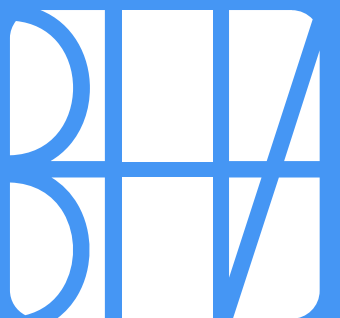


Carnes Hill Aquatic and Recreational Precinct

Liverpool City Council

M a s t e r p l a n D e s i g n 2 0 2 4



brewster
hjorth
architects

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P a r t 1
R e t u r n B r i e f

1. INTRODUCTION

1.1 EXECUTIVE SUMMARY

The site is covering approximately 79,397 sqm (7.93 hectares), and is situated to the north of the Michael Clarke Recreation Centre. It is bordered by Cowpasture Road to the northwest, Beard Creek to the south and southeast, and Pacific Palms Circuit to the northeast.

Liverpool City Council intends to develop the site into a vibrant and attractive new community precinct inclusive of aquatic, recreation and sporting facilities, complementing the existing functions onsite. The existing facilities south of Beard Creek include:

- Stage 1 community facilities
- Carnes Hill Library
- Michael Clarke Recreation Centre
- Outdoor Sports Courts
- Community playground
- Skate park

A series of workshops were held with the council and the consultants to prepare and develop a revised masterplan design.

The works BHA were engaged to carry out are relation to the review of the masterplan and concept design of the aquatic facility including internal road access design and parking to be shared with the outdoor recreational sports area.

Brewster Hjorth will consider the following issues as outlined in this report as part of phase 1 concept design of the works;

- Project objectives
- Statutory planning
- Existing conditions
- Landscape design
- Development standards
- Building character and appearance
- Planning and functional requirements
- Access to the site
- Site works and geotechnical
- Flood and bushfire management
- Environmentally sustainable design
- Services infrastructure
- Easements
- Demolition strategy that relates to high level cost estimate

1.2 PROPOSED MASTERPLAN & SITE ANALYSIS

Part 1 (Return Brief) of this report includes:

1. Overall Summary
2. Site Analysis

Part 2 (Masterplan Design) of this report includes:

3. Preparation of masterplan design by BHA

2. SITE ANALYSIS

KEY FINDINGS

Following a detailed review of the site and key aspects formed the basis of the masterplan design options:

Site Access & Parking:

- Site context and close proximity to public transport including bus services and train station.
- High voltage easement and associated exclusion zones outlined by Transgrid.

Bushfire & Ecology:

- Biodiversity mapping and riparian corridor associated with Beard Creek including preliminary advice on the ecological impact assessment and potential requirement of vegetation management plan. The ecological mapping identifies different levels of constraints around the site and shows development within the subject site can be achieved.
- The site is partially in bushfire prone land and close to a bushfire hazard. The future development must comply with Planning for Bushfire Protection (PBP) and NCC.

Topography & Flooding:

- The diagrams outline the existing topography which are steeper along the areas which run parallel to Cowpasture road. This will result in retaining and excavation works where we are looking to place the proposed works.
- The flooding from Beard Creek indicates the main area which are medium to high risk is in close proximity to the creek where the new building location being proposed within the area that is low risk.

Solar & Winds:

- The site is located in a largely open greenfield site which means the new building should respond to the impact of the strong wind from the south and maximise the natural light.

2.1 SITE CONTEXT

The site is situated at the corner of Kurrajong and Cowpasture Road in Carnes Hill. It is positioned on a major arterial road connecting various suburbs within Liverpool, as well as Fairfield LGA to the north; Camden and Campbelltown LGAs to the south.

