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1. Project Background

Narla Environmental Pty Ltd (Narla) was commissioned by Webber Architecture (the proponent) on behalf of Northern Beaches Council to conduct an ecological assessment for the proposed Warringah Recreation Centre upgrades (Lot 2742/-/DP752038). The assessment aimed to evaluate potential biodiversity impacts resulting from the proposed works, which include new tennis courts, soft and hard landscaping elements, a new pedestrian bridge, east and west carparks, and a new squash building (**Figure 1**, **Appendix A**).

The purpose of this communication is to offer preliminary advice following the ecological site assessment conducted on the 9th of April 2024 before the final Flora and Fauna Assessment Reports are submitted. This preliminary advice allows for timely updates to the master plan and facilitates early discussion to ensure all ecological considerations are incorporated into the design process.

The final Flora and Fauna Assessment reports will be provided as two separate documents due to the distinct planning pathways. The development permitted without consent, outlined in a Review of Environmental Factors (REF), covers the new tennis courts, soft and hard landscaping elements, new pedestrian bridge, and east and west carparks. The development application requiring a Flora and Fauna Assessment (FFA) pertains to the new squash building.

The ecological assessment primarily focused on the proposed development area, referred to as the 'Subject Site.'

2. Site Description and Location

The Subject Property is located within the locality of North Manly in the Northern Beaches Local Government Area (LGA). The site boundary was defined by cadastral boundaries provided on the NSW Government Land and Property Information Spatial Information Exchange map viewer (NSW SixMaps 2024). The Subject Property is currently utilised as a golf course and covers an area of approximately 17.3ha, bound by Pittwater Road to the east, Kentwell Road to the south and Condamine Street to the west. The surrounding area is a highly urbanised landscape.

The Subject Site covers an area of approximately 0.9ha and currently contains the Warringah Recreation Centre comprising of tennis courts, soccer fields, and squash courts, as well as an open area parallel the Warringah Golf Course, and is overall located in the south-eastern portion of the Warringah Golf Course. Riparian vegetation is present on both sides of Brookvale Creek that intersects the Subject Site.

Figure 1. The components of the Subject Site.

3. Biodiversity Assessment Pathway

3.1 Part 4 Assessments (EP&A Act)

The requirements of the BC Act 2016 and Biodiversity Conservation Regulation 2017 are mandatory for all Development Applications (DA) assessed pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) submitted in the Northern Beaches LGA.

The Biodiversity Values (BV) Map (DPE 2024c) identifies land with high biodiversity values that are particularly sensitive to impacts from development and clearing. The map forms part of the Biodiversity Offsets Scheme Entry Threshold which is one of the triggers for determining whether the Biodiversity Offset Scheme (BOS) applies to a clearing or development proposal. The map has been prepared by the Department of Planning and Environment (DPE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act). No areas identified as containing Biodiversity Values are located within the Subject Site or broader Subject Property.

The BC Act and its regulations also stipulate clearing 'area threshold' values (**Table 1**) that determine whether a development is required to be assessed in accordance with the BOS. Minimum entry thresholds for vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

As no minimum lot size is prescribed by the WLEP to the Subject Property, the actual lot size of 17.3ha determines the clearing threshold. To avoid triggering the BOS, the proponent must avoid the clearing/management of native vegetation in excess of 0.5ha. The proposed development will require approximately 0.07ha of native vegetation to be impacted through clearing or pruning within the Subject Site; therefore, the BOS is not triggered by the clearing threshold.

As such, the Biodiversity Offset Scheme is not triggered and a Biodiversity Development Assessment Report (BDAR) is not required. As such, a standard Flora and Fauna Assessment Report will be produced for the DA.

Table 1. Biodiversity offset scheme entry thresholds. Bold indicates the threshold relevant to this report.

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1ha	0.25ha or more
1ha to less than 40ha	**0.5 ha or more**
40ha to less than 1000ha	1ha or more
1000ha or more	2ha or more

3.2 Part 5 Assessments (EP&A Act)

Local government serves as a determining authority for activities falling under Part 5 of the Environmental Planning and Assessment Act, whether they conduct these activities themselves or grant approvals. In evaluating Part 5 activities, the determining authority must assess whether the activity is likely to have a significant impact on threatened species, ecological communities, or their habitats. In cases where a significant impact is anticipated, the determining authority has two options: either opt into the Biodiversity Offsets Scheme for assessment or complete a species impact statement.

