

ATTACHMENT BOOKLET

LOCAL PLANNING PANEL MEETING
26 MAY 2025

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Attachment 1 to DA-597/2024

Liverpool Development Control Plan 2008

Liverpool Development Control Plan 2008 (LDCP) Part 1 and Part 6 are applicable to the proposed development. The key controls in the LDCP are discussed below:

Part 1 General Controls for all Development			
Control	Requirement	Comment	Compliance
Section 2 – Tree Preservation	Consider impact of development on existing vegetation	No existing vegetation on site	Not Applicable
Section 3 – Landscaping and Incorporation of Existing Trees	Incorporation of existing trees into development where appropriate.	No existing trees on subject site to incorporate.	Not Applicable
Section 4 – Bushland and Habitat Preservation	Consider impact of development on bushland and habitats	The subject site is located in proximity to vegetation along Cabramatta Creek. Whilst this is not classified as bushland, it is recognised as Environmentally Significant Land under Liverpool Local Environment Plan 2008. The site is separated by Hoxton Park Road which is 6-7 lanes wide in front of the site and hence there is limited perceived impact on this vegetated area	Noted and considered acceptable.
Section 5 – Bushfire Risk	Land on or adjacent to bushfire prone land to comply with RFS requirements	Site was classified as Bushfire prone land (Vegetation Buffer 100m and 30m) under 2021 Bushfire prone land mapping. A bushfire report Prepared By: Building Code & Bushfire Hazard Solutions Pty Limited dated 7 February 2023 was submitted as part of the application.	Complies.

		Whilst 2025 Bushfire prone land mapping (released post submission of the DA) does not identify the site as impacted anymore, the report supports the application subject to the recommendations provided and will be conditioned accordingly.	
Section 6 – Water Cycle Management	Consideration of stormwater and drainage	Application is supported by Council's Land Development Engineering section subject to the imposition of conditions	Complies by Condition
Section 7 – Development Near a Watercourse	Consideration of impact to riparian corridors	The site is in proximity to Cabramatta Creek. As such the application has been referred to DPE Water as the works are within 40m to Cabramatta Creek. DPE- Water have supported the application subject to conditions of consent.	Complies. Conditions provided.
Section 8 – Erosion and Sediment Control	The development application shall be accompanied by either a Soil and Water Management Plan (SWMP) or an Erosion and Sediment Control Plan (ESCP).	ESCP provided.	Complies
Section 9 – Flooding Risk	Flood affectation of property to be considered	Subject site is located in a flood affected area. Application is supported by Council's Land Flooding section subject to the imposition of conditions	Complies by Condition
Section 10 – Contaminated Land Risk	Previous use to be considered in assessing risk	The historic landuse of the site is for local energy supply infrastructure. A Detailed Site Investigation {DSI} – 335 Hoxton Park Road, Hinchinbrook NSW 2168 by NEO Consulting	Complies by condition.

		Pty Ltd (NEO). Reference: N09587 dated 22 November 2023 was submitted as part of the application. The report identified that the site is suitable for the proposed development subject to the implementation of the recommendations provided.	
Section 11 – Salinity Risk	Salinity Management Response required for affected properties.	The majority of the site is considered to contain moderate salinity potential and the southern portion of the site has high salinity potential. A Detailed Site Investigation {DSI} – 335 Hoxton Park Road, Hinchinbrook NSW 2168 by NEO Consulting Pty Ltd (NEO). Reference: N09587 dated 22 November 2023 was submitted as part of the application. The report states that based off the sampling taken, the area has generally non saline residual soils underlying the site. Standard conditions of consent are to be applied.	Complies
Section 12 – Acid Sulfate Soils Risk	Affected properties to consider impact of development on soils.	Site is not identified as containing acid sulfate soils	Not Applicable
Section 13 – Weeds	Noxious weeds to be removed as part of the development where applicable	No weeds identified on site.	To be conditioned accordingly
Section 14 – Demolition of Existing Developments	Must comply with AS 2601- 2001	Demolition of existing structures proposed. Compliance with standards to be conditioned.	Complies by condition
Section 15 – Onsite Sewage Disposal	S68 Application required where connection to sewer not available	Site is connected to sewer	Complies
Section 16 – Aboriginal Archaeology	AHIA required where items of Aboriginal archaeology exist	Site not identified as containing Aboriginal artefacts or containing or	Not Applicable

		within the vicinity of heritage items. An AHIMS search was provided and there are no listed sites in proximity.	
Section 17 – Heritage and Archaeology	Consideration of the impact on the heritage significance of any heritage buildings, sites, streetscapes and areas	Site is not mapped as being heritage or in close proximity to a heritage item or area. An AHIMS search was provided and there are no listed sites in proximity.	Not Applicable
Section 19 – Used Clothing Bins	Applies to any charity bins located on either private or Council land.	No charity bins located on site.	Not Applicable
Section 20 – Car Parking and Access	As per the Liverpool DCP Part 1, for Materials recycling or recovery centre, a traffic report is required.	A traffic impact and assessment report prepared by The Transport Planning Partnership dated 20 December 2023 has been prepared in support of the application. The traffic report outlines 5 permanent parking spaces, and 7 customer loading bays associated with the Return and Earn scheme. The proposed parking arrangement and amount are considered appropriate for the facility.	Complies
Section 21 – Subdivision of Land and Buildings	This section applies to development, which involves subdivision of land or buildings	No subdivision provided.	Not Applicable
Section 22 – Energy Conservation	New dwellings must demonstrate compliance with BASIX requirements.	BASIX not applicable. It is considered the facility will not require a separate substation nor consume excessive energy.	Not applicable
Section 23 – Reflectivity	Façade must be comprised of low-reflectivity materials.	The façade material is unlikely to cause glare.	Conditioned for accordingly
Section 24 – Landfill	Cut and fill of land should minimise impacts on environment	Cut and fill proposed is considered minor and will not adversely impact on the environment.	Complies

Section 25 – Waste Disposal & re-use Facilities	Development should minimise waste production during all phases of development.	Satisfactory waste management plan provided	Complies
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Part 6 - Part 6 Development in Business Zones			
Control	Requirement	Comment	Compliance
2. Subdivision, Frontage and Allotment Size	- Development for a new building must have a frontage width of at least 30m - Development for a new building must not leave adjacent land such that cannot achieve a frontage width of at least 30m	Not applicable. The proposal utilises the existing site.	N/A
3. Site Planning	- Be compatible with existing business development in terms of <u>scale</u>, bulk, setbacks, materials and visual amenity. - Address the street and consider its presentation to the arterial <u>road</u> environment.	No existing businesses in the locality. The subject site is bounded on all sides by road related infrastructure such as the Liverpool – Parramatta T-way and its associated parking to the north and west, Hoxton Park Road an SP2 Classified Road to the South and Banks Road to the East, it can be considered the site being used for the purposes of a Resource Recovery Facility (Return and Earn facility) is appropriate given the site constraints The facility is considered to addresses the street appropriately.	
4. Setbacks	Neighbourhood Centres (E1 zones mapped as Area G) Front Setbacks 1. Setbacks for new development shall observe the setbacks for	The site is marked as Area G. There are no existing buildings to establish an existing setback. The proposal is bounded on both sides by road	Complies on merit.

	the existing Neighbourhood Centre. 2. Subject to point 1, any floors above the first floor shall be setback equal to the height of the additional floors.	infrastructure being the Tway to the west and Banks Road to the east. As such, the setback assessment is on merit. Due to the irregular shape of the subject site, all setbacks are varying with the closest boundary setback being 4.3m to the western boundary adjoining the T-Way. This setback is considered acceptable as there is no perceived impact to the users and operations of the T-Way. The first-floor office building is setback in excess of 5m from all boundaries.	
5. Landscaped Areas and Pedestrian Areas	Neighbourhood Centres (E1 zones mapped as Area G) - Pedestrian areas should minimise any changes in levels and allow wheelchair access to the shops from the car parking area and public footpaths. - Pedestrian areas should be separate from loading areas. - Sufficient area shall be provided to permit landscaping and tree planting within pedestrian areas and car parking areas. - Outdoor Eating Areas may be permitted in public footpath areas. Refer to the section on Outdoor Eating Areas.	The proposal is for a resource transfer station, as such pedestrian accessibility is not considered to be a relevant matter for the purposes of this DA. The proposal has utilised landscaping on the boundary of the site to maximise screening and soften the appearance of the development. The proposed landscaping is considered appropriately designed to suit the proposed parking areas of the site.	Complies
6. Building Form, Streetscape and Layout	The DCP does not contain particular provision for E1 centres in Area G. As such an assessment against the objectives of this control has been undertaken. Objectives a) To ensure the height and scale of a development	a) The proposal seeks for a 2-storey structure. In the context of the site, the proposed height is considered acceptable. b) The design of the facility does not compromise	

	complements neighbouring development, and/or the desired character of a business centre. b) To provide adequate amenity to the occupants and residents of a development in terms of solar access, visual and acoustic privacy, and natural ventilation. c) To ensure a development does not detrimentally affect the amenity of nearby residential development. d) To ensure a development is integrated with the public domain and contribute to an active pedestrian-orientated environment. e) To maximise natural surveillance so that people feel safe at all times. f) To ensure pedestrian entrances and exits are clearly visible from the street. g) To promote high quality architectural design. h) To ensure corner sites are developed as visually significant elements in order to promote a strong and legible character. i) To ensure weather protection to pedestrians. j) To ensure roof forms contribute to the proposed character of the centre and residential areas.	solar access, visual/acoustic privacy and natural ventilation for occupants of the site c) The proposal does not impact on amenity of nearby residential development. d) Given the context of the site and type of facility, pedestrian orientated environment is not considered suitable. This is due to the site being isolated on all 4 sides by transport dominating infrastructure. e) The facility is located centrally to the site, natural surveillance is considered adequate as there are no blind corners or areas of poor surveillance proposed. f) The site is not considered suitable for pedestrian activity due to the isolated nature of the site. g) The proposal is considered adequate in regard to design. h) N/A. i) N/A j) The roof form is considered acceptable in regard to the	
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		context of the site.	
7. Landscaping and Fencing	Landscaped areas within Neighbourhood Centres shall generally involve the provision of trees and shrubs in mulched garden beds around car parking areas and where pedestrian areas are provided. In particular the landscaping shall involve the following: 1. mulched garden beds shall incorporate ground covers that will cover the ground area; 2. large shrubs shall be used as screen planting where there is a need to screen certain areas such as outside storage; a) Shrubs shall only be planted in mulched garden beds.	• Mulched garden beds proposed on perimeter of the premises to accommodate landscaping • A variety of small and large shrubs proposed to assist with softening the development. The shrubs range from 4 different species proposed ranging from 0.7m to 4m in height. • Shrubs planted in mulched garden beds.	Complies
8. Car Parking and Access	Car parking and loading areas shall be located off rear laneways where there is a rear laneway and existing car parking is located off the rear laneway. Council may consider the provision of car parking in front of a development if there is an existing car parking area provided in front of adjacent developments.	Part 1 of the DCP refers to the requirement of a Traffic Report to confirm the quantum of parking required. A traffic report has been submitted as part of the application which outlines the following: • 4 staff proposed, 5 parking spaces provided. • 7 loading bays proposed. • Expected patronage is 10 vehicles per hour • Each vehicle is expected to utilise the facility for approximately 7-10 minutes on site (wait, park, unload). Survey results based on nearby facility at Prestons. • Estimated traffic generation of 10 vehicles in AM peak, equates to approximately one vehicle every 6	Complies

		minutes which is considered low. Given the majority of these trips are already on the road network, the surrounding road network and nearby intersections will have adequate capacity to accommodate traffic generated by the proposed development. • Facility operates from 8am to 330pm hence no PM peak. The proposed parking arrangement and number of parking/loading spaces are considered acceptable.	
9. Amenity and Environmental Impact	The DCP does not contain particular provision for E1 centres in Area G. As such an assessment against the objectives of this control has been undertaken. Objectives a) To provide adequate amenity to the occupants of buildings and to neighbouring residential development in terms of solar access, and visual and acoustic privacy. b) To ensure buildings and businesses provide safe and easy access for people. c) To provide useable private open space for dwellings.	a) The closest dwellings to the facility are approximately 100m away and separated by Hoxton Park Road which is a 6-lane arterial classified road. The proposal will not impact on residential amenity. A Noise and Vibration Assessment (Ref: 17233, prepared by Sound In, dated December 2023) is submitted with the application which identifies that the site will comply with the relevant guidelines being the Interim Construction Noise Guideline and Noise Policy for Industry.	

		b) Due to the location of the site, access to the site will be primarily vehicular based. Adequate provision has been provided for safe access. c) Not applicable	
10. Site Services	E1 – Local Centre and E3 – Productivity Support <u>Letterboxes and House Numbering</u> 1. A common letterbox structure must be located close to the main pedestrian entrance of a building. 2. The street number of a building must be visible from the street and made of a reflective material to allow visitors and emergency vehicles to easily identify the location of the building. <u>Frontage works and damage to Council assets.</u> Where a footpath, road shoulder, new or enlarged access driveway or 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. <u>Electricity Sub Station</u> In some cases it may be necessary to provide an electricity sub station at the front of the development adjacent to the street frontage. This will involve dedication of the area as a public road to allow access by the electricity provider. The front boundary treatment	<u>Letterboxes and House Numbering</u> Not Applicable to proposed development. <u>Frontage works and damage to Council assets.</u> To be conditioned accordingly. <u>Electricity Sub Station</u> Proposal not considered to require substation. <u>Waste management</u> 1. Not applicable 2. Not applicable 3. WMP provided. <u>Storage Facilities</u> Not applicable	

	used elsewhere on the street frontage shall be used at the side and rear of the area. <u>Waste management</u> 1. Development involving dwellings shall provide at least two waste storage areas to separately cater for the dwellings and non-residential uses on an allotment. 2. A development must provide a waste storage area inside every food premises, and inside any shop that is capable of accommodating a food premises. 3. A development must locate a waste storage area inside the building, or adjacent to a lane where it is convenient and safe for residents, tenants, and waste collection trucks to access the waste storage area and the location and floor level are to the satisfaction of Council and Part 1. <u>Storage Facilities</u> A multi-unit development must provide a minimum storage area of 8 m³ to each dwelling. The storage area may be attached to the car parking space or spaces to each dwelling.		
11. Non Business Uses	Controls related to non business uses within business zones.	The proposal is for a resource transfer station which is not a business use. The application is permissible via the Transport and Infrastructure SEPP.	N/A
12 Shop Top Housing	Controls related to Shop-top Housing	Not Applicable	N/A
13. Restaurants/Outdoor Cafes	Controls related to restaurants/outdoor cafes within E1, E2, E3 & MU1 zones	Not Applicable	N/A
14. Child Care Centres	Controls related to childcare facilities within E1, E2, E3 & MU1 zones	Not Applicable	N/A
15. Telecommunications Facilities	Controls related to telecommunications facilities within E1, E2, E3 & MU1 zones	Not Applicable	N/A

16. Used Clothing Bins	This section applies to charity bins located on either private or Council land.	Not Applicable	N/A
17. Service Stations	This section applies to Service Stations in E1 – Local Centre, E3 – Productivity Support or MU1 – Mixed Use zones.	Not Applicable	N/A
18. Restricted Premises	This section applies to 'Restricted Premises' (as defined by the Liverpool Local Environmental Plan 2008) in E2 – Commercial Centre or MU1 – Mixed Use zones.	Not Applicable	N/A
Appendix – Outdoor Cafes	This section applies to outdoor cafes	Not Applicable	N/A

CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW

BUILDING DESIGN DRAWING SCHEDULE

COVER SHEET
A - 00 COVER SHEET + DRAWING SCHEDULE

SURVEY - BY EAST COAST POSITIONING Pty Ltd
ECP2452.D.01 DETAIL SURVEY

CONSTRUCTION MANAGEMENT
CM - 01 SITE : CONSTRUCTION MANAGEMENT PLAN
CM - 02 SITE : CONSTRUCTION MANAGEMENT NOTES + DETAILS

BUILDING DESIGN
A - 01 SITE : EXISTING FEATURES PLAN
A - 02 SITE : DEMOLITION PLAN
A - 11 SITE : GENERAL ARRANGEMENT PLAN
A - 12 SITE : SETOUT PLAN
A - 13 SITE : LEVELS + CONTOURS PLAN
A - 14 SITE : ELEVATIONS - SHEET No. 01
A - 15 SITE : ELEVATIONS - SHEET No. 02
A - 16 SITE : PERIMETER ELEVATIONS - SHEET No. 01
A - 17 SITE : PERIMETER ELEVATIONS - SHEET No. 02
A - 21 TRANSFER AREA : GENERAL ARRANGEMENT + SETOUT PLAN
A - 31 FIRST FLOOR OFFICE : GENERAL ARRANGEMENT + SETOUT PLAN
A - 41 OFFICE AREA : ROOF PLAN

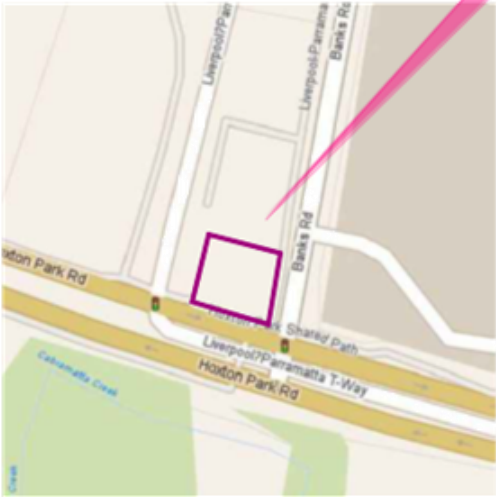
VISUALISATIONS
V - 01 VISUALISATION - No. 01 - AERIAL VIEW FROM SOUTH-WEST
V - 02 VISUALISATION - No. 02 - AERIAL VIEW FROM SOUTH-EAST
V - 03 VISUALISATION - No. 03 - AERIAL VIEW FROM NORTH-EAST
V - 04 VISUALISATION - No. 04 - AERIAL VIEW FROM NORTH-WEST
V - 05 VISUALISATION - No. 05 - STREET VIEW FROM SOUTH-WEST
V - 06 VISUALISATION - No. 06 - STREET VIEW FROM SOUTH-EAST
V - 07 VISUALISATION - No. 07 - STREET VIEW FROM NORTH-EAST
V - 08 VISUALISATION - No. 08 - STREET VIEW FROM NORTH-WEST

TURNING STUDIES
TS - 01 TURNING STUDY No. 01 : CUSTOMER CARS
TS - 02 TURNING STUDY No. 02 : CUSTOMER CAR + BOX TRAILER
TS - 03 TURNING STUDY No. 03 : 8m HOOK TRUCK

CIVIL ENGINEERING - BY DIVERSI CONSULTANTS Pty Ltd
DA01 COVER SHEET, DRAWING LIST, LOCALITY PLAN
DA02 EROSION + SEDIMENT CONTROL PLAN + DETAILS
DA03 SITE WORKS + STORMWATER DRAINAGE PLAN
DA04 DRIVEWAY + QSD LONGITUDINAL SECTION
DA05 SITE SECTIONS
DA06 STORMWATER CATCHMENT PLAN
DA07 STORMWATER DETENTION BASIN TANKS PLAN, SECTIONS + DETAILS
DA08 STORMWATER TYPICAL DETAILS

LANDSCAPE - BY GREEN MOUSE LANDSCAPE ARCHITECTURE
01 LANDSCAPE LAYOUT
02 HARDSCAPE PLAN
03 PLANTING PLAN

SITE



LOCATION MAP
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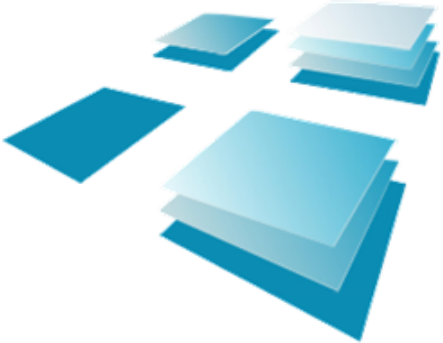
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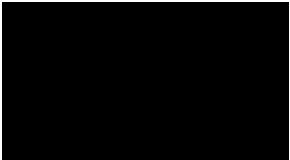
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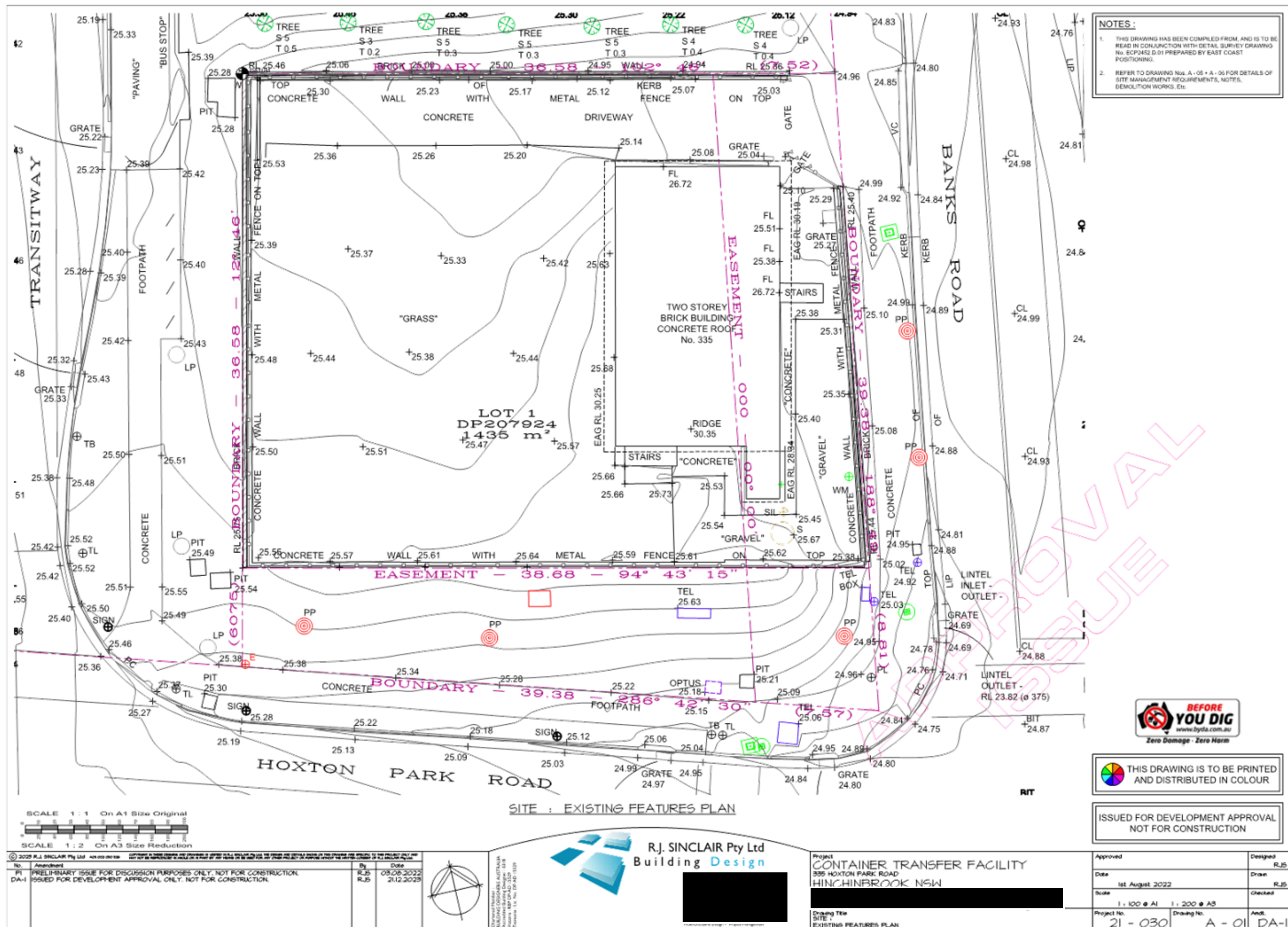


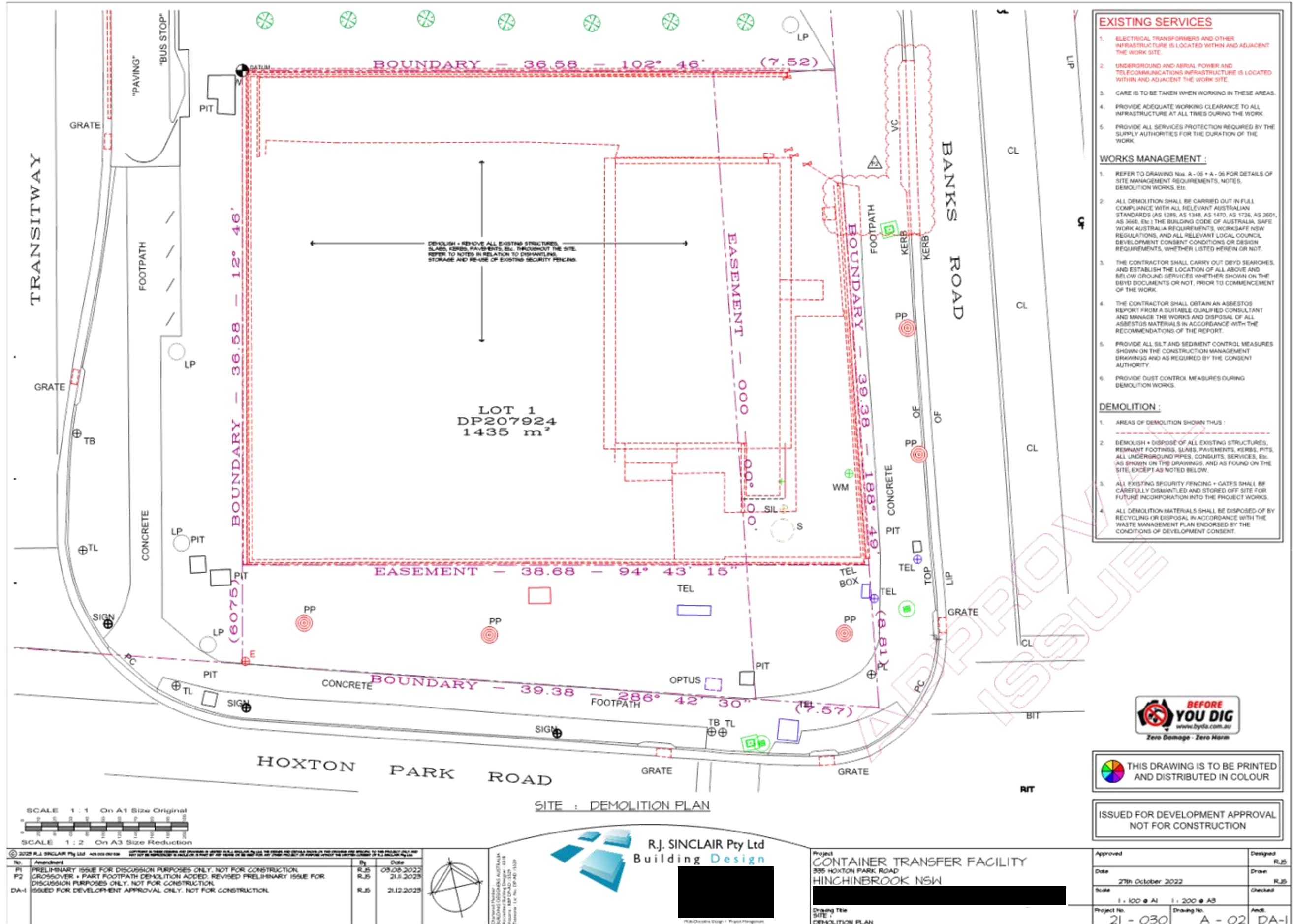
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Building Design

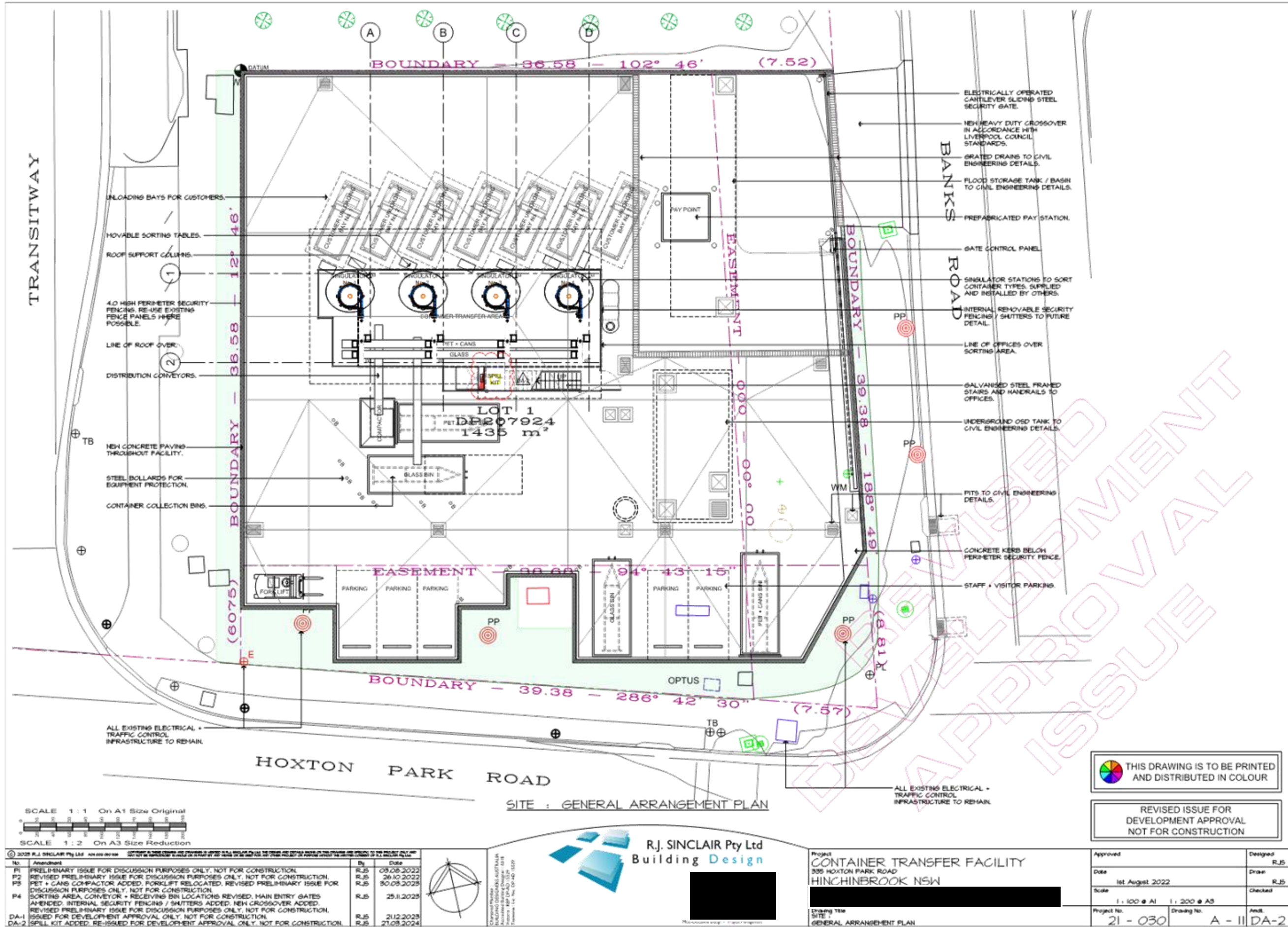


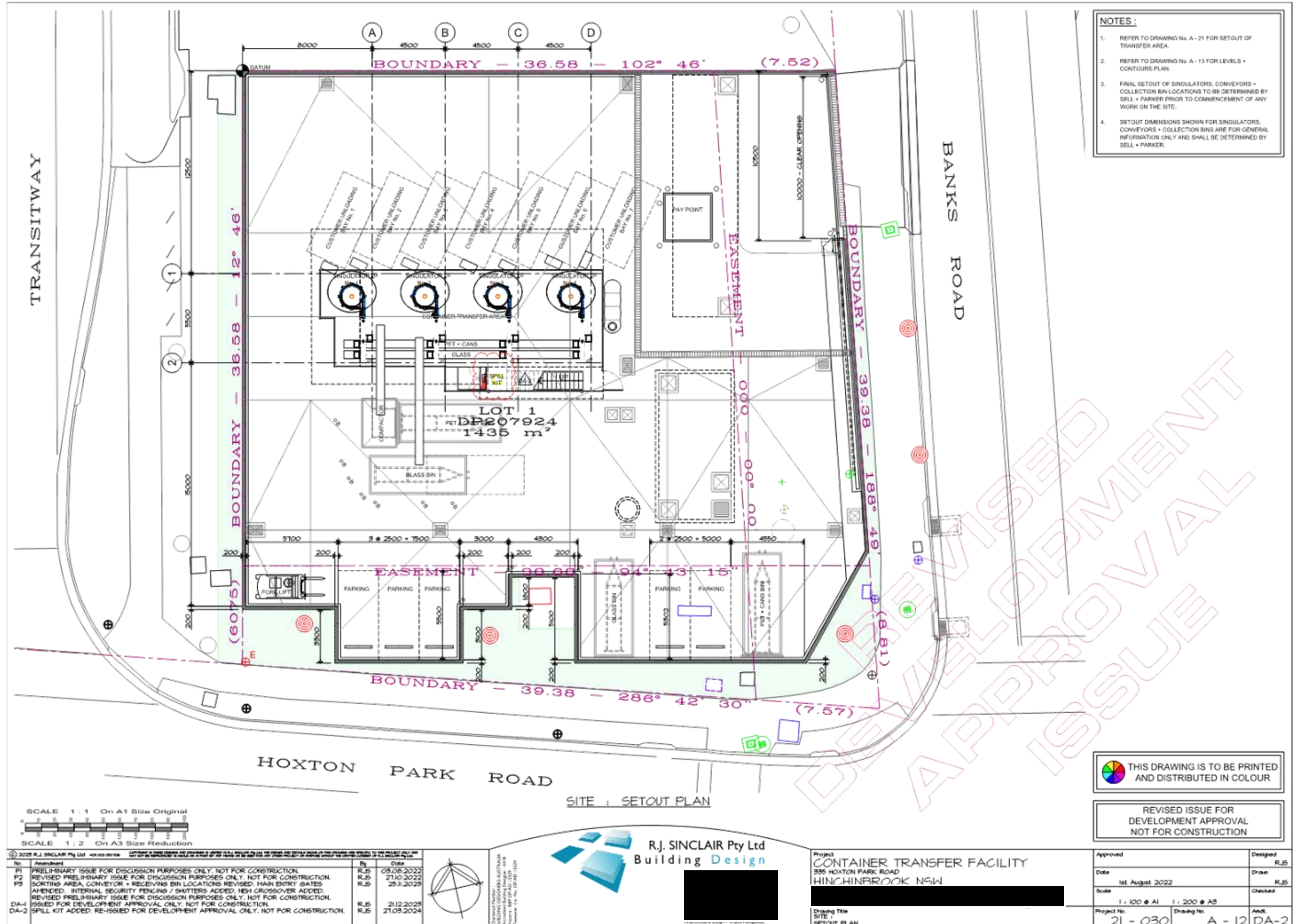
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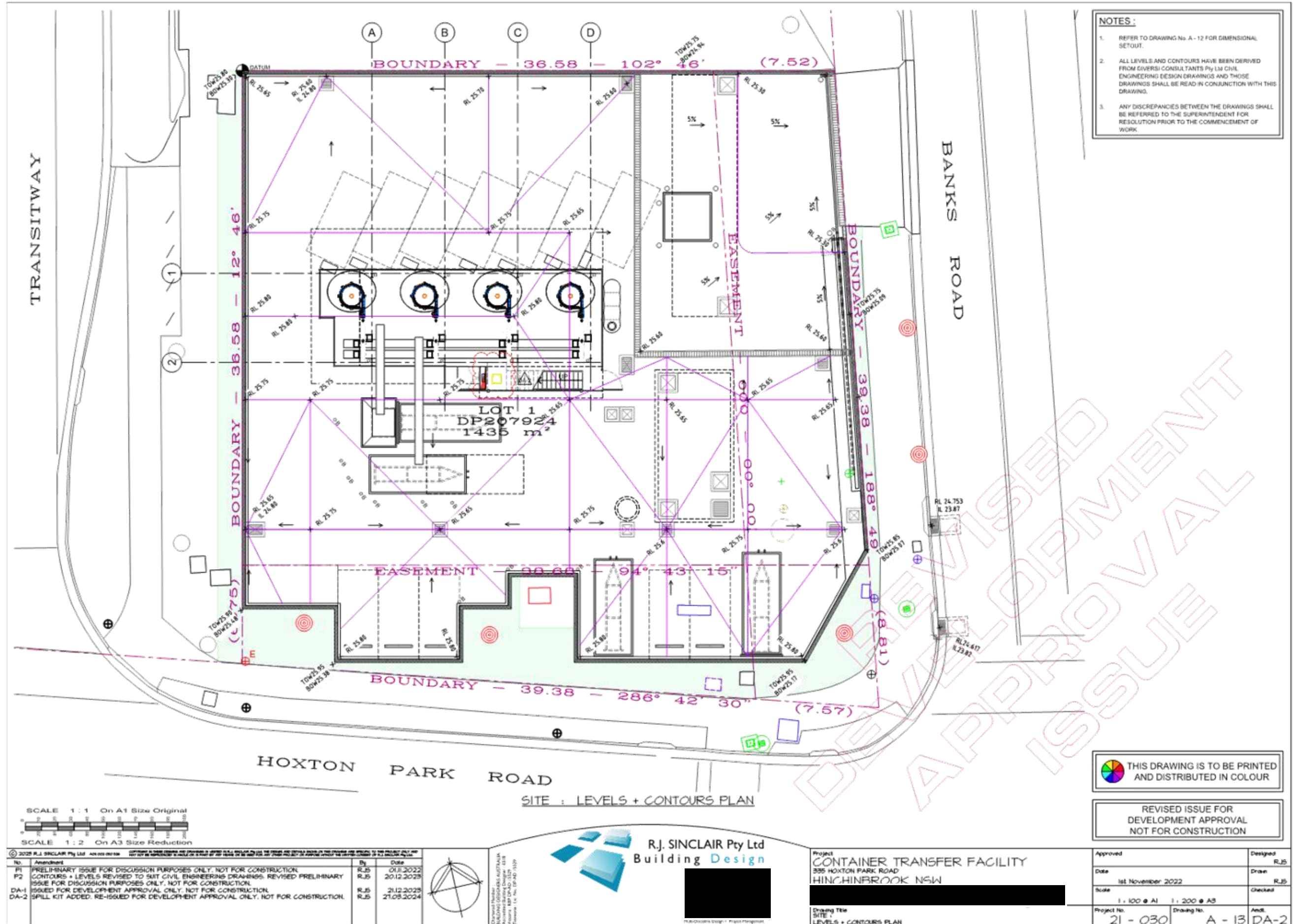
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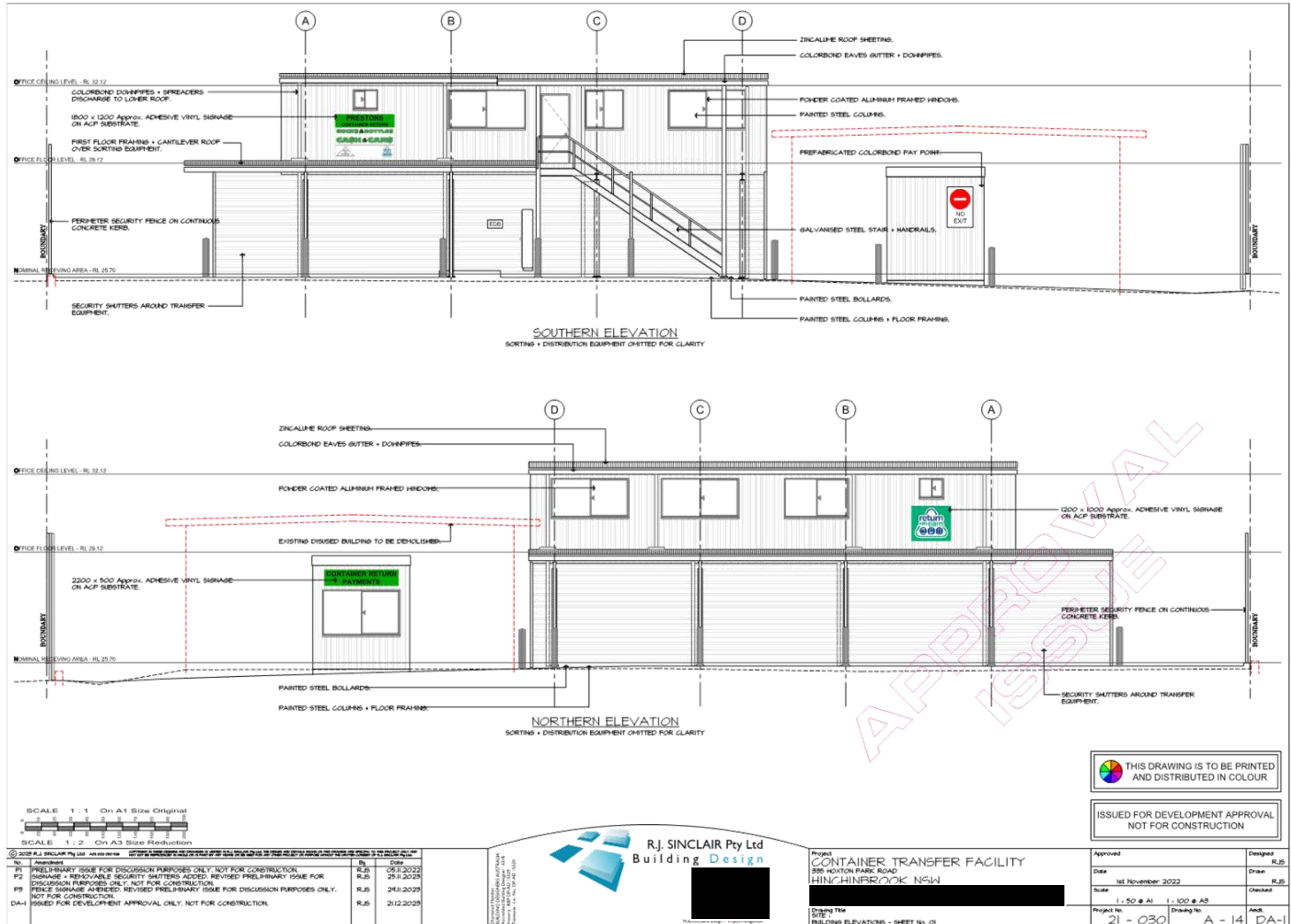


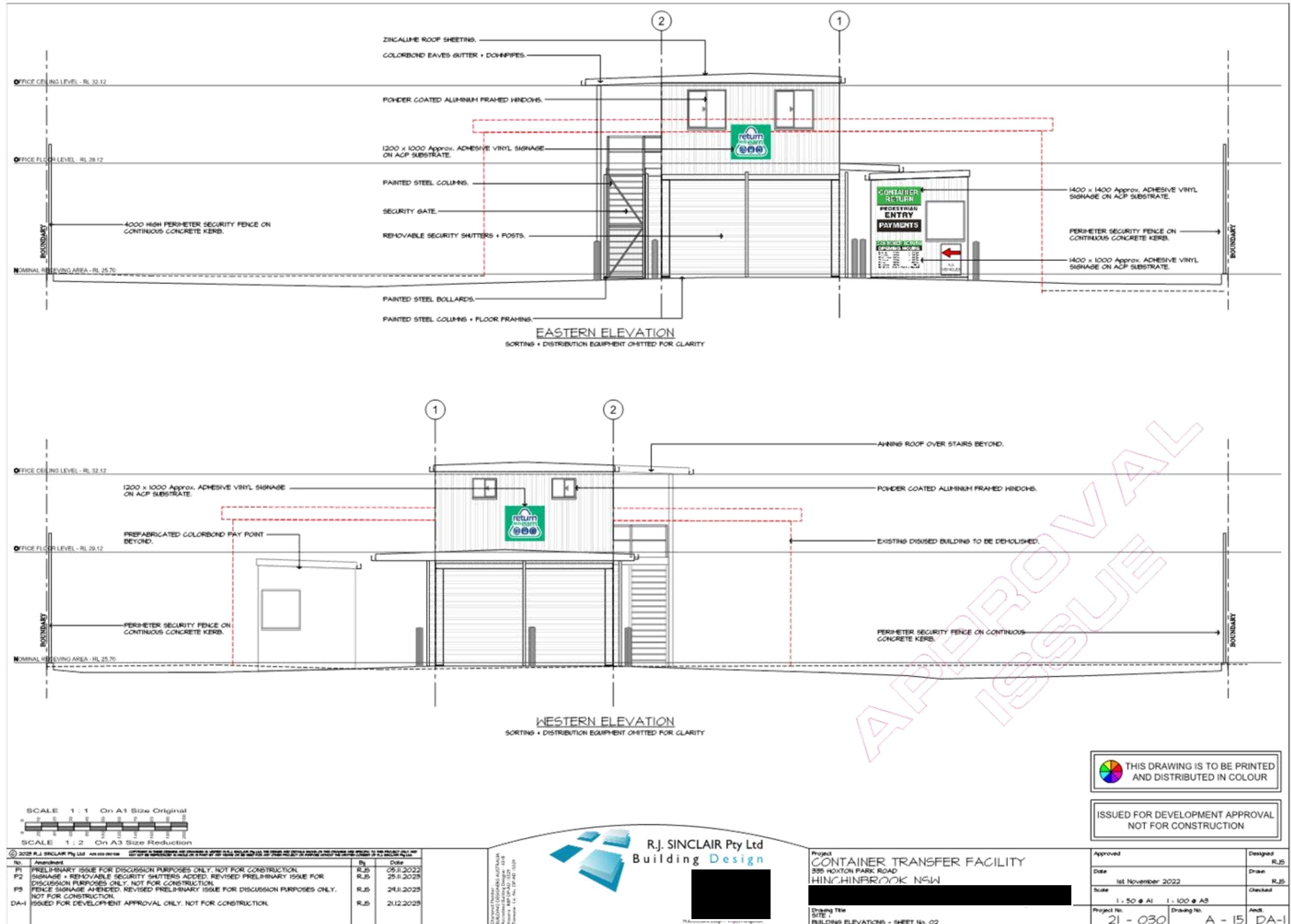


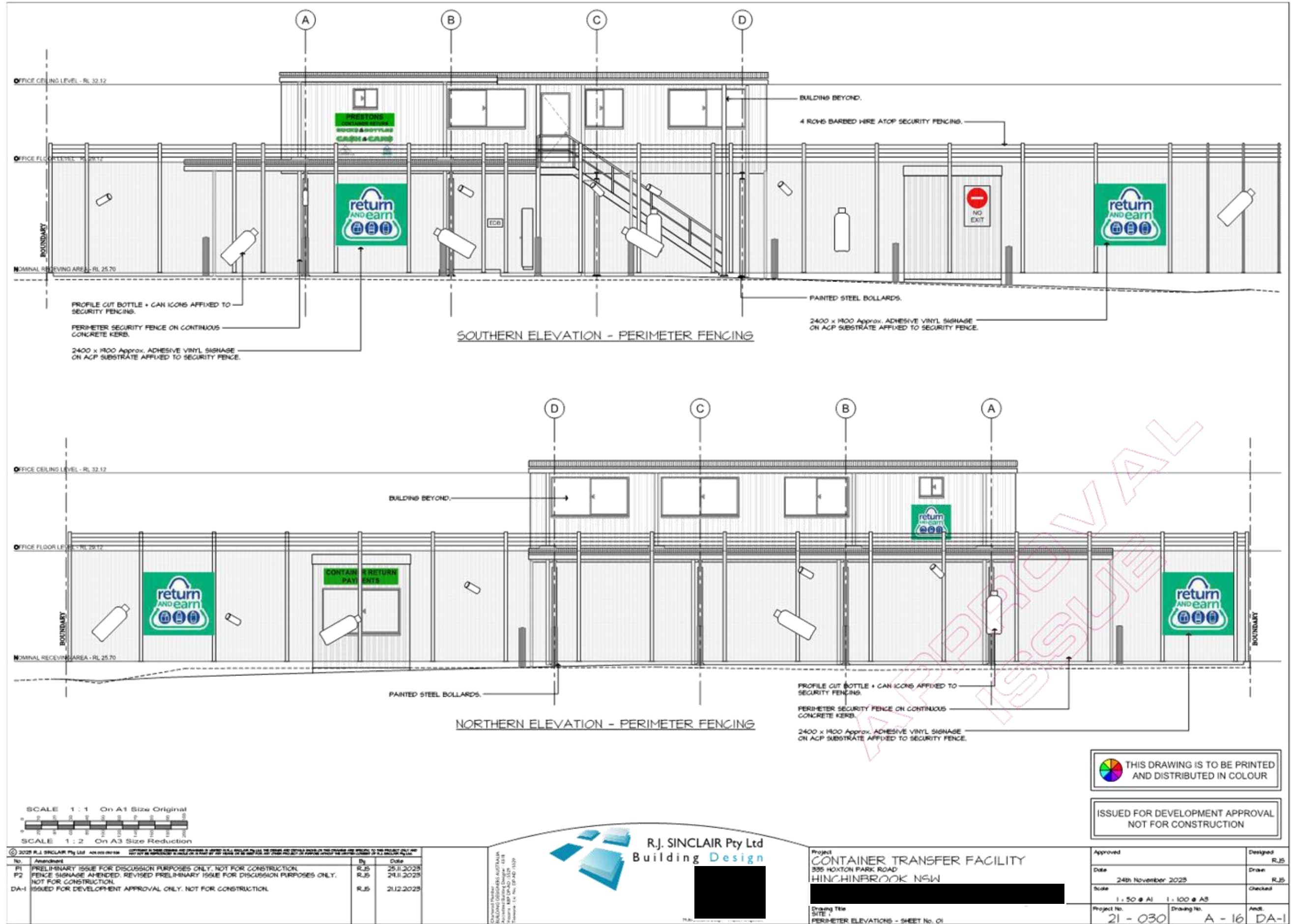


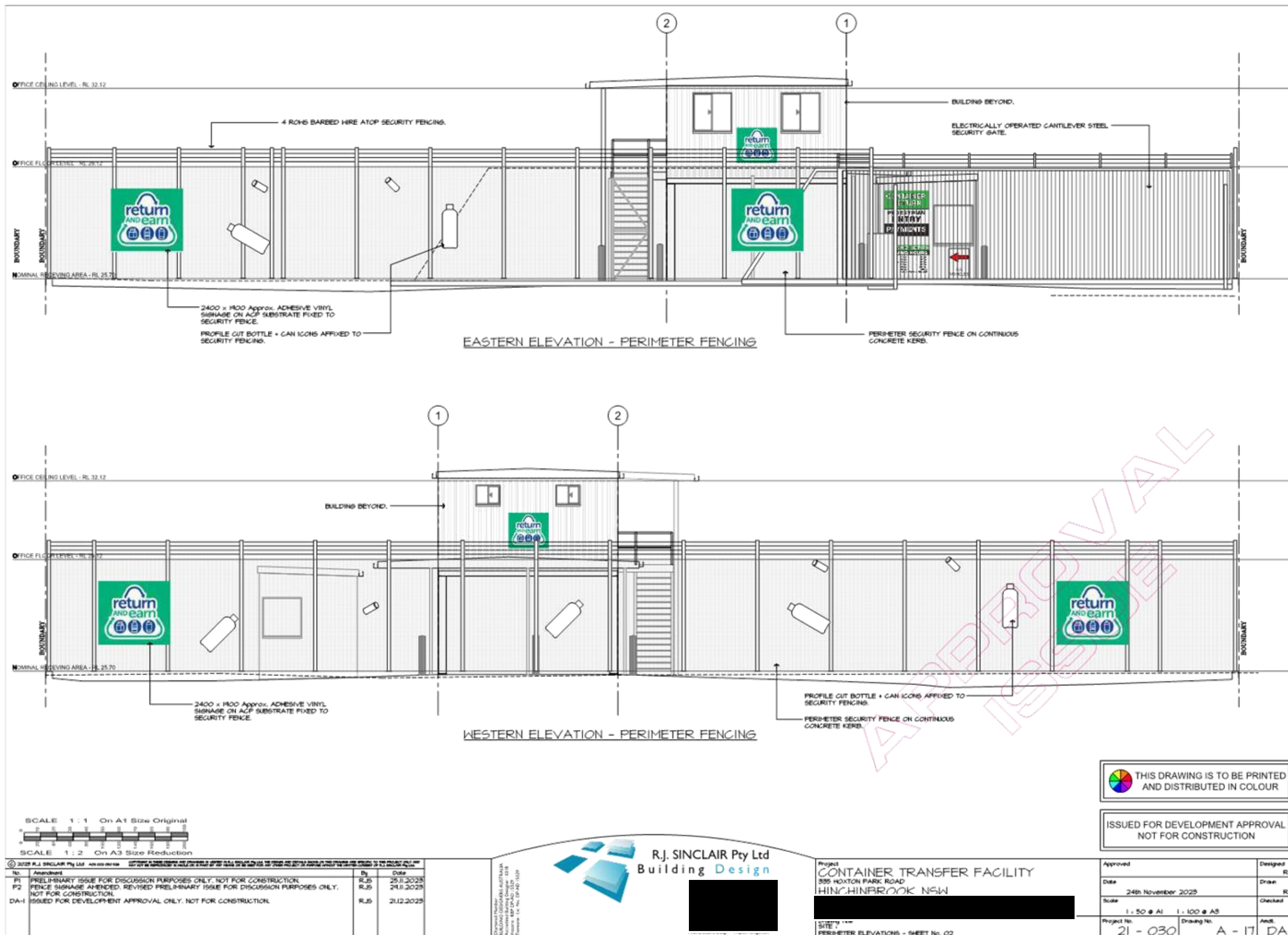


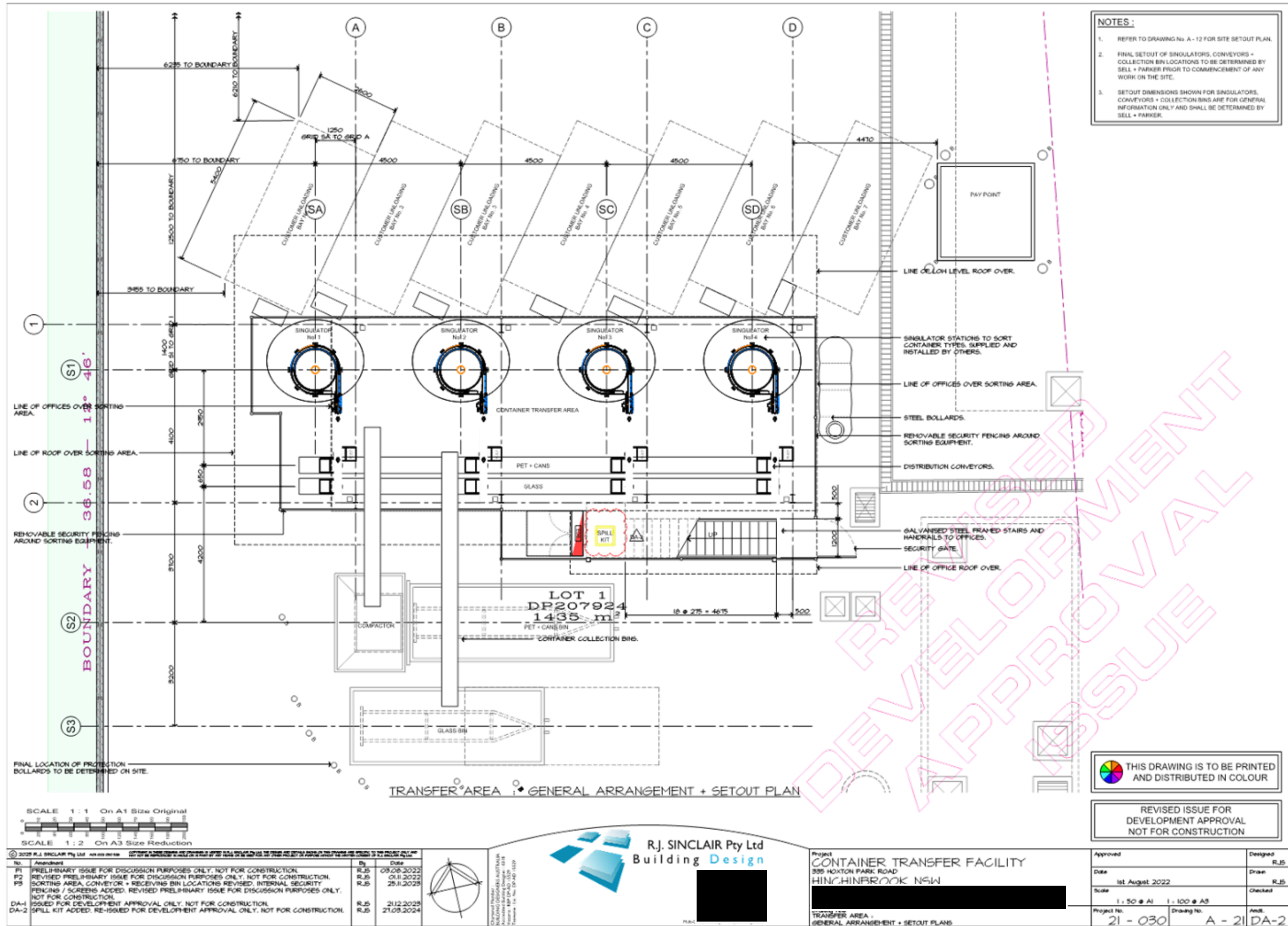


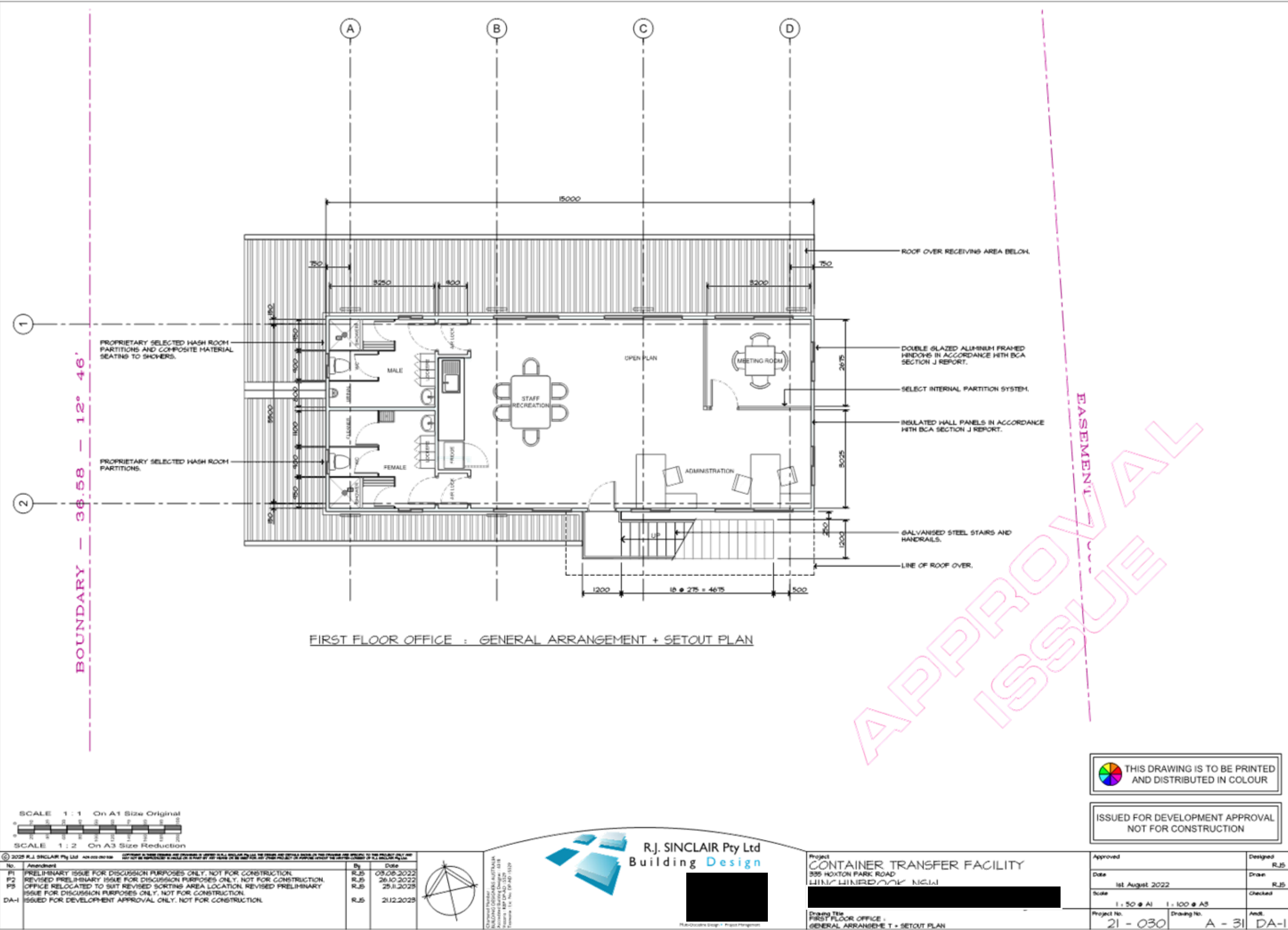


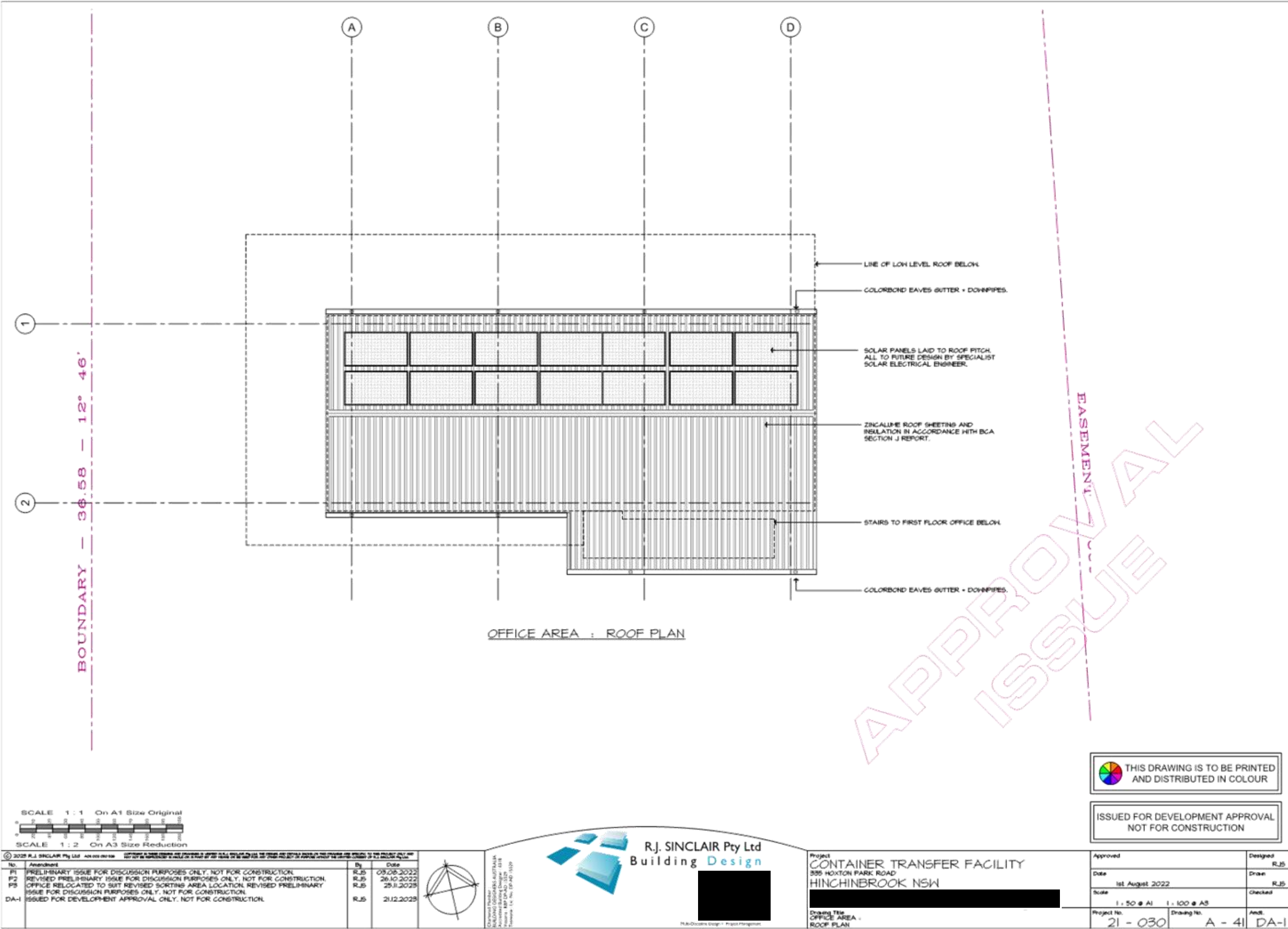














VISUALISATION - No. 01 - AERIAL VIEW FROM SOUTH-WEST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY, NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED, RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY, NOT FOR CONSTRUCTION.	RJS	22/11/2024

Chartered Member
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Public domain design - Project Management

Project
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VISUALISATION - No. 01
AERIAL VIEW FROM SOUTH-WEST

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20th December 2023	JE
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Project No.	Drawing No.
21 - 030	V - 01
	DA-2



VISUALISATION - No. 02 - AERIAL VIEW FROM SOUTH-EAST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	22/11/2024

Client: R.J. SINCLAIR Pty Ltd
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Public/Online Design - Project Management

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VISUALISATION - No. 02
AERIAL VIEW FROM SOUTH-EAST

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Project No.	Drafting No.
21 - 030	V - 02
	DA-2



VISUALISATION - No. 03 - AERIAL VIEW FROM NORTH-EAST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21.12.2023

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VISUALISATION - No. 03
AERIAL VIEW FROM NORTH-EAST

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	Ampl. DA-2



VISUALISATION - No. 04 - AERIAL VIEW FROM NORTH-WEST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	22/11/2024

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Fax: 08 4040 3329



Multi-Discipline Design & Project Management

Project
CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW
Drawing Title
VISUALISATION - No. 04
AERIAL VIEW FROM NORTH-WEST

THIS DRAWING IS TO BE PRINTED AND DISTRIBUTED IN COLOUR	
REVISED ISSUE FOR DEVELOPMENT APPROVAL NOT FOR CONSTRUCTION	
Approved	Designed RJS
Date 20th December 2023	Drawn JE
Scale Not To Scale	Checked
Project No. 21 - 030	Drawing No. V - 04
	Ampl. DA-2



VISUALISATION - No. 05 - STREET VIEW FROM SOUTH-WEST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	22/11/2024

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R.J. SINCLAIR PTY LTD
335 HOXTON PARK ROAD
HINCHINBROOK QLD 4344
Phone: 07 4640 3327
Fax: 07 4640 3329



Project
CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW
[Redacted]
Drawing Title
VISUALISATION - No. 05
STREET VIEW FROM SOUTH-WEST

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Date	Drawn
20th December 2023	JE
Scale	Checked
Not To Scale	
Project No.	Drawing No.
21 - 030	V - 05
	DA-2



VISUALISATION - No. 06 - STREET VIEW FROM SOUTH-EAST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	22/11/2024

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Project
CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW
[Redacted]
Drawing Title
VISUALISATION - No. 06
STREET VIEW FROM SOUTH-EAST

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NOT FOR CONSTRUCTION

Approved	Designed
Date	Drawn
20th December 2023	JE
Scale	Checked
Not To Scale	
Project No.	Drawing No.
21 - 030	V - 06
	DA-2



VISUALISATION - No. 07 - STREET VIEW FROM NORTH-EAST

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	21/12/2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJS	22/11/2024

Client: R.J. SINCLAIR Pty Ltd
Address: 335 HOXTON PARK ROAD
HINCHINBROOK NSW 4344
Phone: 08 4040 3327
Fax: 08 4040 3329



Building Design Project Management

Project
CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW
[Redacted]
Drawing Title
VISUALISATION - No. 07
STREET VIEW FROM NORTH-EAST

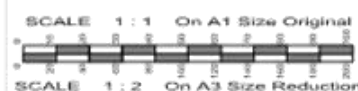
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REVISED ISSUE FOR
DEVELOPMENT APPROVAL
NOT FOR CONSTRUCTION

Approved	Designed
Date	Drawn
20th December 2023	JE
Scale	Checked
Not To Scale	
Project No.	Drawing No.
21 - 030	V - 07
	DA-2



VISUALISATION - No. 08 - STREET VIEW FROM NORTH-WEST



2024 R.J. BINGHAM Pkg List			
No.	Amendment	By	Date
DA-1	ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJB	21.12.2023
DA-2	RENDER UPDATED. RE-ISSUED FOR DEVELOPMENT APPROVAL ONLY. NOT FOR CONSTRUCTION.	RJB	22.8.2023

Richard Pearson :
 ALCOA DESIGNERS AUSTRALIA
 107/108 Building Designer : 4318
 Rooms : 429 DPA-0 : 5529
 Telephone : 01 450 570-0 / 5529

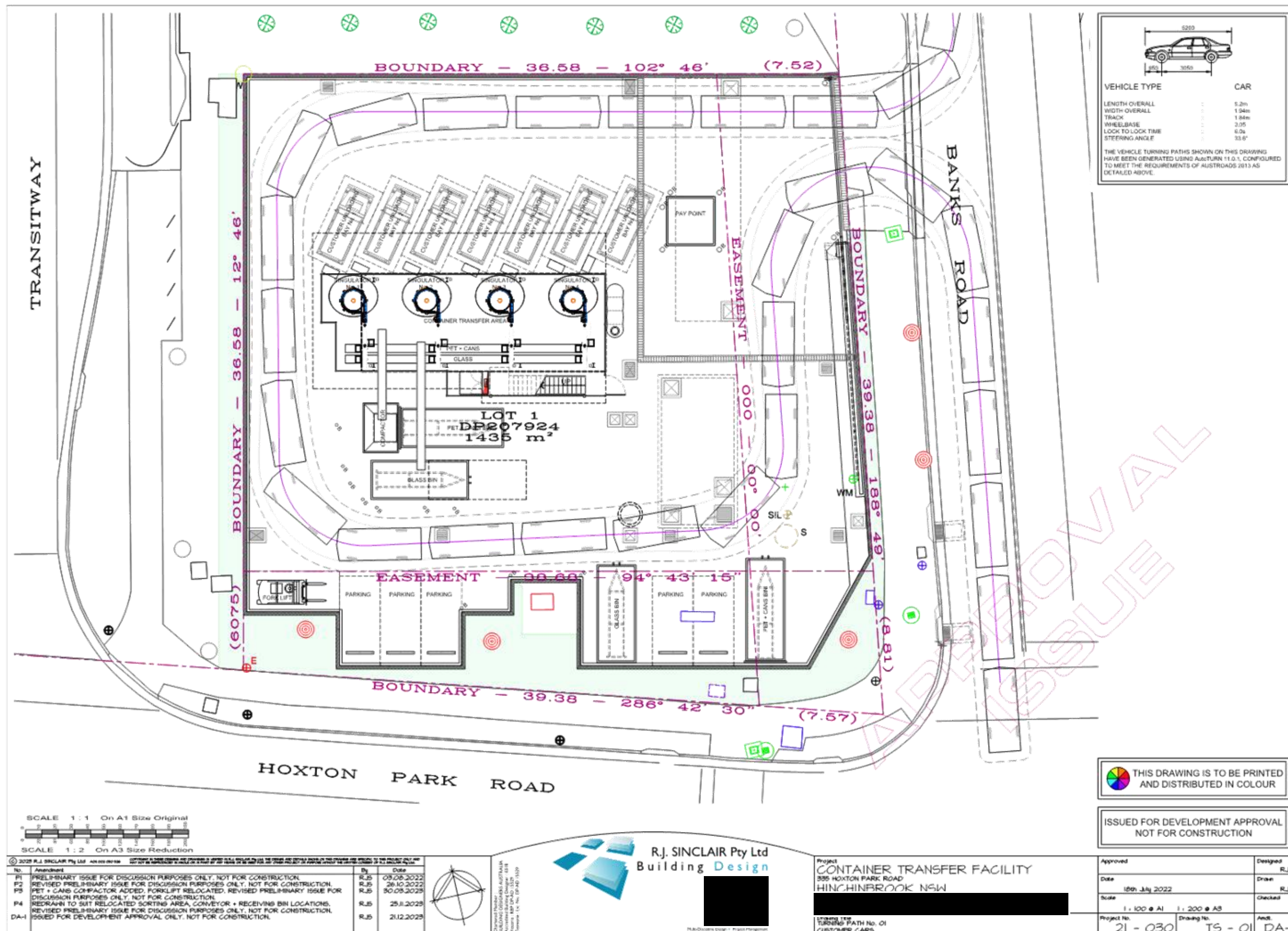


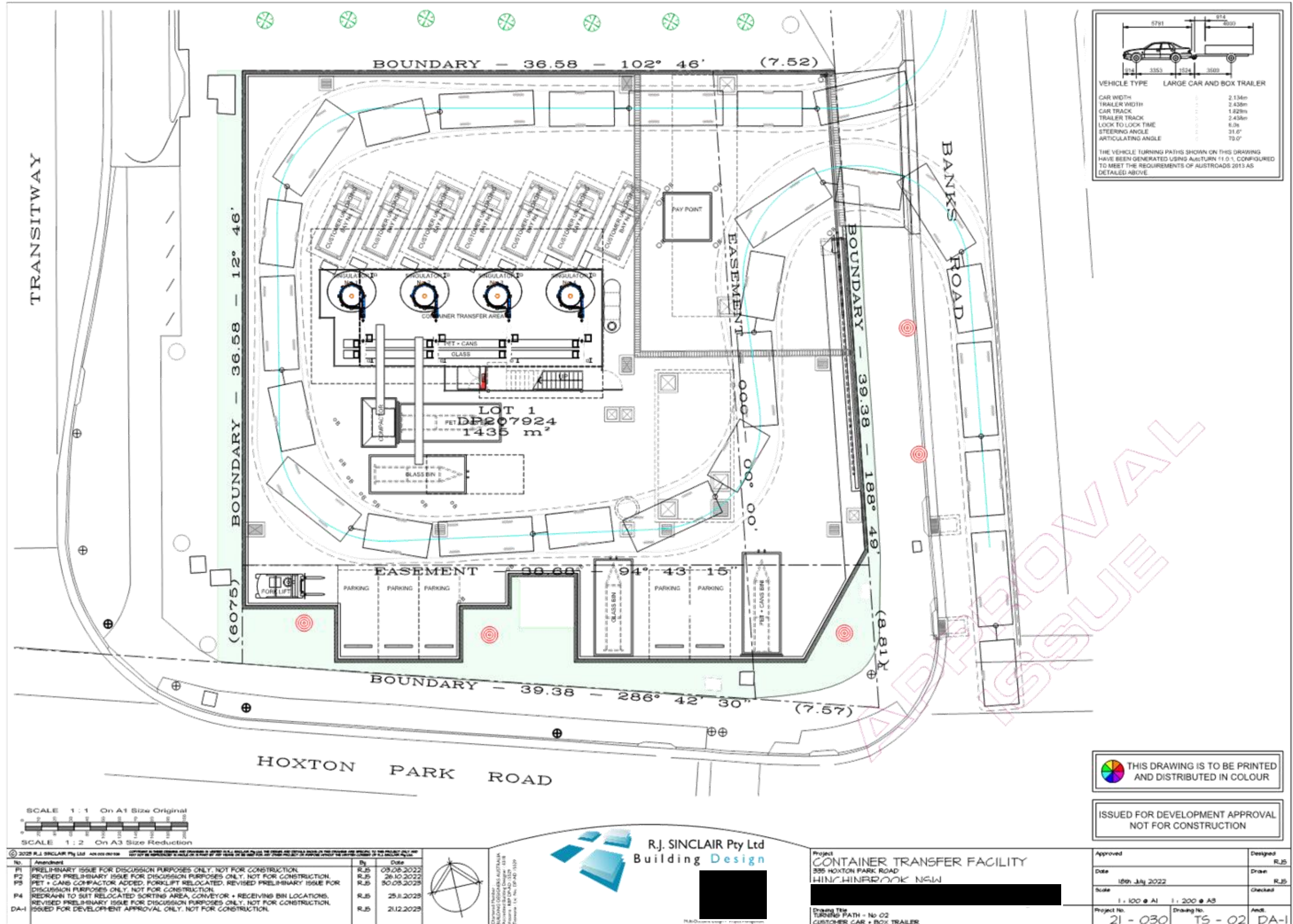
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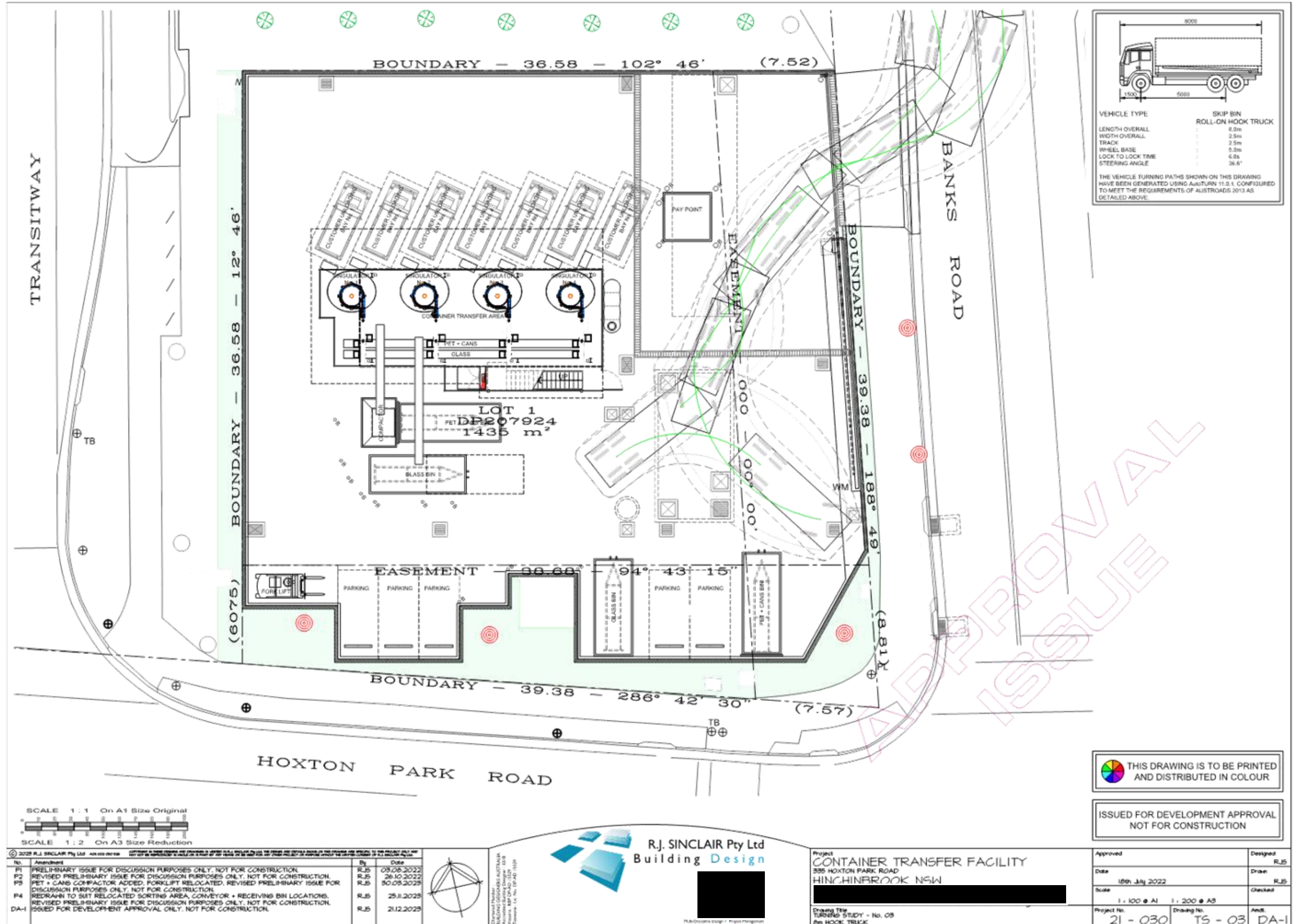
Project
CONTAINER TRANSFER FACILITY
335 HOXTON PARK ROAD
HINCHINBROOK NSW

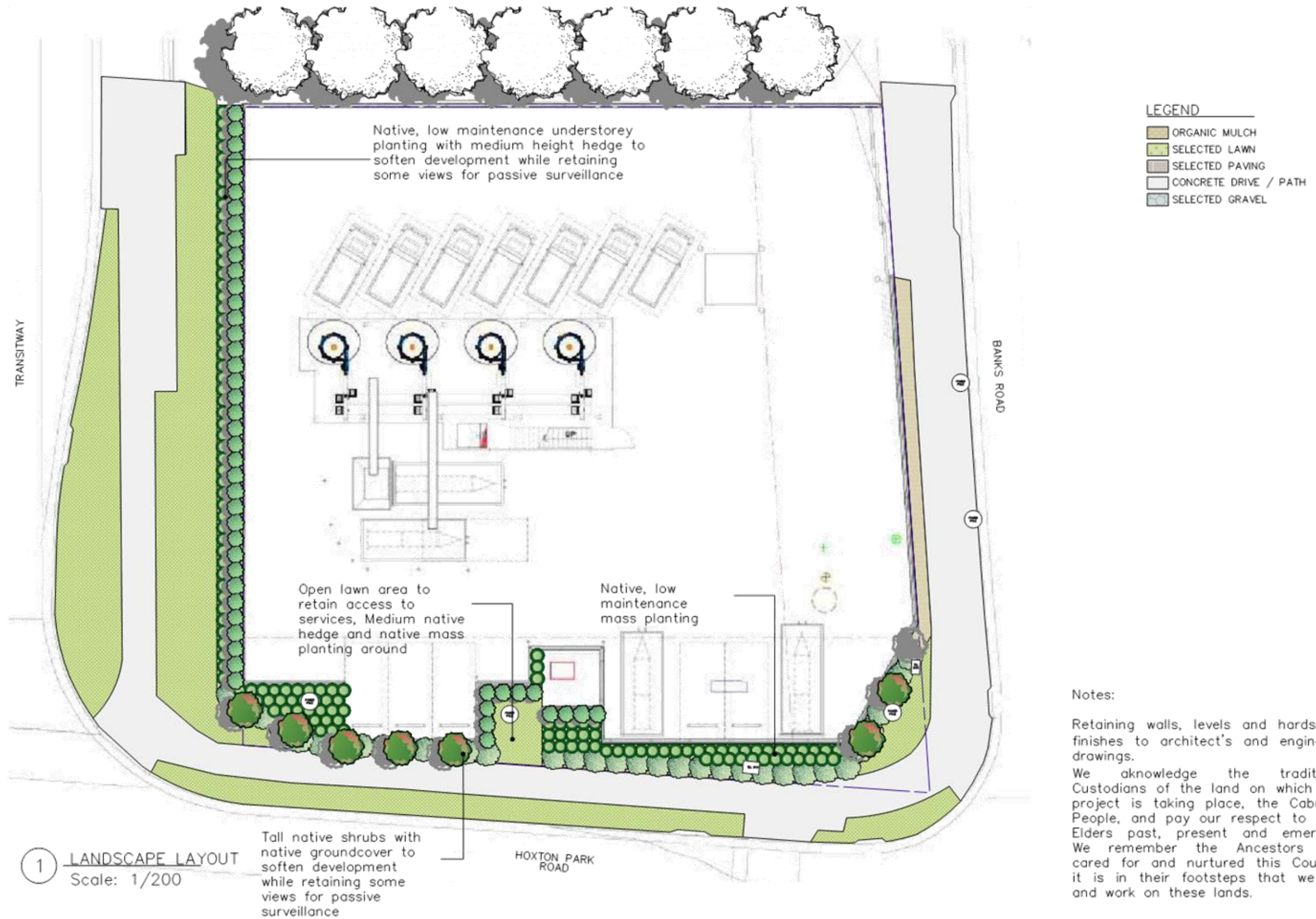
Visualisation - No. 06
STREET VIEW FROM NORTH-EAST

 THIS DRAWING IS TO BE PRINTED AND DISTRIBUTED IN COLOUR	
REVISED ISSUE FOR DEVELOPMENT APPROVAL NOT FOR CONSTRUCTION	
Approved	Designed
Date	Drawn
20th December 2025	
Scale	Checked
Not To Scale	
Project No.	Drawing No.
21 - 030	V - 08
	And.
	DA -







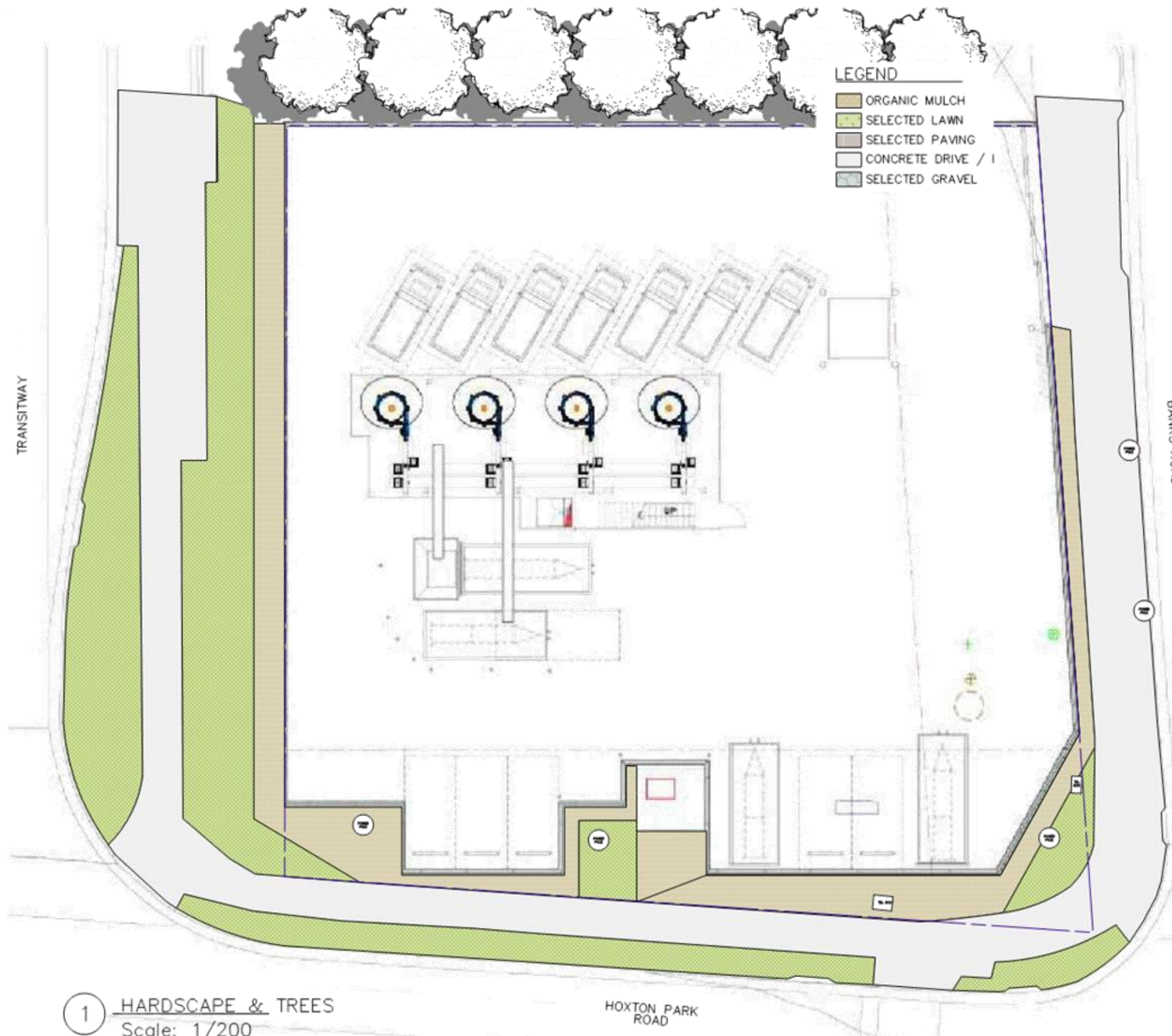


Notes:

Retaining walls, levels and hardscape finishes to architect's and engineer's drawings.