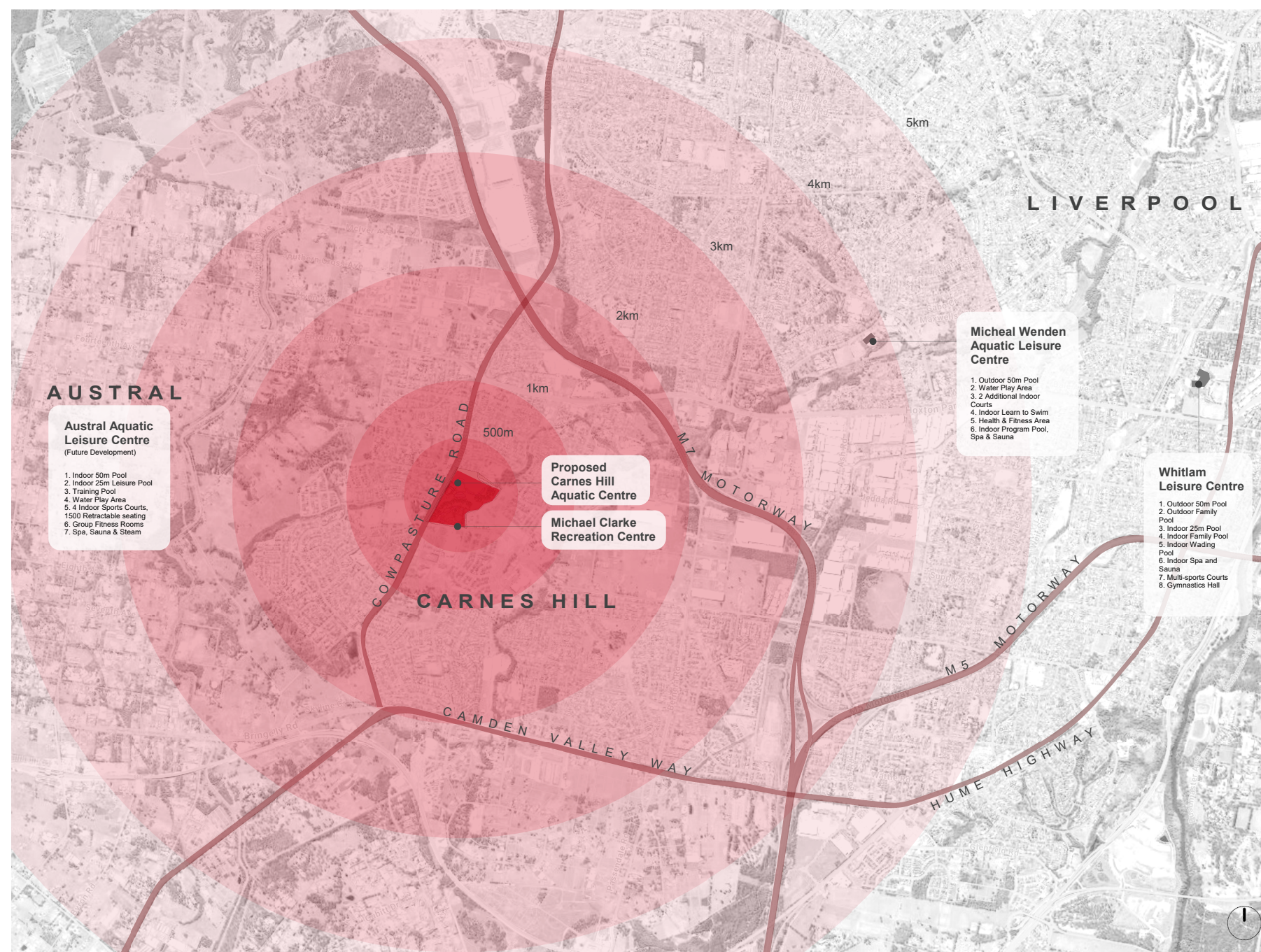
Liverpool has four main aquatic and leisure facilities: Holsworthy Aquatic Centre, Michael Clarke Recreation Centre, Michael Wenden Aquatic Leisure Centre, and Whitlam Leisure Centre. The Michael Clarke Recreation Centre is the only dry facility of existing aquatic and leisure facilities. There is also a splash park at Bigge Park in Liverpool and smaller water play features at Stante Reserve Water Play Park, Middleton Grange.

The area surrounding the proposed precinct consists mainly of low-density housing. To the west, there are semi-rural lots, but these suburbs are within the southwest growth corridor, where Austral and North Leppington are currently undergoing rezoning for future development.

The future development of Austral facilities includes an indoor 50 metre of 10 lane Olympic pool, training pool, 25 metre leisure pool, heated teaching pool, children's play pool, spa, sauna and steam room.

Indoor sports include 4 indoor sports courts with retractable seating for 1,500, this would increase to 3,500 in stage 2, a fitness centre with wellness and health services.

General amenities including kiosk and café, equipment sales, change, lockers, toilets, crèche facilities for users. Outdoor elements include water play park, BMX, skate, sports oval and netball, tennis, basketball courts may be integrated with a youth recreation facility.



2.2 HIGH VOLTAGE LINE

The location of the high voltage powerlines on the site greatly restricts the layout and distribution of activities and functions across the land. Approval from Transgrid will be necessary to ensure adherence to their easement guidelines.

From preliminary discussions with Transgrid, the option to provide parking below the easement has been reviewed and conditions have been placed on the proposed strategy for locating a link road from Pacific Palm Circuit to Cowpasture Road as follows.

The feedback by Transgrid is as follows:

- Vehicle parking is prohibited in the exclusion zones (17m from the centre line or 30m from a structure)
- Trees within the easement can grow to a maximum mature height of 4m and cannot be within 30m of a Transgrid structure.
- Parallel roads, walking tracks, footpaths, cycle walks and fenced dog parks must be located outside the exclusion zone of the transmission line. For 330kv line, the exclusion zone extends a width of 17m on each side from its centre line and a 30m radial distance from the outside face of the existing structure.
- Transgrid will require turn in point off Carnes Hill Aquatic Centre to access. 20m access exclusion zone to carry out maintenance on their assets without causing damage to any pipes, conduits and services.
- Regarding access and maintenance consideration is to be given for any proposed access ways or roads to Transgrid easement and structures to cater for weight and size of Transgrid maintenance vehicles to withstand 43tons load.



2.3 ECOLOGY

The diagram shows lands indicated on the biodiversity value map and the riparian corridor of Beard Creek. The consequences of encroachment into these areas may trigger the Biodiversity offset scheme, which will be outlined in the Vegetation Management Plan and Ecological Impact Assessment.

The proposed development sits outside vegetation riparian zone (VRZ) of 10m. If no works are impacting the riparian zone no controlled activities are required in the VRZ.