The Biodiversity Values Map can provide valuable information to support the consideration of areas with high biodiversity or to assess significance. If a Part 5 activity is expected to significantly affect threatened species, the proponent must prepare a species impact statement and seek concurrence from the Environmental Agency Head. Alternatively, they can opt into the scheme, which does not necessitate concurrence. If the proposed activity is unlikely to have a significant impact on threatened species, the environmental impact will be assessed according to Division 5.1 of the Environmental Planning and Assessment Act 1979.

Given that no Biodiversity Values mapping exists within the Subject Site and the proposed development is not expected to significantly impact a threatened ecological community or species, there is no requirement for opting into the BOS for assessment or completing a species impact statement. Consequently, a standard Flora and Fauna Assessment Report will be produced to support the REF.

4. Regulatory Requirements

4.1 Warringah Local Environmental Plan 2011 (WLEP)

4.1.1 Zoning

The Subject Property is zoned 'RE1: Public Recreation'. The WLEP requires that the development satisfies the zone objectives which are:

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To protect, manage and restore public land that is of ecological, scientific, cultural or aesthetic value.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.

The proposed development satisfies the objectives of this zone by providing public recreation activities.

4.2 Warringah Development Control Plan 2011 (WDCP)

4.2.1 Preservation of Trees or Bushland Vegetation

Part E1 of the WDCP applies to the land. The objectives of this clause are to:

- To protect and enhance the urban forest of the Northern Beaches;
- To effectively manage the risks that come with an established urban forest through professional management of trees;
- To minimise soil erosion and to improve air quality, water quality, carbon sequestration, storm water retention, energy conservation and noise reduction;
- To protect, enhance bushland that provides habitat for locally native plant and animal species, threatened species populations and endangered ecological communities;
- To promote the retention and planting of trees which will help enable plant and animal communities to survive in the long-term; and
- To protect and enhance the scenic value and character that trees and/or bushland vegetation provide.

Although the proposed development will impact native vegetation through removal and pruning, revegetation is proposed to enhance the long-term survival of the community present and protect retained vegetation during and following construction. A VMP will be implemented for the continued enhancement and protection of the EEC within and adjacent to the Subject Site.

4.2.2 Prescribed Vegetation

Part E2 of the WDCP applies to land identified within mapping as containing high conservation habitat, wildlife corridors or native vegetation The objectives of this clause are to:

- To preserve and enhance the area's amenity, whilst protecting human life and property;
- To improve air quality, prevent soil erosion, assist in improving water quality, carbon sequestration, storm water retention, energy conservation and noise reduction;
- To provide habitat for local wildlife, generate shade for residents and provide psychological & social benefits;
- To protect and promote the recovery of threatened species, populations and endangered ecological communities;
- To protect and enhance the habitat of plants, animals and vegetation communities with high conservation significance;
- To retain and enhance native vegetation communities and the ecological functions of wildlife corridors;
- To reconstruct habitat in non-vegetated areas of wildlife corridors that will sustain the ecological functions of a wildlife corridor and that, as far as possible, represents the combination of plant species and vegetation structure of the original 1750 community; and
- Promote the retention of native vegetation in parcels of a size, condition and configuration which will as far as possible enable plant and animal communities to survive in the long-term.

Development is situated and designed to minimise the impact on prescribed vegetation, including remnant canopy trees, understorey vegetation, and ground cover species. Although the proposed will impact native vegetation through removal and pruning, revegetation is proposed to enhance the long-term survival of the community present and protect retained vegetation during and following construction. A VMP will be implemented for the continued enhancement and protection of the EEC within and adjacent to the Subject Site.

4.2.3 Threatened species, populations, ecological communities listed under State or Commonwealth legislation, or High Conservation Habitat

This control applies to land identified on WDCP Map as an Endangered Ecological Community (EEC) is present; therefore, this control applies. The objectives of this control are:

- To protect and promote the recovery of threatened species, populations and endangered ecological communities;
- To protect and enhance the habitat of plants, animals and vegetation communities with high conservation significance;
- To preserve and enhance the area's amenity, whilst protecting human life and property;
- To improve air quality, prevent soil erosion, assist in improving water quality, carbon sequestration, storm water retention, energy conservation and noise reduction; and
- To provide natural habitat for local wildlife, maintain natural shade profiles and provide psychological & social benefits.