We acknowledge the traditional Custodians of the land on which this project is taking place, the Cabrogal People, and pay our respect to their Elders past, present and emerging. We remember the Ancestors who cared for and nurtured this Country: it is in their footsteps that we live and work on these lands.





2 LANDSCAPING SPECIFICATIONS

Scale: None

VEGETATION CONTROL
All on site vegetation other than that for retention is to be removed from site either by excavating the upper 200mm or by use of herbicide with non-residual effect.

EXCAVATION
Excavate all planting areas (tree/shrub/ground cover) to a depth of 300mm below adjacent finished levels.

CULTIVATION
All excavated planting areas are then to be cultivated by harrowing or ripping, ensuring no damage occurs to retained trees or shrubs.

PLANTING MIX
Supply and install to all planting areas, in maximum 150mm consolidated layers, a planting mix comprising of 3 parts topsoil and 1 part soil conditioner of natural ph value. Thoroughly incorporate with prepared subgrade and finish 50mm below adjacent level.

PLANTING
All plant material i.e. shrubs and ground covers, is to be well grown, of typical form, not soft or forced, be hardened off and have healthy well developed root systems. No individual plant is to be root bound and each must be free from disease and insect pests.
To plant, excavate a hole twice the diameter of the root ball, press fertilizer pellets equivalent to dynamic lifter' around the base of each hole at the rate specified.

EDGING
Supply and install a hard garden retaining edge (preferably timber) to all planting areas adjoining turf surfaces.

TURFING
Provide 200mm of topsoil to match the top of existing ground level prior to the laying of the turf.
Turf to be wintergreen variety couchgrass.

MULCHING
All planting areas are to be mulched with a minimum 100mm deep layer of good quality organic mulch.

MAINTENANCE
The following matters are to be attended to for a period of 13 weeks:
- watering, - weeding, - fertilizing
- replacement of any failed plants
- rectification of any soil subsidence

1 HARDSCAPE & TREES

Scale: 1/200

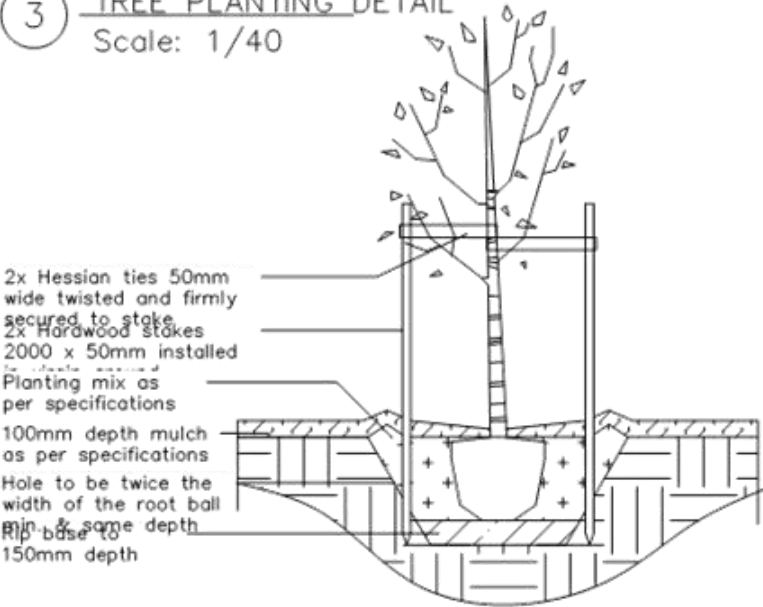


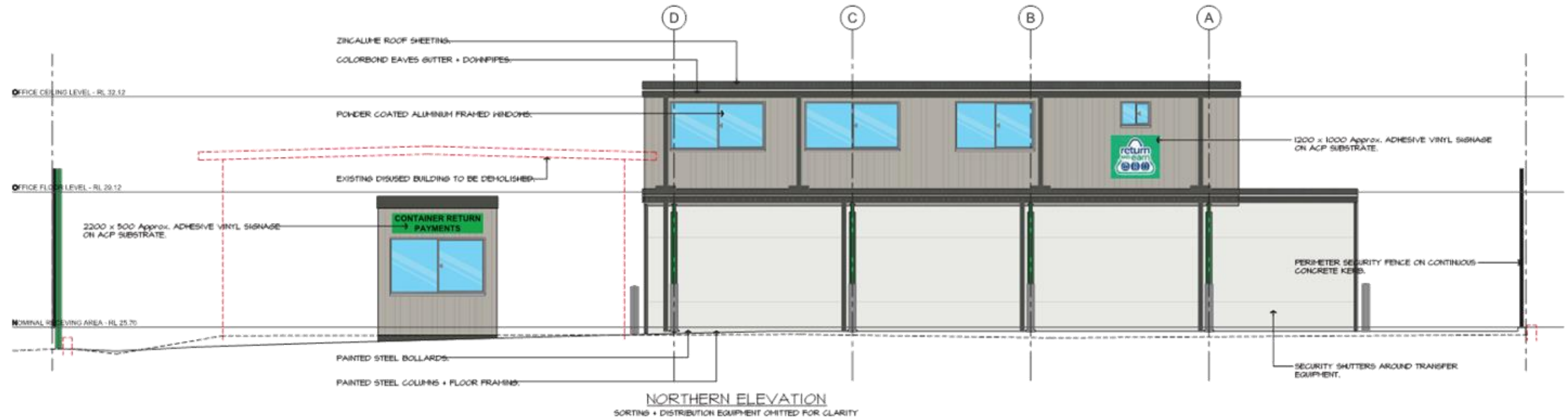
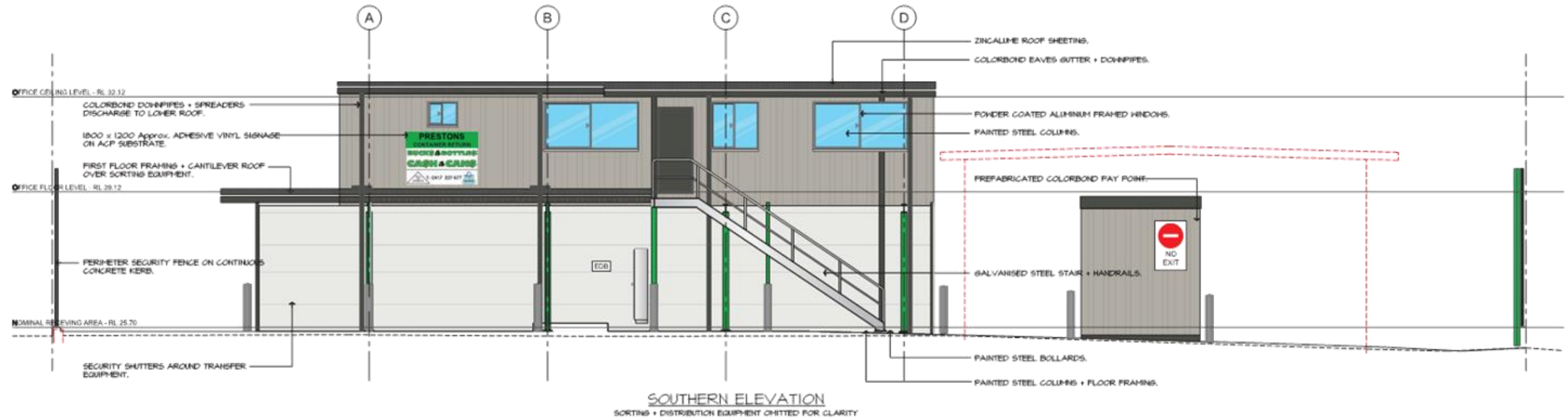


2 PLANTING SCHEDULE
Scale: None

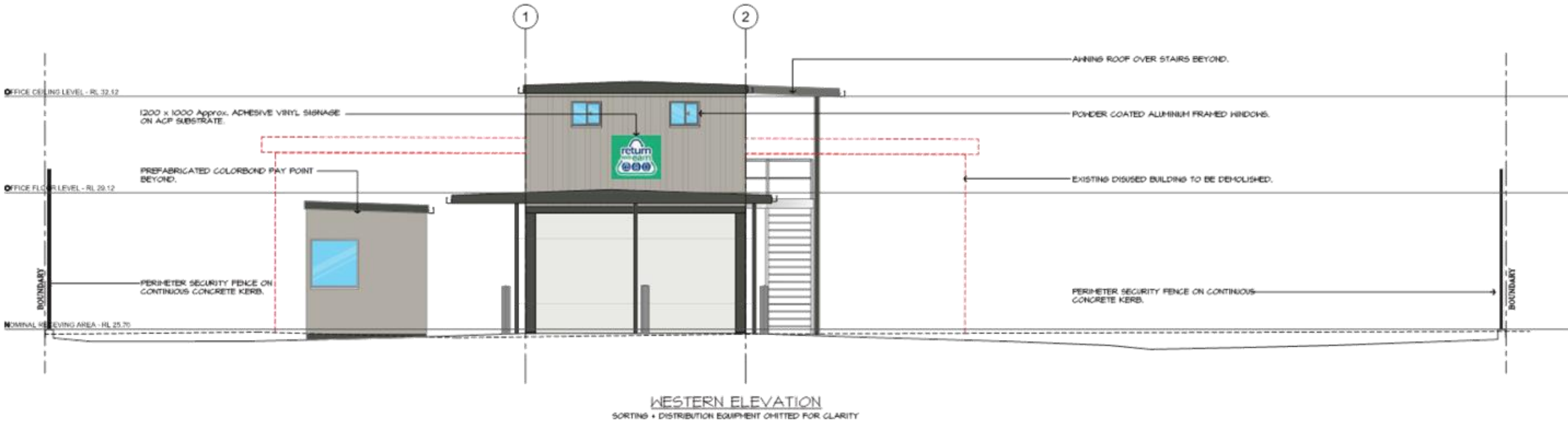
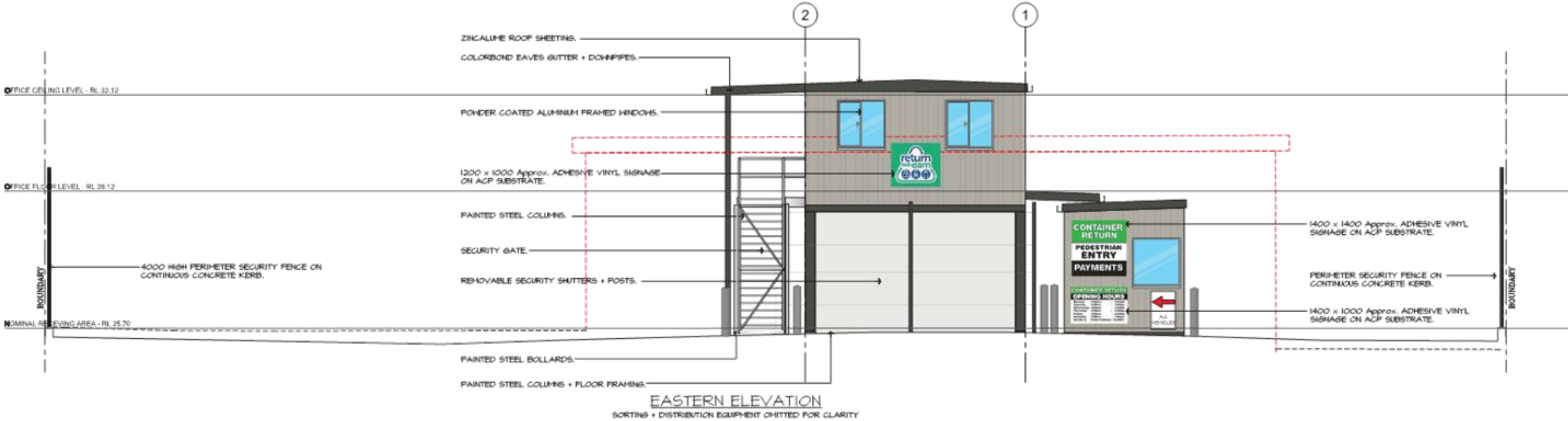
Images	ID	Qty	Common Name	Botanical Name	Scheduled Size	Height	Spread	Remarks
Shrubs								
	LOM nya	135	Spiny-head mat rush	Lomandra longifolia 'Nyalla'	140mm	0.7 - 0.9m	0.6 - 0.9m	
	SYZ cas	7	Lilly pilli 'Cascade'	Syzygium smithii 'Cascade'	300mm	4m	2 - 3m	
	WES mun	35	Rosemary 'Mundi'	Westringia fruticosa 'Mundi'	200mm	0.9 - 1.5m	0.9 - 1.2m	
	WES nar	48	Rosemary 'Naringa'	Westringia x 'Naringa'	300mm	1.2 - 2m	0.6 - 1.5m	

3 TREE PLANTING DETAIL
Scale: 1/40





 Dune Colorbond RGB: 177, 173, 163	 Woodland Grey Colorbond RGB: 75, 76, 70	 CDS Luminous Green RAL 6038 RGB: 0, 171, 50	SCALE 1 : 1 On A1 Size Original  SCALE 1 : 2 On A3 Size Reduction
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Dune Colorbond
RGB: 177, 173, 163

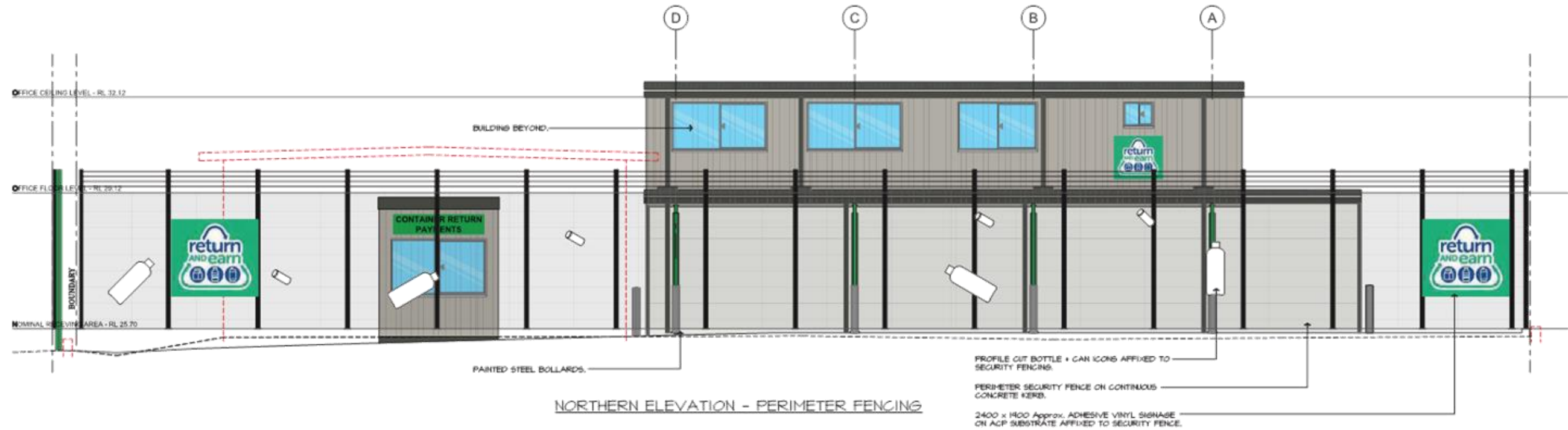


Woodland Grey Colorbond
RGB: 75, 76, 70



CDS Luminous Green
RAL 6038
RGB: 0, 171, 50

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction



Dune Colorbond
RGB: 177, 173, 163

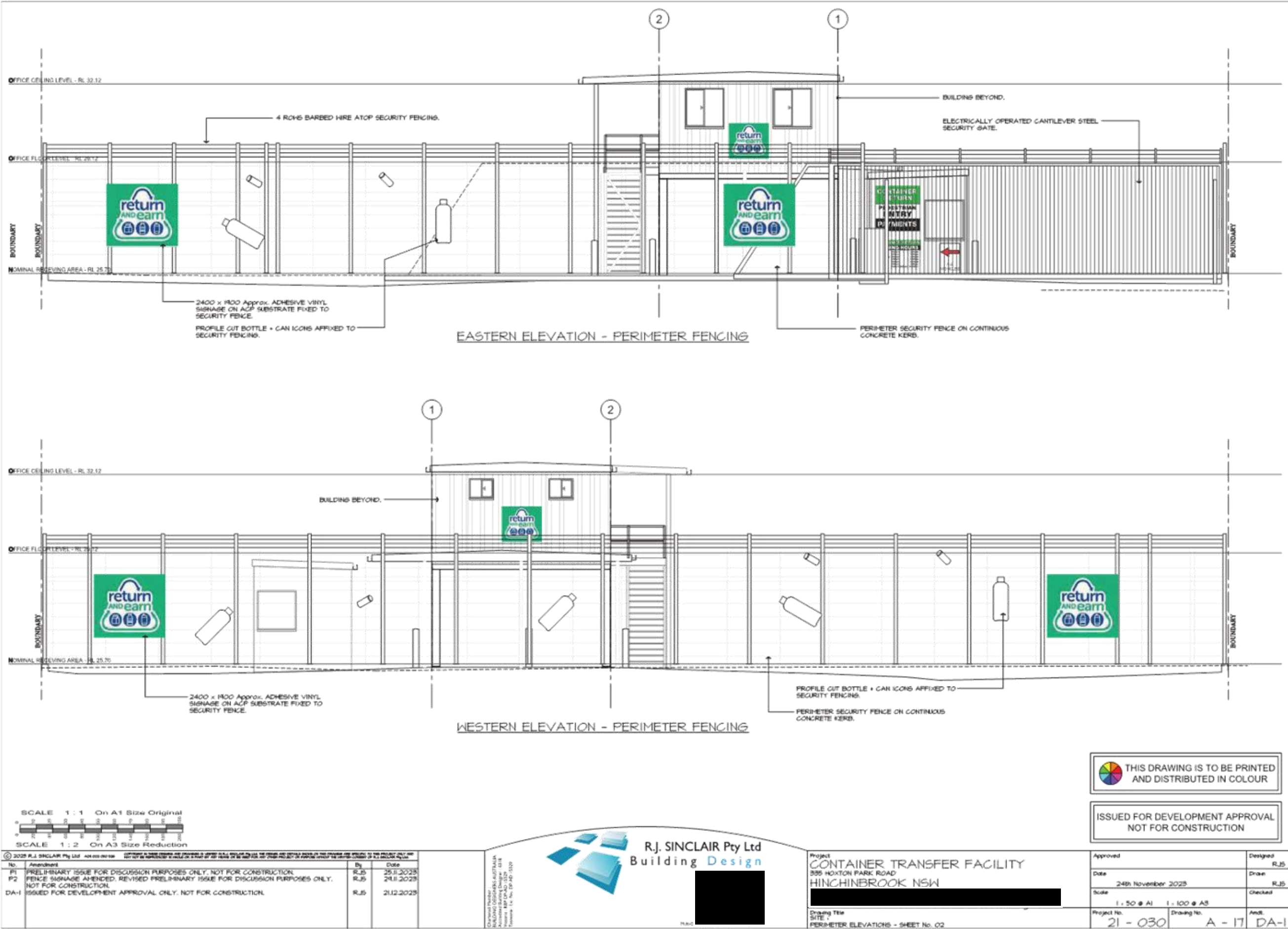


Woodland Grey Colorbond
RGB: 75, 76, 70



CDS Luminous Green
RAL 6038
RGB: 0, 171, 50

SCALE 1 : 1 On A1 Size Original
SCALE 1 : 2 On A3 Size Reduction





NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

Application number	DA-597/2024 PAN-494252
Applicant	SELL & PARKER PROPERTIES PTY LTD 11 MEADOW WAY BANKSMEADOW NSW 2019
Description of development	Demolition of existing building, construction and operation of a container deposit facility ('Return and Earn'), associated services, utilities and landscaping.
Property	335 HOXTON PARK ROAD HINCHINBROOK NSW 2168 DP 207924 CNR LOT 1 LOT 2 HOXTON PARK ROAD HINCHINBROOK NSW 2168 LOT 2 DP 1083454
Determination:	Consent Authority -
Date of determination	13/05/2025
Date from which the consent operates	13/05/2025
Date on which the consent lapses	13/05/2030

Under section 4.18(1) of the EP&A Act, notice is given that the above development application has been determined by the granting of consent using the power in section 4.16(1)(a) of the EP&A Act, subject to the conditions specified in this notice.

Reasons for approval

Right of appeal / review of determination

If you are dissatisfied with this determination:

Request a review

You do not have the right to request a review of the determination under section 8.3 of the EP&A Act.

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.

Objector's right of appeal against the determination

An objector who is dissatisfied with the consent authority's determination to grant consent, has the right to appeal to the Court against the determination under section 8.8 of the EP&A Act within 28 days after the date that the objector was notified of the determination appealed against.

The Dictionary at the end of this consent defines words and expressions for the purposes of this consent.

Peer review (Authorising Officer) sign-off is incomplete

sign-off is incomplete

Person on behalf of the consent authority

For further information, please contact Assessing (Contact Officer) sign-off is incomplete / *sign-off is incomplete*

Terms and Reasons for Conditions

Under section 88(1)(c) of the EP&A Regulation, the consent authority must provide the terms of all conditions and reasons for imposing the conditions other than the conditions prescribed under section 4.17(11) of the EP&A Act. The terms of the conditions and reasons are set out below.

General Conditions

1. (A002) Approved plans and supporting documentation				
Development must be carried out in accordance with the following approved plans and documents, except where the conditions of this consent expressly require otherwise.				
Approved plans				
Plan number	Revision number	Plan title	Drawn by	Date of plan
A-00	-	Cover sheet + Drawing Schedule	R.J Sinclair Pty Ltd	-
A-01	DA-1	Existing Site Features	R.J Sinclair Pty Ltd	21-12-2023
A-02	DA-1	Demolition Plan	R.J Sinclair Pty Ltd	21-12-2023
A-11	DA-2	General Arrangement Plan	R.J Sinclair Pty Ltd	21-08-2024
A-12	DA-2	Setout Plan	R.J Sinclair Pty Ltd	21-08-2024
A-13	DA-2	Levels + Contours Plan	R.J Sinclair Pty Ltd	21-08-2024
A-14	DA-1	Building Elevations - Sheet 01	R.J Sinclair Pty Ltd	21-12-2023
A-15	DA-1	Building Elevations - Sheet 02	R.J Sinclair Pty Ltd	21-12-2023
A-16	DA-1	Perimeter Elevations - Sheet 01	R.J Sinclair Pty Ltd	21-12-2023
A-17	DA-1	Perimeter Elevations - Sheet 02	R.J Sinclair Pty Ltd	21-12-2023
A-21	DA-2	Transfer Area + General Arrangement + Setout Plan	R.J Sinclair Pty Ltd	27-03-2024
A-31	DA-1	First Floor Office	R.J Sinclair Pty Ltd	21-12-2023
A-41	DA-1	Roof Plan	R.J Sinclair Pty Ltd	21-12-2023
V-01 to V-02 & V-04 to V-08	DA-2	Visualisations	R.J Sinclair Pty Ltd	22-11-2024
V-03	DA-1	Visualisation	R.J Sinclair Pty Ltd	21-12-2022
TS-01 to TS-03	DA-1	Turning Path 01, Turning Path 02 + Turning Study	R.J Sinclair Pty Ltd	21-12-2023
01	DA-B	Landscape Layout	Green Mouse Land Architecture	30-11-2023
02	DA-B	Hardscape Plan	Green Mouse Land Architecture	30-11-2023
03	DA-B	Planting Plan	Green Mouse Land Architecture	30-11-2023
-	-	Materials and Finishes Schedule Sheet 1,2 & 3	-	-
Approved documents				

Document title	Version number	Prepared by	Date of document
Bushfire Assessment Report	Ref: 230595	Building Code & Bushfire Hazard Solutions Pty Limited	7 February 2023
HINCHINBROOK CONTAINER RECYCLING NOISE AND VIBRATION IMPACT ASSESSMENT	REPORT NO. 17233 Version 1	SoundIN Pty Ltd	December 2023
Combined Preliminary Site Investigation and Detailed Site Investigation	Report No: N09587	NEO Consulting	22 November 2023
WASTE MANAGEMENT PLAN	Project No: 21 - 030	R.J Sinclair PtyLtd	20 December 2023
OPERATIONAL WASTE MANAGEMENT PLAN	-	-	-
Transport and Parking Impact Assessment	V02	The Transport Planning Partnership	20 December 2023

In the event of any inconsistency between the approved plans and documents, the approved documents prevail.

In the event of any inconsistency with the approved plans and a condition of this consent, the condition prevails.

Condition reason: To ensure all parties are aware of the approved plans and supporting documentation that applies to the development.

2. **(A015) General Terms of Approval**

All General Terms of Approval issued by Department of Planning and Environment - Water, shall be complied with prior, during, and at the completion of construction, as required in accordance with the General Terms of Approval dated 17 April 2025. A copy of the General Terms of Approval is attached to this decision notice.

Condition reason: To ensure General Terms of Approvals are fulfilled in accordance with the relevant agency requirements.

3. **(A025) Comply with EP&A Act**

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.

Condition reason: This condition is imposed to ensure compliance with legislative requirements.

4. **(A032) Shoring and adequacy of adjoining property**

	1. This section applies to a development consent for development that involves excavation that extends below the level of the base of the footings of a building, structure or work on adjoining land, including a structure or work in a road or rail corridor. 2. It is a condition of the development consent that the person having the benefit of the development consent must, at the person's own expense— 1. protect and support the building, structure or work on adjoining land from possible damage from the excavation, and 2. if necessary, underpin the building, structure or work on adjoining land to prevent damage from the excavation. 3. This section does not apply if— 1. the person having the benefit of the development consent owns the adjoining land, or 2. the owner of the adjoining land gives written consent to the condition not applying.
	Condition reason: Prescribed condition under section 74 of the Environmental Planning and Assessment Regulation 2021.
5.	(A040) Compliance with the Building Code of Australia 1. It is a condition of a development consent for development that involves building work that the work must be carried out in accordance with the requirements of the <i>Building Code of Australia</i>. 2. It is a condition of a development consent for development that involves residential building work for which a contract of insurance is required under the <i>Home Building Act 1989</i>, Part 6 that a contract of insurance is in force before building work authorised to be carried out by the consent commences. 3. It is a condition of a development consent for a temporary structure used as an entertainment venue that the temporary structure must comply with Part B1 and NSW Part H102 in Volume 1 of the <i>Building Code of Australia</i>. 4. In subsection (1), a reference to the <i>Building Code of Australia</i> is a reference to the Building Code of Australia as in force on the day on which the application for the construction certificate was made. 5. In subsection (3), a reference to the <i>Building Code of Australia</i> is a reference to the Building Code of Australia as in force on the day on which the application for development consent was made. 6. This section does not apply— 1. to the extent to which an exemption from a provision of the <i>Building Code of Australia</i> or a fire safety standard is in force under the <i>Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021</i>, or 2. to the erection of a temporary building, other than a temporary structure to which subsection (3) applies.
	Condition reason: Prescribed condition under section 69 of the Environmental Planning and Assessment Regulation 2021.
6.	(A050) Works at no cost to Council All roadworks, drainage works and dedications, required to effect the consented development shall be undertaken at no cost to Liverpool City Council.
	Condition reason: To ensure fairness, transparency and probity.
7.	(A060) Erection of signs

	1. This section applies to a development consent for development involving building work, subdivision work or demolition work. 2. It is a condition of the development consent that a sign must be erected in a prominent position on a site on which building work, subdivision work or demolition work is being carried out— 1. showing the name, address and telephone number of the principal certifier for the work, and 2. showing the name of the principal contractor, if any, for the building work and a telephone number on which the principal contractor may be contacted outside working hours, and 3. stating that unauthorised entry to the work site is prohibited. 3. The sign must be— 1. maintained while the building work, subdivision work or demolition work is being carried out, and 2. removed when the work has been completed. 4. This section does not apply in relation to— 1. building work, subdivision work or demolition work carried out inside an existing building, if the work does not affect the external walls of the building, or 2. Crown building work certified to comply with the Building Code of Australia under the Act, Part 6. Condition reason: Prescribed condition under section 70 of the Environmental Planning and Assessment Regulation 2021.
8.	(A130) Council Wastewater Requirements The development must provide for a physical sewerage connection to each created allotment to enable the method of sewage disposal by gravity reticulation mains to either, Sydney Water branch and trunk sewers or Sydney Water point of treatment. Liverpool City Council will not accept any temporary facilities to service the site, including pump-out sewage systems. Condition reason: To promote orderly development supported by adequate infrastructure.
9.	(A950) Transport for New South Wales requirements All requirements set out by Transport for New South Wales (TfNSW) in the correspondence dated 3 March 2025, shall be complied with prior, during, and at the completion of construction. A copy of the TfNSW correspondence is attached to this decision notice. Condition reason: To ensure fairness, transparency and probity.
10.	(A951) Endeavour Energy Requirements Endeavour Energy Standard Conditions (Version 10 - JANUARY 2025) are to be complied with at all times. A copy is attached to this notice of determination. Condition reason: To ensure fairness, transparency and probity.

Building Work Before Issue of a Construction Certificate

11.	(B007) Payment of Development Contributions
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Payment of section 7.12 contributions

Before the issue of the first construction certificate for any building work, the applicant must pay a total contribution of \$11,383.00 as calculated at the date of this consent to Council under section 7.12 of the EP&A Act.

The applicant must pay the following contributions to council for:

Liverpool Contributions Plan 2018 Established Areas		
Transport - Bikeways - works		
Eastern	\$854	GL.10000001865.10208
Transport - Traffic management - works		
Eastern	\$5,692	GL.10000001865.10214
Transport - Bus shelters - works		
Eastern	\$285	GL.10000001865.10216
Drainage - works		
Eastern	\$4,553	GL.10000001866.10210
Total	\$11,383	

The cost (and consequently the levy amount) must be indexed between the date of DA determination and the date of payment in accordance with the following formula:

Indexed development cost (\$) = (\$Co X Current PPI) / Base PPI

Where:

\$Co	<i>is the original development cost estimate assessed at the time of the issue of the development consent</i>
Current PPI	<i>is the Producer Price Index (Building Construction New South Wales) ABS Catalogue No. 6427.30 as published by the Australian Bureau of Statistics at the quarter immediately prior to the date of payment</i>
Base PPI	<i>is the Consumer Price Index (Building Construction New South Wales) ABS Catalogue No. 6427.30 as published by the Australian Bureau of Statistics at the quarter ending immediately prior to the date of imposition of the condition requiring payment of a contribution</i>

Payment of section 7.12 contributions must be made directly to Liverpool City Council.

Contact Liverpool City Council for the current amount payable (contributions are indexed quarterly) on the day of payment.

Contributions can be paid on any date after the issue of this notice of determination, prior to the mandatory timing.

A copy of the development contributions plan is available on Council's website.

Condition reason: To ensure development contributions are paid to address increased demand for public amenities and services or to address increased demand for regional infrastructure or to ensure any planning agreement is finalised at the specified time.

12. **(B009) Housing and Productivity Contribution**

	Before the issue of a construction certificate, the applicant is to make a Housing and Productivity Contribution payment through the NSW Planning Portal. The HPC must be paid using the NSW planning portal. At the time of payment, the amount of the HPC is to be adjusted in accordance with the Environmental Planning and Assessment (Housing and Productivity Contributions) Order 2024 (HPC Order). The HPC may be made wholly or partly as a non-monetary contribution (apart from any transport project component) if the Minister administering the Environmental Planning and Assessment Act 1979 agrees. The HPC 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 HPC Order exempts the development from the contribution. The amount of the contribution may be reduced under the HPC Order, including if payment is made before 1 July 2025. Condition reason: To require contributions towards the provision of regional infrastructure.
13.	(B055) S138 Roads Act - roadworks requiring approval of civil drawings 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 stormwater Drainage in Banks Road. 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. Condition reason: To ensure fairness, transparency and probity.
14.	(B075) Fee Payments 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. These fees are reviewed annually and will be calculated accordingly. Condition reason: To ensure statutory or associated fees are paid prior to construction commencing.
15.	(B095) Long Service Levy Before the issue of a Construction Certificate, the long service levy 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 PCA Condition reason: To ensure the long service levy is paid.
16.	(B149) S138 Roads Act - Minor Works in the public road

	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 Transport for NSW for classified roads. Condition reason: To ensure fairness, transparency and probity.
17.	(B162) Recommendations of Acoustic Report Before the issue of a construction certificate, the certifier must be satisfied that the recommendations provided in the approved acoustic report are implemented and incorporated into the design and construction of the development, and shown on plans accompanying the construction certificate application. The construction methodology and plans accompanying the construction certificate application must 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 must be submitted to and approved by the certifier before issue of the construction certificate. Note: The 'suitably qualified acoustic consultant' must be a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm. Condition reason: To mitigate potential intrusive noise and amenity impacts.
18.	(B360) Construction Environmental Management Plan (CEMP) 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: 1. Asbestos Management Plan; 2. Project Contact Information; 3. Site Security Details; 4. Timing and Sequencing Information; 5. Site Soil and Water Management Plan; 6. Noise and Vibration Control Plan; 7. Dust Control Plan; 8. Air Monitoring; 9. Odour Control Plan; 10. Health and Safety Plan; 11. Waste Management Plan; 12. Incident management Contingency; and 13. 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 Condition reason: To require details of measures that will protect the public, and the surrounding environment, during site works and construction.
19.	(B361) Construction Site Management Plan

	Before the issue of a construction certificate, a construction site management plan must be prepared, and provided to the principal certifier. The plan must include the following matters: 1. The location and materials for protective fencing and hoardings on the perimeter of the site; 2. Provisions for public safety; 3. Pedestrian and vehicular site access points and construction activity zones; 4. Details of construction traffic management including: • Proposed truck movements to and from the site; • Estimated frequency of truck movements; and • Measures to ensure pedestrian safety near the site; 5. Details of bulk earthworks to be carried out; 6. The location of site storage areas and sheds; 7. The equipment used to carry out works; 8. The location of a garbage container with a tight-fitting lid; 9. Dust, noise and vibration control measures; 10. The location of temporary toilets; 11. The protective measures for the preservation of trees on-site and in adjoining public areas including measures in accordance with: • AS 4970 – Protection of trees on development sites; • An applicable Development Control Plan; • An arborist's report approved as part of this consent A copy of the construction site management plan must be kept on-site at all times while work is being carried out. Condition reason: To require details of measures that will protect the public, and the surrounding environment, during site works and construction.
20.	(B380) Mechanical Plant and Equipment Before the issue of a construction certificate, the certifier must be satisfied that mechanical plant and equipment were selected in consultation with a suitably qualified acoustic consultant in accordance with the recommendations of the approved acoustic report. Note: The 'suitably qualified acoustic consultant' must be a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm. Condition reason: To mitigate potential intrusive noise and amenity impacts.
21.	(B450) Stormwater Discharge - Minor Development Stormwater drainage from the site shall be discharged to the: (a) Street drainage system, The proposed development and stormwater drainage system shall be designed to ensure no adverse impact on adjoining properties by the diversion, damming or concentration of stormwater flows. The proposed method of stormwater discharge shall be detailed in the Construction Certificate issued by the Certifying Authority. Condition reason: To ensure fairness, transparency and probity.
22.	(B456) On-Site Detention

	On-Site Detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by Diversi Consulting, reference number 21062, revision B, dated 13-12-2023. 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 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. Condition reason: To ensure fairness, transparency and probity.
23.	(B462) Water Quality Prior to the issue of a Construction Certificate, the Certifying Authority shall ensure that details of a stormwater pre-treatment system have been provided on the stormwater plans and that the design meets pollutant retention criteria in accordance Council's Development Control Plan. The Construction Certificate must be supported by: - Specification & installation details of the stormwater pre-treatment system - The approval of an operation and maintenance manual/ schedule for the stormwater pre-treatment system A copy of the approved operation and maintenance manual/ schedule shall be submitted to Liverpool City Council with notification of the Construction Certificate issue. Condition reason: To ensure fairness, transparency and probity.
24.	(B532) Waste Management Plan requirements Before the issue of a Subdivision Work 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 - the Environment Protection Authority's Waste Classification Guidelines as in force from time to time; and - 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 - include the following information - - the contact details of the person removing waste; - an estimate of the type and quantity of waste; - whether waste is expected to be reused, recycled or sent to landfill; - 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. Condition reason: To ensure resource recovery is promoted and local amenity protected during construction.
25.	(B950) Flooding Requirements

1) There shall be no net loss of flood storage by the proposed development as indicated in the flood impact assessment report by Diversi Consulting Pty Ltd (Reference: 21062-L01-A1-FLOOD IMPACT ASSESSMENT LETTER, dated 05 March 2024).
2) All building floor levels shall be no lower than the 1% AEP flood plus half a metre freeboard (i.e., 25.2m + 0.5m = 25.7m Australian Height Datum).
3) The structure shall be constructed from flood compatible building components below the 1% AEP flood plus half a metre freeboard (i.e., 25.2m + 0.5m = 25.7m Australian Height Datum).
4) Fencing shall be limited to permeable open type fences.
5) Fencing shall be constructed in a manner that does not obstruct the flow of floodwaters so as to have an adverse impact on flooding.
6) Reliable access for pedestrians or vehicles shall be provided from the lowest habitable floor level to a location above the Probable Maximum Flood.
7) On-site detention (OSD) basin shall be provided to limit the post-development flow to the pre-development level (Reference: Water Management Plan - 335 Hoxton Park Road Hinchinbrook, Revision: A, Diversi Consulting Pty Ltd, dated 14/12/2023).
8) On-site water quality treatment devices shall be provided to ensure that stormwater runoffs leaving the site comply with Council's water quality standards. The treatment facilities shall capture all gross pollutants and liquid contaminants from the stormwater before discharging to council's stormwater network. Water quality treatment works shall be designed using MUSIC modelling software and the water quality treatment system performance shall be verified using Council's MUSIC link (Reference: Water Management Plan - 335 Hoxton Park Road Hinchinbrook, Revision: A, Diversi Consulting Pty Ltd, dated 14/12/2023).
Condition reason: To ensure fairness, transparency and probity

Before Building Work Commences

26. (C002) Payment of fees
Before any site work commences, the following must be paid to Council and written evidence of these payments provided to the PCA
1. inspection fees
Condition reason: To ensure fees are paid for inspections carried out by council in connection with the completion of public work such as footway construction or stormwater drainage required in connection with the consent or the making good of any damage to council property
27. (C005) Construction Certificates
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 Certifier (PC) must be appointed to carry out the necessary building inspections and to issue an occupation certificate, and
(e) The PC 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.

	Condition reason: To require approval to proceed with building work.
28.	(C010) Construction Certificates
	Any Construction Certificate 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.
	Condition reason: To ensure details and plans for CC are consistent with the approved DA.
29.	(C012) Commencement of building works
	Building work shall not commence prior to the issue of a Construction Certificate. Building work as defined under Section 1.4 of the Environmental Planning and Assessment Act, 1979 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.
	Condition reason: To require approval to proceed with building work.
30.	(C055) Site Facilities
	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.
	Condition reason: To ensure the required site management measures are implemented before the commencement of building work.
31.	(C117) Erosion and sediment controls in place
	Before any site work commences, the PCA, 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).
	Condition reason: To ensure sediment laden runoff and site debris do not impact local stormwater systems and waterways.
32.	(C250) Notification
	Notification to surrounding residents is to be undertaken within a 100 metre radius from the site. A letter box drop in the form of an informative pamphlet or the like is to be carried out at least 5 days prior to the event to local residents informing them of the event details and including contact details of the site supervisor for the event.
	Condition reason: To advise neighbours of the commencement of building works.
33.	(C466) Dilapidation report
	Before any site work commences, a dilapidation report must be prepared by a suitably qualified engineer detailing the structural condition of adjoining buildings, structures or works and public land, to the satisfaction of the PCA
	Where access has not been granted to any adjoining properties to prepare the dilapidation report, the report must be based on a survey of what can be observed externally and demonstrate, in writing, to the satisfaction of the PCA, that all reasonable steps were taken to obtain access to the adjoining properties.
	No less than 2 days before any site work commences, adjoining building owner(s) must be provided with a copy of the dilapidation report for their property(ies) and a copy of the report(s) must be provided to Council (where Council is not the principal certifier) at the same time.
	Condition reason: To establish and document the structural condition of adjoining properties and public land for comparison as site work progresses and is completed and ensure neighbours and council are provided with the dilapidation report.

During Building Work

34.	(D005) Building Work
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	The building works must be inspected by the Principal Certifier (PC), in accordance with Sections 6.5 of the Environmental Planning & Assessment Act 1979, to monitor compliance with the relevant standards of construction, Council's development consent and the construction certificate. Condition reason: To require stage inspection and approval by the PC in accordance with EP & A Regulation clause 162A.
35.	(D010) Building Work The Principal Certifier (PC) must specify the relevant stages of construction to be inspected and a satisfactory inspection must be carried out, to the satisfaction of the PC, prior to proceeding to the subsequent stages of construction or finalisation of the works. Condition reason: To require approval to proceed with building work following each critical stage inspection.
36.	(D015) Surveys by a registered surveyor While building work is being carried out, the positions of the following must be measured and marked by a registered surveyor and provided to the principal certifier: 1. All footings / foundations in relation to the site boundaries and any registered and proposed easements 2. At other stages of construction – any marks that are required by the principal certifier. Condition reason: To ensure buildings are sited and positioned in the approved location.
37.	(D025) Identification Survey Report On placement of the concrete, works again shall not continue until the Principal Certifier has issued a letter stating that the condition of the approval has been complied with and that the slab has been poured at the approved levels. Condition reason: To ensure that the development is carried out in accordance with the conditions of consent and the approved plans.
38.	(D038) Toilet Facilities 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. Condition reason: To ensure the required site management measures are implemented during construction.
39.	(D045) Hours of work Site work must only be carried out between the following times – From 7am to 6pm on Monday to Friday From 8am to 1pm on 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. Condition reason: To protect the amenity of the surrounding area.
40.	(D049) Security Fence 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. Condition reason: To ensure the required site management measures are implemented during construction.
41.	(D055) Refuse Disposal

	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. Condition reason: To ensure the required site management measures are implemented during construction.
42.	(D061) Craning and Hoardings 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. Condition reason: To require details of measures that will protect the public, and the surrounding environment, during site works and construction.
43.	(D063) Craning and Hoardings 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 or road reserve area, a separate Road Occupancy Certificate and/or Hoarding approval must be obtained from Liverpool City Council prior to undertaking the works. Condition reason: To ensure the required traffic management measures are implemented during construction.
44.	(D100) General Site Works - Surface Contours 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. Condition reason: To protect the amenity of the neighbourhood.
45.	(D130) Removal of dangerous and/or hazardous waste All dangerous and/or hazardous material must be removed by a suitably qualified and experienced contractor licensed by SafeWork NSW. The removal of such material must be carried out in accordance with the requirements of SafeWork NSW and the material must be transported and disposed of in accordance with NSW Environment Protection Authority requirements. Condition reason: To ensure safe removal and disposal of dangerous and/or hazardous material.
46.	(D180) Waste management 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 principal certifier, detailing the following: - The contact details of the person(s) who removed the waste; - The waste carrier vehicle registration; - The date and time of waste collection; - A description of the waste (type of waste and estimated quantity) and whether the waste is to be reused, recycled or go to landfill; - The address of the disposal location(s) where the waste was taken; - 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. Condition reason: To require records to be provided, during site work, documenting the lawful disposal of waste.
47.	(D190) Discovery of relics and Aboriginal objects

	While site work is being carried out, if a person reasonably suspects a relic of Aboriginal object is discovered: - the work in the area of the discovery must cease immediately; - the following must be notified - for a relic – the Heritage Council; or - for an Aboriginal object – the person who is the authority for the protection of Aboriginal objects and Aboriginal places in New South Wales under the National Parks and Wildlife Act 1974, section 85. Site work may recommence at a time confirmed in writing by: - for a relic – the Heritage Council; or - for an Aboriginal object – the person who is the authority for the protection of Aboriginal objects and Aboriginal places in New South Wales under the National Parks and Wildlife Act 1974, section 85. Condition reason: To ensure the protection of objects of potential significance during works.
48.	(D426) Soil management While site work is being carried out, the principal certifier must be satisfied all soil removed from or imported to the site is managed in accordance with the following requirements: - All excavated material removed from the site must be classified in accordance with the EPA's Waste Classification Guidelines before it is disposed of at an approved waste management facility and the classification and the volume of material removed must be reported to the principal certifier. - All fill material imported to the site must be: - Virgin Excavated Natural Material as defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i>; or - a material identified as being subject to a resource recovery exemption by the NSW EPA; or - a combination of Virgin Excavated Natural Material as defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> and a material identified as being subject to a resource recovery exemption by the NSW EPA. Condition reason: To ensure soil removed from the site is appropriately disposed of and soil imported to the site is not contaminated and is safe for future occupants.
49.	(D430) Unidentified Contamination Any new information which arises during remediation, demolition or construction works that has the potential to alter previous conclusions about site contamination and remediation must be immediately notified in writing to the certifier and Liverpool City Council. A section 4.55 Application under the Environmental Planning and Assessment Act 1979 must be made for any proposed works outside the scope of the approved development consent. Condition reason: To ensure the suitability of land for the development.
50.	(D450) Air Quality 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 Certifier may direct that work is not to proceed. Condition reason: To ensure site works are managed appropriately and do not result in air pollution.
51.	(D480) Acoustic Report The construction requirements recommended in the approved acoustic report are to be implemented by the consent holder during the construction of the development. Condition reason: To ensure human health and amenity is maintained by ensuring the development is not impacted by noise.
52.	(D552) Implementation of the site management plans

	While site work is being carried out: - the measures required by the construction site management plan and the erosion and sediment control plan (plans) must be implemented at all times; and - a copy of these plans must be kept on site at all times and made available to Council officers upon request. Condition reason: To ensure site management measures are implemented during the carrying out of site work.
53.	(D565) Water Quality 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. Condition reason: To ensure site works are managed appropriately and do not result in water pollution.
54.	(D570) Pollution Control - Site Operations During construction, building operations including but not limited to brick cutting, mixing mortar and the washing of tools, paint brushes, form-work, concrete trucks and the like must 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. Condition reason: To mitigate potential risks to the environment during construction and facilitate compliance with legislative requirements.
55.	(D574) Pollution Control - Truck Movements 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. Condition reason: To mitigate potential risks to the environment during construction and facilitate compliance with legislative requirements.
56.	(D600) Correct waste separation and removal 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 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. Condition reason: To ensure that separation of waste by type is undertaken in an ongoing basis throughout the building process, and that the wastes are kept separate and not mixed, to facilitate waste management and recycling.
57.	(D605) Containment of site wastes during building All demolition, excavation or construction wastes, e.g. wrapping, packaging materials, bags, insulation, sand, soil etc., must be kept fully enclosed at all times to prevent them from becoming displaced in strong wind conditions or from washing into sewers, storm drains or creeks, or onto adjacent properties or public land during wet weather. Condition reason: To ensure that waste materials from the demolition, excavation or construction are kept appropriately contained on site, irrespective of weather conditions, and do not make their way into the environment as pollutants.
58.	(D650) Noise and vibration - an approved document of this consent 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 under the Construction Environmental Management Plan. Condition reason: To protect the amenity of the neighbourhood during construction.

Before Issue of an Occupation Certificate

59.	(E003) Works-as-executed plans and any other documentary evidence
	Before the issue of an Occupation Certificate, works-as-executed plans, any compliance certificates and any other evidence confirming the following completed works must be submitted to the satisfaction of the principal certifier: 1. All stormwater drainage systems and storage systems; and
	Condition reason: To confirm the location of works once constructed that will become council assets.
60.	(E005) Occupation Certificates
	The premises must not be occupied until an Occupation Certificate (OC) is issued by the certifier. Copies of all documents relied upon for the issue of the OC must be attached to the OC and registered with Council.
	Condition reason: To ensure the development is in accordance with the approval and the use meets health, safety and amenity provisions.
61.	(E010) Certificates
	All required documentary evidence for the critical stage inspections carried out prior, during and at the completion of construction, must be submitted to Council together with the required registration fee payment.
	Condition reason: To ensure the use meets health, safety and amenity provisions.
62.	(E020) Acoustic Report
	Confirmation in writing that the recommended measures were incorporated as required by the report.
	Condition reason: To ensure the use meets health and amenity provisions to occupants and/or neighbouring properties.
63.	(E026) Removal of Waste Upon Completion
	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.
	Condition reason: To ensure waste material is appropriately disposed or satisfactorily stored.
64.	(E030) Section 73 Sydney Water Certificate
	A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained and submitted to the Principal Certifier prior to issue of Occupation Certificate.
	Condition reason: To ensure relevant utility and service providers requirements are provided to the certifier.
65.	(E035) Completion of public utility services
	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.
	Condition reason: To ensure required changes to public utility services are completed, in accordance with the relevant agency requirements, before occupation.
66.	(E037) Liverpool City Council clearance - Roads Act/ Local Government Act
	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.
	Condition reason: To ensure fairness, transparency and probity.
67.	(E064) Completion of landscape and tree works
	Before the issue of an Occupation Certificate, the principal certifier must be satisfied all landscape and tree-works have been completed in accordance with approved plans and documents and any relevant conditions of this consent.

	Condition reason: To ensure the approved landscaping works have been completed in accordance with the approved landscaping plan(s).
68.	(E106) Recommendations of Acoustic Report Upon completion of works and before the issue of any occupation certificate, written certification prepared by a suitably qualified acoustic consultant must be submitted to and approved by the certifier. The written certification prepared by the suitably qualified acoustic consultant must confirm that the development complies with all requirements and recommendations detailed within the approved acoustic report titled "HINCHINBROOK CONTAINER RECYCLING NOISE AND VIBRATION IMPACT ASSESSMENT" (Ref: 17233 Rev: 1.0) prepared by N.L for Sound In dated 22nd December 2023. The acoustic consultant must confirm that the development or use is capable of operating in accordance with the design criteria. Note: The 'suitably qualified acoustic consultant' must be a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm. Condition reason: To mitigate potential acoustic impacts by ensuring that the development or use complies with the specified design criteria.
69.	(E250) Mechanical Ventilation Certification 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 and confirm that the systems comply with the approved plans, specifications, Building Code of Australia and Australian Standard AS 1668 Parts 1 and 2. Condition reason: To facilitate compliance with legislative requirements.
70.	(E400) Stormwater Compliance Prior to the issue of an Occupation Certificate, the Principal Certifying Authority shall ensure that the: (a) On-site detention system/s, (b) Stormwater pre-treatment system/s, Details of the approved and constructed system/s shall be provided as part of the Works-As-Executed drawings. Condition reason: To ensure fairness, transparency and probity.
71.	(E404) Restriction as to User and Positive Covenant Prior to the issue of an Occupation Certificate a restriction as to user and positive covenant relating to the following shall be registered on the title of the property: (a) On-site detention system/s, (b) Stormwater pre-treatment system/s, 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. Condition reason: To ensure fairness, transparency and probity.
72.	(E408) Rectification of Damage 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 Banks Road will require a Roads Act application. The application is to be submitted and approved by Liverpool City Council prior to such works commencing. Condition reason: To ensure fairness, transparency and probity.
73.	(E950) Flooding Requirements

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. The flood evacuation plan shall be prepared and certified by an appropriate professional engineer.

Condition reason: To ensure fairness, transparency and probity

Occupation and Ongoing use

74.	(G004) Plan of Management
	The approved Plan of Management must be complied with at all times. A copy of the Plan of Management must be kept on-site at all times and be provided to Council officers on request.
	Condition reason: To ensure fairness, transparency and probity.
75.	(G060) Graffiti
	During ongoing use of the premises, ensure graffiti is removed from the exterior of the building or associated structures, including any fences, site services and retaining/planter bed walls.
	Condition reason: To protect and preserve the visual amenity of the surrounding public domain
76.	(G065) Unreasonable Noise and Vibration
	The 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 Liverpool City Council, an acoustic assessment must be undertaken by a suitably qualified acoustic consultant and a report must be submitted to Liverpool City Council for review upon request. Any noise attenuation recommendations approved by Liverpool City Council must be fully implemented and verified in writing by a suitably qualified acoustic consultant.
	Note: The 'suitably qualified acoustic consultant' must be a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm.
	Condition reason: To mitigate potential offensive noise and amenity impacts.
77.	(G090) Maintenance of wastewater and stormwater treatment device
	During occupation and ongoing use of the building, all wastewater and stormwater treatment devices (including drainage systems, sumps and traps, and on-site detention) must be regularly maintained to remain effective and in accordance with any positive covenant (if applicable).
	Condition reason: To protect sewerage and stormwater systems.
78.	(G095) Location of mechanical ventilation
	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.
	Condition reason: To protect the residential amenity of neighbouring properties.
79.	(G100) Waste Collection and Management
	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.
	Condition reason: To mitigate potential risks to human health and the environment.
80.	(G130) Waste Storage Area

	Waste bins must be stored in designated garbage/ trade refuse areas, which must be kept tidy at all times. Bins must not be stored or allowed to overflow in parking or landscaping areas, must not obstruct the exit of the building, and must not leave the site onto neighbouring public or private properties. Condition reason: To mitigate potential risks to human health and the environment.
81.	(G160) Storage of goods during ongoing use During ongoing use of the premises, all goods must be stored wholly within the premises and must not be stored or displayed outside the premises, including any public place, without council's approval. Condition reason: To ensure fairness, transparency and probity.
82.	(G210) Car Parking Management All parking areas shown on the approved plans must be used solely for this purpose. Condition reason: To ensure that adequate parking and loading are provided.
83.	(G220) Loading Areas All loading and unloading must take place from the designated loading dock/bay. This area is to be clearly marked/signposted for use by delivery vehicles only. Condition reason: To ensure that adequate parking and loading are provided.
84.	(G230) Vehicle Access Vehicles entering or leaving the development site should be in forward direction. Condition reason: To ensure safety.
85.	(G250) Operating hours During ongoing use of the premises, the hours of operation are restricted to 8:00 – 15:30 Monday to Saturday. The premises is not to operate on Sundays and Public Holidays Condition reason: To protect the amenity of the local area
86.	(G260) Deliveries and waste collection times for food and drink and mixed use developments During ongoing use of, all deliveries, waste and recycling collection carried out by heavy vehicles/vehicles: 1. are to be undertaken between 8am - 5pm Monday - Friday only; 2. only occur in designated loading and unloading areas on the property; 3. do not occur on the street; 4. do not obstruct other operations; 5. minimise disruption to public spaces and neighbouring properties; 6. maintain a clear service vehicle dock, car parking spaces and access driveways at all times; and 7. all vehicles must enter and leave in a forward direction. Condition reason: To ensure deliveries to the premises are carried out safely and protect the amenity of the local area
87.	(G340) Complaints register

	The operator must keep a legible record of all complaints received in an up-to date Complaints Register. The Complaints Register must record, but not necessarily be limited to: (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 by the Applicant in relation to the complaint, including any follow-up contact with the complainant; and if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken. (f) allocate an individual "complaint number" to each complaint received. The Complaints Register must be made available for inspection when requested by Liverpool City Council. The industry must be operated in accordance with the approved Noise Management Plan and Complaints Handling Procedure at all times. Condition reason: To mitigate potential impacts associated with the development and establish a procedure for responding to enquiries.
88.	(G345) Lighting Illumination of the site must be arranged in accordance with the requirements and specifications of AS 4282:2019 - Control of obtrusive effects of outdoor lighting so as not to impact upon the amenity of the occupants of adjoining and nearby premises. Condition reason: To mitigate potential lighting impacts and protect the amenity of the surrounding area.
89.	(G360) Noise - Silent Building Intruder Alarm System Any building intruder alarm installed at the site must be a "silent back to base" type. Condition reason: To mitigate potential acoustic impacts and protect the amenity of the surrounding area.
90.	(G370) Use of building intruder alarm/s 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. Condition reason: To mitigate potential acoustic impacts and facilitate compliance with legislative requirements.
91.	(G390) Noise - General

	Noise associated with the use of the premises, including mechanical plant and equipment, must 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, internal public address system or other internal amplified sound equipment must 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, internal public address system or other internal amplified sound equipment installed on the premises must not cause: i. The emission of noise as measured over a 15 minute period (LAeq (15 minute)) that exceeds the LA90 (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. Condition reason: To mitigate potential intrusive noise and amenity impacts.
92.	(G393) Acoustic Report An acoustic report prepared by a suitably qualified acoustic consultant must be submitted to Liverpool City Council for its assessment and approval within three (3) months of occupation/completion of the development. The report must include but not be limited to the following information: (a) Noise measurements taken during a time of peak occupation at the most affected noise sensitive locations as indicated in the approved acoustic report titled "HINCHINBROOK CONTAINER RECYCLING NOISE AND VIBRATION IMPACT ASSESSMENT" (Ref: 17233 Rev: 1.0) prepared by N.L for Sound In dated 22nd December 2023; (b) Verification that noise levels at the most affected receivers comply with all relevant assessment criteria detailed in the abovementioned report; (c) All complaints received from local residents in relation to the operation of the premises/development; and (d) Where noise measurements required under point a) above indicate that the relevant assessment criteria are exceeded, recommendations must be provided in relation to how noise emissions can be satisfactorily reduced to comply with the assessment criteria. Following written approval from Liverpool City Council, recommendations provided under point d) above must be implemented fully. Note: The 'suitably qualified acoustic consultant' must be a member of the Australian Acoustical Society or employed by an Association of Australasian Acoustical Consultants (AAAC) member firm. Condition reason: To mitigate potential acoustic impacts and protect the amenity of the surrounding area.
93.	(G394) Forklifts and Delivery Vehicles To minimise potential noise impacts, all forklifts and delivery vehicles associated with the use must be equipped with smart (self-adjusting) reverse alarms, broadband reverse alarms, combination alarms or other suitable noise reduction technologies instead of tonal reversing alarms. Condition reason: To mitigate potential acoustic impacts and protect the amenity of the surrounding area.

94.	(G395) Managing noise During ongoing use of the premises, the premises must be operated in accordance with the acoustic report approved under this consent. Condition reason: To protect the amenity of the local area
95.	(G400) Environment The use of the premises must 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. Condition reason: To mitigate potential risks to human health and the environment.
96.	(G402) Air Handling System 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. Condition reason: To ensure no substance other than rainwater enters the stormwater system and waterways.
97.	(G410) Landscaping 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. An annual report shall be submitted to Council, for the 3 years following issue of the OC, certifying that the landscaping works have been satisfactorily maintained. Condition reason: To require records to be provided, after occupation, documenting that landscaping is appropriately maintained.
98.	(G468) Smoke-free Requirements The requirements of the Smoke-free Environment Act 2000 and Smoke-free Environment Regulation 2016 must be complied with at all times. Condition reason: To mitigate potential risks to human health and facilitate compliance with legislative requirements and relevant standards.
99.	(G566) No Amplified Sound Equipment or Music Outside Music and other amplified sound played on the premises must not give rise to 'offensive noise' as defined by the Protection of the Environment Operations Act 1997. The sound pressure level as measured over a 15 minute period (LAeq (15 minute)) must not exceed 5 dB(A) above the ambient background noise level (LA90 (15 minute)) at the boundary of the premises. Sound amplification equipment and music are not permitted in any of the outdoor areas associated with the premises including the public domain. Speakers located within the premises must not be placed so as to direct the playing of music towards the outdoor areas associated with the premises. Condition reason: To mitigate potential acoustic impacts associated with the development.
100.	(G668) Car Park Signage Prominent notices must be installed at the entry and exit to the car park informing people to minimise noise whilst onsite and to enter and leave the car park quietly. Condition reason: To mitigate potential intrusive noise and amenity impacts.
101.	(G950) Flooding Requirements There shall be no storage of materials below the 1% AEP flood plus half a metre freeboard (i.e., 25.2m + 0.5m = 25.7m Australian Height Datum), which may cause pollution or be potentially hazardous during any flood. Condition reason: To ensure fairness, transparency and probity

102.	(G951) Car Park Signage - Left out movement
	Prominent notices must be installed at the exit to the car park informing people that only left turn exit onto Banks Road is permitted.
	Condition reason: To ensure fairness, transparency and probity.

Demolition Work Before Demolition Work Commences

103.	(C003) Bush fire asset protection zones
	Before any site work commences, the boundaries of the asset protection zone must be surveyed and marked on the ground by a registered surveyor in accordance with the approved Bushfire Assessment Report
	Condition reason: To provide a buffer to protect life and property from bush fire attack.
104.	(C004) Asbestos removal signage
	Before demolition work commences involving the removal of asbestos, a standard commercially manufactured sign containing the words 'DANGER: Asbestos removal in progress' (measuring not less than 400mm x 300mm) must be erected in a prominent position at the entry point/s of the site and maintained for the entire duration of the removal of the asbestos.
	Condition reason: To alert the public to any danger arising from the removal of asbestos
105.	(C040) Demolition Works
	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.
	Condition reason: To ensure that the demolition of buildings is carried out without impacting on public and environmental safety.
106.	(C055) Site Facilities
	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.
	Condition reason: To ensure the required site management measures are implemented before the commencement of building work.
107.	(C117) Erosion and sediment controls in place
	Before any site work commences, the PCA, 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).
	Condition reason: To ensure sediment laden runoff and site debris do not impact local stormwater systems and waterways.
108.	(C466) Dilapidation report

	Before any site work commences, a dilapidation report must be prepared by a suitably qualified engineer detailing the structural condition of adjoining buildings, structures or works and public land, to the satisfaction of the PCA Where access has not been granted to any adjoining properties to prepare the dilapidation report, the report must be based on a survey of what can be observed externally and demonstrate, in writing, to the satisfaction of the PCA, that all reasonable steps were taken to obtain access to the adjoining properties. No less than 2 days before any site work commences, adjoining building owner(s) must be provided with a copy of the dilapidation report for their property(ies) and a copy of the report(s) must be provided to Council (where Council is not the principal certifier) at the same time. Condition reason: To establish and document the structural condition of adjoining properties and public land for comparison as site work progresses and is completed and ensure neighbours and council are provided with the dilapidation report.
109.	(C531) Waste management plan - an approved document of this consent Before site work commences, a waste management plan for the development must be provided to the PCA Condition reason: To ensure resource recovery is promoted and local amenity protected during construction.

During Demolition Work

110.	(D045) Hours of work Site work must only be carried out between the following times – From 7am to 6pm on Monday to Friday From 8am to 1pm on 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. Condition reason: To protect the amenity of the surrounding area.
111.	(D049) Security Fence 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. Condition reason: To ensure the required site management measures are implemented during construction.
112.	(D055) Refuse Disposal 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. Condition reason: To ensure the required site management measures are implemented during construction.
113.	(D075) Demolition Inspections

	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 work, or handling of any building or 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, and (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. Condition reason: To require approval to proceed with demolition work following each stage inspection.
114.	(D130) Removal of dangerous and/or hazardous waste All dangerous and/or hazardous material must be removed by a suitably qualified and experienced contractor licensed by SafeWork NSW. The removal of such material must be carried out in accordance with the requirements of SafeWork NSW and the material must be transported and disposed of in accordance with NSW Environment Protection Authority requirements. Condition reason: To ensure safe removal and disposal of dangerous and/or hazardous material.
115.	(D180) Waste management 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 principal certifier, detailing the following: - The contact details of the person(s) who removed the waste; - The waste carrier vehicle registration; - The date and time of waste collection; - A description of the waste (type of waste and estimated quantity) and whether the waste is to be reused, recycled or go to landfill; - The address of the disposal location(s) where the waste was taken; - 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. Condition reason: To require records to be provided, during site work, documenting the lawful disposal of waste.
116.	(D190) Discovery of relics and Aboriginal objects While site work is being carried out, if a person reasonably suspects a relic of Aboriginal object is discovered: - the work in the area of the discovery must cease immediately; - the following must be notified - for a relic – the Heritage Council; or - for an Aboriginal object – the person who is the authority for the protection of Aboriginal objects and Aboriginal places in New South Wales under the National Parks and Wildlife Act 1974, section 85. Site work may recommence at a time confirmed in writing by: - for a relic – the Heritage Council; or - for an Aboriginal object – the person who is the authority for the protection of Aboriginal objects and Aboriginal places in New South Wales under the National Parks and Wildlife Act 1974, section 85.

	Condition reason: To ensure the protection of objects of potential significance during works.
117.	(D426) Soil management While site work is being carried out, the principal certifier must be satisfied all soil removed from or imported to the site is managed in accordance with the following requirements: 1. All excavated material removed from the site must be classified in accordance with the EPA's Waste Classification Guidelines before it is disposed of at an approved waste management facility and the classification and the volume of material removed must be reported to the principal certifier. 2. All fill material imported to the site must be: • Virgin Excavated Natural Material as defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i>; or • a material identified as being subject to a resource recovery exemption by the NSW EPA; or • a combination of Virgin Excavated Natural Material as defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> and a material identified as being subject to a resource recovery exemption by the NSW EPA. Condition reason: To ensure soil removed from the site is appropriately disposed of and soil imported to the site is not contaminated and is safe for future occupants.
118.	(D430) Unidentified Contamination Any new information which arises during remediation, demolition or construction works that has the potential to alter previous conclusions about site contamination and remediation must be immediately notified in writing to the certifier and Liverpool City Council. A section 4.55 Application under the Environmental Planning and Assessment Act 1979 must be made for any proposed works outside the scope of the approved development consent. Condition reason: To ensure the suitability of land for the development.
119.	(D450) Air Quality 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 Certifier may direct that work is not to proceed. Condition reason: To ensure site works are managed appropriately and do not result in air pollution.
120.	(D480) Acoustic Report The construction requirements recommended in the approved acoustic report are to be implemented by the consent holder during the construction of the development. Condition reason: To ensure human health and amenity is maintained by ensuring the development is not impacted by noise.
121.	(D552) Implementation of the site management plans 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. Condition reason: To ensure site management measures are implemented during the carrying out of site work.
122.	(D565) Water Quality 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.

	Condition reason: To ensure site works are managed appropriately and do not result in water pollution.
123.	(D574) Pollution Control - Truck Movements 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. Condition reason: To mitigate potential risks to the environment during construction and facilitate compliance with legislative requirements.
124.	(D600) Correct waste separation and removal 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 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. Condition reason: To ensure that separation of waste by type is undertaken in an ongoing basis throughout the building process, and that the wastes are kept separate and not mixed, to facilitate waste management and recycling.
125.	(D605) Containment of site wastes during building All demolition, excavation or construction wastes, e.g. wrapping, packaging materials, bags, insulation, sand, soil etc., must be kept fully enclosed at all times to prevent them from becoming displaced in strong wind conditions or from washing into sewers, storm drains or creeks, or onto adjacent properties or public land during wet weather. Condition reason: To ensure that waste materials from the demolition, excavation or construction are kept appropriately contained on site, irrespective of weather conditions, and do not make their way into the environment as pollutants.
126.	(D650) Noise and vibration - an approved document of this consent 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 under the Construction Environmental Management Plan. Condition reason: To protect the amenity of the neighbourhood during construction.

General advisory notes

This consent contains the conditions imposed by the consent authority which are to be complied with when carrying out the approved development. However, this consent is not an exhaustive list of all obligations which may relate to the carrying out of the development under the EP&A Act, EP&A Regulation and other legislation. Some of these additional obligations are set out in the [Conditions of development consent: advisory notes](#). The consent should be read together with the Conditions of development consent: advisory notes to ensure the development is carried out lawfully.

The approved development must be carried out in accordance with the conditions of this consent. It is an offence under the EP&A Act to carry out development that is not in accordance with this consent.

A document referred to in this consent is taken to be a reference to the version of that document which applies at the date the consent is issued, unless otherwise stated in the conditions of this consent.

Dictionary

The following terms have the following meanings for the purpose of this determination (except where the context clearly indicates otherwise):

Approved plans and documents means the plans and documents endorsed by the consent authority, a copy of which is included in this notice of determination.

AS means Australian Standard published by Standards Australia International Limited and means the current standard which applies at the time the consent is issued.

Building work means any physical activity involved in the erection of a building.

Certifier means a council or a person that is registered to carry out certification work under the Building and Development Certifiers Act 2018.

Construction certificate means a certificate to the effect that building work completed in accordance with specified plans and specifications or standards will comply with the requirements of the EP&A Regulation and Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

Council means LIVERPOOL CITY COUNCIL.

Court means the Land and Environment Court of NSW.

EPA means the NSW Environment Protection Authority.

EP&A Act means the *Environmental Planning and Assessment Act 1979*.

EP&A Regulation means the *Environmental Planning and Assessment Regulation 2021*.

Independent Planning Commission means Independent Planning Commission of New South Wales constituted by section 2.7 of the EP&A Act.

Local planning panel means LIVERPOOL LOCAL PLANNING PANEL.

Occupation certificate means a certificate that authorises the occupation and use of a new building or a change of building use for an existing building in accordance with this consent.

Principal certifier means the certifier appointed as the principal certifier for building work or subdivision work under section 6.6(1) or 6.12(1) of the EP&A Act respectively.

Site work means any work that is physically carried out on the land to which the development the subject of this development consent is to be carried out, including but not limited to building work, subdivision work, demolition work, clearing of vegetation or remediation work.

Stormwater drainage system means all works and facilities relating to:

- the collection of stormwater,
- the reuse of stormwater,
- the detention of stormwater,
- the controlled release of stormwater, and
- connections to easements and public stormwater systems.

Strata certificate means a certificate in the approved form issued under Part 4 of the *Strata Schemes Development Act 2015* that authorises the registration of a strata plan, strata plan of subdivision or notice of conversion.

Subdivision certificate means a certificate that authorises the registration of a plan of subdivision under Part 23 of the *Conveyancing Act 1919*.

Subdivision works certificate means a certificate to the effect that subdivision work completed in accordance with specified plans and specifications will comply with the requirements of the EP&A Regulation.

Sydney district or regional planning panel means SYDNEY WESTERN CITY PLANNING PANEL.

Department of Planning and Environment



Contact: Department of Planning and Environment-Water
Phone: 1300081047
Email: waterlicensing.servicedesk@dpie.nsw.gov.au

Our ref: IDAS-2025-10102
Your ref: DA-597/2024

17 April 2025

The General Manager
LIVERPOOL CITY COUNCIL
33 MOORE STREET LIVERPOOL 2170

Attention: Tamim Omar

Uploaded to the ePlanning Portal

Dear Sir/Madam

Re: IDAS-2025-10102 - Integrated Development Referral – General Terms of Approval
Dev Ref: DA-597/2024
Description: Demolition of existing building, construction and operation of a container deposit facility ('Return and Earn'), associated services, utilities and landscaping.
Location: Lot 1, DP207924, 335 HOXTON PARK ROAD HINCHINBROOK 2168
Lot 2, DP1083454, HOXTON PARK ROAD HINCHINBROOK 2168

I refer to your recent referral regarding an integrated Development Application (DA) proposed for the above location. Attached, please find Department of Planning and Environment-Water's General Terms of Approval (GTA) for part of the proposed development requiring a Controlled Activity approval under the *Water Management Act 2000* (WM Act), as detailed in the subject DA.

Please note Council's statutory obligations under section 4.46 of the *Environmental Planning and Assessment Act 1979* (EPA Act) which requires consent, granted by a consent authority, to be consistent with the general terms of any approval proposed to be granted by the approval body.

If the proposed development is approved by Council, the department requests these GTA be included (in their entirety) in Council's development consent. Please also note the department requests notification:

- if any plans or documents are amended and these amendments significantly change the proposed development or result in additional works or activities (i) in the bed of any river, lake or estuary; (ii) on the banks of any river lake or estuary, (iii) on land within 40 metres of the highest bank of a river lake or estuary; or (iv) any excavation which interferes with an aquifer.

The Department of Planning and Environment-Water will ascertain from the notification if the amended plans require review of or variation/s to the GTA. This requirement applies even if the amendment is part of Council's proposed consent conditions and do not appear in the original documentation.

- if Council receives an application under s4.46 of the EPA Act to modify the development consent and the modifications change the proposed work or activities described in the original DA.
- of any legal challenge to the consent.

As the proposed work or activity cannot commence before the applicant applies for and obtains an approval, the department recommends the following condition be included in the development consent:

The attached GTA issued by the Department of Planning and Environment-Water do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to the department for a Controlled Activity approval after consent has been issued by Council and before the commencement of any work or activity.

A completed application must be submitted to the department together with any required plans, documents, application fee and proof of Council's development consent. Finalisation of an approval can take up to eight (8) weeks from the date the application and all required

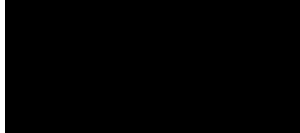
supporting documentation is received.

Applications for controlled activity approval should be made to the department, by lodgement of a Controlled Activity Approval – New approval application on the NSW Planning Portal at:
<https://www.planningportal.nsw.gov.au/>

The Department of Planning and Environment-Water requests that Council provide a copy of this letter to the development consent holder.

The Department of Planning and Environment-Water also requests a copy of the determination for this development application be provided by Council as required under section 4.47(6) the EPA Act.

Yours Sincerely



Team Leader
Licensing and Approvals
Department of Planning and Environment-Water



General Terms of Approval

for proposed development requiring approval under s89, 90 or 91 of the Water Management Act 2000

Reference Number: IDAS-2025-10102
Issue date of GTA: 17 April 2025
Type of Approval: Controlled Activity
Location of work/activity: Lot 1, DP207924, 335 HOXTON PARK ROAD HINCHINBROOK 2168
 Lot 2, DP1083454, HOXTON PARK ROAD HINCHINBROOK 2168
Waterfront Land: Cabramatta River (5th Order)
DA Number: DA-597/2024
LGA: LIVERPOOL

The GTA issued by Department of Planning and Environment-Water do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to the Department of Planning and Environment-Water for the relevant approval **after development consent** has been issued by Council **and before** the commencement of any work or activity.

Condition Number	Details
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TC-G001	Before commencing any proposed controlled activity on waterfront land, an application must be submitted to Department of Planning and Environment-Water, and obtained, for a controlled activity approval under the Water Management Act 2000.
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TC-G004	A. This General Terms of Approval (GTA) only applies to the proposed controlled activity described in the plans and associated documents found in Schedule 1, relating to Development Application DA-597/2024 provided by Council to Department of Planning and Environment-Water.
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B. Any amendments or modifications to the proposed controlled activity may render the GTA invalid. If the proposed controlled activity is amended or modified, Department of Planning and Environment-Water, must be notified in writing to determine if any variations to the GTA will be required.

TC-G005	A. The application for a controlled activity approval must include the following plan(s): • Site plans • Detailed civil construction plans - For the proposed work within waterfront land. • Erosion and sediment control plans • Construction Cut and Fill Cross Sections and Plan View Details of Site
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B. The plan(s) must be prepared in accordance with Department of Planning and Environment-Water's guidelines located on the website
<https://www.dpie.nsw.gov.au/water/licensing-and-trade/approvals/controlled-activity-approvals/what/guidelines>



General Terms of Approval

for proposed development requiring approval under s89, 90 or 91 of the Water Management Act 2000

SCHEDULE 1

The plans and associated documentation listed in this schedule are referred to in general terms of approval (GTA) issued by Department of Planning and Environment-Water for integrated development associated with IDAS-2025-10102 as provided by Council:

- A. Site and Architectural Plans, 335 Hoxton Park Rd Hinchinbrook_PAN-494252
- B. Landscape Plans, 335 Hoxton Park Rd Hinchinbrook_PAN-494252
- C. Civil and Stormwater Plans, 335 Hoxton Park Rd Hinchinbrook_PAN-494252
- EIS - Container Deposit Facility - 335 Hoxton Park Rd, Hinchinbrook_PAN-494252

Transport for NSW

3 March 2025

TfNSW Reference: SYD25/00174/01
Council's Reference: DA-597/2024 (CNR-78741)Mr Jason Breton
Chief Executive Officer
Liverpool City Council
Locked Bag 7064
Liverpool BC, NSW 1871

Attention: Tamim Omar

**DEVELOPMENT APPLICATION FOR DEMOLITION OF EXISTING BUILDING, CONSTRUCTION AND OPERATION OF A CONTAINER DEPOSIT FACILITY ('RETURN AND EARN')
335 HOXTON PARK ROAD HINCHINBROOK 2168**

Dear Mr Breton,

Reference is made to Council's correspondence of 12 February 2025 regarding the abovementioned Development Application (DA), which was referred to Transport for NSW (TfNSW) for comment under 2.119 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

TfNSW has reviewed the information and provides the following commentary for consideration:

- The subject property abuts the Liverpool-Parramatta Transitway which is owned by Transport for NSW (Roads), access across the boundary is not permitted and any works within the corridor is denied. Please refer to Tab A for additional information.
- Due to the proximity of the site to the signalised intersection of Banks Road and Hoxton Park Road (**classified road**), TfNSW recommends a Left in/Left Out access arrangement on Banks Road as there are safety risks associated with southbound vehicles turning right from the existing right-turn bay and from Banks Road into the facility, and similarly for vehicles turning right out of the facility onto Banks Road in close proximity to the signals.

TfNSW raises no objection to the DA subject to approval by the relevant Consent Authority and the inclusion of the following requirements within the Development Consent:

- **Road Occupancy Licence**
A Road Occupancy Licence (ROL) should be obtained from Transport Management Centre (TMC) for any works that may impact on traffic flows on Hoxton Park Road and Liverpool Parramatta Transitway during construction activities. A ROL can be obtained through <https://myrta.com/oplinc2/pages/security/oplincLogin.jsf>.
- **Storm Water Management**
Detailed design plans and hydraulic calculations of any changes to the TfNSW stormwater drainage system are to be submitted to TfNSW for approval, prior to the commencement of any works. Please send all documentation to development.sydney@transport.nsw.gov.au.

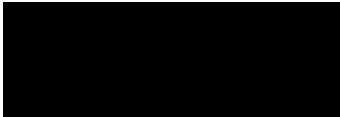
A plan checking fee will be payable and a performance bond may be required before TfNSW approval is issued.

- **Utility Adjustment**

The developer shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.

If you have any further questions regarding the above matter, James Douglas, Land Use Planner, would be pleased to take your call on (02) 9983 3987 or via email at development.sydney@transport.nsw.gov.au.

Your sincerley,



**A/Senior Manager Land Use Assessment - Central and Western
Transport Planning, Planning, Integration and Passenger Division
Planning and Programs, Greater Sydney Division**

TAB A

- The subject property abuts the Liverpool-Parramatta Transitway which is owned by Transport for NSW (Roads) as shown by blue colour and brown hatching in the below aerial.



Standard Conditions for Development Applications and Planning Proposals

Version 10 – January 2025

Prepared by Sustainability and Environment
Endeavour Energy

T 133718

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Purpose

The following Standard Conditions are based on Endeavour Energy's experience dealing with numerous development applications and planning proposals. It provides an overview of Endeavour Energy believes are the issues affecting the electricity distribution network that need to be considered by authorities in determining and conditioning consents.

These Standard Conditions should be referred to for advice about:

- Development Application Referral to Endeavour Energy required under *State Environmental Planning Policy (Transport and Infrastructure) 2021* (NSW), Division 5 'Electricity transmission or distribution', Subdivision 2 'Development likely to affect an electricity transmission or distribution network', Section 2.48 'Determination of development applications—other development'.

2.48 Determination of development applications—other development

- (1) This section applies to a development application (or an application for modification of a consent) for development comprising or involving any of the following—
 - (a) the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower,
 - (b) development carried out—
 - (i) within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or
 - (ii) immediately adjacent to an electricity substation, or
 - (iii) within 5m of an exposed overhead electricity power line,
 - (c) installation of a swimming pool any part of which is—
 - (i) within 30m of a structure supporting an overhead electricity transmission line, measured horizontally from the top of the pool to the bottom of the structure at ground level, or
 - (ii) within 5m of an overhead electricity power line, measured vertically upwards from the top of the pool,
 - (d) development involving or requiring the placement of power lines underground, unless an agreement with respect to the placement underground of power lines is in force between the electricity supply authority and the council for the land concerned.
- (2) Before determining a development application (or an application for modification of a consent) for development to which this section applies, the consent authority must—
 - (a) give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks, and
 - (b) take into consideration any response to the notice that is received within 21 days after the notice is given.
- (3) Subsection (2) does not apply to development specified in subsection (1)(b) if the development involves only one or more of the following—
 - (a) internal alterations to a building,
 - (b) a change of use of an existing building,
 - (c) a change to the hours of operation specified in the development consent,
 - (d) a subdivision that does not involve construction work.

- *Environmental Planning and Assessment Act 1979* (NSW) requires Councils:
 - in the Local Environmental Plan (LEP) making process (including LEP amendments through a planning proposal for rezoning) to consider the environmental, social and economic impact on the site and surrounds and ability to be accommodated within the capacity of the current and/or future infrastructure and services. When an LEP is made or amended through the planning proposal, it must demonstrate site-specific merit by having regard to this criteria;
 - in development control plan (DCP) to have regard to requirements or standards in respect of the provision of services, facilities and amenities demanded by development; and

- advise adjoining and nearby occupiers/owners of proposals lodged with Council, in the Council's opinion, the enjoyment of the adjoining or neighbouring land may be detrimentally affected.
- Under the *Environmental Planning and Assessment Act 1979* (NSW), development may be declared State significant development (SSD). This declaration may be made by a State Environmental Planning Policy (SEPP) or by the Minister for Planning (the Minister) and is generally based on the scale, nature, location and strategic importance of the development to the State.

The Environmental Planning & Assessment Regulation 2021 (EP&A Regulation) requires certain SSD documents to be prepared having regard to the State Significant Development Guidelines and includes requirements for addressing infrastructure requirements and utilities. The following is an extract of a request for Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development.

25. Infrastructure Requirements and Utilities

- In consultation with relevant service providers:
 - assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.
 - identify any infrastructure upgrades required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained.
 - provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.
 - identify potential impacts to existing utility infrastructure, as a result of the development.

- Infrastructure Delivery, Management and Staging Plan.
- Evidence of consultation with providers

It is not intended as an exhaustive list of matters for consideration. Further advice is available via Endeavour Energy's:

- Website <http://www.endeavourenergy.com.au> which contains information for customers as well as in relation to the electricity distribution network and electrical safety.
- [Connections Portal](#) for new enquiries or work requests. After signing up, applicants can sign in and submit requests by clicking on the relevant tile for the service required shown below. Hovering over the tiles provides a preview of the services provided or please refer to the quick reference guides:
 - [Connections Portal User Guide for Construction Works Services](#) - a step by step guide for the new application process.
 - [User registration, log in and password reset guide](#) .



1 Adjoining Sites

Endeavour Energy has a freehold property portfolio made up of network property required for the supply of electricity ie. for major assets such as transmission substations, zone substations and switching stations where security of tenure is paramount. It also holds non-network property which is not directly required for the supply of electricity but needed to provide accommodation for support services, ie. field service centres (FSC), pole yards and telecommunication sites.

Endeavour Energy's network properties being non-habitable buildings / sites are less sensitive and comparatively less impacted by development of adjoining or nearby properties. Accordingly, as an adjoining or nearby owners and occupiers, where compatible development is proposed Endeavour Energy generally leaves the determination regarding the environmental impact and the appropriate development controls to Council. The responses to Development Applications and Planning Proposals are therefore more focused on Endeavour Energy's role as an electricity supply authority.

Endeavour Energy's non-network sites are managed by the company in order to provide an environment that is liveable, sustainable and productive. In order to fully support the core objectives of the company, any development of adjoining or nearby properties which will have a detrimental effect on the foregoing objectives will be opposed by Endeavour Energy. The majority of the non-network sites are field service centres being essentially an industrial use are also comparatively less impacted but conversely may impact on the adjoining or nearby development.

Endeavour Energy is generally opposed to any sensitive development in close vicinity of its properties which could potentially limit its ongoing operations from the site. As the electricity network is operational 24/7/365 ie. all day, every day of the year (please refer to [Section 26 'Prudent Avoidance'](#)), likewise so potentially are the FSCs.

Accordingly there is noise, vehicle emissions, light glare etc. associated with the FSC operations which are not compatible to having nearby sensitive uses eg. traffic or persons accessing or working on the site during emergencies at night etc. Endeavour Energy's experience is that despite being a long standing existing use, when surrounding areas are subsequently redeveloped, the new occupants (sometimes supported by councils) seek to restrict the ongoing use of its sites. Given the essential nature of Endeavour Energy's operations such a situation arising is unacceptable. Endeavour Energy is not responsible for any amelioration measures for any emissions that may impact on the nearby proposed development.



Endeavour Energy's Parramatta Field Service Centre located at 84-86 Macarthur Street North Parramatta has had operational issues due to the later adjoining medium density residential development. Source: Google Maps Street View.

2 Asbestos

Endeavour Energy's HxGN NetWorks Core NetViewer master facility model shows locations identified or suspected of having asbestos or asbestos containing materials (ACM) present. This is usually in older parts of the electricity network where ACM was used for strengthening, insulation, lightness and cost saving.



Endeavour Energy's HxGN NetWorks Core NetViewer master facility model indicates that the site is a location identified or suspected of having asbestos or asbestos containing materials present.

The potential locations of asbestos to which construction / electricity workers could be exposed include:

- customer meter boards;
- conduits in ground;
- padmount substation culvert end panels; and
- joint connection boxes and connection pits.

Works on or in the vicinity of Endeavour Energy's electricity network which has the potential to impact asbestos or ACM must be carried out by the appropriately licenced Contractors in accordance involving with Safe Work NSW requirements and Endeavour Energy company procedures / requirements. Asbestos or ACM must be identified by a competent person employed by or contracted to the applicant and an asbestos management plan, including its proper disposal.

Further details are available by contacting Endeavour Energy's Electrical and Public Safety Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718.



This is an example of ACM cable ducts found in Endeavour Energy's electricity network during excavation for underground works.

3 Asset Planning

Power plants typically generate electricity a long way from homes and businesses. It is transported at high voltages to bulk supply points over the transmission system operated by Transgrid to Endeavour Energy's transmission substations at 132,000 volts / 132 kilovolts (kV).

From here Endeavour Energy transports electricity to our sub-transmission and zone substations, which usually service entire suburbs, transform electricity to mid voltage levels (11,000 / 11 kV or 22,000 volts / 22 kV). When electricity arrives at the location where it is required, distribution substations further transform the electricity to 400 or 230 volts. Underground cables and/or overhead power lines then carry this low voltage electricity to the customer connection points located on the customer's premises to service their electricity load.

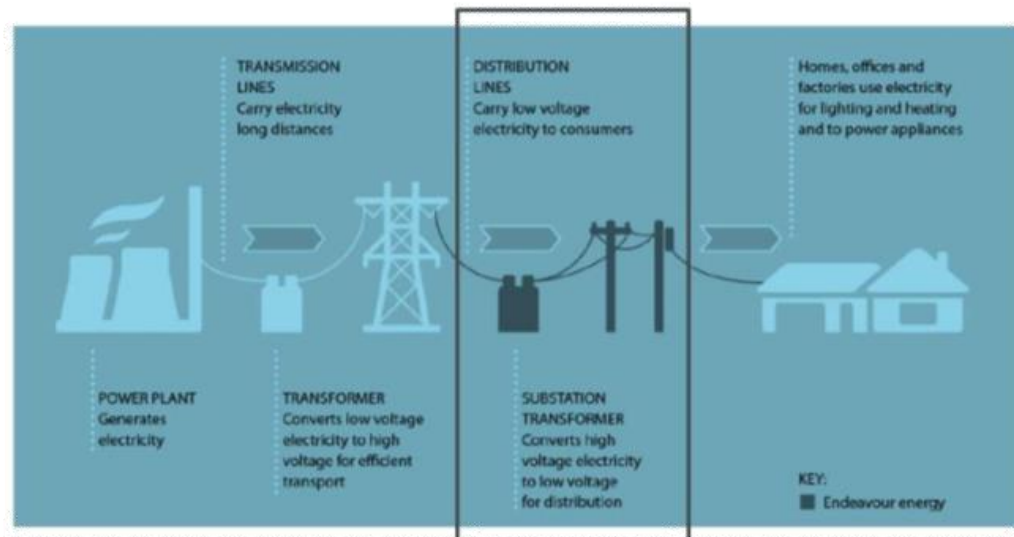
Distribution substations are divided into:

- ground mounted substations most commonly being a padmount substations installed a complete unit on a concrete foundation / plinth and usually associated with underground distribution (indicated by the symbol  on the site plan from Endeavour Energy's HxGN NetWorks Core NetViewer master facility model) can accommodate loads from 315 kilovolt amperes (kVA) up to 1,500 kVA (typically 500 kVA).
- pole mounted substations where there is overhead distribution (indicated by the symbol  on the site plan from Endeavour Energy's HxGN NetWorks Core NetViewer master facility model) and the substation equipment is outdoor type, mounted above ground level on a pole, have comparatively limited capacity of 16 kVA up to a maximum of 400 kVA.

