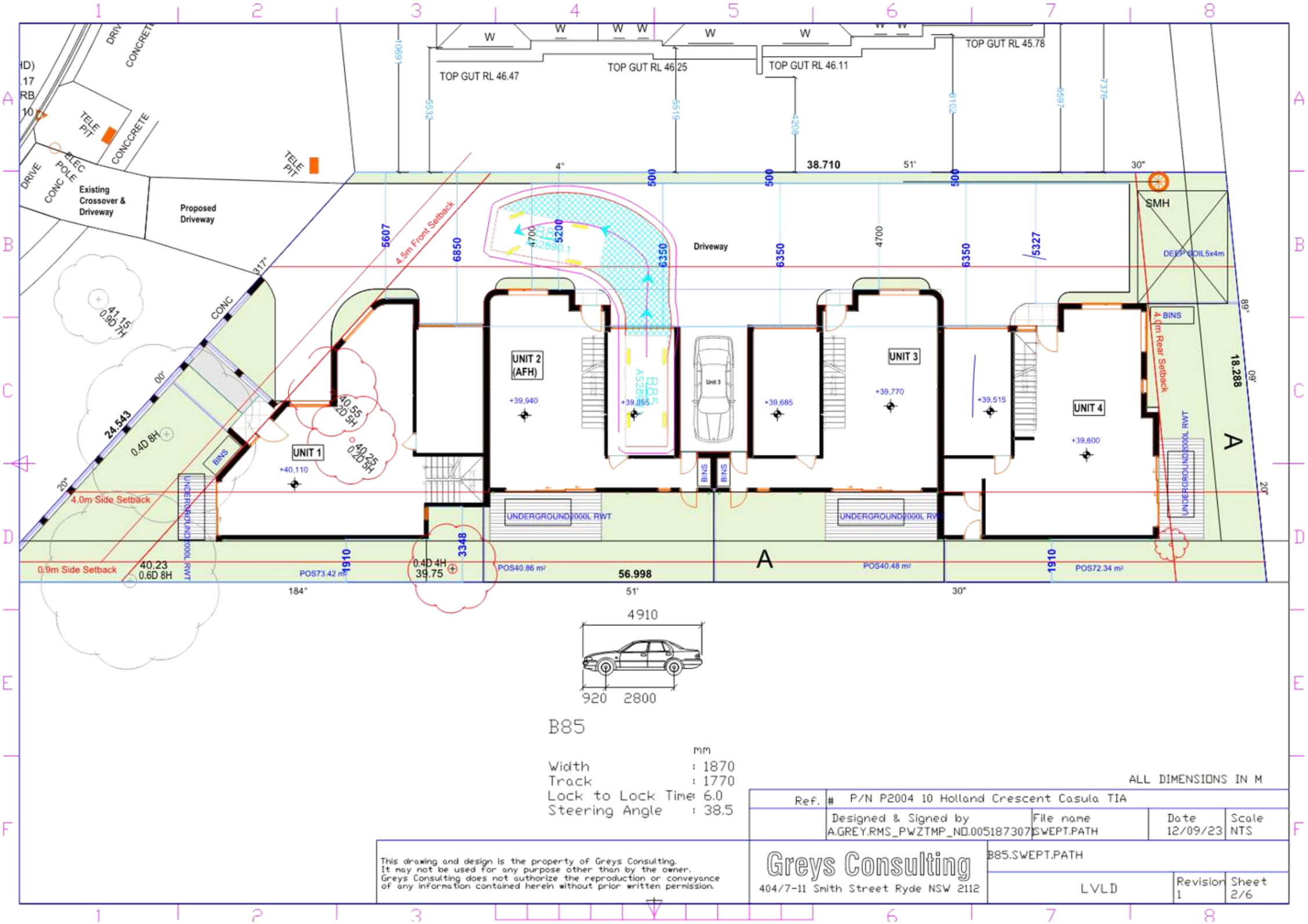
B85.SWEPT.PATH
LVLD
Revision 1
Sheet 1/6


TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TOP GUT RL 45.78
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
Driveway
SMH
DEEP SOIL 5x4m
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
BINS
UNDERGROUND 2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
38.710
56.998
24.543
18.288
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
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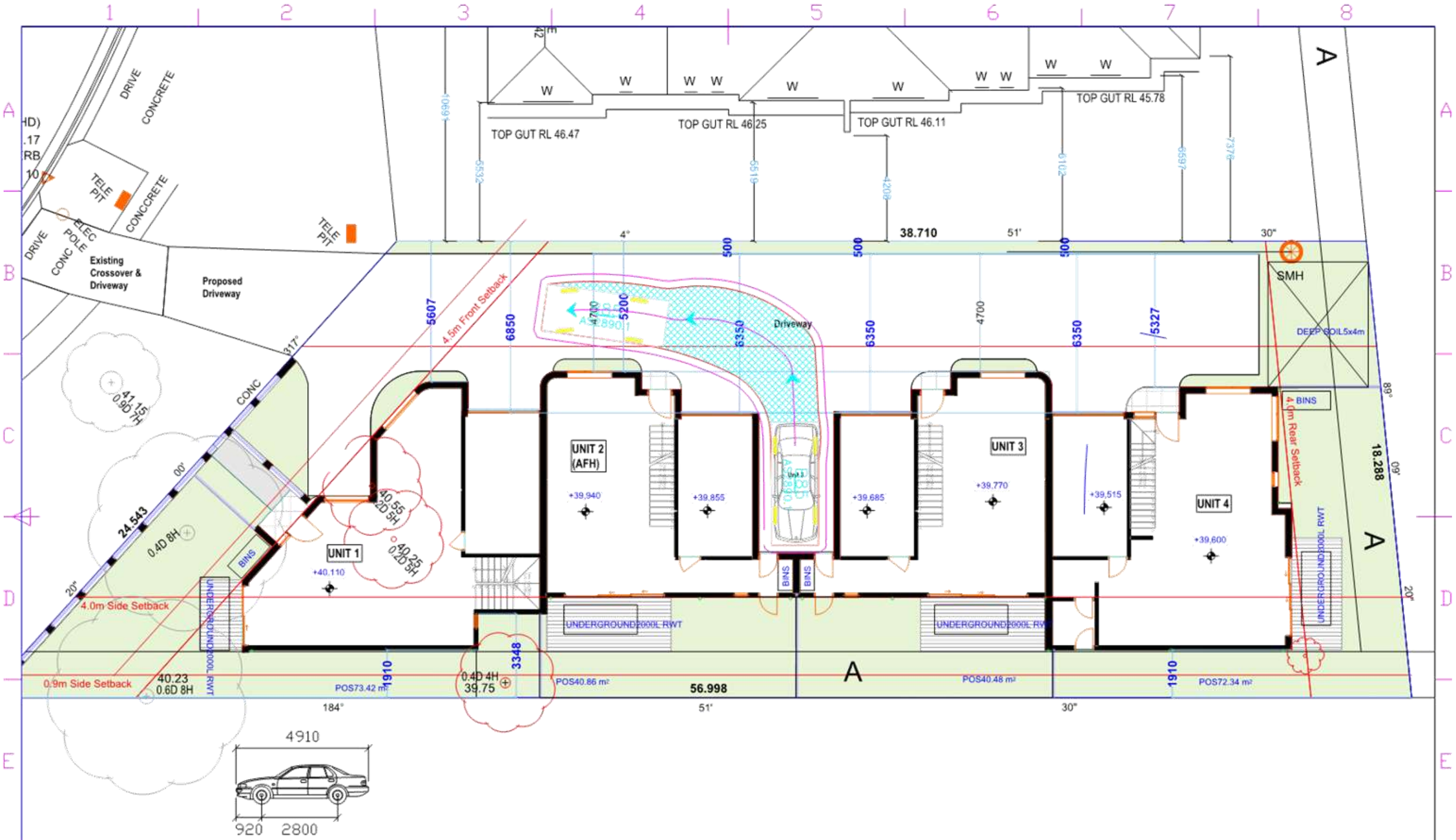
B85.SWEPT.PATH
LVLD
Revision 1
Sheet 2/6


TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TOP GUT RL 45.78
38.710
56.998
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
Driveway
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
SMH
DEEP SOIL 5x4m
4 BINS
UNDERGROUND 2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
18.288
24.543
40.23
39.75
4910
920
2800
B85
ALL DIMENSIONS IN M
mm
Width : 1870
Track : 1770
Lock to Lock Time : 6.0
Steering Angle : 38.5
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
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B85.SWEPT.PATH
LVLD
Revision 1
Sheet 3/6
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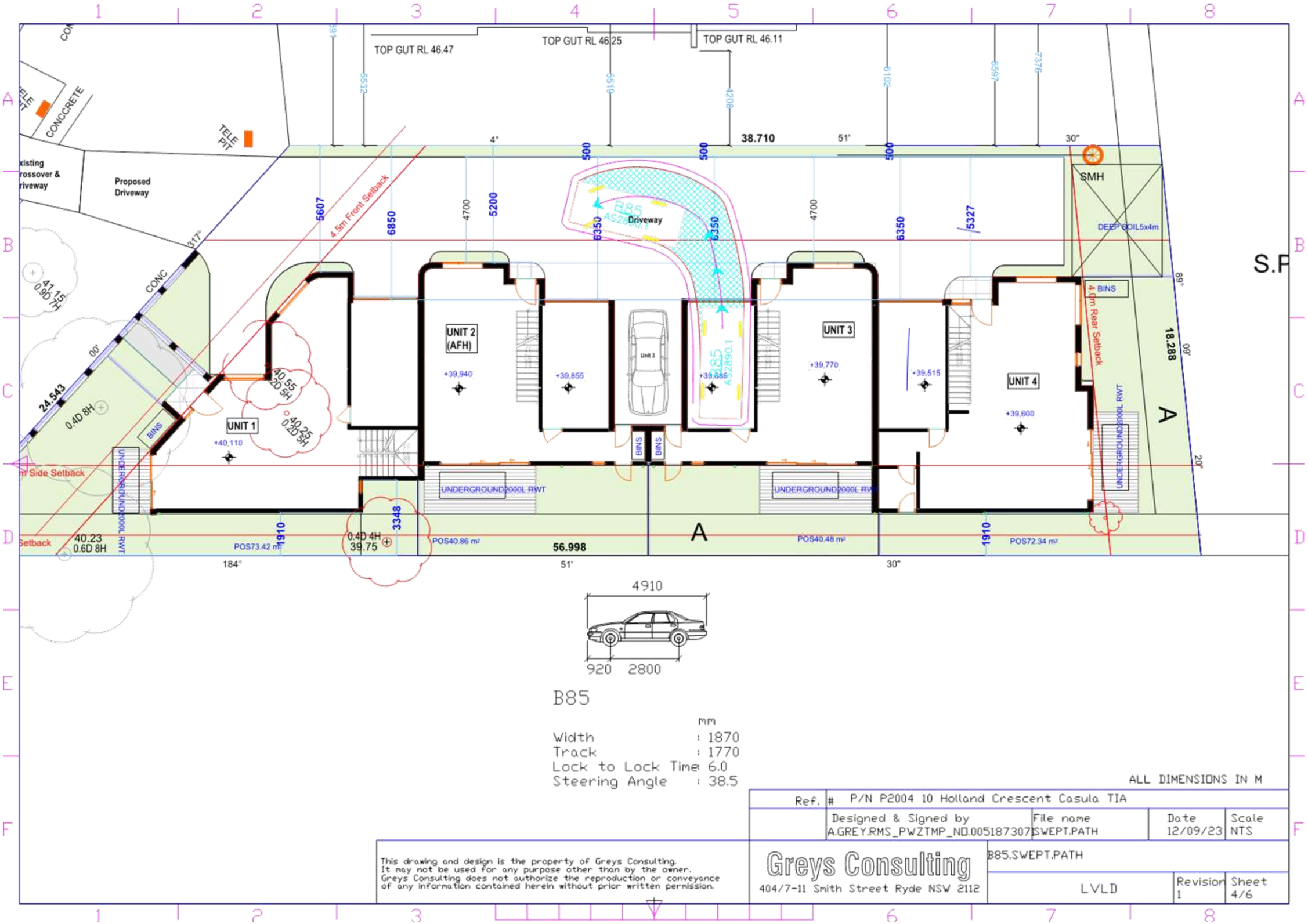