Although the proposed development will impact native vegetation through removal and pruning, revegetation is proposed to enhance the long-term survival of the community present and protect retained vegetation during and following construction. A VMP will be implemented for the continued enhancement and protection of the EEC within and adjacent to the Subject Site.

4.2.4 Native Vegetation

Although no areas mapped as 'Native Vegetation' on the WDCP Map are present within the Subject Property; native vegetation was observed during the site assessment, therefore, this clause applies. The objectives of this clause are:

- To preserve and enhance the area's amenity, whilst protecting human life and property;
- To improve air quality, prevent soil erosion, assist in improving water quality, carbon sequestration, storm water retention, energy conservation and noise reduction;
- To provide natural habitat for local wildlife, maintain natural shade profiles and provide psychological & social benefits;
- Promote the retention of native vegetation in parcels of a size, condition and configuration which will as far as possible enable local plant and animal communities to survive in the long term; and
- To maintain the amount, local occurrence and diversity of native vegetation in the area.

Although the proposed development will impact native vegetation through removal and pruning, revegetation is proposed to enhance the long-term survival of the community present and protect retained vegetation during and following construction. A VMP will be implemented for the continued enhancement and protection of the EEC within and adjacent to the Subject Site.

4.2.5 Waterways and Riparian Land

Part E8 of the WDCP applies to land identified as waterways and riparian lands. Objectives are:

- Protect, maintain, and enhance the ecology and biodiversity of waterways and riparian land;
- Encourage development to be located outside waterways and riparian land;
- Avoid impacts that will result in an adverse change in watercourse or riparian land condition;
- Minimise risk to life and property from stream bank erosion and flooding by incorporating appropriate controls and mitigation measures;
- Maintain and improve access, amenity and scenic quality of waterways and riparian lands; and
- Development on waterways and riparian lands shall aim to return Group B and Group C creeks to a Group A standard (as described in Warringah Creek Management Study, 2004) through appropriate siting and development of development.

The proposed development is located adjacent to Brookvale Creek which is classed as a Group C creek. Catchments that are classed as Group C generally have a low to moderate ecological value with the catchment also containing a 15 to 20% connected impervious area (WDCP 2011). As a portion of the project development and activities are to occur within land mapped as Waterways and Riparian Land, the controls required by this part of the WDCP are to be implemented by (Table 2).

Table 2. Developmental controls required by the pursuant for Part E8 of the WDCP (2011)

Control requirement pursuant to Part E8	Response of the Proposal
1. Development is to be designed to address any distinctive environmental features of the site and on adjoining nearby land.	The proposal has been designed to minimise direct impacts on the creek. The proposed pedestrian bridge will be located above the creek to avoid instream works and impacts. Riparian vegetation which is associated with a Threatened Ecological Community (TEC) will be impacted by the proposal, however this impact is mainly associated within the proposed bridge and will be supplemented by a VMP. The threatened *Callistemon linearifolius* (Netted Bottle Brush) is located near the Subject Site, however is not anticipated to be impacted.

Control requirement pursuant to Part E8	Response of the Proposal
2. Development should respond to these features through location of structures, outlook, design and materials.	The proposed bridge has been designed to sit above the water level of the creek, at the same height as the creek banks, so that the proposed development does not impede on water flow. A Construction Management will be prepared to ensure any excess sediment and erosion will be controlled to avoid discharges into Brookvale Creek and minimise surface water flow velocity. Temporary stabilisation techniques such as strategically placed erosion matting, sediment screens, hay bale energy dissipaters, mulching and annual grass species establishment will be implemented on disturbed areas.
3. The applicant shall submit a Waterway Impact Statement.	The proposal will comply through the preparation of the future FFA reports which will include a Waterway Impact Statement.
4. Developments shall comply with the requirements of Council's Protection of Waterway and Riparian Land Policy and Water Management Policy.	Proposal complies as it satisfies all the objectives laid out in the WLEP 2011 and WDCP 2011.
5. Infrastructure such as roads, drainage, stormwater structures, services, etc. should be located outside land identified as Waterways and Riparian Land.	Owing to the location of the existing recreation centre, all of the proposed development could not be located outside of the Waterways and Riparian Land. However, mitigation methods will be outlined in future reports and a CMP to limit impacts to this land and Brookvale Creek.
6. The Asset Protection Zone must not extend into land identified as Waterways and Riparian Land. Refer to NSW Rural Fire Service for site assessment methodology.	Not applicable.