Accordingly there is a significant variation in the number and type of premises able to be connected to a substation ie. a single distribution substation may serve one large building, or many homes.

As well as transforming voltage from high to low in a controlled manner, distribution substations also make it possible to perform the necessary switching operations in the grid (energizing and de-energizing of equipment and lines) and provide the necessary monitoring, protection and control of the network using the Supervisory Control and Data Acquisition (SCADA) system which is supported by an independent telecommunication network.

The following diagram from Endeavour Energy's Distribution Annual Planning Report December 2020 illustrates how the electricity distribution network operates in a traditional, 'one-way' service.



Source: Endeavour Energy Distribution Annual Planning Report December 2020

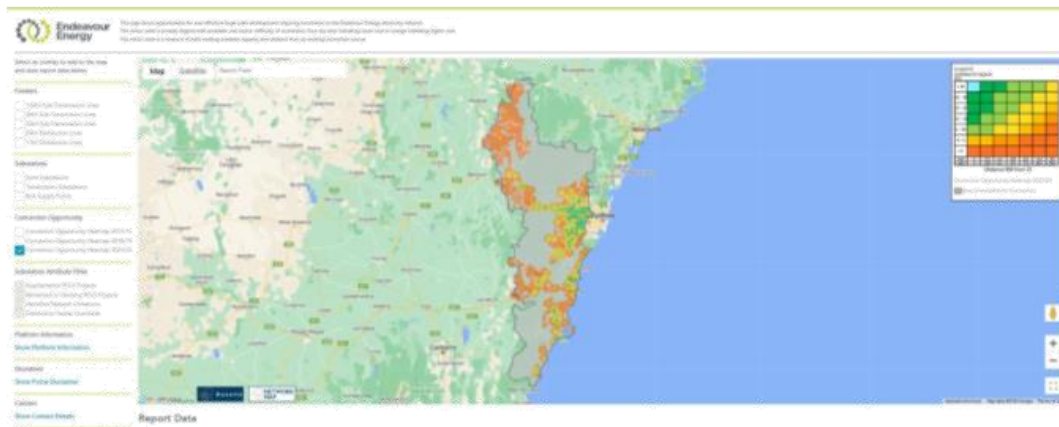
The electricity distribution network also provides a 'two way' service which enables customers with renewable energy resources such as solar photovoltaic panels to export electricity generated into Endeavour Energy's network for supply to other customers for which the customer is credited / paid a solar feed-in tariff as determined by the Independent Pricing and Regulatory Tribunal (IPART).

3.1 Distribution Annual Planning Report Map

The DAPRM (Distribution Annual Planning Report Map) is an interactive geospatial map that has been developed to provide indicative information regarding Endeavour Energy's high voltage electricity network topology, forecast loads and capacities, and network constraints. The DAPRM does not show details of the low voltage electricity distribution network. The DAPRM is an information service available to the public via the following link to Endeavour Energy's website:

<https://dapr.endeavourenergy.com.au/connections/#>.

This map shows opportunities for cost effective large scale development requiring connection to the Endeavour Energy high voltage electricity network. By loading a marker of the proposed connection location, a line will be generated between the marker and the nearest zone substation. By selecting the Connection Opportunity Heatmap the colour scale shown is broadly aligned with probable cost and/or difficulty of connection, from sky blue indicating lower cost to orange indicating higher cost. The colour scale is a measure of both existing available capacity and distance from an existing connection source.



Endeavour Energy Distribution Annual Planning Report Map includes a Connection Opportunity Heatmap providing an indication of probable cost and/or difficulty of connection.

4 Asset Relocation

To facilitate development, some existing electricity infrastructure may need to be decommissioned / relocated or undergrounded. Planning Proposals often entail significant transport and pedestrian facilities involving the widening and upgrade of the roadways and installation of traffic signals. These works within the 'Public Domain' should similarly have regard to Endeavour Energy URD and asset relocation policies and a method of supply will need to be determined to service all other existing customers.

Enquiries for an asset relocation / removal should be made to Endeavour Energy's Customer Network Solutions Branch who can be contacted via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or on Endeavour Energy's website under 'Home > Connections > Remove or Relocate Our Equipment' or via the following link:

<https://www.endeavourenergy.com.au/connections/remove-or-relocate-our-equipment>.

The developer is encouraged to approach a Level 3 Accredited Service Provider (ASP) to obtain preliminary details of the assets and discuss possible solutions to the developer's requirements. The developer must provide as much detail as possible concerning the Endeavour Energy assets that the developer wishes to relocate / remove' (including the addressing of alternative supply arrangements for any other customers supplied by the asset proposed to be removed). For details of the ASP scheme please refer to [Section 24 'Network Connection'](#).

5 Before You Dig



Before commencing any underground activity the applicant is required to obtain advice from the **Before You Dig** service in accordance with the requirements of the *Electricity Supply Act 1995* (NSW) and associated Regulations.

The applicant must obtain plans not only to identify the location of any underground electrical or other utility infrastructure across the site, but also to identify them as a hazard and to properly assess the risk. Therefore, Duty of Care must be exercised when working around any infrastructure assets.

The plans DO NOT pinpoint the exact location of the infrastructure asset and only the presence. NEVER assume the depth or alignment of pipes and cables. Consider using cable location technologies, potholing and non-destructive digging techniques.

The expiry date of the plans can vary from each asset owner and therefore it is important to note the variations. If plans have expired, a new enquiry must be lodged to ensure current plans are always onsite.

The plans provided by the utility owners must be kept in a legible format either as a hard copy or an electronic copy so they can be easily read and understand.

If help is needed in reading plans and / or information provided, please contact the utility owners directly.

Further details are available on the Before You Dig website via the following link (lodging enquiries by phone is no longer available):

<https://www.byda.com.au/> .

6 Bush Fire

Bush fire prone land (BFPL) is land that has been identified by local council which can support a bush fire or is subject to bush fire attack. BFPL maps are prepared by local council and certified by the Commissioner of the NSW Rural Fire Services (RFS). All development on BFPL must satisfy the aim and objectives of RFS Planning for Bush Fire Protection 2019 (PBP). Further information is available via the following link to the RFS website.

<https://www.rfs.nsw.gov.au/plan-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection/bush-fire-prone-land> .

PBP contains development standards / specifications for bush fire protection measures for land use planning and designing and building of new development to ensure that is not exposed to high bush fire risk. Chapter 5 Residential and Rural Residential Subdivisions includes the following specific recommendations related to electricity services (with similar provisions also applying to Chapter 6 Special Fire Protection Purpose Developments (SFPP) and Chapter 7 Residential Infill Development).

5.3.3 Services – Water, electricity and gas

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

Table 5.3c

Performance criteria and acceptable solutions for water, electricity and gas services for residential and rural residential subdivisions.

PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS	
The intent may be achieved where:			
ELECTRICITY SERVICES	➤ location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	➤ where practicable, electrical transmission lines are underground;	
		➤ where overhead, electrical transmission lines are proposed as follows:	
		➤ lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and	
		➤ no part of a tree is closer to a power line than the distance set out in <i>ISSC3 Guideline for Managing Vegetation Near Power Lines</i> .	

Although industrial uses are not covered by Chapters 5 to 7 of NSW Rural Fire Service 'Planning for Bush Fire Protection 2019' (PBP), the aim and objectives of PBP still need to be considered and a suitable package of bush fire protection measures should be proposed commensurate with the assessed level of risk to the development.

The following is an extract of Endeavour Energy's Company Policy 9.1.1 Bushfire Risk Management.

1. Policy Statement

The company will apply prudent asset management strategies to:

- reduce the risk of bushfires caused by network assets and aerial consumer mains to as low as reasonably practicable (ALARP) level;
- mitigating the associated risk to network assets and customer supply reliability during times of bushfire whilst achieving practical safety, reliability, quality of supply, efficient investment and environmental outcomes; and
- ensure compliance with relevant acts, regulations and codes.

Accordingly the electricity network required to service the proposed development must be fit for purpose and meet the technical specifications, design, construction and commissioning standards based on Endeavour Energy's risk assessment associated with the implementation and use of the network connection / infrastructure for a bushfire prone site.

In assessing bushfire risk, Endeavour Energy has traditionally focused on the likelihood of its network starting a bushfire, which is a function of the condition of the network. Risk control has focused on reducing the likelihood of fire ignition by implementing good design and maintenance practices. However the potential impact of a bushfire on its electricity infrastructure and the safety risks associated with the loss of electricity supply are also considered.

Particular attention is given to the design of electrical assets in areas which are susceptible to bushfire to minimise the risk of both normal and foreseeable abnormal operation or failure of the assets initiating a bush fire.



Endeavour Energy crews replacing a burnt timber pole with a concrete pole after the September 2013 bush fire at Winmalee NSW.
Source: Everyday Endeavours, Staff Newspaper November 2013

Endeavour Energy's network is designed to minimise the risk of its assets initiating a bushfire. The asset management actions are focused on identifying and rectifying network defects that may result in faults that could cause fuel ignition. Endeavour Energy has well established processes for identifying such defects, for assessing the likelihood of such faults occurring and prioritising rectification. Endeavour Energy's vegetation management program and pre-summer bushfire inspection program are both examples of this commitment.

However, ultimately the vegetation management work done within easements is primarily to maintain the safe and reliable operation of the electrical network rather than providing a defendable space / Asset Protection Zone (APZ) for an adjoining development / dwelling the easement area is not owned by Endeavour Energy and the slashing and low cut grass would not necessarily be part of Endeavour Energy's vegetation management work.

It is every landholder's responsibility to manage the bush fire hazards on their property. It is also for this reason that any required bushfire protection measures should be contained within the overall development and not on adjoining lands. NSW Rural Fire Service 'Planning for Bush Fire Protection 2019' indicates that a fundamental premise for APZs is that they are provided within the property in such a way that the owner / occupant will be able to maintain the area in perpetuity.

Further details of Endeavour Energy's bushfire / vegetation management policies are available on Endeavour Energy's website under 'Home > Safety > Vegetation management' or via the following link:

<https://www.endeavourenergy.com.au/safety/vegetation-management> .

The following is an extract of Endeavour Energy Directions Paper for Consultation 1 July 2019 – 30 June 2024.

Bushfire Risk

Over 85 per cent of Endeavour Energy's franchise area is bushfire prone as identified by the NSW Rural Fire Service. Endeavour Energy's franchise area includes the Blue Mountains which has been identified as one of the highest areas of bushfire risk in NSW. As a result, vegetation management is a substantive and critical activity in providing a safe and reliable service.

If we fail to properly maintain safe clearances there is an increased risk of bushfire and outages from trees coming in to contact with, or falling on, powerlines. This can have catastrophic consequences for customers and increase the strain on essential government services like Fire and Rescue NSW and the NSW Rural Fire Service who have previously noted our important role in vegetation management.

"Vegetation management around electricity poles, wires and infrastructure is a critical bushfire mitigation measure. Historically the NSW Rural Fire Service (NSW RFS) has been satisfied that electricity distribution businesses have been appropriately addressing bush fire risks"

– Commissioner NSW Rural Fire Service – December 2014

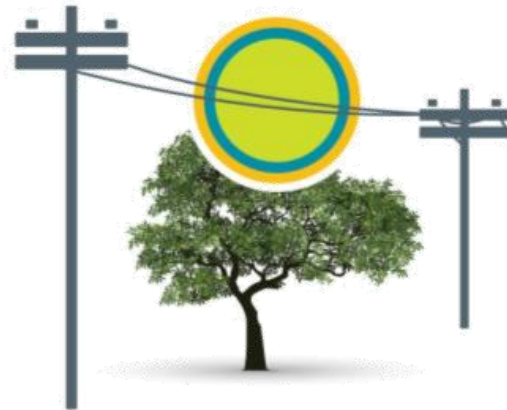
We have a comprehensive program of works to manage the risk of bushfires being initiated by the network. We employ leading edge radar based technology to accurately identify vegetation that is too close to the network. Our pre-summer program includes annual inspections of our assets in bushfire prone areas and associated maintenance work, vegetation management, and capital works to target specific high risk assets.

This program is one of Endeavour Energy's largest operating costs at approximately \$60 million per year. To ensure we deliver value for money services we externally source this function.

Councils and customers may have different views about the frequency, the impact on streetscapes and the cost-benefit trade-off of tree-trimming. However, we are required to trim trees according to mandatory industry standards (Industry Safety Steering Committee Guideline 3 for managing vegetation near power lines). The ongoing use of the latest technology allows us to better target vegetation management programs in order to strike the right balance between the frequency, impact on streetscapes and compliance of tree-trimming.

14 Directions Paper for consultation

Tree-trimming clearance requirements



2.0M - 3.5M SAFETY CLEARANCE
1.0M FOR REGROWTH
CUT TO POINT THAT PROTECTS TREE FROM INFECTION

1 July 2019 – 30 June 2024

7 Construction Management

As part of the construction management plan the applicant must satisfactorily address any impacts of the proposed works on Endeavour Energy's electricity infrastructure located on the site as well as to the adjoining properties. In this regard the following issues should be considered and addressed by the applicant:

- Maintenance of the structural integrity / weather tightness of the substation building / chamber.
- Access to the substation must be available 24/7/365 ie. all day, every day of the year and must not be impeded by temporary fencing, hoardings, the storage of materials etc.
- The electricity infrastructure may be impacted by vehicle / plant operation, excessive loads, vibration, dust or moisture penetration.

Endeavour Energy expects the applicant will need to prepare a dilapidation report to assess of the current condition of any adjoining building before any construction is done around the area and after the new building's completion to determine if any damage was caused by the excavation, demolition, or construction work.

8 Contamination

Endeavour Energy has noted that Contamination Assessments generally do not appear to identify the electricity infrastructure on or in vicinity of the site which is likely to become redundant assets as a result of the proposed development (which is dealt with by Endeavour Energy's Customer Network Solutions Branch as part of the application for the connection of load for the new development – please refer to [Section 24 'Network Connection'](#)) as potential areas of environmental concern (AEC) and associated contaminants of potential concern (COPC).

Due to the potential variability in both the nature and extent of any contamination, it is difficult to define specific remedial strategies for potential contamination associated with electricity infrastructure. As a guide only, Endeavour Energy's Sustainability and Environment Branch have advised the remediation of soils or surfaces impacted by various forms of electricity infrastructure is not uncommon but is usually not significant eg. transformer oil associated with leaking substations, pole treatment chemicals at the base of timber poles etc.

The method of remediation is generally the removal of the electricity infrastructure, removal of any stained surfaces or excavation of any contaminated soils and their disposal at a licensed land fill. The overall Environmental Management System (EMS) for the project should include an unexpected finds protocol to deal with potential contaminated land or asbestos that was not previously identified in the Contamination Assessments. In most cases this should be able to deal with any contamination related to electricity infrastructure. Nonetheless Endeavour Energy's recommendation is for appropriate consideration to be given to electricity infrastructure in the Contamination Assessments.

If the applicant has any concerns over the remediation works related to redundant electricity infrastructure they should contact Sustainability and Environment Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718.

8.1 Contamination from Endeavour Energy Sites

Endeavour Energy's management and / or remediation measures for its sites are implemented based on the presence of contaminants of potential concern that from a contamination perspective would make a site unsuitable for its required use as part of the electricity network. Based on current and historical use of a site, Endeavour Energy may undertake targeted intrusive site investigations to identify or assess concentrations of contaminants of potential concern.

Should the site require significant augmentation or redevelopment, investigations would be undertaken to determine whether environmental management or remediation is required on the site. If that occurs, the site would be assessed under the appropriate land use scenario, which based on the site's current and ongoing use for electricity distribution would be for a commercial or industrial type use. If the use of the site is proposed to change, it would be assessed under the then relevant scenario.

9 Demolition

Demolition work is to be carried out in accordance with Australian Standard AS 2601—2001: 'The demolition of structures' as updated from time to time. All electric cables or apparatus which are liable to be a source of danger, other than a cable or apparatus used for the demolition works shall be disconnected ie. all electrical apparatus shall be regarded as live until isolated and proved de-energised by approved means.

Depending on the extent of the demolition works, the low voltage service conductor and customer connection may need to be isolated and/or removed during demolition. If required the applicant will need to engage and ASP of an appropriate level and class of accreditation to undertake the electrical works. For details of the ASP scheme please refer to [Section 12 'Earthing'](#).

If the entire existing premises are planned for demolition, removal or relocation resulting in the permanent disconnection of a customer connection point, please refer to [Section 28 'Removal of Electricity Supply'](#) for further information.

Appropriate care must be taken to not otherwise interfere with any electrical infrastructure on or in the vicinity of the site eg. streetlight columns, power poles, overhead power lines and underground cables etc.

10 Dispensations

In instances where an applicant's proposal is not compliant with Endeavour Energy's engineering documents or standards, where all other options have been exhausted and compliance cannot be achieved, the applicant must request a dispensation in accordance with Endeavour Energy's Company Procedure GAM 0114 'Granting Dispensations for Engineering Documents' which states:

2.0 SCOPE

This procedure applies to all dispensation requests for proposed deviation from the company's engineering documents. This includes dispensations from, but is not limited to, Accredited Service Provider (ASP) designs, the company's designs, and failed acceptance testing results for new and existing equipment.

The dispensation request must outline the risk to the company's ability to provide a safe, reliable and sustainable electricity supply at an optimal whole of life cost when proposing to deviate from engineering documents. The validity of the risk will be assessed and the request will be approved only if the risk is deemed acceptable. The request will be rejected if the risk is deemed unacceptable or substantial evidence is not provided to justify deviating from the company's engineering documents.

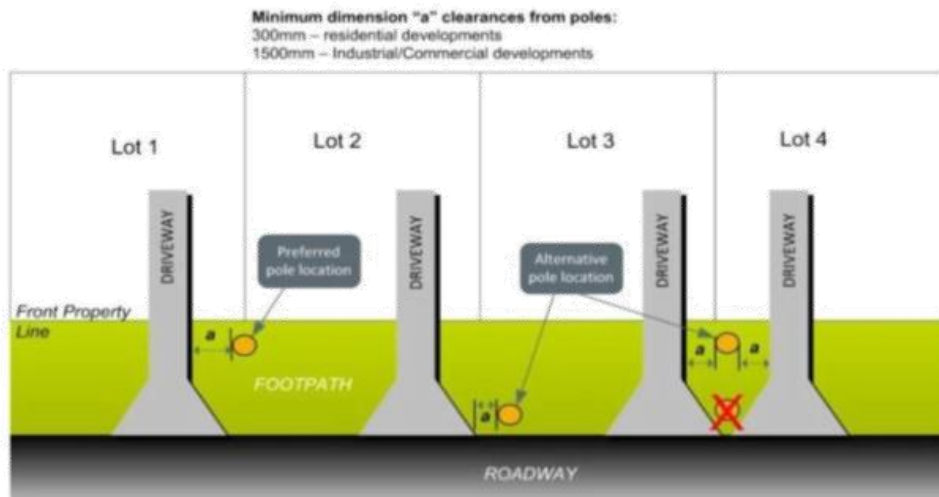
The request should be made to the relevant Endeavour Energy stakeholder eg. if it relates to an easement management matter to the Easement Officers, for an application for connection of load to Customer Network Solutions Branch etc.

11 Driveways

For public / road safety and to reduce the likelihood / protect electricity infrastructure from vehicle impact or loads, Endeavour Energy requires adequate separation distances of driveways that would be acceptable / safe for anyone properly using the driveway. Preference is to have the maximum reasonably possible separation distances from driveways and electricity infrastructure.

However with increased density achieved with smaller, narrower, battle-axe lots and where built to side boundary development is allowed this can sometimes be difficult to achieve. The widening of landscaping provided along the side boundary and the curving of the driveway away can provide additional clearance.

NSW Streets Opening Coordination Council 'Guide to Codes and Practices for Streets Opening' which is available via their website <http://www.streetsopening.com.au/resources/> in Section 5.10. 'Vehicular Footpath Crossing' includes the following diagram.



The minimum separation to the skirting of the proposed driveway is regarded as the minimum that would be acceptable / safe for anyone properly using the driveway (and for which depending on the circumstances appropriate protective devices may be required) and failing the foregoing an asset relocation may be required.

Notwithstanding the 300 millimetre possible minimum, Endeavour Energy's preference is for a minimum of 1 metre separation. This is also in keeping with many Councils' development controls which requires driveways to be at least 1 metre from side boundaries ie. often poles are located in line with the boundaries.

The separation required depends on the type, extent and voltage of the electricity infrastructure (some poles may have multiple overhead power lines ranging from low voltage to 132,000 volt / 132 kilovolt (kV) high voltage); setback of the electricity infrastructure from the roadway / kerb and gutter; curve of the road; the traffic type, volume and speed etc. Essentially this requires the completion of a risk assessment.

For new underground subdivisions driveways should be located a minimum of:

- 500 millimetres from low voltage pillars.
- 1500 millimetres from streetlight columns.

In regard to the relevant parts of Australian Standard 2890 'Parking Facilities' as updated from time to time, whilst there is no direct reference in the Standard to power poles or streetlight columns as a 'permanent sight obstruction', provision needs to be made to allow for turning movements, reversing, safety aspects such as sight distances to both pedestrians and other vehicles should not be compromised. Also, as a 'fixed object', if adequate separation cannot be provided, protective devices to protect the power pole or streetlight column from vehicle impact may be required.

Under the provision of the *Electricity Supply Act 1995* (NSW), a driveway constructed too close to electricity infrastructure may under Section 49 'Obstruction of electricity works' be regarded as interfering with electricity works eg. in the event that a pole needs to be replaced and excavation of the surrounding ground is required part of the driveway would need to be removed.



Driveways need to be appropriately located in relation to poles. Poles with transformers (pole mounted substations) may have an additional earth mat surrounding the pole and should be provided with greater separation to driveways. Repairs and maintenance to poles can occur over extended periods of time blocking driveway access. Source: Google Maps Street View.

12 Earthing

Earth wires are a person's life-lines, conveying electricity from a faulty appliance or equipment through the wire to earth and back to the source through the neutral wires rather than through the person's body. If a fault occurs, power will flow to the earth by the shortest and easiest path. So, if appliances or equipment are not properly earthed, the power could flow through it and then through any person touching or using it, causing serious injury or even a fatality. All electrical infrastructure is therefore earthed.

Inadequate connection to the earth to allow a leaking / fault current to flow into the grounding system and be properly dissipated places persons, equipment connected to the network and the electricity network itself at risk from electric shock, fire and physical injury. The earthing system is usually in the form of an earth electrode consisting of earth rods or mats buried in the ground.

Endeavour Energy is committed to ensuring that its activities and assets conform to all relevant International and Australian Standards, Energy Networks Association (ENA) Standards and NSW legislation. Endeavour Energy's Company Policy, Network Asset Management, 9.2.5 'Network Asset Design' which states the following.

5.10 System earthing

The company's network must generally be effectively earthed. However, in order to improve safety for customers and the public (by reducing earth fault current and magnitude of earth fault potential rise in the distribution systems and zone substations) consideration must be given through the planning process to the limitation of the earth-fault levels on the distribution network.

Metal structures and equipment in some cases will be live to dangerous voltage levels as a result of an earth fault. For this reason depending on access, location and exposure levels, metal structures and equipment must be bonded to earth by permanent connections to electrodes in contact with the general mass of the earth. The hazard to human beings of electric shock means all earthing systems must be designed so that acceptable levels of safety are maintained to electrical employees and the public.

Substations have an 'earth grid' specifically designed for the site considering such factors as ground resistance etc. Depending on the situation, Endeavour Energy may need to seek the imposition of restrictions on land adjoining its electrical infrastructure, particularly in areas of high risk to the public such as:

- aquatic centres, swimming pools (in the vicinity of a zone or transmission substation the required clearance distance is typically 15-30 metres);
- schools; pre-schools and day care centres;
- play grounds;
- conductive concrete or steel poles (near bus stops, pedestrian walkways, etc); and
- conductive boundary fencing.

For this reason, the construction of any building or structure (including fencing, signage, flag poles, hoardings etc.) whether temporary or permanent that is connected to or in close proximity to Endeavour Energy's electrical network is required to comply with AS/NZS 3000:2018 'Electrical installations' as updated from time to time. This Standard sets out requirements for the design, construction and verification of electrical installations, including ensuring there is adequate connection to the earth. Inadequate connection to the earth to allow a leaking/fault current to flow into the grounding system and be properly dissipated places persons, equipment connected to the network and the electricity network itself at risk from electric shock, fire and physical injury.



Copper thieves cutting and taking earths from power poles means there is inadequate connection to the earth placing persons and the electricity network at risk. This example occurred in Prospect NSW part of Endeavour Energy's franchise / network area. Crime Stoppers is urging anyone with information about copper theft in their area to report it anonymously to Crime Stoppers on 1800 333 000.

Earthing systems should be designed by a suitably qualified electrical engineer / Accredited Service Provider (ASP) following a site-specific risk assessment having regard to the potential number of people could be simultaneously exposed, ground resistivity etc. For details of the ASP scheme please refer to [Section 24 'Network Connection'](#).

In particular appropriate consideration should be provided to the conductivity of the fencing near electricity infrastructure or within the easement where there is a possibility it could act as a conductor of electricity and dangerous currents may be carried along the fence. Where conductive / metal fencing is used it must be appropriately earthed eg. the by the use of isolation panels where the fence enters or exits the easement created by the use of timber posts and/or earth electrode installed adjacent to the electricity infrastructure or easement.

12.1 Special Locations

Endeavour Energy's 'Design certification checklist for ASP L3' the design must comply with Endeavour Energy's 'Earthing Design Instruction EDI 001 – Earthing design risk assessment' in which schools, pre-schools, day care centres are regarded as a 'special location' – please see the following extract of EDI 001.

The representative contact scenarios for any risk event are as follows:

- e) *Special*: implies an area within close proximity to or within a premise where there is a high likelihood that shoes will not be worn and/or the risks associated with the earthing system has the potential to be exposed to a number of people simultaneously through contact with affected metalwork. Examples include schools, pre-schools, day care centres, aquatic centres, recreational swimming areas and beaches. This classification must be assessed on a case-by-case basis and may not involve a societal assessment depending on the scenario.

Applicants should check with their ASP responsible for the network connection to the site that any existing or future padmount substations required to facilitate the proposed development that the earthing has been designed to comply with the 'special location' requirements under EDI 100.

13 Easement Management

Whilst the electricity distribution network is held under various forms of property tenure, the most common is an easement which is an encumbrance on the title of land (which may be limited in width and height above or below the land) conferring a right to inspect, construct, operate, maintain, repair, renew, replace or upgrade electrical infrastructure.

Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' deals with easements and covers:

This instruction covers:

- The rights Endeavour Energy has within its own easements;
- The determination of the minimum easement size for an asset;
- The definition of controls for the safe operation of activities within easements; and,
- The definition of activities which are prohibited within easements.

The following is a summary of the usual / main terms of Endeavour Energy's electrical easements requiring that the landowner:

- Not install or permit to be installed any buildings, structures or services within the easement site.
- Not alter the surface level of the easement site.
- Not do or permit to be done anything that restricts access to the easement site without the prior written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose.

Endeavour Energy's preference is for no activities or encroachments to occur within its easements. Most activities are prohibited within the padmount substation easement. However, if any proposed works or activities (other than those approved / certified by Endeavour Energy's Customer Network Solutions Branch as part of an enquiry / application for load or asset relocation project) will encroach / affect Endeavour Energy's easements, contact must first be made with the Endeavour Energy's Easements Officers, via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or email Easements@endeavourenergy.com.au.

Details of all the proposed works or activities within or affecting an easement, restriction or protected works (even if not part of the Development Application) must be referred to Endeavour Energy's Easements Officer for assessment and possible approval provided it meets the minimum safety requirements and controls. However please note that this does not constitute or imply the granting of approval by Endeavour Energy to any or all of the proposed encroachments and / or activities within the easement.

Please note Endeavour Energy's Easement Officers do not have access to the NSW Planning Portal. To resolve the easement management matters direct contact with the Easement Officer should be made.

13.1 Padmount Substation Fire Rating Restriction

If part of a building encroaches the fire rating restriction for a padmount substation, the applicant will need to provide Endeavour Energy's Easements with an engineer's certificate identifying that all external surfaces of the building within the fire rating zone meet the appropriate fire rating as per Endeavour Energy's terms for the restriction and in accordance with Australian Standard AS 1530 'Fire Test to Building Material – Standard'. The engineer must also specify the materials to be utilised and the fixing instructions for those materials in order to meet the stated fire rating.

Alternatively, if it can be demonstrated that the entire building (including the fascia, down pipes and guttering) is a minimum of 3 metres away from the substation plinth, then Endeavour Energy would have no objection to the proposed development. Failing the foregoing, the location / design of the part of the building encroaching the restriction area would need to be amended to be outside of the restriction area or be protected by a fire screen / wall.

Figure 46 from Endeavour Energy's Mains Construction Instruction MCI0006 'Underground distribution: Construction standards manual' explains the fire restriction and the use of screen walls.

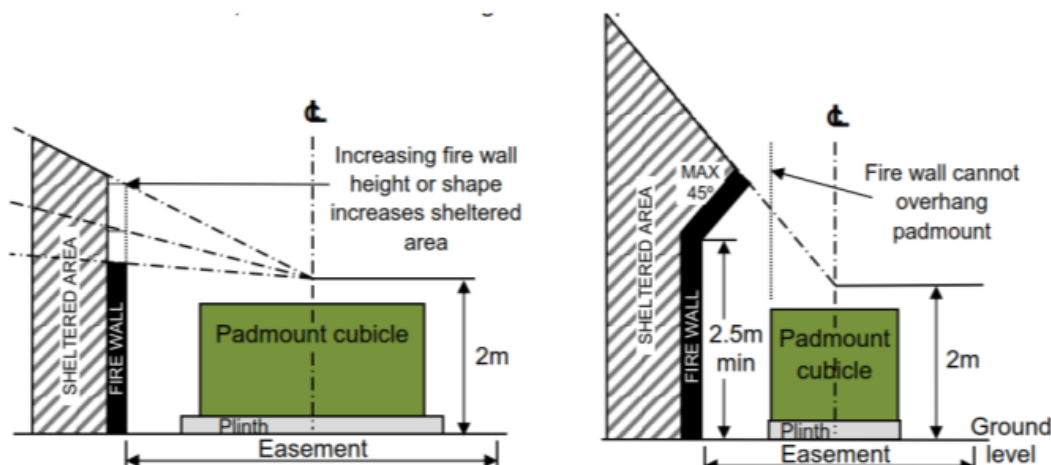
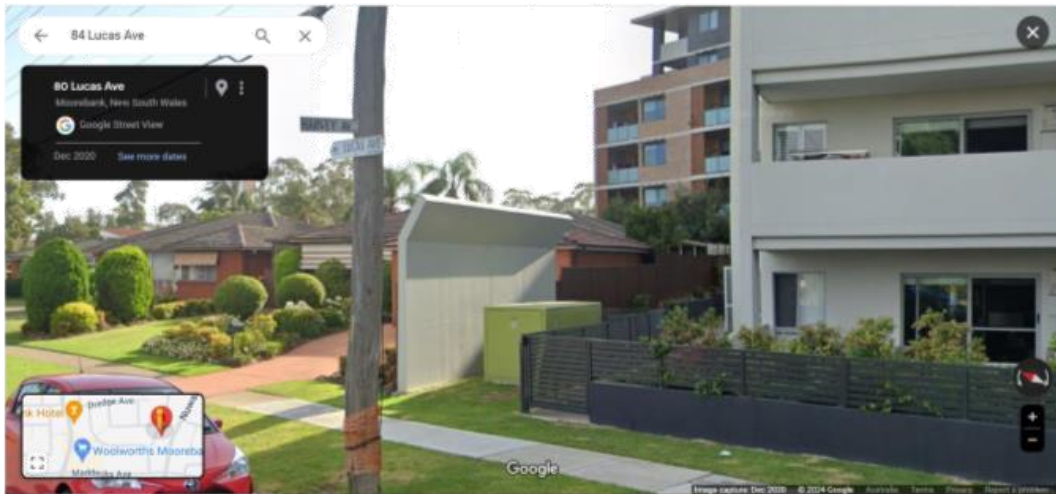


Figure 46 - Screen wall examples

This is also outlined in Endeavour Energy's Mains Design Instructions MDI0028 'Underground distribution network design' and the Australian Standard AS2067: 2016 'Substations and high voltage installations exceeding 1 kV a.c.' which provides common rules for the design and the construction of electrical power installations and also addresses a range of issues including fire risk related to substations within or near buildings (which excludes any constructions with non-fire rated materials being allowed within the fire clearance zone) and recognises requirements of the National Construction Code.



Fire screen wall to padmount substation no. 36553 in Lucas Avenue, Moorebank used to avoid the fire rating restriction encroaching the adjoining property. Source: Google Maps Street View.

It is Endeavour Energy's experience in dealing with the fire restriction areas for padmount substations that any form of glazing (in particular opening windows) cannot achieve the required rating. In regard to the Building Code of Australia (BCA) the grading period in minutes is for three criteria: structural adequacy, integrity and insulation. For glazing the structural stability of the product and the capacity it has to resist fire, while still acting as a support for its structure (since windows are generally not structural elements) is difficult to achieve. The issue with any openings is that if they are left open, the internal surfaces are also exposed to fire. For this reason both openings and glazing within the fire restriction site is best avoided.

Partly for this reason the Terms of Restriction on the Use of Land for Fire Rating of Buildings was amended in 2022 to include the following additional requirement.

No doors or opening windows are permitted to be erected within the restriction site on the external surface of a building within 3 metres from the substation footing.

Although this additional requirement is not included in the restriction registered on title to all properties, given the problem in achieving the required fire rating, it essentially will apply.

In addition the following matters also need to be considered in regard to the fire rating restriction:

- Personnel access doors and fire exit doors to a building are not permitted within the fire restriction area.
- Gas mains/pipes shall not pass through the fire restriction area.
- A 10 metre clearance distance shall be maintained between substation and fire hydrants, booster valves, and the like in accordance with AS2419.1 'Fire hydrant installations System design, installation and commissioning' as updated from time to time.
- Any landscaping that potentially could transfer / provide connectivity for flame or radiant heat from a fire in the substation to a dwelling or building should be avoided.
- The storage of and / or use of flammable, combustible, corrosive or explosive material within the fire restriction should be avoided.



An electrical transformer caught alight in Sydney's south-west today. (9News)



At least 18 people were evacuated from nearby units. (9News)

Whilst fires in padmount substations are relatively rare they do occur and can represent a risk to the nearby buildings and occupants. The required fire clearances / ratings must be complied with. Above are photographs from 9 News coverage of 'Fire erupts between two apartment blocks in Sydney's south-west' regarding a padmount substation fire at Guildford which occurred on 25 October 2021.

Source: <https://www.9news.com.au/national/guildford-fire-apartment-block-electrical-new-south-wales-sydney-south-west/46ff15ed-84f7-4442-9884-dc206cb6e7d0>

13.2 Site Specific Conditions

Land interests benefitting Endeavour Energy must be provided where any part of the distribution system is or will be located on land that is not a dedicated public road or reserve. Depending on the type of development and the location of electricity assets being installed, there are different pathways to providing land interests for contestable works. All land interest requirements are outlined in Endeavour Energy's 'Land Interest Guidelines for Network Connection Works'.

Although land interests are still created by registration of the approved Endeavour Energy, there are also unregistered land interests in the form of Site Specific Conditions, which may be appropriate for certain types of distribution network assets, where the connection assets are positioned on the public road frontage within the land parcel being supplied and with direct access from the public road. Endeavour Energy's Customer Network Solutions Branch maintain a register of the Site Specific Conditions and will apply for the life of the 'Premises Connection Assets'.

These Site Specific Conditions are imposed in lieu of the customer creating a registered Land Interest in the form of an easement. Essentially the Conditions are the same as that for the easement for the type of distribution network asset and the assets are managed on the same basis as if an easement is in place.

Further details of the land interest requirements are available by contacting Endeavour Energy's Customer Network Solutions Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or on Endeavour Energy's website under 'Home > Connections > Land interest for contestable works' or via the following link:

<https://www.endeavourenergy.com.au/connections/land-interest-for-contestable-works>.

14 Easement Release

Under Endeavour Energy's Company Policy 9.2.3 (Network) 'Property Tenure for Network Assets', the company will assess all applications for the release of easements to identify and manage risks to its network, commercial and community interests. The company may seek compensation for the extinguishment of property tenure. No easement is considered to be redundant or obsolete until it is released under this policy. Applications for the release / extinguishment of an easement can only be made by the registered landowners of the encumbered property and are usually done either:

- As part of an application for connection of load or capital works project for a development project eg. where alternative / new network arrangements are to be put in place, which is managed by Endeavour Energy's Customer Network Solutions Branch. Endeavour Energy's Customer Network Solutions Branch will make the applicant or their ASP aware of Endeavour Energy's requirements for the release of easement. Please refer to [Section 24 'Network Connection'](#).
- At the request of landowners where the electrical assets within the easement have been removed or it has become apparent that the easement has possibly become redundant to Endeavour Energy's future network requirements eg. no electrical assets have ever been installed in the easement. Further details are available by contacting Endeavour Energy's Property Services Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or email network_property@endeavourenergy.com.au (underscore between 'network' and 'property'). The greater amount of detail provided will assist in the assessment of the application.

In some circumstances the release of easement may be for nil compensation eg. the affected land is subject to dedication as public road or as part of an asset relocation / capital works project where the alternative network arrangements occur at the same voltage and level of easement affectation. Otherwise the release will be subject to monetary compensation paid by the applicant having regard to the potential increase in value of the land as a result of the easement release / reduction in the extent of easement affectation (with appropriate consideration given to the applicant's alternative network arrangements).

15 Easement Subdivision

Endeavour Energy's preference is to have continuity of all easement types over the most direct and practicable route affecting the least number of lots as possible. Therefore, Endeavour Energy generally does not support the subdivision of easements and their incorporation into multiple / privately owned lots.

The incorporation of electricity easements into privately owned lots is generally problematic for both Endeavour Energy and the future landowners and requires additional easement management to ensure no uncontrolled activities / encroachments occur within the easement area.

Accordingly, Endeavour Energy's recommendation is that whenever reasonably possible, easements be entirely incorporated into public reserves and not burden private lots (except where they are remnant lots or not subject to development). In some Council areas this is a requirement for subdivisions as shown in the following extract of Camden Council's development control plan.

C7.2 Neighbourhood and Subdivision Design

Electricity easements are to be incorporated in public road reserves and shall not burden private lots.

The proposed electricity easements are located within the public road reserve. No electricity easements burden the private lots.



Endeavour Energy's experience is that regardless of the easement, inevitably some property owners will seek to maximise the utilisation of their land and will encroach or undertake prohibited activities within the easement. The following aerial photograph shows part of easement within the public reserve being clear but that within the private lots having prohibited buildings and swimming pools.



Overlay of approximate location of easement for 132,000 volt / 132 kilovolt Feeders No. s 930 & 931 Baulkham Hills to Carlingford from Endeavour Energy's HxGN NetWorks Core NetViewer master facility model onto aerial photograph from SIX Maps of properties located on the southern side of McGiff Avenue, North Rocks NSW. The part of the easement to the west within Hunts Creek Reserve show no encroachments. To the east within privately owned lots there are encroachments of the easement by buildings / structures and swimming pools.

Where subdivisions of property are proposed for land in which Endeavour Energy has an easement, the following requirements must be met:

- Subdivision of the easement parallel to overhead power lines or underground cables which effectively reduce the easement width must be avoided.
- The number of crossings of easements must be minimised and crossings should be or close to perpendicular to the overhead power lines or underground cables and must be at least half the easement width beyond any pole or structure. Contiguous / ready access along the easement can be difficult not only due to fencing but also retaining walls and changes in levels which may preclude physical access.
- Unrestricted access to structures such as poles and towers or cable pits must be retained. Where subdivisions incorporate easements to the rear of the lots, if buildings are constructed from side boundary to side boundary, access to the easement is extremely restricted.
- Easements for other types of electricity infrastructure such as padmount substations or switching stations shall not be subdivided but any associated restriction or right of access etc. may encumber and adjoining lot.



Poor subdivision of easements restricts access and working area around the structures. Source: Google Maps Street View.

If a subdivision results in the incorporation of Endeavour Energy's easement into new or multiple lots, the easements, rights and restrictions, covenants etc. must be retained over the affected lots and in accordance with the requirements of NSW Land Registry Services (LRS).

Depending on the age of the existing easement terms and the intended use of the site, Endeavour Energy may need to include additional requirements / restrictions to be registered on titles to each of the lots to ensure it can reasonably access and manage its existing electricity infrastructure within the easement. This may apply in situations where the terms of easements reflected the use at the time of large lot non-urban changing to a multiple lot urban use. For example, old terms of easement may only provide access to the site via the easement itself compared to being able to enter the (entire) lot burdened using the most practical route to the easement.

16 Emergency Contact

In case of an emergency relating to Endeavour Energy's electrical network, the applicant should note the Emergencies Telephone is 131 003 which can be contacted 24 hours / 7 days. Endeavour Energy's contact details should be included in any relevant risk and safety management plan.

If someone seriously injured or in need of urgent medical help call the Triple Zero (000) service which is the quickest way to get the right emergency service to help you. It should be used to contact Police, Fire or Ambulance service in life threatening or emergency situations.

17 Excavation

Section 49A 'Excavation work affecting electricity works' of the of *Electricity Supply Act 1995* (NSW) covering the carrying out or proposed carrying out of excavation work in, on or near Endeavour Energy's electrical infrastructure.

Electricity Supply Act 1995 No 94

Current version for 1 August 2015 to date (accessed 4 September 2015 at 08:54)

Part 5 > Division 2 > Section 49A

< >

49A Excavation work affecting electricity works

- (1) This section applies if a network operator has reasonable cause to believe that the carrying out or proposed carrying out of excavation work in, on or near its electricity works:
 - (a) could destroy, damage or interfere with those works, or
 - (b) could make those works become a potential cause of bush fire or a potential risk to public safety.
- (2) In those circumstances, a network operator may serve a written notice on the person carrying out or proposing to carry out the excavation work requiring the person:
 - (a) to modify the excavation work, or
 - (b) not to carry out the excavation work, but only if the network operator is of the opinion that modifying the excavation work will not be effective in preventing the destruction or damage of, or interference with, the electricity works concerned or in preventing those works becoming a potential cause of bush fire or a potential risk to public safety.

If any excavation work affects Endeavour Energy's electricity infrastructure, prior contact must be made with Endeavour Energy's Field Operations Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or alternately email Construction.Works@endeavourenergy.com.au.

With the increased number of developments incorporating basements often being constructed to the property boundaries or immediately adjacent to easements, the integrity of the nearby electricity infrastructure can be placed at risk.



This excavation for a basement at 6 Sorrell Street Parramatta NSW for a mixed use 8 storey development in 2015 was identified by Endeavour Energy's Regional Services North as being unsafe due to the integrity of padmount substation 7858 located on the adjoining lot being compromised and access not being available. This resulted in the 'switching out' of the substation from the network until the site conditions were again deemed to be safe.

However even relatively minor excavation works may affect the integrity of the nearby electricity infrastructure.



Crews from Endeavour Energy's Moss Vale Field Service Centre in March 2024 had to attend site as this excavation by a drainage contractor resulted in the striking of the earthing system for a pole mounted substation and compromised the support of the poles.

18 Flooding

Particular attention must be given to the design of electrical assets in areas which are susceptible to flooding. The network required to service an area / development must be fit for purpose and meet the technical specifications, design, construction and commissioning standards based on Endeavour Energy's risk assessment associated with the implementation and use of the network connection / infrastructure for a flood prone site. Risk control has focused typically on avoiding the threat, but where this is not possible, reducing the negative effect or probability of flood damage to assets by implementing good design and maintenance practices.

Endeavour Energy's System Control Branch Procedure NCB 0615 'Flood Response Plan' is based on electricity supply being maintained as long as practicable consistent with the safety of employees' general public and emergency services personnel. It involves rearranging the network having regard to a substation prioritisation ranking, comprised of flood risk and damage potential, to focus the flood response efforts toward areas and resources in order of highest importance.

In regard to the flood susceptibility of electricity infrastructure, overhead power lines which can be damaged by flying or floating debris, falling trees and branches, inundation by floodwater and in colder parts of the network, collected ice and snow. The main guide to the construction of overhead power lines is Australian/New Zealand Standard AS/NZS 7000:2016 'Overhead line design' which has specific as well as general guidance in regard to design of overhead power lines in flood prone land.

Underground cables are less likely to be damaged from storm events but are still susceptible to flooding and tidal surges. Saltwater, which is a very good conductor and causes electrolysis reactions with the metal conductors and can result in accelerated corrosion to the underground cables and associated infrastructure. With appropriate design electrical cables are commonly run underwater and in other hostile environments and likewise can also take into consideration potential flood events.

The main guide to the construction of overhead power lines used by Endeavour Energy is its:

- Mains Design Instruction MDI 0028 'Underground distribution network design'.
- Mains Construction Instruction MCI 0006 'Underground distribution construction standards manual'.

These documents have specific as well as general guidance applicable to the design and construction of underground cables in flood prone land.

Distribution substations should not be subject to flood inundation or stormwater runoff ie. the padmount substation cubicles are weatherproof not flood proof and the cable pits whilst designed to be self-draining should not be subject to excessive ingress of water. Section 7 'Substation and switching stations' of Endeavour Energy's Mains Construction Instruction MCI 0006 'Underground distribution construction standards manual' provides the following details of the requirements for flooding and drainage in new distribution substation locations.

7.1.6 Flooding and drainage

Substations are to be located such that the risk of flooding or stormwater damage is minimal.

As a minimum the level at the top of the transformer footing, HV and LV switchgear, shall not be lower than the 1:100 year flood level.

All drains within the substation site area or in the vicinity shall be properly maintained to avoid the possibility of water damage to Endeavour Energy's equipment.

In areas where, as determined by the Network Substation Manager, there is a high water table or a heightened risk of flooding, indoor substations will not be permitted.

All materials used in the construction below the substation (ground level) shall be capable of withstanding prolonged immersion in water without swelling or deterioration.



Figure 51 - Example substation raised above 1:100 flood level

18.1 Building in flood hazard areas

The Australian Building Codes Board (ABCB) National Construction Code Standard 2012.3 'Construction of buildings in flood hazard areas' includes the following requirements.

2.9 Requirements for utilities

2.9.1 General

- (a) Utilities and related equipment, other than an electrical meter for the building, must not be placed below the *FHL* unless they have been designed specifically to cope with flood water inundation.

Note: The location of electrical meters is regulated by the electrical authority.

- (b) Buried systems must be placed at a depth sufficient to prevent damage due to scour and erosion during the *DFE*.
- (c) Exposed systems must be designed to withstand the flood related actions (buoyancy, flow, debris and wave).

2.9.2 Electrical

Unless the electrical supply authority determines otherwise:

- (a) Electrical switches must be placed above the *FHL*.
- (b) Electrical conduits and cables installed below the *FHL*, must be waterproofed or placed in waterproofed enclosures.

(*DFE*: Defined Flood Event; *FHL*: Flood Hazard Level)

19 Hazardous Environment

Endeavour Energy is aware that the provisions of State Environmental Planning Policy Resilience and Hazards (Resilience and Hazards SEPP) Chapter 3 'Hazardous and offensive development' in the preparation of a preliminary hazard assessment electricity infrastructure is not defined / regarded as sensitive land use. However, in these situations Endeavour Energy has sought further advice from the consultants preparing the preliminary hazard assessment on the basis that, although not a sensitive land use in the traditional / environmental sense, if the electricity infrastructure on or in proximity of the site (which also may be a potential ignition source) is damaged, the resulting outage could leave many properties / customers without power.

In these situations the applicant's consultants have been requested to specifically address the risks associated with the proximity of the electricity infrastructure ie. detail design considerations, technical or operational controls etc. to demonstrate as required by the Resilience and Hazards SEPP that the proposed business / development is suitably located and can be built and operated with an adequate level of safety and pollution control.

Irrespective of the class / division and the quantities, any dangerous goods whether combustible and / or flammable should not be stored near electricity infrastructure and increasing the separation distance as far as reasonably possible is recommended.



Figure 4: Service Station Facility Following Fire

Extract of Statement of Environmental Effects for a Development Application notification received by Endeavour Energy in July 2023 for the rebuilding of a service station at Campbelltown following a fire in February 2023 which was near low voltage and 11,000 volt / 11 kilovolt high voltage overhead power lines. Note the fire damage to the pole.

In similar situations the consultants have been requested to specifically address the risks associated with the proximity of the electricity infrastructure ie. detail design considerations, technical or operational controls such as equipotential bonding between the earth, concrete driveway and fuel tanks etc. to demonstrate as required by the Resilience and Hazards SEPP that the proposed business / development is suitably located and can be built and operated with an adequate level of safety and pollution control.

Irrespective of the class / division and the quantities, any dangerous goods whether combustible and / or flammable should not be stored near electricity infrastructure and increasing the separation distance as far as reasonably possible is recommended.

Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' includes the following advice regarding substations near hazards.

6.3.7 Substation near hazards

Substations contain HV and LV electricity, oil, plastics, concrete and other materials. In some situations, a substation can be regarded as a hazardous source, or be susceptible to hazardous sources.

Therefore, substations in or near hazardous areas will be dealt with strictly in accordance with Australian Standards and statutory requirements. The minimum distances to be maintained from hazardous locations are set out in AS 60079.10:2009. Reference will be made to AS 60079.10:2009 and any relevant statutory authority, in determining the siting of a substation when in hazardous locations. Padmount substations in or near hazardous areas, will have stainless steel cubicles as long as they comply with EDI 100 for earthing.

19.1 Fire Risk

Endeavour Energy's electricity infrastructure is potentially a source of ignition for fires. Endeavour Energy's risk control has focused on reducing the likelihood of fire ignition by implementing good design and maintenance practices. However there is still the potential for fires to occur as a result of fault currents, flashovers, fallen conductors, vehicle impacts etc.

With oil-filled equipment used in the substations there is the possibility of fires occurring eg. with padmount substations this is the reason for the inclusion of a fire restriction area. The appropriate selection, installation, maintenance and condition monitoring of the equipment used in substations is undertaken to reduce the possibility of fires and their containment.

Although the risk cannot be eliminated entirely, Endeavour Energy's aim is to reduce the residual risk of these potential hazardous events to 'As Low As Reasonably Practicable'.

Whilst, Endeavour Energy has traditionally focused on the likelihood of its network starting a fire, conversely Endeavour Energy believes that Councils (and applicants) should consider the safety risks associated with inappropriate development in proximity of electricity infrastructure that may result in damage to the network and the loss of electricity supply.

19.2 Air Quality / Dust

Although Endeavour Energy's electricity infrastructure is not a 'sensitive receptor' in the traditional sense of being a habitable / residential use, the electrical equipment / operation of the site would be affected by excessive / cumulative dust emissions. Although unlikely in normal circumstances and the risk is considered low, it could cause a flashover to occur on the insulators on the overhead power lines or start a fire in the substation. From Endeavour Energy's perspective it is imperative that the appropriate air quality management measures are implemented and adhered to in order to minimise any impact on the electricity infrastructure on or in the vicinity of the site.

20 Look Up and Live

Before undertaking work on a site with overhead power lines, the location of powerlines can be checked with the free Look up and Live app which is available via the following link:

www.lookupandlive.com.au .

The Look up and Live map is an interactive geospatial map that has been developed to display the electricity networks of various distributors including Endeavour Energy. It is a simple worksite planning tool which provides information on powerline safety and allows specific information to be obtained from Endeavour Energy concerning how to minimize the risk of contact while working in proximity to the electricity network.

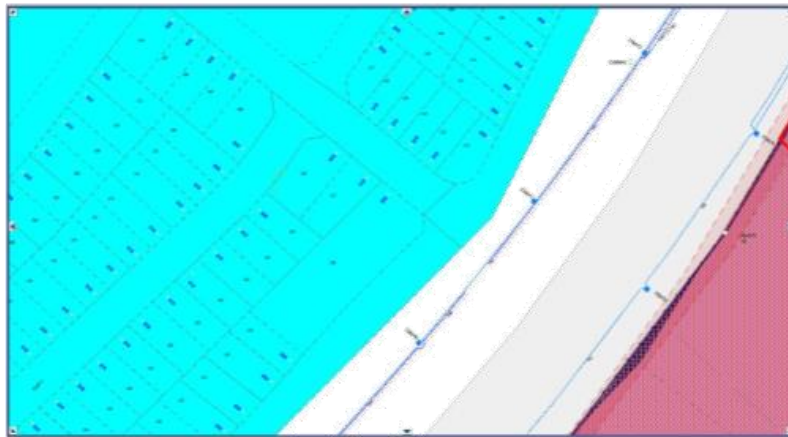


In December 2022 a concrete boom truck in Western Sydney came into contact with 33,000 volt / 33 kilovolt high voltage overhead powerlines causing an electrical explosion that energised the immediate area with potentially fatal consequences. Thankfully no one was killed or seriously hurt. Source: [Too often Endeavour Energy \(NSW\) is ... - Endeavour Energy | Facebook](#)

21 Modifications

Endeavour Energy's HxGN NetWorks Core NetViewer master facility model shows enquiries and applications for contestable works projects with Endeavour Energy's Customer Network Solutions Branch for electricity supply by either:

- 'Work Polygon' indicated by the coloured highlighting and/or hatching of the lot.
- 'Developer Area' indicated by a proposed road / lot layout for a proposed subdivision.



Extract of Endeavour Energy's HxGN NetWorks Core NetViewer master facility model showing 'Work Polygon' and 'Developer Area'.

As such, Endeavour Energy's Customer Network Solutions Branch are managing the conditions of supply with the proponent and their Accredited Service Provider (ASP). However the applicant will need to contact Endeavour Energy's Customer Network Solutions Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 if the Development Application:

- Includes any contestable works projects that are outside of any existing approved / certified works.

- Results in an electricity load that is outside of any existing Supply / Connection Offer requiring the incorporation of the additional load for consideration. This is due to load often being based on a desktop assessment using an After Diversity Maximum Demand (ADMD) where demand is aggregated over a large number of customers providing an ADMD for the site / per lot. Depending on the actual development proposed for the site, the ADMD provided may not be sufficient ie. the increase in the number of premises or in the developable area may result in the creation of additional load; requirement for another separate customer connection point etc.

22 Network Access

It is imperative that the access to electrical infrastructure be maintained at all times. To ensure that the supply electricity is available to the community, access to the electricity infrastructure may be required at any time. Restricted access to electricity infrastructure by electricity workers causes delays in power restoration and may have severe consequences in the event of an emergency.

If Endeavour finds that a structure impedes access or presents an unacceptable level of risk, Endeavour Energy reserves the right to have the structure removed, or to remove it at the owner's expense. To ensure suitable access is available to electricity infrastructure the *Electricity Supply Act 1995* (NSW) includes the following Section 49 'Obstruction of electricity works'.

Electricity Supply Act 1995 No 94

Current version for 1 July 2019 to date (accessed 7 April 2020 at 10:49)
Part 5 > Division 2 > Section 49



49 Obstruction of electricity works

- (1) This section applies if a network operator has reasonable cause to believe that any structure or thing situated in, on or near its electricity works:
 - (a) could destroy, damage or interfere with those works, or
 - (b) could make those works become a potential cause of bush fire or a potential risk to public safety.
- (2) In those circumstances, a network operator:
 - (a) may serve a written notice on the person having control of the structure or thing requiring that person to modify or remove it, or
 - (b) in an emergency, may, at its own expense, modify or remove the structure or thing itself.

This is particularly important where there are poles or structures and changes in direction to a line route. In the event of fallen conductors or faults in underground cables, access to the poles or cable pits to restring or pull cables will be required by electricity workers with heavy vehicles, machinery and materials and is essential for restoring electricity supply.



The equipment required for pole replacements can include up to a 60 ton crane, franna crane, large elevating work platform and lifter borer.

23 Network Asset Design

Endeavour Energy's Company Policy, Network Asset Management, 9.2.5 'Network Asset Design' as one of its purposes is to establish the design principles and standards to be applied consistently across the network. The Company Policy includes the following:

5.11 Reticulation policy

5.11.1 Distribution reticulation

In order to improve the reliability performance of and to reduce the operating expenditure on the network over the long term the company has adopted the strategy of requiring new lines to be either underground cables or where overhead is permitted, to be predominantly of covered or insulated construction. Notwithstanding this strategy, bare wire overhead construction is appropriate and permitted in some situations as detailed below.

In areas with the potential for significant overhanging foliage, CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown branches and debris than bare conductors. CCT must only be used in treed² areas as the probability of a direct lightning strike is low. In open areas where the line is not shielded from a direct lightning strike, bare conductors must generally be used for 11kV and 22kV reticulation.

Non-metallic Screened High Voltage Aerial Bundled Cable (NMSHVABC) must be used in areas which are heavily treed and where it is not practicable to maintain a tree clearing envelope around the conductors.

² A "treed" area is one with a substantial number of trees adjacent to the line, in each span. In these situations CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown

For urban areas it provides the following additional detail.

5.11.1.1 Urban areas

Reticulation of new residential subdivisions will be underground. In areas of low bushfire consequence, new lines within existing overhead areas can be overhead, unless underground lines are cost justified or required by either environmental or local council requirements.

Where underground reticulation is required on a feeder that supplies a mixture of industrial, commercial and/or residential loads, the standard of underground construction will apply to all types of load within that development.

Where ducting is used, adequate spare ducts and easements must be provided at the outset to cover the final load requirements of the entire development plan.

Extensions to the existing overhead 11kV/22kV network must generally be underground. Bare wire will be used for conductor replacements and augmentations except in treed areas where CCT or NMSHVABC must be used.

Extensions to the existing overhead LV network and augmentations must either be underground or ABC. Conductor replacements greater than 100m in route length must utilise aerial bundled cable.



Overhead power lines are progressively undergrounded as subdivisions progress. Source: Google Maps Street View.

For non-urban areas it includes the following.

5.11.1.2 Non-urban areas

Extensions to the existing overhead 11kV and 22kV network and conductor replacements / augmentations must be underground. Where underground reticulation is not practical overhead construction can be used. The choice of overhead construction must be bare wire for the following circumstances:

- areas that are not substantial treed;
- long gully crossings;
- SWER lines;
- joint use 132, 66 or 33kV lines; and
- distribution lines with transmission construction and located in an easement.

All other overhead constructions must be CCT or NMSHVABC.

Extensions to the existing overhead LV network and augmentations must either be underground or utilise ABC. Conductor replacements greater than 100m route length must utilise ABC.

5.11.2 Transmission and sub-transmission

Transmission and sub-transmission lines will be must overhead construction unless environment, community and/or planning instrument considerations require an underground solution.

The Company Policy also indicates that 'Customers may elect or may be required by local council to install underground reticulation'. Councils may seek the enforcement of underground cables policy as part of their detailed planning and design guidelines in their Development Control Plans to support the planning controls in the Local Environmental Plan.

As well as improving the reliability of supply, and improved aesthetics a major consideration for increasing the proportion of underground power is the reduction of traffic hazards with poles traditionally placed in close to the kerb lines which increases the risk of vehicular impacts and potential road fatalities.

24 Network Connection

Applicants should not automatically assume that the presence of electricity infrastructure in the locality and / or nearby similar development means that adequate supply is immediately available to facilitate their proposed development.

Generally, customers wishing to connect a typical low voltage load up to 100 amps single phase or 63 amps three phase in an existing urban area will be offered to connect under a low voltage (LV) basic connection service even though out minimal extensions or augmentation works may need to be carried out to the network in order to facilitate the connection.

Many other types of LV connections, such as loads in non-urban locations or loads above 100 amps single phase or 63 amps three phase, may also be offered a LV basic connection service if it is assessed that the connection can be supported by the network without the need to extend or enhance the network.

In cases where the non-urban or larger LV loads are deemed to be requiring enhancement or extension works to the network, the offer will be in the form of a standard connection service.

When considering applications, Endeavour Energy will determine which areas are urban and rural based on the criteria specified within the definition of rural and urban below and the local government planning instruments.

Applications for new connection services need to be completed online. Further details of the entire range of connection services including high voltage installations; temporary builder's supply; asset relocation and removal; multi occupant developments; subdivisions; meeting the requirements of development approval etc; are available by contacting Endeavour Energy's Customer Network Solutions Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or on Endeavour Energy's website under 'Home > Connections > Connect online > Connection of load > Connecting to our network' or via the following link:

<https://www.endeavourenergy.com.au/connections/connect-online/connection-of-load> .

To ensure an adequate connection, the applicant may 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. The ASP scheme is administered by Energy NSW and details are available on their website via the following link or telephone 13 77 88:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/asp-scheme-and-contestable-works> .

There are currently 3 levels of accreditation:

- Level 1: Construction of electricity distribution network assets ('poles and wires' or underground)
- Level 2: Construction or change of service lines between the electricity distribution network and the point of connection of the property/premises and for energising new or altered connections
- Level 3: Design of electricity distribution network assets underground or overhead.

The availability of additional electricity supply to a development is based on a wide range of factors eg. the age and design of the network; the number and type of distribution substations required to transform high to low voltage to supply customers / developments; other development in the locality utilising previously spare capacity within the local network; the progress of nearby / surrounding sites including electricity infrastructure works; the size and rating / load on the conductors and voltage drop (which can affect the quality of supply particularly with long conductor runs) etc.

Depending on these factors, in some circumstances the electrical infrastructure may need to be extended or upgraded to accommodate additional electrical load resulting from a development. However the extent of any works required will not be determined until the final load assessment is completed. Any work required to enable supply of the load in line with the requirements of the *Electricity Supply Act 1995* (NSW) is deemed to be 'contestable works' and should be undertaken by an ASP of an appropriate level and class of accreditation.

As part of the application for connection of load Endeavour Energy's Customer Network Solutions Branch as well as determining the method of supply requirements will also determine the funding arrangements. Depending on the circumstances not all the works may be customer funded or constructed and Endeavour Energy may supply materials, fund or construct works, make a capital contribution or seek reimbursements from the customer eg. for the use of spare ducts which Endeavour Energy has made a capital contribution as part of other nearby works.

For more complex connections, advice on the electricity infrastructure required to facilitate the proposed development can also be obtained by submitting a Technical Review Request to Endeavour Energy's Customer Network Solutions Branch who can be contacted via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or by completing an online application on Endeavour Energy's website under 'Home > Connections > Speak to an engineering expert' or via the following link

<https://www.endeavourenergy.com.au/connections/speak-to-an-engineering-expert> .

The response to these enquiries is based upon a desktop review of corporate information systems, and as such does not involve the engagement of various internal stakeholders in order to develop a 'Connection Offer'. It does provide details of preliminary connection requirements which can be considered by the applicant prior to lodging a formal application for connection of load.

Endeavour Energy is urging applicants /customers to engage with an Electrical Consultant / ASP prior to finalising plans in order to assess and incorporate any required electricity infrastructure. 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.

Questions about connections services can be made by completing Enquiry Form available via the following link and submitted to CWAdmin@endeavourenergy.com.au or speak to a Customer Service Representative on 133 718.

<https://www.endeavourenergy.com.au/contact-us/general-enquiry> .

24.1 Facilitating Subdivision

As a facilitating subdivision for the orderly subdivision and development of land the usual requirement to provide a separate customer connection point for each lot within the subdivision may be waived with the resulting lots to be identified / released as residue lots.

Accordingly the notification of arrangement letter issued by Endeavour Energy's Customer Network Solutions Branch will identify the lots as residues and are being released unsupplied.

The further proposed subdivision to create developable lots will be subject to Endeavour Energy's normal customer connection procedure and policies.

24.2 High Voltage Customer

As a high voltage customer the 'High Voltage Operational and Maintenance Protocol' between Endeavour Energy and the customer regarding the provision of high voltage supply to the site will specify a 'Load of Customers Installation' which is adequate for the then / Customer's current requirements. The Protocol generally also states the following:

'Should any further increase in loads be required, contact should be made with Endeavour Energy's Customer Network Solutions Branch, who will inform you of the requirements in this regard'.

The Protocol also identifies where Endeavour Energy's responsibility terminates (normally at the pole or pillar on the road verge from which supply is taken) in respect of:

- ownership of high voltage equipment;
- switching operations; and
- maintenance of equipment.

However, high voltage customer connections must be a single customer site. Multiple occupant developments such as subdivisions, shopping centres, factory units, distribution centres, etc. are not entitled to high voltage connections. Accordingly, should this change, the site will no longer be eligible for a High Voltage Connection Service.

24.3 Distribution Substations

As distribution substations require incoming supply at 11,000 volts / 11 kilovolts (kV), in areas with only low voltage supply the 11 kV high voltage supply will need to be extended from the closest existing feeder to the site. However, feeders are also limited in capacity and in some instances a new dedicated feeder/s from the closest zone substation to the site will be required.

Although there are numerous diversity factors applicable for any given type of connection, installation (ie. residential, commercial, industrial) and other factors, for typical installations and usual equipment loads are provided in the Australian / New Zealand Standard AS / NZS 3000:2018 Electrical Installations (known as the Electrical Wiring Rules) as updated from time to time.

Any required distribution substation 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'.

Endeavour Energy's general requirements is for distribution substation to be at ground level and have direct ready access from a public street (unless provided with appropriate easements for the associated underground cables and right of access) and must not be located within 6 metres of road intersections or bends to reduce the risk of possible vehicle impact damage.

Generally it is the Level 3 Accredited Service Provider's (ASP) responsibility (engaged by the developer) to make sure that the substation location and design complies with Endeavour Energy's standards the suitability of access, safety clearances, fire ratings, flooding etc. As a condition of the Development Application consent Council should request the submission of documentary evidence from Endeavour Energy confirming that satisfactory arrangements have been made for the connection of electricity and the design requirements for the substation, prior to the release of the Construction or Subdivision Certificate / commencement of works.

Endeavour Energy's distribution substations in newer / urban / underground areas consist mostly of padmount substations (also known as kiosk substations). Typically, they are a green or brown coloured box to blend into their surroundings, these structures are connected by underground cables. They can accommodate loads from 315 kVA up to 1,500 kVA (typically 500 kVA) ie. there is a significant variation in the number and type of premises able to be connected to a substation.



Padmount substations are converters of electricity, reducing the high voltages for street lighting and to the end user whilst low voltage pillar boxes are distribution junction points. These structures also mean underground cables are nearby. Digging activities and planting of trees or shrubs should not occur near them.

As an example of the type of development that may require the provision of a padmount substation, Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' includes the following requirement for substations in urban residential development.

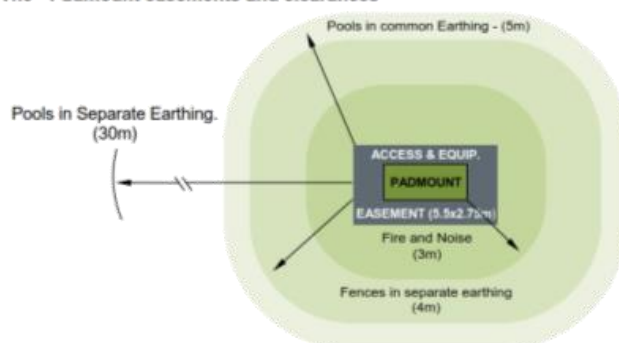
4.4 SUBSTATIONS FOR URD

Substations in URD's must be padmounts, 500 kVA must be the standard size for transformers. 315 kVA transformers must be installed where the capacity of a 500 kVA transformer cannot be adequately utilised by this and adjacent developments and the deferment of expenditure is economical.

From Endeavour Energy's Mains Design Instruction MDI 0030 'Method of calculating voltage drop in low voltage mains', the After Diversity Maximum Demand (ADMD) Schedule for new URD development areas in Western Sydney in a gas area 6.5 KVA with 90 % of the transformer capacity allows for a maximum of 69 small dwellings for a 500 kVA padmount substation (or 43 for a 315 kVA).

The majority of Endeavour Energy's padmount substations are held under easement. As shown in the following extract of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', Figure A4.3 'Padmount easements and clearances', padmount substations require:

- Easement with a minimum size of 2.75 x 5.5 metres (single transformer).
- Restriction for fire rating which usually extends 3 metres horizontally from the base of the substation footing / plinth.
- Restriction for swimming pools which extends 5 metres from the easement (which may not be required for non-residential development).

A4.3 - Padmount easements and clearances

The easement should not cross property boundaries but the restriction/s may affect any adjoining property provided they are able to be registered on the title to that property.

The restrictions for padmount substations were introduced on a case for case basis from 2003 before becoming standard in 2009. Whilst some existing padmount substations may not have these restrictions, in the redevelopment of any site with an existing padmount substation, for safety reasons the new restrictions should also be applied.

Older / non-urban / above ground areas of the network utilising pole mounted substations have comparatively limited capacity of 16 kilovolt amperes (kVA) up to a maximum of 400 kVA. Pole mounted substations need to be located in an area that is clear of overhead obstructions and the immediate area surrounding the pole should provide a firm, level base with sufficient space to safely erect an extension ladder.



Pole mounted substation no. 914 in Blaxcell Street, Guildford NSW has 79 customer connection points servicing 119 premises in an urban context which is at the upper end of the number of premises able to be serviced. In contrast pole mounted substation no. 26132 in Baaners Lane Little Hartley NSW in a non-urban context only services a single rural property. Source: Google Maps Street View.

24.4 Indoor Substations

Traditionally Endeavour Energy's preference has been for the utilisation of padmount substations. The reasons for this included ready access and no reliance on the building owners to provide / maintain the building required to house an indoor substation. Padmount substations are regarded as a 'plug and play' system without the need for a physical building which allows for easier reconfiguration and less involvement with a building owner to resolve any issues / conflicts.

Developers have consistently opposed the imposition that such indoor substations place on their developments, but indoor substations have usually taken up development space equivalent to a few car parking spaces and in comparison to padmount substations, being integrated into the building they are an aesthetic improvement and also address issues related to fire rated construction and avoiding the need for the use of fire / screen walls.

For new developments particularly within central business districts where zero and minimal building setbacks are allowed (and which given their size makes the provision of the easements and restrictions for a padmount substation difficult to achieve on site), Endeavour Energy's recommendation is for the distribution substation to be an indoor substation (also known as a chamber substation).

Whilst indoor substations are predominantly utilised for commercial / office type development, in May 2017 Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' was amended to allow certain types of urban multi residential load (UML) developments to utilise indoor substations where a padmount substation is not practicably possible.

As with the installation of underground reticulation, Councils may seek the enforcement of an indoor substations policy as part of their detailed planning and design guidelines in their Development Control Plans to support the planning controls in the Local Environmental Plan.

As shown in the following extract of Google Maps Street View this site at 32 Castlereagh Street Liverpool utilises an indoor substation due to the zero building setback with the low voltage overhead power lines also having been undergrounded to provide the required safety clearances to the building.



Indoor substation at 32 Castlereagh Street Liverpool. Source: Google Maps Street View.

In comparison, as shown in the following extract of Google Maps Street View is of a site at 18 Copeland Street Liverpool required the installation of a fire wall next to the padmount substation to avoid the creation of restrictions on the adjoining site the development. Whilst meeting the fire rating requirements etc. from an aesthetics perspective this is not an attractive outcome.



Fire wall constructed for padmount substation at 18 Copeland Street Liverpool. Source: Google Maps Street View.

25 Protected Works

In cases where Endeavour Energy does not have an easement over electricity infrastructure on a site, they are usually protected assets and deemed to be lawful for all purposes under Section 53 'Protection of certain electricity works' of the *Electricity Supply Act 1995* (NSW). Essentially this means the owner or occupier of the land cannot take any action in relation to the presence in, on or over the land of electricity works ie. the electricity infrastructure cannot be removed to rectify the encroachment.

These protected assets are managed as if an easement is in place (please refer to [Section 13 'Easement Management'](#)) and in accordance with the minimum easement widths specified in Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights',

For overhead power lines, this easement width in some circumstances may not be warranted ie. depending on the span (the longer the span the greater the sag and blowout of the overhead power lines), type of conductor, access, property type and use etc. However if the easement width cannot be reasonably provided, as a minimum any building or structure (including fencing, signage, flag poles etc.) whether temporary or permanent must comply with the minimum required safe distances / clearances (please refer to [Section 29 'Safety Clearances'](#)).

Protected works often occur in non-urban / rural areas (where in the past the policy was not to obtain easements due to the lower number of customers and the associated network risks)

The applicant should note the following requirements of Endeavour Energy's 'Land Interest Guidelines for Network Connection Works, Provision of Network Connection Services'.

5.0 REGISTERED LAND INTERESTS REQUIRED WHEN SUBDIVIDING LAND

5.1 Urban Requirements

Endeavour Energy will require the registration of Land Interests for:

- a) all new transmission, high voltage and low voltage Network Assets; and
- b) all existing transmission, high voltage and low voltage Network Assets located within the Customer's land.

5.2 Non-urban Requirements

Endeavour Energy will require the registration of Land Interests for:

- a) all new transmission, high voltage and low voltage Network Assets;
- b) all existing transmission Network Assets located within the Customer's land;
- c) all existing high voltage Network Assets located within the Customer's land; and
- d) all existing low voltage Network Assets that will be used to supply any adjoining land outside the subdivision.

6.0 REGISTERED LAND INTERESTS REQUIRED WHEN NOT SUBDIVIDING LAND

6.1 Urban Requirements

Endeavour Energy will require the registration of Land Interests for:

- e) all existing Network Assets that will be used to supply a new Network Asset.

26 Prudent Avoidance

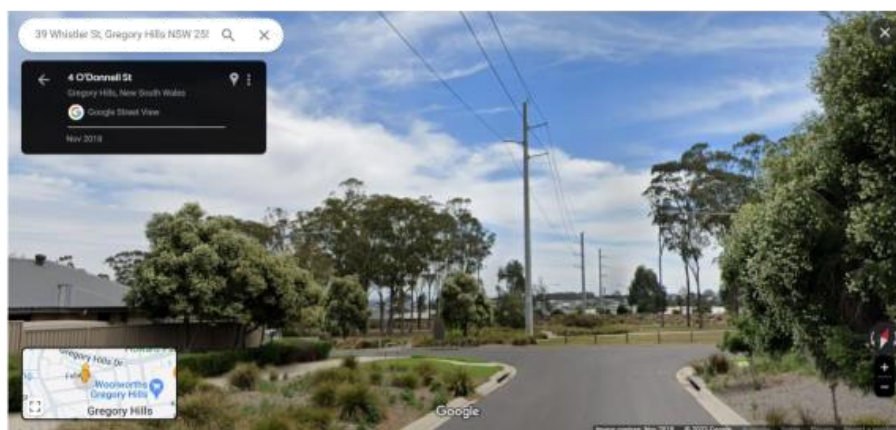
The electricity industry has adopted a policy of prudent avoidance by doing what can be done without undue inconvenience and at modest expense to avert the possible risk to health from exposure to emissions from electricity infrastructure such as electric and magnetic fields (EMF) and noise which generally increase the higher the voltage ie. Endeavour Energy's network ranges from low voltage (normally not exceeding 1,000 volts) to high voltage (normally exceeding 1,000 volts but not exceeding 132,000 volts / 132 kV).

In practical terms this means that when designing new transmission and distribution facilities, consideration is given to reducing exposure and increasing separation distances to more sensitive uses such as residential or schools, pre-schools, day care centres or where potentially a greater number of people are regularly exposed for extended periods of time.

These emissions are usually not an issue but with Council's permitting or encouraging development with higher density, reduced setbacks and increased building heights, but as the electricity network operates 24/7/365 (all day, every day of the year), the level of exposure can increase.

Endeavour Energy believes that irrespective of the zoning or land use, applicants (and Council) should also adopt a policy of prudent avoidance by the siting of more sensitive uses eg. the office component of an industrial building, away from and less susceptible uses such as garages, non-habitable or rooms not regularly occupied eg. storage areas in a commercial building, towards any electricity infrastructure – including any possible future electricity infrastructure required to facilitate the proposed development.

Where development is proposed near electricity infrastructure, Endeavour Energy is not responsible for any amelioration measures for such emissions that may impact on the nearby proposed development.



Incorporating the easement for 132 kilovolt (kV) overhead transmission lines at Gregory Hills into the public road reserve and parks is in keeping with a policy of prudent avoidance and also assists with easement management associated with the subdivision of easements.

Please refer to the Appendices for a copy of Energy Networks Association's 'Electric & Magnetic Fields – What We Know' which can also be accessed via their website at <https://www.energynetworks.com.au/electric-and-magnetic-fields> and provides the following advice:

Electric fields are strongest closest to their source, and their strength diminishes rapidly as we move away from the source.

The level of a magnetic field depends on the amount of the current (measured in amps), and decreases rapidly once we move away from the source.

Typical magnetic field measurements associated with Endeavour Energy's activities and assets given the required easement widths, safety clearances etc. and having a maximum voltage of 132,000 volt / 132 kV, will with the observance of these separation distances not exceed the recommended magnetic field public exposure limits. As a guide, reference should be had to Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' Table 1 – 'Minimum easement widths'.

26.1 Special / Sensitive Uses

Regarding the proximity of sensitive / special uses such as schools, pre-schools, day care centres etc. near electricity infrastructure, Endeavour Energy's Sustainability & Environment Branch has provided the following advice.

As far as Network Environment Assessment Section is aware there are no restrictions in legislation that stop schools, pre-schools, day care centres being placed next to electricity infrastructure.

In regard to the NSW Planning & Environment 'Child Care Planning Guideline' August 2017, besides Part 3.6 'Noise and air pollution' referring to substations as a 'noisy environment', there is no specific requirement under the site selection and location criteria to consider proximity to electricity infrastructure, although arguably a child care centre and electricity infrastructure are not a compatible use.

Prudent avoidance measures must however be implemented. Prudent avoidance was a policy recommended by former Chief Justice of the High Court of Australia, Sir Harry Gibbs, as a result of an inquiry he conducted into community needs and high voltage transmission lines including issues in relation to EMF back in 1991. The findings in the Gibbs report are consistent with subsequent inquiries and are still relevant today.

Prudent avoidance is defined as doing what can be done without undue inconvenience and at modest expense to avert the possible risk to health from exposure to new high voltage transmission facilities. In practical terms, this means designing new transmission and distribution facilities having regard to their capacity to produce EMFs, and siting them having regard to the proximity of houses, schools and the like.

Although the Gibbs report was particularly aimed at electricity distributors to consider when placing their infrastructure, and bearing in mind that there are schools, pre-schools, day care centres adjacent to our infrastructure in various locations right across our franchise area, it is nonetheless Endeavour Energy's recommendation that such 'sensitive uses' are not built adjacent to major electricity infrastructure.

Should such a development proceed, the design of the schools, pre-schools, day care centres should also consider prudent avoidance measures such as any rooms which the children will occupy (class rooms, play areas, sleeping rooms, eating areas) be arranged such that they are on the side of the site/building which is furthest away from the electricity infrastructure.

There is scientific consensus that health effects have not been established but that the possibility cannot be ruled out. Accordingly, if there are any concerns regarding the location of the schools, pre-schools, day care centres in proximity to the electricity infrastructure, in order to make an informed conclusion, the applicant may need to commission an independent review to provide an overall assessment including electric and magnetic field measurement and advice. Applying a precautionary approach early on in the design process will hopefully result in the adoption of prudent avoidance principles benefitting the eventual development of the site.

Endeavour Energy is able to provide estimated EMF levels from comparable electricity infrastructure and having regard to concept designs which can then be used to model the possible impact. Further details are available by contacting Endeavour Energy's Substation Primary Design Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or email earthingenquiry@endeavourenergy.com.au.

Although not part of Endeavour Energy's electricity network, the applicant should consider wiring the new building and locating high electricity consuming devices away from areas occupied by children.

26.2 Noise

The transformers in substations may emit a hum – especially when under heavy load say in the summer peak when use of air conditioning is at its highest. Overhead power lines can produce an audible sound or buzz as a side effect of carrying electricity. The sound can be louder if there is increased moisture (during rain, fog, frost etc.) or pollutants in the air. The sound usually occurs at the poles at the insulators supporting the power lines and increase at higher voltages.

Endeavour Energy's substations are not a 'scheduled premises' under the *Protection of the Environment Operations Act 1997* (NSW) and the holding of a licence under that Act for operations at the site is not required ie. a substation is generally located and designed to not result in the emission of offensive noise. As guide / target Endeavour Energy's substations nominally meet the Environmental Protection Authority 'NSW Industrial Noise Policy' with the overall aim to allow the need for its network operations to be balanced with the desire for quiet in the community.

The Environment Protection Authority EPA 2013/0127 Noise Guide for Local Government, in Part 3 Noise management principles, includes a reference to *State Environmental Planning Policy (Infrastructure) 2007* (NSW). Whilst not directly applicable to 'Division 5 Electricity transmission or distribution', the similar standard as that required for rail corridors and roads and traffic should be imposed on any new development.

If the development is for the purposes of a building for residential use, 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 building—35 dB(A) at any time between 10 pm and 7 am,*
- (b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.*

Acoustic assessments should consider substations required to facilitate the proposed development as a potential mechanical / plant noise source.

26.3 Electronic and Magnetic Fields (EMF)

Endeavour Energy recognises that a causal link between EMF exposure and demonstrated health effects has not been established, even after much scientific investigation throughout the world. There are no state or federal exposure standards for 50/60- hertz (Hz) EMF based on demonstrated health effects. Nor are there any such standards world-wide. Among those international agencies that provide guidelines for acceptable EMF exposure to the general public, the International Commission on Non-Ionizing Radiation Protection in 2010 established a level of 2,000 milligauss (mG). Endeavour Energy recognises that timely additional research is unlikely to prove the safety of power-line EMF to the satisfaction of all.

Endeavour Energy is committed to ensuring that its activities and assets conform to all relevant International and Australian Standards, National Health and Medical Research Council (NH&MRC) Standards, Energy Networks Association (ENA) Standards and NSW legislation. As mentioned above, this includes a commitment to a policy of prudent avoidance as endorsed by the ENA with regard to the location of assets and electric and magnetic fields.

27 Public Safety

Workers involved in work near electricity infrastructure run the risk of receiving an electric shock and causing substantial damage to plant and equipment. Please find attached copies of Endeavour Energy's public safety training resources, which were developed to help general public / workers to understand why you may be at risk and what you can do to work safely. The public safety training resources are also available via Endeavour Energy's website under 'Home > Safety' or via the following link:

<https://www.endeavourenergy.com.au/safety> .

Endeavour Energy provides safety advice to the building industry, councils or any other organisation or individuals working near our overhead or underground network. Enquiries for parts of the network which are not subject to easements can be made by completing the attached Request for Safety Advice form and emailing it to Construction.Works@endeavourenergy.com.au . Enquiries related to electricity infrastructure located within an easement should be directed to Endeavour Energy's Easements Officers by email Easements@endeavourenergy.com.au .

SafeWork NSW provides key safety information on how to protect persons from the risks arising when working or undertaking activities near overhead power lines and underground cables including:

- SafeWork NSW 'Work Near Underground Assets – Guide 2007'; and
- WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006'.

These documents as well as other useful resources are available via the following link to the SafeWork NSW website.

<https://www.safework.nsw.gov.au/your-industry/construction/safety-topics/electrical> .



Electrical



The most common electrical risks include hitting overhead and underground powerlines, working on live equipment, and arc flashes. Consult with the supply authority and de-energise equipment before working near electricity. Don't do electrical work without a licence.

28 Removal of Electricity

Approval for the permanent disconnection and removal of supply and meters eg. when premises are planned for demolition, removal or relocation, or the replacement of a temporary builder's supply with a permanent connection, must be obtained from Endeavour Energy's Customer Network Solutions Branch (contact via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718) and the works completed by Accredited Service Providers (ASP) with the relevant class of Authorisation for the type of work being carried out. For details of the ASP scheme please refer to [Section 24 'Network Connection'](#).

The work could involve:

- The disconnection and removal of an underground service cable or overhead service line,
- Removal of metering equipment.

The Authorised Level 2 ASP will complete an online application on Endeavour Energy's website for Removal of All Gear Notification of Service Works (NOSW) for approval to undertake the works. The ASP must also follow the Retailer / Meter Providers' process for the permanent removal of supply.

29 Safety Clearances

As a minimum any building or structure (including fencing, signage, flag poles etc.) whether temporary or permanent must comply with the minimum safe distances / clearances for voltages up to and including 132,000 volts (132 kV) as specified in:

- Australian/New Zealand Standard AS/NZS 7000 – 2016: 'Overhead line design' as updated from time to time.
- 'Service and Installation Rules of NSW' which can be accessed via the following link to the NSW Climate and Energy Action website:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules> .

These distances must be maintained at all times and regardless of the Council's allowable building setbacks etc. under its development controls. As a guide only please find attached a copy of Endeavour Energy Drawing 86232 'Overhead Lines Minimum Clearances Near Structures'. Factors such as the span (the longer the span the greater the sag and blowout of the overhead power lines), type of conductor, access, property type and use etc. will impact on the minimum clearances.

Different voltages are kept at different heights, the higher the voltage, the higher the wires are positioned on the pole. Similarly, the higher the voltage, the greater the required building setback.



Overhead powerlines with high voltage, low voltage and service connections at different levels on the poles. This example is in Marayong NSW part of Endeavour Energy's franchise / network area. Source: Google Maps Street View.

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 (please refer to [Section 24 'Network Connection'](#)). This will require the provision of a detailed survey plan showing the location of the conductors to enable the assessment / modelling of the clearances for which there are software packages available. If the safety clearances are inadequate, either the parts of the building encroaching the required clearances or the overhead power lines will need to be redesigned to provide the required clearances.

Even if there is no issue with the safety clearances to the building or structure, ordinary persons must maintain a minimum safe approach distance of 3.0 metres to all voltages up to and including 132,000 volts / 132 kV. Work within the safe approach distances requires an authorised or instructed person with technical knowledge or sufficient experience to perform the work required, a safety observer for operating plant as well as possibly an outage request and/or erection of a protective hoarding.

Endeavour Energy's recommendation is that whenever reasonably possible buildings and structures be located and designed to avoid the need to work within the safe approach distances for ordinary persons eg. not having parts of the building normally accessible to persons in close proximity of the overhead power lines; the use of durable / low maintenance finishes. Alternatively, in some instances the adoption of an underground solution may be warranted ie. particularly for low voltage which can be more readily (in shorter distances) and comparatively economically be undergrounded.

Consideration must be given to WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006' which 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

In addition the developer / builder should consider 'tiger tailing'/matting the low voltage overhead service lines to provide a distinct visual of the location of overhead construction ie. these are still not regarded as insulated conductors and safe approach distances need to be maintained. as shown in the following photograph.

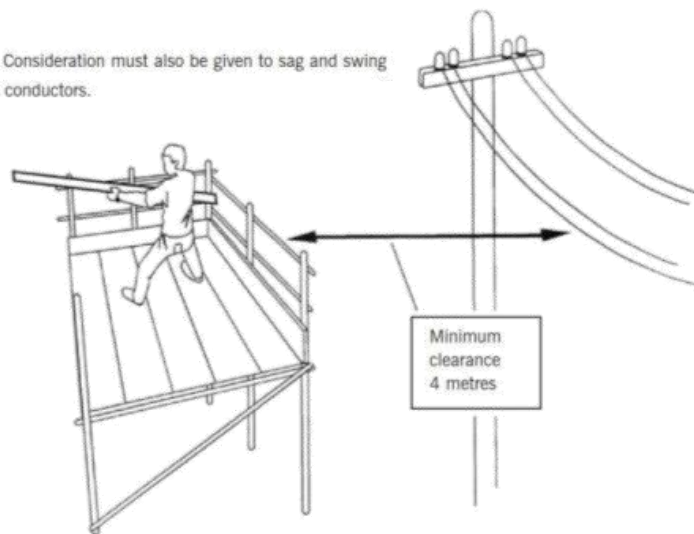


'Tiger Tails' are used primarily as a visual indicator or for mechanical protection from electrical wires. They are not to be used as insulating material and will not provide full protection from live electricity. This example is of tiger tails installed by Endeavour Energy on overhead power lines at Ermington NSW as part of a risk management for work on a nearby Distribution Substation No. 20981.

29.1 Scaffolding

For any scaffolding, depending on the width of the working platform and the distance of the conductors from the boundary, consideration may need to be given to the 'Work Near Overhead Power Lines Code of Practice 2006', Section 6.5 'Control measures for erection and dismantling of scaffolding near overhead power lines up to and including 33kV' an extract of which follows.