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
CONCCRETE
TELE PIT
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
Driveway
38.710
SMH
DEEP SOIL5x4m
BINS
4.5m Rear Setback
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
56.998
18.288
24.543
S.P
A
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
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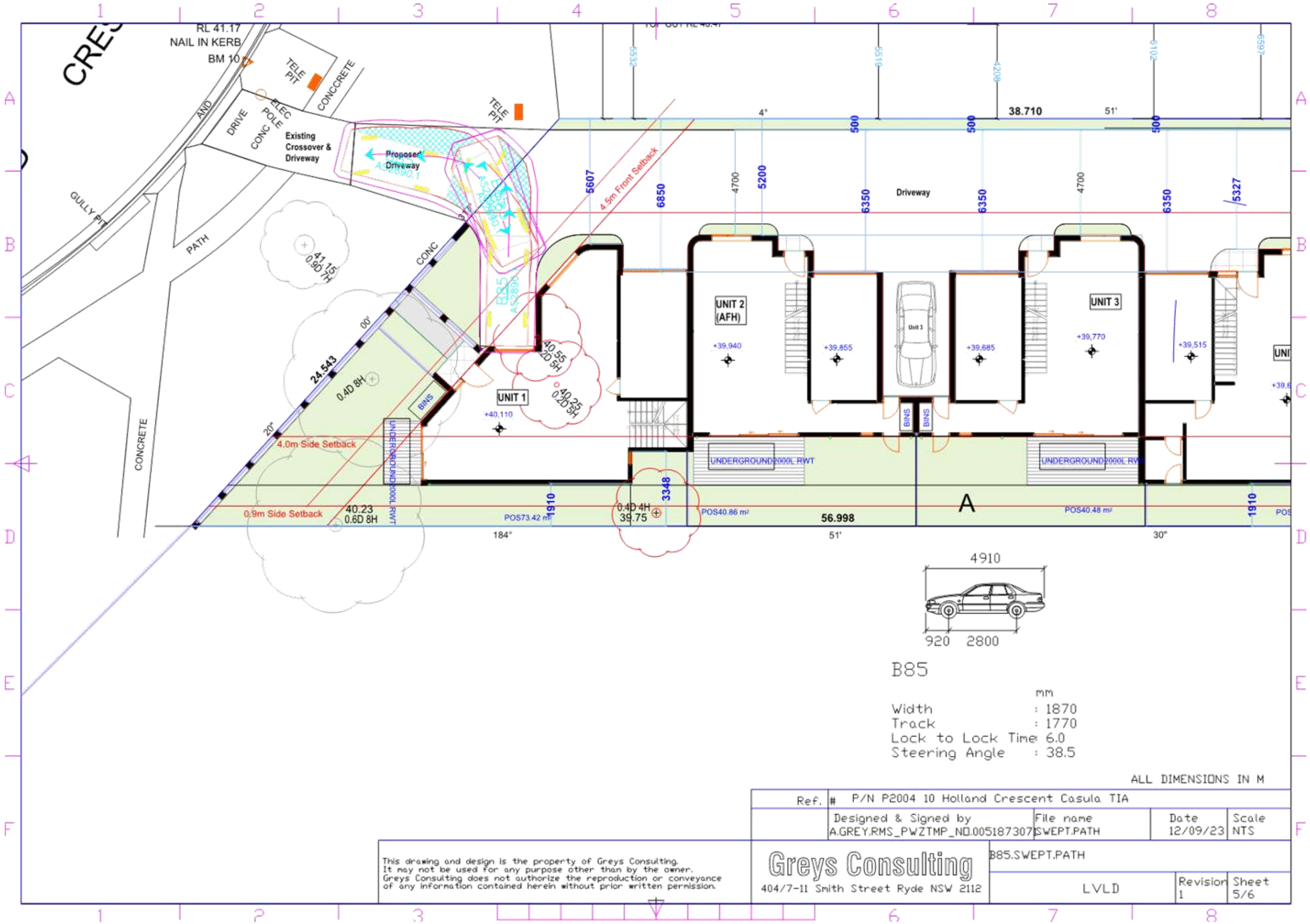
LVLD
Revision 1
Sheet 4/6


RL 41.17
NAIL IN KERB
BM 10
TELE PIT
CONCCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
Proposed Driveway
GULLY PIT
PATH
CONCRETE
CONC