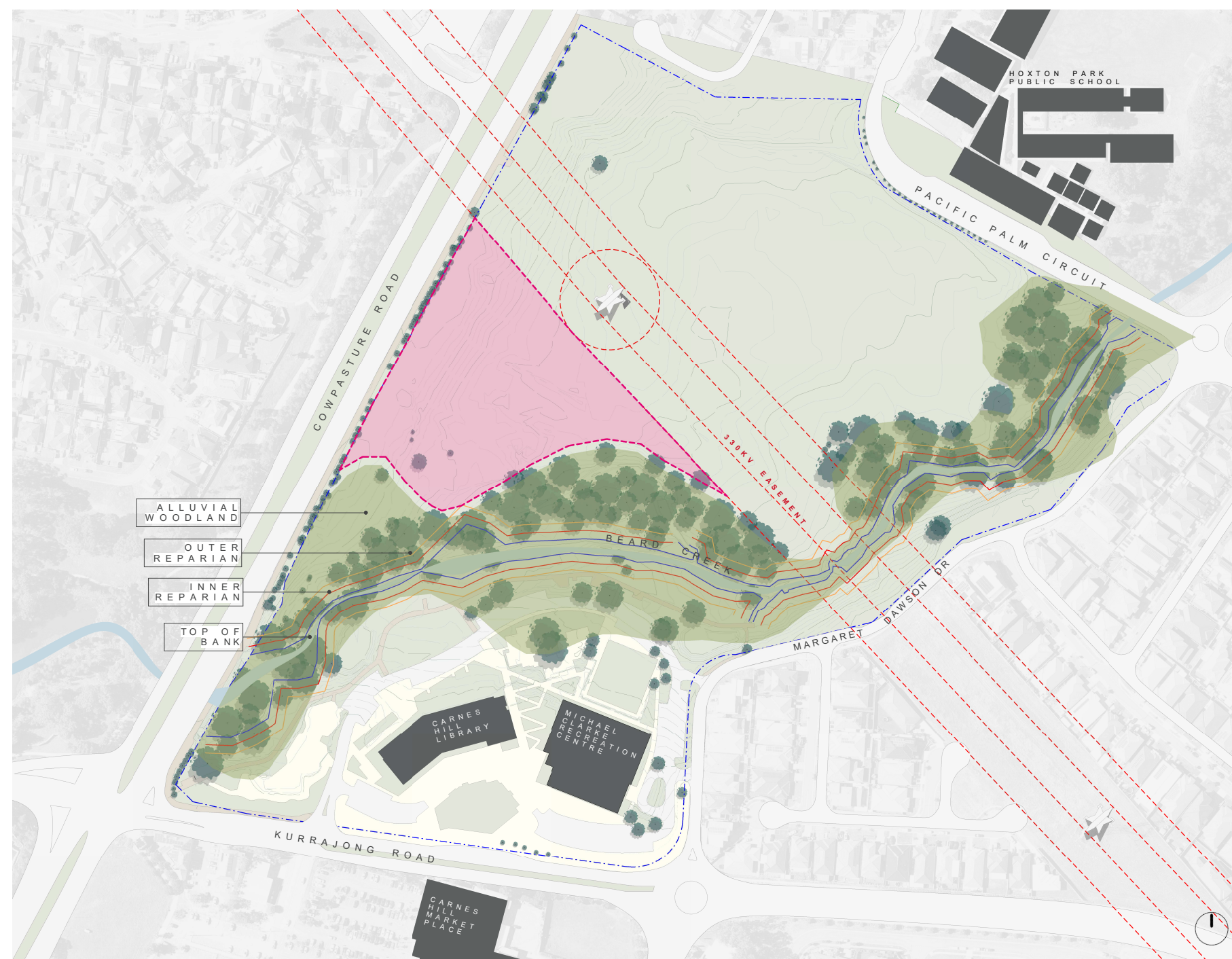
The zones identified in the 2014 VMP are as follows with the action items being staged weed removal, infill and active regeneration works, ongoing maintenance and follow up weed control.

MZ1 - Swamp oak dominated section of Beard Creek riparian corridor. Weed density is very high with African Boxthorn, exotic grasses, for and vines.

MZ2 - More species diverse sections of the Beard Creek riparian corridor. Weed density is moderate consisting of African Boxthorn exotic grasses, for and vines and woody weeds.

MZ3 - Wet soak area weed density from low to medium with sharp rush with low native diversity. Aquatic weeds including Parrot Feather and large patches of Trad and Blackberry.

MZ4 - Native grassland with moderate weed density with patches of exotic grasses, St John's Wort and exotic grasses with high percentage of native ground cover.



2.3 ECOLOGY

Natural regeneration will be most effective in zone 4 where patches native grasses are to be managed in a way that enables them to spread.

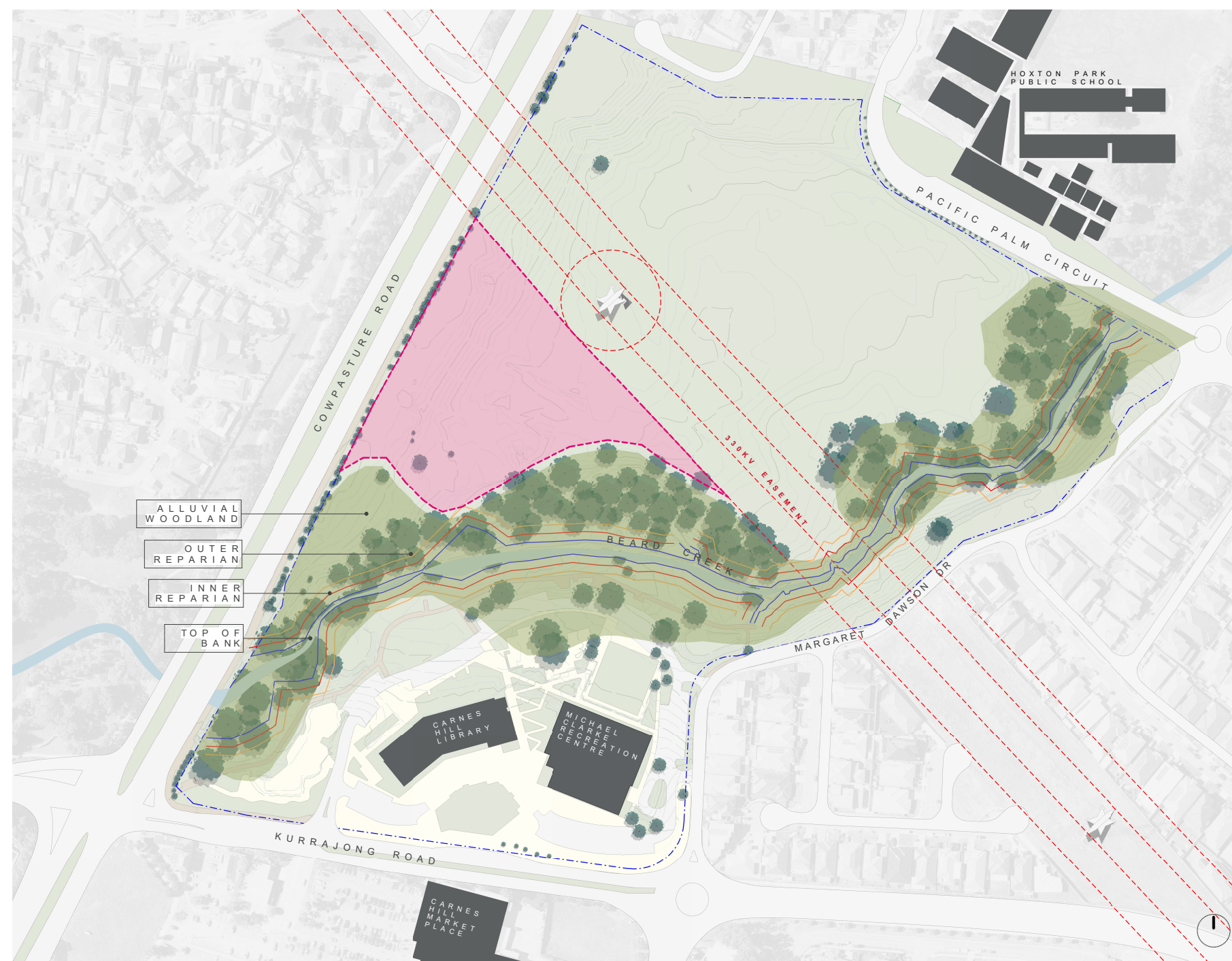
Active regeneration is required in vegetation management zone 1 and 3 because of the requirement for exotic vegetation removal particularly within the shrub strata.