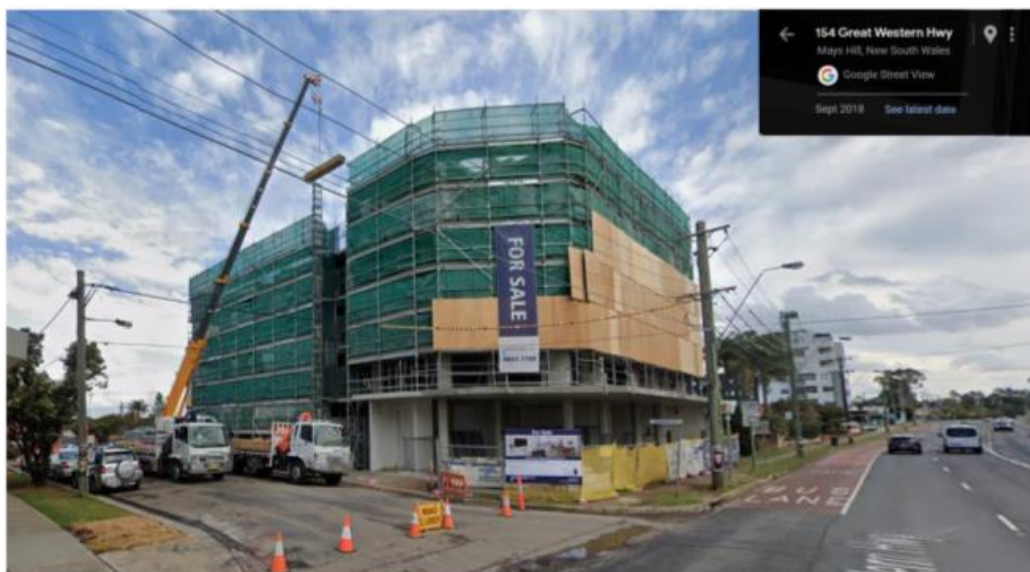
Note: Consideration must also be given to sag and swing of the conductors.



Note: End protection omitted for clarity

Figure 10 – A 4 metre approach distance applies in any direction where metallic scaffold is erected, used or dismantled near overhead power lines.

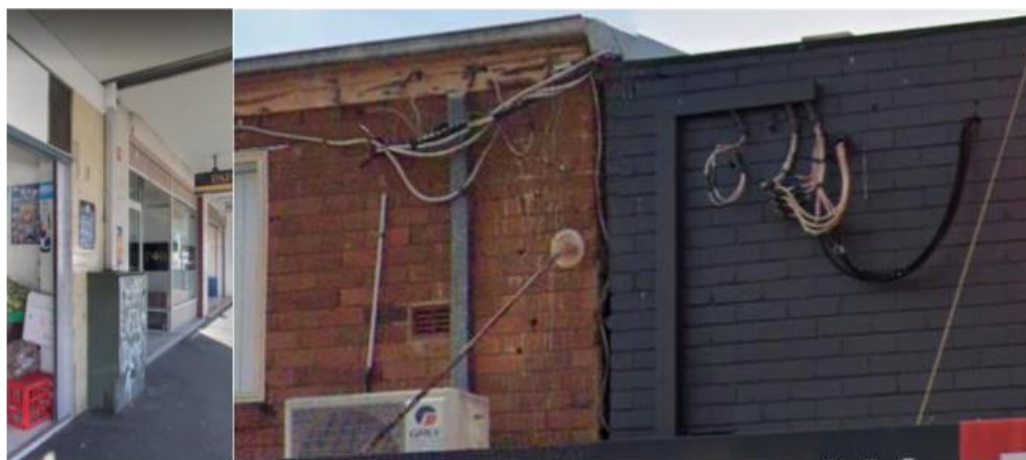
The use of scaffolding near overhead power lines may require the isolation of the network and the use of a hoarding which can be a significant cost and time to organise.



Hoarding erected on scaffolding near overhead powerlines for construction of a mixed use development at the Great Western Highway, Westmead. Source: Google Maps Street View.

29.2 'Awning' Overhead Power Lines

In some older urban areas of the electricity distribution network may have low voltage overhead 'awning' power lines where the conductors are in troughs / ducts fixed to the awnings / shop fronts.



Example of 'awning' overhead power lines coming from a low voltage pillar on the road verge rising to through a duct and then through or above the awnings to the customer connection points for the premises. Source: Google Maps Street View.

With the low voltage overhead 'awning' power lines, before commencing any activity their exact location must be identified. If any of the foregoing external works involves the exposing of the power lines within the awning and the undertaking of works within the safe approach distances, it requires an electrically authorised (500 mm) or instructed person (1,000 mm) with technical knowledge or sufficient experience to perform the work required. The applicant may need to seek advice from an Accredited Service Provider (ASP) of an appropriate level and class of accreditation for the undertaking of any such works. For details of the ASP scheme please refer to [Section 24 'Network Connection'](#).

29.3 Pole Mounted Substations

Endeavour Energy Mains Design Instruction MDI 0031 'Overhead line design' includes the following clearance zone for pole mounted substations.

9.0 SUBSTATIONS, AUTO-RE Closers, SECTIONALISERS, VOLTAGE REGULATORS AND ENCLOSED SWITCHES

9.1.2 Equipment hazard and fire zone

As part of the design, allowance is to be made for a three metre horizontal clearance zone around pole mounted substations, regulators, reclosers, sectionalisers and enclosed switches to minimise the effects of failure of any equipment and manage ongoing noise in accordance with Figure 13.

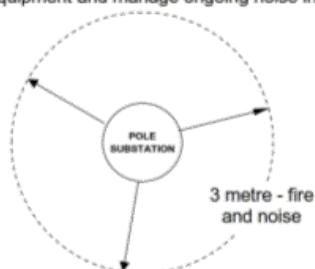


Figure 13 – Fire and noise separation

Pole mounted substations, regulators, reclosers, sectionalisers and enclosed switches may contain hazardous materials. Additional requirements apply to environments containing explosive gas atmospheres. Where applicable these provisions must comply with the requirements of AS/NZS 60079.

29.4 Ground or Pole Stays

The turning / angle of overhead power lines or at a termination pole / structure creates an 'unbalanced load' and means it is necessary for the pole to be stayed to stop it from leaning or tipping over from the forces of the conductors turning or terminating. This is done with tensioned wires going to a bollard pole, concrete block or embedded into ground with an anchor rod and plate or concrete footing. Stay poles are generally best avoided i.e. the use of an un-stayed higher strength pole is preferable to a lower strength pole that is stayed.

Endeavour Energy Mains Design Instruction MDI 0031 'Overhead line design' includes the following

3.12 Stays

Where it is necessary to stay a pole in an urban area, a bollard pole must be used. Ground stays are permitted in non-urban areas where a trip hazard is deemed unlikely, otherwise a bollard pole must be used.



Stay poles at Riverstone Ground stay at Menangle which with the urban residential subdivision may need to be replaced with a bollard pole.

When previously non-urban / rural areas become urban area, existing ground stays may not only become a trip hazard due to the increase in pedestrian traffic but may also impact on the location of driveways and the clearances to the stay wires which could be damaged by vehicle impacts.

29.5 Building Setbacks

As the electricity distribution network partially relies on the retention of appropriate building setbacks relative to the use / zoning of the land to the road frontages to provide safety clearances to overhead power lines on the road verge / roadway, the encroachment of building setbacks is generally not supported by Endeavour Energy.

Particular regard needs to be had to secondary road frontages or where overhead power lines are located near side or rear boundaries where lesser building setbacks apply. Multi-dwelling development with subsequent subdivision should assess building setbacks based on the proposed subdivision layout. Consideration must be given in rezonings reducing building setbacks and subdivisions changing the primary road frontage to secondary road / side or rear boundaries to which reduced building setbacks usually apply under the councils' Development Control Plans. Even if there is no existing electricity infrastructure, the encroachment of building setbacks may affect future required line routes. This may also apply to underground cables.

As a guide, the minimum easement widths in Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', Table 1 – 'Minimum easement widths', should be considered. Although the safety clearances to a building or structure are less than the minimum easement width, the greater separation will assist in addressing issues for ordinary persons maintaining a minimum safe approach distance; prudent avoidance etc.



The encroachment of building setbacks by dwellings, structures etc. may also result in the encroachment of safety clearances to overhead power lines on the road verge / roadway or on the site itself. In this example located in The Hills Shire Local Government Area (LGA), there are both low voltage and 11,000 volt / 11 kilovolt high voltage overhead power lines. Source: Google Maps Street View.

In areas where the electricity network is designed on the basis of low density residential development with typically minimum front building setbacks ranging from 4.5 to 10 metres, a rezoning to increases density / dwellings per hectare is often achieved by allowing for reduced and sometimes zero setbacks, as well as then encroachments / projections of balconies and awnings into the front building setback (or in some mixed-use developments the awnings extend over the footpath), the required clearances cannot be maintained and causes issues with the network.

The following shows two examples of rezonings of rural land with 33,000 volt / 33 kilovolt (kV) overhead transmission lines to the road frontages which under Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' require a minimum 18 metre wide easement.

At Fifteenth Avenue, Austral which is to become a major road with restricted vehicle access, as part of the Indicative Layout Plan the local roads run parallel to the major road and are located within the notional easement fully incorporated into the public road reserve and not impacting the developable lots.



33,000 volt / 33 kilovolt (kV) overhead power lines at Fifteenth Avenue, Austral Source: Google Maps Street View. Inset Austral & Leppington North Precincts Indicative Layout Plan.

At Dunmore Road, Shell Cove where the fronts of the low density residential lots are subject to an easement for overhead power lines 10 metres wide ie. Although there was no existing easement over the land, as part of the application for connection of load for the new urban residential subdivision the easements were required to be created to ensure the future dwellings did not encroach the minimum required safety clearances etc.



Easement for 11,000 volt / 11 kilovolt (kV) and 33,000 volt / 33 kV overhead power lines at Dunmore Road, Shell Cove. Source: Google Maps Street View. Extract of Deposited Plan DP 1113813.

30 Security / Climb Points

Endeavour Energy's Substation Design Instruction SDI524 'Fencing and Perimeter Security at Zone and Transmission Substations, and Switching Stations' states the following requirement in relation to the prevention of unauthorised access by any person to a substation by the creation of 'climb points'.

5.11 Perimeter management

Consideration shall be given to the balance between screening with manufactured objects or plants, and the security benefits of uninhibited visibility to staff and the general public.

To prevent people from concealing themselves or aiding their activities, vegetation shall not screen the entire length of the substation perimeter.

Vegetation that could provide a climbing point, and all objects, including equipment and stores, shall not be located within 2000mm of either side of the intruder resistant perimeter fence or intruder resistant barrier.

Accordingly, Endeavour Energy's usual requirement is to have a minimum clear area / buffer of 2 metres from the fence with 3 metres preferred, and then depending on what the climb point is, it could increase to 4 metres. Where a permanent structures / object is constructed within these clearances, Endeavour Energy may raise the height of the substation fence.

Zone substations typically have a security weldmesh fence, the height and finish eg. may be topped with razor wire, depending upon the nearby existence of climb points and the clearance of vegetation within 3m of the fence. Whilst Endeavour Energy has no control over the development on the adjacent land, the construction of a structure that constitutes a 'climb point' would require an increase in the height of the substation fence.



Endeavour Energy's Seven Hills Zone Substation is an 'outdoor' design. Note height of fencing due to adjacent 'climb point' created by the seating and awning.

31 Service Conductors

A component of Endeavour Energy's electricity distribution system are the service lines from the street to the customer's connection point / electrical installation dedicated to the supply of electricity to the site. In older / above ground areas of the network this is typically an overhead service line coming from a pole on the road verge going to a point of attachment where the mains are terminated on a customer's building, pole or structure.

Low voltage overhead service conductors encroaching adjoining properties in older / above ground parts of the network can be an issue for the redevelopment of 'brownfield' areas. These service mains are generally 'legacy assets' but are also 'Protected Works' and cannot be removed to rectify the encroachment – unless it is done so with the agreement of the benefited property owner and an alternative low voltage customer service is provided at the applicant's cost. Conversely, if the adjoining site were to be redeveloped, the encroachment would need to be rectified by and at the cost of the adjoining owner.

Clauses 2.2.2 'Service Route' and 3.2.4 'Crossing of Adjoining Property' of the Service and Installation Rules of NSW state that service mains or consumer's mains crossing an adjoining property must have a suitable easement. Endeavour Energy generally requires this easement to adopt the standard terms in Schedule 8 of the *Conveyancing Act 1919* (NSW) and benefit the lot being serviced (an inter-allotment easement appurtenant to the land). As Endeavour Energy's HxGN NetWorks Core NetViewer master facility model only shows easements benefiting Endeavour Energy, these are not shown on the site plan from Endeavour Energy's HxGN NetWorks Core NetViewer master facility model. To verify the existence of such an easement a title search would be required.

Whilst Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure' requires a minimum easement width of 9 metres for low voltage overhead power lines ie. 4.5 metres to both sides of the centreline of the conductors, for certain types of conductors and in some circumstances a lesser easement width may be allowed – usually 6 metres.

Given the difficulty in obtaining easements, the solution to the encroachment is usually the adoption of an alternative network design involving either an underground solution or a customer owned / private pole. In accordance with the Service and Installation Rules of NSW, Clause 3.7.2.1 'Private Posts/Poles' a private post/pole must be installed within 1 metre of the front property street alignment.

The Service and Installation Rules of NSW can be accessed via the following link to the NSW Climate and Energy Action website:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules> .



The low voltage overhead service conductor to the older dwelling on the right encroaches the adjoining property. The newer dwelling to the left utilises a private pole to avoid encroaching the adjoining property. The newly constructed dwelling also utilises a private pole possibly also utilised for temporary builder's supply and as cables will not impede the front building setback and also avoid the need for a point of attachment bracket usually required to be fixed to a rafter or fascia. Source: Google Maps Street View.

31.1 Mid Span - Suspended Service Conductors

The 'Service and Installation Rules of NSW' under Clause 3.2.4 'Crossing of Adjoining Property' indicates 'A private pole should be installed to avoid a suspended service. A mid span / suspended service is only permitted as a last resort'. Mid span / suspended services are also generally 'legacy assets' and not permitted for new development.



Mid span / suspended low voltage overhead service conductor for a dwelling at Rydalmere. Source: Google Maps Street View.

32 Solar / Generation

Endeavour Energy allows connection of up to 8 kilowatts (kW) total panels to a 5 kW inverter or up to 40 kW total panels to a 30 kW inverter. If the applicant's connection requirements are other than these, an application for a micro embedded generator connection service will be required.

The connection of small and medium embedded generators with a capacity of between 30 kilowatts (kW) and 5 megawatts (MW) may affect other Endeavour Energy customers connected to the electricity network. A detailed technical review of Endeavour Energy's network's capacity to transfer the generation energy along with analysis of the generator's protection schemes and quality of supply considerations must therefore be undertaken prior to a permission to connect to Endeavour Energy's network being issued. Further details are available by contacting Endeavour Energy's Customer Network Solutions Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or on Endeavour Energy's website under 'Home > Connections > Connect online > Small and medium embedded generator connection service' via the following link:

<https://www.endeavourenergy.com.au/connections/connect-online/small-and-medium-embedded-generator-connection-service> .



The roof at Bankwest (now CommBank) stadium in Parramatta supports a 100 kilowatt hour (kWh) solar panel system 309 individual solar panels generating renewable energy for the stadium. Source: Bankwest Stadium Sustainability Case Study May 2020.

33 Street Infrastructure

33.1 Streetlighting

Endeavour Energy recognise that lighting roads, pedestrian crossings and pathways helps to keep pedestrians and motorists safe during times of inadequate natural light.

With the increase in both vehicular and pedestrian traffic resulting from the overall development occurring in the area, even if the existing streetlighting is already designed for an urban environment, the streetlighting may need to be reviewed and if necessary upgraded to comply with the series of standards applying to the lighting of roads and public spaces set out in with Australian / New Zealand Standard AS/NZS 1158: 2010 'Lighting for roads and public spaces' as updated from time to time.

Whilst the determination of the appropriate lighting rests with the road controlling authority, Endeavour Energy as a Public Lighting Service Provider is responsible for operating and maintaining the streetlights on behalf of local councils, Roads and Maritime Services and other utilities in accordance with the NSW Public Lighting Code 2019 (Code) as updated from time to time. Endeavour Energy recognises that well designed, maintained and managed Public Lighting offers a safe, secure and attractive visual environment for pedestrians and drivers during times of inadequate natural light.

For any Code implementation and administration / technical matters please contact Endeavour Energy's Substation Mains Assets Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or email mainsenquiry@endeavourenergy.com.au.



Green light for Net Zero Strategy

Kiama Council has given the green light to switch all remaining local street lights to LED, a key element of their Net Zero Strategy. Council has endorsed a proposal by Endeavour Energy to upgrade the remaining 951 non-LED street lights in the municipality.

The completion of light-emitting diode (LED) street lighting upgrade by Kiama Municipal Council will reduce emissions by 310 tonnes of carbon emissions a year [382,225 kilowatt-hours (kWh)]. Source: <https://www.nationaltribune.com.au/green-light-for-net-zero-strategy/>.

33.2 Street Awnings

With zero building setbacks and street awnings extending over the footpath, consideration must be provided to the possible impacts on the existing streetlights. This may result in the reduction of light levels by having a shadowing effect. To rectify this additional under awning lighting may be required to ensure the visual requirements of pedestrians and motorists are maintained.

The design of the awning must take into consideration the positioning of the existing lighting infrastructure and must facilitate the safe working environment. Streetlight columns and poles must not pass through awnings. As a guide:

- Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' includes the following requirements.

5.4 Assets within special areas

5.4.1 Assets within the road verge

Assets installed within a road carriageway cannot be provided with an easement. However, overhead assets proposed to be installed within the road verge still require the clearances specified in Table 1 and Clause 5.3.1.

5.3.2 Minimum easement required for network assets

The table below details the minimum easement widths for various network assets. Refer to Annexure 4 for graphical representation for a cable joint system; pole stay and padmount clearances.

Table 1 - Minimum easement widths

	Voltage	Asset Type	Construction	Minimum Easement (m)
Other		Streetlight Column / Service Pillar		1.0 x 1.0

(The network asset must be positioned in the centre of the easement).

- NSW Streets Opening Coordination Council 'Guide to Codes and Practices for Streets Opening' includes the following:

5.8. SERVICES AROUND POLES

Underground services and other obstructions around poles are to be kept a minimum distance of 300mm from the periphery of the pole to allow inspections by utility/service provider staff and the safe replacement of the pole.



The street awning is inappropriately constructed around three streetlight columns. Source: Google Maps Street View.

The awning may restrict access for the installation and removal of the streetlight column, fixing of streetlight faults for which access will be required for all lighting infrastructure including lamps, columns, supply cabling, pillars and pits. Maintenance staff will require safe access both for themselves and their vehicles and equipment purposes eg. from an elevated work platform (EWP) vehicle to change the lamps. Failing the foregoing, an asset redesign / relocation may be required.

33.3 Public / Pedestrian Obstruction

For public / pedestrian safety and to protect electricity infrastructure from becoming a public obstruction, Endeavour Energy requires adequate consideration to walkway and thoroughfare design where a new or existing electrical asset is likely to pose a hazard. Preference is to ensure electrical infrastructure is not placed or left stranded in public areas.

This may occur with public domain upgrades with footpaths and pavements being redesigned and particularly impact on the low voltage network pillars which provide the connection point to supply residences and businesses is underground distribution areas. Alternatively, assets may need to be relocated where design alternatives are not suitable - please refer to [Section 4 'Asset Relocation'](#). Wall mounted designs are available where building facades are in close proximity to pedestrian footpath areas.



Low voltage pillars should be appropriate to the role and context of the street / footpath. Source: Google Maps Street View.

Conversely it is also important that when designing a new street making changes to an existing street or undergoing maintenance to the public domain (including lighting; landscaping and street furniture etc.) do not interfere with, restrict access for maintenance and repairs or replacements (which may require excavation and result in difficulties in restoration of the finished surfaces) or create a hazard such as climb point, to the electricity distribution infrastructure.



Street furniture such as bus shelters etc. need to be appropriately located. Source: Google Maps Street View.

The foregoing is also in keeping with the processes and design principles set out the NSW Government Movement and Place framework for planning, designing and managing transport networks to maximise benefits for the people and places and which can be accessed via the following link to their website.

<https://www.movementandplace.nsw.gov.au/>

34 Sustainability

Greenhouse gas emissions from Australia's energy sector continue to decline due to gradual decarbonisation of the grid. Endeavour Energy is also committed to reducing greenhouse gas emissions and helping customers save on their energy consumption and costs through new initiatives and projects to adopt sustainable energy technologies.

This commitment involves network demand management solutions (also known as a non-network option) being investigated and implemented where cost to either permanently defer network investment or temporarily defer investment to achieve the optimal timing and utilisation of network investments whilst meeting regulatory, statutory obligations, stakeholder and customer expectations. This will include consideration and potential adoption of new technologies and innovative approaches that can provide those solutions.

Demand management solutions generally involve a specific or linked network element, such as a zone substation, or broad based targeted solution – where a network area, such as a broader distribution area, has been forecast to exceed network capacity limitations within the area.

Notwithstanding the solutions such as the use of controllable loads, embedded generation and network tariff options that promote the efficient utilisation of network assets by signalling the economic cost of network congestion can also apply to individual customers eg. by saving energy around the home when and how heating or cooling, cooking, lighting etc. that involves the use of smart meters, batteries and solar panels to enable customers to generate, store and sell electricity into the grid as well as integrating electric vehicles into the network.

Accordingly Endeavour Energy encourages all development to adopt sustainable energy initiatives. For details of Endeavour Energy's sustainable energy initiatives or on Endeavour Energy's website under 'Home > Modern grid > Sustainability' via the following link:

<https://www.endeavourenergy.com.au/modern-grid/sustainability> .



In particular:

- Endeavour Energy has launched a 'Customer EV hub' where further information on electric vehicles and associated infrastructure is available for customers. Please refer to the following link for more information: <https://www.endeavourenergy.com.au/modern-grid/electric-vehicles>.
- Endeavour Energy's "Flexible Exports" program enables efficient energy usage and supports renewable energy integration (from solar) into the grid. Please refer to the following link for more information: <https://www.endeavourenergy.com.au/modern-grid/flexible-exports>.

For those working in Western Sydney, the following section of the website provides resources for establishing sustainable growth in the region: <https://www.endeavourenergy.com.au/modern-grid/our-work-in-greater-western-sydney>.

Endeavour Energy is also working towards a circular economy that recovers resources and protects the planet. This includes aiming to be nature positive by 2025 and waste neutral by 2030 (excluding hazardous and contaminated waste). As such, we encourage the consideration of circular economy practices and habitat protection in development.

35 Swimming Pools

Electricity and water are a potentially dangerous combination and needs to be treated with caution. This is due to parts of the swimming pool having the potential to be a conductor of electricity that can function as a path for stray current which as it seeks to complete the circuit, it could travel through to the water in the swimming pool. This includes but is not limited to coping / paving, rail / decks, steps, diving boards, pumps, filters etc.

Swimming pools potential could occur in any land zone and in addition to private pools on residential lots can be for various other uses eg. as part of an apartment complex / common area, recreation centres, hotels, sales and display etc.

Special consideration needs to be provided to the positioning of swimming pools in:

- Front yards.
- Corner lots with reduced building setbacks to the secondary road frontage.
- Adjoining zone and transmission substations.

The potential risk is reflected in swimming pools being prohibited in all types of easements. The separation / restrictions for swimming pools near padmount substations is detailed in Section 24.3 'Distribution Substations'. For Endeavour Energy's purposes the separation required from electricity infrastructure to a swimming pool includes the 'pool zone' being 'arms reach' or 1.25 metres from the water edge, as referred / defined in Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' as updated from time to time.

As a guide, for electricity distribution infrastructure that is protected works or adjacent to the site in public roadways and other adjoining properties ie. without an easement, the 'pool zone' should be outside of the notional easement provided in Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' Table 1 – 'Minimum easement widths'.

If there is any doubt whatsoever regarding the safety clearances to any electricity distribution infrastructure, the applicant will need to have the safety clearances assessed by a suitably qualified electrical engineer / Accredited Service Provider (please refer to [Section 24 'Network Connection'](#)).

Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' in clause 6.3.4.8 'Electricity Distributor's electrical equipment' states:

- Pools and spas shall not be located in areas containing electrical equipment, including connection pits and cabinets, owned by the electricity distributor, that results in such equipment being incorporated into any classified zone. See diagrams 6.15 and 6.16 of the Standard. (Please refer to the Appendices for a copy of the diagrams).

With the 'classified zones' this means no pool or spa can be installed within 3.5 metres of any of Endeavour Energy's electrical equipment and ever further if a 5 metre restriction zone is registered on the title to the property.

The Standard also requires the construction of a bonded earthing system to meet the requirements of equipotential bonding all the metal / conductive components to create substantially the same electrical potential, so that, under fault conditions, the difference in potential between simultaneously accessible exposed and extraneous conductive parts will not cause electric shock.



Before and After. This swimming pool in Endeavour Energy's network area at Middleton Grange NSW had to be modified to comply with the restriction for the padmount substation on the use of land in relation to swimming pools.

36 Telecommunications

Endeavour Energy has significant telecommunications infrastructure between their control centres, substations and other key electricity network infrastructure for Supervisory Control and Data Acquisition (SCADA) applications, communications to our Field Service Centres asset monitoring systems and high-speed protection packages can also be affected. In some cases the infrastructure is shared with telecommunications carriers.

Factors including environmental factors (topography, direct signal strength, radio frequency interference, proposed transmitter type, receiver type etc) affect the operation of the telecommunications systems. Accordingly telecommunications facilities need to be clear of surrounding obstructions such as buildings to reduce 'dead spots' and allow the radio base station to effectively cover its intended range / path (typically a direct line of sight between two radio base stations located on towers or elevated topographical features).

Telecommunications are likely to be affected if a building or development is in the line of sight between sending and receiving antennae or within a zone of the line of sight of these antennae. Where a potential exists for interference to line of sight links, an obstruction analysis will need to be undertaken to ensure that there is no impact on Endeavour Energy's telecommunications facilities.

Mitigation measures may require an establishment of an exclusion zone or relocation or redesign of the development causing the interference. Failure to do so would require Endeavour Energy to modify or relocate its existing telecommunications infrastructure eg. by installation of a directional antennae to reroute the existing signal; installation of an amplifier to boost the signal, and / or utilisation of onsite optical cable to reroute the original signal. All of these will involve a significant impact on Endeavour Energy's telecommunication facilities, cost and potential safety risk until the matter is rectified.

36.1 Telecommunications Carriers

In addition to electricity distribution, telecommunications carriers can apply for a Facilities Access Agreement (FAA) to install their assets on parts of the network, being mostly poles in overhead distribution areas but also on streetlight columns, including:

- cable television (CATV); fibre coaxial, public switched telephone network (PSTN) cables;
- associated telecommunication equipment including antennas, micro cells etc. (and which may have a power supply / electrical connection); and

are the responsibility of the carrier owning the telecommunications system.

Telecommunications cables are typically the lowest wires and located below the overhead power lines. If a telecommunication cable or equipment is encountered, advice should be obtained from the telecommunications network operator and never assume that the operating voltage is harmless.



Telecommunications equipment on the road verge and streetlight column in Bedford Street and Northcliffe Drive, Berkeley. Source: Google Maps Street View.

37 Vegetation Management

Endeavour Energy recognises the importance of plants and vegetation in helping to maintain the environmental balance and mitigate some of the negative impacts and social consequences of urbanisation eg. the creation of 'urban heat islands' and need for green / canopy cover to help offset the absorption and retention of heat. However, as an electricity distributor this also needs to be balanced against the critical need to manage the risks of vegetation intrusion to the electricity network that can cause:

- public safety incidents such as electrocution, or damage to a person's property;
- fire starts and the risk of bushfires that have devastating impacts including loss of human life and large-scale property destruction;
- restrict access for installation maintenance and repair of electricity infrastructure;
- reduce light levels from streetlights which can impact on crime prevention and road and pedestrian safety; and
- electricity supply interruptions which can also impact not only electricity customers but also other critical infrastructures and result in significant economic and social consequences.

Such landscaping may be subject to Endeavour Energy's Vegetation Management program and/or the provisions of the *Electricity Supply Act 1995* (NSW) Section 48 'Interference with electricity works by trees' by which under certain circumstances the cost of carrying out such work may be recovered.

Sydney's weather of storms and high winds can cause trees and branches to touch and short out the network or fall onto and damage overhead power lines. Heavy rain and flooding can also damage the electricity network. Many blackouts are caused from trees and shrubs damaging power lines and other network assets, especially during storms and periods of high winds.



Endeavour Energy's Transmission North had to repair a pole failure in April 2024 as a large tree fell on mains also resulting in damage to some customer switchboards and house fascias. Always treat fallen power lines as 'alive' and keep 8 metres away from them. Any trees, branches or other debris can also become 'alive' if they contact the damaged power lines.

The central activity is to clear vegetation and remove identified hazard trees that are in close proximity to electricity lines and to safely dispose of cut vegetation in accordance with Endeavour Energy's environmental obligations.



Poor tree selection and placement near overhead power lines in Moss Vale NSW in Endeavour Energy's franchise area. Source: Google Maps Street View.

Endeavour Energy regularly inspect and clear vegetation around electricity infrastructure. This not only includes tree trimming to overhead power lines but also ground clearing eg. for underground cable works or access tracks. As well as power, the infrastructure includes earthing cables (to allow a leaking/fault current to flow into the grounding system and be properly dissipated) and pilot cables (carrying protection signals or communications between substations). The poles may also carry data and telecommunications cables for other authorities / carriers.

The cost of vegetation management is a significant cost element in the company's operating budget (and the network charges to its customers). Endeavour Energy is constantly looking to improve its vegetation management practices to enable better maintenance, resulting in fewer faults and fewer outages of shorter duration and reducing costs.

The planting of large trees in the vicinity of electricity infrastructure is therefore not supported by Endeavour Energy. Suitable planting needs to be undertaken in proximity of electricity infrastructure. Only low growing shrubs not exceeding 3.0 metres in height, ground covers and smaller shrubs, with non-invasive root systems (less than 400 millimetres below ground level) are the best plants to use. Larger trees should be planted well away from electricity infrastructure (at least the same distance from overhead power lines as their potential full grown height) and even with underground cables, be installed with a root barrier around the root ball of the plant.



Although the spread of the tree on the opposite side of the road did not encroach safety clearances to the overhead power lines, the height meant that when the tree fell during a storm, it damaged the overhead power lines requiring repairs to restore electricity supply to customers. Source: <https://web.yammer.com/main/org/endeavourenergy.com.au>

Endeavour Energy's recommendation is that consideration be given to the removal of the existing street trees that are of nil to low ecological value and the trees be replaced with an alternative smaller planting to ensure appropriate clearances are maintained whilst minimising the need for future pruning. Alternatively, the minimum clearances for vegetation as required by the 'Service and Installation Rules of NSW' must be allowed for the details of which can be accessed via the following link to the NSW Climate and Energy Action website:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules> .

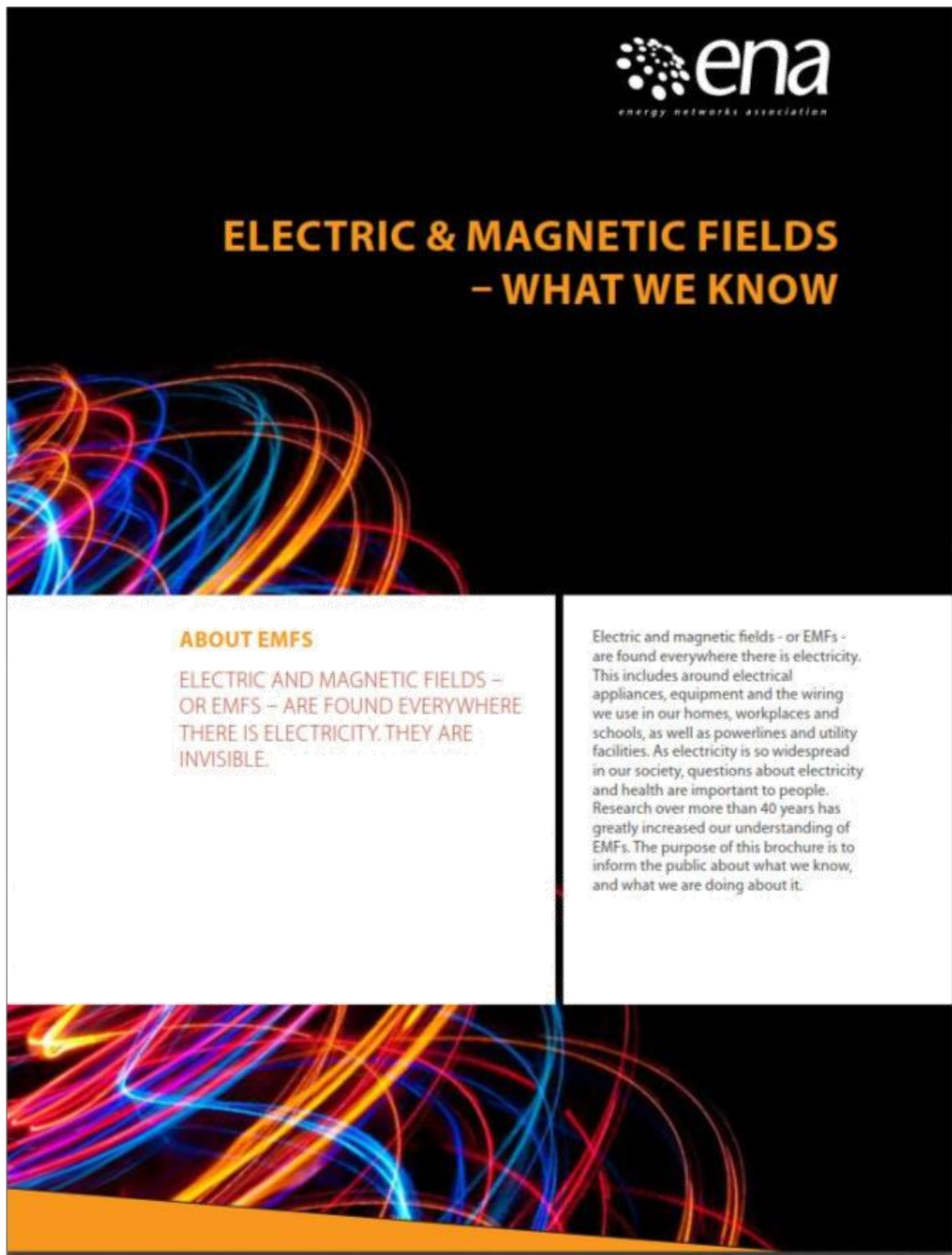
While trees and underground cables often coexist well together, it is also important to keep trees a safe distance away from the cables to prevent the root system from growing around and possibly into the cable ducts the lines. The tree could be seriously damaged if roots have to be cut to dig up and repair underground cables.

38 References

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 Endeavour Energy Mains Design Instruction MDI 0028 'Underground distribution network design'
 Endeavour Energy Mains Design Instruction MDI 0031 'Overhead line design'
 Endeavour Energy Mains Construction Instruction MCI 0002 'Attachment of communication cables to Endeavour Energy poles'
 Endeavour Energy Mains Construction Instruction MCI 0006 'Underground distribution construction standards manual'
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 Endeavour Energy Earthing Design Instruction EDI 001 'Earthing design risk assessment'
 Endeavour Energy Drawing 86232 'Overhead Lines Minimum Clearances Near Structures'
 Endeavour Energy Form FPJ7006 'Technical Review Request'
 Endeavour Energy Form FPJ4015 'Application for the Relocation / Removal of Electrical Network Assets'
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 Endeavour Energy 'Land Interest Guidelines for Network Connection Works, Provision of Network Connection Services'
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 Environment Protection Authority EPA 2013/0127 Noise Guide for Local Government
 SafeWork NSW 'Work Near Underground Assets – Guide 2007'
 WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006'

39 Appendices

39.1 Energy Networks Association (ENA) 'Electric & Magnetic Fields – What We Know'



2

WHAT ARE ELECTRIC FIELDS?

Electric fields are related to the voltage, or the pressure which pushes electricity along wires. The higher the voltage, the higher will be the electric field. Electric fields are present in any appliance plugged into a power point which is switched on. Even if the appliance itself is turned off, if the power point is on, an electric field will be present.

Electric fields are strongest closest to their source, and their strength diminishes rapidly as we move away from the source. The many common materials such as brickwork or metal will block electric fields. Walls, tables and bench tops can act as shields.

WHAT ARE MAGNETIC FIELDS?

Magnetic fields are produced by the flow of electricity, commonly known as current. Unlike electric fields, magnetic fields are only present when electric current is flowing. In other words, if an appliance is operating (even while in 'standby' mode), a magnetic field is produced.

The level of a magnetic field depends on the amount of the current (measured in amps), and decreases rapidly once we move away from the source. While electric fields are shielded by many common materials, this is not the case with magnetic fields. This is one reason why power lines may contribute to magnetic fields in the home and why burying power lines will not eliminate magnetic fields.

EMFS AND HEALTH

Research on EMFs and health has been conducted for over 40 years. This includes over 2,900 studies at a cost of more than \$490 million internationally.

The research has generally focused on the magnetic fields with two main areas of research, *epidemiology* and *laboratory* studies. Both areas would need to provide links between EMFs and adverse health effects for causality to be accepted by health authorities.

Epidemiology (population).

This research looks at statistics to see if there are patterns of disease in large groups of people. The difficult with large statistical studies is that they take several years to produce meaningful results and even then, there are different opinions about how the results should be interpreted.

There may be other factors in the study which could complicate the interpretation of the results. Scientists generally agree that epidemiological studies aren't strong enough by themselves to establish that adverse health effects exist.

Laboratory

In the laboratory researchers have studied animals cells, as well as human volunteers under controlled circumstances to see if EMFs have any effects.

There have been many hundreds of these studies, and scientists look for results which can be successfully repeated in different laboratories. In over 40 years of research there have been no such consistently reproducible results for exposures below the guidelines.

AUTHORITATIVE REVIEWS

It is well accepted by scientists that no one study considered in isolation will provide a meaningful answer to the question of whether or not EMF can contribute to adverse health effects. In order to make an informed conclusion from all of the research, it is necessary to consider the science in its totality.

All of the research is reviewed periodically by expert panels which are established by national or international bodies with the purpose of trying to determine whether or not human exposure to EMF is related to adverse health effects.



3

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Commonwealth Government agency charged with the responsibility for protecting the health and safety of people and the environment from EMF. ARPANSA advises that:

"The scientific evidence does not establish that exposure to ELF EMF found around the home, the office or near powerlines and other electrical sources is a hazard to human health."

"There is no established evidence that ELF EMF is associated with long term health effects. There is some epidemiological research indicating an association between prolonged exposure to higher than normal ELF magnetic fields (which can be associated with residential proximity to transmission lines or other electrical supply infrastructure, or by unusual domestic electrical wiring), and increased rates of childhood leukaemia."

However, the epidemiological evidence is weakened by various methodological problems such as potential selection bias and confounding. Furthermore this association is not supported by laboratory or animal studies and no credible theoretical mechanism has been proposed."

These findings are consistent with the views of other credible public health authorities. For example the World Health Organisation (WHO) advises that:

"Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."

Similarly, the US National Cancer Institute concludes that:

Currently, researchers conclude that there is little evidence that exposure to ELF-EMFs from power lines causes leukemia, brain tumors, or any other cancers in children."

"No mechanism by which ELF-EMFs could cause cancer has been identified. Unlike high-energy (ionizing) radiation, ELF-EMFs are low energy and non-ionizing and cannot damage DNA or cells directly."

"Studies of animals exposed to ELF-EMFs have not provided any indications that ELF-EMF exposure is associated with cancer, and no mechanism has been identified by which such fields could cause cancer."

EMF GUIDELINES FOR ESTABLISHED HEALTH EFFECTS

The two internationally recognised exposure guidelines are:

- » International Commission in Non-Ionizing Radiation Protection (ICNIRP) 2010; and
- » International Committee on Electromagnetic Safety, Institute of Electrical and Electronics Engineers (IEEE) 2002.

ARPANSA's advice is:

- » *"The ICNIRP ELF guidelines are consistent with ARPANSA's understanding of the scientific basis for the protection of the general public (including the foetus) and workers from exposure to ELF EMF."*
- » Under the ICNIRP guidelines of 2010 the recommended magnetic field public exposure limit is 200 microtesla.

Under the IEEE Standard of 2002 the recommended magnetic field public exposure limit is 904 microtesla.

FIGURE 1: TYPICAL MAGNETIC FIELD MEASUREMENT RANGES

Magnetic Field Source	Range of Measurements in μT^*
Electric stove	0.2 – 3
Refrigerator	0.2 – 0.5
Electric kettle	0.2 – 1
Toaster	0.2 – 1
Television	0.02 – 0.2
Personal computer	0.2 – 2
Electric blanket	0.5 – 3
Hair dryer	1 – 7
Pedestal fan	0.02 – 0.2
Substation	
» substation fence	0.1 – 0.8
Distribution line	
» under line	0.2 – 3
» 10m away	0.05 – 1
Transmission Line	
» under line	1 – 20
» edge of easement	0.2 – 5

* Note: Levels of magnetic fields may vary from the range of measurements shown. Appliance measurements at normal user distance.

Source: ARPANSA, Measuring magnetic fields

ENA | ELECTRIC AND MAGNETIC FIELDS – WHAT WE KNOW

GUIDE TO COMMON EMFS

It is possible to measure magnetic fields using a gaussmeter.

The fields are measured in a unit of microtesla (μT) or milligauss (mG). 1 Microtesla (μT) equals 10 milligauss (mG).

To give you an idea of the relative strengths of EMF, the following guide shows the typical magnetic fields close to appliances and under power lines.

Due to variations in the design of electrical appliances / powerlines and the power consumed or transmitted, the levels of magnetic fields will vary.

ENA'S RESPONSE?

Electricity utilities review scientific developments related to EMFs and are guided by relevant health authorities. In Australia, the Energy Networks Association (ENA) recommends that electricity utilities provide balanced and accurate information to the community and design and operate electrical power systems prudently within relevant health guidelines. This includes such actions as:

- » providing training to staff;
- » informing the community;
- » ensuring that fields are within established guidelines set by health authorities; and
- » practising "prudent avoidance" when building new electrical facilities.

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 Level 1, 110 Giles St, Kingston ACT 2604
www.ena.asn.au

Prudent avoidance involves reducing magnetic field exposure where this is practicable and can be done at no cost or very low cost.

The industry has followed this reasonable, common sense approach for many years.

INDIVIDUALS RESPONSE

There are some things you can do very easily to reduce exposure to EMF. Since EMFs drop off rapidly as you move away from their source, you can modify your use of electrical appliances such as clock radios. You can locate beds away from a wall that has a switchboard outside and you can switch off your electric blanket before you get into bed. These actions may reduce exposure to EMFs but it cannot be said that doing any of these things will have any health benefit.

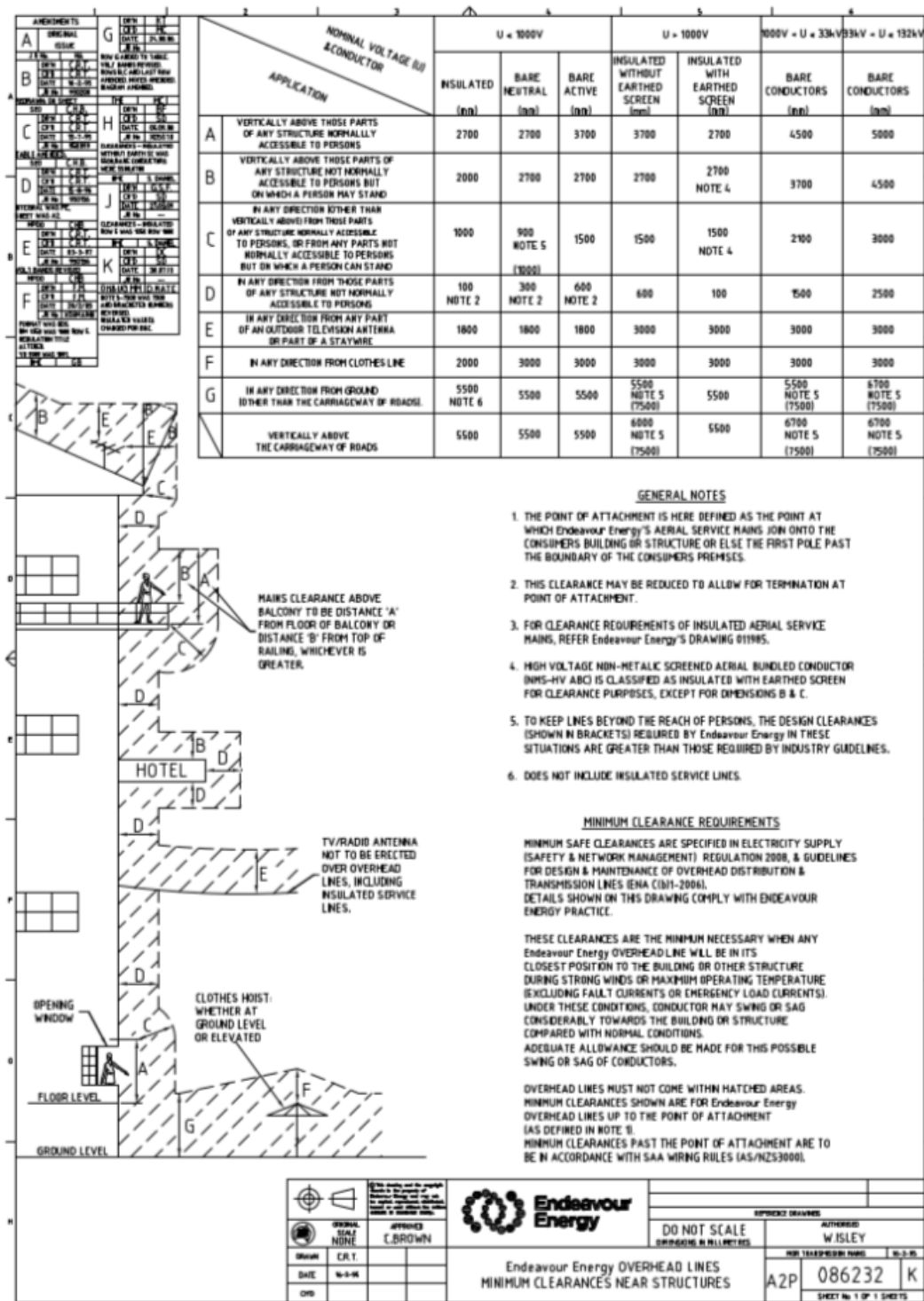
For further information about EMFs:

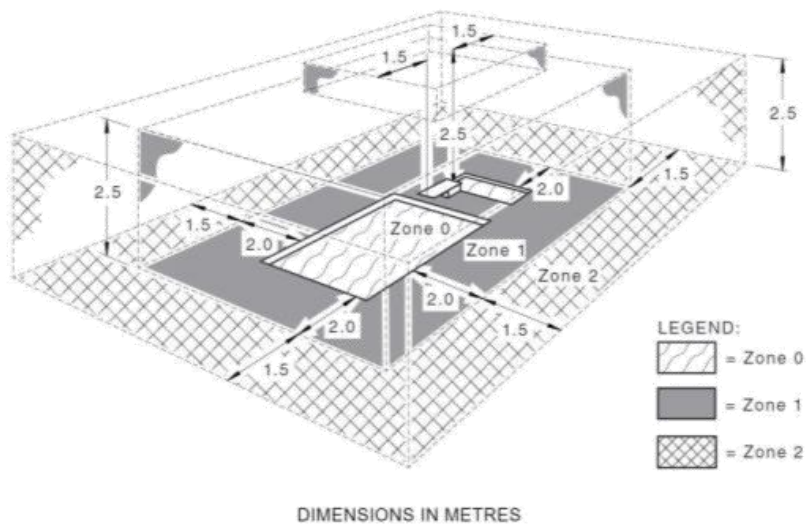
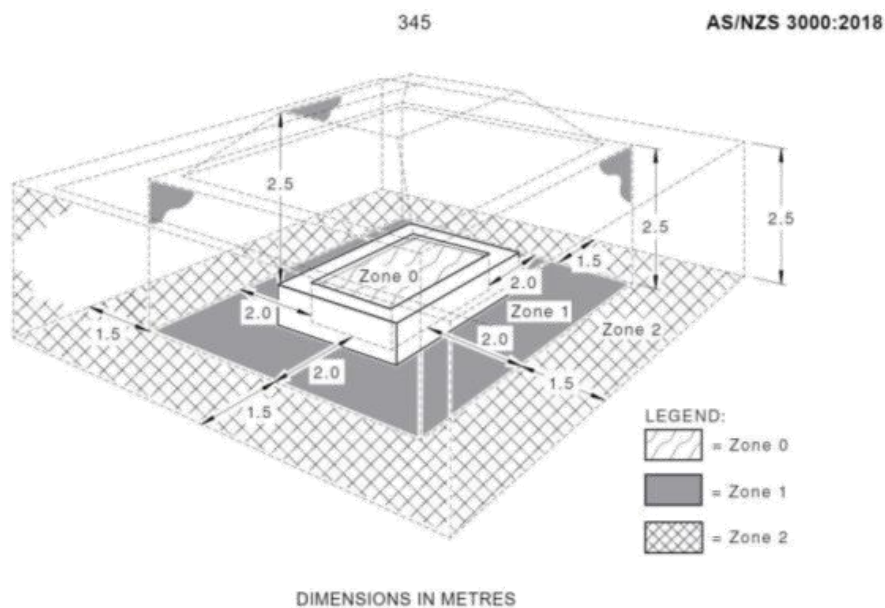
- » your local electricity utility or the Energy Networks Association (ENA) www.ena.asn.au;
- » the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) - www.arpansa.gov.au
- » the World Health Organisation (WHO) - www.who.int

UPDATED DEC 2015 PUBLISHED FEB 2016



39.2 Endeavour Energy Drawing 86232 'Overhead Lines Minimum Clearances Near Structures'



39.3 Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' Figures 6.15 & 6.16.**FIGURE 6.15 ZONE DIMENSIONS OF IN-GROUND SWIMMING POOLS****FIGURE 6.16 ZONE DIMENSIONS OF ABOVE-GROUND SWIMMING POOLS**

A classified zone is made up of 3 zones:

- Zone 0 being the area of the interior of the water container of the pool .
- Zone 1 being the area limited to zone 0, and a vertical plan 2 metres from zone 0.
- Zone 2 being the area limited by a vertical plane 1.5 metres external of Zone 1.

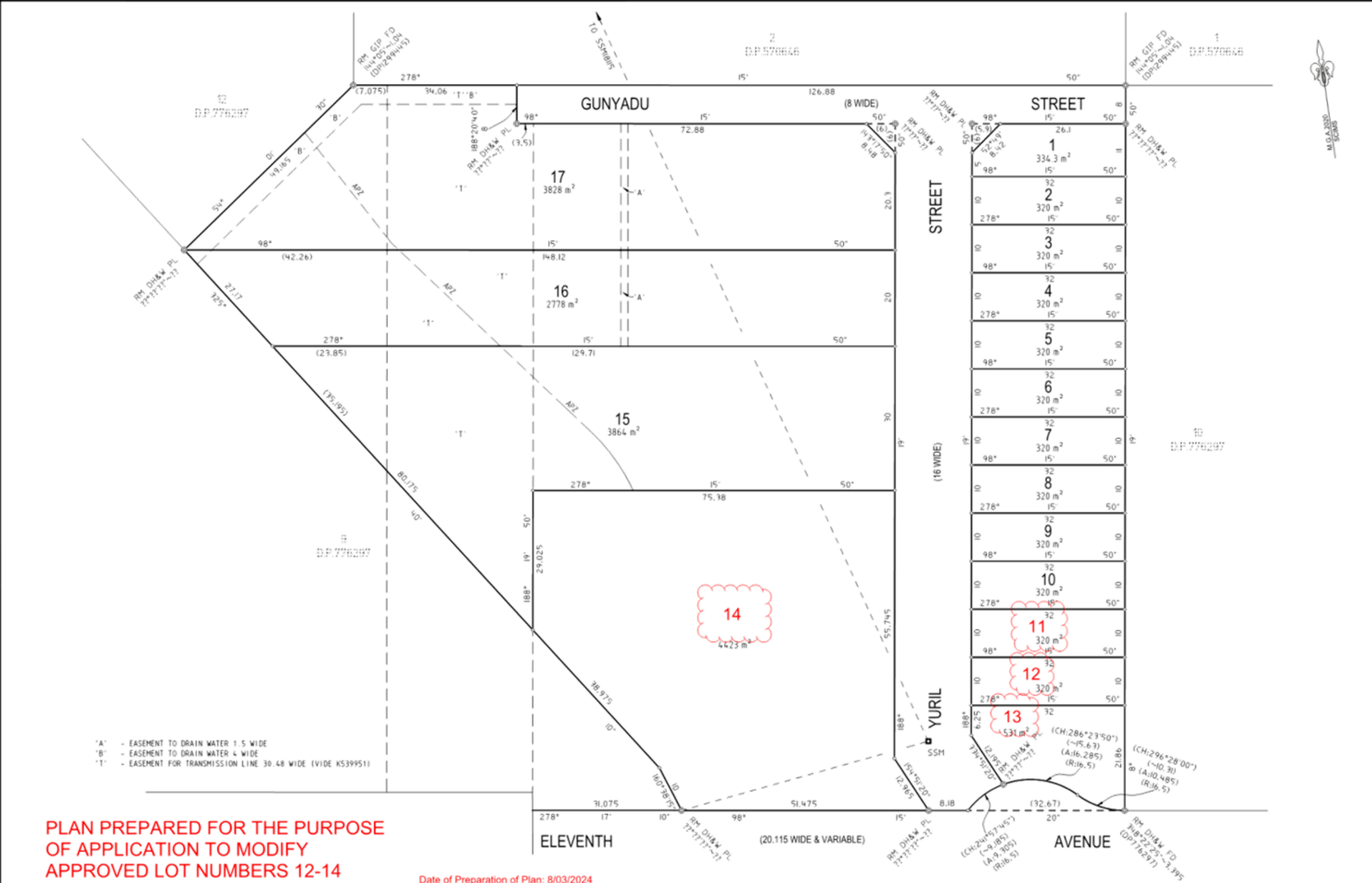
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PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SHEET 2 OF 2 SHEETS



PLAN PREPARED FOR THE PURPOSE
OF APPLICATION TO MODIFY
APPROVED LOT NUMBERS 12-14
INCLUSIVE AND 102-RE1 TO LOTS 11
TO 14 INCLUSIVE AS PER THE
CLOUDED AREAS ON THIS PLAN

Date of Preparation of Plan: 8/03/2024

SURVEYOR
[Redacted]

Date:
Reference: 638-23

PLAN OF
SUBDIVISION OF LOT 11 D.P.776297

LGA: LIVERPOOL
Locality: AUSTRAL
Reduction Ratio: 1: 500
Lengths are in metres

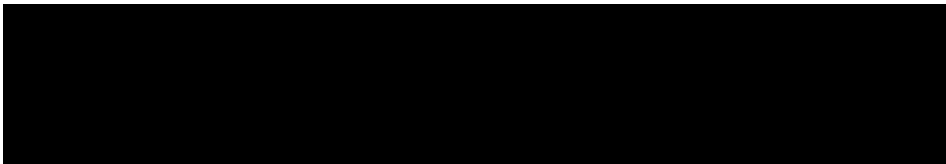
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**GeoEnviro Consultancy Pty Ltd**ABN 62 084 294 762
**Report**

**Remediation Action Plan (RAP)
Proposed Stormwater Works for
No 231-245 Eleventh Avenue
Lot 9 DP 776297 and Eleventh Avenue
Austral NSW**

Prepared for:


Ref: JE24472A-r2
August 2024

**GeoEnviro Consultancy Pty Ltd**

ABN 62 084 294 762

9th August 2024

Our Ref: JE24752A-r2

Attention: Mr Nicholas Geroulas

Re: Remediation Action Plan (RAP)
Proposed Stormwater Works for No 231-245 Eleventh Avenue, Austral
Lot 9 DP 776297 and Eleventh Avenue, Austral

We are pleased to submit our RAP report for the proposed stormwater works at the above address.

Yours faithfully


GeoEnviro Consultancy Pty Ltd

ABN 62 084 294 762

Document Control

Document Details	
Job No	JE24472A
Revision	r2
Title	Remediation Action Plan (RAP) Proposed Stormwater Works for No 231-245 Eleventh Avenue Lot 9 DP 776297 and Eleventh Avenue Austral NSW
Address	Lot 9 DP 776297 and Eleventh Avenue, Austral NSW
Client	Colliers International Engineering & Design (NSW) Pty Ltd

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Appendix A Extracts of Detailed Site Investigation Report
Appendix B Unexpected Finds Protocol
Appendix C Important Information about your Environmental Site Assessment

Executive Summary

This Remediation Action Plan (RAP) has been prepared for the property referred to as Lot 9 DP 776297 and Eleventh Avenue in Austral (the Subject Site) to provide appropriate remediation strategies for the identified contamination within the site.

We understand as part of the proposed subdivision of No 231-245 Eleventh Avenue, the proposed stormwater modifications will involve the removal of a temporary basin and construction of two new outlets (ie Outlet #1 and Outlet #2) that discharge to Kemps Creek through GPTs.

A Detailed Site Investigation Report (GeoEnviro Consultancy Pty Ltd, August 2024) was prepared for the site and concluded that the subject site has contamination issues associated with Asbestos.

This RAP has been prepared to detail the remediation strategies by which the contamination needs to be managed so that the site can be considered suitable for the proposed development.

The remediation strategy provided has been developed with respect to the preferred order of remedial options outlined in the NSW EPA guidelines. The preferred remediation option for the identified contamination is off-site disposal of the impacted soil and is considered to be the most appropriate and cost-effective remediation method in view of the type of contamination and the nature of the proposed development.

The Validation Plan and Site Management Plan outlined in this report must be implemented to ensure good environmental practices are adopted and corrective actions are performed in a timely manner.

A validation sampling program will also be undertaken following the remediation of the impacted soil. This will ensure that the concentrations of chemical contaminants remaining on the site are below the adopted remediation and validation acceptance criteria.

The RAP also provides a number of site management strategies to ensure the remediation works will not cause adverse human health or environmental effects or result in disruption or loss of amenity, particularly for neighbouring sites. In addition, the RAP includes an unexpected finds protocol to address additional contaminated material not identified previously.

By implementing this RAP, we consider the strategies outlined to be effective in remediating the identified contamination and ensuring the suitability of the site for the proposed development.

1. INTRODUCTION

This report presents a Remediation Action Plan (RAP) for the proposed Stormwater works located within the site identified as Lot 9 Deposited Plan (DP) 776297 and the Eleventh Avenue road reserve in Austral (The Subject Site) as shown in Drawing No 1.

We understand as part of the proposed subdivision of No 231-245 Eleventh Avenue, the proposed stormwater modifications will involve the removal of a temporary basin and construction of two new outlets (ie Outlet #1 and Outlet #2) that discharge to Kemps Creek through GPTs.

A Detailed Site Investigation Report (GeoEnviro Consultancy Pty Ltd, August 2024) was prepared for the site and concluded that the subject site has contamination issues associated with Asbestos.

The objective of this RAP is to provide a strategy to remediate the site to ensure suitability of the site for the intended land use. This RAP is based on information obtained from our previous investigation.

2. SCOPE OF WORK

The scope of work conducted for this RAP consisted of the following;

- Review of the Detailed Site Investigation Report undertaken for the site and identify the extent of contamination within the site.
- Establish remediation acceptance criteria that are appropriate for the proposed development.
- Provide a remediation strategy for the identified contamination to ensure the site is suitable for the proposed development.
- Outline the details of a validation sampling strategy which would be implemented to determine the effectiveness of remediation works and to confirm the suitability of the site for the proposed land use.

3. SITE INFORMATION

3.1 Site Location

The Subject Site encompasses the proposed stormwater works at the western end of Eleventh Avenue and on Lot 9 DP 776297 and are referred to as Outlet #1 and Outlet #2 respectively as shown on Drawing No 1. Total site area is expected to be less than 500m².

The site is situated on the western end of Eleventh Avenue and on Lot 9 DP 776297 immediately adjacent the existing creek and the proposed subdivision development of No 231-245 Eleventh Avenue as shown on Drawing No 1A.

The site is within the jurisdiction of Liverpool City Council.

3.2 Surrounding Land Use

The site is situated within a semi-rural area with the adjoining No 231-245 Eleventh Avenue to the north-east comprising of a residential dwelling and several sheds. An existing creek which acts as a tributary to Kemps Creek further north is situated immediately to the west.

3.3 Site Topography and Geological Setting

The site is situated on low lying to gently undulating terrain with ground surface within the site sloping to the west at angles of less than 3 degrees towards the creek. Based on Google Earth, the ground surface within the site ranges in elevation from about 61m to 62m above sea level and the creek is situated about 2 to 3m below the site level.

The 1:100,000 Soil Landscape of Penrith prepared by the Soil Conservation Services of NSW indicates the site to be underlain by Residual soil belonging to the Blacktown landscape group (ref. 9030bt). Blacktown Landscape Group Soils typically consists of low permeability, highly plastic and moderately reactive soil.

The 1:100,000 Geological Map of Penrith indicates the site to be underlain by Bringelly shale of the Wianamatta Group consisting of shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

3.4 Existing Site Conditions and Description

A site visit was carried out on the 6th June 2024 by an environmental scientist to observe existing site features and identify obvious or suspected areas of potential contamination.

Outlet #1 at the western end of Eleventh Avenue was part of the road reserve consisting of vacant land with thick grass cover. There was an existing stormwater swale which drained to the creek.

Outlet #2 which is situated adjacent the north-western corner of No 231-245 Eleventh Avenue and this area was vacant with grass cover and medium dense vegetation along the 2 to 3m high creek banks.

4. PREVIOUS CONTAMINATION STUDIES

A Detailed Site Investigation Report was prepared by GeoEnviro in August 2024. The objective of this study was to assess the contamination status of the Subject Site for the Proposed Stormwater Works (ie Outlet #1 and Outlet #2).

Based on aerial photographs, the Subject Site appeared to comprise of largely of vacant land up until about the mid 1980s where some earthworks occurred along the creek. Since then the site appeared to be mainly used as the road reserve and part of the creek banks.

A site visit was carried out on the 6th June 2024 by an environmental scientist to observe existing site features and identify obvious or suspected areas of potential contamination.

Outlet #1 at the western end of Eleventh Avenue was part of the road reserve although was vacant with thick grass cover. There was an existing stormwater swale which drained to the creek.

Outlet #2 which is situated adjacent the north-western corner of No 231-245 Eleventh Avenue was vacant with grass cover and medium dense vegetation along the banks of the creek.

Soil sampling was carried out on the 6th June 2024 and involved excavation at eleven locations (TP 1 to TP 11). Soil sampling was conducted at all 11 sampling points (i.e. test pits). The following is a summary of the subsurface profiles encountered;

- Topsoil/Fill was encountered on the surface of all test pits comprising of Clayey Silt of low liquid limit with varying amounts of gravel. Some minor foreign inclusions were encountered in TP 1, 2, 5 and 7 in the Outlet #1 area including brick fragments, terracotta tile pieces and bricks. A fibre cement fragment was encountered in TP 11 in Outlet #2 area.
- Natural soil was encountered below the topsoil/fill in all test pits generally consisting of medium plasticity Silty Clay. The natural clay was generally assessed to be moist (ie moisture content equal to the plastic limit).
- Bedrock was not encountered in the test pit investigation which was taken to a maximum depth of 0.8m below existing ground level.
- Groundwater was not encountered in any of the test pits during the investigation noting that the test pits were taken to a maximum depth of 0.8m. As the site is located immediately adjacent to a tributary, we expected perched groundwater to be present at shallow depth similar to the water level of the tributary. Permanent groundwater table is expected to be present a lower depth.

Soil sampling was conducted at all 11 sampling points (i.e., test pits) and a total of 21 soil samples were analysed for a range of COPC including heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), OCP, PCB, TRH, BTEX and asbestos.

The reported concentrations of COPC did not exceed the laboratory's LOR and/or assessment criteria. The material sample in TP 11 was found to contain Chrysotile Asbestos.

The absence of apparent widespread chemical contaminations within the soil indicates that the potential for groundwater contamination at the site is low and the potential off-site impacts of contaminants on groundwater and waterbodies are also negligible.

One Area of Environmental Concern (AEC I) being Outlet #2 area was found to be impacted by Asbestos.

5. REMEDIATION ACCEPTANCE CRITERIA

The remediation acceptance criteria for the remediation and validation program are criteria which details the required condition of the site media for the site to be considered suitable for the proposed development. The criteria outlined in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) – Schedule B1 (1999 amended 2013) (NEPC, 2013) which includes health-based soil investigation levels (HILs) have been adopted as the remediation criteria. Given the proposed development, the appropriate HIL for the site is HIL A - Residential with garden/accessible soil.

5.1 Health Investigation Levels (HILs)

Chemical	Health-based investigation levels (mg/kg) ¹
	Residential A
Arsenic ²	100
Cadmium	20
Chromium (VI)	100
Copper	6000
Lead ³	300
Mercury (inorganic)	40
Nickel	400
Zinc	7400
Carcinogenic PAHs (as BaP TEQ) ⁴	3
Total PAHs ⁵	300
Aldrin and dieldrin	6
chlordan	50
DDT+DDE+DDD	240
Endosulfan	270
Endrin	10
Heptachlor	6
Methoxychlor	300

Notes:

- HIL A – Residential
- Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability may be important and should be considered where appropriate (refer Schedule B7).
- Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.
- Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.
- Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998).

PAH species	TEF	PAH species	TEF
Benzo(a)anthracene	0.1	Benzo(g,h,i)perylene	0.01
Benzo(a)pyrene	1	Chrysene	0.01
Benzo(b+j)fluoranthene	0.1	Dibenz(a,h)anthracene	1
Benzo(k)fluoranthene	0.1	Indeno(1,2,3-c,d)pyrene	0.1

For TRH, BTEX and naphthalene, for direct contact, the HSL A Residential (Low Density) have been adopted from the CRC CARE.

Chemical	HSL A – Residential (Low Density) mg/kg
Toluene	14,000
Ethylbenzene	4,500
Xylenes	12,000
Naphthalene	1,400
Benzene	100
C6-C10 TRH	4,400
>C10-C16 TRH	3,300
>C16-C34 TRH	4,500
>C34-C40 TRH	6,300

5.2 Health Screening Levels (HSLs) – Inhalation/Vapour Intrusion

Health Screening Levels (HSLs) for hydrocarbons in soil have been adopted from Table 1A(3) of Schedule B1 Guideline on Investigation Levels for Soil and Groundwater of the ASC NEPM (2013).

Chemical	HSL A & HSL B (mg/kg)			
	Low – high density residential			
	0 m to <1 m	1 m to <2 m	2 m to <4m	4 m+
SAND				
Toluene	160	220	310	540
Ethylbenzene	55	NL	NL	NL
Xylenes	40	60	95	170
Naphthalene	3	NL	NL	NL
Benzene	0.5	0.5	0.5	0.5
F1	45	70	110	200
F2	110	240	440	NL
SILT				
Toluene	390	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	95	210	NL	NL
Naphthalene	4	NL	NL	NL
Benzene	0.6	0.7	1	2
F1	40	65	100	190
F2	230	NL	NL	NL
CLAY				
Toluene	480	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	110	310	NL	NL
Naphthalene	5	NL	NL	NL
Benzene	0.7	1	2	3
F1	50	90	150	290
F2	280	NL	NL	NL

Notes:

mg/kg Milligrams per kilogram

NL Not limiting as the soil vapour concentration could not exceed a level that would result in the maximum allowable vapour risk.

5.3 Health Screening Levels for Asbestos in Soil (HSLs – Asbestos)

The following HSLs for asbestos contamination in soil have been adopted from Table 7 of Schedule B1 Guideline on Investigation Levels for Soil and Groundwater of the ASC NEPM (2013).

Form of asbestos	HSL A – Residential A (w/w)
Bonded ACM ¹	0.01% w/w
FA ² and AF ² (friable asbestos)	0.001% w/w
All forms of asbestos	No visible asbestos for surface soil

Notes:

1. ACM – Asbestos containing material
2. FA – Fibrous asbestos; AF – Asbestos fines

5.4 Ecological Investigation Levels (EILs)

Chemical	EIL for Urban residential and public open space (mg/kg)
Arsenic	100
Chromium (III)	260
Copper	220
Lead	1100
Nickel	250
Zinc	710

5.5 Ecological Screening Levels (ESLs)

For ecological levels for TRH, BTEX and PAH, the NEPM has provided ecological screening level (ESL) for the assessment.

Chemical	Soil texture	ESLs (mg/kg dry soil)
		Urban residential and public open space
F1 >C6-C10	Coarse/ Fine	180
F2 >C10-C16		120
F3 >C16-C34	Coarse	300
	Fine	1300
F4 >C34-C40	Coarse	2800
	Fine	5600
Benzene	Coarse	50
	Fine	65
Toluene	Coarse	85
	Fine	105
Ethylbenzene	Coarse	70
	Fine	125
Xylenes	Coarse	105
	Fine	45
Benzo(a)pyrene	Coarse	0.7
	Fine	0.7

5.6 Aesthetics

In addition to the above, the NEPM 2013 guidelines address the issue of aesthetic considerations in relation to non-hazardous inert foreign material (refuse) in soil or fill resulting from human activities. The guidelines permit the presence of foreign matter within the fill to be retained within the site subject to compliant of the fill material to the Site Criteria and aesthetically acceptable (eg malodorous soils, discoloured chemical deposits, stained soil, large monolithic deposits/large inert foreign matter, putrescible refuse and animal remains). Though the guidelines do not outline specific trigger values, we consider fill containing greater than 2% by weight of foreign matter to be aesthetically unacceptable.

In addition to the above criteria, considerations should be given to odour (eg hydrocarbon and solvents) where adoption of lower threshold criteria may be required if it causes significant nuisance.

6. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources and exposure pathways between those sources and receptors. The model provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or the future and it enables an assessment of the potential pathways.

6.1 Areas of Uncertainty & Data Gap

During our site investigation, the existing creek banks were inaccessible due to thick vegetation. It was not considered practical/permisable to investigate these at the time. The existing creek bank may be further investigated if required during stormwater works to further assess the contamination status of the proposed outlet areas.

6.2 Identified Contamination

Based on the findings of the previous investigations, the potential contamination on-site is as defined in Table A below;

Table A: Areas of Environmental Concern

Potential Source	Description	Contaminant/Issues
AEC I	Outlet #2 Area	Asbestos (ie TP 11)

6.3 Exposure Pathways

Taking into consideration the existing land use and the future site development activities, the contaminants identified above have the potential to be mobilised through dermal, inhalation and ingestion particularly to workers on site and adjacent land users during construction.

6.4 Potential for Migration

Contaminants can migrate from site through wind, stormwater runoffs, infiltration of surface water and groundwater flows. The factors influencing the potential for contaminants to migrate include;

- Type of contaminants (eg mobility characteristics, bioability).
- Extent (eg localised or widespread) and concentrations of contaminants.
- Locality and source of contaminants
- Physical characteristics of the site (eg topography, geology, hydrology and hydrogeology).

The potential contaminants identified on this site are present in soil (eg impacted soil or fill and asbestos). There are no known liquid forms of contaminants on this site.

There is a potential for stormwater runoff infiltrating through the contaminated fill and leaching contaminants into the underlying natural soil.

There is no potential for vapours or ground gases associated with volatile contaminants generated from the site and impacting on adjoining sites.

6.5 Sensitive Receptors

Based on the results of the previous contamination assessment, the receptors of environmental impacts on the subject site include mainly construction and maintenance workers during construction site redevelopment, and land users in adjacent areas.

7. REMEDIATION ACTION PLAN

The following sections describe the components essential for the remediation of the site. Appropriate modification of these components may be required depending upon actual site conditions encountered during the remediation process and other factors involving the logistics of the work to be carried out.

7.1 Remediation Objectives

Based on our previous reports, we have identified one area of environmental concern (AEC I) impacted Asbestos (ie TP 11) as shown on Drawing No 1A that needs to be remediated in order to ensure suitability of the site for the intended land use.

The remediation objectives is to clean up the areas of environmental concern as described above to the appropriate remediation acceptance criteria outlined in Section 5 to ensure the site is suitable for the proposed development. The areas of uncertainty and data gap identified in Section 6.1 should also be further investigated to determine if remediation and/or validation is necessary to ensure these areas are also suitable for the proposed development.

7.2 Remedial Options Assessment

The development of the site-specific remediation strategy initially involves comparing potential remediation options used to mitigate, remove and/or manage any exposure from contamination at the site.

The NEPM 2013 guidelines outline the preferred hierarchy of options for site clean-up and/or management as follows;

- | | |
|----------|--|
| Option 1 | On-site remediation of the contaminated material for re-use within the site. |
| Option 2 | Off-site treatment of the contaminated material and returned for re-use at the site. |
| Option 3 | On-site encapsulation and containment with suitable capping layer. |
| Option 4 | Excavation and disposal of material off-site to an approved landfill. |

The preferred remediation strategy was determined based on the following considerations;

- Human health issues; dust suppression should be implemented during remediation works – particularly for asbestos.
- Ecological terrestrial ecosystems; appropriate consideration should be given to sensitive ecological communities when determining ecological investigation levels and screening levels.
- Reliability; only experienced contractors should be engaged to remediate contaminated materials at the site.
- Site remediation supervision and validation; all methods, whether treatment or disposal will require validation by experienced consultant prior to being considered suitable. This may include assessment by a suitably experienced occupational hygienist. We recommend full time supervision during bulk excavation of un-suitable materials to ensure appropriate waste segregation – mitigating waste bulking – likely reducing the volume disposed and subsequent landfill tipping fees.
- Lawful disposal – receipts for waste disposal must be retained by the waste contractor for inclusion in the validation report. The consultant should perform spot checks on trucks to ensure they are tipping at licensed facilities only.
- Regulatory Approvals; Category 1 remediation work should be notified to Council under the SEPP (Resilience and Hazards) 2021 planning instrument. Category 2 remediation generally does not require development consent
- Long term management; the risk of harm is eliminated following the successful treatment/ remediation or off-site disposal.
- Cost & Time; it is likely that the remediation activities will be required to happen swiftly to prevent further delay. Therefore, a cost/ time benefit analysis should be conducted to determine the most suitable method following excavation and realisation of the quantity.
- Proficient identification and management of unexpected finds; should any material be identified that differs from the descriptions provided in earlier environmental reports be observed during the works, the council must be notified and a suitably experienced environmental consultant should be engaged to direct the on-going works to ensure all risks are mitigated.

7.3 Remediation Strategy and Process

The following preferred remediation strategy and process being on-site treatment (Option 1) and off-site disposal (Option 4) has been adopted based on the considerations outlined in the above Section 7.2 and on the proposed development being the most sensitive land use.

Option 2 (Off-Site Treatment and Re-Use) is considered not to be an economically viable option. Option 3 (Encapsulation) are not considered feasible options due to the nature of the proposed development whereby the site will be subdivided into residential lots with multiple individual stakeholders making environmental management of this option difficult.

The remediation strategy for AEC I is as follows;

- Excavation and disposal of all topsoil/fill impacted by asbestos (ie TP 11). All fill material impacted by anthropogenic materials (>2%) should also be excavated and disposed off-site. The material to be disposed off-site should be classified in accordance to NSW EPA 2013 guidelines "Part 1 – Classifying Waste" and to be disposed off-site to a landfill as per Section 12.
- Removal of all surface rubbish and inspection of surface for further asbestos or potential ACM. All excavated fill should be noted for buried rubbish inclusion including bonded asbestos. All fibre-cemented material encountered on site should be treated as potential ACM.
- Further sampling in a grid pattern based on the minimum sampling guidelines and analysis of the AEC area may be carried out to further delineate any asbestos impacted material encountered. Should asbestos be detected, the asbestos impacted area should be isolated and stockpiled for disposal off-site.
- Those areas found to be clean and free of asbestos should be excavated and placed in a designated area and should be subject to a final visual assessment and possible improvement prior to being deemed suitable to be retained on site to ensure the material is suitable for geotechnical use during earthworks.
- Any material found to have marginal building debris and foreign material (compliant to NEPM 2013) should be retained on site in areas not exposed by anthropogenic activities.

- Validation sampling and laboratory testing should be carried out on the natural surface at the base and sides of the excavation to ensure the underlying soil is clean and contaminants of concern are not exceeding the criteria. Validation needs to be undertaken as per Section 8.2.
- In the event where the validation samples are found to have contamination, further excavation and removal of the affected soil should be carried out and additional validation sampling should be carried out to confirm complete removal of the contaminated soil.

8. VALIDATION PLAN

8.1 Validation Data Quality Objective and Indicators

The sampling analytical and quality plan for site remediation validation should be developed in order to ensure that the data collected is representative for the site validation assessment decisions. The plan should be completed in general accordance with the NSW EPA guidelines and includes;

- Data quality objectives
- Sampling methodologies and procedures
- Field screening methods
- Sample handling, preservation and storage procedures
- Analytical QA/QC

8.1.1 Data Quality Objectives

The purpose of establishing Data Quality Objectives (DQO) is to ensure that the field sampling and subsequent analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment.

The process for establishing DQOs has been defined by the US EPA. That process has been adopted within the Australian Standard: AS 4482.1-2005 and referenced by the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC, 2013) and the *Guidelines for the NSW Site Auditor Scheme, 3rd edition* (NSW EPA, 2017).

The DQO process, involves the following seven steps:

Step 1 State the problem;

The previous Detailed Site Investigation undertaken has identified contamination present at the site that poses an unacceptable health and/or environmental risk.

Site remediation is required to clean up the site to the appropriate acceptance criteria to deem the site suitable for the proposed land use.

Step 2 Identify the decision;

Remediation is required for the identified contamination within the site. To assess the suitability of the site for future residential use, decisions are to be made based on the following questions

- Is contamination present in soil at concentrations above the applicable approved guidelines?
- Where contamination has occurred, does it have the potential to adversely impact on human health and/or environmental receptors?
- Does the site appear suitable (from a contamination perspective) for the current and future proposed land use?

Step 3 Identify inputs to the decision;

Data to be inputted to the decision-making process will include:

- Information gained from a review of existing information;
- Visual observation and soil sampling at nominated locations (where access is available) across the site.
- Laboratory analytical results for relevant to the area of environmental concerns.
- Appropriate screening-level criteria (investigation thresholds) for soil.
- Quantitative data gained via intrusive sampling and analytical works
- Assessment of the suitability of the data obtained from sampling and analysis as measured against data quality indicators (DQIs).
- Assessment of analytical results against site suitable human health criteria.

Step 4 Define the study boundaries;

The lateral boundary of the study area is the western end of Eleventh Avenue and on Lot 9 DP 776297 and are referred to as Outlet #1 and Outlet #2 respectively as shown on Drawing No 1A.

Step 5 Develop a decision rule;

Project analytical data will be compared to appropriate NSW EPA prepared or endorsed guidelines for residential land use. If the concentration of contaminants in the soils exceeds the adopted remediation acceptance criteria outlined in Section 5; an assessment of the need to further investigate, remediate and or manage the onsite impacts in relation to the proposed development will be undertaken.

Step 6 Specify limits on decision errors; and

Guidance found in ASC NEPM (1999 amended 2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.

Step 7 Optimise the design for obtaining data.

The sampling program was designed with reference to the existing contamination assessment completed for the site and the identified contamination (ie AEC I to III). The sampling program was designed to target these areas of the site where contamination has been identified.

8.1.2 Data Quality Indicators

To minimise the potential for decision errors, Data Quality Indicators (DQIs) should be determined, for completeness, comparability, representativeness, precision and accuracy as detailed below;

The DQIs for sampling techniques and laboratory analysis of collected samples defines the acceptable level of error required for this investigation.

The data quality objectives should be assessed by reference to data quality indicators as follows:

- **Completeness** - defined as the percentage of measurements made which are judged to be valid measurements. To ensure data set completeness, the following is required:
 - Confirmation that all sampling methodology be completed in general accordance with GeoEnviro sampling quality assurance plan.
 - Chain of Custody and receipt forms.
 - Results from all Laboratory QA/QC samples (Lab blanks, matrix spikes, lab duplicates).
 - NATA accreditation stamp on all laboratory reports
- **Comparability** - is the confidence that data may be considered to be equivalent for each sampling and analytical event. It provides 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 in techniques used to collect samples and ensuring analysing laboratories use consistent analysis techniques and reporting methods.

Data comparability is maintained by ensuring that:

- All site sampling events are undertaken following methodologies outlined in GeoEnviro Sampling Quality Assurance Plan and published guidelines.
- NATA accredited laboratory methodologies shall be followed on all laboratory testing.
- **Representativeness** - expresses the degree which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness should be achieved by collecting samples in an appropriate pattern across the site, and by using an adequate number of sample locations to characterise the site. Consistent and repeatable sampling techniques and methods should be utilised throughout the sampling.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the data is assessed by calculating the Relative Percent Difference (RPD) between duplicate sample pairs.

$$RPD(\%) = [|C_0 - C_d| / C_0 + C_d] \times 200$$

Where C_0 = Analyte concentration of the original sample
 C_d = Analyte concentration of the duplicate sample

GeoEnviro adopts nominal acceptance criteria of 50% RPD for field duplicates and splits for inorganics and nominal acceptance criteria of 50% RPD for field duplicates and splits for organics, however it is noted that this will not always be achieved, particularly in heterogeneous soil or fill materials, or at low analyte concentrations

- **Accuracy** - measures the bias in a measurement system or a quantitative measure of the closeness of reported data to the true value. Accuracy can be undermined by such factors as field contamination of samples, poor preservation of samples, poor sample preparation techniques and poor selection of analysis techniques by the analysing laboratory. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes, laboratory blanks and analyses against reference standards. The nominal "acceptance limits" on laboratory control samples are defined as follows:

- Laboratory spikes – 70-130% for metals / inorganics 60-140% for organics.
- Laboratory duplicates – <30% for metals / inorganics, <50% for organics.
- Laboratory blanks – <practical quantitation limit.

Accuracy of field works should be assessed by examining the level of contamination detected in field and equipment blanks. Blanks should return concentrations of all organic analytes as being less than the practical quantitation limit of the testing laboratory.

8.2 Validation Sampling and Analysis Plan

8.2.1 Remediated Areas

Final validation of remediated areas including exposed natural ground from AEC areas should entail a 'Three-pronged' approach involving visual inspection, soil sampling/analysis and air monitoring as follows;

Visual

- Visual inspection for signs of anthropogenic material including ACM and building demolition rubbish/waste and this should be undertaken by an Occupational Hygienist or Licensed Asbestos Assessor. An Asbestos Clearance Certificate should be issued.
- The remediated area should also be inspected for discolouration, staining or odours by walking over the area in a grid pattern and this should be undertaken by an experienced Environmental Consultant.

Sampling

- The results of the visual inspection will be confirmed through soil sampling and analysis.
- Validation sampling and laboratory analysis for the appropriate contaminants of potential concern (COPCs) identified within the AEC in Section 6.1 (ie Asbestos) should be undertaken with sampling at a rate of 1 per 25m² for the base of the excavation and 1 per 10 lineal metres of each of the excavation walls up to 1m deep.

- For large excavations, validation sampling using systematic grid sampling may be undertaken based on the NSW EPA Sampling Design Guidelines 2022 as follows;

Validation Area Size (m ²)	Number of Validation Samples
500	8
1,000	8
2,000	8
3,000	9
4,000	11
5,000	13
6,000	15
7,000	17
8,000	19
9,000	20
10,000	21

- The validation laboratory test results should be compared with the appropriate Acceptance Criteria.
- Should contamination be encountered during validation of the excavated areas, further remediation works must be carried out.
- Validation sampling will be undertaken in accordance to GeoEnviro's quality assurance and control plan as provided in Appendix C and briefly mentioned in Section 8.2.4 which will include intra-laboratory, inter-laboratory, trip blank and rinsate samples.

Air Monitoring

- Although the previous contamination studies did not identify any friable asbestos (ie AF/FA), air monitoring should still be carried out as precaution.
- The results of airborne asbestos fibre from the air monitoring by an Occupation Hygienist or Licensed Asbestos Assessor should be incorporated into the validation report.
- The airborne asbestos fibre level of 0.1 fibre/ml is adopted as the criteria and frequency to be determined by the Occupation Hygienist or Licensed Asbestos Assessor.

8.2.2 Validation Areas and Areas of Uncertainty

Final validation of any building areas and areas of uncertainty should entail a 'Three-pronged' approach involving visual inspection, soil sampling/analysis and air monitoring as follows;

Visual

- Visual inspection for signs of anthropogenic material including ACM and building demolition rubbish/waste and this should be undertaken by an Occupational Hygienist or Licensed Asbestos Assessor. An Asbestos Clearance Certificate should be issued.
- The remediated area should also be inspected for discolouration, staining or odours by walking over the area in a grid pattern and this should be undertaken by an experienced Environmental Consultant.

Sampling

- The results of the visual inspection will be confirmed through soil sampling and analysis.
- Validation sampling and laboratory analysis for contaminants of potential concern (COPCs) including Heavy Metals, OCP, PCB, TRH, BTEX, PAH and Asbestos should be undertaken with sampling density based on the NSW EPA Sampling Design Guidelines as follows;

Validation Area Size (m ²)	Number of Validation Samples
500	8
1,000	8
2,000	8
3,000	9
4,000	11
5,000	13
6,000	15
7,000	17
8,000	19
9,000	20
10,000	21

*Reference should be made to NSW EPA Sampling Design Guidelines 2022 for areas greater than 10,000m².

- The validation laboratory test results should be compared with the appropriate Acceptance Criteria as outlined in Section 8.2.3 of this RAP.

- Should the above validation areas be found to contain minimal fill and/or visual inspection determines there to be a low risk of contamination, a reduced number of validation samples may be considered.
- The validation laboratory test results should be compared with the appropriate Acceptance Criteria as outlined in Section 8.2.3 of this RAP.
- Validation sampling will be undertaken in accordance to GeoEnviro's quality assurance and control plan as provided in Appendix C and briefly mentioned in Section 8.1 which will include intra-laboratory, inter-laboratory, trip blank and rinsate samples.
- The results of the validation sampling of validation areas and areas of uncertainty/data gap should be included in the final remediation and validation report as per Section 8.3.
- Should buried asbestos contamination be encountered during validation of the above areas, further remediation works should be carried out as per Section 7.3 (ie disposal off site).
- For asbestos encountered on the ground surface (ie upper 100mm) as unexpected finds or after demolition/clearing may be remediated on-site as follows;
 - Fill containing fragments of building debris and asbestos may be treated based on the NEPM 2013 procedure by an asbestos licenced contractor with experience in asbestos identification and this includes;
 - Manually picking (ie Emu bob) of asbestos fragments where encountered on the surface and all asbestos material are to be disposed off-site.
 - Hand picking should be carried out using a rake with teeth <7mm spaced apart and >10cm long with at least 2 passes of picking and raking made with 90° direction change between each pass and in a grid pattern.
 - Tilling of the area up to a depth of 100mm for further identification of hazardous material including asbestos fragments and if encountered, should be treated accordingly. Tilling should be undertaken with at least 2 passes with a 90° direction change between passes and in a grid pattern. This process should be repeated about 3 times.

- The area should be sampled and assessed for presence of asbestos in accordance to the NEPM 2013 procedure (Reference 4) and minimum sampling guidelines. The NEPM provides a guideline on health screening levels for asbestos in soil which may be classified in three types of asbestos; Bonded asbestos-containing-material (ACM), Fibrous asbestos (FA) and Asbestos fines (AF).
- Analysis should include a 10L sample for ACM and FA screened through a <7mm sieve, and 500mL sample for AF.
- The area should also be checked for other contaminants of potential concern (COPC) such as heavy metals, pesticides and hydrocarbons, and if the contamination levels exceed the Site Criteria or if the stockpiles are aesthetically not acceptable, the fill should be disposed off-site as per Section 12.
- Any material found to have marginal building debris and foreign material may be retained on site in areas not exposed by anthropogenic activities. Validation sampling should be undertaken prior to placement of the above material which included analysis of all contaminants of concern to ensure no contamination is present.
- Should the underlying material encounter asbestos impacted fill or other contaminants of concern, further assessment will be required to assess the extent of impacted material and remediation works will be required as outlined in Section 7.