4.5m Front Setback
4.0m Side Setback
0.9m Side Setback
38.710
Driveway
UNIT 1
UNIT 2 (AFH)
UNIT 3
BINS
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
56.998
A
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time : 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
File name SWEPT.PATH
Date 12/09/23
Scale NTS
B85.SWEPT.PATH
LVLD
Revision 1
Sheet 5/6
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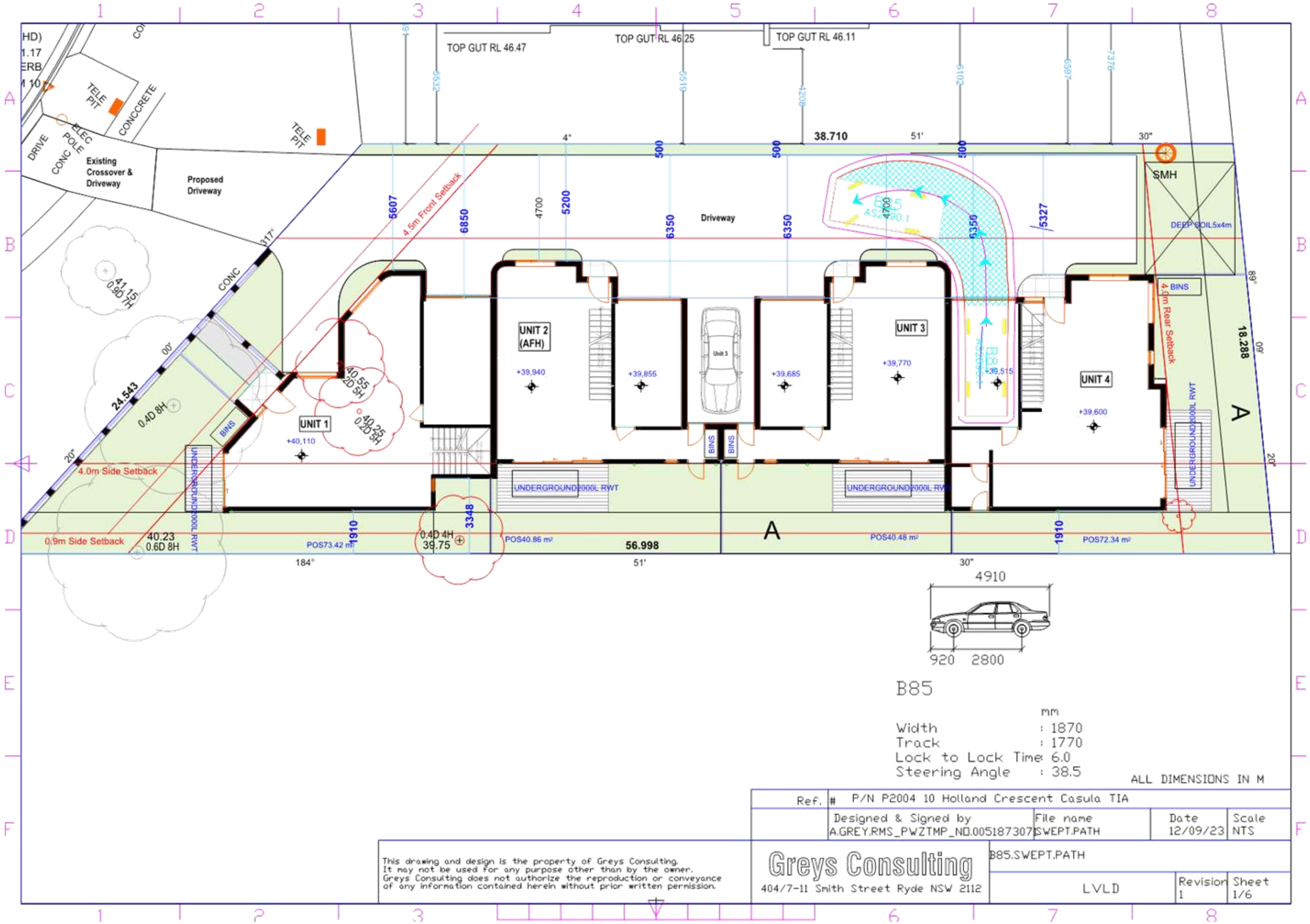
TOP GUT RL 46.47
TOP GUT RL 46.25
TOP GUT RL 46.11
TELE PIT
CONCRETE
DRIVE
ELEC POLE
CONC
Existing Crossover & Driveway
Proposed Driveway
4.5m Front Setback
Driveway
38.710
SMH
DEEP SOIL5x4m
4.0m Rear Setback
4.0m Side Setback
0.9m Side Setback
24.543
18.288
56.998
UNIT 1
UNIT 2 (AFH)
UNIT 3
UNIT 4
BINS
UNDERGROUND2000L RWT
POS73.42 m²
POS40.86 m²
POS40.48 m²
POS72.34 m²
4910
920 2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time: 6.0
Steering Angle : 38.5
ALL DIMENSIONS IN M
Ref. # P/N P2004 10 Holland Crescent Casula TIA
Designed & Signed by A.GREY.RMS_PWZTMP_ND.005187307
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Scale NTS
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Revision 1
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