Tree guards are not to be used in areas where seasonal flooding occurs immediately adjacent to Beard Creek. Soil is of a good nature and free draining. Specified soil conditioners are to be applied evenly across the area to be treated at the required amounts.

Soil Erosion:

No areas of significant soil erosion, soil loss or siltation where obscured. All grasses are to be retained in creek and wetland banks to minimise erosion but all noxious weeds removed.

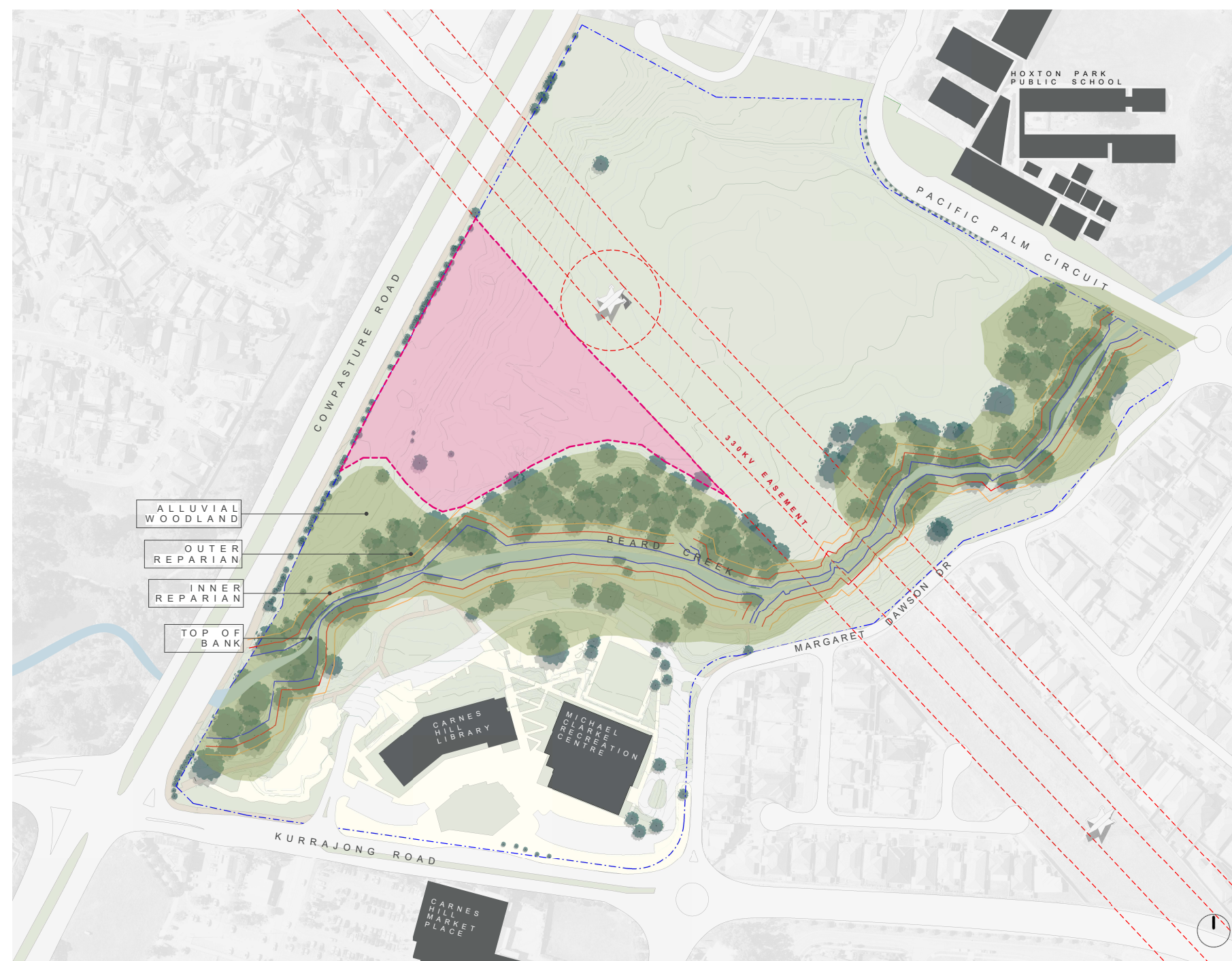
The impacts of the building location and the Asset Protection Zone are required to be assessed against the proposed scheme.