Air Monitoring

- The results of airborne asbestos fibre from the air monitoring by an Occupation Hygienist or Licensed Asbestos Assessor should be incorporated into the validation report.
- The airborne asbestos fibre level of 0.1 fibre/ml is adopted as the criteria and frequency to be determined by the Occupation Hygienist or Licensed Asbestos Assessor.

8.2.3 Validation Acceptance Criteria

The validation acceptance criteria for the remediation and validation program are criteria which details the required condition of the site media for the site to be considered suitable for the proposed development. The criteria outlined in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) – Schedule B1 (1999 amended 2013) which includes health-based soil investigation levels (HILs) has been adopted as the validation acceptance criteria. Given the proposed development, the appropriate HIL for the site is HIL A - Residential with garden/accessible soil. These criteria are outlined in the above Section 5.

8.2.4 Quality Assurance Plan

Appropriate quality assurance/quality control (QA/QC) procedures must be maintained during the course of validation sampling. The samples must be analysed at a National Associate of Testing Authority (NATA) accredited laboratory. The QA/QC procedures and results adopted must be included in the final validation report.

The following Data Quality Indicators and requirements are necessary for the assessment;

DQO	Requirement	DQI
Precision		
Standard operating procedures appropriate and complied with	The sampling methods comply with industry standards and guidelines	Meet requirement
Intra-laboratory duplicates	1 per 20 samples (5%)	RPDs < 50%
Inter-laboratory duplicates	1 per 20 samples (5%)	RPDs < 50%
Laboratory duplicates	Minimum of 1 per batch per analyte	RPDs < 50%
Accuracy		
Laboratory matrix spikes	1 per batch per volatile/semi-volatile analyte	Recoveries 50% to 150%
Laboratory surrogate spikes	1 per volatile/semi-volatile analyte sample (as appropriate)	Recoveries 70% to 130%
Laboratory control samples	At least 1 per batch per analyte tested for	Result < limit of reporting (LOR)
Representativeness		
Sampling methodology - preservation	Appropriate for the sample type and analytes	Meet requirement
Samples extracted and analysed within holding times	Specific to each analyte	Meet requirement
Field equipment calibration	All field equipment calibrated and calibration records provided.	Meet requirement
Laboratory method blanks	At least 1 per batch per analyte tested for	Result < LOR
Trip blanks	1 per lab batch for volatile analytes	Result < LOR
Rinsate	1 per lab batch for volatile analytes	Result < LOR

8.3 Final Validation Report

The validation plan should be prepared by an experienced consultant in general accordance with the *NSW EPA 2020 Consultants reporting on contaminated land*. The report should comprehensively address:

- Historical investigations undertaken at the site
- Detail the remediation works undertaken at the site
- Present field and laboratory information satisfying the objectives of the RAP
- Demonstrate that the remediation outcomes have been achieved
- Include all waste tracking and disposal information, both for all exported wastes and all imported products.
- Detail any unexpected finds or pollution incidents which may have occurred during the works.
- Outline any variance from the remedial strategy and discuss how this was appropriately implemented.
- Outline any long-term environmental management or monitoring requirements for the site
- Include any other information relevant to the contamination status of the site
- Provide a statement regarding the future suitability of land for its intended use from a contamination perspective

9. SITE MANAGEMENT PLAN

It is the responsibility of the Contractor to develop a Site Management Plan (SMP) detailing overall site management, environmental management (including soil, air and water) and work health and safety (WHS) plans. This section provides a brief summary of some of the items which need to be included in the Contractor's plans.

9.1 All Other Areas

The following procedure should be adopted during earthworks construction to ensure suitability of the remainder of the site;

- Stripping of all surface vegetation/grass and topsoil to expose natural clay. The stripped grass/organic material should be visually inspected for rubbish and fibre cement/asbestos fragments. Should asbestos exist within the stripped grass/organic layer, this material should be disposed as Asbestos Waste
- Inspection of stripped surfaces for contamination such as odorous or stained soils, fibre cement/asbestos fragments and foreign building debris, and if encountered, all works should cease and the Unexpected Finds Protocol (Appendix B) and procedure as outlined in Section 9.9 should be initiated.
- All asbestos and rubbish impacted soil where encountered should be remediated in accordance with the procedure outlined in above Section 7.3.
- Validation sampling and laboratory testing should be carried out on the excavated surface to ensure the underlying soil is clean of contaminants of concern (ie Heavy metals, pesticides and hydrocarbons) not exceeding the criteria. Validation sampling for COPCs may be based on the sampling density for ENM as tabulated above.

In addition to the above, the following issues relating to site contamination which need to be addressed prior to development of the site are as follows;

- Topsoil/fill with traces of anthropogenic materials (ie brick fragments, terracotta tile pieces and bricks) was encountered in Outlet #1 area in TP 1, 2, 5 and 7. Further assessment of the insitu fill may be carried during construction works to ensure no significant anthropogenic materials or asbestos is present. Should asbestos be encountered, the asbestos impacted material should be classified and disposed off-site as "Special Waste – Asbestos Waste". Following excavation, this area should be validated to ensure this asbestos impacted material is removed.
- Validation sampling and laboratory analysis should be carried out on all structures, buildings, sheds, storage areas and driveways after removal to ensure these areas are not affected by contamination. Should contamination be present, remediation and validation will be required to ensure the site is made suitable for the proposed subdivision development.
- All site remediation and validation works should be carried out under the supervision of an environmental consultant and this should include soil sampling and validation sampling to ensure these areas are adequately remediated.
- All other surface rubbish material not mentioned above and asbestos material where encountered on-site should be appropriately disposed off-site to an EPA approved landfill as per Section 12.
- Rubbish fill containing bonded asbestos may still be present elsewhere within the site in between test pit locations and should bonded asbestos be encountered during construction works, all works should cease and an "Unexpected Finds Protocol" as outlined in Appendix B should be initiated. Should asbestos be encountered, the asbestos impacted fill should be disposed to a landfill. Rubbish fill containing bonded asbestos should be removed and disposal to a landfill as "Special Waste – Asbestos".
- All fill material requiring off-site disposal should be laboratory tested and characterised in accordance with NSW EPA guidelines.

9.2 Site Operations

The schedule of remedial works, including timing and staging is to be prepared by the Contractor to meet the requirement of this RAP.

Remediation works will be restricted to the hours set out by Council. The site should be restricted from public access unless there is an interim management plan until such time remediation works occur.

It is the site owner/developers responsibilities to ensure that appropriate personnel are appointed to manage and conduct the remediation and validation works. This will include;

- The Principal's representative who is responsible for overseeing the implementation of this RAP
- The asbestos licensed Contractor, who is responsible for overseeing the implementation of this RAP, conducting the remediation works and managing the site and
- An environmental consultant who will be responsible for providing advice as required for the remedial works and undertaking the validation works in accordance with this RAP.

Other parties who may be employed to assist in the implementation of this RAP include but not limited to Occupational Hygienist and Asbestos Licensed Contractor.

The Contractor will be responsible for preparing a list of contacts for the works, including emergency contacts for the site operations and provision of signage at the site to allow the public to contact nominated site personnel out of hours.

9.3 Environmental Management Plan

An EMP should be prepared for implementation during site works. If asbestos has been identified on site and is considered the primary chemical of concern; the EMP must include the following measures (but are not limited to):

- Measures to control noise emissions
- Measures to suppress odours and dust emissions
- Measures to monitor and control airborne asbestos. The following guidelines should be adhered to;
 - NSW Code of Practice, How to Safely Remove Asbestos (November 2019)
 - Safe Work Australia How to manage and control asbestos in the workplace (August 2020)
 - Safe Work Australia (2016) How to manage and control asbestos in workplace.
 - WA DoH (2021) Guidelines for the assessment remediation and management of asbestos contaminated sites in Western Australia
- Selection of traffic routes to minimise residential noise intrusions
- Setting up of work zones, remediation treatment areas, exclusion zones and decontamination areas.
- Soil and sediment controls to prevent erosion/ run-off
- Measures to identify hazardous and industrial wastes and procedures for removal including asbestos
- Community consultation

Further:

- The development shall not result in increased sediment deposition to water bodies, wetlands, bushlands or environmentally significant lands.
- All disturbed areas shall be progressively stabilised and re-vegetated so no area remains exposed for extended periods.
- Sediment and erosion measures should be maintained until establishment of ground cover
- Vehicular access shall be controlled through installation of wash bays or shaker ramps to prevent tracking of sediment or dirt onto adjoining roadways. Wet washing of roadways to remove sediment is not permitted – another means must be implemented.
- All topsoil, aggregate, sand or spoil shall be stored clear of drainage lines, easements, water bodies, stormwater drains, footpaths, kerbs, roads and there shall be measures in place with the approved sediment and erosion control plan.
- The remediation works shall comply with the *NSW EPA Interim Construction Noise Guideline* for the control of noise from construction sites. No works shall occur outside the allowed hours as specified. It is preferable all noisy activities are focused in the mid-morning or mid-afternoon when most neighbours may not be at home.
- Any litter and refuse on-site should be immediately collected and placed in bins with plastic liners for disposal offsite in the general waste bins. Any outdoor bins should have secured lids to prevent birdlife picking items and dispersing rubbish across site.
- Good civil work practises and overall housekeeping should be maintained on-site, potential run-off from excavations and stockpiles should be appropriately protected using control measures such as hay bales and silt fencing.
- The project design and environmental protection measures should also consider the requirements specified in Landcom 2004 'The Blue Book Managing Urban Stormwater

9.4 Traffic Control and Management Plans

Generally, a Construction Traffic Management Plan is required for development works. The plan should detail:

- Vehicle route
- Number of trucks
- Hours of operation
- Access arrangements
- Traffic control

The plan is to be submitted to council for approval and in some cases the RMS. The plans should be prepared in accordance with the *NSW RMS Traffic Control at Work Sites V4*.

9.5 Dust and Odour Management

Given the sensitive location and general nature of remediation it is crucial adequate dust control measures are implemented during the remediation works. Dust shall be managed using techniques that may include (but not be limited to):

- Utilising a water cart to control dust on all exposed areas of site.
- Wetting down material prior to loading or handling
- Covering, grassing or stabilising exposed earth stockpiles that will be left for an extended period of time

It is overall good practice to prevent the generation of any nuisance dust during the works. Due to the nature of the contaminants and site conditions, odour is unlikely to be an issue at the site.

9.6 Asbestos Control and Management

Sampling and monitoring should be undertaken during and after completion of the site remediation works. In the event where a significant amount of friable asbestos (AF/FA) is uncovered during remediation works, daily air monitoring of airborne Asbestos Fines should be undertaken.

The levels of airborne Asbestos Fines should be analysed using the Standard Polarised Light Microscopy Method. The airborne asbestos fibre level of 0.1 fibre/ml is adopted as the occupational exposure standard.

Exceedance of this level will trigger the requirements for;

- The engagement of a Class A asbestos licensed remediation contractor and an Occupation Hygienist.
- A review of remediation work methodology to limit generation of airborne asbestos.
- Additional PPE requirements including P2 disposal dusk mask or a particulate half-face mask with a P3 filter and disposal coveralls.
- Establishment of decontamination facilities.

9.7 Workplace Health and Safety (WHS)

A site-specific workplace health and safety (WHS) plan should be developed by the contractor for implementation at the site. The plan should be prepared in accordance with the Workplace Health and Safety Act 2011.

As detailed in Section 9 the principal will be responsible for conducting site inductions and ensuring the safety of all workers on-site. The principal should also advise of their duty of care and responsibilities when on-site. The plan should include the following (but not be limited to):

- Site introduction, principal contractor roles and responsibilities, policies, consultation and adherence
- Site specific rules (to be adhered to at all times)
- Site emergency protocol including site muster point, evacuation and roll call

- Management of high risk construction work
- Also consider site hazards and how they are reported, broadly they may include:
 - Mobile plant and equipment including road trucks
 - Contaminant management
 - Deep excavations
 - Nuisance dust
 - Underground services
 - Slips/ Trips and Falls on uneven ground
 - Site access and familiarity
 - Pollution and spills
 - Provision of safety data sheets (SDS) on-site for all substances.
 - Manual handling procedures and clear communication of techniques.
 - Environmental requirements and site management practices
 - Communication of the unexpected finds procedure and handling of contaminated materials at the site.
 - Implementation of task specific safe work method statements (SWMS)
 - Equipment checks; including pre-delivery checks, service records, risk assessments and daily pre-starts

All staff must attend the required site inductions, consultation and acknowledge through signing that they understand and will adhere to the covered topics, ensuring works can be undertaken safely.

9.8 Contingency Plan

A review of the RAP identified data gaps and potential risks to meeting the specified site validation criteria. A number of possible risks are outlined as well as contingencies to be implemented should unexpected finds occur.

It is difficult to quantify the volume of actual impacted material and the following contingency may apply if the quantity exceeds the anticipated volume;

- Excess volume not able to be contained within the site should be disposed off-site to an appropriated licenced facility
- Untreated material may be retained within the site subject to implementation of an approved Long Term Environmental Management Plan.

Health and environmental risks, and hazards associated with the remediation work and their minimisation or mitigation measures are discussed in Section 9.

9.9 Unexpected Finds Protocol

Whilst undertaking remediation and civil works, should any uncharacteristic material be observed that was not identified during earlier site investigations the following precautions and actions should be implemented:

- Works in the vicinity of the material are to cease immediately
- The area is to be sign posted and cordoned off from other site workers
- Advise the local government authority (council) of the discovery – to the assigned principal compliance officer (PCA).
- Engage a suitably qualified consultant to attend site to assess the materials
- Photographic records should be collected
- Do not disturb any suspected contaminated material until further observation and determination of the material (should it be hazardous) has been undertaken by an experienced consultant.
- PPE should be used (if required).
- Environmental Sampling, removal, off-site disposal and validation
- The engaged EPA accredited environmental site auditor should be kept informed of un-expected occurrences and consulted with if required.

Uncharacteristic soil may be characterised as:

- Distinctively different to other soils on-site
- Appear to be concentrated to a localised area (ie. burial pits)
- Stained, oil soaked or containing a petroleum sheen. Includes other products such as batteries etc
- Buried building products and debris/ waste or other anthropogenic materials
- May contain potential asbestos containing materials. In the event where bonded asbestos fragments are encountered on the site other those areas identified, an unexpected asbestos finds protocol as detailed in Appendix B should be initiated.

9.10 Complaints

In view of the nature of the activities and type of contaminants identified at the site there is a potential for complaints to be received from members of the public relating to environmental emissions including:

- Noise and vibration arising from excavation; and
- Dust emissions arising from excavation, soil handling, and placement.

Management of environmental emissions shall be undertaken during the work as detailed in Section 9 and appropriate actions taken to further control emissions following receipt of a complaint. Such additional controls may include the following actions:

- Limiting disturbance and exposure of contaminated soil to meteorologically favourable periods (ie dry weather and not windy/gusty conditions); and
- Covering or wetting down soil, which are generating dust.

10. SITE CONTACT DETAILS

The table below provides the site contact details to be updated during remediation activities;

Company	Contact	Phone
Developer:		
Contractor:		
Superintendent:		
Project Manager:		
Environmental Consultant:		
Council: Liverpool City Council		
NSW EPA		131 555

11. STATUTORY REQUIREMENTS AND APPROVALS

Works shall comply with all legislative requirements including but not limited to those set out under the following Acts (and subsequent amendments and regulations);

- Council's Development Consent (If Category 1 applies to the development)
- State Environmental Planning Policy (Resilience and Hazards) 2021 under the Environmental Planning Assessment Act 1979
- Contaminated Land Management Act 1997
- Environmentally Hazardous Chemicals Act 1985
- Hazardous Chemicals Act (1985) (under review)
- Environmental Offences and Penalties Act 1989
- Protection of the Environmental Operations Act 1997 (POEO)
- OHS Amendment (Dangerous Goods) Act 2003 including OHS Amendment (Dangerous Goods Regulation 2005) and
- EPA authority or approvals for discharge of chemicals into environment (if applicable)
- EPA licences for operations of scheduled activities under POEO act (if applicable)
- POEO Amendment Act 2005 (including POEO Amendment (Scheduled Activities and Waste) Regulation 2008).
- Work Health and Safety Regulation (2017)
- NSW Code of Practice, How to Safely Remove Asbestos (August 2019)
- Safe Work Australia How to manage and control asbestos in the workplace (August 2020)
- Safe Work Australia (2016) How to manage and control asbestos in workplace.
- WA DoH (2021) Guidelines for the assessment remediation and management of asbestos contaminated sites in Western Australia.

12. WASTE MANAGEMENT

Where off-site disposal of excess soil materials is required, a waste classification assessment is required to be undertaken by the validating consultant, as stated in Section 8 of this plan.

12.1 Reporting and Sampling Requirements

All materials transported off-site must be accompanied by a waste classification letter prepared in accordance with NSW EPA 2014 Waste Classification Guidelines Part 1 Classifying Waste, NSW EPA 2020 Consultants reporting on contaminated land and/or letter indicating Excavated Natural Material (ENM) under the Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A. The report must detail the process and findings of the investigation, including:

- Introduction and Background;
- Assessment Objective;
- Sampling and Analysis Plan;
- Assessment Criteria;
- Fieldwork and Analytical Results; and
- Conclusions/Findings/Classification

12.2 Sampling and Analysis Plan

Waste classification assessment and sampling must be undertaken by the validating consultant (or suitably qualified environmental professional). The sampling objective is to gather information with regard to the type, location, level and extent of potential contamination within stockpiled materials, for the purpose of off-site disposal.

The analysis of soil samples must be undertaken against the criteria outlined in the NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste 2014 as follows:

- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- Polycyclic aromatic hydrocarbons (PAH);
- Total recoverable hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Organochlorine Pesticides (OCP);
- Polychlorinated Biphenyls (PCB); and
- Asbestos

12.3 Material Handling and Tracking

The materials must be received by an appropriately licensed facility with a source-transport-landfill receipt movement record available.

Any materials transported off-site classified as hazardous or restricted waste (waste code N120) must be tracked using the online NSW EPA waste consignment online tracking system and assigned a load number. This class of material must also be transported by a Category. 1 licensed contractor.

All road and bitumen material to be taken off-site for reuse under Resource Recovery Order under Par 9, Clause 93 of the Protection of the Environment (Waste) Regulation 2014.

12.4 Imported Fill Material

All imported fill materials if required needs be assessed for their suitability for use at the Site. Imported fill includes VENM and ENM or any other material for which a valid and applicable NSW EPA Waste Exemption Order is in force.

Material shall only be considered suitable for use on-site if the following criteria (minimum) are satisfied:

- The material must be VENM based on Waste Classification Guidelines - Part 1: Classifying Waste prepared by the NSW EPA 2014. One validation sample per 1000m³ of earth fill or a minimum of 3 samples should generally be adequate depending on the homogeneity of the fill material. More samples per unit volume of earth fill may be required if the fill material is found to be variable.
- The material source site should be assessed by an experienced consultant for suitability.
- The other selected analytes (ie. OCP, TRH, BTEX, PAH, Asbestos) are all less than the laboratory limit of reporting (LOR).
- The composition, type and colour of the material needs to be generally consistent with the local geology of the site of sourced material.
- Imported material needs to be assessed for its aesthetic suitability to the site.
- Imported material cannot affect the surrounding ecosystem or sensitive environmental receptors.

The supervising environmental consultant will need to perform routine inspections of the VENM upon arrival to site. The consultant should inspect the material to ensure it is consistent with the material characteristic/descriptions provided in its respective source VENM report. Should any unexpected find, uncharacteristic material or visible/ olfactory contamination be observed in the VENM the load should be rejected from import to site.

We recommend the supervising consultant consider use of a 'Fill Import, Load Inspection Proforma' which can be completed during the import works to verify each load of imported material

13. CONCLUSION

Based on the contamination identified being asbestos, this RAP has been developed to detail the remediation strategies that will be necessary to ensure the site is suitable for the proposed development from its current land use and site conditions.

The remediation strategy provided has been developed with respect to the preferred order of remedial options outlined in the NSW EPA guidelines. The preferred remediation option for the identified contamination is off-site disposal of the impacted soil and is considered to be the most appropriate and cost-effective remediation method in view of the type of contamination and the nature of the proposed development.

The Validation Plan and Site Management Plan outlined in this report must be implemented to ensure good environmental practices are adopted and corrective actions are performed in a timely manner.

By implementing this RAP, we consider the strategies outlined to be effective in remediating the identified contamination and ensuring the suitability of the site for the proposed development.

14. LIMITATIONS

The findings contained in this report are the results of Discrete/specific sampling methodologies used in accordance with normal practices and standards. There is no investigation which is thorough enough to preclude the presence of material which presently, or in future, may be considered hazardous to the site.

This report has been prepared solely for the use of the client to whom it is addressed and no other party is entitled to rely on its findings.

It should be recognised that this assessment is not intended to be a definitive or quantitative investigation of the environmental impacts of the subject property and operations. All conclusions and recommendations made in this report are of the professional judgement of personnel involved with the investigation and though normal checking and validation of the accuracy of data is included in the preparation of this report and circumstances outside the scope of this report or which are not made known to us that may influence the assessment is not the responsibility of GeoEnviro Consultancy Pty Ltd.

Assessment and recommendations presented herein apply to the site as it existed at the time of the site inspection and cannot apply to changes of which GeoEnviro Consultancy is not aware and has not had the opportunity to evaluate.

As regulatory evaluation criteria are constantly updated, concentrations of contaminants presently considered low, may in the future fall short of regulatory standards that require further investigation/redemption.

The statements presented in these documents are intended to advise you of what should be your realistic expectations of this report, and to present you with recommendations on how to minimise the risks associated with the ground works for this project. The document is not intended to reduce the level of responsibility accepted by GeoEnviro Consultancy Pty Ltd, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing. Attached in Appendix C are documents entitled "Important Information about Your Environmental Site Assessment" and Explanatory Notes in conjunction with which this report must be read, as it details important limitations regarding the investigation undertaken and this report.

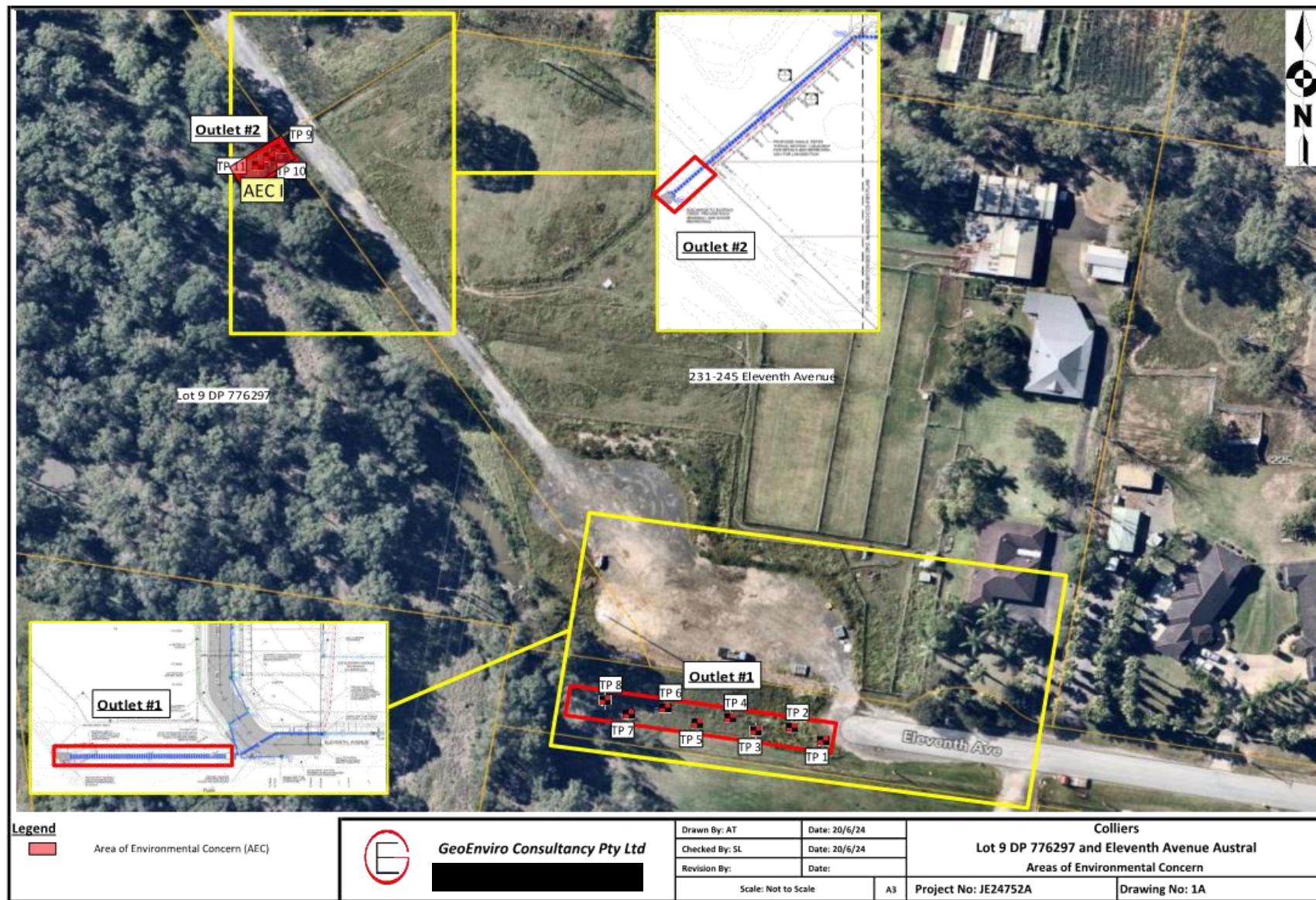
Remediation Action Plan
Lot 9 DP 776297 and Eleventh Avenue, Austral

44

JE24752A-r2
August 2024

REFERENCES

1. *Detailed Site Investigation Report- Proposed Stormwater Works for No 231-245 Eleventh Avenue- Lot 9 DP 776297 and Eleventh Avenue Austral - GeoEnviro Consultancy Pty Ltd Ref JE24752A-r1 dated August 2024.*
2. *1:100,000 Soil Landscape Map of Penrith – Department of Environment, Climate Change and Water; Soil Landscape Series – Sheet 9030 [Edition 1 Reprint]*
3. *1:100,000 Geological Map of Penrith– Geological Survey NSW Department Minerals and Energy; Geological Series Sheet 9030 (Edition 1) 1991*
4. *National Environment Protection (Assessment of Site Contamination Measure 1999 as amended 2013)*
5. *CRC Care Technical Report No 10 – Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater Part 1: Technical Development Document November 2011*
6. *NSW EPA 2014 Waste Classification Guidelines “Part 1 – Classifying Waste*
7. *EPA NSW Sampling Design Part 1 – Application – Aug 2022*
8. *Environmentally Hazardous Chemicals (EHC) Act 2008 and subordinate Polychlorinated Biphenyls (PCB) Chemical Control Order 1997*
9. *Polychlorinated Biphenyls Management Plan, Revised Edition May 2003, Issued by the Environmental Protection and Heritage Council (EPHC)*



*Remediation Action Plan
Lot 9 DP 776297 and Eleventh Avenue, Austral*

*JE24752A-r2
August 2024*

APPENDIX A

Extracts of Detailed Site Investigation Report

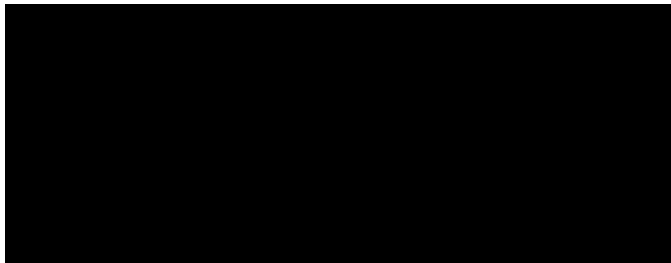
Detailed Site Investigation Report- Proposed Stormwater Works for No 231-245 Eleventh Avenue- Lot 9 DP 776297 and Eleventh Avenue Austral - GeoEnviro Consultancy Pty Ltd Ref JE24752A-r1 dated August 2024.

**GeoEnviro Consultancy Pty Ltd**

ABN 62 084 294 762

**Report**

**Detailed Site Investigation Report
Proposed Stormwater Works for
No 231-245 Eleventh Avenue
Lot 9 DP 776297 and Eleventh Avenue,
Austral NSW**



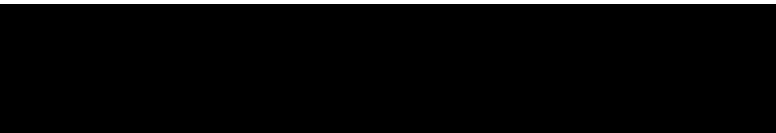
Ref: JE24752A-r1(rev)
June 2024

**GeoEnviro Consultancy Pty Ltd**

ABN 62 084 294 762

28th June 2024

Our Ref: JE24752A-r1(rev)



Attention: Mr Nicholas Geroulas

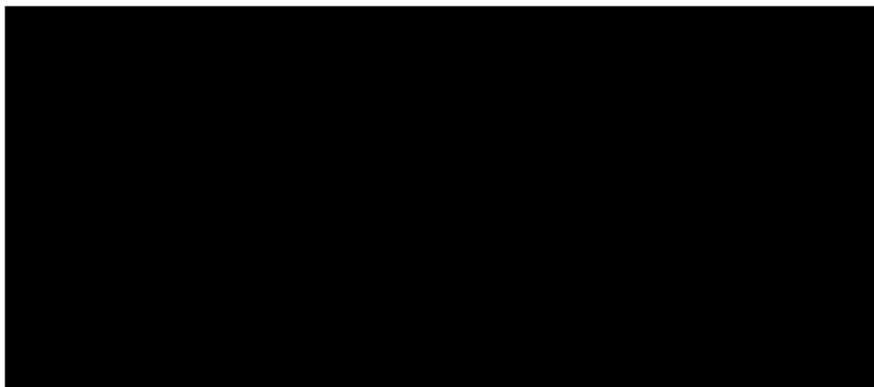
Dear Sir

**Re: Detailed Site Investigation Report
Proposed Stormwater Works for No 231-245 Eleventh Avenue, Austral
Lot 9 DP 776297 and Eleventh Avenue, Austral**

We are pleased to submit our Detailed Site Investigation Report for the Proposed Stormwater Works at the above address.

Should you have any queries, please contact the undersigned.

Yours faithfully




GeoEnviro Consultancy Pty Ltd

ABN 62 084 294 762

Document Control

Document Details	
Job No	JE24752A
Revision	r1(rev)
Title	Detailed Site Investigation Report Proposed Stormwater Works for No 231-245 Eleventh Avenue Lot 9 DP 776297 and Eleventh Avenue Austral NSW
Address	Lot 9 DP 776297 and Eleventh Avenue, Austral NSW
Client	Colliers International Engineering & Design (NSW) Pty Limited

Document Status				
Issue/Revision	Status	Prepared By	Reviewed By	Date
r1	Final	A Tejada	S Liew	28 th June 2024
r1(rev)	Final	A Tejada	S Liew	9 th August 2024

Executive Summary

This report presents the results of a Detailed Site Investigation for the Proposed Stormwater Works located within the site identified as Lot 9 Deposited Plan (DP) 776297 and the Eleventh Avenue road reserve in Austral (The Subject Site) as shown in Drawing No 1. The objective of this study was to assess the contamination status of the Subject Site for the Proposed Stormwater Works (ie Outlet #1 and Outlet #2).

We understand as part of the proposed subdivision of No 231-245 Eleventh Avenue, the proposed stormwater modifications will involve the removal of a temporary basin and construction of two new outlets (ie Outlet #1 and Outlet #2) that discharge to Kemps Creek through GPTs.

Based on aerial photographs, the Subject Site appeared to comprise of largely of vacant land up until about the mid 1980s where some earthworks occurred along the creek. Since then the site appeared to be mainly used as the road reserve and part of the creek banks.

A site visit was carried out on the 6th June 2024 by an environmental scientist to observe existing site features and identify obvious or suspected areas of potential contamination.

Outlet #1 at the western end of Eleventh Avenue was part of the road reserve although was vacant with thick grass cover. There was an existing stormwater swale which drained to the creek.

Outlet #2 which is situated adjacent the north-western corner of No 231-245 Eleventh Avenue was vacant with grass cover and medium dense vegetation along the banks of the creek.

Soil sampling was carried out on the 6th June 2024 and involved excavation at eleven locations (TP 1 to TP 11). Soil sampling was conducted at all 11 sampling points (i.e. test pits). The following is a summary of the subsurface profiles encountered;

- Topsoil/Fill was encountered on the surface of all test pits comprising of Clayey Silt of low liquid limit with varying amounts of gravel. Some minor foreign inclusions were encountered in TP 1, 2, 5 and 7 in the Outlet #1 area including brick fragments, terracotta tile pieces and bricks. A fibre cement fragment was encountered in TP 11 in Outlet #2 area.

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V

*JE24752A-r1(rev)
June 2024*

- Natural soil was encountered below the topsoil/fill in all test pits generally consisting of medium plasticity Silty Clay. The natural clay was generally assessed to be moist (ie moisture content equal to the plastic limit).
- Bedrock was not encountered in the test pit investigation which was taken to a maximum depth of 0.8m below existing ground level.
- Groundwater was not encountered in any of the test pits during the investigation noting that the test pits were taken to a maximum depth of 0.8m. As the site is located immediately adjacent to a tributary, we expected perched groundwater to be present at shallow depth similar to the water level of the tributary. Permanent groundwater table is expected to be present a lower depth.

Soil sampling was conducted at all 11 sampling points (i.e., test pits) and a total of 21 soil samples were analysed for a range of COPC including heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), OCP, PCB, TRH, BTEX and asbestos.

The reported concentrations of COPC did not exceed the laboratory's LOR and/or assessment criteria. The material sample in TP 11 was found to contain Chrysotile Asbestos.

The absence of apparent widespread chemical contaminations within the soil indicates that the potential for groundwater contamination at the site is low and the potential off-site impacts of contaminants on groundwater and waterbodies are also negligible.

Within the context of the scope of work, we are of the opinion that the risk of gross chemical contamination within the Subject Site is generally considered to be low however the site was found to be impacted by asbestos and some anthropogenic materials.

Excavation and off-site disposal of the asbestos impacted topsoil/fill material in Outlet #2 area (ie TP 11) to an EPA approved landfill facility should be carried out. The asbestos impacted material should be classified and disposed off-site as "Special Waste – Asbestos Waste". Following excavation, this area should be validated to ensure this asbestos impacted material is removed.

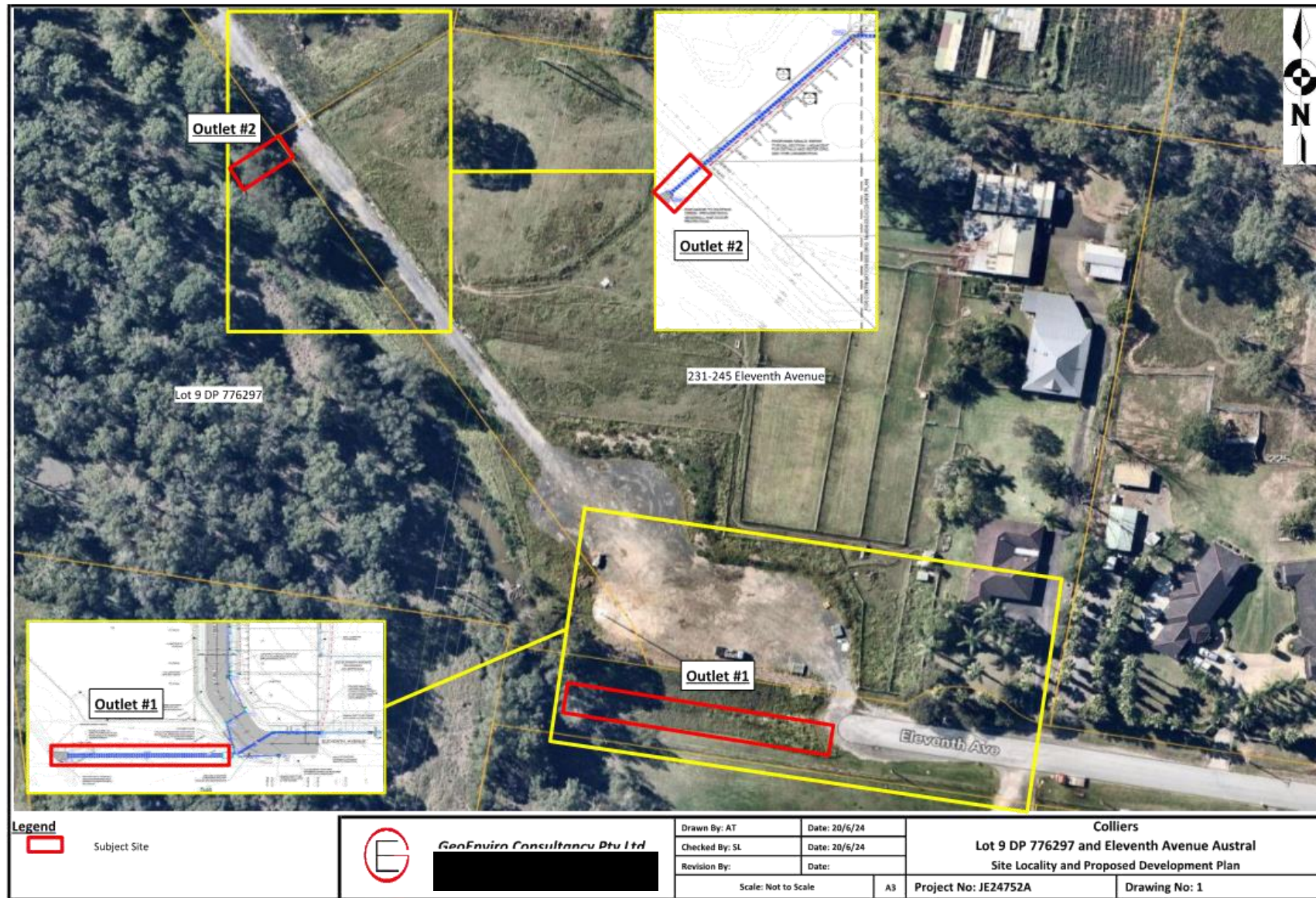
Proposed Stormwater Works

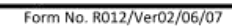
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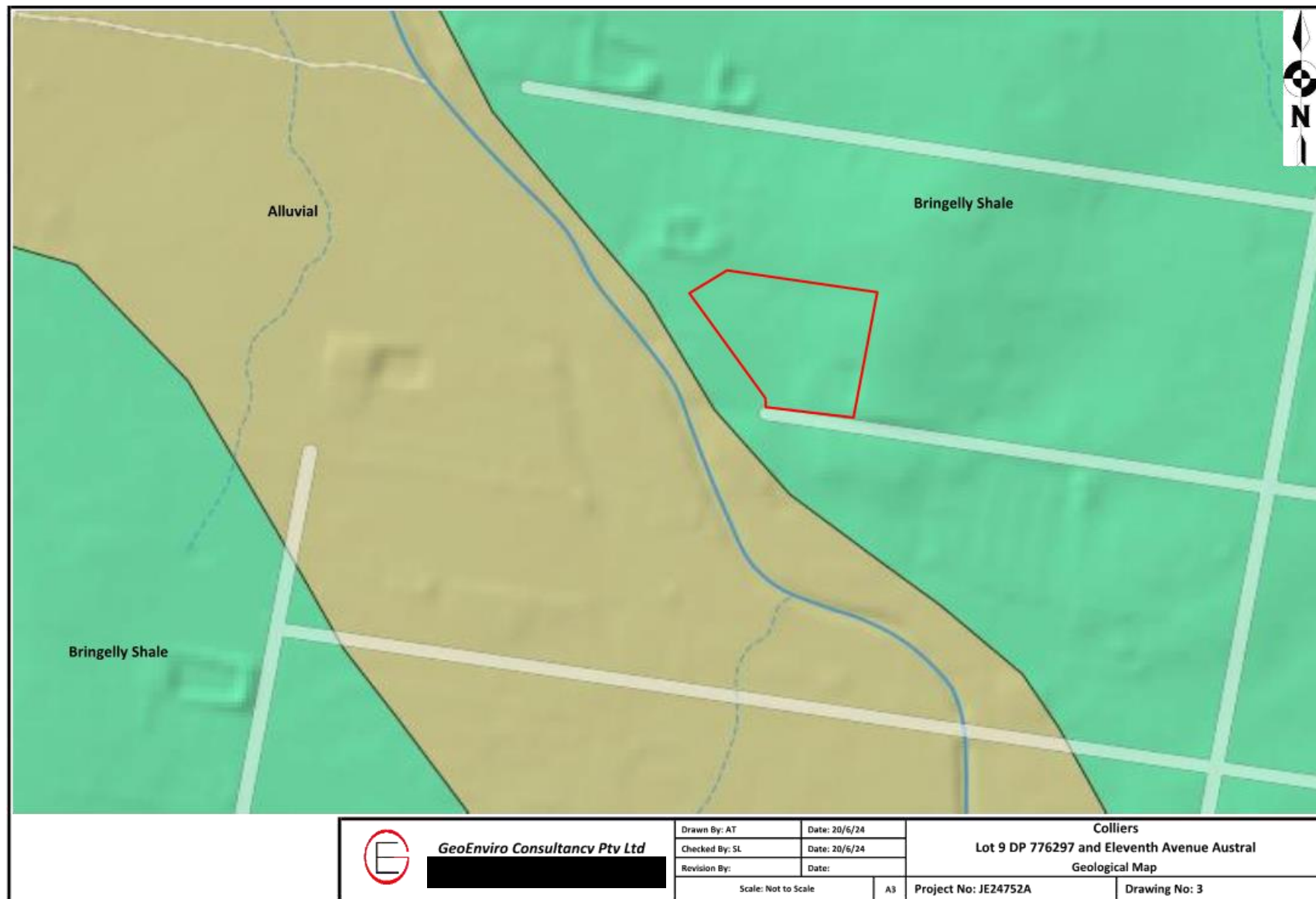
*JE24752A-r1(rev)**Lot 9 DP 776297 and Eleventh Avenue, Austral**June 2024*

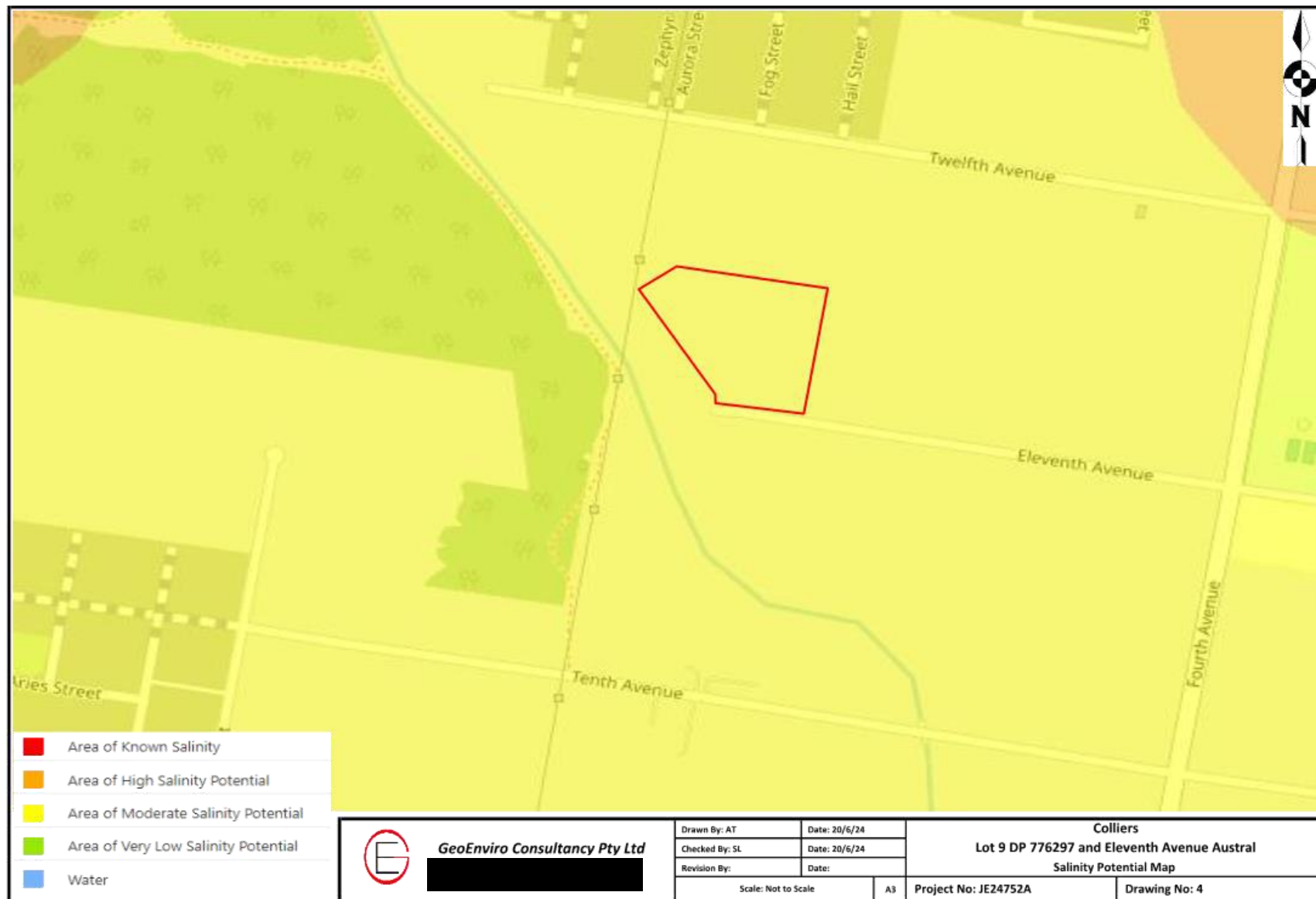
Topsoil/fill with traces of anthropogenic materials (ie brick fragments, terracotta tile pieces and bricks) was encountered in Outlet #1 area in TP 1, 2, 5 and 7. Further assessment of the insitu fill may be carried during construction works to ensure no significant materials or asbestos is present.

We recommend a remediation action plan (RAP) be prepared outlining a remediation strategy to render the site suitable for the proposed development. Subject to the appropriate remediation and validation works, we are of the opinion that the site will be suitable for the proposed stormwater works.



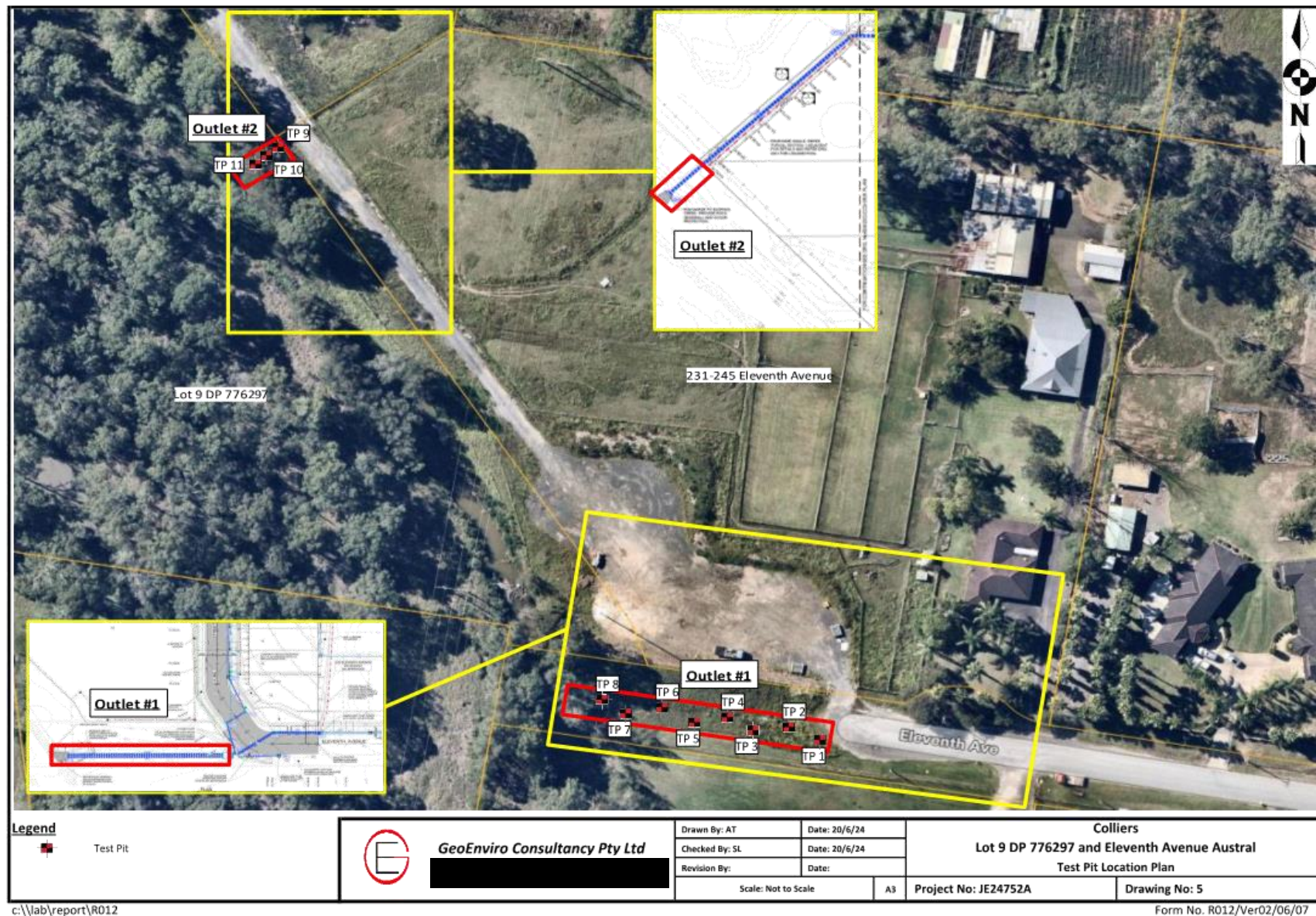






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Form No. R012/Ver02/06/07



Test Pit Number	Depth (m)	Profile Type	Description	PID (ppm)
1	0.00 - 0.40	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, clay lumps and trace of brick fragments, moist to wet	0.4
Outlet #1	0.40 - 0.70	Natural	(CI) Silty Clay: medium plasticity, grey brown, moist	
2	0.00 - 0.35	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, clay and trace of terracotta tile pieces, moist to wet	0.6
Outlet #1	0.35 - 0.60	Natural	(CI) Silty Clay: medium plasticity, grey brown, moist	
3	0.00 - 0.35	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, moist to wet	0.5
Outlet #1	0.35 - 0.70	Natural	(CI) Silty Clay: medium plasticity, light brown, moist	
4	0.00 - 0.30	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, moist to wet	0.2
Outlet #1	0.30 - 0.60	Natural	(CI) Silty Clay: medium plasticity, light brown red, moist	
5	0.00 - 0.50	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel and 1 brick, moist to wet	0.6
Outlet #1	0.50 - 0.80	Natural	(CI) Silty Clay: medium plasticity, light brown, moist	
6	0.00 - 0.20	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, moist to wet	0.7
Outlet #1	0.20 - 0.60	Natural	(CI) Silty Clay: medium plasticity, light brown red, moist	
7	0.00 - 0.25	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel and 1 brick, moist to wet	0.8
Outlet #1	0.25 - 0.60	Natural	(CI) Silty Clay: medium plasticity, light brown red, moist	
8	0.00 - 0.45	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel and clay lumps, moist to wet	0.3
Outlet #1	0.45 - 0.80	Natural	(CI) Silty Clay: medium plasticity, light brown red, moist	
9	0.00 - 0.30	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, moist	0.8
Outlet #2	0.30 - 0.60	Natural	(CI) Silty Clay: medium plasticity, light brown, moist	
10	0.00 - 0.20	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel, moist	0.9
Outlet #2	0.20 - 0.50	Natural	(CI) Silty Clay: medium plasticity, light brown, moist	
11	0.00 - 0.25	Topsoil/Fill	Clayey Silt: low liquid limit, brown with gravel and 1 fibre-cement fragment, moist	0.9
Outlet #2	0.25 - 0.60	Natural	(CI) Silty Clay: medium plasticity, light brown, moist	

Note:

PP = Pocket Penetrometer

MC = Moisture Content

PL = Plastic Limit

TABLE 1 (Page 1 of 1)
SUMMARY OF SOIL PROFILE

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Sample Date	Sample Type	Analysis													
				pH	Heavy Metals							OCP	PCB	TRH	BTEX	PAH	Asbestos
					As	Cd	Cr	Cu	Pb	Hg	Ni						
TP1	0.0-0.1	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP1	0.4-0.5	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP2	0.1-0.2	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP2	0.4-0.5	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP3	0.0-0.1	06/06/2024	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP3	0.4-0.5	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP4	0.0-0.1	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP4	0.3-0.4	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP5	0.1-0.2	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP5	0.5-0.6	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP6	0.0-0.1	06/06/2024	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP6	0.2-0.3	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP7	0.1-0.2	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP7	0.3-0.4	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP8	0.1-0.2	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP8	0.5-0.6	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP9	0.0-0.1	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP9	0.3-0.4	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP10	0.1-0.2	06/06/2024	Soil	o	o	o	o	o	o	o	o	o	o	o	o	o	o
TP10	0.2-0.3	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP11	0.0-0.1	06/06/2024	Soil		o	o	o	o	o	o	o	o	o	o	o	o	o
TP11- Fragment	-	06/06/2024	Material														o
DUPA	-	06/06/2024	Soil		o	o	o	o	o	o	o	o	o				
DUPB	-	06/06/2024	Soil		o	o	o	o	o	o	o	o	o				
Trip Blank	-	06/06/2024	Soil												o		

Note: O denotes tested


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**TABLE 2
Analytical Program**

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Sample Date	Sample Type	Analysis													
				pH	Heavy Metals							OCP	PCB	TRH	BTEX	PAH	Asbestos
					As	Cd	Cr	Cu	Pb	Hg	Ni	Zn					
TRP A	-	06/06/2024	Soil		o	o	o	o	o	o	o	o					
TRP B	-	06/06/2024	Soil		o	o	o	o	o	o	o	o					

Note: O denotes tested

Sample	Depths (m)	pH	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP1	0.0-0.1	6.6	6	<0.4	22	45	24	<0.1	39	74
TP1	0.4-0.5		6	<0.4	11	22	14	<0.1	5	20
TP2	0.1-0.2		6	<0.4	23	80	29	<0.1	34	90
TP2	0.4-0.5		7	<0.4	16	25	13	<0.1	5	23
TP3	0.0-0.1		7	<0.4	19	21	21	<0.1	9	28
TP3	0.4-0.5		5	<0.4	15	19	14	<0.1	7	21
TP4	0.0-0.1	6.4	6	<0.4	15	30	21	<0.1	20	62
TP4	0.3-0.4		7	<0.4	17	24	14	<0.1	6	24
TP5	0.1-0.2		7	<0.4	19	18	21	<0.1	11	25
TP5	0.5-0.6		<4	<0.4	11	15	14	<0.1	5	14
TP6	0.0-0.1		8	<0.4	16	23	25	<0.1	13	46
TP6	0.2-0.3		6	<0.4	19	29	16	<0.1	6	28
TP7	0.1-0.2	7.4	7	<0.4	13	25	20	<0.1	12	45
TP7	0.3-0.4		6	<0.4	16	26	12	<0.1	5	23
TP8	0.1-0.2		11	<0.4	18	25	20	<0.1	15	41
TP8	0.5-0.6		7	<0.4	16	36	15	<0.1	16	38
TP9	0.0-0.1		9	0.4	15	48	250	0.2	14	330
TP9	0.3-0.4		6	<0.4	12	22	26	<0.1	7	87
TP10	0.1-0.2	7.4	9	<0.4	15	41	86	<0.1	17	170
TP10	0.2-0.3		5	<0.4	13	21	15	<0.1	6	57
TP11	0.0-0.1		11	0.5	18	49	270	0.2	12	430
DUPA	-		4	<0.4	13	39	19	<0.1	26	61
DUPB	-		8	<0.4	18	18	24	<0.1	14	26
TRP A	-		6.3	<0.40	23	36	20	<0.10	34	63
TRP B	-		6.4	<0.40	16	16	18	<0.10	10	24
HILs 'A' Criteria			100	20	100 (VI)	6000	300	40	400	7400
EIL Criteria*			100	NA	260	220	1100	NA	250	710

Notes:

1) All results are expressed as mg/kg and except pH.

2) Figures in bold italics exceed the EIL Criteria.

3) Figures in bold italics and underlined exceed the HIL Criteria.

*) EIL has been calculated using NEPC EIL Calculation Spreadsheet December 2010



TABLE 3
Summary of Analytical Results - Heavy Metals

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Heptachlor Epoxide	gamma-Chlordane	alpha-chlordane	Endosulfan I	Aldrin	Dieldrin	Endrin	pp-DDD	pp-DDE	pp-DDT	Endosulfan II	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor	Mirex	Total OCP
TP1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP3	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP5	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP7	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP9	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP11	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
HILs 'A' Criteria		10				6			50	270	6*	10	240 #						300	10			

Notes:

- 1) All results are expressed as mg/kg.
 - 2) Figures in bold italics exceed the HIL Criteria.
- * HIL Criteria for total sum of Aldrin + Dieldrin
HIL Criteria for Total Sum of DDE + DDD + DDT



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**TABLE 4
Summary of Analytical Results - OCP**

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
TP1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP3	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP5	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP7	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP9	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP11	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
HILs 'A' Criteria									1

Notes:

- 1) All results are expressed as mg/kg.
- 2) Figures in bold italics exceed the HILs Criteria.



TABLE 5
Summary of Analytical Results - PCB

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	C ₁₀ -C ₃₆	F1 ⁽⁴⁾ C ₆ -C ₁₀	F2 ⁽⁵⁾ >C ₁₀ -C ₁₆	F3 C ₁₆ -C ₃₄	F4 C ₃₄ -C ₄₀	Volatile Organic Compounds (VOC)					
											Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene
TP1	0.0-0.1	<25	<50	<100	100	100	<25	<50	<100	130	<0.2	<0.5	<1	<2	<1	<1
TP3	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP5	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP7	0.1-0.2	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP9	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
TP11	0.0-0.1	<25	<50	<100	<100	<250	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<1
HSL 'A and B' Criteria (CLAY)							50	280			0.7	480	480	110		5
							90				1			310		
							150				2					
							290				3					
HSL 'A and B' Criteria (SILT)							40	230			0.6	390		95		4
							65				0.7					
							100				1					
							190				2					
HSLs 'A and B' Criteria (SAND)							45	110			0.5	160	55	40		3
							70	240			0.5	220		60		
							110	440			0.5	310		95		
							200				0.5	540		170		
HSL - A Residential (Low Density)							4400	3300	4500	6300	100	14000	4500	12000		1400
Soil Health Screening Levels for Direct Contact																
CRC Care 2011																
ESL Criteria (Fine)							180	120	1300	5600	65	105	125	45		
ESL Criteria (Coarse)							180	120	300	2800	50	85	70	105		

Notes:

- 1) All results are expressed as mg/kg unless otherwise specified.
- 2) ND = Not detected.
- 3) F1 is C₇-C₁₀ minus the sum of the BTEX concentrations.
- 4) F2 is >C₁₀-C₁₆ Minus Naphthalene.
- 5) Figures in bold italics exceed the ESL Criteria.
- 6) Figures in bold italics that have been underlined exceed the HSL Criteria.
- 7) HSL - A Residential (Low Density) derived from CRC Care 2011 for Direct Contact.



TABLE 6
Summary of Analytical Results - TRH and VOC

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ	Total PAHs
TP1	0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.2	0.1	<0.1	<0.1	0.1	<0.5	0.5
TP3	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	ND
TP5	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	ND
TP7	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.5	ND
TP9	0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	0.3	0.2	0.1	0.3	0.2	<0.1	<0.1	0.1	<0.5	1.8
TP11	0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	<0.2	0.1	<0.1	<0.1	0.1	<0.5	0.5
HILs 'A' Criteria		3															3*	300
HSL 'A and B' Criteria for Sand/Silt/Clay		3 / 4 / 5																
ESL Criteria													0.7					

Notes:

- 1) All results are expressed as mg/kg.
- 2) Figures in bold *italic*s exceed the ESL Criteria.
- 3) Figures in bold *italic*s that have been underlined exceed the HIL Criteria.

* B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.

PAH Species	TEF
Benzo(a)anthracene	0.1
Benzo(a)pyrene	1
Benzo(b+j)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Benzo(g,h,i)perylene	0.01
Chrysene	0.01
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-c,d)pyrene	0.1

**GeoEnviro
Consultancy****TABLE 7
Summary of Analytical Results - PAH**

Colliers
Proposed Stormwater Modifications
Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Sample Type	Asbestos ID in Soil and Materials
TP1	0.0-0.1	Soil	No Asbestos Detected
TP3	0.0-0.1	Soil	No Asbestos Detected
TP5	0.1-0.2	Soil	No Asbestos Detected
TP7	0.1-0.2	Soil	No Asbestos Detected
TP9	0.0-0.1	Soil	No Asbestos Detected
TP11	0.0-0.1	Soil	No Asbestos Detected
TP11- Fragment	-	Material	Chrysotile Asbestos Detected
HSLs 'A' Criteria			No visible asbestos for surface soil

Notes:

ND = Not Detected

Measured in %w/w

1) Bonded Asbestos Containing Material (Bonded ACM) / Fibrous Asbestos (FA) and Asbestos Fines (AF).

2) Figures in bold italics exceed the HSLs Criteria.

**GeoEnviro
Consultancy****TABLE 8
Summary of Analytical Results - Asbestos**

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

Sample	Depths (m)	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP1	0-0.1	6	<0.4	22	45	24	<0.1	39	74
DUPA	-	4	<0.4	13	39	19	<0.1	26	61
Relative Percentage Difference (RPD)		40.0	NA	51.4	14.3	23.3	NA	40.0	19.3
TP1	0-0.1	6	<0.4	22	45	24	<0.1	39	74
TRP A	-	6	<0.40	23	36	20	<0.10	34	63
Relative Percentage Difference (RPD)		0.0	NA	4.4	22.2	18.2	NA	13.7	16.1

Sample	Depths (m)	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
TP5	0.1-0.2	7	<0.4	19	18	21	<0.1	11	25
DUPB	-	8	<0.4	18	18	24	<0.1	14	26
Relative Percentage Difference (RPD)		13.3	NA	5.4	0.0	13.3	NA	24.0	3.9
TP5	0.1-0.2	7	<0.4	19	18	21	<0.1	11	25
TRP B	-	6	<0.40	16	16	18	<0.10	10	24
Relative Percentage Difference (RPD)		15.4	NA	17.1	11.8	15.4	NA	9.5	4.1

Sample	Depths (m)	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
Rinsate		<0.05	<0.01	<0.01	<0.01	<0.03	<0.0005	<0.02	<0.02

Sample	Depths (m)	Volatile Organic Compounds				
		Benzene	Toulene	Ethylbenzene	m+p-xylene	O-Xylene
Trip Blank		<0.2	<0.5	<1	<2	<1

Notes:

- 1) All results are expressed as mg/kg.
- 2) ND = Not Detected
- 3) NA = Not Applicable



TABLE 9
Summary of Analytical Results - Quality Assurance

Colliers

Proposed Stormwater Modifications

Lot 9 DP 776297 and Eleventh Avenue Austral

*Remediation Action Plan
Lot 9 DP 776297 and Eleventh Avenue, Austral*

*JE24752A-r2
August 2024*

APPENDIX B

Unexpected Finds Protocol


GeoEnviro Consultancy Pty Ltd

ARN: 62 084 794 762

UNEXPECTED FINDS PROTOCOL

ITEM	REQUIREMENTS	
DEFINITION	An unexpected find may be identified as a result of site activity, for example through earthworks and movement of plant on site including preparatory site works.	
SITE SUPERVISOR	On being notified of an Unexpected Find, the Principal Contractor must: - Stop work & notify the site manager/HSE coordinator as soon as practically possible. - Ensure the find is not further disturbed. - Ensure all personnel are removed from the area with the exception of personnel required to isolate or make safe the area. - Establish an "unexpected find" isolation zone as required to prevent or minimise exposure risks for site personnel, members of the public, fauna or flora. Note: Persons are not to expose themselves to further risk whilst establishing isolation zone. - Assess the requirement to evacuate areas or the entire site. - Co-ordinate site or area evacuation as assessed. Note: It is preferable to evacuate the whole site if there is any doubt as to the safety of personnel or the environment. - As soon as the safety of personnel, environment & the site is secured the Site Manager/Supervisor should notify their relevant HSE Manager, Project Manager & Construction Manager. - As soon as practically possible record the events associated with the unexpected find.	
PROJECT MANAGER	The Project Manager and/or HSE Manager in consultation with the relevant General Manager notify regulatory authorities as required. Establish a risk based process for managing clearance of the unexpected find & establishing incident investigation. The Project Manager or HSE Manager must also ensure that the find is reported to the Principal. This may be by verbal communication.	
UNEXPLODED ORDNANCE	- Do not touch or disturb. - Contact Police immediately.	
UNEXPECTED SERVICES (LIVE OR DISUSED)	- This may include power, gas or fuel. - Do not touch or further disturb. - The area must be immediately designated a non-smoking and "no naked flames" area. - All nearby machinery should be turned off. - Contact relevant governing authority. - Contact appropriate trade supervisor.	
ASBESTOS	Products made from asbestos cement not only include fibro sheeting (flat and corrugated), but items such as water, drainage and flue pipes, roofing shingles and gutters. - Do not touch or further disturb. - Isolate area (10 metre isolation zone required for asbestos). - Contact hygienist. - Implement hygienist's recommendations. - If persons have been exposed arrange medical advice/consultation i.e. possible asbestos fibre exposure will require lung function test & chest x-ray. Note: This applies more specifically to friable type asbestos rather than non friable asbestos containing material however if any doubt exists treat as friable. - Obtain clearance from hygienist prior to re-entering area.	
	Non-Friable Asbestos Over 97% of the products in Australia were non-friable material in which the Asbestos fibres were bonded by cement, vinyl, resin or other similar material.	Friable Asbestos The hazardous friable asbestos is material which can be crumbled, pulverised, or reduced to powder by hand pressure. This may also include previously non-friable material which becomes broken or damaged by mechanical force.

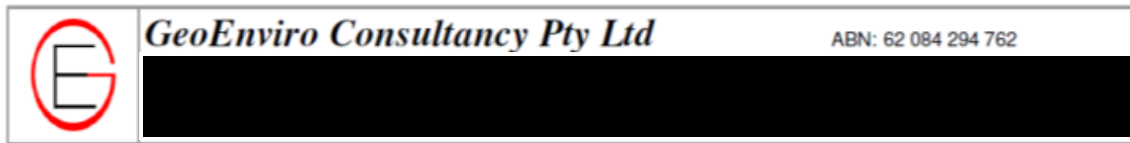
ITEM	REQUIREMENTS
OTHER CONTAMINANTS OF CONCERN	The possibility exists for additional contamination other than those previously identified to be present within the site. Ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and/or in unexpected locations. The nature of any additional contamination which may be present at the site are generally detectable through visual or olfactory means, for example: • Drums or underground storage tanks; • Chemical bottles; and • Odorous or stained soils. As a precautionary measure to ensure the protection of the site personnel and surrounding community, should any of the abovementioned substances be identified (or any other contamination), the following procedure should be undertaken: • Cease work. • Isolate area around the unexpected find. • Client to be contacted and environmental consultant to inspect unexpected find. • Environmental consultant to undertake detailed inspection including sampling and analysis. • Where substance is assessed as presenting an unacceptable risk to human health; remediation and validation to be undertaken. • Exclusion zone and environmental controls to be removed. • Continue work. Should any unexpected finds require remediation and validation, the works will be conducted in general accordance with relevant NSW EPA guidance, and with appropriate measures based on the nature of the unexpected find. The sampling strategy for each 'unexpected finds' shall be determined by a suitably qualified environmental consultant, in accordance with NSW EPA sampling guidelines.
HUMAN REMAINS	• Do not touch or disturb. • Contact Police immediately. • Please note that aboriginal burial objects (such as bark coffins) are defined by legislation as human remains.
HERITAGE ITEMS	• Do not touch or disturb. • Contact Heritage Office or relevant State or Local Government Authority.
OBJECTS OF POSSIBLE CULTURAL SIGNIFICANCE	• Do not touch or disturb. • Contact Department of Indigenous Affairs or relevant State or Local Government Authority.
UNEXPECTED FIND PROCESS	<pre> graph TD A[Unexpected Find Discovered] --> B[Person Uncovering Find 1. Stop work 2. Consider personnel safety etc 3. Notify Site Supervisor/ Manager location] B --> C[Site Supervisor/Manager • Establish Unexpected Find isolation zone as required • Notify Project Manager/ Construction Manager and HSE Managers] C --> D[Project Manager/Construction Manager • In consultation with State General Manager/HSE Manager notify relevant authority (where required) • Complete Incident Register in site diary • Develop, document and implement process to clear find] </pre>

*Remediation Action Plan
Lot 9 DP 776297 and Eleventh Avenue, Austral*

*JE24752A-r2
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APPENDIX C

Important Information about your Environmental Site Assessment



IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT

This Environmental Assessment Report was performed in general conformance with our understanding of the guidelines by the Australian and New Zealand Conservation Council (ANZECC), the Office of Environment and Heritage (OEH) and the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013).

These accompanying notes have been prepared by GeoEnviro Consultancy Pty Ltd, using guidelines prepared by ASFE; The Association of Engineering Firms Practising in the Geosciences. The notes are offered as an aid in the interpretation of your environmental site assessment report.

REASONS FOR AN ENVIRONMENTAL SITE ASSESSMENT

Environmental site assessments are typically, though not exclusively, performed in the following circumstances:

- As a pre- acquisition assessment on behalf of either a purchaser or a vendor, when a property is to be sold
- As a pre-development assessment, when a property or area of land is to be redeveloped, or the land use has change, eg from a factory to a residential subdivision
- As a pre-development assessment of greenfield sites, to establish baseline conditions and assess environmental, geological and hydrological constraints to the development of, eg, a landfill
- As an audit of the environmental effects of previous and present site usage

Each circumstance requires a specific approach to the assessment of soil and groundwater contamination. In all cases the objective is to identify and if possible, quantify the risks which unrecognised contamination poses to the ongoing or proposed activity. Such risk may be both financial (clean-up costs or limitations in site use) and physical (health risks to site users or the public).

ENVIRONMENTAL SITE ASSESSMENT LIMITATIONS

Although information provided by an environmental site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination within a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which did not show signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur, only the most likely contaminants are screened.

Information Regarding Your Environmental Site Assessment Report
Page 2



AN ENVIRONMENTAL SITE ASSESSMENT REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

Your environmental assessment report should not be used;

- When the nature of the proposed development is changed, eg, if a residential development is proposed, rather than a commercial development
- When the size or configuration of the proposed development is altered, eg, if a basement is added
- When the location or orientation of the proposed structure is modified
- When there is a change of land ownership, or
- For application to an adjacent site

In order to avoid costly problems, you should ask your consultant to assess any changes in the project since the assessment and the implications, if any, to recommendations made in the assessment.

ENVIRONMENTAL SITE ASSESSMENT FINDINGS ARE PROFESSIONAL ESTIMATES

Site assessment identifies actual sub-surface conditions only at those points where samples are taken, when they are taken. Data obtained from the sampling and subsequent laboratory analyses are interpreted by geologists, engineers or scientist and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on any proposed development and appropriate remediation measures. Actual conditions may differ from those inferred, because no professional, no matter how qualified and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, however, steps can be taken to help minimise the impact. For this reason, site owner should retain the services of their consultants throughout the development stage of the project in order to identify variances, conduct additional tests which may be necessary and to recommend solutions to problems encountered on site.

Soil and groundwater contamination is a field in which legislation and interpretation of legislation by government departments is changing rapidly. Whilst every attempt is made by GeoEnviro Consultancy Pty Ltd to be familiar with current policy, our interpretation of the investigation findings should not be taken to be that of the relevant authority. When approval from a statutory authority is required for a project, that approval should be directly sought.

STABILITY OF SUB-SURFACE CONDITIONS

Sub-surface conditions can change by natural processes and site activities. As an environmental site assessment is based on conditions existing at the time of the investigation, project decisions should not be based on environmental site assessment data which may have been affected by time. The consultant should be requested to advise if additional tests are required.

**ENVIRONMENTAL SITE ASSESSMENTS ARE PERFORMED FOR SPECIFIC PURPOSES AND CLIENTS**

Environmental site assessments are prepared in response to a specific scope of work required to meet the specific needs or specific individuals. An assessment prepared for a consulting civil engineer may not be adequate to a construction contractor or another civil engineer.

An assessment should not be used by other persons for any purpose, or by the client for a different purposes. No individual, other than the client, should apply an assessment, even for its intended purposes, without first conferring with the consultant. No person should apply an assessment for any purposes other than that originally contemplated, without first conferring with the consultant.

MISINTERPRETATION OF ENVIRONMENTAL SITE ASSESSMENTS

Costly problems can occur when design professionals develop plans based on misinterpretation of an environmental site assessment. In order to minimise problems, the environmental consultant should be retained to work with appropriate design professionals, to explain relevant findings and to review the adequacy of plans and specifications relative to contamination issues.

LOGS SHOULD NOT BE SEPARATED FROM THE REPORT

Borehole and test pit logs are prepared by environmental scientists, engineers or geologist, based upon interpretation of field conditions and laboratory evaluation of field samples. Field logs normally provided in our reports and these should not be redrawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however, contractors can still misinterpret the logs during bid preparation if separated from the test of the assessment. Should this occur, delays and disputes, or unanticipated costs may result.

To reduce the likelihood of boreholes and test pit logs misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of sub-surface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations, such as contractors.

READ RESPONSIBILITY CLAUSES CLOSELY

An environmental site assessment is based extensively on judgement and opinion, therefore, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claim being lodged against consultants. In order to aid in prevention of this problem, model clauses have been developed for use in written transmittals. These are definitive clauses, designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment and you are encouraged to read them closely. Your consultant will be happy to give full and frank answers to any questions you may have.

ATTACHMENT 3 - CONSIDERATION OF RELEVANT MATTERS IN LIVERPOOL GROWTH CENTRE DCP

Liverpool Growth Centre DCP- Chapter 2- Precinct Planning Outcomes		
Control	Requirement	
2.2 – Indicative Layout Plan	Development should occur in a coordinated manner consistent with the Indicative Layout Plan which sets out the transport network, open space and drainage network, location of various land uses etc.	Complies Removal of the detention basin and installation of stormwater drainage pipes for direct discharge into the creek will not impact the approved subdivision layout or cause any inconsistency with the Indicative Layout Plan.
2.3.1 - Flooding	Post development flows should replicate pre-development flows. The potential flooding impacts on the development, essential services and other land uses should be minimised. Floor levels are required to comply with flood planning levels. When determining an application for development within a floodway or flood fringe, Council should consider the consistency with the NSW Flood Plain Manual, compatibility of the building materials, impact of proposed structures including fencing and filling that are likely to affect flows, impact on native vegetation etc.	Complies Due to the site's location in the immediate vicinity of the creek, post development flows can be conveyed rapidly into the watercourse through the proposed piped drainage, with energy dissipators at the outlets to prevent scouring and erosion. Also, there are no other developments downstream of the subject site which could be impacted by the runoff from the subject site. The proposed direct discharge into the creek is considered acceptable although the post development flows will not match the predevelopment scenario. The design and sizing of the trunk main will be required to cater for fully developed upstream catchments for all flows up to 1%AEP. The design will also require compliance with Council's road flood depth criteria ($d < 0.2\text{m}$) and velocity * depth criteria ($vd < 0.4\text{m}^2/\text{s}$) to ensure safety. Although the development will increase the flow rates, the construction of the trunk main in accordance with Council's standards will ensure that runoff is safely conveyed to the creek, without adversely impacting adjacent properties or increasing flood risks. Due to the modest scale of works involving minimal fill and above ground structures, no displacement of flood water or increased flood risks are anticipated from the proposal. Flood

		planning levels do not apply to the proposed non-habitable structures. Vegetation removal required for the proposed works is limited to a small footprint of 75m² at each stormwater outlet which is considered insignificant to aggravate flood risks. The proposal has been assessed and supported by the Council's Floodplain Management Engineer.
2.3.2 – Water cycle management	The quality of stormwater should comply with appropriate standards. Minor and major flows within subdivision are to comply with Council's Engineering Specification	Complies From the information provided in the Statement of Environmental Effects, it is noted that remodeling of minor and major flows for the proposed stormwater discharge demonstrates compliance with Councils' Engineering specifications. The quality of the stormwater is managed through the proposed GPTs. The proposal has been reviewed and supported by Council's Land Development Engineer.
2.3.3 – Salinity and soil management	Appropriate measures should be in place to manage and mitigate the impacts of salinity and sodicity on the environment.	Not applicable The subject site and immediate surrounds are not impacted by saline soils.
2.3.4 – Aboriginal and European heritage	Development applications must consider the European and Aboriginal heritage significance and include appropriate assessment of impacts with recommendations for any management and mitigation measures required as part of the proposal.	Complies The subject site and Lot 9 DP 776297 do not contain any items of European heritage significance, nor are they within a heritage conservation area. However, Lot 9 DP776297 where the stormwater works are proposed is identified as a high Archaeological Sensitivity Area in Schedule 1 of the Liverpool Growth Centre Precincts Development Control Plan (Liverpool Growth Centre DCP). The Due Diligence Assessment undertaken by McCardle Heritage identified no items of significance on the site. Refer to the discussion under Section 6.6 of this report.
2.3.5 – Native vegetation and ecology	When assessing proposed clearing, consideration should be given to the impact on ecological	Complies This section allows clearing where it is inevitable for the delivery of essential infrastructure such as roads and drainage. The Threatened Species

	values, and amenity of the precinct. All existing trees should be retained or replaced where removal is unavoidable.	Assessment undertaken for the development concludes that no significant impact will occur from the tree removal. Refer to the discussion in Section 6.6 of this report. Additionally, the Arboricultural Impact Appraisal and Method Statement undertaken for the development recommends tree protection measures for the trees to be retained in the vicinity of the works. Refer to the discussion in Section 6.6 of this report. Replacement trees will be imposed as a condition of consent to offset the vegetation loss.
2.3.7 – Site contamination	This section requires contamination issues to be appropriately addressed.	Complies This application includes a RAP to address the area of potential concern identified on Lot 9 DP 776297 Refer to the discussion under State Environmental Planning Policy (Resilience and Hazards) 2021.
2.6 - Earthworks	Impact of the earthwork on the natural environment, drainage patterns, flooding and visual environment should be minimised.	Complies The earthworks required for the stormwater infrastructure and removal of asbestos are considered minor in nature and will not adversely impact flooding or any other aspect of the biophysical environment.

Crownland Australia Pty Ltd

M

231-245 Eleventh Avenue, Austral Stormwater Infrastructure

LGA: Liverpool

Archaeological Due Diligence Assessment

3 June 2024

McCARDLE CULTURAL HERITAGE PTY LTD

ACN 104 590 141 • ABN 89 104 590 141

**Report No: J202463 DD**

Approved by: Penny McCardle

Position: Director

Signed:

Date: 3 June 2024

This report has been prepared in accordance with the scope of services described in the contract or agreement between McCardle Cultural Heritage Pty Ltd (MCH), ACN: 104 590 141, ABN: 89 104 590 141, and the proponent. The report relies upon data, surveys, measurements and specific times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the proponent. Furthermore, the report has been prepared solely for use by the proponent and MCH accepts no responsibility for its use by other parties.

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EXECUTIVE SUMMARY

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Colliers on behalf of Crownland Australia Pty Ltd, to undertake an Archaeological Due Diligence Assessment for the proposed stormwater infrastructure for the residential development at 231-245 Eleventh Avenue, Austral. The project area includes part of Lot 9 DP776297 (Council owned) and within the road reserve of Eleventh Avenue, Austral (adjoining Kemps Creek).

The project is located in the Cumberland Plain, which is a flat region in the centre of the Sydney Basin. The eastern section of the project area consists of shale, claystone, laminate, lithic sandstone, and coal belonging to the Waiiamatta Group Bringelly Shales. The western part of the project area is characterized by alluvial floodplain deposits consisting of silt, fine-grained lithic to quartz-rich sand, and clays. The eastern part situated on the Bringelly shales consists of the Blacktown residual soil landscape, while the western part consists of alluvium and South Creek soil landscape. The geomorphology of the area, excluding alluvial soil landscapes, includes texture contrast soils with an upper soil Horizon A and underlying B. In this region, sites are typically found on or near the interface of the A and B horizons within the A horizon.

The fresh water availability in the project area is influenced by a 3rd order creek located along the western boundary. This creek flows north and converges with Kemps creek, forming a 4th order approximately one kilometre away from the project area. However, due to previous excavation and widening works carried out on the creek since the 1960s, it is likely that the creek was originally a 2nd or 1st order. As an original 2nd or 1st order creek, it would have provided fresh water following heavy rain, supporting small hunting and gathering parties rather than long-term, large-scale camping.

The project area has been cleared a number of times, subject to excavation works a number of times, has tracks through it and the creek along the western boundary has been excavated and expanded in width twice. These land uses not only impact on the landscape and any evidence of past Aboriginal land uses, but notably, the excavation and widening of the creek has resulted in the creek being mapped as a 3rd order today, which has significant implications for archaeological predictive modelling.

A search of the AHIMS register identified 26 Aboriginal sites within two kilometres of the project area and include 21 artefact sites, 3 PADs 1 artefact with PAD site and 1 restricted access site. Based on AHIMS results, local and regional archaeological investigations, and the environmental context, it appears that the project area, originally situated along a small creek, lacked a reliable source of fresh water. This suggests that the area and its immediate surroundings were likely used primarily for hunting and gathering, rather than long-term camping. However, past land uses have likely resulted in the removal or redistribution of any cultural materials that may be present in the project area.

The survey confirmed that the project area had been subject to high levels of past disturbance, including creek widening, drainage line excavation, vegetation clearance, track creation/use, dam/embankment creation, the establishment of a power line easement and animal grazing. No sites or PADs were identified and as such there are no impacts on the archaeological record and the following recommendations are provided:

- 1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Regulation 2019, under the National Parks and Wildlife Act 1974;

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- 2) An Unexpected Finds Procedure (Appendix B) will be implemented during all works; and
- 3) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately, the Unexpected Finds Procedure followed and the Environmental Line contacted.

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GLOSSARY

Aboriginal Place: are locations that have been recognised by the Minister (and gazetted under the *National Parks and Wildlife Act 1974*) as having special cultural significance to the Aboriginal community. An Aboriginal Place may or may not include archaeological materials.

Aboriginal Site: an Aboriginal site is the location of one or more Aboriginal archaeological objects, including flaked stone artefacts, midden shell, grinding grooves, archaeological deposits, scarred trees etc.

Artefact: any object that is physically modified by humans.

Artefact scatter: a collection of artefacts scattered across the surface of the ground (also referred to as open camp sites).

Assemblage: a collection of artefacts associated by a particular place or time, assumed generated by a single group of people, and can comprise different artefact types.

Backed artefact: a stone tool where the margin of a flake is retouched at a steep angle and that margin is opposite a sharp edge.

Background scatter: a term used to describe low density scatter of isolated finds that are distributed across the landscape without any obvious focal point.

Core: a chunk of stone from which flakes are removed and will have one or more negative flake scars but no positive flake scars. The core itself can be shaped into a tool or used as a source of flakes to be formed into tools.

Debitage: small pieces of stone debris that break off during the manufacturing of stone tools. These are usually considered waste and are the by-product of production (also referred to as flake piece).

Flake: any piece of stone struck off a core and has a number of characteristics including ring cracks showing where the hammer hit the core and a bulb of percussion. May be used as a tool with no further working, may be retouched or serve as a platform for further reduction.

Flaked piece/waste flake: an unmodified and unused flake, usually the by-product of tool manufacture or core preparation (also referred to asdebitage).

Harm: is defined as an act that may destroy, deface or damage an Aboriginal object or place. In relation to an object, this means the movement or removal of an object from the land in which it has been situated

In situ: archaeological items are said to be "in situ" when they are found in the location where they were last deposited.

Retouched flake: a flake that has been flaked again in a manner that modified the edge for the purpose of resharpening that edge.

Typology: the systematic organization of artefacts into types on the basis of shared attributes.

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ACRONYMS

ACHA	Aboriginal Cultural Heritage Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit

AHIMS SITE ACRONYMS

ACD	Aboriginal ceremonial and dreaming
AFT	Artefact (stone, bone, shell, glass, ceramic and metal)
ARG	Aboriginal resource and gathering
ART	Art (pigment or engraving)
BOM	Non-human bone and organic material
BUR	Burial
CFT	Conflict site
CMR	Ceremonial ring (stone or earth)
ETM	Earth mound
FSH	Fish trap
GDG	Grinding groove
HAB	Habitation structure
HTH	Hearth
OCQ	Ochre quarry
PAD	Potential archaeological deposit.
SHL	Shell
STA	Stone arrangement
STQ	Stone quarry
TRE	Modified tree (carved or scarred)
WTR	Water hole

1 INTRODUCTION

1.1 INTRODUCTION

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Colliers on behalf of Crownland Australia Pty Ltd, to undertake an Archaeological Due Diligence Assessment for the proposed stormwater infrastructure for the residential development at 231-245 Eleventh Avenue, Austral.

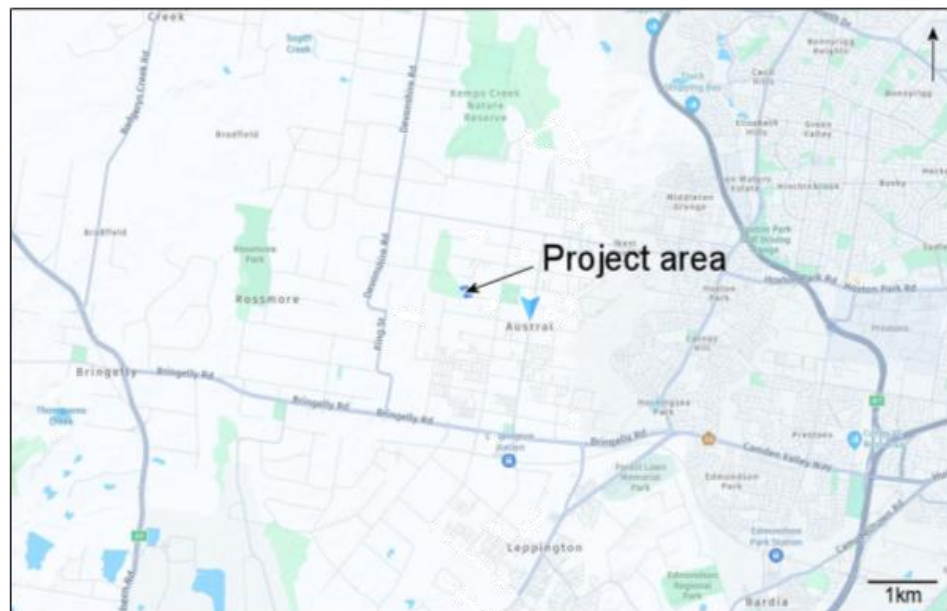
The assessment has been undertaken to meet the Heritage NSW, Department of Premier & Cabinet Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW and the brief. The purpose of a due diligence assessment is to assist proponents to exercise due diligence when carrying out activities that may harm Aboriginal objects or Aboriginal places and to determine whether that should apply for a consent to harm Aboriginal objects or Places through an Aboriginal Heritage Impact Assessment (AHIP).

The purpose of this due diligence report is to demonstrate that all reasonable and practicable measures have been undertaken to prevent harm to any Aboriginal objects and/or place within the project area. This report has met the Heritage NSW Due Diligence requirements and considered the relevant environmental and archaeological information, the project land condition, the nature of the proposed development activity and impacts, as well as preparing appropriate recommendations.

1.2 THE PROJECT AREA

The project area includes part of Lot 9 DP776297 (Council owned) and within the road reserve of Eleventh Avenue, Austral (adjoining Kemps Creek). The location of the project area is shown in Figures 1.1 and 1.2.

Figure 1.1 Location of the project area



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Figure 1.2 Aerial photograph of the project area (Nearmap 2023)



1.3 PROPOSED DEVELOPMENT

The project is for stormwater infrastructure for the residential development at 231-245 Eleventh Avenue, Austral. Works will include the construction of the following (Refer to Figures 1.3 to 1.5):

- Outlet 1: Proposed extension of the trunk stormwater drainage along Eleventh Avenue with the addition of a new Gross Pollutant Trap (GPT); and
- Outlet 2: Utilisation of the outlet approved running through the subject site with the addition of a new GPT

Figure 1.3 Location of Outlets 1 and 2



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Figure 1.4 Proposed Stormwater outlet 1 and GPT along Eleventh Avenue (Colliers 2023)

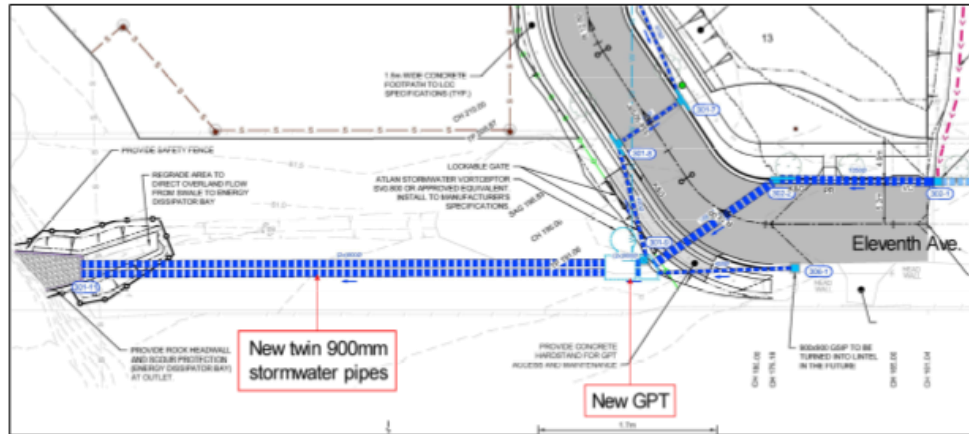
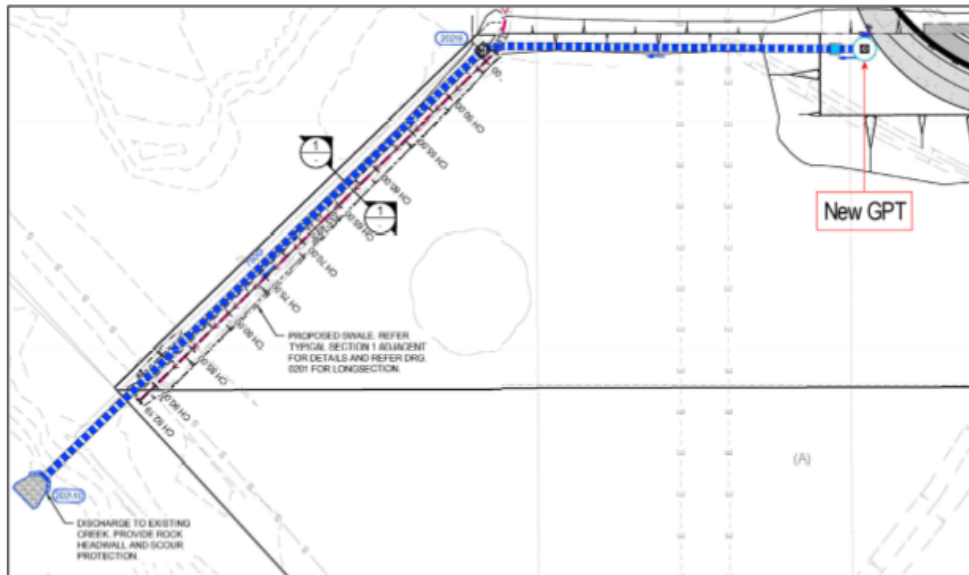


Figure 1.5 Proposed Stormwater outlet 2 and GPT along Eleventh Avenue (Colliers 2023)



1.4 OBJECTIVES OF THE DUE DILIGENCE ASSESSMENT

The objectives and primary tasks of this due diligence assessment were to:

- undertake a search of the Aboriginal Heritage Management System (AHIMS) and other relative registers;
- undertake research into the environmental and archaeological contexts of the project area;
- develop a predictive model of site location for the project area;
- undertake a field survey of the project area;

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- assess the potential impacts of the proposed development on any identified Aboriginal sites or potential archaeological deposits (PADs) identified within the project area;
- assess the significance of any identified Aboriginal objects or sites identified within the project area;
- complete and submit site cards to AHIMS for any Aboriginal sites identified; and
- provide appropriate recommendations.

1.5 LEGISLATIVE CONTEXT

The following overview of the legislative framework, is provided solely for information purposes for the client, and should not be interpreted as legal advice. MCH will not be liable for any actions taken by any person, body or group as a result of this general overview and MCH recommends that specific legal advice be obtained from a qualified legal practitioner prior to any action being taken as a result of the general summary below.

Land managers are required to consider the effects of their activities or proposed development on the environment under several pieces of legislation. Although there are a number of Acts and regulations protecting Aboriginal heritage, including places, sites and objects, within NSW, the three main ones include:

- National Parks and Wildlife Act (1974, as amended)
- National Parks and Wildlife Regulation (2019)
- Environmental Planning and Assessment Act (1979)

1.5.1 NATIONAL PARKS AND WILDLIFE ACT (1974, AS AMENDED)

The National Parks and Wildlife Act (1974), Amended 2019, is the primary legislation for the protection of Aboriginal cultural heritage in New South Wales. The NPW Act protects Aboriginal heritage (places, sites and objects) within NSW and the protection of Aboriginal heritage is outlined in s86 of the Act, as follows:

- “A person must not harm or desecrate an object that the person knows is an Aboriginal object” s86(1)
- “A person must not harm an Aboriginal object” s86(2)
- “A person must not harm or desecrate an Aboriginal place” s86(4)

Penalties apply for harming an Aboriginal object, site or place. The penalty for knowingly harming an Aboriginal object (s86[1]) and/or an Aboriginal place (s86[4]) is up to \$550,000 for an individual and/or imprisonment for 2 years; and in the case of a corporation the penalty is up to \$1.1 million. The penalty for a strict liability offence (s86[2]) is up to \$110,000 for an individual and \$220,000 for a corporation.

Harm under the National Parks and Wildlife Act (1974, as amended) is defined as any act that destroys defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. However, it is a defence from prosecution if the proponent can demonstrate that;

- 1) harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) (and the permit was properly followed), or

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2) the proponent exercised due diligence in respect to Aboriginal heritage.

The 'due diligence' defence (s87[2]), states that if a person or company has applied due diligence to determine that no Aboriginal object, site or place was likely to be harmed as a result of the activities proposed for the Project Area, then liability from prosecution under the NPW Act 1974 will be removed or mitigated if it later transpires that an Aboriginal object, site or place was harmed. If any Aboriginal objects are identified during the activity, then works should cease in that area and Heritage NSW, Department of Premier & Cabinet notified (DECCW 2010:13). The due diligence defence does not allow for continuing harm or as defence to s.86(1) or (4).

The archaeological due diligence assessment and report has been carried out in compliance with the Heritage NSW (DECCW 2010) Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.

1.5.2 NATIONAL PARKS AND WILDLIFE REGULATION (2019)

The National Parks and Wildlife Regulation 2019 provides a framework for undertaking activities and exercising due diligence in respect to Aboriginal heritage. The Regulation (201909) recognises various due diligence codes of practice, including the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, but it also outlines procedures for Aboriginal Heritage Impact Permit (AHIP) applications and Aboriginal Cultural Heritage Consultation Requirements (ACHCRs); amongst other regulatory processes.

1.5.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 (EP&A ACT)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the statutory framework for planning and environmental assessment in NSW and the implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. The EP&A Act sets up a planning structure that requires developers (individuals or companies) to consider the environmental impacts of new projects. Under this Act, cultural heritage is considered to be a part of the environment. It provides for the identification, protection and management of heritage items through inclusion of these items into schedules of planning instruments, such as Local Environmental Plans (LEPs) or Regional Environmental Plans (REPs). This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage that development may have, are formally considered in land-use planning and development approval processes.

This Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part 3 which governs the preparation of planning instruments, Part 4 which relates to development assessment provisions for local government (consent) authorities and Part 5 which relates to activity approvals by governing (determining) authorities. Planning decisions within Local Government Areas (LGAs) are guided by Local Environmental Plans (LEPs). Each LGA is required to develop and maintain an LEP that includes Aboriginal and historical heritage items which are protected under the EP&A Act and the NPW Act. The Project Area is located within the Liverpool City Council LGA and falls under the 2008 LEP.

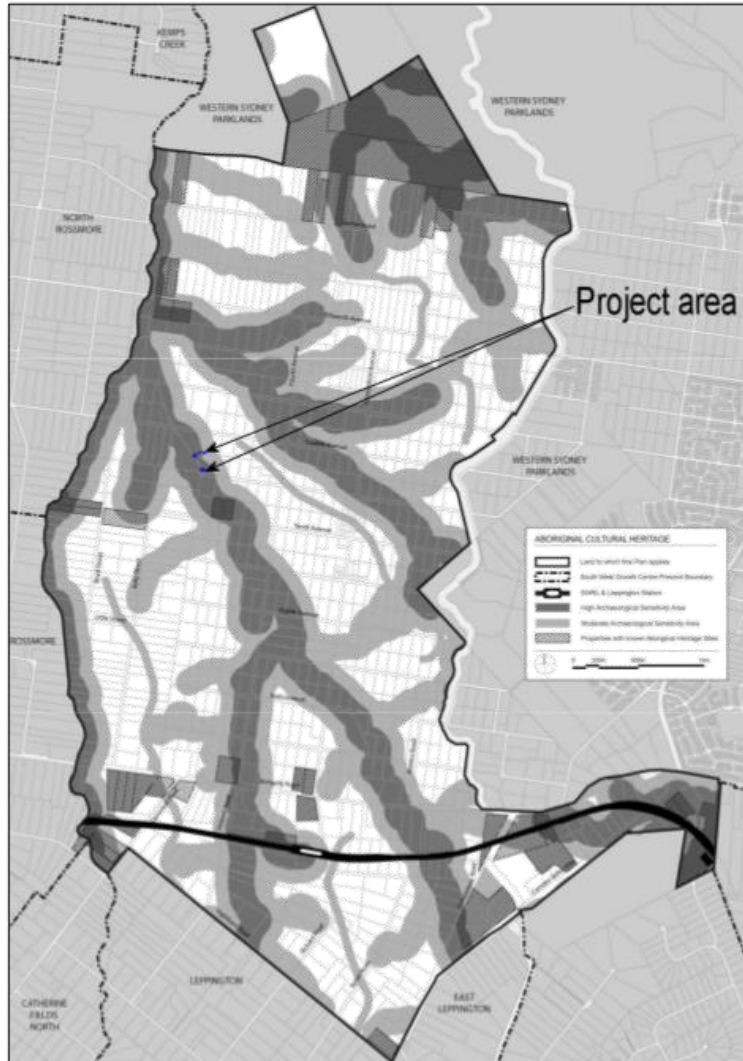
1.5.4 LOCAL ENVIRONMENTAL PLAN

The project area is located within the Liverpool City LGA and is subject to the South West Growth Centre SEPP and is located within the Austral Precinct of the SEPP.

As indicated in Figure 1.6, the Liverpool City Council Schedule One – Austral and Leppington North Precincts DCP (2021) shows that the project area falls within an area identified as having high and

moderate potential on the Aboriginal cultural heritage control plan. The archaeology of the area and potential in the project area are discussed in Section 2.2.

Figure 1.6 The Liverpool Aboriginal cultural control plan



1.6 ABORIGINAL COMMUNITY CONSULTATION

A due diligence assessment relates to the physical identification of Aboriginal objects, sites and places. Community consultation is only required once Aboriginal objects, sites or places have been identified and an Aboriginal Heritage Impact Permit (AHIP) is deemed necessary. Section 5.2 of the Heritage NSW (DECCW 2010) Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW specifically states that;

'consultation with the Aboriginal community is not a formal requirement of the due diligence process' (2010:8).

1.7 QUALIFICATIONS OF THE INVESTIGATOR

Dr. Penny McCardle: Principal Archaeologist & Forensic Anthropologist has 23 years experience in Indigenous archaeological assessments, excavation, research, reporting, analysis and consultation and 20 years in skeletal identification, biological profiling and skeletal trauma identification for NPWS, NSW Police and the NSW Department of Forensic Medicine.

- BA (Archaeology and Palaeoanthropology): Indigenous archaeology, University of New England 1999
- Hons (Archaeology and Palaeoanthropology): Physical Anthropology, University of New England 2001
- Forensic Anthropology Course, University of New England 2003
- Armed Forces Institute of Pathology Forensic Anthropology Course, Ashburn, VA 2008
- Analysis of Bone trauma and Pseudo-Trauma in Suspected Violent Death Course, Erie College, Pennsylvania, 2009
- Documenting Scenes of War and Human Rights Violations. Institute for International Criminal Investigations, 2018
- PhD, University of Newcastle, 2019

1.8 REPORT STRUCTURE

The report includes Section 1 which outlines the project, Section 2 presents the environmental and archaeological context, Section 3 provides the results and discussion and Section 4 presents the Impact Assessment, Section 5 discusses the mitigation measures and Section 6 provides the management recommendations.

2 ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXT

The archaeological due diligence process and assessment requires that the available knowledge and information in relation to the environmental and archaeological contexts are considered. The purpose of this is to assist in identifying whether Aboriginal objects, sites or places are likely to be present within the project area based on archaeological predictive modelling and in what condition they may be found in given the environmental impacts, both natural and anthropogenic.

2.1 LOCAL ENVIRONMENT

Past site location and land use are closely linked to the environment including the landform, geology, geomorphology, soils, waterways and associated resources. The environmental context is important to identify potential factors relating to past Aboriginal land use patterns.

The project area is situated in the Cumberland Plain, an expanse of flat land in the centre of the Sydney Basin and the eastern portion of the project area is on the Waiiamatta Group Bringelly Shales consisting of shale, claystone, laminate, lithic sandstone, and coal. The western part of the project area is on Alluvial floodplain deposits of silt, fine grained lithic to quartz rich sand and clays (NSW Seamless Geology), (Figure 2.1). Materials most dominant in stone tool manufacture in the local area include a dominance of silcrete followed by indurated mudstone/tuff and in lesser quantities, quartz, basalt and petrified wood (McDonald 2002, Oakley 2007, Austral Archaeology 1984, AHMS 2012), all of which are absent from the local area.

Figure 2.1 Geology of the project area and surrounds



The eastern part of the project area that consists of the Bringelly shales, consists of the Blacktown residual soil landscape and the western part (alluvium) consists of the South Creek soil landscape. The Blacktown soil landscape typically consists gently undulating rises and include broad rounded crests and ridges with gently inclined slopes. This soil landscape consists of an A₁ horizon (up to 30 cm in depth) of friable brownish-black loam to clay loam, but can range from dark reddish-brown to dark yellowish-brown. This overlies the A₂ horizon (10-20 cm in depth) of hard setting dark brown clay loam to silty clay loam, but can range from dark reddish-brown to dark brown. This the overlies the B horizon (Hazelton, Bannerman, and Tille. P. 1989: 35-38). The South Creek soil landscape occurs

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on flood plains, valley flats and drainage depressions of the channels of the Cumberland Plain, is usually flat with incised channels and is mainly cleared land. The A horizon (up to 50 cm in depth) consists of a brown sandy loam to sandy clay loam or a hard setting dull brown clay loam to fine sandy clay loam. This overlies the B horizon that is a bright brown light to medium clay (Hazelton, Bannerman and Tille, 1989: 92-95).

The geomorphology of the local area (excluding alluvial soil landscapes), includes texture contrast soils that consist of an upper soil Horizon A and underlying B (referred to as duplex soils). Within the region, sites tend to occur on or within soil Horizon A or are often present at the interface of the A and B horizons. Within the A horizon the lowermost (in terms of vertical positioning) artefact assemblages tend to contain artefacts that are typically attributed to the mid-Holocene, as characterised by an increase in the number of backed artefacts.

In terms of fresh water availability, a 3rd order creek is located along the western boundary. This flows north to meet Kemps creek where it forms a 4th order approximately one kilometre from the project area (Figure 2.2). However, prior to works along the creek that have included excavation and widening twice since the 1960s, the creek was likely originally a 2nd or 1st order. Being an original 2nd or 1st order creek, fresh would have been available following heavy rain which would have enabled small hunting and gathering parties rather than long-term, large-scale camping.

Figure 2.2 Stream orders of the local area



In relation to land uses and associated impacts, Heritage NSW (DECCW 2010) defines disturbed lands as land that has been the subject of human activity that has changed the lands' surface and, or subsurface, these changes being changes that remain clear and observable. This definition is based on the types of disturbances classified in The Australian Soil and Land Survey Field Handbook (CSIRO 2010) and Table 2.1 provides a scale formulated by the CSIRO of the levels of disturbances and their classification, which will assist in determining the level of disturbance across the project area and its impact on potential cultural material that may be present.

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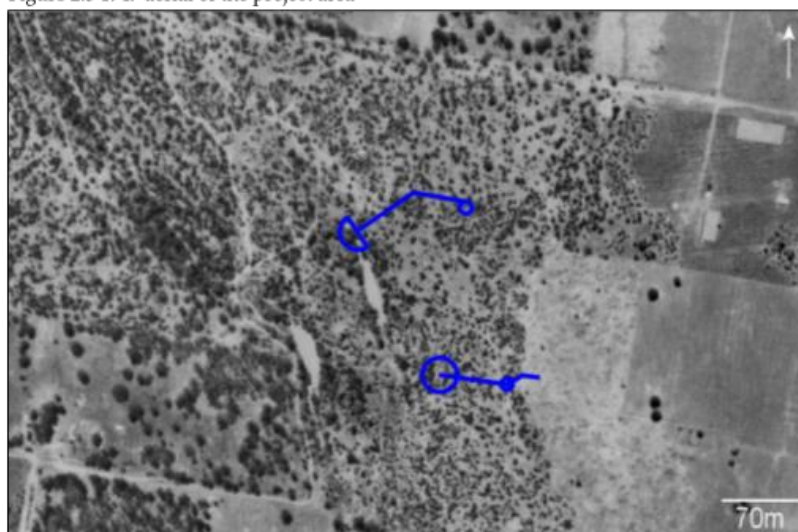
Table 2.1 Land use scale (CSIRO 2010)

Minor disturbance		Moderate disturbance		Major disturbance	
Cleared and/or grazed at some time, but apparently never ploughed		Cleared and/or grazed at some time, with ploughing also attested		Severe disturbance to natural soil profiles; complete-to-near complete topsoil loss/disturbance	
0	No effective disturbance; natural	3	Extensive clearing (e.g., poisoning and ringbarking)	6	Cultivation: grain fed
1	No effective disturbance other than grazed by hoofed animals	4	Complete clearing; pasture native or improved, but never cultivated	7	Cultivation: irrigated, past and present
2	Limited clearing (e.g., selected logging)	5	Complete clearing; pasture native or improved, cultivated at some stage	8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban

Regionally, following European settlement of the area in the 1820s, the regional landscape has been subjected to a range of different modifactory activities including extensive logging and clearing, agricultural cultivation (ploughing), pastoral grazing, residential developments and other construction works. The associated high degree of landscape disturbance has resulted in the alteration of large tracts of land and the cultural materials contained within these areas.

Based on NSW Government historic aerial photography (NSW Historic Imagery) and Nearmap, the project area has been subject to a range of both moderate and high landuses disturbances and impacts. As shown in Figure 2.3. The project area appears to have been subject to selective logging by 1947 only. Interestingly, the creek along the western boundary of the project area appears to be of a smaller order than mapped today.

Figure 2.3 1947 aerial of the project area

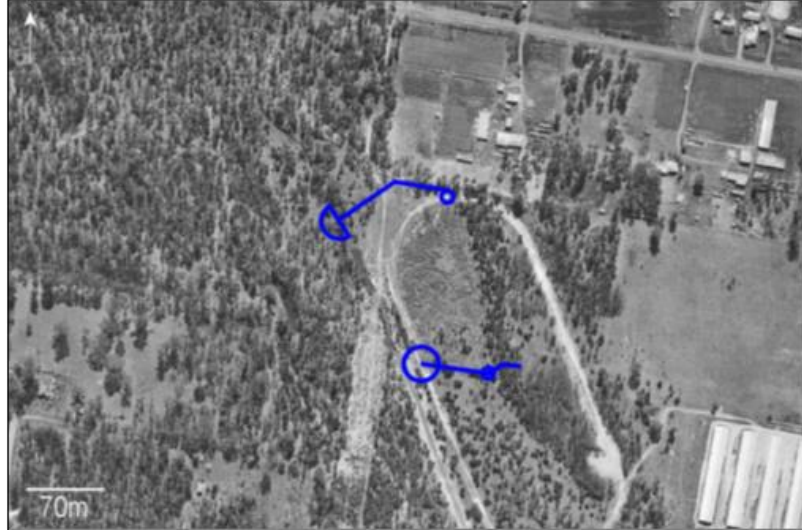


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By 1965 (Figure 2.4), the southern component of the project area has been cleared and a large track goes through it and through the eastern part of the northern component of the project area. The majority of the northern component has also been cleared with a smaller track through it. Additionally, and very significantly is the creek has been excavated and widened.

Figure 2.4 1965 aerial of the project area



The next obvious visible change appears to be excavation and agricultural activities along the northern border of the project area in 1978 (Figure 2.5) along with vegetation re-growth and continued of the tracks.

Figure 2.5 1978 aerial of the project area



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By 1986 (Figure 2.6), the entire northern component of the project area has been cleared and subject to some form of excavation/levelling works. The western half of the southern component has also been cleared again and subject to similar works as the northern end. The creek along the eastern boundary has again been subject to excavation and widening works.

Figure 2.6 1986 aerial of the project area



The next time disturbances appear in aerial photography is the 2004 aerial photograph (Figure 2.7) whereby the northern component of the project area is again subject too clearing and excavation works. The western side of the southern component is also subject to clearing and some form of excavation works as well as road construction works along the eastern end. The creek does not appear to have been widened again but appears to have been subject to maintenance (vegetation control).

Figure 2.7 2004 aerial of the project area



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The 2023 aerial photograph (Figure 2.8) shows an established track through the northern part of the project area and no other obvious visible disturbances to the project area.

Figure 2.8 2023 aerial of the project area



In summary, the project area has been cleared a number of times, subject to excavation works a number of times, has tracks through it and the creek along the western boundary has been excavated and expanded in width twice. These land uses not only impact on the landscape and any evidence of past Aboriginal land uses, but notably, the excavation and widening of the creek has resulted in the creek being mapped as a 3rd order today, which has significant implications for archaeological predictive modelling. These landuses and how they impact on the landscape and deposits are discussed below and the impacts to archaeological predictive modelling is discussed in Sections 2.3 and 2.7.

Early vegetation clearing included the uprooting of trees by chaining which disturbed or destroyed that may be present near, or underneath trees and vegetation (Wood 1982). Alternatively, timber was harvested manually, using axes and hand saws and generally, only the trees that were wanted for timber were felled (selective logging). However, after the 1950s, there was an increase in mechanisation in the logging industry, and clear-felling became widely practised whereby the best logs were removed for processing, but nearly every other tree was bulldozed and burnt, and had increased impacts to the landscape.

Excavation works required for developments, including but not limited to business, residential, industrial, works depots and associated infrastructure and utilities, as well as excavation works required for creek widening, require excavation, cut and fill methods. These direct impacts to the land and associated cultural materials that may be present are easy to see and understand. Any form of construction or resource exploitation that involves the removal of, relocation of or compaction or soils sediments or minerals, requires the modification of the topography, thus displacing and/or destroying any cultural materials that may have been present (Wood 1982). These significant disturbances have results in very little to none of the original topsoils remaining in situ in the project area.

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In terms of everyday land uses, vehicular movements on sites have been well documented and based on several experiments (DeBloois, Green and Wylie 1974, Gallagher 1978), have shown that vehicle movements over an archaeological site are extremely destructive to the site through compaction and movement, thus altering the spatial relationship and location of the artefacts. Based on general observations it is expected that the creation of dirt tracks for vehicle access would also result in the loss of vegetation and therefore will enhance erosion and the associated relocation of cultural materials.

Additional disturbances would have derived from natural processes. The patterns of deposition and erosion within a locality can influence the formation and/or destruction of archaeological sites. Within an environment where the rate of erosion is generally high, artefacts deposited in such an environment will be eroded downslope after being abandoned (Waters 2000; Waters and Kuehn 1996). If erosion occurs after cultural material is deposited, it will disturb or destroy sections, or all of, archaeological sites even if they were initially in a good state of preservation. The more frequent and severe the episodes of erosional events the more likely it is that the archaeological record in that area will be disturbed or destroyed.

Additionally, bioturbation processes such as the redistribution and mixing of cultural deposits occurs as a result of burrowing and mounding by earthworms, ants and other species of burrowing animals. Artefacts can move downwards through root holes as well as through sorting and settling due to gravity, and translocation can also occur as a result of tree falls (Balek 2002; Peacock and Fant 2002; Canti 2003; Stein 2003:). Experiments to assess the degree that bioturbation can affect material have been undertaken. In abandoned cultivated fields in South Carolina, Michie (summarised in Balek 2002:42-43) found that over a 100-year period 35% of shell fragments that had been previously used to fertilise the fields were found between 15 and 60 centimetres below the surface, inferred to be as a result of bioturbation and gravity. The ways in which earthworms can affect cultural deposits includes: creating false artefact concentrations and stratigraphy (for example biomantles) by moving artefacts downwards through the soil; indirectly displacing larger artefacts as they burrow through the soil; burying artefacts through the deposition of faecal material on the surface; and blurring natural and cultural boundaries. They can also destroy remains of seeds and organic materials as they eat them (Fowler et al. 2004:462; Stein 1983:280-281).

The project area is located within an environment that provided limited resources. As shown through historical aerial imagery, the creek located along the western side of the project area was not a 3rd order, but rather a 2nd or 1st order. Without a reliable fresh water supply to enable camping, the project area may have been utilised for more transitory activities such as travel and hunting and gathering following rain on the way to reliable water and associated subsistence resources. Such past Aboriginal land uses are manifest in the archaeological record as a background scatter of discarded artefacts (such as isolated artefacts and/or very low-density artefact scatters). In relation to modern alterations to the landscape, the previous large-scale clearing, a number of excavations, creek widening and tracks can be expected to have had moderate to high impacts upon the archaeological record at those locations.

2.2 ARCHAEOLOGICAL CONTEXT

A review of the archaeological literature of the region, and more specifically the local area and the results of an AHIMS search provide essential contextual information for the current assessment.

While the Aboriginal occupation of Australia is currently accepted as beginning approximately 65,000 years ago (Clarkson et al. 2017), the Aboriginal occupation of the Hunter Valley has been dated to approximately 20,000 years (Brayshaw 1987:100). Radiocarbon dates obtained from charcoal at a site in Glennies Creek, north of Singleton, found that artefacts within the deposit dated to

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approximately 20,200 years before present (BP). Despite this Pleistocene period site, most of the archaeology in the Hunter region has been dated to the Holocene period.

There are many types of evidence past Aboriginal occupation across the landscape which form the archaeological record of a region. Places which show evidence of Aboriginal occupation of an area are archaeological sites. These sites contain numerous site features, and some contain more than one features.

2.3 LIVERPOOL GROWTH CENTRE PRECINCTS DEVELOPMENT CONTROL PLAN (SCHEDULE 1)

As indicated in Figure 1.6, the project area falls within areas previously identified as being of moderate and high potential on heritage control plan within the Austral and Leppington North Precincts (Liverpool DCP – Schedule 1).

However, the assessment undertaken to inform the DCP (AMBS 1012) has been shown to be out of date as new information through assessments and test excavations have provided more information regarding past Aboriginal land use and site patterns in the archaeological record. Based on more recent assessments, it is known that the highest concentration of sites is within 50 metres of reliable water and that site numbers and density decrease with distance from water. In fact, the evidence has shown that:

- sites located in the vicinity of major tributaries (4th and 5th order streams/rivers) have the highest distribution and densities. These sites tend to be extensive and complex in landscapes with permanent and reliable water and contain evidence representative of concentrated activity;
- sites located in the vicinity of the lower reaches of tributaries (3rd order creeks) have a decreased distribution and density and contain evidence that may represent repeated occupation or concentration of activity;
- sites located in the vicinity of the upper reaches of minor tributaries (2nd order streams) have a relatively sparse distribution and density and may represent evidence of localised one-off behaviour such as brief camping, travel and/or hunting and gathering; and
- sites in proximity to ephemeral water sources or located in the vicinity of headwaters of upper tributaries (1st order streams) have a sparse distribution and density and contain little more than a background scatter representative of travel and/or hunting and gathering.

Additionally, in relation to this project area, the NSW historic imagery has shown that the 3rd order creek along the western side of the project area was in fact a lower stream order prior to it being excavated and widened twice. The creek prior to its first widening completion in 1965, was either a 2nd or 1st order drainage line.

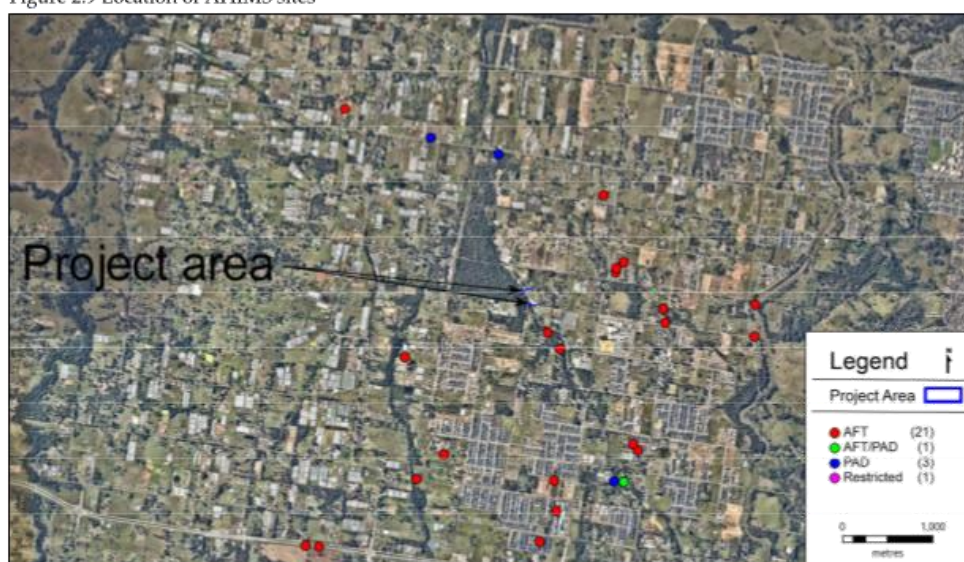
Based on the recent assessments throughout the area and a thorough understanding of land uses and their impacts to the project area, and more importantly, to the creek along its western boundary, the previous mapping of the heritage potential (moderate to high) in the project area is partially supported. Due to the level of disturbances and lower stream order of the creek, the project area has low to moderate archaeological potential. However, the survival of any archaeological evidence will be dependent on the level of impacts for past land uses which will be assessed during this assessment.

2.3.1 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

It must be noted that there are many limitations with an AHIMS search including incorrect site coordinates due to errors and changing of computer systems at AHIMS over the years that failed to correctly translate old coordinate systems to new systems. Secondly, AHIMS will only provide up to 110 sites per search, thus limiting the search area surrounding the project area and limiting a more comprehensive analysis and finally, few sites have been updated on the AHIMS register to notify if they have been subject to a s87 or s90 and as such what sites remain in the local area and what sites have been destroyed, to assist in determining the cumulative impacts, is unknown.

A search of the AHIMS register (Appendix A) has identified 26 known Aboriginal sites currently recorded within two kilometres of the project area and include 21 artefact sites, 3 PADs 1 artefact with PAD site and 1 restricted access site (Figure 2.9). There are no registered sites or Aboriginal Places within the project area.

Figure 2.9 Location of AHIMS sites



2.3.2 HERITAGE REGISTER LISTINGS

The National Heritage List, the Commonwealth Heritage List, the Australian Heritage Database, Australia's National Heritage List and The National Trust Heritage Register State Heritage Inventory have no Aboriginal objects, sites or places listed.

2.3.3 SUMMARY OF THE ARCHAEOLOGICAL CONTEXT

The majority of archaeological surveys and excavations throughout the region have been undertaken in relation to environmental assessments for various developments, including but not limited to, residential and industrial, infrastructure, utilities, mining and quarrying. A review of the of the most relevant investigations (Smith 1990, McDonald 1993a, b, McDonald 2002, Veth and McDonald 2003, Craib, McDonald and White 2006, Oakley 2007, Austral 2009, AMBS 2012; AHMS 2012, AECOM 2015; McDonald 2005; Comber 2016), specifically those in the immediate area (Biosis 2017, MCH 2017a, b, 2018a, b, 2019a, b, 2000a, b, 2021a, b 2022a-c, 2023a-d, 2024a – c, Stenning 2016, 2017), have highlighted that;

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- a wide variety of site types are represented in the project area with open campsites and isolated artefacts by far the most common
- lithic artefacts are primarily manufactured from silcrete and mudstone with a variety of other raw materials also utilised but in smaller proportions
- sites in proximity to ephemeral water sources or located in the vicinity of headwaters of upper tributaries (1st order streams) have a sparse distribution and density and contain little more than a background scatter
- sites located in the vicinity of the upper reaches of minor tributaries (2nd order streams) also have a relatively sparse distribution and density and may represent evidence of localised one-off behaviour
- sites located in the vicinity of the lower reaches of tributaries (3rd order creeks) have an increased distribution and density and contain evidence that may represent repeated occupation or concentration of activity
- sites located in the vicinity of major tributaries (4th and 5th order streams/rivers) have the highest distribution and densities. These sites tend to be extensive and complex in landscapes with permanent and reliable water and contain evidence representative of concentrated activity
- sites located within close vicinity at the confluence of any order stream may be a focus of activity and may contain a relatively higher artefact distribution and density

The previous assessments also noted that all sites had been disturbed through past landuses including but not limited to clearing, agricultural and pastoral activities, residential developments, utilities, infrastructure and erosion. All excavations also identified highly disturbed subsurface deposits due to the above mentioned intensive long-term land uses.

2.3.4 PREVIOUS ASSESSMENT IN THE ADJOINING PROPERTY

Eco Logical Australia undertook an archaeological due diligence assessment of 231-245 Eleventh Avenue, Austral, adjoining the eastern side of the project area. A summary of the report was available in the SEE assessment (GDS 2019).

The AHIMS search found that no sites were located within the study area. The field investigations identified moderate to heavy disturbance across the study area, with the eastern half of the site being the most disturbed. However, based on the adjacent creek line and less disturbed nature of the western half of the study area, it was determined that the western portion of the site possesses moderate archaeological potential. Further investigation, including test excavation, was recommended to identify any Aboriginal subsurface archaeological deposit that may exist within the study area.

Due to the constraints pertaining to the site, including vegetation retention areas, electrical easement and flood prone land within the western portion of the site, the development area available was restricted and therefore, the development was proposed in a way that no works were to be undertaken within the western half of the study area. No impacts on potential aboriginal artefacts were anticipated.

As the full DD assessment is unavailable, it is unknown if the DD assessment took into consideration the extensive previous archaeological work in the local area and, more importantly, the fact that the creek was of a lower order prior to the 1960s, both of which significantly affects archaeological predictive modelling and understanding of the local environment.

2.4 SYNTHESIS OF ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS

When assessing sites in terms of distance to water, in the region there is a clear pattern of past land uses whereby the majority of high-density sites are situated within 50 metres of reliable fresh water (high order) and reduce in both numbers and densities with a decrease in stream order. Thus, it is apparent that open campsites/isolated finds are most concentrated in number and size within 50 metres of reliable fresh water.

As is to be expected, the majority of sites within 50 metres of water are present on elevated landforms in association with creek lines whilst slopes and crest/ridge formations are also common site locations, although with an absence of reliable fresh water, were used for more transitory activities. The frequent presence of sites on crest/ridges and slopes is also noticeable for sites located over 50 metres from water. Due to the importance of water in the grinding process, it is not surprising that sites of this type are situated close to water. Based on information gained from previous studies, both regionally and locally, and the environmental context, within a two-kilometre radius of our project area, it can be expected that:

- main site types are artefact scatters and isolated finds
- the likelihood of locating sites increases with proximity to available water;
- the likelihood of finding large sites of high densities increases markedly with proximity to reliable water and decreases with a reduction in stream order;
- silcrete is by far the most common raw material types represented at sites in the region. Mudstone/tuff/chert are the next most frequently in artefact assemblages followed by quartz, volcanic materials, porphyry and petrified wood
- a variety of stone artefact types will be located though the majority will be flakes, flaked pieces and debitage;
- grinding grooves may be located along or near water sources within sandstone formations;
- the likelihood of finding scarred trees is dependent on the level of clearing in an area;
- the vast majority of artefactual material in the region was observed on exposures with good to excellent ground surface visibility; and
- the majority of sites will be subject to disturbances including human and natural.

2.5 MODELS OF PAST ABORIGINAL LAND USE

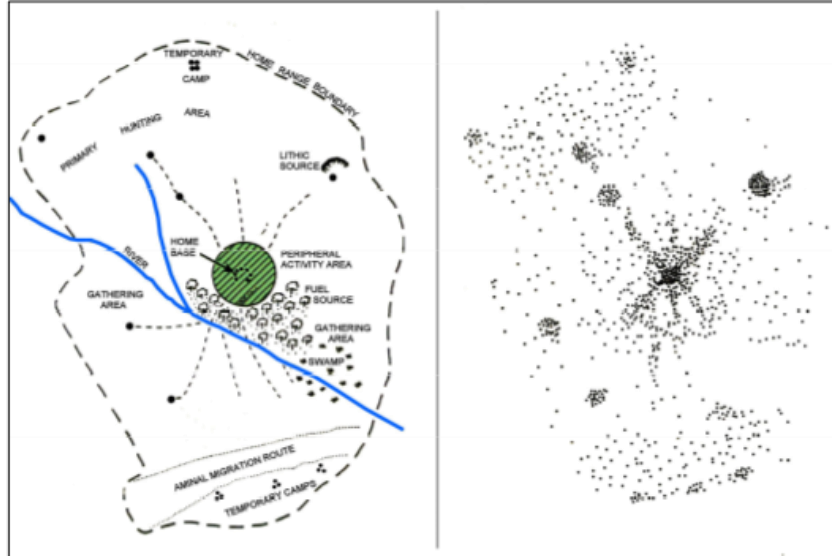
The main aim of this project is to attempt to define both the nature and extent of occupation across the area. As a result, the nature of the analysis will focus on both the landform units and sites. The purpose of this strategy is to highlight any variations between sites and associated assemblages, landforms and resources across the area treating assemblages as a continuous scatter of cultural material across the landscape. In doing this, it is possible to identify variation across the landscape, landforms and assemblages that correspond with variation in the general patterns of landscape use and occupation. Thus, the nature of activities and occupation can be identified through the analysis of stone artefact distributions across a landscape. A general model of forager settlement patterning in the archaeological record has been established by Foley (1981). This model distinguishes the residential 'home base' site with peripheral "activity locations".

Basically, the home base is the focus of attention and many activities and the activity locations are situated away from the home base and are the focus of specific activities (such as tool manufacturing). This pattern is illustrated in Figure 2.10 Home base sites generally occur in areas

with good access to a wide range of resources (reliable water, raw materials etc). The degree of environmental reliability, such as reliable water and subsistence resources, may influence the rate of return to sites and hence the complexity of evidence. Home base sites generally show a greater diversity of artefacts and raw material types (which represent a greater array of activities performed at the site and immediate area). Activity locations occur within the foraging radius of a home base camp (approximately 10 km); (Renfrew and Bahn 1991).

Based on the premise that these sites served as a focus of a specific activity, they will show a low diversity in artefacts and are not likely to contain features reflecting a base camp (such as hearths). However, it is also possible that the location of certain activities cannot be predicted or identified, adding to the increased dispersal of cultural material across the landscape. If people were opting to carry stone tools during hunting and gathering journeys throughout the area rather than manufacturing tools at task locations, an increased number of used tools should be recovered from low density and dispersed assemblages.

Figure 2.10 Foley's model (L) and its manifestation in the archaeological record (R), (Foley 1981).



2.6 MODEL OF OCCUPATION FOR THE LOCAL AREA

Work throughout NSW has aimed to understand the nature of Aboriginal occupation and to identify the nature of past Aboriginal land uses. This theme often aims to identify and explain archaeological patterning in site type, content and distribution. General theories have been developed outlining the relationship between land use patterns and the resulting archaeological evidence. A number of models developed for the region have been reviewed (McBryde 1976; Koettig 1994; Dean-Jones and Mitchell 1993; Rich 1995; Kuskie and Kamminga 2000; McDonald and White 2010). All models state that the primary requirements for repeated, concentrated or permanent occupation is access to reliable fresh water. Brief and possible repeated occupation may be represented in areas that have unreliable access to ephemeral water sources, however, these areas will not contain high archaeological evidence or potential (Goodwin 1999).

Kuskie and Kamminga (2000) established a general model of occupation strategies based primarily upon ethnographic research. Used as a starting point, it makes a general set of factors that are

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consistent with other studies (e.g., McDonald and White 2010, Nelson 1991). The model distinguishes between short-term or extended long-term occupation and makes some predictions about the likely location of different foraging and settlement activities. Combining this information with a review of assemblage contents from a sample of excavated sites within the region, a baseline of settlement activities may be determined (Barton 2001).

The model provides a number of archaeological expectations that may be tested. For example, the presence of features requiring a considerable labour investment (e.g., stone-lined ovens or heat-treatment pits) are likely to occur at places where occupation occurred for extended periods of time. The presence of grindstones is also a reliable indicator of low mobility and extended occupation as seed grinding requires a large investment of time and effort (Cane 1989). In most ethnographic examples, seed grinding is an activity that takes place over an entire day to provide adequate energetic returns (Cane 1989; Edwards and O'Connell 1995).

Where group mobility was high and campsites frequently shifted throughout the landscape, artefact assemblages are not expected to contain elements such as grindstones, heat-treatment pits, ovens and the diversity of implements frequently discarded at places of extended residential occupation. It may also have been the case that the location of particular activities could not be predicted by tool users, adding to the increased low-density scattering of artefacts over the landscape. Also, if individuals were opting to carry a number of stone tools during hunting and gathering activities and maintaining these tools rather than manufacturing new tools at each task location, the ratio of used tools to unworn flakes in these assemblages should be high. Table 2.2 has been adapted from Kuskie and Kamminga (2000).

Table 2.2 Site descriptions (Kuskie & Kamminga 2000).

Occupation Pattern	Activity Location	Proximity to water	Proximity to food	Archaeological expectations
Transitory movement	all landscape zones	not important	not important	- assemblages of low density & diversity - evidence of tool maintenance & repair - evidence for stone knapping
Hunting &/or gathering without camping	all landscape zones	not important	near food resources	- assemblages of low density & diversity - evidence of tool maintenance & repair - evidence for stone knapping - high frequency of used tools
Camping by small groups	associated with permanent & temporary water	near (within 100m)	near food resources	- assemblages of moderate density & diversity - evidence of tool maintenance & repair - evidence for stone knapping & hearths
Nuclear family base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	- assemblages of high density & diversity - evidence of tool maintenance, repair, casual knapping - evidence for stone knapping - heat treatment pits, stone lined ovens - grindstones
Community base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	- assemblages of high density & diversity - evidence of tool maintenance, repair, casual knapping - evidence for stone knapping - heat treatment pits, stone lined ovens - grindstones & ochre - large area >100sqm with isolated camp sites

2.7 PREDICTIVE MODEL FOR THE PROJECT AREA

An archaeological predictive model is established to identify areas of archaeological sensitivity so it can be used as a basis for the planning and management of Aboriginal heritage. It involves reviewing existing literature to identify basic site distribution patterns. These patterns are then modified according to the specific environment of the project area to form a predictive model for site location within the current project area. A sampling strategy is then used to test the model and the results of the survey used to confirm, refute or modify the model.

Land-systems and environmental factors are commonly used factors in predictive modelling based on the assumption that they provide distinctive sets of constraints and opportunities that influenced past Aboriginal land use patterns. As land use patterns may differ between zones (due to different environmental conditions), this may result in the physical manifestation of different spatial distributions and forms of archaeological evidence. The predictive model presented here is based on landform units, previous archaeological assessments conducted within the region, distribution of known sites and site densities and traditional Aboriginal land use patterns. Also taken into consideration are land use impacts (both natural and anthropomorphic) that may have resulted in a disturbed landscape and associated archaeological record.

Considering the AHIMS results, local and regional archaeological investigations as well as the environmental context, given that fresh water was necessary for survival and the project area is located along what was originally a 1st or 2nd order creek, the absence of reliable fresh water indicates the project area and immediate surrounds may have been used no more than hunting and gathering opportunities rather than large-scale long-term camping. Evidence of such past Aboriginal land uses manifest in the archaeological record as low-density artefact scatters and isolated artefacts.

Non-indigenous settlement and land uses have significantly impacted the investigation area, most noticeably from clearing works twice, excavation works twice as well as the removal of the banks along the original creek banks for widening of the creek twice since the 1960s. These land uses would have impacted on the archaeological record by removing or re-distributing any cultural materials that may have been present in the project area.

The presence of past Aboriginal people and their use of the landscape are undeniable and evidence is seen in the cultural materials that have survived both natural and human land uses since colonisation of the area in the 1800's. Whilst it is clear Aboriginal people lived across the landscape, the evidence will have been impacted and/or destroyed through such land uses. The site types that may be present within the project area include artefact scatters and, or isolated artefacts, both of which are described below.

- **Artefact scatters**

Also described as open campsites, artefact scatters and open sites, these deposits have been defined as two or more stone artefacts within 50 metres of each other and will include archaeological remains such as stone artefacts and may be found in association with camping where other evidence may be present such as shell, hearths, stone lined fire places and/or heat treatment pits. These sites are usually identified as surface scatters of artefacts in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing, grazing) and access ways can also expose surface campsites. Artefact scatters may represent evidence of;

- Large camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- Medium/small camp sites, where activities such as minimal tool manufacturing occurred;

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- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

Artefact scatters are a common site type in the locality and the broader region. There is potential for low-density artefact scatters to occur within the project area in area and be representative of hunting and gathering activities. However, there is also the potential for such sites to be impacted on through past land uses.

- **Isolated finds**

Isolated artefacts are usually identified in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface artefacts. Isolated finds may represent evidence of;

- Hunting and/or gathering events; or
- Transitory movement through the landscape.

Isolated finds are a common site type in the locality and the broader region. There is potential for isolated artefacts to occur across the project area and across all landforms. There is also the potential for such sites to be impacted on through past land uses.

3 RESULTS AND DISCUSSION

To comply with the due diligence requirement that a visual inspection of the project area be undertaken, an archaeological survey across the project area was undertaken by MCH archaeologist on 24th May 2024. The survey focused on areas of high ground surface visibility and exposures (erosional features, tracks, cleared areas).

3.1 SURVEY UNITS

A project area consisting of two parcels (a southern portion and a northern portion) accessed via 231-245 Eleventh Avenue, Austral. The inspection confirmed that the project area had been subject to high levels of past disturbance, including creek widening, drainage line excavation, vegetation clearance, track creation/use, dam/embankment creation, the establishment of a power line easement and animal grazing.

The southern portion of the project area was located to the immediate west of Eleventh Avenue. The western end of this portion of the project area was predominantly within the channel of an unnamed tributary of Kemps Creek, unable to be accessed due to both fencing and high levels of water within the channel at the time of inspection. The highly channelised nature of the tributary and artificially straight edges were assessed as being evidence of past modification.

The northern portion of the project area also had its western-most section inaccessible due to fencing and high levels of water in the tributary channel, but visual assessment across this area verified it as being highly disturbed. Similarly, the middle section was fenced off at the time of inspection, but it was possible to walk immediately adjacent to it along the fence line and visually inspect it, again confirming it as highly disturbed. The eastern portion was immediately adjacent to a large embankment that formed a dam wall. It was being used for animal grazing and had a power line easement and excavated drainage channel running through it. No sites or PADs were identified. Based on the high levels of past disturbance, no intact in situ subsurface archaeological deposits were considered likely to occur within this project area. Examples of the project area are provided in Figures 3.1 to 3.4.

Figure 3.1 View east across the southern section of the project area towards Eleventh Avenue



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Figure 3.2 View west across the unnamed Kemps Creek tributary at the western end of the southern section of the project area



Figure 3.3 View west across the unnamed Kemps Creek tributary at the western end of the northern section of the project area



Figure 3.4 View northeast across the northern section of the project area showing an excavated drainage channel



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As shown in Table 3.1 the total effective coverage for the project area was 15m², or 1% reflecting the low surface visibility due to vegetation cover.

Table 3.1 Effective coverage for the investigation area

SU	Landform	Area (m2)	Vis. %	Exp. %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m2)
1	north	700	10%	10%	erosion, tracks, quarry	clearing, creek widening, fencing	erosion	vegetation	7
2	south	800	10%	10%	erosion	clearing, creek widening, fencing, dam wall	erosion	vegetation	8
Totals		1,500							15
Effective coverage %									1.00%

The level and nature of the effective survey coverage is considered satisfactory to provide an effective assessment of the project area. The coverage was comprehensive for obtrusive site types (e.g., grinding grooves and scarred trees) but somewhat limited for the less obtrusive surface stone artefact sites by surface visibility constraints that included vegetation cover and minimal exposures.

In relation to land uses and the associated impacts on the landscape and any cultural materials that may have been present, the project area has been subject to high levels of past disturbance, including creek widening, drainage line excavation, vegetation clearance, track creation/use, dam/embankment creation, the establishment of a power line easement and animal grazing, and as indicated in Table 3.2, these disturbances range from moderate to high.

Table 3.2 Land use scale (CSIRO 2010) and land uses in the project area

Minor disturbance		Project area	Moderate disturbance		Project area	Major disturbance		Project area
0	No effective disturbance; natural		3	Extensive clearing (e.g., poisoning and ringbarking)		6	Cultivation: grain fed	
1	No effective disturbance other than grazed by hoofed animals		4	Complete clearing: pasture native or improved, but never cultivated	all	7	Cultivation: irrigated, past and present	
2	Limited clearing (e.g., selected logging)		5	Complete clearing: pasture native or improved, cultivated at some stage		8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban	yes

3.2 ARCHAEOLOGICAL SITES AND ARCHAEOLOGICAL SENSITIVITY

No sites or areas of potential archaeological sensitivity were identified in the project areas during the survey and this is due to the significantly high impacts from previous land uses across the project area (clearing, ploughing, grazing, vineyard). Additionally, being located at a distance from reliable fresh water and resources, indicates the project area may have been utilised for more transitory activities rather than camping. Evidence of such past Aboriginal land uses manifests in the archaeological record as a background scatter of discarded artefacts, which would have been disturbed/destroyed through past land uses.

In view of the predictive modelling and the results obtained from the effective coverage and disturbance rating, it is concluded that the survey provides a valid basis for determining the probable impacts of the proposal and formulating recommendations for the project. The survey results demonstrate the absence of Aboriginal objects within the project area. The results are consistent with those obtained from other studies in the local area in similar environmental contexts. The results indicate a number of possible past Aboriginal land use within the project area;

- No Aboriginal occupation
- Ground disturbances having disturbed or removed evidence

3.3 CONCLUSION

It is well established that proximity to water was an important factor in past occupation of the area, with sites reducing in number significantly away from water with most sites located within 50 metres of the tributaries. The project area is located over one kilometre from a 4th order creek and associated subsistence resources. The project area was unsuitable for sustained camping but may have been utilised for transitory movement or hunting/gathering activities only.

In relation to modern alterations to the landscape, previous high levels of past disturbance, including creek widening, drainage line excavation, vegetation clearance, track creation/use, dam/embankment creation, the establishment of a power line easement and animal grazing, can be expected to have had moderate to high impacts upon the archaeological record. Natural factors such as erosion would also have impacted on the archaeological record, all of which would have displaced cultural materials and the likelihood of in situ cultural materials is very low.

4 ASSESSMENT OF IMPACTS

The archaeological record is a non-renewable resource that is affected by many processes and activities. As outlined in Section 2 and Section 3, the various natural processes and human activities have impacted on archaeological deposits through both site formation and taphonomic processes.

4.1 IMPACTS

The Heritage NSW Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (2010:21) describes impacts to be rated as follows:

- 1) Type of harm: is either direct, indirect or none
- 2) Degree of harm is defined as either total, partial or none
- 3) Consequence of harm is defined as either total loss, partial loss, or no loss of value

As no sites or PADs were identified, there are no impacts on the archaeological record.

5 MITIGATION AND MANAGEMENT STRATEGIES

Specific strategies, as outlined through the Heritage NSW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), and the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010c), are considered below for the management of the identified site(s) within the project area.

5.1 CONSERVATION/PROTECTION

Conservation is the first avenue and is suitable for all sites, especially those considered high archaeological significance and/or cultural significance. Conservation includes the processes of looking after an indigenous site or place so as to retain its significance and managed in a way that is consistent with the nature of peoples' attachment to them.

As no sites or PADs were identified conservation/protection is not required.

5.2 FURTHER INVESTIGATION

An Aboriginal Heritage Impact Permit (AHIP) is no longer required to undertake test excavations (providing the excavations are in accordance with the Code of Practice for Archaeological Investigations in NSW). Subsurface testing is appropriate when a PAD has been identified, and it can be demonstrated that sub-surface Aboriginal objects with potential conservation value have a high probability of being present, and that the area cannot be substantially avoided by the proposed activity.

As no sites or PADs were identified further investigations are not justified.

5.3 AHIP

If harm will occur to an Aboriginal object or Place, then an AHIP should be sought from Heritage NSW, Department of Premier & Cabinet as a defence to that harm. If a systematic excavation of the known site could provide benefits and information for the Aboriginal community and/or archaeological study of past Aboriginal occupation, a salvage program, and, or community collection, may be an appropriate strategy to enable the salvage of cultural objects.

As no sites or PADs were identified an AHIP is not required.

6 RECOMMENDATIONS

6.1 GENERAL

- 1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Regulation 2019, under the National Parks and Wildlife Act 1974;
- 2) An Unexpected Finds Procedure (Appendix B) will be implemented during all works; and
- 3) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately, the Unexpected Finds Procedure followed and the Environmental Line contacted.

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APPENDIX A

AHIMS Search Results



AHIMS Web Services (AWS)

Search Result

Your Ref/PO Number : Austral

Client Service ID : 893889

Penny Mccardle

Date: 21 May 2024

Po Box 166

Adamstown New South Wales 2289

Attention: Danny Merceda



Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 294700.0 - 298700.0, Northings : 6241500.0 - 6245500.0 with a Buffer of 0 meters, conducted by Penny Mccardle on 21 May 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

26	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](https://www.legislation.nsw.gov.au/gazette) (<https://www.legislation.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Austral

Client Service ID : 893889

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-4018	PAD 2019-6	GDA	56	297367	6242079	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103783
	Contact									
	Recorders									
45-5-5017	Kelly Street AD 1	GDA	56	295666	6242099	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-5831	Thirteenth Ave IF02	GDA	56	297451	6243969	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-5242	Eight Ave Austral Scatter 2	GDA	56	297572	6242348	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-5-3873	BRP-S-18	GDA	56	294710	6241532	Open site	Destroyed	Artefact : 1		
	Contact									
	Recorders									
45-5-5291	FOURTH AVENUE	GDA	56	297277	6244546	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-5-4020	Isolated Object 2021-5	GDA	56	296796	6243361	Open site	Valid	Artefact : -		103783
	Contact									
	Recorders									
45-5-5658	Boyd Street AS 1	GDA	56	295565	6243151	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-5832	Thirteenth Ave IF01	GDA	56	297381	6243882	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-4019	PAD 2020-6	GDA	56	297450	6242075	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		103783
	Contact									
	Recorders									
45-5-5318	Tenth Avenue Austral AFT 1	GDA	56	296903	6243221	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-5043	UC IA 13	GDA	56	298584	6243604	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-5-4005	PAD 2006-6	GDA	56	295790	6245041	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									
	Recorders									
45-5-4964	Eight Ave Austral Scatter	GDA	56	297530	6242401	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-5-2689	B62	AGD	56	295050	6245290	Open site	Valid	Artefact : -		
	Contact									
	Recorders									
45-5-5317	EDM IF1	GDA	56	297809	6243447	Open site	Valid	Artefact : -		
	Contact									
	Recorders									

Report generated by AHIMS Web Service on 21/05/2024 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 294700.0 - 298700.0, Northings : 6241500.0 - 6245500.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 26

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Austral

Client Service ID : 893889

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-3860	BRP-IF-11	GDA	56	294826	6241522	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd, Mr. Leigh Bate, Miss. Kristen Taylor					Permits	3742	
45-5-5347	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	Recorders	Mr. Giles Hamm					Permits		
45-5-5830	Thirteenth Ave AS01	GDA	56	297388	6243917	Open site	Valid	Artefact : -		
	Contact	Recorders	Biosis Pty Ltd - Wollongong, Mrs. Samantha Keats					Permits		
45-5-4017	PAD 2018-6	GDA	56	296372	6244899	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103783, 103786
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users, Doctor. Alan Williams, Mr. Matt					Permits		
45-5-4962	SA-AS1-17	GDA	56	296870	6241825	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr. Geordie Oakes, AECOM Australia Pty Ltd - Sydney					Permits	4553	
45-5-3968	ALN-IF-60	GDA	56	298577	6243329	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	Australian Museum Consulting (AM Consulting), Niche Environment and Heritage, S					Permits		
45-5-3887	BRP-S-10	GDA	56	296851	6242085	Open site	Destroyed	Artefact : 1		103783
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd, Mr. Leigh Bate, Miss. Kristen Taylor					Permits	3742	
45-5-5546	Edmondson Avenue West AFT 1	GDA	56	297792	6243566	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr. Matthew Kelleher, Kelleher Nightingale Consulting Pty Ltd (Generic users)					Permits	4938	
45-5-5401	Lot 21 AS 1 & PAD 1	GDA	56	295902	6242313	Open site	Valid	Artefact : -		
	Contact	Recorders	Archaeological Risk Assessment Services (ARAS), Mr. Giles (dup ID#12832) Hamm					Permits		
45-5-4912	Fifth Avenue 1	GDA	56	296727	6241565	Open site	Valid	Artefact : -		104137
	Contact	Recorders	Biosis Pty Ltd - Sydney, Mr. James Cole					Permits	4167	

**** Site Status****Valid** - The site has been recorded and accepted onto the system as valid**Destroyed** - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.**Partially Destroyed** - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground**Not a site** - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 21/05/2024 for Penny Mccardle for the following area at Datum : GDA, Zone : 56, Eastings : 294700.0 - 298700.0, Northings : 6241500.0 - 6245500.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 26

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APPENDIX B

Unexpected finds procedure

Unexpected finds procedures

Unexpected find protocols have been developed to provide procedures for unexpected finds including Aboriginal objects and the discovery of human remains. These protocols must be followed throughout all stages of the development.

Unexpected Aboriginal objects

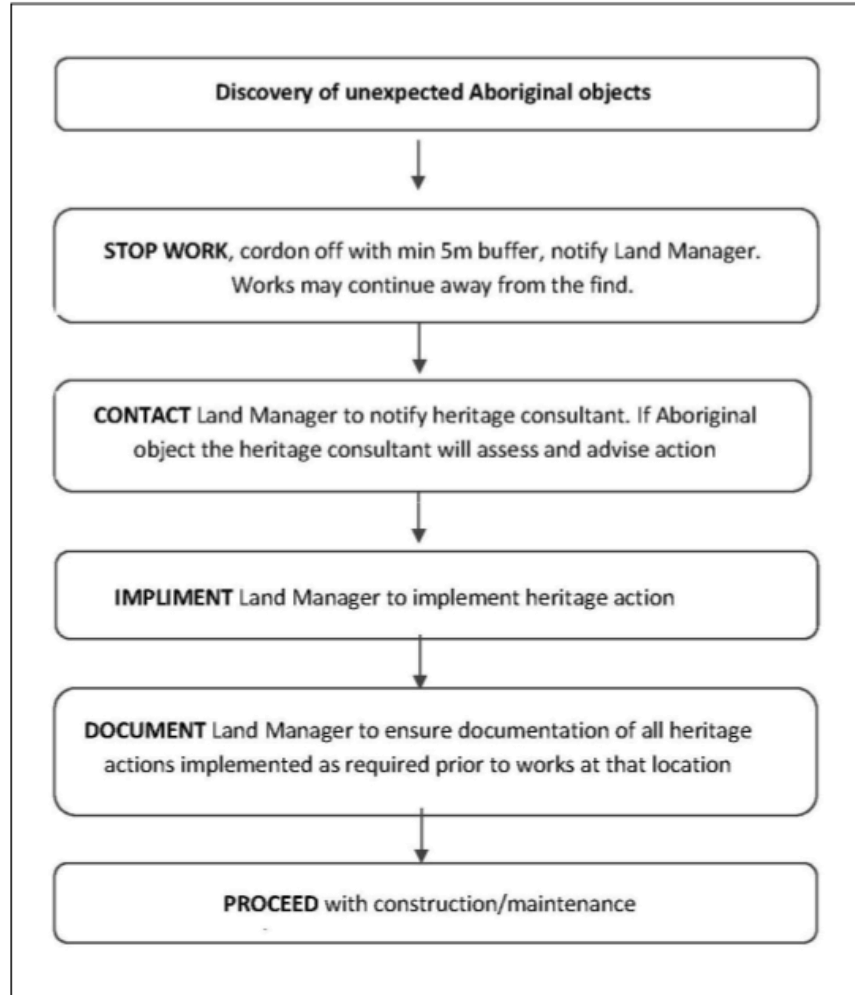
Should unexpected Aboriginal objects be uncovered during any stage of the development, Figure 1 illustrates the protocols. Unexpected Aboriginal objects may include, but not limited to, isolated artefacts, artefact scatters, scarred trees, hearths and shell middens (descriptions of such objects are provided).

Work must stop immediately in that location, the objects cordoned off with at least a 5m perimeter surrounding the object(s) with high visibility fencing/barrier and the Land Manager notified immediately. The Land Manager will then contact the heritage consultant who will assess the object(s) and recommend appropriate mitigation measures, including contacting the Environmental Line if required. The Land Manager is to implement all reasonable mitigation measures recommended by the heritage consultant and in accordance with Heritage NSW regulations and the NSW NPW Act.

If additional works are required, such as an Aboriginal Cultural Heritage Assessment (ACHA) with or without test excavations or an Aboriginal Heritage Impact Permit (AHIP) (with collection or salvage excavations), the Land Manager is to arrange for the heritage consultant to undertake those works in accordance with all Heritage NSW requirements, procedures and Code of Practice. The methodology for undertaking additional works will be dependant on a number of factors including, but not limited to, site/object type and disturbances. Due to the unknown nature of unexpected objects, methodologies for further investigation (if required) of unexpected Aboriginal objects will be determined during consultation with Heritage NSW.

Provided these heritage unexpected finds protocols have been followed, construction/maintenance works in that location may proceed.

Figure 1. Unexpected finds protocol flow chart



Discovery of human remains

Human skeletal remains are of the highest significance and importance to Aboriginal people, and all care, respect and dignity will be extended by all parties should human remains be uncovered.

If human remains or unidentified bone are uncovered during any stage of the development and maintenance activities, the appropriate State legislation will be followed. All human remains fall under the *Coroners Act 2009* in the first instance. If they are identified as Aboriginal and older than 100 years old, they will fall under the *NSW NPWS Act 1974* (as amended). If they are identified as Aboriginal and 100 years or less, they will remain under Police derestriction under the *Coroners Act 2009*. Figure 2 outlines the required protocols should human remains be uncovered.

Should any human remains or unidentifiable bone be found, work is to stop in that area immediately and an area of 15m cordoned off surrounding the remains/bone in high visibility fencing. The Land Manager is to be notified immediately.

The Land Manager will contact the heritage consultant and local NSW Police immediately, who will then contact the NSW Forensic Services who will determine if they are:

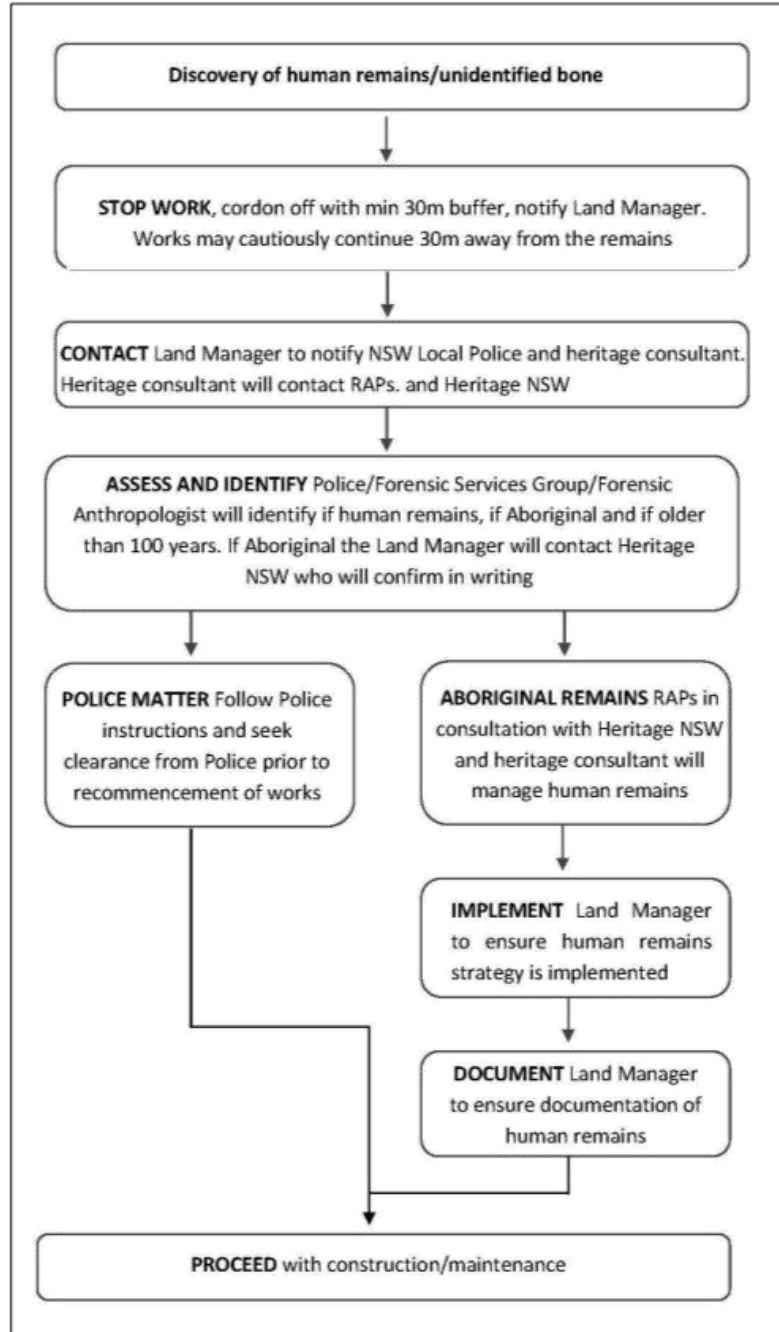
- 1) Human;
- 2) Aboriginal or non-Aboriginal;
- 3) If Aboriginal, determine antiquity (older or younger than 100 years)

If it is determined the remains are Aboriginal and older than 100 years old, the Police will notify the Land Manager who must contact the Environmental Line and Heritage NSW immediately. Heritage NSW, in consultation with the relevant Aboriginal community and the heritage consultant will develop a human remains management strategy and the Land Manager is to ensure this strategy is implemented. The Land Manager must also document the human remains management strategy and the heritage consultant will provide a letter of clearance prior to any works recommencing at that location.

If the remains are determined to be a Police matter, Police instructions will be followed and clearance to recommence works should be sought from the Police.

Provided the human skeletal protocols have been followed and documented, and a clearance letter from the heritage consultant has been obtained, construction/maintenance works may proceed in that location.

Figure 2 Human remains protocol flow chart



Verification of all Aboriginal objects (sites)

All potential Aboriginal sites will be verified by the heritage consultant in the first instance, and Heritage NSW if required.

The purpose of the verification process is to determine whether or not the objects in question are in fact Aboriginal objects to ensure appropriate management measures be implemented.

The verification process will include the following provisions:

1. A heritage consultant may assess the scientific status of the Aboriginal object (site) and provide evidence and justification for significance;
2. If it is an Aboriginal object the Environmental Line will be contacted and the site reported;
3. An AHIMS site card will be completed for each Aboriginal object (site); and
4. Management recommendations specific to each Aboriginal object (site), will be determined by Heritage NSW.

231-245 Eleventh Avenue, Austral Stormwater Infrastructure

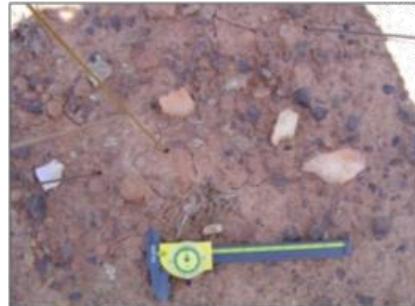
2024

Surface Artefact scatters

Also described as open campsites, artefact scatters and open sites, these deposits have been defined at two or more stone artefacts within 50 or 200 metres of each other and may include archaeological remains such as stone artefacts, shell, and sometimes hearths, stone lined fire places and heat treatment pits. These sites are usually identified as surface scatters of artefacts in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface campsites. Artefact scatters may represent evidence of;

- Camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

If a potential artefact scatter has been identified, the Unexpected Finds Protocol must be followed immediately.

Examples of artefact scatters (MCH)

Surface Isolated finds

Isolated artefacts are usually identified in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface artefacts. Isolated finds may represent evidence of;

- Hunting and/or gathering events; or
- Transitory movement through the landscape.

If a potential isolated find has been identified, the Unexpected Finds Protocol must be followed immediately.

Examples of isolated artefacts (MCH)

231-245 Eleventh Avenue, Austral Stormwater Infrastructure

2024



**THREATENED SPECIES ASSESSMENT
FOR POTENTIAL IMPACTS OF
MODIFICATIONS TO DA-793/2019
(ADDITIONAL STORMWATER
INFRASTRUCTURE)
IN RELATION TO A SMALL PATCH OF
COASTAL VALLEYS RIPARIAN FOREST
LOCATED AT 231-245 ELEVENTH AVE,
AUSTRAL**

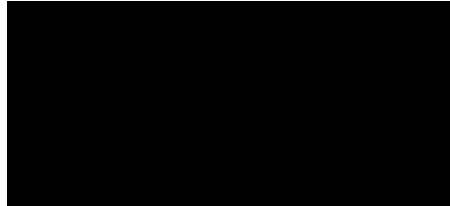
Prepared for:



Finalised 19th JULY 2024

ACS Environmental P/L

Flora and Fauna Surveys, Biodiversity Impact Assessment
& Bushland Plans of Management Services
Australian Business Number (ABN) 24 154 491 120



Director & Principal Ecologist

Peter Stricker BSc. (Hons) (Syd) ^α

^α Member Ecological Consultants Association NSW Inc

Consultant Ecologist

Josie Drevon BSc., Grad. Dip. (UNSW)

Consultants experience

The principal of 'ACS Environmental P/L' has worked in the area of biodiversity impact and bushland management plan preparation services for 20 years. He also has 20 years of experience in scientific research (ecological) and teaching in biological science at UNSW.

The consultant ecologist has several years' experience in ecology and biodiversity impact assessment. She has also taught biological sciences at UNSW.

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GLOSSARY AND ACRONYMS

BC Act	Biodiversity Conservation Act (2016): legislation enacted in August 2017
BV Map	Biodiversity Values Map
CCPD	Crown Canopy Projective Density (DEC 2002)
CEEC	Critically Endangered Ecological Community
DEC	State Department of Environment and Conservation
DECCW	State Department of Environment, Climate Change and Water
DPI	Department of Primary Industries
DPE	Department of Planning and Environment
E (threatened species status)	Endangered species
EEC	Endangered Ecological Community as listed by the BC Act and EPBC Act
EPA Act	Environment Protection Act
EPBC Act	Environmental Protection & Biodiversity Conservation Act (1999). Enacted to protect and manage nationally and internationally (migratory) flora, fauna and ecological communities, defined in the Act as matters of national environmental significance (NES)
HTW	High Threat Weeds
LPI	NSW Land and Property Information
NPWS	State National Parks and Wildlife Service
OEH	State Office of Environment and Heritage
PCT	Plant Community Type identified as such using the Bionet Vegetation Classification system (OEH 2018)
RoTAP	Rare or Threatened Australian Plants
SMCMA	Sydney Metropolitan Catchment Management Authority
SRZ	Structural Root Zone
Threatened species, populations or ecological communities	Entities listed by the BC Act and EPBC Act as 'Vulnerable to decreasing population growth in time', Endangered as population growth decreasing rapidly leading to eventual extinction' or 'Critically Endangered, a more extreme rate of population decrease than the former'
TPZ	Tree Protection Zone
V (threatened species status)	Vulnerable

1 Background

On behalf of Crownland Austral Pty Ltd, an application for modifications of consent for the approved DA-793/2019 (subdivision of lot 11: 231 – 245 Eleventh Ave, Austral) has been submitted which involves adding additional stormwater infrastructure servicing the development at the subject site. The modifications include installing gross pollutant traps (GPTs) accompanied by new stormwater drainage pipes that will connect the subject site to Bonds Creek, where stormwater will be discharged through energy dissipater bays and rock headwalls at 2 locations. The modifications replace the need for the already approved temporary On-Site Detention (OSD) and bio-retention basins (Colliers 2024).

Figure 1 shows the subject site with approximate location of the new GPTs and drainage pipes (Colliers 2024).

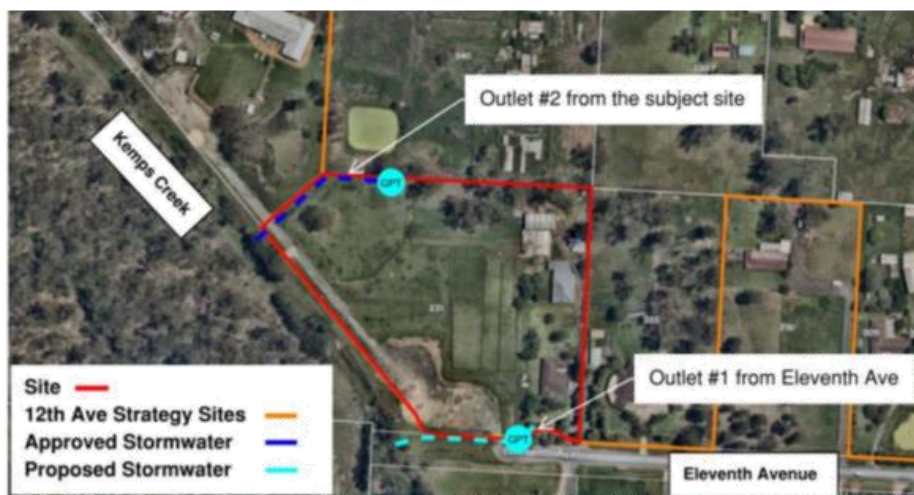


Figure 1 Aerial view of the subject site at Austral with approximate locations of the new GPTs and stormwater drains terminating at Bonds Creek (taken from Colliers 2024)

The construction of the dissipater bays and rock headwalls at the outlets into Bonds Creek will involve clearing some areas of native vegetation along the creek line. The trees that are required to be removed to accommodate the construction have been documented in an Arboricultural Impact Assessment [AIA] report by Naturally Trees (2024) (Figure 2). It is estimated that the impact zone around the outlets will extend approximately 7.5m either side along the line of the creek and approximately 5m from the vegetation to the edge of creek (Figures 3 & 4). The impact zones fall within the Cumberland Red Gum Riverflat Forest Plant Community Type (PCT 4025) which has an associated threatened ecological community (TEC) (DPE 2024) (Figure 5), however the area has not been mapped on the Biodiversity Values (BV) Map (Figure 6).

Figures 7-9 show the location and structure of the vegetation occurring at the 2 outlet sites within the impact zones.

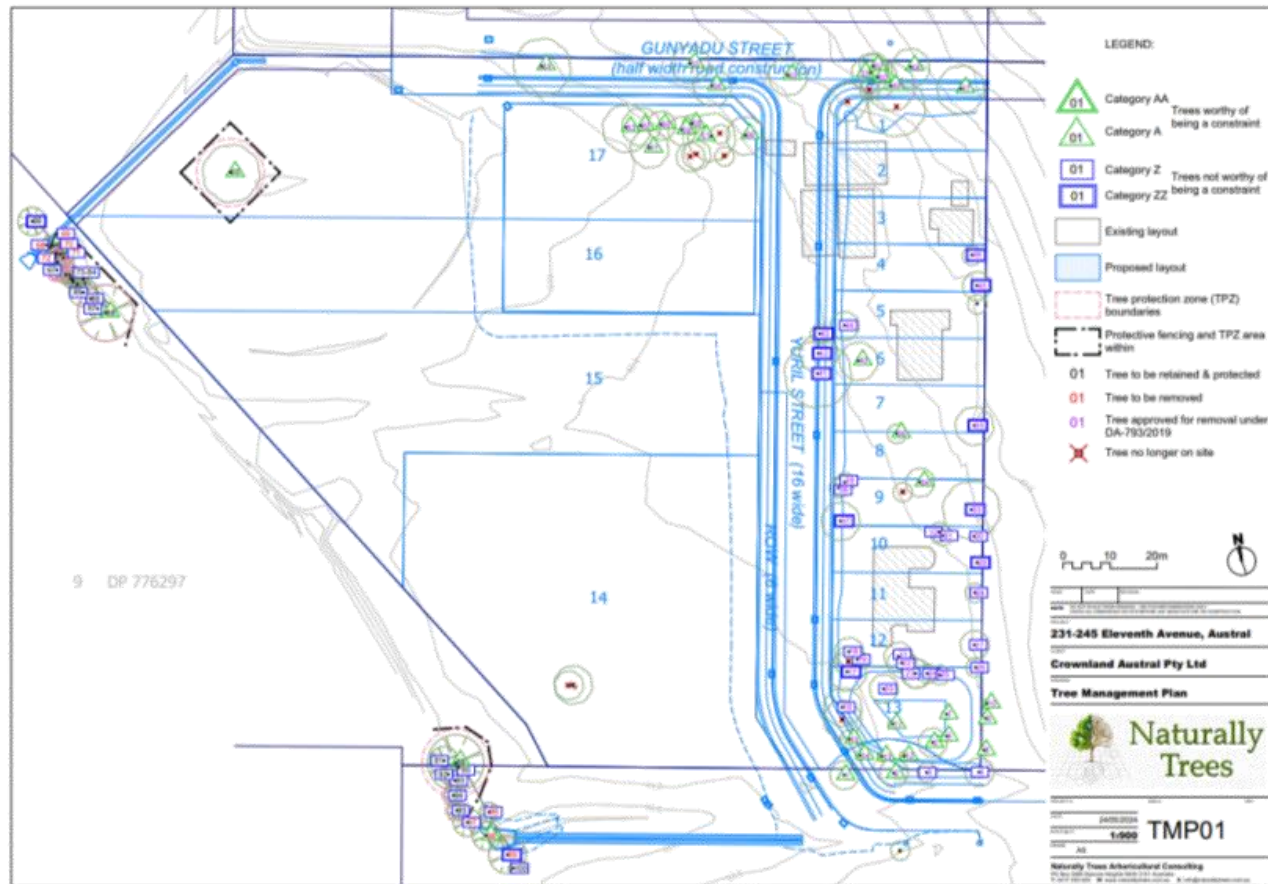
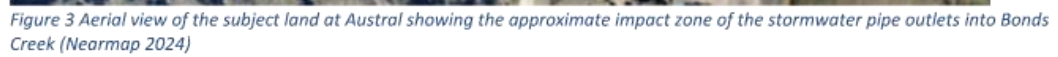


Figure 2 Location of 9 trees to be removed (red numbering) within the stormwater outlet sites 1 and 2 (red dotted lines), at 231 Eleventh Ave, Austral



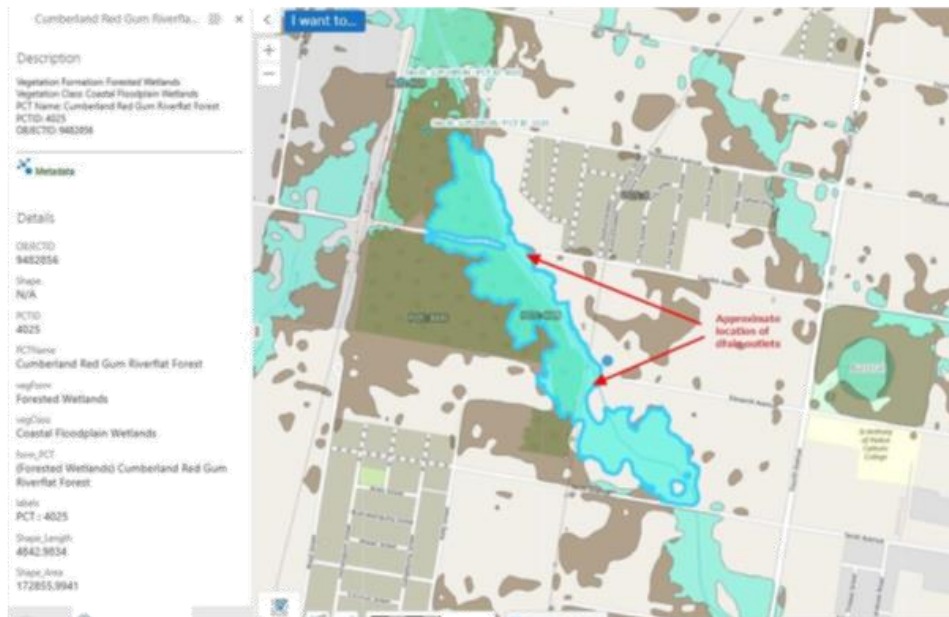


Figure 5 Vegetation map of the subject area at Austral indicating the presence of PCT 4025, a component of Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions – a threatened ecological community (TEC), along Bonds Creek.

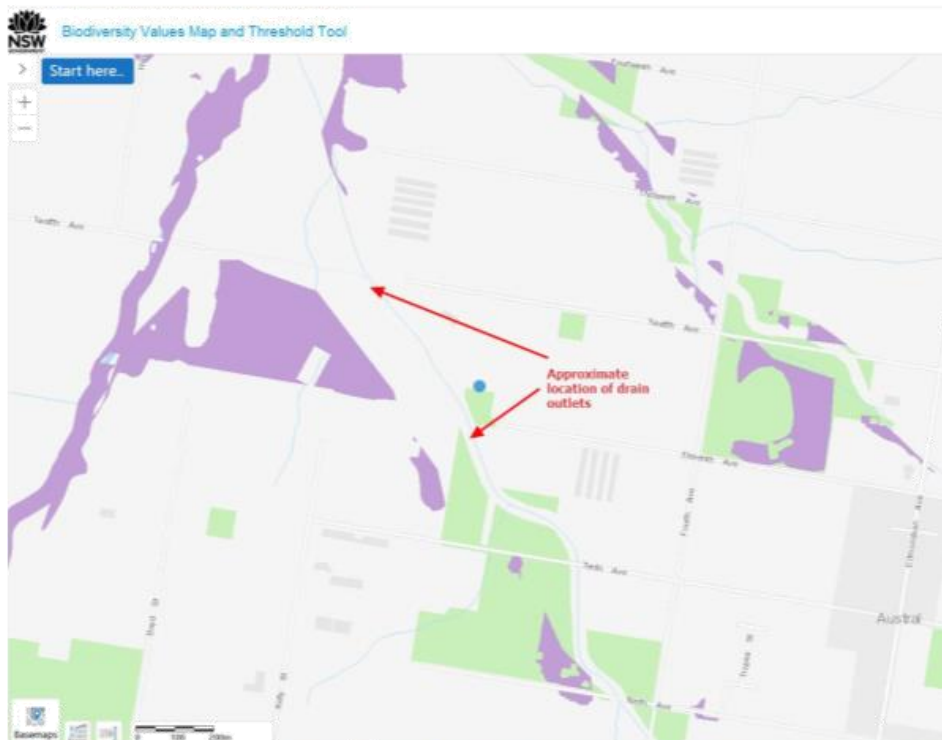


Figure 6 Distribution of biodiversity value (BV) along Bonds Creek, Austral, indicating no biodiversity value associated with the stormwater outlets (DPE 2024)



Figure 7 View looking towards Bonds Creek from the bottom of Eleventh Ave showing location of new stormwater pipes with subject site on the right



Figure 8 Copse of Casuarina glauca at subject site, typical of the vegetation along the creek line.



Figure 9 A mature individual of *Casuarina glauca* and *Acacia decurrens* at outlet site 1 that are marked for removal by Naturally Trees (2024)



Figure 10 View from the top of levee at outlet site 2 showing weedy ground cover of

2 Ecological Communities occurring at subject site

The Cumberland Red Gum Riverflat Forest (PCT 4025) that is mapped as occurring at the subject site has been documented as “grading into PCT 4023 on saline soils on a floodplain, which includes *Casuarina glauca* in its canopy” (DPE 2024). A site inspection and survey by ACS Environmental on 21/05/2024 confirmed that the Plant Community Type is more likely to be that of Coastal Valleys Riparian Forest (PCT 4023) (Figures 7-10). This PCT is identified as a component of Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions, an Endangered Ecological Community listed under the BC Act (DPE 2024).

The characteristics of the floristic assemblage at the study site that is representative of Coastal Valleys Riparian Forest are as follows:

Plant Community Type ID (PCT ID): 4023

PCT Name: Coastal Valleys Riparian Forest are as follows

Classification Confidence Level: 2-High

Total Number of Replicates: 36

Number of Primary Replicates: 31

Number of Secondary Replicates: 5

Vegetation Description A tall *Casuarina* open forest with a dense grassy ground layer that is found adjacent to streams or on river flats, primarily in the South Creek catchment of the Cumberland Plain to the west of Sydney and from Ellalong to north of Rothbury in the central Hunter valley.

The canopy is one of the distinguishing features of this PCT, very frequently including a high cover of relatively young *Casuarina glauca* amongst a mix of old and young eucalypts, commonly red gums (*Eucalyptus amplifolia* and *Eucalyptus tereticornis*) or occasionally *Eucalyptus moluccana*. The only common species in the sparse shrub layer is *Bursaria spinosa*.

There is a dense ground cover, typical of river flat forests, that is typically comprised of grasses, forbs, twiners and ferns. A high cover of *Microlaena stipoides* is almost always present, with more scattered *Brunoniella australis* and *Dichondra repens* being very frequent. Common ground covers include *Solanum prinophyllum*, *Glycine tabacina*, *Cheilanthes sieberi* subsp. *sieberi*, *Oplismenus aemulus* and *Lobelia purpurascens*.

It is possible that this PCT represents a successional state in a community that is re-establishing following clearing. In addition, the dominance of the salt tolerant *Casuarina glauca* may indicate saline conditions.

This PCT typically occurs at elevations below 70 metres asl in a hot, dry climate. On broader floodplains of the Cumberland Plain, it grades into PCT 4025, which rarely includes *Casuarina glauca* however nevertheless has considerable floristic overlap with this PCT. Near the edge of the

floodplain, it adjoins the grassy forests of either the Cumberland Plain (PCT 3320) or the Hunter valley (PCT 3315). Again, *Casuarina glauca* is rare in these PCTs.

Vegetation Formation: Forested Wetlands;

Vegetation Class: Coastal Floodplain Wetlands;

IBRA Bioregion(s): Sydney Basin;

IBRA Sub-region(s): Hunter; Cumberland;

LGA: SINGLETON, CAMDEN CESSNOCK, LIVERPOOL, PENRITH, BLACKTOWN, THE HILLS SHIRE;

Elevation (m) (Min, Median, Max): 19.70 53.20 113.50

Annual Rainfall (mm) (Min, Median, Max): 735 807 880

Annual Mean Temperature (deg C) (Min, Median, Max): 16.35 16.74 17.78

Median Native Species Richness per plot: 24

TEC Assessed: Has associated TEC

TEC List: Listed BC Act, E: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Part);

Listed EPBC Act, E: Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (Part);

TEC Comments: (Comment TEC1) Relates to the NSW Swamp Oak Floodplain Forest TEC.

(Comment TEC2) Relates to the Commonwealth Coastal Swamp Oak Forest TEC where a patch satisfies the condition requirements as per section 3.2 of the Conservation Advice.