2.4 Aboriginal Cultural Heritage Assessment

The desktop assessment carried out in 2024 by Biosis regarding cultural heritage and did not identify any historical sites or items within the Bringelly Park assessment area.

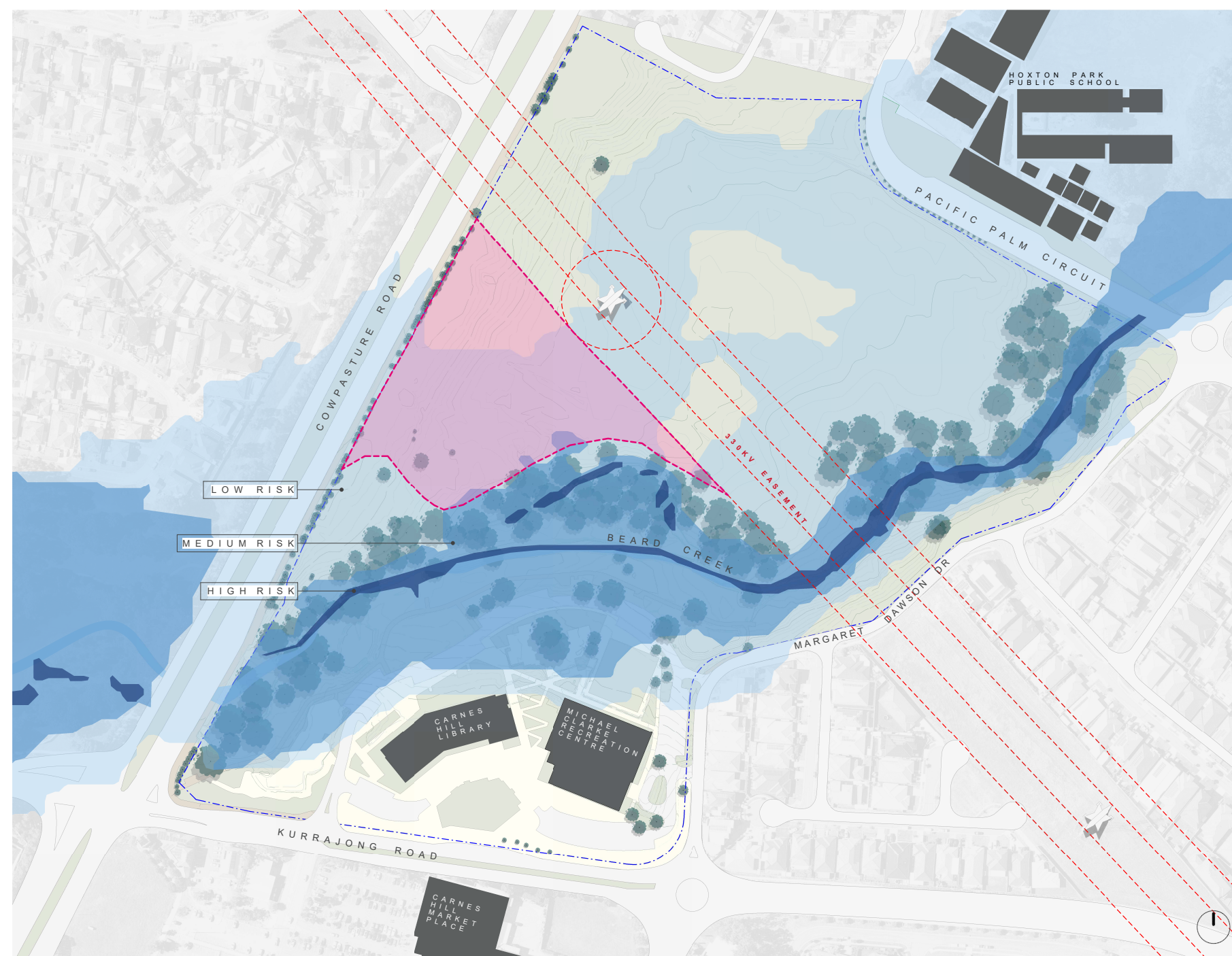
The assessment also did not identify any aboriginal sites. However a survey of the area did identify a number of areas of flat to gently sloping ground which DSCA interpreted as site favourable where Aboriginal sites and objects are more likely to be identified in close proximity to the creek on raised platforms, with the western portion of the study area subject to flooding as its more low lying as compared to the remainder of the study area. The study area has therefore been assessed as having low archaeological potential.



2.5 FLOODING MAPPING

The following diagram outlines the existing site topography overlaid with the flooding risk analysis around the precinct and the Beard Creek on south to identify potential impact on the site's suitability for recreational use. The site is located within the low-medium floodplain zone of a tributary of Beard Creek.

The proposed development is located in the low risk areas of the site however a flood assessment may be required for the development application should the development impact the path of the flooding.