PCT Percent Cleared: 78.22

PCT Definition Status: Approved

3 Environmental constraints, potential impacts and mitigation measures

3.1 Occurrence of Coastal Valleys Riparian Forest vegetation in work area

The proposed impact site is located in an area confirmed as occurring within Coastal Valleys Riparian Forest, a component of Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (DPE 2024) (Figures 4, 7- 10).

A floristic survey by ACS confirmed the dominant canopy species to be *Casuarina glauca*, along with some *Eucalyptus teretifolia* and *Eucalyptus moluccana*. *Acacia decurrens* and *Melaleuca decora* occurred in the mid storey. The dense ground cover consisted mostly of Kikuya, interspersed with weeds such as Wandering Jew (Figure 10), African Boxthorn and Fleabane

(Appendix 1). Small patches of *Persicaria decipiens*, *Phragmites australis* and *Typha orientalis* were evident in the creek itself.

3.2 Potential impacts to Coastal Valleys Riparian Forest vegetation in the works area

The area of Coastal Valleys Riparian Forest to be cleared to allow construction of the dissipator bays and headwalls at the stormwater outlets (Figure 4) is estimated at about 150m² based on 15 by 5m plots at the 2 outlet sites (Figure 3).

An Arboricultural Impact Appraisal (AIA) was carried out by Naturally Trees to assess the impact of the development on the surrounding trees, and found that a total of 9 trees are assessed to be removed at the two impact zones. These include several semi mature and mature individuals of *Casuarina glauca* and one individual of *Acacia decurrens* (Figures 2 & 9) (Naturally Trees 2024). There are approximately 21 trees to be retained in and around the impact zones (Naturally Trees), with sufficient numbers of mature individuals of *Casuarina glauca* and *Eucalyptus tereticornis* adjacent to the impact zones and on the opposite side of Bonds creek to maintain a healthy canopy density.

The understory to be cleared is very degraded and the ground storey consists mostly of weedy grasses and forbs (Figure 10, Appendix 1), with minimal native species found.

3.3 Threatened Species

No threatened flora species were observed at or in the vicinity of the subject site and it is considered that no threatened flora species will likely be directly impacted by the proposed works.

No threatened fauna species were observed at or in the vicinity of the subject site. The Swift parrot (*Lathamus discolor*) and Regent Honeyeater (*Anthochaera phrygia*) do not forage within this ecological community, both preferring open forests of flowering Eucalypts. In any case, these are all highly mobile species and the reduction of 150m² of this community is not considered to impact on the foraging, roosting or breeding behaviours of any of these species.

As such, it is considered that no threatened fauna species will likely be impacted by the proposed works.

3.4 5-part test of significance for potential impacts to Coastal Valleys Riparian Forest, a component of Swamp Oak Floodplain Forest at the subject site

Potential impacts of the proposal on the 2 small patches Coastal Valleys Riparian Forest, a component of the endangered ecological community Swamp Oak Floodplain Forest of the NSW

North Coast, Sydney Basin and South East Corner Bioregions, is assessed in accordance with Section 5A of the EP & A Act 1979 (State legislation).

The factors to be considered when determining whether an action, development or activity is likely to affect species, populations or ecological communities has been revised under Section 7.3 of the *Biodiversity Conservation Act (2016)* to a '5-Part Assessment of Significance' to focus consideration of likely impacts in the context of the **local** rather than the regional environment. This is consistent with the understanding that the long-term loss of biodiversity at all levels arises primarily from the losses and depletions of populations of species at a local level.

Coast Valleys Riparian Forest

This community is found adjacent to rivers and streams of the Cumberland Plain and from Ellalong to north of Rothbury in the central Hunter Valley. It has high cover of *Casuarina glauca* (Swamp Oak) amongst a mix of old and young Eucalypts, commonly *E. amplifolia* (Cabbage Gum), *E. tereticornis* (Forest Red Gum), and occasionally *E. moluccana* (Grey Box).

Assessment of the potential impacts on a small section of Coastal Valleys Riparian Forest listed under Schedule 2 Part 2 of the BC Act, by construction 2 stormwater outlets and headwalls within the Swamp Oak vegetation.

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species, populations or ecological communities or their habitats:

The factors of assessment:

(a) in the case of a threatened species, whether the proposed development or activity proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Comment: NA

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Comment: i) The patch of Coastal Valleys Riparian Forest that would be impacted is small, with the number of trees estimated to be removed being low at 9 (Naturally Trees 2024). The majority

of trees to be removed are individuals of *Casuarina glauca* (Swamp Oak) (Figures 7-10) and a satisfactory level of regeneration of this predominant species is currently occurring at the site. The ground layer is comprised largely of Kikuya (*Cenchrus clandestinum*) and Wandering Jew (*Tradescantia fluminensis*) (Figure 10, Appendix 1).

It is still recommended, however, that monitoring of weed emergence at the impacted site be undertaken to establish weed removal and weed control at the subject sites.

Comment ii) A relatively high level of regeneration of Swamp Oak and associated species, is currently occurring at the site. Although already degraded with a high content of weed species in the under and ground storeys, it is recommended that monitoring of weed emergence be regularly undertaken to establish weed removal and subsequent weed incursion control, so as to prevent modification of the composition of the community at the subject sites.

(c) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed

Comment: The total area of the patch of Coastal Valleys Riparian Forest that occurs in the immediate locality of the subject area is estimated at about 17.3ha (Figure 5), with numerous other patches occurring within a few kms along Bond and Kemps Creeks. The construction footprint within the patch is about 150m² (0.09 %) and as such, the extent of Coastal Valleys Riparian Forest within the subject patch will likely remain virtually unchanged.

The potential small loss of Coastal Valleys Riparian Forest habitat from an overall distribution of 2637ha is not considered to be significant in relation to the requirements of the proposed works. It is considered that the habitat will satisfactorily regenerate in time, post-construction.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

Comment: The limited potential impacts of the proposal is not considered to result in the local area of habitat to become fragmented or isolated as a result of the proposed works. In any case, it is considered that the habitat will regenerate in time post-construction.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality, long-term survival of the species,

Comment: The limited potential impacts of the proposed clearing of a small amount of habitat is not considered to adversely modify the habitat of the subject site such that the local ecological

community would incur any significant overall loss of species composition, fragmentation, habitat loss or decrease in extent of the ecological community in the locality.

(d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity (either directly or indirectly)

Comment: The area of Coastal Valleys Riparian Forest occurring at the subject site at Austral has not been mapped as an area of **outstanding biodiversity** (AOBV) (DPE 2024).

However, the biodiversity value of the locality is not considered to be significantly reduced by the impact of a potential loss of 9 trees and 150m² of habitat compared to the extent of habitat occurring in the local area (Figures 2 & 6).

(e) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Comment: Clearing of native vegetation is a Key Threatening Processes listed under the BC Act (2016).

However, the patch of about 150m² of Coastal Valleys Riparian Forest that will be impacted and the actively occurring regeneration of Swamp Oak and associated species, would not be considered to result in a key threatening process as a result of the proposed works.

Assessment of Significance Conclusion

The small patch of Coastal Valleys Riparian Forest that would be impacted would be very small (Figures 2 & 3).

A satisfactory level of regeneration of Swamp Oak is currently occurring at the site. The ground layer is comprised largely of Kikuya (*Pennisetum clandestinum*) and other weed species (Figure 10, Appendix 1).

As such, it would be considered that the removal of 9 trees and clearing of mostly understorey weed species would not have an adverse effect on the extent of the local community such that it would be placed at risk of extinction, further fragmented or significantly modified.

It would be recommended however, that monitoring of weed emergence at the impacted site be undertaken to establish weed removal and weed control at the subject sites.

The five factors requiring consideration, in determining '*whether there is likely to be a significant effect on threatened ecological communities*' concluded that there should be no significant long-term effect on the small patch of Coastal Valleys Riparian Forest that may be impacted at the

subject site compared to that which occurs in the general locality if the recommendations detailed in the assessment report are undertaken.

As a consequence, it is considered that further assessment in the form of a 'Species Impact Statement' is not considered warranted.

3.5 Addressing other environmental constraints in relation to the proposed works

- Spoil stockpiles and equipment laydown areas should be located so as not to disturb native vegetation.
- Sediment fences should be installed where appropriate.
- A spill kit should be on site at all times.
- All equipment and materials will be removed from the site upon completion of the works
- In the unlikely event of leakage or spillage, the spill/leak should be immediately contained and the Incident Management Plan should be implemented.
- Access to the site should be restricted and clearly marked signage displayed at the entrance points to the work site informing users of the works.

4 Conclusions

A 5-part test of significance for potential impacts to a small patch of Coastal Valleys Riparian Forest concluded that there would be no significant potential impacts to the extent of Swamp Oak Floodplain Forest vegetation in the immediate locality in respect to overall loss of individuals of Swamp Oak and Black Wattle, or of any other associated species and no overall loss of regeneration potential.

The 5-part test of significance also concluded that there would be no potential fragmentation or isolation of patches of Coastal Valleys Riparian Forest within the overall local distribution that would occur as a result of the proposed works, particularly if the necessary environmental safeguards are undertaken.

No threatened flora or fauna were recorded at the subject site. As such, the proposal to minimally impact a small section of Coastal Valleys Riparian Forest, a component of Swamp Oak Floodplain Forest vegetation is not expected to lead to the local extinction, fragmentation, isolation or modification of this patch of Coastal Valleys Riparian Forest community at the subject site at Eleventh Ave, Austral.

5 Literature referenced or reviewed

Colliers International Engineering & Design (2024) Application for modification of consent for DA-793/2019 | 231-245 Eleventh Ave, Austral

Colliers International Engineering & Design (2024) Civil Works Subdivision Works Certificate for Proposed Subdivision of Lot 11 D.P.776297 231-245 Eleventh Ave, Austral

DPE (2024) NSW Bionet Atlas Records

DPE (2024) Threatened Species and Ecological Communities Profiles

Naturally Trees (2024) Arboricultural Impact Appraisal and Method Statement

OEH (2016) 'The Native Vegetation of the Sydney Metropolitan Catchment Management Authority Area'.

Appendix 1: Species list at the stormwater outlets

OUTLET 1 (Southern end of property)	
Eastern side of Bonds Creek (Impact Zone)	
<i>Acacia decurrens</i>	Black Wattle
<i>Araujia sericifera</i>	Moth Vine
<i>Casuarina glauca</i>	Swamp Oak
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Lycium ferocissimum</i>	African Boxthorn
<i>Melaleuca decora</i>	White Feather Honey Myrtle
<i>Cenchrus clandestinum</i>	Kikuya
<i>Tradescantia fluminensis</i>	Wandering Jew
Western side of Bonds Creek (Opposite Impact Zone)	
<i>Eucalyptus moluccana</i>	Grey Box
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Phragmites australis</i>	Common Reed
OUTLET 2 (Northern end of property)	
Eastern side of Bonds Creek (Impact Zone)	
<i>Bidens pilosa</i>	Cobbler's Pegs
<i>Brassica juncea</i>	Brown Mustard
<i>Casuarina glauca</i>	Swamp Oak
<i>Conyza sumatrensis</i>	Fleabane
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Melaleuca linariifolia</i>	Snow in Summer
<i>Cenchrus clandestinum</i>	Kikuya
<i>Senecio madagascariensis</i>	Fireweed
<i>Verbena bonariensis</i>	Purpletop Vervain
Western side of Bonds Creek (Opposite Impact Zone)	
<i>Cactus sp.</i>	Cactus
<i>Conyza sumatrensis</i>	Fleabane
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Cenchrus clandestinum</i>	Kikuya
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Typha orientalis</i>	Typha



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Arboricultural Impact Appraisal and Method Statement

S.4.55(2) Modification of consent to DA-793/2019

(Revision A)

231-245 Eleventh Avenue
Austral, NSW

Prepared for



28 February 2025

by Andrew Scales
Dip. Horticulture / Dip. Arboriculture AQF5



Summary

The proposed S4.55 Modification includes additional stormwater infrastructure within the subject site, Lot 9 and along Eleventh Avenue that will replace the need for the approved temporary basin. I have inspected all the trees that could be affected and list their details in Appendix 2. Based on this information, I provided guidance to project architect on the constraints these trees impose on the use of the site.

Thirty-two high category trees and twenty-nine low category trees are approved for removal under DA-793/2019. The S4.55 modification will necessitate the removal of three high category trees and eight low category trees.

The proposed S4.55 modification may adversely affect a further three high category trees and twenty-five low category trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal is expected to have a low to moderate impact on the contribution of trees to local amenity or character.



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1. INTRODUCTION

- 1.1 **Instruction:** I am instructed by Colliers International (NSW) to inspect the tree population at 231-245 Eleventh Avenue, Austral and to provide an arboricultural report to accompany a S4.55 Application. This report investigates the impact of the proposed development on trees and provides the following guidelines for appropriate tree management and protective measures:
- a schedule of the relevant trees to include basic data and a condition assessment;
 - an appraisal of the impact of the proposal on trees and any resulting impact that has on local character and amenity;
 - a preliminary arboricultural method statement setting out appropriate protective measures and management for trees to be retained
- 1.2 **Purpose of this report:** This report provides an analysis of the impact of the development proposal on trees with additional guidance on appropriate management and protective measures. Its primary purpose is for the council to review the tree information in support of the planning submission and use as the basis for issuing a planning consent or engaging in further discussions towards that end. Within this planning process, it will be available for inspection by people other than tree experts, so the information is presented to be helpful to those without a detailed knowledge of the subject.
- 1.3 **Qualifications and experience:** I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture and include a summary in Appendix 1.
- 1.4 **Documents and information provided:** Colliers International (NSW) provided me with copies of the following documents:
- Survey Plan, Dwg No. P00302 (Revision E), by Group Development Services Pty Ltd dated 7 December 2022;
 - Proposed Subdivision, Dwg No. 638-23C-CC3-0001 to 638-23C-CC3-0952 (Revision A), by Colliers International Engineering & Design dated 7 March 2024.
- 1.5 **Scope of this report:** This report is only concerned with one hundred trees, fifty-nine located within the subject site and forty-one adjacent to it, on public and private properties. It takes no account of other trees, shrubs or groundcovers within the site unless stated otherwise. It includes a preliminary assessment based on the site visit and the documents provided, listed in 1.4 above.



2. THE LAYOUT DESIGN

- 2.1 **Tree AZ method of tree assessment:** The TreeAZ assessment method determines the worthiness of trees in the planning process. TreeAZ is based on a systematic method of assessing whether individual trees are important and how much weight they should be given in management considerations. Simplistically, trees assessed as potentially important are categorised as 'A' and those assessed as less important are categorised as 'Z'. Further explanation of TreeAZ can be found in Appendix 3.

In the context of new development, all the Z trees are discounted as a material constraint in layout design. All the A trees are potentially important and they dictate the design constraints. This relatively simple constraints information is suitable for use by the architect to optimise the retention of the best trees in the context of other material considerations.

2.2 Site visit and collection of data

- 2.2.1 **Site visit:** I carried out a site visit on 21 May 2024. All my observations were from ground level and I estimated all dimensions unless otherwise indicated. Aerial inspections, root or soil analysis, exploratory root trenching and internal diagnostic testing was not undertaken as part of this assessment. I did not have access to trees on other private properties and have confined observations of them to what was visible from within the property. The weather at the time of inspection was clear and dry with good visibility.
- 2.2.2 **Brief site description:** 231-245 Eleventh Avenue is located in the residential suburb of Austral (refer figure 1). The site is on the north-western end of the road and surrounded by similar development. The property consists of two residential dwellings that are currently occupied and set to the east of the property. A variety of ornamental and indigenous trees are scattered throughout the site and around the site boundaries.



Figure 1: The location of the subject site (www.googlemaps.com).



- 2.2.3 **Collection of basic data:** I inspected each tree and have collected information on species, height, diameter, maturity and potential for contribution to amenity in a development context. I have recorded this information in the tree schedule included, with explanatory notes, in Appendix 2. Each tree was then allocated to one of four categories (**AA**, **A**, **Z** or **ZZ**), which reflected its suitability as a material constraint on development.
- 2.2.4 **Identification and location of the trees:** I have illustrated the locations of the significant trees on the Tree Management Plan (Plan TMP01) included as Appendix 9. This plan is for illustrative purposes only and it should not be used for directly scaling measurements.
- 2.2.5 **Advanced interpretation of data:** Australian Standard *Protection of trees on development sites* (AS4970-2009), recommends that the trunk diameter measurement for each tree is used to calculate the tree protection zone (TPZ), which can then be interpreted to identify the design constraints and, once a layout has been consented, the exclusion zone is to be protected by barriers.
- 2.3 **The use of the tree information in layout design:** Following my inspection of the trees, the information listed in Appendix 2 was used to provide constraints guidance based on the locations of all the A trees. All the Z trees were discounted because they were not considered worthy of being a material constraint. This guidance identified two zones of constraint based on the following considerations:
- **The tree protection zone (TPZ)** is an area where ground disturbance must be carefully controlled. The TPZ was established according to the recommendations set out in AS4970-2009 and is the radial offset distance of twelve (x12) times the trunk diameter. In principle, a maximum encroachment of 10% is acceptable within the TPZ and a high level of care is needed during any activities that are authorised within it if important trees are to be successfully retained.
 - **The structural root zone (SRZ)** is a radial distance from the centre of a tree's trunk, where it is likely that structural, woody roots would be encountered. The distance is calculated on trunk flare diameter at ground level. The SRZ may also be influenced by natural or built structures, such as rocks and footings. The SRZ only needs to be calculated when major encroachment (>10%) into a TPZ is proposed.



3. ARBORICULTURAL IMPACT APPRAISAL

- 3.1 **Summary of the impact on trees:** I have assessed the impact of the proposal on trees by the extent of disturbance in TPZs and the encroachment of structures into the SRZ (as set out briefly in 2.3 above and more extensively in Appendix 2). All the trees that may be affected by the development proposal are listed in Table 1

Table 1: Summary of existing trees and trees that may be affected by development

Impact	Reason	Important trees	Unimportant trees	
		A	Z	ZZ
Retained trees that may be affected through disturbance to TPZs	Removal of existing surfacing/structures/landscaping and/or installation of new surfacing/structures/landscaping	TOTAL 3	TOTAL 24	TOTAL 1
Trees to be removed	Approved for removal under DA-793/2019	TOTAL 32	TOTAL 19	TOTAL 10
Trees to be removed	Civil and road construction and/or level variations within TPZ	TOTAL 3	TOTAL 7	TOTAL 1

3.2 Detailed impact appraisal

- 3.2.1 **Category A trees approved for removal under DA-793/2019:** The proposed development will necessitate the removal of thirty-two high category trees (Trees 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 40, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63 and 64). These trees are considered moderate to high significance and display good health and condition. To compensate for loss of amenity, consideration should be given to replacement planting within the site.
- 3.2.2 **Category A trees to be lost for stormwater:** The proposed stormwater S4.55 application will necessitate the removal of three high category trees (Trees 34, 36 and 98). These trees are considered a moderate significance and display good health and condition. To compensate for loss of amenity, consideration should be given to replacement planting within the site.



- 3.2.3 Category A trees that could potentially be adversely affected through TPZ disturbance:** Three category A trees (Trees 65, 88 and 89) could potentially be adversely affected through disturbance to their TPZs as follows:
- Trees 65, 88 and 89: These are important trees with a high potential to contribute to amenity so any adverse impacts on them should be minimised. The proposed works remain largely outside the TPZ of these trees and therefore direct impacts are not expected. I have reviewed the situation carefully and my experience is that these trees could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.
- 3.2.4 Low category trees to be retained:** Trees 66, 67, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 90, 91, 92, 93, 94, 95 and 100 could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.
- 3.2.5 Category Z trees approved for removal under DA-793/2019:** The proposed DA-793/2019 has approved the removal of thirty-four trees of low and very low retention value. These include Trees 3, 4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 37, 38, 39, 41, 42, 43, 44, 45 and 46. None of these trees are considered significant or worthy of special measures to ensure their preservation. It should be noted that Trees 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 31, 32, 33, 35, 37, 38, 39, 41, 42, 44, 45 and 46 are exempt from Liverpool City Council's Tree Preservation Order.
- 3.2.6 Low category trees to be removed:** The proposed stormwater S4.55 application will necessitate the removal of eight trees of low and very low retention value. These include Trees 68, 69, 70, 71, 72, 96, 97 and 99. None of these trees are considered significant or worthy of special measures to ensure their preservation. It should be noted that Tree 99 is dead and therefore exempt from Liverpool City Council's Tree Preservation Order.
- 3.3 Proposals to mitigate any impact**
- 3.3.1 Protection of retained trees:** The successful retention of trees within the site will depend on the quality of the protection and the administrative procedures to ensure protective measures remain in place throughout the development. An effective way of doing this is through an arboricultural method statement that can be specifically referred to in the planning condition. An arboricultural method statement for this site is set out in detail in Section 4.
- 3.3.2 Summary of the impact on local amenity:** Thirty-two high category trees and twenty-nine low category trees are approved for removal under DA-793/2019. The S4.55 modification will necessitate the removal of three high category trees and eight low category trees. The proposed S4.55 modification may adversely affect a further three high category trees and twenty-five low category trees if



appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal is expected to have a low to moderate impact on the contribution of trees to local amenity or character.



4. ARBORICULTURAL METHOD STATEMENT

4.1 Introduction

4.1.1 **Terms of reference:** The impact appraisal in Section 3 identified the potential impacts on trees caused by proposed development. Section 4 is an arboricultural method statement setting out management and protection details that must be implemented to secure successful tree retention. It has evolved from Australian Standard AS4970-2009 *Protection of trees on development sites*.

4.1.2 **Plan TMP01:** Plan TMP01 in Appendix 9 is illustrative and based entirely on provided information. This plan should only be used for dealing with the tree issues and all scaled measurements must be checked against the original submission documents. The precise location of all protective measures must be confirmed at the pre-commencement meeting before any demolition or construction activity starts. Its base is the existing land survey, which has the proposed layout superimposed so the two can be easily compared. It shows the existing trees numbered, with high categories (A) highlighted in green triangles and low categories (Z) highlighted in blue rectangles. It also shows the locations of the proposed protective measures.

4.2 Tree protection with fencing and ground protection

4.2.1 **Protection fencing:** Tree protection fencing must comply with AS4970 (section 4.3) recommendations. An illustrative guide is included as Appendix 4. The approximate location of the barriers and the TPZs is illustrated on plan TMP01. The precise location of the fencing must be agreed with the project Arborist before any development activity starts.

4.2.2 **Ground protection:** Any TPZs outside the protective fencing must be covered in ground protection based on AS4970 recommendations until there is no risk of damage from the demolition and construction activity. An illustrative specification for this ground protection is included as Appendix 5. On this site, it must be installed near any retained tree where access is required across a TPZ.

4.3 **Precautions when working in TPZs:** Any work in TPZs must be done with care as set out in Appendix 7. On this site, special precautions must be taken near Trees 65, 88 and 89 as illustrated on plan TMP01 and summarised below:

- **Removal of existing surfacing/structures and replacement with new surfacing/structures:** Trees 65, 88 and 89 may be adversely affected by the demolition and construction works or the installation of new surfacing. Any adverse impact must be minimised by following the guidance set out in Appendix 7.
- **Installation of new soft landscaping:** All landscaping activity within TPZs has the potential to cause severe damage and any adverse impact



must be minimised by following the guidance set out in Section 7 of Appendix 7.

- **Installation of new services or upgrading of existing services:** It is often difficult to clearly establish the detail of services until the construction is in progress. Where possible, it is proposed to use the existing services into the site and keep all new services outside TPZs. However, where existing services within TPZs require upgrading or new services have to be installed in TPZs, great care must be taken to minimise any disturbance. Trenchless installation should be the preferred option but if that is not feasible, any excavation must be carried out by hand according to the guidelines set out in Section 6 of Appendix 7. If services do need to be installed within TPZs, consultation must be obtained from the project Arborist and/or council before any works are carried out.

4.4 Other tree related works

4.4.1 **Site storage, cement mixing and washing points:** All site storage areas, cement mixing and washing points for equipment and vehicles must be outside TPZs unless otherwise agreed with the project Arborist and/or council. Where there is a risk of polluted water run off into TPZs, heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination.

4.4.2 **Pruning:** Any pruning that is required to accommodate hoardings, scaffolding or to accommodate the unloading/loading of vehicles and has been approved by Council shall be carried out by a qualified Arborist (AQF3) and must be in accordance with AS4373 Australian Standards 'Pruning of Amenity Trees'.

4.5 Programme of tree protection and supervision

4.5.1 **Overview:** Tree protection cannot be reliably implemented without arboricultural input. The nature and extent of that input varies according to the complexity of the issues and the resources available on site. For this site, a summary of the level of arboricultural input that is likely to be required is set out in Appendix 8. The project arborist must be instructed to work within this framework to oversee the implementation of the protective measures and management proposals set out in this arboricultural method statement.

The framework in Appendix 8 must form the basis for the discharge of planning conditions through site visits by the project arborist. These supervisory actions must be confirmed by formal letters circulated to all relevant parties. These permanent records of each site visit will accumulate to provide the proof of compliance and allow conditions to be discharged as the development progresses. The developer must instruct the project arborist to comply with the supervision requirements set out in this document before any work begins on site.



- 4.5.2 **Phasing of arboricultural input:** Trees can only be properly budgeted for and factored into the developing work programmes if the overall project management takes full account of tree issues once consent is confirmed. The project arborist must be involved in the following phases of the project management:
1. **Administrative preparation before work starts on site:** It is normal for a development proposal to vary considerably from the expectations before consent as the detailed planning of implementation evolves. The early instruction of the project arborist ensures that tree issues are factored into the complexities of site management and can often help ease site pressures through creative approaches to tree protection. Pre-commencement discussions between the project arborist and the developer's team is an effective means of managing the tree issues with difficult constraints.
 2. **Pre-commencement site meeting:** A pre-commencement meeting must be held on site before any of the demolition and construction work begins. This must be attended by the site manager and the project arborist. Any clarifications or modifications to the consented details must be recorded and circulated to all parties in writing. This meeting is where the details of the programme of tree protection will be agreed and finalised by all parties, which will then form the basis of any supervision arrangements between the project arborist and the developer.
 3. **Site supervision:** Once the site is active, the project arborist must visit at an interval agreed at the pre-commencement site meeting. The supervision arrangement must be sufficiently flexible to allow the supervision of all sensitive works as they occur. The project arborist's initial role is to liaise with developer to ensure that appropriate protective measures are designed and in place before any works start on site. Once the site is working, that role will switch to monitoring compliance with arboricultural conditions and advising on any tree problems that arise or modifications that become necessary.
- 4.6 **Site management:** It is the developer's responsibility to ensure that the details of this arboricultural method statement and any agreed amendments are known and understood by all site personnel. Copies of the agreed documents must be kept on site at all times and the site manager must brief all personnel who could have an impact on trees on the specific tree protection requirements. This must be a part of the site induction procedures and written into appropriate site management documents.



5. HOW TO USE THIS REPORT

5.1 Limitations: It is common that the detail of logistical issues such as site storage and the build programme are not finalised until after consent is issued. As this report has been prepared in advance of consent, some of its content may need to be updated as more detailed information becomes available once the post-consent project management starts. Although this document will remain the primary reference in the event of any disputes, some of its content may be superseded by authorised post-consent amendments.

5.2 Suggestions for the effective use of this report: Section 4 of this report, including the relevant appendices, is designed as an enforcement reference. It is constructed so the council can directly reference the detail in a planning condition. Referencing the report by name and relating conditions to specific subsections is an effective means of reducing confusion and facilitating enforcement in the event of problems during implementation. More specifically, the following issues should be directly referenced in the conditions for this site:

1. Pre-commencement meeting	4.5
2. Protection fence	4.2.1 and Appendix 4
3. Ground protection	4.2.2 and Appendix 5
4. Removal of surfacing/structures	4.3 and Appendix 7 (Section 4)
5. Installation of surfacing/structures	4.3 and Appendices 6 (Section 5)
6. Services	4.3 and Appendix 7 (Section 6)
7. Landscaping	4.3 and Appendix 7 (Section 7)
8. Programming of tree protection	4.5 and Appendix 8
9. Arboricultural supervision	4.5 and Appendix 8

Each of the above matters shall be supervised by the project arborist and the relevant conditions can only be discharged once that supervision has been confirmed in writing to the relevant parties. The last column of the table in Appendix 8 is to be used so that the various supervision issues can be recorded as they are confirmed by supervision letters. It is intended to act as a summary quick reference to help keep track of the progress of the supervision.



6. OTHER CONSIDERATIONS

- 6.1 **Trees subject to statutory controls:** Trees 1 to 64 are approved for removal under DA-793/2019. The remaining trees (Trees 65 to 100) are legally protected under Liverpool City Council's Tree Preservation Order, it will be necessary to consult the council before any pruning or removal works other than certain exemptions can be carried out. The works specified above are necessary for reasonable management and should be acceptable to the council. However, tree owners should appreciate that the council may take an alternative point of view and have the option to refuse consent.

7. BIBLIOGRAPHY

7.1 List of references:

Australian Standard AS4373-2007 *Pruning of Amenity Trees*.
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Barrel Tree Consultancy, Bridge House, Ringwood BH24 1EX

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Blooming Books, Hawthorn Vic.

Matheny, N.P. & Clark, J.R. (1998) Trees & Development: A Technical Guide to Preservation of Trees During Land Development
International Society of Arboriculture, Savoy, Illinois.

Mattheck, Dr. Claus R., Breloer, Helge (1995) The Body Language of Trees - A Handbook for Failure Analysis;
The Stationery Office, London. England.

Robinson, L (1994) Field Guide to the Native Plants of Sydney
Kangaroo Press, Kenthurst NSW



8. DISCLAIMER

8.1 Limitations on use of this report:

This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, and directly attached to that submission, report or presentation.

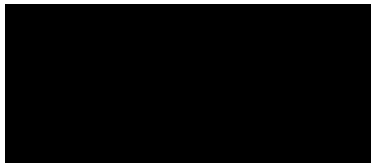
ASSUMPTIONS

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible: however, Naturally Trees can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

- *Information contained in this report covers only those trees that were examined and reflects the condition of those trees at time of inspection: and*
- *The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.*

Yours sincerely



Dip. Horticulture
Dip. Arboriculture AQF5



APPENDIX 1

Brief qualifications and experience of Andrew Scales

1. Qualifications:

Associate Diploma Horticulture	Northern Sydney Institute of TAFE	1998
Certificate in Tree Surgery	Northern Sydney Institute of TAFE	1998
Diploma of Horticulture (Arboriculture)	Northern Sydney Institute of TAFE	2006
Diploma of Arboriculture AQF5	Northern Sydney Institute of TAFE	2019

2. Practical experience:

Being involved in the arboricultural/horticultural industry for in excess of 20 years, I have developed skills and expertise recognized in the industry. Involvement in the construction industry and tertiary studies has provided me with a good knowledge of tree requirements within construction sites.

As director of Naturally Trees, in this year alone I have undertaken hundreds of arboricultural consultancy projects and have been engaged by a range of clients to undertake tree assessments. I have gained a wide range of practical tree knowledge through tree removal and pruning works.

3. Continuing professional development:

Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Northern Sydney Institute of TAFE	2001
Wood Decay in Trees (F.W.M.R.Schwarze)	Northern Sydney Institute of TAFE	2004
Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Carlton Hotel, Parramatta NSW	2004
Tree A-Z / Report Writing (Jeremy Barrell)	Northern Sydney Institute of TAFE	2006
Up by Roots – Healthy Soils and Trees in the Built Environment (James Urban)	The Sebel Parramatta NSW	2008
Tree Injection for Insect Control (Statement of Attainment)	Northern Sydney Institute of TAFE	2008
Quantified Tree Risk Assessment (QTRA) Registered Licensee #1655	South Western Sydney Institute TAFE	2011
Practitioners Guide to Visual Tree Assessment	South Western Sydney Institute TAFE	2011
Quantified Tree Risk Assessment (QTRA) Registered Licensee #1655	Richmond College NSW TAFE	2014
VALID Approach to Likelihood of Failure (David Evans)	Centennial Park NSW	2017
An Irreverent Look at Tree Protection on Development Sites (Mark Hartley)	Dooleys Lidcombe Catholic Club NSW	2023



APPENDIX 2**Tree schedule**

NOTE: Colour annotation is AA & A trees with green background; Z & ZZ trees with blue background; trees to be removed in red text; trees approved for removal under DA-793/2019.

No.	Genus species	Height	Spread	DBH	TPZ	Foliage %	Age class	Defects/Comment	Location	Services	Significance	Tree AZ
1	<i>Callistemon sp.</i>	7	7	300	3.6	80%	M	Nil	Grass	Nil	M	A1
2	<i>Callistemon sp.</i>	7	7	300	3.6	80%	M	Nil	Grass	Nil	M	A1
3	<i>Callistemon sp.</i>	5	4	150	2.0	70%	M	Nil	Grass	Nil	L	Z12
4	<i>Callistemon sp.</i>	5	4	150	2.0	70%	M	Nil	Grass	Nil	L	Z12
5	<i>Callistemon sp.</i>	5	5	250	3.0	80%	M	Nil	Grass	Nil	M	A1
6	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
7	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
8	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
9	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
10	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
11	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
12	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
13	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
14	<i>Washingtonia robusta</i>	12	3	500	3.0	80%	M	Nil	Grass	Nil	M	A1
15	<i>Callistemon sp.</i>	7	7	300	3.6	80%	M	Nil	Grass	Nil	M	A1
16	<i>Syagrus romanzofianum</i>	9	3	300	3.0	80%	M	Nil	Grass	Nil	M	Z3
17	<i>Acer negundo</i>	7	7	400	4.8	0%	O	Dead tree	Grass	Nil	M	ZZ4
18	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
19	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
20	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
21	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
22	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
23	<i>Syagrus romanzofianum</i>	9	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3



No.	Genus species	Height	Spread	DBH	TPZ	Foliage %	Age class	Defects/Comment	Location	Services	Significance	Tree AZ
24	<i>Syagrus romanzofianum</i>	6	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
25	<i>Syagrus romanzofianum</i>	6	3	300	2.0	80%	M	Nil	Grass	Nil	M	Z3
26	<i>Callistemon sp.</i>	6	4	150	2.0	70%	M	Nil	Grass	Nil	M	Z12
27	<i>Callistemon sp.</i>	6	4	150	2.0	70%	M	Nil	Grass	Nil	M	Z12
28	<i>Callistemon sp.</i>	6	4	150	2.0	70%	M	Nil	Grass	Nil	M	Z12
29	<i>Olea sp.</i>	7	5	200	2.4	80%	M	Nil	Garden	Nil	M	ZZ3
30	<i>Callistemon sp.</i>	5	4	150	2.0	70%	M	Nil	Grass	Nil	L	Z12
31	<i>Syagrus romanzofianum</i>	6	3	250	2.0	80%	M	Nil	Grass	Nil	L	Z3
32	<i>Syagrus romanzofianum</i>	6	3	250	2.0	80%	M	Nil	Grass	Nil	L	Z3
33	<i>Eucalyptus sp.</i>	20	12	500	6.0	0%	O	Dead tree	Grass	Adj. driveway	H	ZZ4
34	<i>Grevillea robusta</i>	10	7	350	4.2	70%	M	Nil	Grass	Nil	M	A1
35	<i>Eucalyptus sp.</i>	20	12	500	6.0	0%	O	Dead tree	Grass	Adj. driveway	H	ZZ4
36	<i>Callistemon sp.</i>	7	7	300	3.6	80%	M	Nil	Grass	Nil	M	A1
37	<i>Acer negundo</i>	7	7	400	4.8	0%	O	Dead tree	Grass	Nil	M	ZZ4
38	<i>Syagrus romanzofianum</i>	6	3	250	2.0	80%	M	Nil	Grass	Nil	L	Z3
39	<i>Syagrus romanzofianum</i>	6	3	250	2.0	80%	M	Nil	Grass	Nil	L	Z3
40	<i>Callistemon sp.</i>	8	8	300	3.6	70%	M	Nil	Grass	Nil	M	A1
41	<i>Salix sp.</i>	6	3	600	7.2	20%	O	Epicormic growth Lopped	Grass	Nil	L	ZZ5
42	<i>Acer negundo</i>	7	7	400	4.8	0%	O	Dead tree	Grass	Nil	M	ZZ4
43	<i>Acer negundo</i>	5	4	250	3.0	10%	O	Dead tree	Grass	Nil	L	ZZ4
44	<i>Syagrus romanzofianum</i>	6	3	250	2.0	80%	M	Nil	Grass	Nil	L	Z3
45	<i>Cinnamomum camphora</i>	5	5	100	2.0	70%	S	Nil	Garden	Nil	L	ZZ3
46	<i>Cupressus sp.</i>	5	2	250	3.0	0%	O	Dead tree	Garden	Nil	L	ZZ4
47	<i>Eucalyptus tereticornis</i>	20	14	500	6.0	80%	M	Nil	Grass	Nil	H	A1
48	<i>Eucalyptus tereticornis</i>	20	14	600	7.2	80%	M	Nil	Grass	Nil	H	A1
49	<i>Eucalyptus tereticornis</i>	20	14	500	6.0	80%	M	Nil	Grass	Nil	H	A1
50	<i>Eucalyptus tereticornis</i>	18	9	400	4.8	80%	M	Nil	Grass	Nil	M	A1



No.	Genus species	Height	Spread	DBH	TPZ	Foliage %	Age class	Defects/Comment	Location	Services	Significance	Tree AZ
51	<i>Eucalyptus tereticornis</i>	14	9	500	6.0	80%	M	Nil	Grass	Nil	M	A1
52	<i>Eucalyptus tereticornis</i>	10	9	350	4.2	80%	M	Nil	Grass	Nil	M	A1
53	<i>Eucalyptus tereticornis</i>	24	18	600	7.2	80%	M	Nil	Grass	Nil	H	A1
54	<i>Eucalyptus tereticornis</i>	18	12	450	5.4	70%	M	Nil	Grass	Nil	H	A1
55	<i>Eucalyptus tereticornis</i>	18	12	450	5.4	70%	M	Nil	Grass	Nil	H	A1
56	<i>Eucalyptus tereticornis</i>	24	14	500	6.0	80%	M	Nil	Grass	Nil	H	A1
57	<i>Eucalyptus tereticornis</i>	18	9	400	4.8	80%	M	Nil	Grass	Nil	M	A1
58	<i>Eucalyptus tereticornis</i>	18	9	400	4.8	80%	M	Nil	Grass	Nil	M	A1
59	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
60	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
61	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
62	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
63	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
64	<i>Eucalyptus tereticornis</i>	18	10	400	4.8	80%	M	Nil	Grass	Nil	M	A1
65	<i>Eucalyptus tereticornis</i>	16	14	600	7.2	80%	M	Nil	Grass	Nil	H	A1
66	<i>Melaleuca linariifolia</i>	5	3	100	2.0	0%	O	Dead tree	Grass	Nil	L	ZZ4
67	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
68	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
69	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
70	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
71	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
72	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
73	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
74	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
75	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
76	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
77	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
78	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12



No.	Genus species	Height	Spread	DBH	TPZ	Foliage %	Age class	Defects/Comment	Location	Services	Significance	Tree AZ
79	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
80	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
81	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
82	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
83	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
84	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
85	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
86	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
87	<i>Casuarina glauca</i>	10	4	200	2.4	80%	S	Nil	Grass	Nil	L	Z12
88	<i>Eucalyptus tereticornis</i>	16	14	500	6.0	80%	M	Nil	Grass	Nil	H	A1
89	<i>Eucalyptus tereticornis</i>	16	12	600	7.2	80%	M	Nil	Grass	Nil	H	A1
90	<i>Casuarina glauca</i>	6	2	100	2.0	70%	S	Nil	Grass	Nil	L	Z12
91	<i>Casuarina glauca</i>	9	3	200	2.4	70%	S	Nil	Garden	Nil	L	Z12
92	<i>Casuarina glauca</i>	9	3	200	2.4	70%	S	Nil	Garden	Nil	L	Z12
93	<i>Casuarina glauca</i>	9	3	200	2.4	70%	S	Nil	Garden	Nil	L	Z12
94	<i>Casuarina glauca</i>	9	3	200	2.4	70%	S	Nil	Garden	Nil	L	Z12
95	<i>Casuarina glauca</i>	9	3	200	2.4	70%	S	Nil	Garden	Nil	L	Z12
96	<i>Acacia parramattensi</i>	6	5	150	2.0	60%	O	Borer Dieback	Grass	Nil	L	Z4
97	<i>Casuarina glauca</i>	9	3	300	3.6	70%	M	Leaning	Grass	Nil	L	Z12
98	<i>Casuarina glauca</i>	14	5	300	3.6	70%	M	Nil	Grass	Nil	M	A1
99	<i>Casuarina glauca</i>	12	6	250	3.0	0%	O	Dead tree	Grass	Nil	M	Z4
100	<i>Casuarina glauca</i>	6	2	100	2.0	70%	S	Nil	Grass	Nil	L	Z12



Explanatory Notes

- **Measurements/estimates:** All dimensions are estimates unless otherwise indicated. Measurements taken with a tape or clinometer are indicated with a '*'. Less reliable estimated dimensions are indicated with a '?'.
- **Species:** The species identification is based on visual observations and the botanical name. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicated with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the main component and there may be other minor species not listed.
- **Tree number:** relates to the reference number used on site diagram/report.
- **Height:** Height is estimated to the nearest metre.
- **Spread:** The average crown spread is visually estimated to the nearest metre from the outermost tips of the live lateral branches.
- **DBH:** These figures relate to 1.4m above ground level and are recorded in millimetres. If appropriate, diameter is measured with a diameter tape. 'M' indicates trees or shrubs with multiple stems.
- **Foliage Cover:** Percent of estimated live foliage cover for particular species range.
- **Age class:**
 - Y Young = recently planted
 - S Semi-mature (<20% of life expectancy)
 - M Mature (20-80% of life expectancy)
 - O Over-mature (>80% of life expectancy)
- **TPZ:** The Tree Protection Zone (TPZ) is the radial offset distance of twelve times the trunk diameter in meters.
- **Tree AZ:** See reference for Tree AZ categories in Appendix 3.
- **Significance:** A tree's significance/value in the landscape takes into account its prominence from a wide range of perspectives. This includes, but is not limited to neighbour hood perspective, local perspective and site perspective. The significance of the subject trees has been categorized into three groups, such as: High, Moderate or Low significance.



APPENDIX 3

TreeAZ Categories (Version 10.04-ANZ)

Z

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorisation hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

A

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorisation hierarchy and should be given the most weight in any selection process.

TreeAZ is designed by Barrell Tree Consultancy (www.treeaz.com/tree_az/)



APPENDIX 4

Tree protection fencing and signs - Illustrative specification

Protective fencing: Protective 1.8m high fencing should be installed at the location illustrated on the Tree Management Plan before any site works start. All uprights should be fixed in position for the duration of the development activity. The fixings must be able to withstand the pressures of everyday site work.

Inside the protective fencing, the following rules must be strictly observed:

- No vehicular access
- No storage of excavated debris, building materials or fuels
- No excessive cultivation for landscape planting
- No fires
- No mixing of cement
- No service installation or excavation

Once erected, protective fencing must not be removed or altered without consulting first with the project Arborist.

Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area and signage must be attached to outside of fencing.

Signage: All signs are to provide clear and readily accessible information to indicate that a TPZ has been established. Signage identifying the TPZ must be attached to outside of fencing and be visible from within the development site.



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.

Signage example:

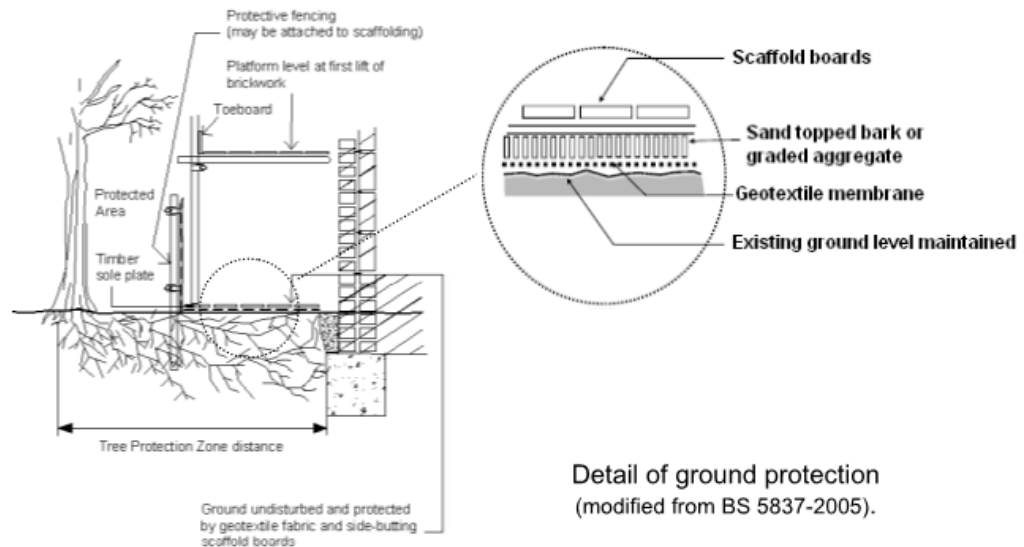


(Naturally Trees- reproduced under copyright Licence number 1009-c095)

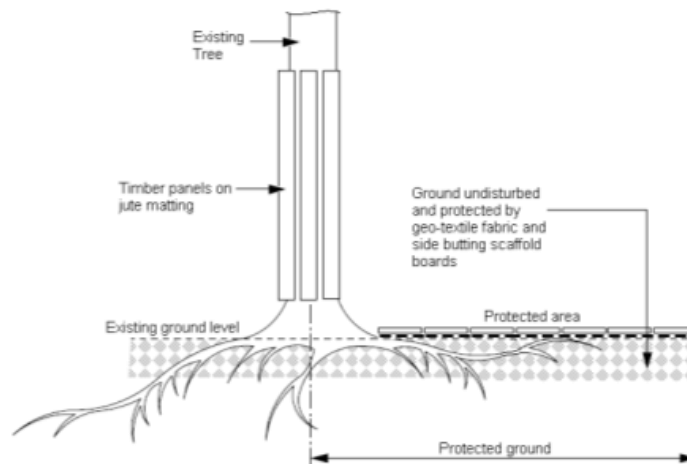


APPENDIX 5**Root zone and trunk protection - Illustrative specification**

Root zone protection: Where necessary, access through the TPZ can be achieved by laying aggregate and timber boards (or similar) over the root zone to protect roots. The ground beneath the boarding should be left undisturbed and should be protected with a porous geo-textile fabric covered with sand or mulch.



Trunk protection: Where fencing cannot be installed, the vertical trunk of exposed trees shall be protected by the placement of 3.6m lengths of 50 x 100mm hardwood timbers, spaced vertically, at 150mm centres and secured by 2mm wire at 300mm wide spacing over suitable protective padding material e.g. Jute Matting. The trunk protection shall be maintained intact until the completion of all work on site.



Detail of trunk protection.

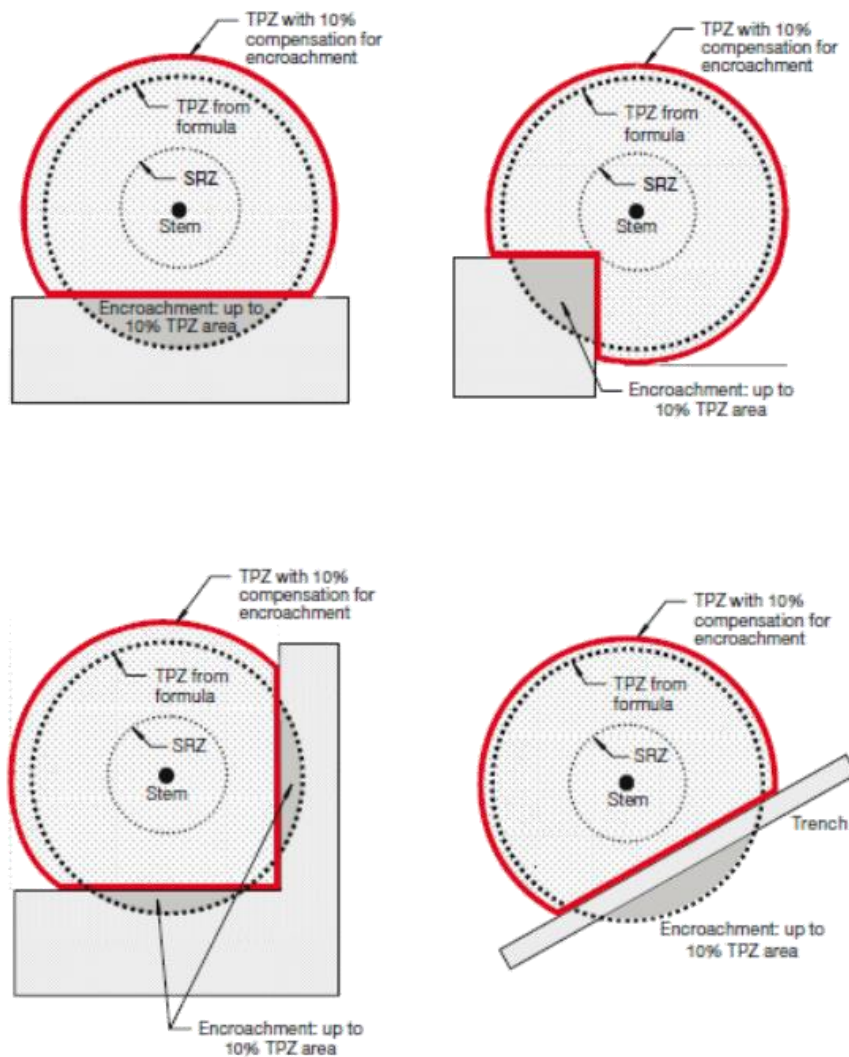


APPENDIX 6**Tree Protection Zone Encroachments AS4970-2009****Minor Encroachments**

The proposed encroachment is less than 10% of the TPZ and outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.

Major Encroachments

The proposed encroachment exceeds 10% of the TPZ or inside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods.



APPENDIX 7

General guidance for working in TPZ

1 PURPOSE OF THIS GUIDANCE

This guidance sets out the general principles that must be followed when working within a TPZ. Where more detail is required, it will be supplemented by illustrative specifications in other appendices in this document (refer Appendix 4 and 5).

This guidance is based on the Australian Standards (2009) AS4970: *Protection of Trees on Construction Sites*.

Once the site works start, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in TPZs must be properly briefed about their responsibilities towards important trees based on this guidance.

This guidance should always be read in conjunction with the Tree Management Plan (TMP01) illustrating the areas where specific precautions are necessary. Each area where precautions are required is explained on the plan as identified on the legend. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the Project Arborist before any demolition or construction work starts.

2 TREE PROTECTION

2.1 Tree Protection Zone (TPZ)

The TPZ is a radial setback, extending outwards from the centre of the trunk, where disturbance must be minimised if important trees are to be successfully retained. The TPZ area is illustrated on the Tree Management Plan (TMP01) accompanying this guidance.

- The TPZ is a radial setback extending outwards from the centre of the trunk equal to the DBH x 12.
- This area shall be protected by tree protective fencing (refer Appendix 4).
- Any part of the TPZ outside of the tree protective fencing area must be isolated from the work operations by protective barriers and/or root zone protection for the duration of the work (refer Appendix 5).
- The Project Arborist shall approve the extent of the TPZ prior to commencement of works.
- The TPZ shall be mulched to a depth of 90mm with approved organic mulch e.g. leaf and wood chip where possible.
- Supplementary watering shall be provided in dry periods to reduce water or construction stress, particularly to those trees which may incur minor root disturbance.

The following activities shall be excluded within the TPZ:

- Excavation, compaction or disturbance of the existing soil.
- The movement or storage of materials, waste or fill.
- Soil level changes
- Disposal/runoff of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids
- Movement or storage of plant, machinery, equipment or vehicles.
- Any activity likely to damage the trunk, crown or root system.

2.2 Arboricultural supervision

Any work within TPZs requires a high level of care. Qualified arboricultural supervision is essential to minimise the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any work starts. Ongoing work must be inspected regularly and, on completion, the work must be signed off by the Project Arborist to confirm compliance by the contractor.



2.3 Tree protection fencing, root zone and trunk protection

Prior to site establishment, tree protection fencing and root zone and trunk protection shall be installed to establish the TPZ for trees to be retained in accordance with site conditions. These protective barriers shall be maintained entire for the duration of the construction program (refer Appendix 4 and 5).

Tree protection fencing and trunk and root zone protection shall be removed following completion of construction. The mulch layer in the TPZ shall be retained and replenished where required to maintain a 75mm thickness

2.4 Pruning

All pruning work required (including root pruning) should be in accordance with Australian Standard No 4373-1996 - Pruning of Amenity Trees.

2.5 Tree Damage

In the event of damage to a tree or the TPZ, the Project Arborist shall be engaged to inspect and provide advice on remedial action. This should be implemented as soon as practicable and certified by the Project Arborist.

2.6 Post construction maintenance

In the event of any tree deteriorating in health after the construction period, the Project Arborist shall be engaged to provide advice on any remedial action. Remedial action shall be implemented as soon as practicable and certified by the Project Arborist.

3 EXCAVATION AND FILL IN TPZ**3.1 Excavation within TPZ**

If excavation within the TPZ is required the following shall be applied to preserve tree root systems:

- Excavation within TPZ must be carried out under the instruction and supervision of the Project Arborist.
- A root mapping exercise is to be undertaken and certified by the Project Arborist. Root mapping shall be undertaken by either ground penetrating radar, air spade, water laser or by hand excavation using hand tools, taking care not to damage the bark and wood of any roots.
- The purpose of the root mapping shall be to locate woody structural roots greater than 40mm in diameter. Where possible, flexible clumps of smaller roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.
- If digging by hand, a fork shall be used to loosen the soil and help locate any substantial roots.
- Once roots have been located, the trowel shall be used to clear the soil away from them without damaging the bark.
- Exposed roots to be removed shall be cut cleanly with a sharp saw or secateurs.
- Roots temporarily exposed shall be protected from direct sunlight, drying out and extremes of temperature by appropriate covering.

3.2 Fill within TPZ

Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided where possible. However, where fill cannot be avoided:

- All fill material to be placed within the TPZ should be approved by Project Arborist and consist of a coarse, gap-graded material to provide aeration and percolation to the root zone. Materials containing a high percentage of 'fines' is unacceptable for this purpose.
- The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil.
- No fill material should be placed in direct contact with the trunk.



4 DEMOLITION OF SURFACING/STRUCTURES IN TPZ

4.1 Definitions of surfacing and structures

For the purposes of this guidance, the following broad definitions apply:

- **Surfacing:** Any hard surfacing used as a vehicular road, parking or pedestrian path including tarmac, solid stone, crushed stone, compacted aggregate, concrete and timber decking.
- **Structures:** Any man-made structure above or below ground including service pipes, walls, gate piers, buildings and foundations. Typically, this would include drainage structures, services, car-ports, bin stores and concrete slabs that support buildings.

4.2 Demolition and access

Roots frequently grow adjacent to and beneath existing surfacing/structures so great care is needed during access and demolition. Damage can occur through physical disturbance of roots and/or the compaction of soil around them from the weight of machinery or repeated pedestrian passage. This is not generally a problem whilst surfacing/structures are in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once they are removed and the soil below is newly exposed, damage to roots becomes an issue and the following guidance must be implemented:

- No vehicular or repeated pedestrian access into TPZ permitted unless on existing hard surfacing or root zone protection.
- Regular vehicular and pedestrian access routes must be protected from compaction with temporary root zone protection as set out in Appendix 5.
- Where a TPZ is exposed by the work, it must be protected as set out in AS4970 until there is no risk of damage from the development activity.

4.3 Removal of surfacing/structures

Removing existing surfacing/structures is a high-risk activity for any adjacent roots and the following guidance must be observed:

- Appropriate tools for manually removing debris may include a pneumatic breaker, crow bar, sledgehammer, pick, mattock, shovel, spade, trowel, fork and wheelbarrow.
- Machines with a long reach may be used if they can work from outside the TPZ or from protected areas within the TPZ.
- Debris to be removed from the TPZ manually must be moved across existing hard surfacing or temporary root zone protection in a way that prevents compaction of soil. Alternatively, it can be lifted out by machines provided this does not disturb the TPZ.
- Great care must be taken throughout these operations not to damage roots.

5 INSTALLATION OF SURFACING/STRUCTURES IN TPZ

5.1 Basic principles: New surfacing/structures in a TPZ are potentially damaging to trees because they may disturb the soil and disrupt the existing exchange of water and gases in and out of it. Adverse impact on trees can be reduced by minimising the extent of these changes within the TPZ.

- **Surfacing:** Suitable surfacing should be relatively permeable to allow water and gas movement, load spreading to avoid localised compaction and require little or no excavation to limit direct damage. The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.
- **Structures:** Where possible structures are to be constructed above ground level on piled supports and redirecting water to where it is needed. The detailed design and specification of such structures is an engineering issue that should be informed and guided by the Project Arborist. Conventional strip foundations in the TPZ for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, disturbance can be significantly reduced by supporting the above ground part of the structures on small diameter piles/piers or



cast floor slabs set above ground level. The design should be sufficiently flexible to allow the piles to be moved if significant roots are encountered in the preferred locations.

5.2 Establishing the depth of roots

The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing within a TPZ should be no-dig, i.e. requiring no excavation whatsoever, but this is rarely possible on undulating surfaces.

New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut.

Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of a turf layer up to 50mm is unlikely to be damaging to trees. It may be possible to dig to a greater depth depending on local conditions but this would need to be assessed by the Project Arborist.

6 SERVICES IN TPZ

For the purposes of this guidance, services are considered as structures. Excavation to upgrade existing services or to install new services within a TPZ may damage retained trees and should only be chosen as a last resort. In the event that excavation emerges as the preferred option, the decision should be reviewed by the Project Arborist before any work is carried out. If excavation is agreed, all digging should be done carefully and follow the guidance set out in 3.1 above.

7 SOFT LANDSCAPING IN TPZ

For the purposes of this guidance, soft landscaping includes the re-profiling of existing soil levels and covering the soil surface with new plants or an organic covering (mulch). It does not include the installation of solid structures or compacted surfacing.

Soft landscaping activity after construction can be extremely damaging to trees.

No significant excavation or cultivation shall occur within the TPZ (e.g. planting holes). Where new designs require levels to be increased to tie in with new structures or surrounding ground level, good quality and relatively permeable top soil should be used for the fill. It should be firmed into place but not over compacted in preparation for turfing or careful shrub planting.

All areas close to tree trunks should be kept at the original ground level and have a mulched finish rather than grass to reduce the risk of mowing damage.



APPENDIX 8

Schedule of works and responsibilities

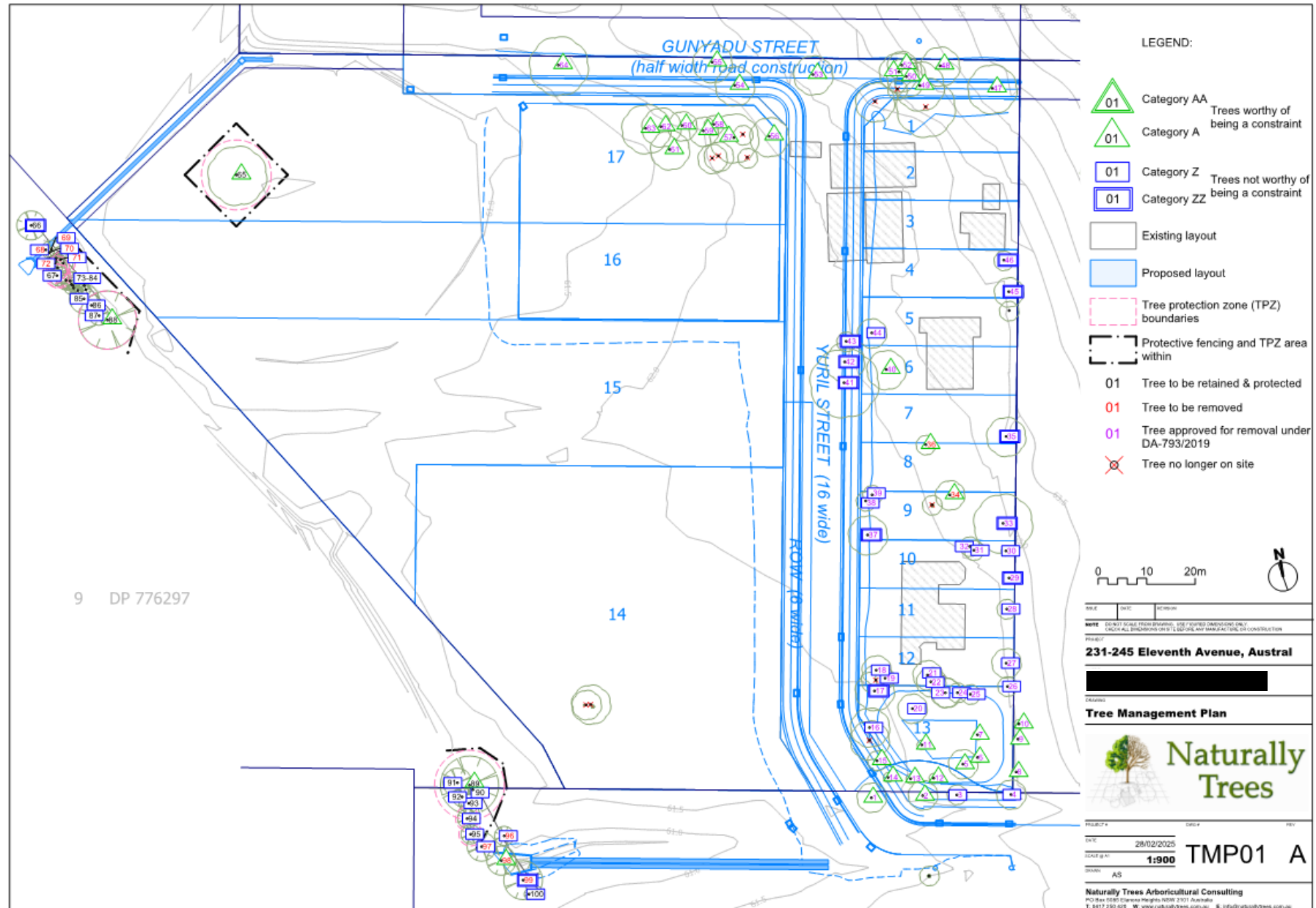
Hold Point	Task	Responsibility	Certification	Timing of Inspection
1	Indicate clearly (with spray paint) trees approved for removal only	Principal Contractor	Project Arborist	Prior to demolition and site establishment
2	Establishment of tree protection fencing and additional root, trunk and/or branch protection	Principal Contractor	Project Arborist	Prior to demolition and site establishment
3	Supervise all excavations works proposed within the TPZ	Principal Contractor	Project Arborist	As required prior to the works proceeding adjacent to the tree
4	Inspection of trees by Project Arborist	Principal Contractor	Project Arborist	Monthly during construction period
5	Final inspection of trees by Project Arborist	Principal Contractor	Project Arborist	Prior to the issue of Occupation Certificate



APPENDIX 9**Tree management plan**

-refer attached Tree Management Plan, Dwg No. TMP01,
by Naturally Trees dated 28 February 2025





Department of Planning and Environment



Contact: Department of Planning and Environment-Water
Phone: 1300081047
Email: waterlicensing.servicedesk@dpe.nsw.gov.au

Our ref: IDAS-2025-10020
Your ref: DA-793/2019/A

16 January 2025

The General Manager
LIVERPOOL CITY COUNCIL
33 MOORE STREET LIVERPOOL 2170

Attention: Sarah Ilma

Uploaded to the ePlanning Portal

Dear Sir/Madam

Re: IDAS-2025-10020 - Integrated Development Referral – General Terms of Approval
Dev Ref: DA-793/2019/A
Description: Modifications to the approved DA plans and conditions of consent to facilitate:
1. Additional stormwater infrastructure within the subject site, Lot 9 DP776297, and along Eleventh Avenue that will replace the need for the approved temporary basin;
2. Removal of eleven trees to facilitate the proposed stormwater infrastructure; and
3. Amendments to the lot numbering to account for errors on the approved DA plans.
Location: Lot 11, DP1304045, 233 ELEVENTH AVENUE AUSTRAL 2179
Lot 9, DP776297, 350 THIRTEENTH AVENUE AUSTRAL 2179

I refer to your recent referral regarding an integrated Development Application (DA) proposed for the above location. Attached, please find Department of Planning and Environment-Water's General Terms of Approval (GTA) for part of the proposed development requiring a Controlled Activity approval under the *Water Management Act 2000* (WM Act), as detailed in the subject DA.

Please note Council's statutory obligations under section 4.46 of the *Environmental Planning and Assessment Act 1979* (EPA Act) which requires consent, granted by a consent authority, to be consistent with the general terms of any approval proposed to be granted by the approval body.

If the proposed development is approved by Council, the department requests these GTA be included (in their entirety) in Council's development consent. Please also note the department requests notification:

- if any plans or documents are amended and these amendments significantly change the proposed development or result in additional works or activities (i) in the bed of any river, lake or estuary; (ii) on the banks of any river lake or estuary, (iii) on land within 40 metres of the highest bank of a river lake or estuary; or (iv) any excavation which interferes with an aquifer.

The Department of Planning and Environment-Water will ascertain from the notification if the amended plans require review of or variation/s to the GTA. This requirement applies even if the amendment is part of Council's proposed consent conditions and do not appear in the original documentation.

- if Council receives an application under s4.46 of the EPA Act to modify the development consent and the modifications change the proposed work or activities described in the original DA.
- of any legal challenge to the consent.

As the proposed work or activity cannot commence before the applicant applies for and obtains an approval, the department recommends the following condition be included in the development consent:

The attached GTA issued by the Department of Planning and Environment-Water do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to the department for a Controlled Activity approval after consent has been issued by Council and before the commencement of any work or activity.

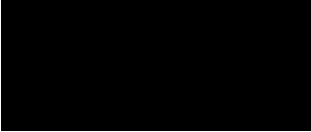
A completed application must be submitted to the department together with any required plans, documents, application fee and proof of Council's development consent. Finalisation of an approval can take up to eight (8) weeks from the date the application and all required supporting documentation is received.

Applications for controlled activity approval should be made to the department, by lodgement of a Controlled Activity Approval – New approval application on the NSW Planning Portal at:
<https://www.planningportal.nsw.gov.au/>

The Department of Planning and Environment-Water requests that Council provide a copy of this letter to the development consent holder.

The Department of Planning and Environment-Water also requests a copy of the determination for this development application be provided by Council as required under section 4.47(6) the EPA Act.

Yours Sincerely



**Team Leader
Licensing and Approvals
Department of Planning and Environment-Water**



General Terms of Approval

for proposed development requiring approval under s89, 90 or 91 of the Water Management Act 2000

Reference Number: IDAS-2025-10020
Issue date of GTA: 16 January 2025
Type of Approval: Controlled Activity
Location of work/activity: Lot 11, DP1304045, 233 ELEVENTH AVENUE AUSTRAL 2179
 Lot 9, DP776297, 350 THIRTEENTH AVENUE AUSTRAL 2179
Waterfront Land: Tributary of Kemps Creek
DA Number: DA-793/2019/A
LGA: LIVERPOOL

The GTA issued by Department of Planning and Environment-Water do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to the Department of Planning and Environment-Water for the relevant approval **after development consent** has been issued by Council **and before** the commencement of any work or activity.

Condition Number	Details
------------------	---------

TC-G001	Before commencing any proposed controlled activity on waterfront land, an application must be submitted to Department of Planning and Environment-Water, and obtained, for a controlled activity approval under the Water Management Act 2000.
----------------	--

TC-G004	A. This General Terms of Approval (GTA) only applies to the proposed controlled activity described in the plans and associated documents found in Schedule 1, relating to Development Application DA-793/2019/A provided by Council to Department of Planning and Environment-Water.
----------------	--

B. Any amendments or modifications to the proposed controlled activity may render the GTA invalid. If the proposed controlled activity is amended or modified, Department of Planning and Environment-Water, must be notified in writing to determine if any variations to the GTA will be required.

TC-G005	A. The application for a controlled activity approval must include the following plan(s):
----------------	---

- Site plans
- Erosion and sediment control plans - shall detail how disturbed areas will be stabilised and revegetated.
- Construction detailed drainage plans
- Construction stormwater drainage outlet plan

B. The plan(s) must be prepared in accordance with Department of Planning and Environment-Water's guidelines located on the website

<https://www.dpie.nsw.gov.au/water/licensing-and-trade/approvals/controlled-activity-approvals/what/guidelines>



General Terms of Approval

for proposed development requiring approval under s89, 90 or 91 of the Water Management Act 2000

SCHEDULE 1

The plans and associated documentation listed in this schedule are referred to in general terms of approval (GTA) issued by Department of Planning and Environment-Water for integrated development associated with IDAS-2025-10020 as provided by Council:

S.4.55(2) Modification of consent to DA-793/2019 231-245 Eleventh Avenue, Austral (Lot 11 DP 1304045), prepared by Colliers International Engineering & Design NSW Pty Ltd dated 18 November 2024

Civil Plans, Drawing No.638-23C-CC3-0001 to 638-23C-CC3-0952, prepared by Colliers International Engineering & Design NSW Pty Ltd dated 11 November 2024

Arboricultural Impact Appraisal and Method Statement, prepared by Naturally Trees dated 24 May 2024

Threatened Species Assessment for potential impacts of Modifications to DA 793/2019, prepared by ACS Environmental Pty Ltd dated 19 July 2024

Remediation Action Plan (RAP) Proposed Stormwater Works for No 231-245 Eleventh Avenue Lot 9 DP 776297 and Eleventh Avenue Austral NSW, prepared by GeoEnviro Consultancy Pty Ltd dated August 2024

Archaeological Due Diligence Assessment, prepared by Mccardle Cultural Heritage Pty Ltd dated 3 June 2024

**RFS**

Liverpool City Council
Locked Bag 7064
LIVERPOOL BC NSW 1871

Your reference: (CNR-77602) DA-793/2019/A
Our reference: DA20200407001222-S4.55-1

ATTENTION: Sarah Ilma

Date: Thursday 13 March 2025

Dear Sir/Madam,

Integrated Development Application
s100B – Subdivision – Torrens Title Subdivision
233 Eleventh Avenue Austral NSW 2179, 11//DP1304045

I refer to your correspondence dated 24/02/2025 seeking general terms of approval for the above Integrated Development in accordance with s4.55 of the *Environmental Planning and Assessment Act 1979*.

The New South Wales Rural Fire Service (NSW RFS) has reviewed the submitted amended information. General Terms of Approval are now re-issued, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997*, are now issued subject to the following conditions.

General Conditions

- The development proposal is to comply with the subdivision layout identified on the drawing prepared by Colliers, numbered 638-23, revision C, dated 15 November 2024.

Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and prevent direct flame contact. To achieve this, the following conditions shall apply:

1. At the issue of a subdivision certificate, and in perpetuity to ensure ongoing protection from the impact of bush fires, the entirety of the proposed residential Lots 1-13 must be managed as an inner protection area (IPA) in accordance with the requirements of Appendix 4 of *Planning for Bush Fire Protection 2019*.

When establishing and maintaining an IPA the following requirements apply:

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m;
- preference should be given to smooth barked and evergreen trees;

1

Postal address

NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address

NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au





RFS



- large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

2. At the issue of a subdivision certificate, and in perpetuity to ensure ongoing protection from the impact of bush fires, the entirety of the proposed residential Lots 15-17 must be managed as an inner protection area (IPA), excluding the native vegetation retention area and the easement for transmission line, in accordance with the requirements of Appendix 4 of *Planning for Bush Fire Protection 2019*.

When establishing and maintaining an IPA the following requirements apply:

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m;
- preference should be given to smooth barked and evergreen trees;
- large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed

3. A Plan of Management must be prepared for proposed Lot 14 demarcated for RE1 landuse to ensure that the land will be managed in perpetuity.

Access – Public Roads

The intent of measures is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area. To achieve this, the following conditions shall apply:

4. Public access roads must comply with the following general requirements of Table 5.3b of *Planning for Bush Fire Protection 2019*:

- are two-way sealed roads with minimum 5.5 metre carriageway width kerb to kerb;
- a minimum vertical clearance of 4 metre to any overhanging obstructions, including tree branches, is provided.
- parking is provided outside of the carriageway width;
- are through roads, and these are linked to the internal road system at an interval of no greater than 500 metre;
- curves of roads have a minimum inner radius of 6 metre;
- the maximum grade road is 15 degrees and average grade of not more than 10 degrees;
- the road crossfall does not exceed 3 degrees;
- traffic management devices are constructed to not prohibit access by emergency services vehicles;



RFS



- dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;
- the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles; bridges/causeways are to clearly indicate load rating;
- hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; and
- hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - *Fire hydrant installations System design, installation and commissioning*.

Water and Utility Services

The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities. To achieve this, the following conditions shall apply:

5. The provision of water, electricity and gas must comply with the following in accordance with Table 5.3c of *Planning for Bush Fire Protection 2019*:

- reticulated water is to be provided to the development where available;
- fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005;
- hydrants are not located within any road carriageway;
- reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads;
- fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005;
- all above-ground water service pipes are metal, including and up to any taps;
- where practicable, electrical transmission lines are underground;
- where overhead, electrical transmission lines are proposed as follows:
 - a. lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and
 - b. no part of a tree is closer to a power line than the distance set out in accordance with the specifications in *ISSC3 Guideline for Managing Vegetation Near Power Lines*.
- reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;
- all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side;
- connections to and from gas cylinders are metal; polymer-sheathed flexible gas supply lines are not used; and
- above-ground gas service pipes are metal, including and up to any outlets.

Landscaping Assessment

The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities. To achieve this, the following conditions shall apply:

6. Landscaping within the required asset protection zone must comply with Appendix 4 of *Planning for Bush Fire Protection 2019*. In this regard, the following principles are to be incorporated:

- A minimum 1 metre wide area (or to the property boundary where the setbacks are less than 1 metre), suitable for pedestrian traffic, must be provided around the immediate curtilage of the building;
- Planting is limited in the immediate vicinity of the building;

**RFS**

- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs are isolated or located in small clusters);
- Landscape species are chosen to ensure tree canopy cover is less than 15% (IPA), and less than 30% (OPA) at maturity and trees do not touch or overhang buildings;
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies;
- Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown;
- Avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter);
- Avoid climbing species to walls and pergolas;
- Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building;
- Locate combustible structures such as garden sheds, pergolas and materials such as timber garden furniture away from the building; and
- Low flammability vegetation species are used.

General Advice – Consent Authority to Note

- Development applications lodged on lots created within this subdivision may be subject to further assessment under the *Environmental Planning & Assessment Act 1979*. Future dwellings are required to address the requirements of *Planning for Bush Fire Protection 2019*.
- The access road requirements have been modified from perimeter road requirement to non-perimeter road requirement considering that the proposed public roads do not traverse along the bush fire hazard.

This letter is in response to an assessment of the application based on the submitted further information and supersedes our previous general terms of approval dated 15/05/2020.

For any queries regarding this correspondence, please contact Rohini Belapurkar on 1300 NSW RFS.

Yours sincerely,

Nika Fomin
Manager Planning & Environment Services
Built & Natural Environment



**RFS**

BUSH FIRE SAFETY AUTHORITY

Subdivision – Torrens Title Subdivision
233 Eleventh Avenue Austral NSW 2179, 11//DP1304045
RFS Reference: DA20200407001222-S4.55-1
Your Reference: (CNR-77602) DA-793/2019/A

This Bush Fire Safety Authority is issued on behalf of the Commissioner of the NSW Rural Fire Service under s100b of the Rural Fires Act (1997) subject to the attached General Terms of Approval.

This authority confirms that, subject to the General Terms of Approval being met, the proposed development will meet the NSW Rural Fire Service requirements for Bush Fire Safety under *s100b of the Rural Fires Act 1997*.

Nika Fomin

Manager Planning & Environment Services
Built & Natural Environment

Thursday 13 March 2025



ATTACHMENT 9 – DRAFT MODIFIED CONDITIONS OF CONSENT

Our Ref: DA-793/2019/A
Contact: Sarah Ilma
Ph: 02 8711 7975

THE TRUSTEE FOR CROWN TRUST 28
7.01 7/3 RIDER BLVDE
RHODES NSW 2138

SECTION 4.55 MODIFICATION OF DEVELOPMENT CONSENT

(In accordance with the provisions under Section 4.55 of the *EP&A Act 1979*)

ADDRESS: LOT 11 DP 1304045, LOT 9 DP 776297
231-245 ELEVENTH AVENUE, AUSTRAL NSW 2179,
STARR PARK, 350 THIRTEENTH AVENUE, AUSTRAL NSW
2179

DESCRIPTION: Modification to Development Consent DA-793/2019. Under Section 4.55 of the Environmental Planning and Assessment Act 1979, to the approved DA plans and conditions of consent to facilitate:

1. Additional stormwater infrastructure within the subject site, Lot 9 DP776297, and along Eleventh Avenue that will replace the need for the approved temporary basin;
2. Removal of eleven trees to facilitate the proposed stormwater infrastructure; and
3. Amendments to the lot numbering to account for errors on the approved DA plans.
4. Deletion of the stages to allow the development to be delivered in a single stage

Reference is made to Modification Application DA-793/2019/A which seeks amendment to Development Consent DA-793/2019 issued for *the demolition of existing structures and subdivision of one (1) lot into fourteen (14) low density residential lots, three (3) environment living residential lots and (1) RE1 lot for public open space over three stages.*

Modification Application DA-793/2019/A seeks consent for:

1. Additional stormwater infrastructure within the subject site, Lot 9 DP776297, and along Eleventh Avenue that will replace the need for the approved temporary basin;
2. Removal of eleven trees to facilitate the proposed stormwater infrastructure; and
3. Amendments to the lot numbering to account for errors on the approved DA plans.
4. Deletion of the stages to allow the development to be delivered in a single stage
5. Rectify the proposal description to reflect these changes.

Pursuant to Section 4.55 (2) of the *Environmental Planning and Assessment Act 1979*, the Local Planning Panel has granted approval for the modifications sought. Accordingly, Development Consent DA-793/2019 has been amended as follows:

1. The description of development has been amended to read as follows:

The application is seeking consent for the demolition of existing structures and subdivision of one (1) lot into thirteen (13) low density residential lots, three (3) environment living residential lots and (1) RE1 lot for public open space.

The proposal is identified as Integrated Development under the Rural Fires Act, requiring an approval from the NSW Rural Fire Service.

The proposed works on Lot DP 776297 is identified as integrated development under Water Management Act 2000 requiring a Controlled Activity Approval from Department of Planning and Environment - Water

2. The following condition/s of Development Consent DA-793/2019/A have been amended to read as follows:

Condition 2 has been amended to read as follows:

2. Development the subject of this determination notice must be carried out strictly in accordance with the following approved plans/reports marked as follows, except where modified by the undermentioned conditions.

Plan name	Sheet	Date	Revision	Prepared by
Proposed Subdivision Plan – Stage 3	3	7/12/2022	D	Group Development Services
Plan of Subdivision of Lot 11 DP 776297	-	8/03/2024	-	Stephen Craig Bishop
Public Domain Plan	500	7/12/2022	E	Group Development Services
Tree Removal Plan	600	7/12/2022	E	Group Development Services
Tree Management Plan	-	28/02/2025	A	Naturally Trees
Demolition Plan	601	7/12/2022	E	Group Development Services

Report name	Date	Reference	Prepared by
Bushfire Protection Hazard Assessment	7/11/2018	18HNG_11282	Eco-Logical Australia

Flora and Fauna Assessment	30/11/2018	18SYD - 11356	Eco Logical Australia
Demolition Statement	-	-	Group Development Services Pty Ltd
Odour Assessment	27 February 2020	20.10270DR1V1	NorthStar Air Quality
Flood Assessment	September 2020	-	GRC Hydro
Remedial Action Plan	September 2019	1009-RAP-01-190919.v1f	Sydney Environmental Group
Stage 2 Detailed Site Investigation Report	September 2019	1009-DSI-01-170919.v1f	Sydney Environmental Group
Public Utility Infrastructure Report	December 2018	-	Group Development Services Pty Ltd
Arboricultural Impact Appraisal and Method Statement	28 February 2025	S.4.55(2) Modification of consent to DA-793/2019 (Revision A)	Naturally Trees
Remediation Action Plan	August 2024	JE24472A-r2	GeoEnviro Pty Ltd Consultancy
Detailed Site Investigation Report	June 2024	JE24752A-r1(rev)	GeoEnviro Pty Ltd Consultancy
Archaeological Due Diligence Assessment	3 June 2024	J202463 DD	McCardle Heritage Pty Ltd
Threatened Species Assessment	19 July 2024	-	ACS Environmental Pty Ltd

Condition 5 has been amended to read as follows:

NSW RFS Requirements

- General Terms of Approval provided by the NSW RFS dated **13 March 2025** and included in Appendix 3 of this report must be adhered to at all times.

Condition 8 has been amended to read as follows:

Department of Planning and Environment - Water requirements

- General Terms of Approval provided by the **Department of Planning and Environment-Water (DPE-Water)** dated **16 January 2025** must be adhered to at all times.

Works on waterfront land shall not commence until a controlled activity approval has been obtained from DPE-Water.

Condition 13 has been amended to read as follows:

Construction Certificate for Subdivision Works

13. Prior to the issue of a Construction Certificate for subdivision works the Certifying Authority shall ensure that engineering plans are consistent with the ***plans prepared by Colliers International Engineering and Design reference number 638-23, revision C, dated 15/11/2024 submitted with the development application*** and that all subdivision works have been designed in accordance with conditions of this consent, Liverpool City Council's Design Guidelines and Construction Specification for Civil Works, any Roads Act approval issued, Austroad Guidelines and best engineering practice. The subdivision works may include but are not limited to the following:
- Public and private roads
 - Stormwater drainage including water quantity and quality treatment measures • Interallotment drainage
 - Private access driveways
 - Sediment and erosion control measures 219 220 221 223 224 226 (b) 228 230 239 242 243 248 Apply only for subdivision works where a Construction Certificate will be issued by Land Development Engineering Section. Do not apply B450, B454 or B456 Special condition required where works are not provided on the concept plans. Page 5 of 30 Revision 9/2018
 - Overland flow paths
 - Flood control measures
 - Traffic facilities including roundabouts, intersection treatments, car parks, bus stops, cycleways, pathways etc.
 - Earthworks
 - Bridges, culverts, retaining walls and other structures • Landscaping and embellishment works
 - All works required for conversion of the proposed sediment basin to a bio retention function
- The Construction Certificate must be supported by engineering plans, calculations, specifications and any certification relied upon.

Condition 16 has been amended to read as follows:

Stormwater Management

16. ***Stormwater management for the development shall be provided generally in accordance with the with the plans prepared by Colliers International Engineering and Design, reference number 638-23, revision C, dated 15/11/2024 submitted with the development application.***

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 as required, 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 stormwater management system has been designed in accordance with Liverpool City Council's guidelines.

Condition 25 has been amended to read as follows:

Flooding

25. The proposal shall be consistent with the submitted flood assessment report (Sept. 2020 by GRC Hydro) and ***civil plans prepared by Colliers International Engineering and Design.***

Condition 27 has been amended to read as follows:

27. Existing overland flows from upstream catchment through the site shall be accommodated into proposed stormwater system ***for the development, consistent with the plans prepared by Colliers International Engineering and Design, reference number 638-23, revision C, dated 15/11/2024 submitted with the development application.*** Design & sizing of stormwater system shall consider full developed upstream catchment flows through the site up to the 1% AEP event.

Two Gross Pollutant Traps (GPTs) shall be installed at proposed stormwater outlets to capture stormwater pollutants before discharging into the creek.

The design and sizing of the GPTs shall be adequate to capture pollutants from fully developed upstream catchment area.

The development, including construction works, shall not result in any increase in sediment deposition into any natural water body, wetland, bushland or environmentally significant land. A sediment control basin must be incorporated into the design to manage sediment, and pollutant discharges downstream and into the watercourse during the subdivision work stage.

Condition 28 has been amended to read as follows:

28. ***The design and sizing of the trunk line on Eleventh Avenue shall consider overland flows from the upstream catchment up to the 1%AEP storm event with flood depth not exceeding 0.2m & comply velocity x depth safety criteria of 0.4m²/s.***

Condition 41 has been amended to read as follows:

On-site water quality

41. ***Permanent on-site water quality treatment system shall be provided and maintained. Water quality treatment system shall be designed using MUSIC modelling software and the water quality treatment system performance shall be verified using Council's MUSIC link.***

Any runoff entering the areas of vegetation to be retained on Lot 9 DP 776297 shall be of an equivalent or better quality, and of a similar rate of flow to present levels.

Existing hydrological regimes shall be maintained so as not to negatively impact vegetation to be retained on site and downslope/downstream of the site.

Condition 111 has been amended to read as follows:

Stormwater Compliance

111. Prior to the issue of a Subdivision Certificate the Principal Certifying Authority shall ensure that the:
- i) Stormwater pre-treatment System/s
 - ii) Overland flow path works
- 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.

Condition 112 has been amended to read as follows:

112. Prior to the issue of a Subdivision Certificate a restriction as to user and positive covenant relating to the:
- i) Overland Flow Paths

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.

Condition 120 has been amended to read as follows:

120. Where common drainage lines or other drainage lines are required, a drainage easement shall be created in accordance with Council's minimum widths as scheduled in councils design specification for subdivisions (as amended). ***This may include, but not limited to, an easement or a separate deed of agreement for an easement, for drainage over Lot 9 DP 776297 if required.***

Condition 125 has been amended to read as follows:

125. Prior to the issue of Subdivision Certificate for **the development**, all existing buildings and structures must be demolished to the satisfaction of the Council.

Condition 128 has been amended to read as follows:

128. Prior to the issue of a subdivision Certificate for **the development**, evidence that full width construction and dedication of Road No 2 (Gunvada Street) must be provided and the temporary turning head removed to the satisfaction of the Council.

Condition 129 has been amended to read as follows:

SECTION 7.11 PAYMENT

Liverpool Contributions Plan 2014 Austral & Leppington North

129. 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 above Liverpool Contributions Plan 2014 Austral & Leppington North as amended.

The total contribution is **\$480,000** and will be adjusted at the time of payment in accordance with the contributions plan.

A breakdown of the contribution's 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.

3. **The following conditions have been inserted to form part of Development Consent DA-793/2019/A, and read as follows:**

New condition 44.1 has been added to read as follows:

Aboriginal Heritage Impact Permit

- 44.1. Prior to issue of Construction Certificate, the following requirements shall be met:**

- a) ***An Aboriginal Heritage Impact Permit is to be applied for and received from Heritage NSW in accordance with the National Parks and Wildlife Act 1974.***
- b) ***The permit application is to be accompanied by an Aboriginal Cultural Heritage Assessment prepared by an experienced Archaeologist in accordance with the relevant guidelines published by Heritage NSW.***
- c) ***A copy of the Aboriginal Heritage Impact Permit and supporting information including the Aboriginal Cultural Heritage Assessment, GIS file of PAD and/or permit area, Register of Aboriginal Parties and a register of artefacts recovered, are to be provided to Council's Heritage Officer.***

New condition 68.1 has been added to read as follows:

Vegetation Management Plan

68.1. Prior to the commencement of works on Lot 9 DP 776297, a Vegetation Management Plan containing the following details shall be submitted to, and approved, by Council.

- a) At least one coir log structure (square shaped 300mm x 3m) shall be provided between each proposed outlet structure and the creek to mitigate the high-energy stormwater flow entering the creek. Additionally, three lines of coir logs shall be provided along the sides of the outlet structures to further stabilise the area. These requirements are demonstrated by the brown lines in Figure 1.**
- b) Revegetation plantings shall consist of:**
 - i. native ground cover species between the coir logs**
 - ii. semi-aquatic and water-tolerant species (sedges and rushes) near the lower coir logs crossing the stormwater outlet structures**
 - iii. compensatory plantings to replace the high amenity value tree approved for removal under this consent**
 - iv. ground cover species in the area indicated by the light green polygon around stormwater outlet 301-11 in Figure 1, and native riparian species in the area indicated by the dark green polygon**
 - v. thick slitted jute matting secured with steel fastening pins shall be used as part of the regeneration works**
- c) The Vegetation Management Plan shall specify a minimum maintenance period of two years. Council reserves the rights to extend this timeframe if the specified performance targets have not been met. The Vegetation Management Plan shall include the following requirements:**
 - i. Monitoring reports to be submitted to Council at 6 monthly intervals following primary planting.**
 - ii. A final report to be submitted to Council upon completion of the maintenance period to demonstrate that all Vegetation Management Plan actions have been completed and that performance targets specified within the Vegetation Management Plan have been met.**

Note: The final appearance of the stormwater outlet structures may vary slightly with the detailed design plans and final construction. The number of coir logs may be adjusted (i.e., moved, reduced, or increased) to suit site conditions and ensure optimal performance. Any additional revegetation requirements as part of the controlled activity approval should be included in the Vegetation Management Plan.

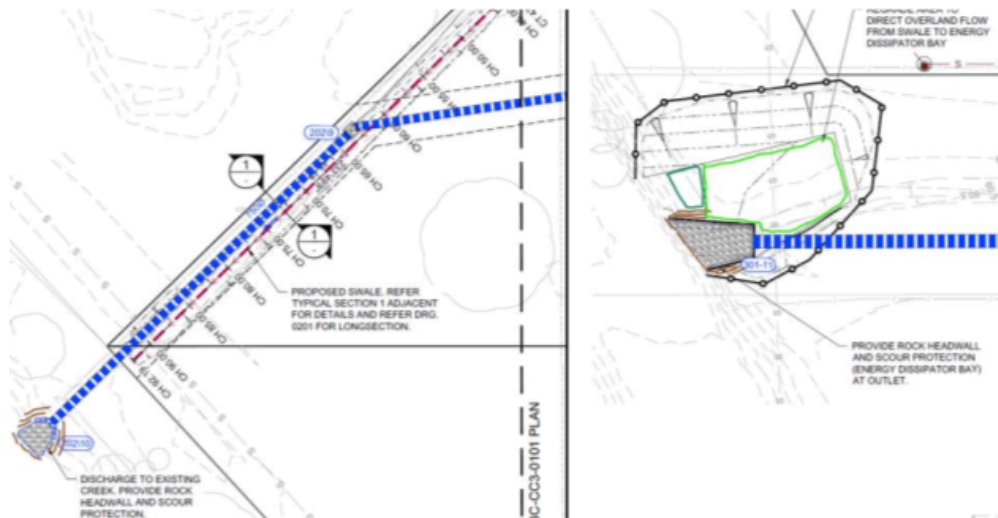


Figure 1- Vegetation management and erosion control works required at the stormwater outlets

New condition 87.1 has been added to read as follows:

Aboriginal Cultural Heritage • Staff and Contractors

87.1 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.

The National Parks and Wildlife Act 1974 protects all Aboriginal Cultural Heritage in New South Wales. Where a proposal has the potential to impact on Aboriginal Cultural Heritage objects and places, whether the presence is known or not, a permit is to be sought from Heritage NSW.

In the event that Aboriginal Cultural Heritage objects or places are encountered/discovered, works must cease immediately and Council and Heritage NSW notified.

The finds are to be investigated by an experienced archaeologist and no works are to recommence onsite until approved by Heritage NSW and Liverpool City Council.

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.

New condition 101.1 has been added to read as follows:

Tree Protection Measures and Revegetation

101.1. Consent is granted for the removal of trees identified in the approved Arboricultural Impact Appraisal and Method Statement by Naturally Trees. All other trees shall be protected in accordance with recommendations in the aforementioned report. 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.

All works identified within the approved Vegetation Management Plan shall be implemented by person or persons with appropriate knowledge, qualifications and experience in current best practices of indigenous vegetation rehabilitation and management. The timeframes, actions and works specified within the Vegetation Management Plan shall be adhered to.

Where there is inconsistency between the requirements in this condition and the recommendations in the approved documents, the latter prevails to the extent of inconsistency.

New condition 101.2 has been added to read as follows:

Fauna Management

101.2 The works shall comply with the recommendations in the approved Flora and Fauna Assessment and Threatened Species Assessment.

Prior to the removal of each tree, they shall be examined by a qualified ecologist for the presence of hollows, active nests of birds or fauna. 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. Any native fauna encountered shall be relocated by a qualified ecologist, or member of a wildlife rescue organisation, with necessary permits.

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.

Imported mulch and soils will be certified and free of any disease and pathogens and tested to ensure they meet the standards of drainage, particle size, purity, and consistency.

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.

Where there is inconsistency between the requirements in this condition and the recommendations in the approved documents, the latter prevails to the extent of inconsistency. In the event of inconsistency between the approved documents, written advice should be sought from Council.

New condition 101.3 has been added to read as follows:

Site Remediation Works

101.3 The site must be remediated in accordance with:

- a) **Remediation Action Plan titled "Remediation Action Plan (RAP) Proposed Stormwater Works for No 231-245 Eleventh Avenue Lot 9 DP 776297 and Eleventh Avenue Austral NSW" (Ref: JE24472A-r2) prepared by Adrian Tejada and reviewed by Solern Liew for Geo Enviro Consultancy Pty Ltd dated 9th August 2024;**
- b) **State Environmental Planning Policy (Resilience and Hazards) 2021;**
- c) **National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM, 1999 as amended 2013); and**
- d) **The guidelines in force under the Contaminated Land Management Act 1997**

A suitably qualified environmental consultant must be engaged to supervise all aspects of site remediation and validation works in accordance with the approved Remediation Action Plan.

Liverpool City Council must be informed in writing of any proposed variation to the remediation works. Liverpool City Council must approve these variations in writing prior to commencement/ recommencement of works.

Note: The 'suitably qualified environmental consultant' must be certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) Scheme.

New condition 129.1 has been added to read as follows:

Vegetation Management Plan • Monitoring Report

129.1 All works identified within the approved Vegetation Management Plan shall be implemented by person or persons with appropriate knowledge,

qualifications and experience in current best practices of indigenous vegetation rehabilitation and management. The timeframes, actions and works specified within the Vegetation Management Plan shall be adhered to.

A compliance report shall be submitted to Council following completion of the primary planting the subject of the Vegetation Management Plan prior to the issue of a Subdivision Certificate.

New condition 129.2 has been added to read as follows:

Aboriginal Cultural Heritage

129.2 *A final Aboriginal Cultural Heritage Assessment is to be submitted to Liverpool City Council prior to issue of a Subdivision Certificate. The report is to include the sensitivity and significance findings of the original assessment and a comparison with the site conditions, i.e. additional objects identified that were not anticipated. The report is to include an analysis of all objects identified on the site and where necessary a GIS file indicating the location of the objects re-interred on site.*

4. The following condition/s have been deleted from Development Consent DA-793/2019/A:

- **Part 2, Condition A – Staged Approval**

~~—Staged Approval~~

~~The Conditions referenced in the below table apply to each stage of the development as identified:~~

Stage	Development works	Part Reference	Condition Reference
1	Subdivision of one allotment into 3 allotments along R2 (Lot 101), E4 (Lot 103) and RE1 (Lot 102) zoning boundaries.	All Parts	All conditions as relevant to the stage
2	Subdivision of Lot 102 into 14 R2 Zoned Lots	All Parts	All conditions as relevant to the stage
3	Subdivision of Lot 103 into 3 E4 Zones Lots.	All Parts	All conditions as relevant to the stage

- **Conditions 16,31, 32 and 39 relating to On-site Detention**

~~On-Site Detention~~

~~16. On-Site Detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by Group Development Services, reference number P00302, revision F, dated 7/12/2022. 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.~~

Flooding

- ~~31. Proposed interim OSD shall control post development storm flow discharges from the development to no greater than the pre development flow discharges for range of storm events up to the 1%AEP storm event.~~
- ~~32. Interim OSD & water quality facility shall remain and be not decommissioned until regional flood detention & water quality basins of the precinct is constructed.~~

Temporary On-Site Detention (OSD)

- ~~39. The temporary on-site detention (OSD) basin shall provide adequate flow attenuation to ensure that the peak post development flow do not exceed peak pre development flow for the 20%, 5% and 1% AEP storm events. The OSD basin shall not be removed without Council's written consent.~~

- **Condition 127 relating to half road construction of Gunvada Street**

- ~~127. Prior to the issue of a subdivision Certificate for Stage 2, evidence that the proposed half width road construction of Road No 2 (Gunvada Street) on the southern side must be provided to the satisfaction of the Council. Dedication of this road must be shown on the proposed plan of subdivision for Stage 2.~~

All other conditions of Development Consent DA-793/2019 remain unchanged.

Note: This determination notice is strictly for changes sought under Modification Application DA-793/2019/A. No approval is granted or implied for any other works / changes proposed to the submitted development.

ADVISORY NOTES:

- (a) Section 8.2 of the EP&A Act provides that an applicant may request that Council review the determination of the Modification Application (this does not relate to designated development or Crown development).

Section 244 of the EP&A Regulations provides that an application for review must be submitted within 28 days of the date of the determination, and Section 8.2 of the EP&A Act provides that an application cannot be reviewed/determined after 6 months of the date of determination.

- (a) Section 8.9 of the EP&A Act provides that an applicant who is dissatisfied with the determination of a Modification 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.

- (b) The Section 4.55 (2) Modification Application does not extend the timeframe of the Development Consent initially granted by Council.
- (c) Modification of the Development Consent does not remove the need to obtain any other statutory consent necessary under the EP&A Act.

If you have any further enquiries, please contact Sarah Ilma on the abovementioned contact details.



Our Ref: DA-793/2019
Contact: Glen Hanchard
Ph: 02 8711 7639
Date: 08 January 2023

**GROUP DEVELOPMENT SERVICES
PO BOX 498
PENNANT HILLS 1715**

**NOTICE OF DETERMINATION OF DEVELOPMENT APPLICATION
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979
APPROVED AS "DEFERRED COMMENCEMENT" CONSENT**

Being the applicant in respect of Development Application No. DA-793/2019 as detailed below, you are advised that the subject application has been granted a "Deferred Commencement" consent pursuant to Section 4.16(3) of the Environmental Planning and Assessment Act 1979.

The applicant has been given a period of twenty-four (24) months in which to provide the required evidence to satisfy the matters as listed in "Part 1". On the submission of the required evidence and on the applicant receiving written notification that Council is satisfied, then the consent shall become operative subject to compliance with conditions outlined in "Part 2".

Should satisfactory evidence not be submitted to Council within the time period specified, this development consent shall be rendered inoperative and no work will be permitted to be carried out in connection with this development consent.

APPLICANT:	Group Development Services
LAND:	231-245 Eleventh Avenue, Austral LOT 11 DP 776297
PROPOSED DEVELOPMENT:	The application is seeking consent for the demolition of existing structures and subdivision of one (1) lot into fourteen (14) low density residential lots, three (3) environment living residential lots and (1) RE1 lot for public open space over three stages. The proposal is identified as Integrated Development under the Rural Fires Act, requiring an approval from the NSW Rural Fire Service.



Customer Service Centre Ground floor, 33 Moore Street, Liverpool NSW 2170
All correspondence to Locked Bag 7064 Liverpool BC NSW 1871
Call Centre 1300 36 2170 **Email** lcc@liverpool.nsw.gov.au
Web www.liverpool.nsw.gov.au **NRS** 13 36 77 **ABN** 84 181 182 471

DETERMINATION:	Approved as a “Deferred Commencement” under Delegated Authority on 08 January 2023.
CONSENT TO OPERATE FROM:	This development consent has no effect until further information required by Part 1 has been submitted to Council and Council has notified in writing that it is satisfied with the information.
CONSENT TO LAPSE ON:	Five years from the operative date (Unless physically commenced)
ATTACHMENTS:	1. Conditions of Approval 2. Section 7.11 Payment Form 3. General Terms of Approval issued by NSW Rural Fire Service 4. Requirements of Sydney Water 5. Requirements of Endeavour Energy 6. Requirements of NRAR



Customer Service Centre Ground floor, 33 Moore Street, Liverpool NSW 2170
All correspondence to Locked Bag 7064 Liverpool BC NSW 1871
Call Centre 1300 36 2170 **Email** lcc@liverpool.nsw.gov.au
Web www.liverpool.nsw.gov.au **NRS** 13 36 77 **ABN** 84 181 182 471

Before commencing the development, please read the Development Consent carefully and make sure you understand all the conditions that have been imposed. Please contact Council if you have any questions.

DEFINITIONS

AEP	Annual Exceedance Probability
Council	Liverpool City Council
DCP	Liverpool Development Control Plan 2008
DECC	Department of Environment and Climate Change and Water
CC	Construction Certificate
1% AEP Flood	The 1 in 100 year flood
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021</i>
LRS	Land Registry Services
NCC	National Construction Code (formerly Building Code of Australia)
OC	Occupation Certificate
PCA	Principal Certifying Authority
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
TfNSW	Transport for NSW
TBA	To Be Advised



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ATTACHMENT 1 – CONDITIONS OF APPROVAL

Council has imposed the following conditions under the relevant planning instruments and policies.

PART 1

DEFERRED COMMENCEMENT

Development consent shall be deferred pursuant to Section 4.16 of the Environmental Planning and Assessment Act 1979, until the submission to Council of:

Odour Impacts

1. Evidence shall be submitted to the satisfaction of the Liverpool Council Manager Development Assessment that demonstrates the proposed development will not experience adverse odour impacts from the poultry farm located at:

- 200 Eleventh Avenue, Austral, Lot 806 DP 2475 & Lot 805 DP 2475

This may be done by either of the following methods;

- a) that existing use rights for the poultry farm have lapsed and confirmation has been provided by the owner of the poultry farm; or
- b) any existing consents for the poultry farm have been surrendered, and the farm sheds and ancillary structures have been demolished (subject to separate approval).

Note: The items raised within Part 1, above, are to be addressed within twenty-four (24) months of the date shown on Council's determination notice. The consent shall become operative once Council has notified the applicant in writing that the evidence submitted in response to the "Deferred Commencement" conditions is acceptable.



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PART 2

On the submission of the required evidence and on the applicant receiving written notification that Council is satisfied that the matters listed in "Part 1" have been satisfied, then the consent shall become operative subject to compliance with conditions outlined in "Part 2".

Council has imposed the following conditions under the relevant planning instruments and policies.

A. THE DEVELOPMENT

Staged Approval

The Conditions referenced in the below table apply to each stage of the development as identified:

Stage	Development works	Part Reference	Condition Reference
1	Subdivision of one allotment into 3 allotments along R2 (Lot 101), E4 (Lot 103) and RE1 (Lot 102) zoning boundaries.	All Parts	All conditions as relevant to the stage
2	Subdivision of Lot 102 into 14 R2 Zoned Lots	All Parts	All conditions as relevant to the stage
3	Subdivision of Lot 103 into 3 E4 Zones Lots.	All Parts	All conditions as relevant to the stage

Approved Plans

- Development the subject of this determination notice must be carried out strictly in accordance with the following approved plans/reports marked as follows, except where modified by the undermentioned conditions.

Plan name	Sheet	Date	Revision	Prepared by
Plan of Subdivision Plan- Stage 1	1	2/03/2021	C	Group Development Services
Proposed Subdivision Plan – Stage 2	2	7/12/2022	D	Group Development Services



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Proposed Subdivision Plan – Stage 3	3	7/12/2022	D	Group Development Services
Public Domain Plan	500	7/12/2022	E	Group Development Services
Tree Removal Plan	600	7/12/2022	E	Group Development Services
Demolition Plan	601	7/12/2022	E	Group Development Services

Report name	Date	Reference	Prepared by
Bushfire Protection Hazard Assessment	7/11/2018	18HNG_11282	Eco-Logical Australia
Flora and Fauna Assessment	30/11/2018	18SYD - 11356	Eco Logical Australia
Concept Stormwater Management Plan Report	January 2019		Group Development Services Pty Ltd
Demolition Statement	-	-	Group Development Services Pty Ltd
Odour Assessment	27 February 2020	20.10270DR1V1	NorthStar Air Quality
Flood Assessment	September 2020	-	GRC Hydro
Remedial Action Plan	September 2019	1009-RAP-01-190919.v1f	Sydney Environmental Group
Stage 2 Detailed Site Investigation Report	September 2019	1009-DSI-01-170919.v1f	Sydney Environmental Group
Public Utility Infrastructure Report	December 2018	-	Group Development Services Pty Ltd

Works at no cost to Council

- All roadworks, drainage works and dedications, required to effect the consented development shall be undertaken at no cost to Liverpool City Council.

Council Waste-Water Requirements

4. The development must provide for a physical sewerage connection to each created allotment to enable the method of sewage disposal by gravity reticulation mains to either, Sydney Water branch and trunk sewers or Sydney Water point of treatment. Liverpool City Council will not accept any temporary facilities to service the site, including pump-out wet-wells.

NSW RFS Requirements

5. General Terms of Approval provided by the NSW RFS dated 15 May 2020 and included in Appendix 3 of this report must be adhered to at all times.

Sydney Water Requirements

6. General Terms of Approval provided by Sydney Water and dated 14 December 2020 included in Appendix 4 of this Notice of Determination must be adhered to at all times.

Endeavour Energy Requirements

7. General Terms of Approval provided by Endeavour Energy dated 15 April 2020 and included in Appendix 5 of this report must be adhered to at all times.

NRAR Requirements

8. General Terms of Approval provided by the Natural Resources Access Regulator dated 24 August 2020 and included in Appendix 6 of this report must be adhered to at all times.

Excavation Works

9. All excavation works shall employ such techniques and equipment which minimises the amount of ground vibration.

In this regard, excavation of the site by use of pneumatic drill for the breaking of rock or any other vibrating equipment for excavation, is not permitted.

EP&A Act Compliance

10. The requirements and provisions of the EP&A Act 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.

Stages of Consent

11. This consent approves development with respect to the Stages of Consent as follows;
 - (a) Stage 1 to be completed prior to the beginning of any works for any other stage.
 - (b) Stage 2 can be undertaken once Stage 1 has been completed.

- (c) Stage 3 not being consequential of Stage 2 can occur once Stage 1 is completed.

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.

Special Infrastructure Contribution

12. A special infrastructure contribution is to be made in accordance with the Environmental Planning and Assessment (Special Infrastructure Contribution – Western Sydney Growth Areas) Determination 2011, as in force when this consent becomes operative. Information about this special infrastructure contribution can be found on the Department of Planning and Environment regarding arrangements for the making of a payment.

Construction Certificate for Subdivision Works

13. Prior to the issue of a Construction Certificate for subdivision works the Certifying Authority shall ensure that engineering plans are consistent with the stamped approved concept plan/s prepared by Group Development Services reference number P00302, revision E, dated 7/12/2022 and that all subdivision works have been designed in accordance with conditions of this consent, Liverpool City Council's Design Guidelines and Construction Specification for Civil Works, any Roads Act approval issued, Austroad Guidelines and best engineering practice. The subdivision works may include but are not limited to the following:
- Public and private roads
 - Stormwater drainage including water quantity and quality treatment measures • Interallotment drainage
 - Private access driveways
 - Sediment and erosion control measures 219 220 221 223 224 226 (b) 228 230 239 242 243 248 Apply only for subdivision works where a Construction Certificate will be issued by Land Development Engineering Section. Do not apply B450, B454 or B456 Special condition required where works are not provided on the concept plans. Page 5 of 30 Revision 9/2018
 - Overland flow paths
 - Flood control measures
 - Traffic facilities including roundabouts, intersection treatments, car parks, bus stops, cycleways, pathways etc.
 - Earthworks
 - Bridges, culverts, retaining walls and other structures • Landscaping and embellishment works

- All works required for conversion of the proposed sediment basin to a bio retention function
- All works required for the decommissioning temporary OSD systems including pipe removal, basin filling and works to existing pit structures if required The Construction Certificate must be supported by engineering plans, calculations, specifications and any certification relied upon.

The Construction Certificate must be supported by engineering plans, calculations, specifications and any certification relied upon.

Road Design Criteria Table

14. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the proposed roads have been designed in accordance with Liverpool City Council's Design Guidelines and Construction Specification for Civil Works and the following criteria:

Road No.	Road Reserve Width	Carriageway Width	Verge	Footpath (1.5m wide)	ESA
Yuril Street	16.0	9.0	3.5	Both Sides	3 X 10 ⁵
Eleventh Ave	20.11	4.5(half Road)	5.	Northern Side	3 X 10 ⁵
Gunyadu Street	8.0	4.5(half Road)	3.5	Southern Side	3 X 10 ⁵

Road Safety Audit

15. A Stage 3 (detailed design) Road Safety Audit (RSA) shall be undertaken on the proposed roadworks by an accredited auditor who is independent of the design consultant. A copy of the RSA shall accompany the design plans submitted with the Construction Certificate or Roads Act application.

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.

On-Site Detention

16. On-Site Detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by Group Development Services, reference number P00302, revision F, dated 7/12/2022. 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.

Inter-allotment Drainage

17. Inter-allotment drainage shall be provided for all lots that are unable to be drained by gravity to the street system. Inter-allotment drainage is to be constructed with a pit located immediately within the lot boundary of each lot created by the subdivision at the lowest point in the line or a maximum pit space of 40m.

No loading on easements

18. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the foundations of the proposed structures adjoining the drainage and/or services easement have been designed clear of the zone of influence.

Water Quality

19. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that details of a stormwater pre-treatment system have been provided on the stormwater plans and that the design meets pollutant retention criteria in accordance Council's Development Control Plan.

The Construction Certificate must be supported by:

- Specification & installation details of the stormwater pre treatment system
- The approval of an operation and maintenance manual/ schedule for the stormwater pre-treatment system

A copy of the approved operation and maintenance manual/ schedule shall be submitted to Liverpool City Council with notification of the Construction Certificate issue.

Inter-allotment drainage

20. Inter-allotment drainage shall be provided for all lots that are unable to be drained by gravity to the street system. Inter-allotment drainage is to be constructed with a pit located immediately within the lot boundary of each lot created by the subdivision at the lowest point in the line or a maximum pit spacing of 40m.

Site Development Work

21. 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

22. 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.
- (c) Long Service Levy – based on 0.35% of the cost of building work where the costing of the CC is \$25,000 or more.

These fees are reviewed annually and will be calculated accordingly.

Fee Payments

23. 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 PCA. 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.

Landscape Plan - Street Tree

24. Prior to the issue of a construction certificate, the approved plans are to be amended to include the following to the satisfaction of the PCA:
- (a) The approved proposed landscape plan shall be amended to include street trees with a minimum pot size of 100 litres to be planted in the street verge to Yurill Street, lots which front Gunyadu Street and Eleventh Avenue one either side of the proposed driveway. The street tree is to be chosen from the following species:
 - i. *Tristaniopsis laurina* (water gum)
 - ii. *Elaeocarpus reticulatus* (blueberry ash)
 - iii. *Fraxinus griffithii* (evergreen ash);
 - iv. *Lagerstroemia* species. (crepe myrtle).

Flooding

25. The proposal shall be consistent with the submitted flood assessment report (Sept. 2020 by GRC Hydro) and concept civil design drawings Rev.A dated 15/10/2019 by GDC Pty Ltd.
26. There shall be no adverse flooding impact in the vicinity of the site due to proposed work. Any loss of flood storage volume from development of western environmental lot 17 shall be compensated through flood compensatory excavation below the 1%AEP flood.

Plans/drawings & volume calculation of compensatory works shall be submitted at CC stage.

27. Existing overland flows from upstream catchment through the site shall be accommodated into proposed stormwater system of the development. Design & sizing of stormwater system shall consider full developed upstream catchment flows through the site up to the 1% AEP event.
28. Major system (roads) shall consider overland flows through the site up to the 1%AEP storm event with flood depth not exceeding 0.2m & comply velocityxdepth safety criteria.
29. Finished floor levels of future residential development shall be no lower the 1%AEP flood level plus 0.5m freeboard for the location.
30. Water quality treatment measures shall be in accordance with the concept proposal and shall treat stormflows before discharging into receiving waters and shall achieve Council's stormwater treatment targets.
31. Proposed interim OSD shall control post development storm flow discharges from the development to no greater than the pre-development flow discharges for range of storm events up to the 1%AEP storm event.
32. Interim OSD & water quality facility shall remain and be not decommissioned until regional flood detention & water quality basins of the precinct is constructed.
33. Detailed design plans & drawings of proposed stormwater drainage works shall be submitted at CC Stage for review and approval.

Traffic

34. Detailed design plans for the access roads including temporary turning head for Road 1, gradient swept path analysis, line markings and sign posting in accordance with the DCP and AS2890 should be submitted to Traffic and Transport Section for review.
35. The applicant is to submit a public street lighting design brief to Council prior to the issue of a Construction Certificate to Category P3 for local streets.
36. The design of street lighting in accordance with Council's and Endeavour Energy specifications along all the roads fronting the development site shall be submitted to Council Traffic and Transport Section for review.
37. A construction traffic management plan prepared by an accredited practitioner is to be submitted to Council's Traffic and Transport Section for endorsement. The CTMP is to outline the need for a Road Occupancy Permit issued by Council or Road Occupancy Permit issued by the Transport Management Centre.
38. Works within the road reserve shall not commence until the construction traffic management plan has been endorsed.

Temporary On-Site Detention (OSD)

39. The temporary on-site detention (OSD) basin shall provide adequate flow attenuation to ensure that the peak post-development flow do not exceed peak pre-development flow for the 20%, 5% and 1% AEP storm events. The OSD basin shall not be removed without Council's written consent.

Stormwater Design

40. The stormwater design shall incorporate interim streetscape silt trap devices in accordance with the Liverpool Growth Centre Precincts Development Control Plan, June 2021. The DCP can be downloaded from the link below.

https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Liverpool+Growth+Centre+Precincts+DCP+Main+Body+June+2021_S-3453.PDF

Schedule 1 of the DCP can be downloaded from the link below.

https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Liverpool+Growth+Centre+Precincts+DCP+Schedule+1+June+2021_S-3453.pdf

The detailed design of interim streetscape silt trap devices can be obtained from council upon request.

Interim On-Site Water Quality

41. Interim on-site water quality treatment system shall be provided and maintained. Water quality treatment system shall be designed using MUSIC modelling software and the water quality treatment system performance shall be verified using Council's MUSIC link. Temporary basin shall not be removed without Council's written consent.

Construction Environmental Management Plan (CEMP)

42. 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.

Hazardous Material Survey

43. Completion of a Hazardous Materials Survey (HMS) by a suitably qualified and experienced consultant, before commencement of any demolition works, to identify any hazardous materials that may be present within existing structures is required.

Provision of Services – Land Development

44. 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 Principal Certifying Authority.

C. PRIOR TO WORKS COMMENCING

The following conditions are to be complied with or addressed prior to works commencing on the subject site/s:

Waste Classification and disposal of Contaminated Soil Material

45. 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.

Construction Traffic Management Plan (CTMP)

46. The applicant is to prepare a Construction Traffic Management Plan (CTMP) detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic controls and a work zone (if required). The plan shall be prepared by a

suitably qualified persons and shall be submitted to and approved by Council's Transport Management Section prior to the issue of a Construction Certificate.

The CTMP is to outline the need for a Road Occupancy Permit issued by Council and/or Road Occupancy Permit issued by the Transport Management Centre.

47. The developer shall obtain any necessary Road Occupancy Certificates (ROC), Road Opening permits, and works zone approvals from Council, as required, prior to undertaking any works within public road reserve. The application forms are available on Council's website or can be requested from the Council's Customer Services.

The ROC applications are to be accompanied by Traffic Control Plans which include details for pedestrian and cyclist access management. The plans shall be prepared by a suitably qualified person and are to be in accordance with AS1742.3 "Traffic Control Devices for Works on Roads" and the Transport for NSW publication "Traffic Control at Worksites". The plans are to be submitted to and approved by Council and the PCA.

Commencement of work

48. 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

49. Detailed engineering plans and specifications relating to the work shall be endorsed with a CC, in accordance with Section 4.19, 6.6, 6.7, 6.12, 6.13, 6.14 of the EP&A Act, and a copy submitted to Council, with payment of any relevant fees.
50. 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.
51. Where this consent requires both engineering and building works to be undertaken, a separate construction certificate shall be issued for each category of works i.e., a separate Civil Engineering CC and a separate Building CC.

Prior to Works Commencing - Traffic

52. The developer shall seek road occupancy, road opening permits, and works zone approval from Council if required prior to undertaking any works within public road reserve. The application forms are available on Council's website or can be requested from the Council's Customer Services.

Demolition Works

53. 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, must be prepared by a suitably qualified person with suitable expertise 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 NSW Work Cover 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 NSW Work Cover requirements.

Site Facilities

54. 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.

Notification/Principal Certifying Authority

55. The applicant shall advise Council of the name, address and contact number of the Accredited Certifier, in accordance with Section 6.12 of the EP&A Act.
56. The PCA must advise Council of the intended date to commence work which is the subject of the 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.
57. 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.
58. In the event the development involves 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 adjoining premises from possible damage from the excavation, and
 - (b) Where necessary, underpin the adjoining premises to prevent any such damage.

Erosion Control - Stabilization

59. All disturbed areas shall be progressively stabilized and/or revegetated so that no areas remain exposed to potential erosion damage for a period of greater than 14 days.

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 certifier 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

Waste Classification and Disposal of Contaminated Soil and Material

Environmental Management

61. 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.

Security Fence

62. 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.

Sediment & Erosion Control

63. 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.

Traffic Control Plan

64. 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.

Matters to be addressed prior to commencement of Subdivision Works

65. Work on the subdivision shall not commence until:
- a Construction Certificate (if required) has been issued,
 - a Principal Certifying Authority has been appointed for the project, and
 - any other matters prescribed in the development consent for the subdivision and the Environmental Planning and Assessment Act and Regulation have been completed with.

A notice of Commencement is to be submitted to Liverpool City Council two (2) days prior to commencement of engineering's works or clearing associated with the subdivision.

Sediment & Erosion Control

66. 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.

Site Notice Board

67. 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:
- The name, address and telephone number of the principal certifying authority for the work; and
 - 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
 - Unauthorised entry to the premises is prohibited.

Facilities

68. 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*.

D. DURING CONSTRUCTION

The following conditions are to be complied with or addressed during construction:

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.

Imported Fill Material

70. 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.

71. All works within the road reserve are to be at the applicant cost and all signage is to be in accordance with the RMS Traffic Control at Worksites Manual and the RMS Guide to Signs and Markings.
72. 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.

73. 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 prior to implementation. This includes temporary closures for delivery of materials, concrete pours etc.
74. Applications must be made to Council's Traffic and Transport Section for any 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.
75. The endorsed CTMP is to be implemented during the construction.

Demolition of Septic Tank and Effluent Disposal Area

76. Any existing subsurface effluent disposal area is to be demolished and back filled with Virgin Excavated Natural Material (VENM). Any septic tank, collection well or aerated wastewater treatment system is to be removed or reused in accordance with NSW Health Advisory Note 3 – Destruction, Removal or Reuse of Septic Tanks, Collection Wells and Aerated Wastewater Treatment Systems and other Sewage Management Facilities.

Removal of dangerous and/or hazardous waste

77. 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.

Imported Fill Material

78. Filling material must be limited to the following:
 - a. Virgin excavated natural material (VENM)
 - d. Excavated natural material (ENM) certified as such in accordance with Protection of the Environment Operations (Waste) Regulation 2014; and/or
 - e. 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

79. The following records of accepted waste derived fill material must be submitted to the Principal Certifying Authority at the completion of earth works: 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, Documentation confirming the results of the waste classification assessment carried out on the fill material used in the development, and the results of any chemical testing undertaken on fill material.

Site Remediation Works

80. The site must be remediated in accordance with;
- a) Remediation Action Plan 1009-RAP-1-170919 prepared by Karl Finnerty/Reviewed by Steven Wallace (CEnvP) (Sydney Environmental Group Pty Ltd) dated 19 September 2019;
 - b) *State Environmental Planning Policy (Resilience and Hazards) 2021*;
 - c) National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM, 1999 as amended 2013); and
 - d) The guidelines in force under the *Contaminated Land Management Act 1997*.

The applicant must engage an appropriately qualified and experienced environmental consultant to supervise all aspects of site remediation and validation works in accordance with the approved Remedial Action Plan.

Council must be informed in writing of any proposed variation to the remediation works. Council must approve these variations in writing prior to commencement/recommencement of works.

Contamination

81. 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).

Traffic Conditions

82. The endorsed Construction Traffic Management Plan (CTMP) is to be implemented at all times during the course of the project.
83. All works within the road reserve are to be at the applicant's cost and all signage is to be in accordance with the TfNSW Traffic Control at Worksites Manual and the TfNSW Interim Guide to Signs and Markings.
84. Notice must be given to Council's Transport Management 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.

85. Applications must be made to Council's Transport Management Section for any 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.
86. Council's on-street assets, including but not limited to; footpaths, kerbs, gutters, traffic calming devices, etc. should be protected at all times. Any damages shall be rectified by the applicant, at no cost to Council and to Council's satisfaction.

Aboriginal Relics/Artefacts

87. If any Aboriginal relics/artefacts or potential Aboriginal relics/artefacts are uncovered during the course of any construction works including demolition, work is to cease immediately. The Office of Environment and Heritage is to be notified and no further work shall be undertaken until the relevant assessments and permits have been issued in accordance with the National Parks and Wildlife Act 1974 (NSW).

Erosion and Sediment Control

88. Erosion and sediment control measures shall remain in place and be maintained until all disturbed areas have been rehabilitated and stabilized.

Street Lighting

89. Street lighting is to be provided for all new and existing streets within the proposed subdivision to Liverpool City Council's standards.

The developer shall submit a Public Lighting Design Brief to Council for approval for the provision of street lighting on all new public roads dedicated to Council. A street lighting design plan must be prepared by an accredited service provider for approval prior to construction. All street lighting must comply with the electricity service provider Street Lighting Policy and illumination requirements and Council's Street Lighting policy. All cost associated with the installation of street lighting shall be borne by the developer.

Major Filling / Earthworks

90. All earthworks shall be undertaken in accordance with AS3798 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.

Soil Testing – Subdivisions

91. Soil testing is to be carried out to enable each lot to be classified according to AS2870 "Residential Slabs and Footings".

Unidentified Contamination

92. 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 immediately notified to Council and the Principal Certifying Authority in writing. 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.

Air Quality

93. Dust screens shall be erected and maintained in good repair around the perimeter of the subject land during land clearing, demolition, and construction works.

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 Certifier may direct that work is not to proceed.

All vehicles involved in the delivery, demolition or construction process departing from the property shall have their loads fully covered before entering the public roadway.

Pollution Control – Site Operations

94. During construction the consent holder is to ensure 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.

Pollution Control – Truck Materials

95. 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.

Hours of Construction Work and Deliveries

96. Construction work/civil 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 on Saturday. No work will be permitted on Sundays or Public Holidays, unless otherwise approved by Council.

Security Fence

97. 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.

Waste

98. All waste materials generated as a result of the development are to be disposed at a facility licensed to receive such waste.

Waste Management Plan

99. The Waste Management Plan as amended by the Construction Certificate, 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.

Erosion Control

100. 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.

Water Quality

101. 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.

E. PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE

The following conditions are to be complied with or addressed prior to issue of the subdivision certificate:

Service Providers

102. 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.

S138 Roads Act – Minor Works in the public road

103. Prior to the issue of a Construction Certificate a S138 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 the following: · Vehicular crossings (including kerb reinstatement of redundant vehicular crossings) · Road opening for utilities and stormwater (including stormwater connection to Council infrastructure) · 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: 1. Approvals may also be required from the Roads and Maritime Service (RMS) for classified roads.

Decommissioning of On-Site Sewage Management System/s

104. Following the decommissioning of the on-site sewage management system, a certificate certifying that the system was decommissioned in accordance with NSW Health Advisory Note 3 – Destruction, Removal or Reuse of Septic Tanks, Collection Wells and Aerated Wastewater Treatment Systems (AWTS) and other Sewage Management Facilities (SMF), shall be submitted to Council. A template decommissioning certificate can be found on Councils website www.liverpool.nsw.gov.au

Traffic

105. All required road works on the proposed roads, traffic calming devices, signage, line markings and street lighting shall be completed to Council's satisfaction.

Retaining Walls on Boundary

106. 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

107. 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 Road & Drainage Works in Eleventh Avenue. 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: 1. 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.

Dilapidation Report

108. Prior to the Commencement of Works a dilapidation report of all infrastructure fronting the development in Eleventh 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.

Amended Plans

109. Plans prepared for the issue of a Subdivision Works Certificate must ensure upstream development is considered and all pipes sizes designed to cater for all upstream flows and match must match existing designs for adjoining developments.

Completion of subdivision works

110. 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 of that suitable arrangements have been made with Liverpool City Council for any outstanding works.

Stormwater Compliance

111. Prior to the issue of a Subdivision Certificate the Principal Certifying Authority shall ensure that the:

- i) On-Site Detention System/s
- ii) Stormwater pre-treatment System/s
- iii) Overland flow path works

- 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.

112. Restriction as to User and Positive Covenant

Prior to the issue of a Subdivision Certificate a restriction as to user and positive covenant relating to the:

- i) On-Site Detention Systems
- ii) Stormwater pre-treatment systems
- iii) Overland Flow Paths

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

113. 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 Eleventh Avenue will require a Roads Act application. The application is to be submitted and approved by Liverpool City Council prior to such works commencing.

Linemarking & Signage

114. Prior to the issue of a Subdivision Certificate, the installation of regulatory / advisory linemarking and signage, plans are to be completed. Signage and Linemarking plans shall be lodged with Liverpool City Council and approved by the Local Traffic Committee. Notes: 1. Allow eight (8) weeks for approval by the Local Traffic Committee.

Maintenance Bond

115. Prior to the issue of a Subdivision Certificate a maintenance bond is to be lodged with Liverpool City Council for Road & Drainage Works. The value of the bond shall be determined in accordance with Liverpool City Council's Bond Policy. The bond will be administered in accordance with this policy.

Subdivision Compliance Documentation

116. 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 DWG format and PDF format to Council along with two hard copies of the WAE plans.

b) The WAE drawings shall clearly indicate the 1% Annual Exceedance Probability flood lines (local and mainstream flooding).

c) The WAE drawings shall be accompanied by plans indicating the depth of fill for the entire development site. The plans must show, by various shadings or cross hatchings, the depth of any fill within 0.3m depth ranges.

d) CCTV footage in DVD format to Council's requirements and a report in "SEWRAT" format for all drainage within future public roads and public land. Inspections are to be carried out in accordance with the Conduit Inspection Reporting Code of Australia WSA 05-2006. Any damage that is identified is to be rectified in consultation with Liverpool City Council.

e) 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.

f) Documentation for all road pavement materials used demonstrating compliance with Council Design Guidelines and Construction Specification.

g) 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:

- Compaction reports for road pavement construction
- Compaction reports for bulk earthworks and lot regrading.
- Soil classification for all residential lots
- Statement of Compliance

h) Structural Engineer's construction certification of all structures

Linen Plans & 88B

117. 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 if required.

Linen Plans & 88B

118. The applicant shall pay the standard fee for purpose of subdivision certificate administration of plan checking and release.

Linen Plans & 88B

119. The final plan of subdivision must be supported by an 88B instrument to the approval of Council. The 88B instrument shall properly reflect the requirements of the conditions of development consent, the plans forming part of the consent, and Councils 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.

Linen Plans & 88B

120. Where common drainage lines or other drainage lines are required, a drainage easement shall be created in accordance with Council's minimum widths as scheduled in councils design specification for subdivisions (as amended).

Linen Plans & 88B

121. 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.

Dilapidation Report

122. Any rectification works required by Council regarding the condition of Council infrastructure shall be undertaken, at full cost to the developer.

Footpaths

123. Construction of 1.5m wide by 100mm thick (with one layer of SL72 reinforcing mesh) concrete path paving on both sides of all residential access roads and both sides of all collector and distributor roads.

Bonds

124. A maintenance bond in the form of a bank Guarantee or cash bond, shall be lodged with Council prior to the issue of a Subdivision Certificate. The bond shall cover maintenance and any damage to roads, drainage lines, public reserves or other council property or works required as a result of work not in accordance with Council's standards, and /or development consent conditions. The bond will be held by Council for a minimum period of 12 months from the date of Council acceptance of final works.
125. Prior to the issue of Subdivision Certificate for Stage 2, all existing buildings and structures must be demolished to the satisfaction of the Council.

Site Contamination Validation Report

126. Prior to issue of the subdivision certificate a detailed validation report must be submitted to the Principal Certifying Authority. The Report must be prepared in accordance with:
- a) NSW Contaminated Land Planning Guidelines (1998);
 - b) Relevant EPA guidelines. In particular the Contaminated Land Guidelines – Consultants Reporting on Contaminated Land (NSW EPA 2020); and
 - c) National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

The Validation Report must be prepared or reviewed and approved by a suitably qualified and experienced contaminated land consultant.

The report's cover or title page of the document shall include a personalised electronic seal for either the CEnvP(SC) or CPSS CSAM scheme.

The Validation report must verify that the land is suitable for the proposed use(s), and that the remediation and validation of the site has been undertaken in accordance with the approved Remedial Action Plan.

Note: 'Suitably qualified and experienced contaminated land consultant' means someone who is certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) Scheme.

127. Prior to the issue of a subdivision Certificate for Stage 2, evidence that the proposed half width road construction of Road No 2 (Gunvada Street) on the southern side must be provided to the satisfaction of the Council. Dedication of this road must be shown on the proposed plan of subdivision for Stage 2.
128. Prior to the issue of a subdivision Certificate for Stage 3, evidence that full width construction and dedication of Road No 2 (Gunvada Street) must be provided and the temporary turning head removed to the satisfaction of the Council.

SECTION 7.11 PAYMENT

Liverpool Contributions Plan 2014 Austral & Leppington North

129. 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 above Liverpool Contributions Plan 2014 Austral & Leppington North as amended.

The total contribution is **\$480,000** and will be adjusted at the time of payment in accordance with the contributions plan. This will be paid over two stages:

Stage 2 - \$390,000

Stage 3 - \$90,000

A breakdown of the contribution's 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.

F. 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 designated 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)

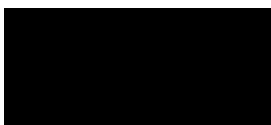
Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility

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.
- m) The Austral Leppington Catchment Area – Phase 1 and Phase 2 Catchments are not currently serviced by Sydney Water wastewater infrastructure providing disposal and management of sewage. Sydney Water expects that the provision of this wastewater infrastructure will be available in 2025-2026.

Should you have any queries please contact Glen Hanchard on 8711 7639.

Yours faithfully,



Patrick Curmi
Team Leader
Development Assessment

APPENDIX 2: SECTION 7.11 PAYMENT FORM

STAGE 2 CONTRIBUTIONS PURSUANT TO SECTION 7.11 OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT, 1979

Liverpool Contributions Plan – Austral Leppington North Precincts

Note to the applicant:

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 CPI September Quarter 2022 and will be adjusted at the time of payment in accordance with the conditions of consent.

APPLICATION NO.:

DA-793/2019

APPLICANT:

Group Development Services

PROPERTY:

231-245 Eleventh Avenue, Austral

LOT 11 DP 776297

PROPOSAL:

The application is seeking consent for the demolition of existing structures and subdivision of one (1) lot into fourteen (14) low density residential lots, three (3) environment living residential lots and (1) RE1 lot for public open space over three stages.

The proposal is identified as Integrated Development under the Rural Fires Act, requiring an approval from the NSW Rural Fire Service.

<u>Facilities</u>	<u>Amount (\$)</u>	<u>Job No.</u>
Liverpool Contributions Plan 2014 ALN		
Local Community Facilities - Land	\$8,618	GL.3011210001870.10190
Local Recreation - Land	\$295,751	GL.3011210001869.10191
Local Recreation - Works	\$0	GL.3011210001869.10192
Local Transport Facilities - Land	\$12,421	GL.3011210001865.10193
Local Transport Facilities - Works	\$0	GL.3011210001865.10194
Local Drainage Facilities - Land	\$71,099	GL.3011210001866.10195
Local Drainage Facilities - Works	\$0	GL.3011210001866.10196
Administration	\$2,111	GL.3011210001872.10197
TOTAL	\$390,000	

OFFICE USE ONLY

RECORD OF PAYMENT

Total Amount paid: _____

Date: _____

Receipt No.: _____ Cashier: _____



Customer Service Centre Ground floor, 33 Moore Street, Liverpool NSW 2170

All correspondence to Locked Bag 7064 Liverpool BC NSW 1871

Call Centre 1300 36 2170 Email lcc@liverpool.nsw.gov.au

Web www.liverpool.nsw.gov.au NRS 13 36 77 ABN 84 181 182 471

**STAGE 3 CONTRIBUTIONS PURSUANT TO SECTION 7.11 OF THE ENVIRONMENTAL
PLANNING & ASSESSMENT ACT, 1979**

Liverpool Contributions Plan – Austral Leppington North Precincts

Note to the applicant:

When remitting payment as specified in the Conditions of Consent to the approval, this Form must be submitted with your payment.

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<u>Facilities</u>	<u>Amount (\$)</u>	<u>Job No.</u>
Liverpool Contributions Plan 2014 ALN		
Local Community Facilities - Land	\$1,989	GL.3011210001870.10190
Local Recreation - Land	\$23,737	GL.3011210001869.10191
Local Recreation - Works	\$0	GL.3011210001869.10192
Local Transport Facilities - Land	\$9,323	GL.3011210001865.10193
Local Transport Facilities - Works	\$0	GL.3011210001865.10194
Local Drainage Facilities - Land	\$53,366	GL.3011210001866.10195
Local Drainage Facilities - Works	\$0	GL.3011210001866.10196
Administration	\$1,585	GL.3011210001872.10197

TOTAL**\$90,000**

----- OFFICE USE ONLY -----

RECORD OF PAYMENT

Total Amount paid: _____

Date: _____

Receipt No.: _____ Cashier: _____

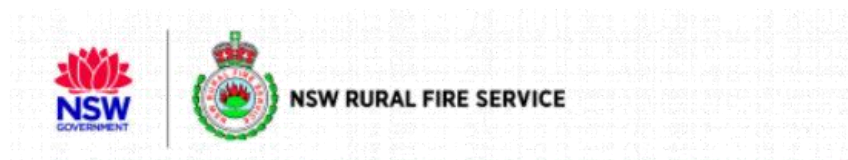


Customer Service Centre Ground floor, 33 Moore Street, Liverpool NSW 2170

All correspondence to Locked Bag 7064 Liverpool BC NSW 1871

Call Centre 1300 36 2170 Email lcc@liverpool.nsw.gov.auWeb www.liverpool.nsw.gov.au NRS 13 36 77 ABN 84 181 182 471

APPENDIX 3 – NSW RFS – General Terms of Approval



Liverpool City Council
Locked Bag 7064
LIVERPOOL BC NSW 1871

Your reference: DA-793/2019 (CNR-6179)
Our reference: DA20200407001222-Original-1

ATTENTION: Kevin Kim

Date: Friday 15 May 2020

Dear Sir/Madam,

Integrated Development Application
s100B - Subdivision - Torrens Title Subdivision
245 Eleventh Avenue Austral NSW 2179, 11/DP776297

I refer to your correspondence dated 25/03/2020 seeking general terms of approval for the above Integrated Development Application.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted. General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997*, are now issued subject to the following conditions:

Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and prevent direct flame contact. To achieve this, the following conditions shall apply:

1. At the issue of a subdivision certificate, and in perpetuity to ensure ongoing protection from the impact of bush fires, the entirety of the proposed residential Lots 1-14 must be managed as an inner protection area (IPA) in accordance with the requirements of Appendix 4 of *Planning for Bush Fire Protection 2019*.

2. At the issue of a subdivision certificate, and in perpetuity to ensure ongoing protection from the impact of bush fires, the entirety of the proposed residential Lots 15-17 and the lot demarcated for RE1 landuse must be managed as an inner protection area (IPA), excluding the native vegetation retention area and the easement for transmission line, in accordance with the requirements of Appendix 4 of *Planning for Bush Fire Protection 2019*. When establishing and maintaining an IPA the following requirements apply:

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m;
- preference should be given to smooth barked and evergreen trees;

1

Postal address	Street address	
NSW Rural Fire Service Locked Bag 17 GRANVILLE NSW 2142	NSW Rural Fire Service 4 Murray Rose Ave SYDNEY OLYMPIC PARK NSW 2127	T (02) 8741 5555 F (02) 8741 5550 www.rfs.nsw.gov.au



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- large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed

Access - Public Roads

The intent of measures is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area. To achieve this, the following conditions shall apply:

3. Public access roads must comply with the following general requirements of Table 5.3b of *Planning for Bush Fire Protection 2019* and the following:

- these are two-way sealed roads;
- minimum 8 metre carriageway width kerb to kerb;
- parking is provided outside of the carriageway width;
- hydrants are to be located clear of parking areas;
- curves of roads have a minimum inner radius of 6m;
- the maximum grade road is 15 degrees and average grade of not more than 10 degrees;
- the road crossfall does not exceed 3 degrees; and
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

4. At each stage of the subdivision, temporary turning heads must be provided to temporary dead end roads incorporating either a minimum 12 metre radius turning circle or turning heads compliant with A3.3. Vehicle turning head requirements of *Planning for Bush Fire Protection 2019*. The turning areas may be removed upon opening of future proposed through roads.

Water and Utility Services

The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities. To achieve this, the following conditions shall apply:

5. The provision of water, electricity and gas must comply the following in accordance with Table 5.3c of *Planning for Bush Fire Protection 2019*:

- reticulated water is to be provided to the development where available;
- fire hydrant, spacing, design and sizing complies with the relevant clauses of *Australian Standard AS 2419.1:2005*;
- hydrants are and not located within any road carriageway;
- fire hydrant flows and pressures comply with the relevant clauses of *AS 2419.1:2005*;
- all above-ground water service pipes are metal, including and up to any taps;
- where practicable, electrical transmission lines are underground;
- where overhead, electrical transmission lines are proposed as follows:
 - a) lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and
 - b) no part of a tree is closer to a power line than the distance set out in accordance with the specifications in *ISSC3 Guideline for Managing Vegetation Near Power Lines*.
- reticulated or bottled gas is installed and maintained in accordance with *AS/NZS 1596:2014* and the requirements of relevant authorities, and metal piping is used.

General Advice - Consent Authority to Note

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- Development applications lodged on lots created within this subdivision may be subject to further assessment under the *Environmental Planning & Assessment Act 1979*.
- The bushfire report has proposed the APZ requirement considering the provisions of *Draft Planning for Bush Fire Protection 2018* as an alternate solution. The recommended conditions are as per the provisions of *Planning for Bush Fire Protection 2019*.

For any queries regarding this correspondence, please contact Rohini Belapurkar on 1300 NSW RFS.

Yours sincerely,

Kalpana Varghese
Team Leader, Dev. Assessment & Planning
Planning and Environment Services

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BUSH FIRE SAFETY AUTHORITY

Subdivision - Torrens Title Subdivision
245 Eleventh Avenue Austral NSW 2179, 11//DP776297
RFS Reference: DA20200407001222-Original-1
Your Reference: DA-793/2019 (CNR-6179)

This Bush Fire Safety Authority is issued on behalf of the Commissioner of the NSW Rural Fire Service under s100b of the Rural Fires Act (1997) subject to the attached General Terms of Approval.

This authority confirms that, subject to the General Terms of Approval being met, the proposed development will meet the NSW Rural Fire Service requirements for Bush Fire Safety under s100b of the Rural Fires Act 1997.

Kalpana Varghese

Team Leader, Dev. Assessment & Planning
Planning and Environment Services

Friday 15 May 2020



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APPENDIX 4 – Sydney Water Requirements

14 December 2020

Kevin Kim

Council Assessing Officer

Liverpool City Council

kimk@liverpool.nsw.gov.au

RE: Development Application DA-793/2019 at 231-245 Eleventh Avenue, Austral

Sydney Water sincerely apologise for the delay in response and thank you for notifying us of DA-793/2019 at 231-245 Eleventh Avenue, Austral which proposes the subdivision of an existing allotment into a Torrens title subdivision of 17 residential lots, and a residue lot excision (lot 1) for public recreation lot, the demolition of existing structures and construction of roads and associated civil works. Sydney Water has reviewed the application based on the information supplied and provides the following comments to assist in planning the servicing needs of the proposed development.

Water Servicing

- Potable water servicing should be available via a 100mm DICL watermain (laid in 1988) on Eleventh Avenue.
- Amplifications, adjustments and extensions may be required to service the proposed lots.

Wastewater Servicing

Sydney Water is committed to servicing the existing and future needs of developers and the community in the South West Growth Area. A review is underway for delivery of the ultimate wastewater servicing solution for the Austral-Leppington precincts with a view to meeting revised population, growth and service demand. The change in scope and funding requires additional approvals, resulting in a change to the previously announced delivery timeframes of Dec 2021 for the ultimate solution.

When the ultimate servicing solution is confirmed our investment timescales for infrastructure in South Western Sydney will be announced to the Council. This is anticipated to be by **early 2021**. Sydney Water will work with developers to design interim solutions to meet their servicing requirements in a timely way, where feasible.

We are working closely with developers, to identify and expedite interim servicing solutions, while ultimate servicing plans and funding for this growth precinct are confirmed. **Sydney Water advises that the proponent contacts Sydney Water to investigate whether initial staged servicing requirement opportunities are available, as soon as possible.**

This advice is not formal approval of our servicing requirements. Detailed requirements, including any potential extensions or amplifications, will be provided once the development is referred to Sydney Water for a Section 73 application. More information about the Section 73 application process is available on our web page in the [Land Development Manual](#).



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Further advice and requirements for this proposal are in the Attachment 1. If you require any further information, please contact the Growth Planning Team at urbangrowth@sydneywater.com.au.

Yours sincerely,



Yours sincerely,

Growth Intelligence Manager
City Growth and Development, Business Development Group
Sydney Water, 1 Smith Street, Parramatta NSW 2150

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | CK 14 Sydney | T 13 20 92 | www.sydneywater.com.au
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Attachment 1

Sydney Water Servicing

A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained from Sydney Water.

The proponent is advised to make an early application for the certificate, as there may be water and wastewater pipes to be built that can take some time. This can also impact on other services and buildings, driveways or landscape designs.

Applications must be made through an authorised Water Servicing Coordinator. For help either visit www.sydneywater.com.au > Plumbing, building and developing > Developing > Land development or telephone 13 20 92.

Building Plan Approval

The approved plans must be submitted to the Sydney Water [Tap in™](#) online service to determine whether the development will affect any Sydney Water sewer or water main, stormwater drains and/or easement, and if further requirements need to be met.

The Sydney Water [Tap in™](#) online self-service replaces our Quick Check Agents as of 30 November 2015.

The [Tap in™](#) service provides 24/7 access to a range of services, including:

- building plan approvals
- connection and disconnection approvals
- diagrams
- trade waste approvals
- pressure information
- water meter installations
- pressure boosting and pump approvals
- changes to an existing service or asset, e.g. relocating or moving an asset.

Sydney Water's [Tap in™](#) online service is available at:
<https://www.sydneywater.com.au/SW/plumbing-building-developing/building/sydney-water-tap-in/index.htm>

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
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APPENDIX 5 – Endeavour Energy Requirements



The General Manager
Liverpool City Council

15 April 2020

ATTENTION: Kevin Kim

Dear Sir or Madam

I refer to the below email of 25 March 2020 from NSW Planning, Industry & Environment regarding NSW Government concurrence and referral request CNR-6179 for Liverpool City Council's development application DA-793/2020 at 231-245 ELEVENTH AVENUE AUSTRAL 2179 (Lot 11 DP 776297) for 'Subdivision of an Existing Allotment into a Torrens Title Subdivision of 17 Residential Lots, and a Residue Lot Excision (Lot 1) for Public recreation lot, the demolition of existing structures and Construction of Roads and associated Civil Works'. Submissions need to be made to Council by 15 April 2020.

As shown in the below site plans from Endeavour Energy's G/Net master facility model (and extract from Google Maps Street View) there are:

- An easement over the site benefitting Endeavour Energy (indicated by red hatching) for 132,000 volt / 132 kilovolt (kV) high voltage overhead power lines, overhead earth cables and overhead power lines (carrying protection signals or communications between substations).
- Low voltage overhead power lines to the road verge / roadway.
- An extended low voltage overhead service conductor coming from the pole on the road verge to a customer owned pole on the site (indicated by the green circle) and going to the customer connection point for the existing dwelling on the site.

Please note the location, extent and type of any electricity infrastructure, boundaries etc. shown on the plan is indicative only. Generally (depending on the scale and/or features selected), low voltage (normally not exceeding 1,000 volts) is indicated by blue lines and high voltage (normally exceeding 1,000 volts but for Endeavour Energy's network not exceeding 132,000 volts / 132 kV) by red lines (these lines can appear as solid or dashed and where there are multiple lines / cables only the higher voltage may be shown). This plan only shows the Endeavour Energy 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. This plan is not a 'Dial Before You Dig' plan under the provisions of Part SE 'Protection of underground electricity power lines' of the Electricity Supply Act 1995 (NSW).



51 Huntingwood Drive, Huntingwood, NSW 2148
PO Box 811, Seven Hills, NSW 1730
T: 133 718

endeavourenergy.com.au

ABN 11 247 365 823



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The following is a summary of the usual / main terms of Endeavour Energy's electrical easements requiring that the landowner:

- Not install or permit to be installed any services or structures within the easement site.
- Not alter the surface level of the easement site.
- Not do or permit to be done anything that restricts access to the easement site without the prior written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose.

Endeavour Energy's preference is for no activities or encroachments to occur within its easement areas. However, if any proposed works (other than those approved / certified by Endeavour Energy's Network Connections Branch as part of an enquiry / application for load or asset relocation project) will encroach / affect Endeavour Energy's easements, contact must first be made with the Endeavour Energy's Easements Officer, Philip Wilson, on direct telephone 9853 7110 or alternately by email Philip.Wilson@endeavourenergy.com.au or Easements@endeavourenergy.com.au.

Please find attached for the applicant's reference copies of Endeavour Energy's:

- General Restrictions for Overhead Power Lines.
- Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' which in Section 5.14 'Encroachments on overhead line easements' deals with activities / encroachments within easements.
- 'Guide to Fencing, Retaining Walls and Maintenance Around Padmount Substations' in regard to the padmount substation site possibly required to facilitate the proposed development - please refer to the below point 'Network Capacity / Connection'.

In regard to the easement for 132 kV high voltage overhead power lines Endeavour Energy has noted the following in the Statement of Environmental Effects:

4.9 DEVELOPMENT CONTROL PLANS

The Liverpool Growth Centre Precincts Development Control Plan 2016 (DCP) provides specific controls for development within the Austral and Leppington North precinct. Each of the relevant sections of the DCP, as it relates to the proposed subdivision, are addressed below. The proposed subdivision is considered to comply with the provisions of the DCP. The following sections of this SoEE represent an assessment of the proposal against the relevant DCP provisions.

2.0 Precinct Planning Outcomes

This section contains objectives and controls relating to the overall layout and vision for the future development of the Precinct. The following table represents an assessment of the subject development application against Section 2 of the DCP.

Control	Comment	Compliance
2.3.8 Development on and Adjacent to electricity and gas easements	The proposed subdivision is located within a site containing n existing electricity easement. No road crossings are proposed to be undertaken with the easement as the road network is consistent with the ILP. One drainage outlet is proposed to be constructed within the easement for electricity however these works are considered minimal and are required to facilitate stormwater management for the subdivision. The applicant is supportive of appropriate conditions relating to the works required to be carried out within the easement and further, the restrictions to be maintained within the 88B instrument for the lots burdened by the easement.	Yes



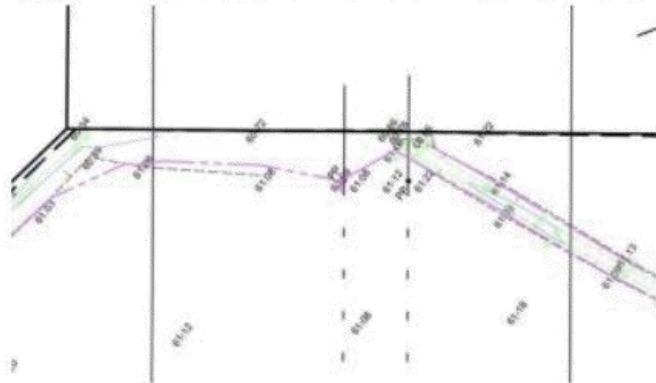
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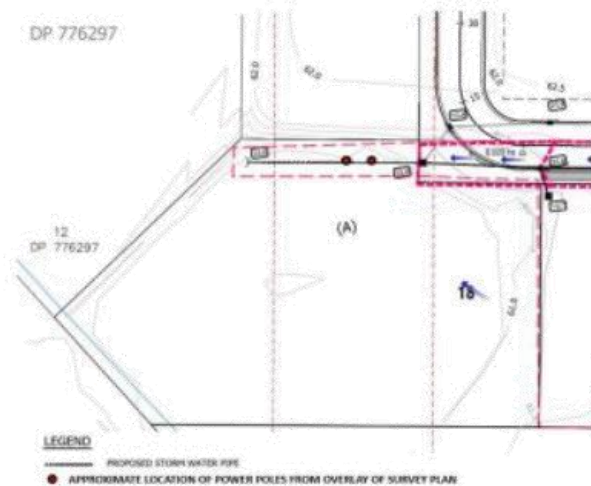
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By scale from the Survey Plan the poles are approximately 3.5 metres from the northern side boundary.



Overlaying the Survey Plan onto the Stormwater Catchment Plan the proposed storm water pipe is close to the pole in the easement and this location may impact the subsoil stability and the electrical assets structural integrity. Accordingly the storm water will need to be relocated to be a reasonable distance away from the poles taking into consideration the access requirements to the poles which may involve heavy vehicles up to 30 tonnes and the access tracks have a minimum required width of 5 metres.



5.14 Encroachments on overhead line easements

5.14.4 Controlled activities / encroachments

All controlled activities require approval to be sought from the applicable Regional Easement Officer of Endeavour Energy, in writing as set out in Clause 5.18.2. The Easement Officer will assess the activity/encroachment as defined Clause 5.18. The proposed activity must not commence unless approval is received in writing from Endeavour Energy Regional Easement Officer.

All these controlled activities must meet the required minimum safety requirements detailed in clause 5.14.1, as well as any additional controls listed below.



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5.14.4.13 Roads (other than access tracks)

For roads proposed within an existing easement, the minimum ground clearances as specified in MDI 0047 and MDI 0031 must be achieved.

Where alterations to conductor height and/or relocation of poles are required for the development of the road, this will be at the cost of the developer. This will include any work required to maintain safety clearances arising from activities in the easement after the road works are completed.

Where a road is proposed to run parallel to a feeder, a risk assessment evaluating the risk of impact with each structure as outlined in MDI 0031 must be submitted.

Earthing conductors may have been laid near, around and between the structures and must not have their electrical integrity compromised. Where a developer plans to construct a road which crosses the easement, the onus is on the developer to locate and avoid all earthing cables. If earthing cables are damaged, Endeavour Energy must be notified immediately.

Roads and driveways that are required for access to electrical infrastructure must be capable of carrying a 30 tonne truck.

5.14.4.14 Installation of utility services

Applications for the installation of telephone, water and sewerage services (overhead, underground, or on the surface) may be considered for approval by Endeavour Energy's Mains Assets Manager. The approval of the installation of these services will be based on:

- There is no practical alternative available;
- Any services within 15 metres of a structure must be constructed of non-conducting materials;
- The integrity of all line structures and stay pole/wires are to be maintained at all times;
- Designers and installers of utility services must consider any hazards associated with induced voltages and transferred earth potentials, in accordance with AS 4853, which must be controlled. Applications will require a risk assessment and proposed controls for each of the identified hazard.

Establishment of an easement for other utilities assets within Endeavour Energy's easement may be required.

Regarding the proposed subdivision of the easement for 132 kV high voltage overhead power lines, Endeavour Energy has noted the following in the Statement of Environmental Effects.

3.0 Neighbourhood and Subdivision design

This section provides specific requirements relating to the development of land and in particular, land subdivision. The following table represents an assessment of the subject development application against the applicable controls within Section 3 of the Liverpool Growth Centres Precinct DCP.

Control	Comment	Compliance
3.1.5 - Subdivision in the Environmental Living Zone	Three E4 lots are proposed greater than the minimum lot size of 2500sqm (as per the SEPP). The minimum width frontage of 30m is maintained for proposed Lot 15 and Lot 17. As discussed in the Pre-lodgement meeting, Council would be supportive of the minimum 30m frontage being varied in order to achieve a better vehicular access, aspect, and building area for the dwellings (away from the easement and other site affectations). Access to the electricity transmission line for maintenance and inspections is maintained through the provision of the easement (marked (A) on the plan of subdivision) at the rear of the E4 lots. This easement provides direct access from Road 2 (public road).	Yes



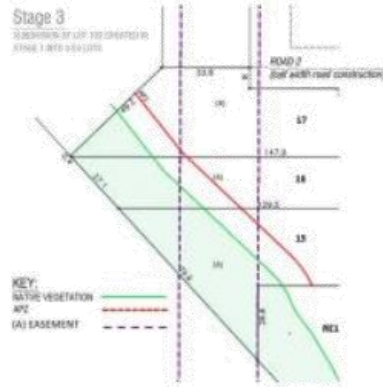
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The access from the public road to the easement is shown in the following extract of the Plan of Subdivision.



Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' includes the following:

5.14.4.15 Residential/Commercial subdivisions

Where subdivisions of property are proposed for land in which Endeavour Energy has an easement, the following requirements must be met:

- Unrestricted access to Endeavour Energy's structures are retained;
- No structures are to be erected within the easement;
- Structures suitably protected against motor vehicle impact;
- The number of crossings of Endeavour Energy's overhead line by utilities must be minimised, and complies with 5.14.4.14.

Endeavour Energy's preference is to have continuity of its easements over the most direct and practicable route affecting the least number of lots as possible. Therefore, it generally does not support the subdivision of easements and their incorporation into multiple / privately owned lots. The incorporation of electricity easements into privately owned lots is generally problematic for both Endeavour Energy and the landowner and requires additional easement management to ensure no uncontrolled activities / encroachments occur within the easement.

In this instances the large lot sizes of the three E4 Environmental living lots reduces the dissection of the easement along its route and the crossings are perpendicular to the overhead power lines to reduce their length. However with every lot being potentially fenced on both sides, multiple gates / openings will still be required to ensure contiguous / ready access (please also refer to the below point 'Network Access'). This is particularly important where there are poles as in the event of fallen conductors, access to the poles to restring power lines is essential for restoring electricity supply.

As the subdivision results in the incorporation of Endeavour Energy's easement into multiple lots, not only must the easements, rights and restrictions, covenants etc. be retained over the effected lots and in accordance with the requirements of NSW Land Registry Services (LRS), but Endeavour Energy may need to include additional requirements / restrictions to be registered on titles to each of the lots to ensure it can reasonably access and manage its existing electricity infrastructure within the easement.



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Endeavour Energy's Easement Assessment and Property Survey have provided the following advice:

The existing terms of the transmission easement date back to 1966 when the easement was acquired by the then Electricity Commission of New South Wales – please refer to the attached copy of dealing no. K539951 memorandum of transfer & grant of easement.

Given the time that has passed and the changing land use / zoning, it is suggested that the terms of easement be updated to reflect the current terms of easement of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

Rather than creating a new easement and releasing the existing easement, additional restrictions can be added to the titles of the affected lots to cover matters not addressed in the existing terms of easement. In particular, having regard to an urban context the additional restrictions would relate to (but are not necessarily limited to):

- *Metallic fencing may only be erected within the easement if the fence panels are insulated from the fence posts and from the ground.*
- *No swimming pool or spa (either in or above ground) must be erected or permitted to remain within the easement.*

The creation of the additional restrictions should be a condition of the development application consent and subject to a further, more detailed review of the respective easement terms. Endeavour Energy can also add this requirement to the electrical design drawing through the Network Connections /Property & Easements process. The partial road closure in Eleventh Avenue will be allowed for in the final electrical design for the subdivision and will take into account the new property boundaries.

The contact person for dealing with the review of the easement terms is Endeavour Energy's Easement Assessment Specialist, John Lucich, who can be contacted by email John.Lucich@endeavourenergy.com.au or telephone 4252 2817.

Accordingly the applicant will need to contact Endeavour Energy's Easements Officer with sufficient details of the proposed works within the easements (including the remediation works identified in the contamination reports for the area of environmental concern (AEC02) partially located in the easement near the poles for the 132 kV overhead power lines) for assessment. Please note however that this does not imply or indicate the granting of permission to any or all of the proposed activities within the easements.

Subject to the satisfactory resolution of the foregoing and the following recommendations and comments Endeavour Energy has no objection to the Development Application.

- **Network Capacity / Connection**

Endeavour Energy has noted the following in the Public Utility Infrastructure Report addressing the suitability of the site for the development in regard to whether electricity services are available and adequate for the development.

4. Electricity

The existing overhead assets on Eleventh Avenue will have capacity to service the proposed subdivision. It will be the requirement of the developer to convert the existing overhead assets within the extent of the subdivision to an underground reticulation. Attached at **Appendix B** of this report is the Supply Offer from Endeavour Energy. This outlines the requirements needed to support the development

Appendix B is an Endeavour Energy Connection Offer – Standard Connection Service (Endeavour Energy Ref: URS22210–2018/03280/001) dated 10 December 2018. As indicated in the Supply Offer:



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This Supply Offer is part of the Connection Offer for a Standard Connection Service and is valid for three (3) months from the date of issue.

Where this Connection Offer has lapsed, you or your Level 3 ASP must contact Endeavour Energy with the request to extend the Connection Offer. Endeavour Energy will assess your request and will inform you of the outcome. It must be recognised that the network is being constantly extended/augmented as new customers get connected. This means that for your Connection Offer to be extended, your Supply Offer may require alteration. If this is the case, additional fees to cover administrative costs may apply.

This essentially also means that Endeavour Energy does not reserve supply for proposed developments.

The availability of electricity supply to a site is based on a wide range of factors eg. the age and design of the network; other development in the locality utilising previously spare capacity within the local network; the progress of nearby / surrounding sites including electricity infrastructure works eg. a smaller and isolated development that may not of its own accord require a distribution substation may require a substation to facilitate the development and from which the spare capacity is made available to subsequent nearby development.

Non-urban / older areas of the network utilising (indicated by the symbol  on the site plan from Endeavour Energy's G/Net master facility model) have comparatively limited capacity of 25 kilovolt amperes (kVA) up to a maximum of 400 kVA whereas a newer padmount substation can accommodate loads from 315 kVA up to 1,500 kVA ie. there is a significant variation in the number and type of premises able to be connected to a substation.

The Supply Offer indicated at the time that electricity supply is available from pole mounted substation no. 18238 which is located approximately 312 metres to the east. Endeavour Energy's G/Net master facility model indicates that the substation currently has 13 customer connection points servicing 20 premises. Whilst it may have some spare capacity, it is not intended or capable of servicing a significant urban residential subdivision.

Whilst an urban residential subdivision of 17 residential lots would of its own not usually require the provision of a padmount substation, it is nonetheless a considerable electricity load and there may not be sufficient spare capacity in the existing local network to facilitate the proposed development.

As well as the capacity of distribution substations, 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. An extension and/or augmentation of the existing local network is likely to be required. However the extent of the works will not be determined until the final load assessment is completed. Endeavour Energy's preference is to alert proponents / applicants (and Council) of the potential matters that may arise as further development of areas continues to occur.

In due course the applicant for the proposed development of the site will need to submit an application for connection of load via Endeavour Energy's Network Connections Branch to carry out the final load assessment (including consideration of the development potential / load of the Temporary Detention & Bio-Retention Basin) and the method of supply will be determined.

Depending on the outcome of the assessment, any required padmount substation will need to be located within the property (in a suitable and accessible location) and be protected (including any associated cabling) by an easement and associated restrictions benefiting and gifted to Endeavour Energy. Please refer to the attached copy of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

In response to an application for connection of load Endeavour Energy will provide a connection / supply offer based on a desktop assessment of the load. This includes a possible method of supply and also details of the initial funding arrangements. Under some circumstances Endeavour Energy may supply materials, fund or construct works or may provide reimbursement for certain customer funded or constructed works eg. for provision of spare ducts to facilitate other development within the local network.



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Further details are available by contacting Endeavour Energy's Network Connections Branch via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or on Endeavour Energy's website under 'Home > Residential and business > Connecting to our network' via the following link:

<http://www.endeavourenergy.com.au/>.

Advice on the electricity infrastructure required to facilitate the proposed development can be obtained by submitting a Technical Review Request to Endeavour Energy's Network Connections Branch, the form for which FPJ6007 is attached and further details (including the applicable charges) are available from Endeavour Energy's website under 'Our connection services'. The response to these enquiries is based upon a desktop review of corporate information systems, and as such does not involve the engagement of various internal stakeholders in order to develop a 'Connection Offer'. It does provide details of preliminary connection requirements which can be considered by the applicant prior to lodging a formal application for connection of load.

Alternatively the applicant should engage a Level 3 Accredited Service Provider (ASP) approved to design distribution network assets, including underground or overhead. The ASP scheme is administered by Energy NSW and details are available on their website via the following link or telephone 13 77 88:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/asp-scheme-and-contestable-works>.

- Network Asset Design

Endeavour Energy's Company Policy 9.2.5 'Network Asset Design', includes the following requirements for electricity connections to new urban subdivision / development:

5.11 Reticulation policy

5.11.1 Distribution reticulation

In order to improve the reliability performance of and to reduce the operating expenditure on the network over the long term the company has adopted the strategy of requiring new lines to be either underground cables or where overhead is permitted, to be predominantly of covered or insulated construction. Notwithstanding this strategy, bare wire overhead construction is appropriate and permitted in some situations as detailed below.

In areas with the potential for significant overhanging foliage, CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown branches and debris than bare conductors. CCT must only be used in 'treed' areas as the probability of a direct lightning strike is low. In open areas where the line is not shielded from a direct lightning strike, bare conductors must generally be used for 11kV and 22kV reticulation.

Non-metallic Screened High Voltage Aerial Bundled Cable (NMSHVABC) must be used in areas which are heavily treed and where it is not practicable to maintain a tree clearing envelope around the conductors.

² A 'treed' area is one with a substantial number of trees adjacent to the line. In each span. In these situations CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown.

5.11.1.1 Urban areas

Reticulation of new residential subdivisions will be underground. In areas of low bushfire consequence, new lines within existing overhead areas can be overhead, unless underground lines are cost justified or required by either environmental or local council requirements.

Where underground reticulation is required on a feeder that supplies a mixture of industrial, commercial and/or residential loads, the standard of underground construction will apply to all types of load within that development.



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Where ducting is used, adequate spare ducts and easements must be provided at the outset to cover the final load requirements of the entire development plan.

Extensions to the existing overhead 11kV/22kV network must generally be underground. Bare wire will be used for conductor replacements and augmentations except in treed areas where CCT or NMSHVABC must be used.

Extensions to the existing overhead LV network and augmentations must either be underground or ABC. Conductor replacements greater than 100m in route length must utilise aerial bundled cable.

- Bushfire

Endeavour Energy has noted that the Statement of Environmental Effects indicates that 'The site includes land classified as bush fire prone on the Liverpool City Council's bush fire prone land map'. The accompanying Bushfire Protection Assessment which provides and assessment of the site having regards to NSW Rural Fire Service 'Planning for Bush Fire Protection 2006' and 'Planning for Bush Fire Protection 2018 – Pre-release issued August 2018' includes the following advice:

3.5 Services – Water, electricity and gas

3.5.2 Electricity services

Electricity supply to / within the subject land is located underground and therefore complies with Section 4.1.3 of PBP.

NSW Rural Fire Service 'Planning for Bush Fire Protection 2019' provides the following advice:

5.3.3 Services – Water, electricity and gas

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

Table 5.3c

Performance criteria and acceptable solutions for water, electricity and gas services for residential and rural residential subdivisions.

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
The intent may be achieved where:	
ELECTRICITY SERVICES location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	- where practicable, electrical transmission lines are underground; - where overhead, electrical transmission lines are proposed as follows: - lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.

The following is an extract of Endeavour Energy's Company Policy 9.1.1 Bushfire Risk Management:

9.1.1 BUSHFIRE RISK MANAGEMENT

1.0 POLICY STATEMENT

The company is committed to the application of prudent asset management strategies to reduce the risk of bushfires caused by network assets and aerial consumer mains to as low as reasonably practicable (ALARP) level. The company is also committed to mitigating, the associated risk to network assets and customer supply reliability during times of bushfire whilst achieving practical safety, reliability, quality of supply, efficient investment and environmental outcomes. The company is committed to compliance with relevant acts, regulations and codes.



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Accordingly the electricity network required to service the proposed development must be fit for purpose and meet the technical specifications, design, construction and commissioning standards based on Endeavour Energy's risk assessment associated with the implementation and use of the network connection / infrastructure for a bushfire prone site. In assessing bushfire risk, Endeavour Energy has traditionally focused on the likelihood of its network starting a bushfire, which is a function of the condition of the network. Risk control has focused on reducing the likelihood of fire ignition by implementing good design and maintenance practices. However the potential impact of a bushfire on its electricity infrastructure and the safety risks associated with the loss of electricity supply are also considered.

- Flooding and Drainage

Endeavour Energy has noted that the Statement of Environmental Effects indicates that 'The north western portion of the site is identified as 1% Annual Exceedance Probability (AEP) flood extent'. However it also indicates that there are 'No earthworks / land filling is proposed within the flood extent area' and 'Ultimately the flood levels are not affected by the proposed development'.

Accordingly the flood affectation should not impact on the electricity infrastructure required to facilitate the proposed development. Endeavour Energy requires the electricity network required to service an area / development must be fit for purpose and meet the technical specifications, design, construction and commissioning standards based on Endeavour Energy's risk assessment associated with the implementation and use of the network connection / infrastructure for a flood prone site. Risk control has focused typically on avoiding the threat, but where this is not possible, reducing the negative effect or probability of flood damage to assets by implementing good design and maintenance practices.

- Earthing

The construction of any building or structure (including fencing, signage, flag poles, hoardings etc.) whether temporary or permanent that is connected to or in close proximity to Endeavour Energy's electrical network is required to comply with Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' as updated from time to time. This Standard sets out requirements for the design, construction and verification of electrical installations, including ensuring there is adequate connection to the earth. It applies to all electrical installations including temporary builder's supply / connections.

Inadequate connection to the earth to allow a leaking/fault current to flow into the grounding system and be properly dissipated places persons, equipment connected to the network and the electricity network itself at risk from electric shock, fire and physical injury.

- Network Access

It is imperative that the access to the existing electrical infrastructure on and in proximity of the site be maintained at all times. To ensure that supply electricity is available to the community, access to the electricity infrastructure may be required at any time. Restricted access to electricity infrastructure by maintenance workers causes delays in power restoration and may have severe consequences in the event of an emergency.

- Location of Electricity Easements / Prudent Avoidance

The incorporation of electricity easements into privately owned lots is generally problematic for both Endeavour Energy and the future landowners and requires additional easement management to ensure no uncontrolled activities / encroachments occur within the easement area.

Accordingly Endeavour Energy's recommendation is that whenever reasonably possible, easements be entirely incorporated into public reserves and not burden private lots. Endeavour Energy's preference is to have continuity of its easements over the most direct and practicable route affecting the least number of lots as possible.



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This is also in keeping with a policy of prudent avoidance. In practical terms this means that when designing new transmission and distribution facilities, consideration is given to reducing exposure and increasing separation distances to more sensitive uses such as residential or schools, pre-schools, day care centres or where potentially a greater number of people are regularly exposed for extended periods of time.

These emissions are usually not an issue but with Council's permitting or encouraging development with higher density, reduced setbacks and increased building heights, but as the electricity network operates 24/7/365 (all day, every day of the year), the level of exposure can increase.

Endeavour Energy believes that irrespective of the zoning or land use, applicants (and Council) should also adopt a policy of prudent avoidance by the siting of more sensitive uses eg. the office component of an industrial building, away from and less susceptible uses such as garages, non-habitable or rooms not regularly occupied eg. storage areas in a commercial building, towards any electricity infrastructure – including any possible future electricity infrastructure required to facilitate the proposed development.

Where development is proposed in the vicinity of electricity infrastructure, Endeavour Energy is not responsible for any amelioration measures for such emissions that may impact on the nearby proposed development.

Please find attached a copy of Energy Networks Association's 'Electric & Magnetic Fields – What We Know' which can also be accessed via their website at <https://www.energynetworks.com.au/electric-and-magnetic-fields> and provides the following advice:

Electric fields are strongest closest to their source, and their strength diminishes rapidly as we move away from the source.

The level of a magnetic field depends on the amount of the current (measured in amps), and decreases rapidly once we move away from the source.

Typical magnetic field measurements associated with Endeavour Energy's activities and assets given the required easement widths, safety clearances etc. and having a maximum voltage of 132,000 volt / 132 kV, will with the observance of these separation distances not exceed the recommended magnetic field public exposure limits.

- **Vegetation Management**

The planting of large trees in the vicinity of electricity infrastructure is not supported by Endeavour Energy. Suitable planting needs to be undertaken in proximity of electricity infrastructure (including any new electricity infrastructure required to facilitate the proposed development). Larger trees should be planted well away from electricity infrastructure and even with underground cables, be installed with a root barrier around the root ball of the plant.

Landscaping that interferes with electricity infrastructure could become a potential safety risk, restrict access, reduce light levels from streetlights or result in the interruption of supply may become subject to Endeavour Energy's Vegetation Management program and/or the provisions of the Electricity Supply Act 1995 (NSW) Section 48 'Interference with electricity works by trees' by which under certain circumstances the cost of carrying out such work may be recovered.

In regard to the future padmount substation site possibly required to facilitate the proposed development, please find attached for the applicant's reference a copy Endeavour Energy's 'Guide to Fencing, Retaining Walls and Maintenance Around Padmount Substations'.



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- Dial Before You Dig

Before commencing any underground activity the applicant is required to obtain advice from the **Dial Before You Dig 1100** service in accordance with the requirements of the *Electricity Supply Act 1995* (NSW) and associated Regulations. This should be obtained by the applicant not only to identify the location of any underground electrical and other utility infrastructure across the site, but also to identify them as a hazard and to properly assess the risk.

- Demolition

Demolition work is to be carried out in accordance with Australian Standard AS 2601—2001: 'The demolition of structures' as updated from time to time. All electric cables or apparatus which are liable to be a source of danger, other than a cable or apparatus used for the demolition works shall be disconnected ie. the existing customer service lines will need to be isolated and/or removed during demolition. Appropriate care must be taken to not otherwise interfere with any electrical infrastructure on or in the vicinity of the site eg. streetlight columns, power poles, overhead power lines and underground cables etc.

- Removal of Electricity Supply

Approval for the permanent disconnection and removal of supply must be obtained from Endeavour Energy's Network Connections Branch (contact via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm) by Accredited Service Providers (ASP) with the relevant class of Authorisation for the type of work being carried out. The work could involve:

- The disconnection and removal of an underground service cable or overhead service line,
- Removal of metering equipment.

The written request must be submitted to Endeavour Energy using Form FPJ4603 'Permission to Remove Service / Metering by Authorised Level 2 Accredited Service Provider' which must be accompanied by Notification of Service Works (NOSW) forms provided as a result of service work activity performed by a Level 2 ASP. The retailer must also provide written agreement for the permanent removal of supply.

For details of the ASP scheme please refer to the above point 'Network Capacity / Connection'.

- Public Safety

Workers involved in work near electricity infrastructure run the risk of receiving an electric shock and causing substantial damage to plant and equipment. I have attached Endeavour Energy's public safety training resources, which were developed to help general public / workers to understand why you may be at risk and what you can do to work safely. The public safety training resources are also available via Endeavour Energy's website via the following link:

<http://www.endeavourenergy.com.au/wps/wcm/connect/ee/nsw/nsw+homepage/communitynav/safety/safety+brochures>.

If the applicant has any concerns over the proposed works in proximity of the Endeavour Energy's electricity infrastructure to the road verge / roadway, as part of a public safety initiative Endeavour Energy has set up an email account that is accessible by a range of stakeholders across the company in order to provide more effective lines of communication with the general public who may be undertaking construction activities in proximity of electricity infrastructure such as builders, construction industry workers etc. The email address is Construction.Works@endeavourenergy.com.au.



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- Emergency Contact

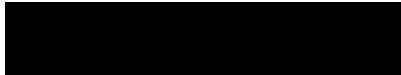
In case of an emergency relating to Endeavour Energy's electrical network, the applicant should note the Emergencies Telephone is 131 003 which can be contacted 24 hours/7 days. Endeavour Energy's contact details should be included in the any risk or safety management plan.

I appreciate that not all the foregoing issues may be directly or immediately relevant or significant to the Development Application ie. If a padmount substation is not required on site. 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.

Could you please pass on a copy of this submission and the attached resources to the applicant? Should you wish to discuss this matter, or have any questions, please do not hesitate to contact me or the contacts identified above in relation to the various matters. Due to the high number of development application / planning proposal notifications submitted to Endeavour Energy, to ensure a response contact by email to property.development@endeavourenergy.com.au is preferred.

Due to the current COVID-19 health risk, as many as possible of Endeavour Energy staff are working from home. As a result there is only a small contingent located at the Huntingwood head office for essential operations. Although working from home, access to emails and other internal stakeholders is now somewhat limited and as a result it may take longer than usual to respond to enquiries. Thank you for your understanding during this time.

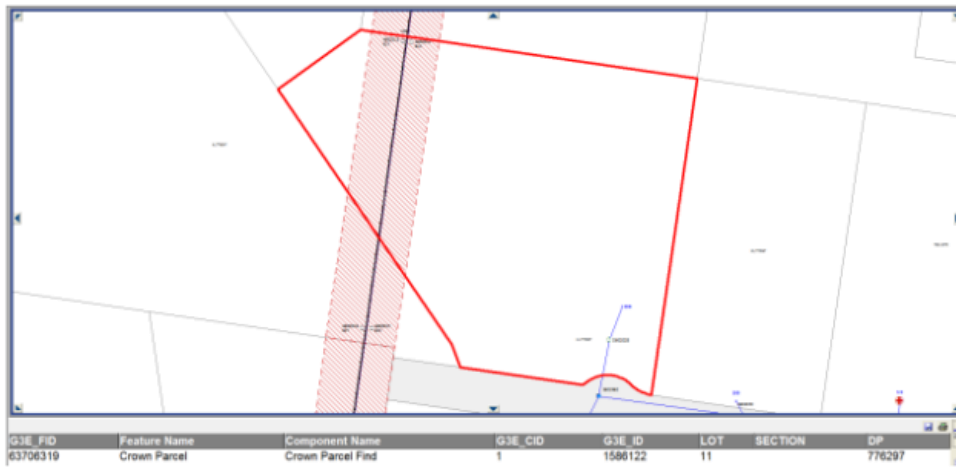
Yours faithfully
Cornelis Duba
Development Application Specialist
Network Environment & Assessment



www.endeavourenergy.com.au



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APPENDIX 6 – Natural Resources Access Regulator



Natural Resources
Access Regulator

Contact: Mohammed Ismail
Phone: 02 8838 7535
Email: Mohammed.Ismail@dpie.nsw.gov.au

General Manager
Liverpool City Council
Director Property
Locked Bag 7064
Liverpool B C NSW 1871

Our ref: IDAS1123940
File No: CNR-6179 A-6752
Your Ref: DA-793/2019

Attention: kimk@liverpool.nsw.gov.au

24 August 2020

Dear Sir/Madam

Re: Integrated Development – for controlled activity described as: Subdivision of an Existing Allotment into a Torrens Title Subdivision of 17 Residential Lots, and a Residue Lot Excision (Lot 1) for Public recreation lot, the demolition of existing structures and Construction of Roads and associated Civil Works.

Located at: 231-245 ELEVENTH AVENUE AUSTRAL 2179

Natural Resources Access Regulator (formerly the Department of Industry - Water) has reviewed documents for the above development application and considers that, for the purposes of the *Water Management Act 2000* (WM Act), a controlled activity approval is not required and no further assessment by this agency is necessary because the proposed activity is **not a controlled activity** as defined by the WM Act.

Should the proposed development be varied in any way that results in development extending onto land that is waterfront land, or encompassing works that are defined as controlled activities, then NRAR should be notified.

Further information on controlled activity approvals under the WM Act can be obtained from NRAR's website: www.water.nsw.gov.au go to *Water licensing > Approvals > Controlled activities*.

Please direct any questions regarding this correspondence to Mohammed Ismail by email to Mohammed.Ismail@dpie.nsw.gov.au.

Yours sincerely



David Zerafa
Senior Water Regulation Officer
Natural Resources Access Regulator

Level 11, 10 Valentine Avenue, PARRAMATTA NSW 2150 | Locked Bag 5123, PARRAMATTA NSW 2124

Template Ref: WLS-006(CX)C – June 2017 (Version 1.0)



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