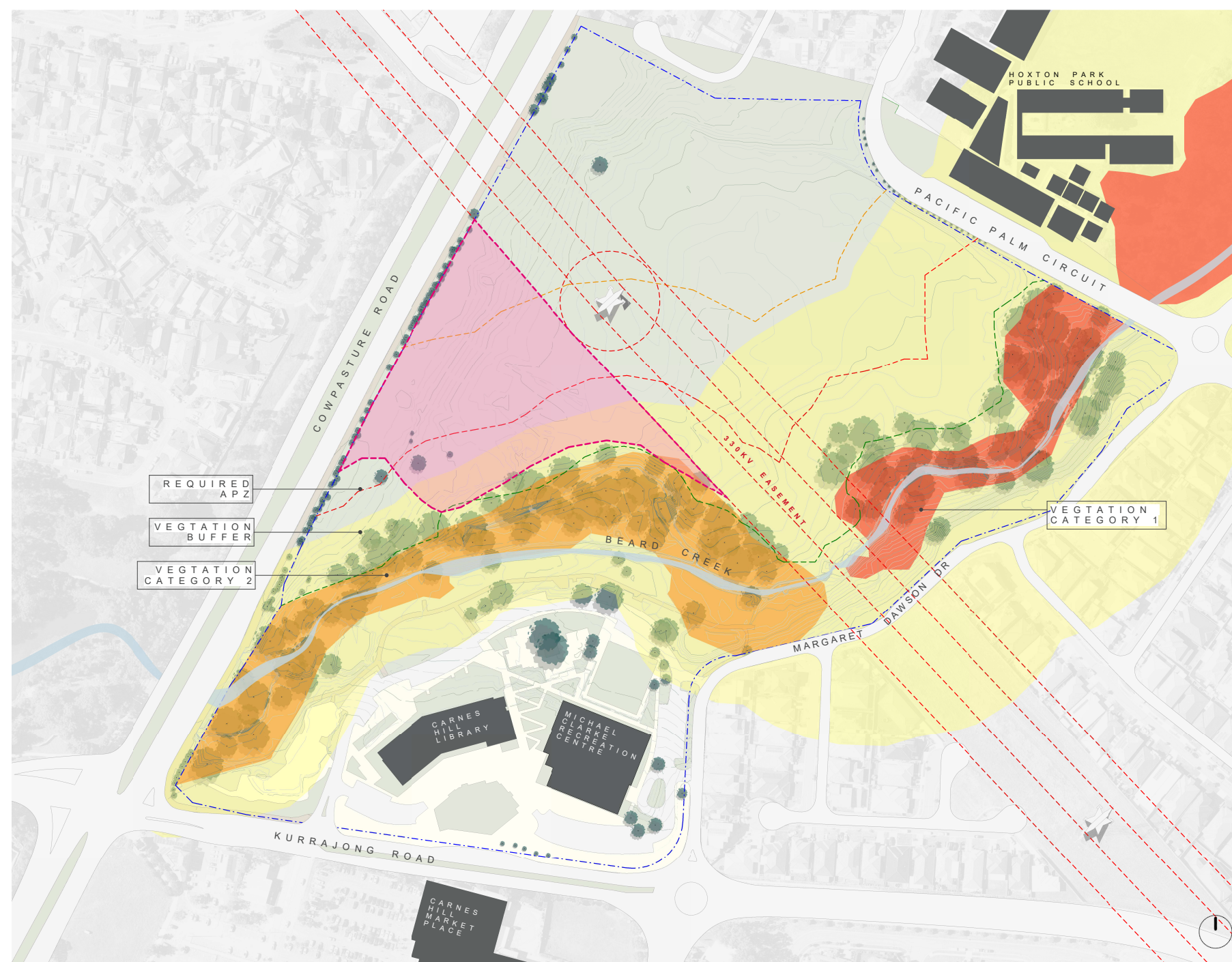


2.5 BUSHFIRE

The site is partly within a Bushfire Prone Land (BFPL) area and close to a bushfire hazard. Future development must comply with Planning for Bushfire Protection (PBP) and National Construction Code (NCC) requirements. The current location of the proposed aquatic and leisure centre may not meet the required Asset Protection Zone (APZ), and adjustments might be needed, subject to approvals. The site can still meet other bushfire protection measures, but any proposed performance solutions or building adjustments will require approval from the Rural Fire Service (RFS) and possibly the Natural Resources Access Regulator (NRAR). Class 9 Special Fire Protection Purpose (SFPP) buildings must adhere to specific NCC standards, with performance solutions needing approval from a fire engineer.

- Constraint area: the site is located in a biodiversity protection area, with protected fauna & flora and Beard Creek's biodiversity corridor, thus the extent of the development area has to comply with Liverpool LEP & DCP so that it does not encroach into high constraints area and pose threat to the protected native ecological communities. Vegetation modification inside moderate constraints area is also required to be minimised.
- The site is also under the threat of bushfire with the division between the bushfire prone vegetation category 2 and bushfire prone vegetation buffer zone, as mapped on the diagram.
- Buildings within the bushfire zone are required to:
 - Comply with the selection of building materials as stated in the BAL standard.
 - Establish an Asset Protection Zone (APZ) within which vegetation levels need to be controlled to minimise the fuels that may contribute to the spread of fire between the bushfire zone and the building.
- The extent of the APZ can also be affected by the target BAL level, where the selection of building materials with higher fire resistances can result a smaller APZ extent.

With all of these factors mapped and considered, the footprint of the development needs to be carefully considered so that it ensures not only the building but also its APZ is not encroaching into high constraint area and the impact to the riparian zone is minimised.



3. SITE ACCESS

3.1 VEHICULAR ACCESS

The proposed main entry to the precinct is through Pacific Palm Circuit. This entry allows for the masterplan to cohesively create a loop road via Margaret Dawson Drive which runs parallel to Beard Creek, that separates the site into 2 precincts.

The internal access road from Pacific Palm Circuit runs through the site and utilises the space below the main voltage line facilitating the connection of parking serving both the sports and playground to the main parking to the aquatic centre.

The loop road allows parking to be co-located alongside each facilities with the opportunity to meet the required parking numbers and offering overflow parking for each precinct whilst offering without putting pressure on on-street parking.

The existing services entry for Transgrid has been maintained from Cowpasture Road to comply with authority access requirements.

The internal access road also provides service load access to the aquatic centre with the potential for emergency services vehicles to utilise the connection to Cowpasture Road. The internal access road also allows parking to be spread across the site to ensure that the required parking numbers are achieved and still on-grade.



3.2 PEDESTRIAN ACCESS

The following diagram indicates potential site links between precincts and the importance of connections across Beard Creek to connect the proposed works to the existing Carnes Hill Library and Michael Clarke Recreation Centre.



4. NAVIGATING SITE

4.1 SITE LEVELS

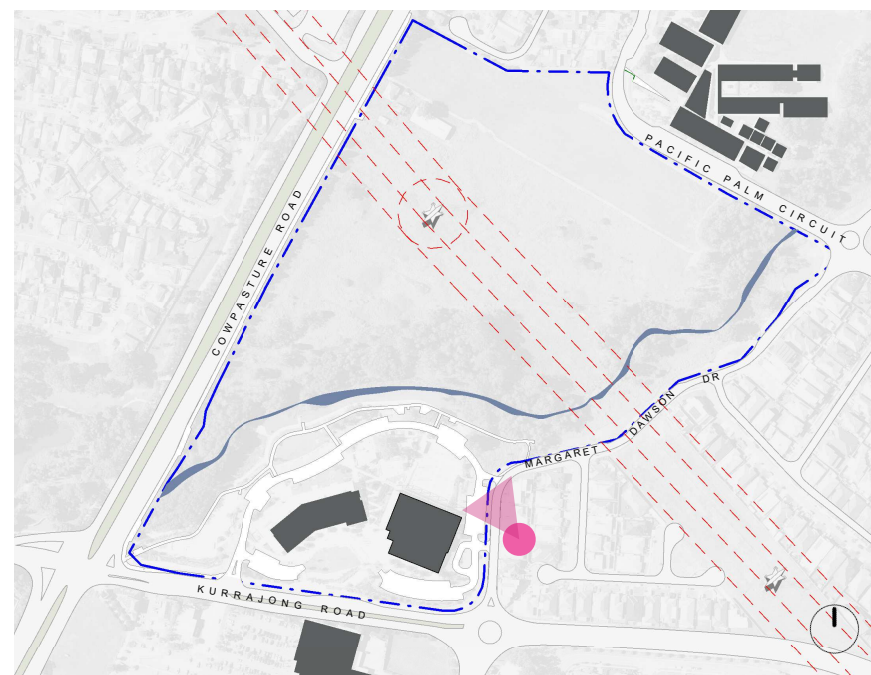
The site falls from its high point on the west along Cowpasture Road to the low point to the east Beard Creek which created an embankment to the west boundary of the site. Beard creek runs east-west adjacent to the southern boundary of the site.

The area denoted in pink in the attached diagram is within the steeper parts of the sites, although it has been identified as the zone with the least impact on ecology, bushfire and flooding.

The proposed development in this area would require levelling the site to allow an on-grade facility and reduce the requirement for retaining walls.



4.2 SITE AERIAL VIEWS



SITE PLAN

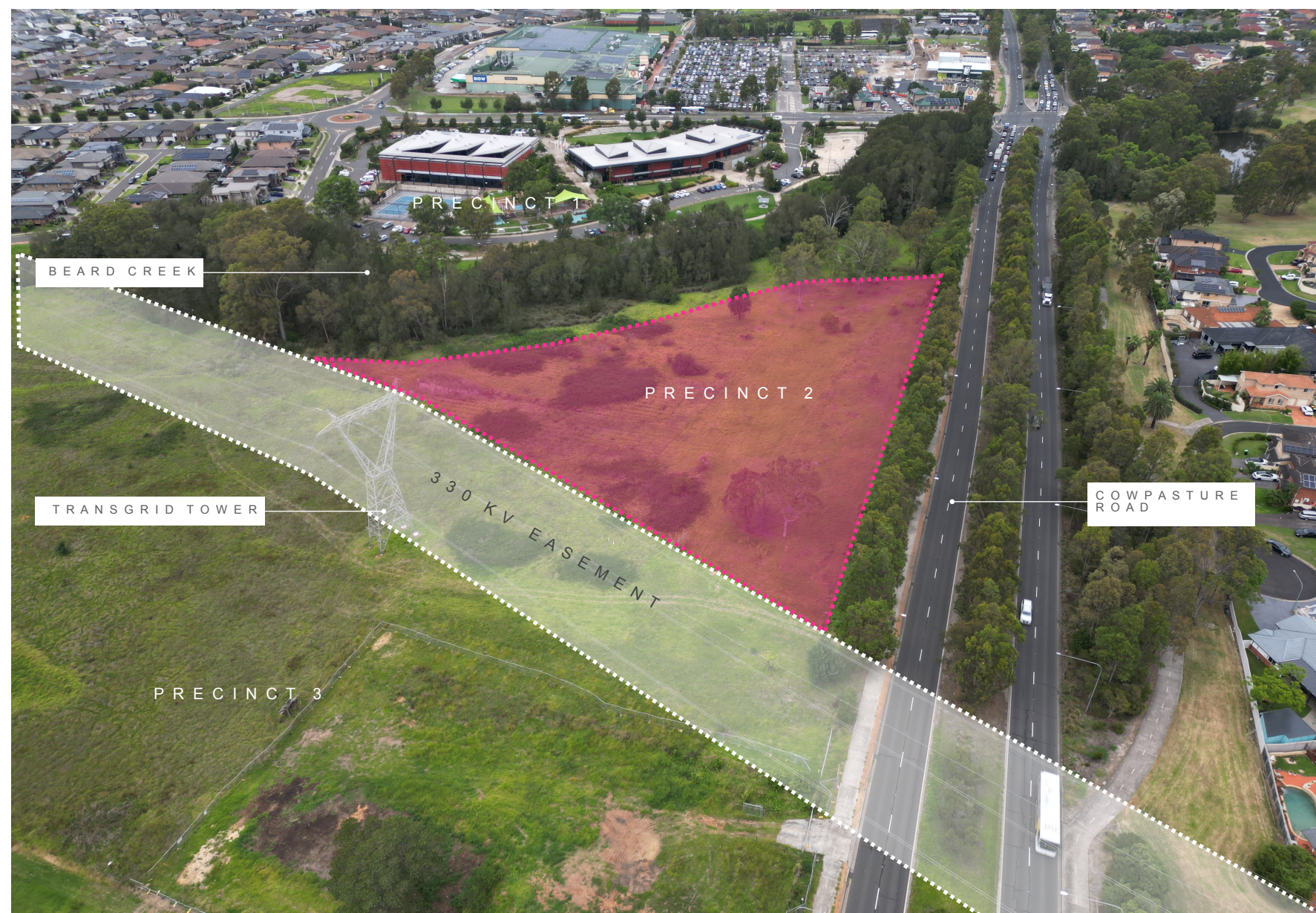


AERIAL VIEW FROM PRECINCT 1

4.2 SITE AERIAL VIEWS



SITE PLAN

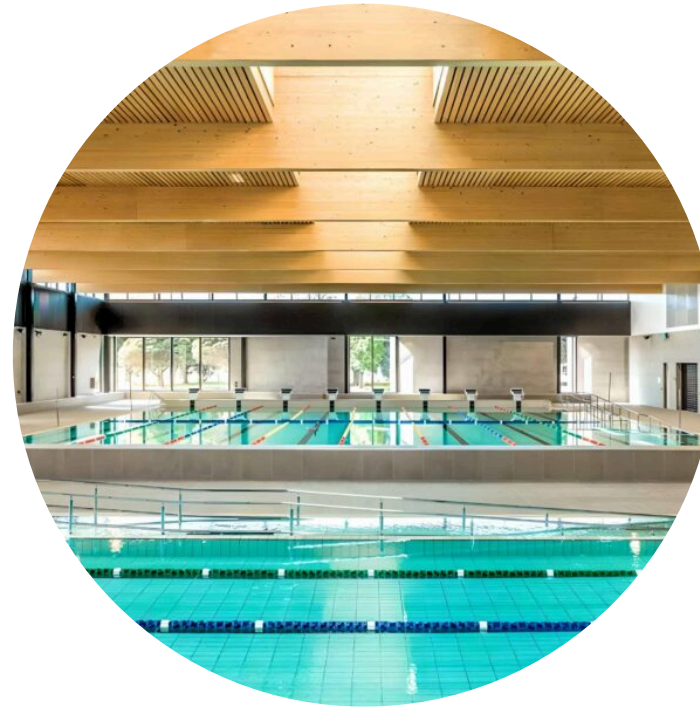


AERIAL VIEW FROM COWPASTURE ROAD

5. PROJECT ASPIRATION

5.1 AQUATIC CENTRE

The proposed aquatic centre looks to take on a combination of timber and mounding landscaping given the site location. It would create a built form that heroes timber within the internal pool hall and provides a facility that looks at integrating the external landscape.



5.2 INDOOR AND OUTDOOR WATER PLAY

Indoor and outdoor splash play areas provides children with opportunities for physical activity, sensory exploration and interaction. The spaces can serve community hubs for family activities. The key elements include interactive water features, landscape integration with shaded areas, cafe and seating.



5.3 PEDESTRAIN LINKING PATHWAY

Designing pedestrian pathways that link the Michael Clarke Recreation Centre to the aquatic centre and integrates landscape and public domain elements. Incorporating native plants and spaces like seating areas and open lawns create communal spaces for community engagement. Pathway to be inclusive accommodating all users including those with mobility challenges.



6. MASTERPLAN REVIEW

6.1 PROPOSED MASTERPLAN

The Carnes Hill Aquatic and Recreational Centre masterplan was submitted to Council's Western Sydney Infrastructure Grants Program (WSIG) community infrastructure portfolio.

Based on the masterplan options prepared by CO.OP and revised in 2024. A revised plan was prepared, which provides the following facilities:

- 01 Entry and drop off
- 02 Storage/ loading dock connected to aquatic and services plant room
- 03 Entry foyer/ reception/ retail/ cafe
- 04 Aquatic amenities
- 05 Main pool hall including:
 - a. 25m pool
 - b. Learn to swim
 - c. Leisure pool with kids play area
 - d. Spa & sauna
- 06 Outdoor concourse connected to main pool hall
- 07 Staff area with connection to future multipurpose hall
- 08 Outdoor 50m pool
- 09 Dedicated aquatic centre parking
- 10 Sports field
- 11 Amenities block and sports store
- 12 Community playground
- 13 Community operated learning garden
- 14 Dedicated sports precinct parking
- 15 High-voltage easement



6.1 PROPOSED MASTERPLAN

The masterplan considers the feedback from Transport NSW and Liverpool City Council as well as Transgrid to ensure their easement requirements are met.

A car parking area is provided that can be accessed via a newly constructed entry point from Pacific Palm Circuit. This road is to include adequate parking spaces to accommodate vehicles for visitors to both precincts, the new indoor aquatic facility, and the outdoor sporting complex, ensuring the parking area supports the overall functionality and user experience of the recreational precinct.

The proposed link road allows for 203 on grade parking spaces with a bus drop off with batches of parking for each precincts. As part of the masterplan assessment the layout of the outdoor fields was reviewed to ensure the proposed amenities are placed adjacent to parking and closer to the existing underground sewer.

The proposal allows for parking to all the main areas of the two new precincts to ensure accessibility to both sides, in an otherwise under utilised part of the site below the high voltage easement.

The aquatic precinct includes a total of 107 car spaces, along with a bus drop-off area located at the eastern boundary. Accessible parking spaces are provided closer to the indoor facility to ensure convenience for individuals with mobility impairment.