4.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021: Chapter 4 - Koala Habitat Protection 2021

This chapter applies to LGAs that are listed in Schedule 2 'Local government areas' of the SEPP. As the Northern Beaches LGA is included in Schedule 2, this SEPP applies to the Subject Site. As such, the following development control provisions apply to development applications relating to the land, as the land:

- Has an area of at least 1 hectare (including adjoining land within the same ownership); and
- Does not have an approved koala plan of management applying to the land.

Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat. If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.

A site assessment was undertaken to determine whether the land contained core koala habitat, which is defined by the SEPP as:

- an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
- an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

The Subject Property did contain suitable habitat (where 15% or greater of the total number of trees are the regionally relevant species of those listed in Schedule 3 of the SEPP), however no signs of koalas or koala occupancy (scats, scratch marks) were observed at the time of the site assessment. Furthermore, there are only two (2) records of Koalas within 2.5km of the Subject Property in the last 18 years. Due to the urban nature of the Subject Site and low number of proximal records, it is considered unlikely to be core Koala habitat and no further assessment under the SEPP (i.e. Koala Assessment Report) should be required.

4.4 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the Water Management Act 2000 (WM Act). The Natural Resources Access Regulator (NRAR) administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land. Water front land include the bed and bank of any river, lake or estuary and all land within 40 meters of the highest bank of the river, lake or estuary.

The proposed development involves a water crossing and riparian works, which are considered a controlled activity. However, the parts of the development impacting this waterfront land is part of the Part 5 activities (i.e., to be assessed under a REF). Clause 41 of the Water Management (General) Regulation 2018 specifies "A public authority is exempt from section 91E(1) of the Act in relation to all controlled activities that it carries out in, on or under waterfront land".

Therefore, a controlled activity approval is not required for the works that are to be completed under the REF. The works proposed as a Part 4 activity will not be occurring on waterfront land. Therefore, the WM Act does not apply.

If Part 4 activities were to impact waterfront land, consent must be obtained from the NRAR before commencing the proposed development. Additionally, when a proposed controlled activity disturbs or substantially modifies the riparian corridor (e.g. through vegetation removal or excavation), its restoration and/or rehabilitation will be a requirement of the controlled activity approval. A Vegetation Management Plan (VMP) may be required that details how the restoration or rehabilitation will be carried out for crossing and riparian works.

4.5 Fisheries Management Act 1994

One of the objectives of the Fisheries Management Act 1994 is to 'conserve key fish habitats'. 'Key Fish Habitat' (KFH) was defined to include all marine and estuarine habitats up to highest astronomical tide level (that are reached by 'king' tides) and most permanent and semi-permanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments up to the top of the bank.

Brookvale Creek within the Subject Site is mapped as containing KFH (**Figure 2**). NSW DPI assesses development proposals with consideration to the water way class (**Table 3**) and habitat sensitivity type (**Table 4**), which factors in the importance, resilience and functionality of the waterway as fish habitat (DPI 2013). Brookvale Creek within the Subject Site meets the definition of 'Class 1 – Major key fish habitat' and 'Type 3 – Minimally sensitive key fish habitat'.

Any works that involve dredging or temporary obstruction of fish passage within KFH would require a Part 7 Fisheries Permit under section 201 and 219 of the FM Act.

Table 3. Classification of waterways for fish passage. Green shading = Class within the Subject Site (DPI 2013).

Water Way Classification	Characteristics of Waterway Class	Features present within the Subject Site
Class 1 – Major key fish habitat	Marine or estuarine waterway, or permanently flowing or flooded freshwater waterway (e.g. river or major creek), habitat of a threatened or protected fish species or 'critical habitat'.	Brookvale Creek is a perennial (permanently flowing) waterway.
Class 2 – Moderate key fish habitat	Non-permanently flowing (intermittent) stream, creek or waterway (generally named) with clearly defined bed and banks with semi-permanent to permanent waters in pools or in connected wetland areas. Freshwater aquatic vegetation is present. Type 1 and 2 habitat present.	N/A
Class 3 – Minimal key fish habitat	Named or unnamed waterway with intermittent flow and sporadic refuge, breeding or feeding areas for aquatic fauna (e.g. fish, yabbies). Semi-permanent pools form within the waterway or adjacent wetlands after a rain event. Otherwise, any minor waterway that interconnects with wetlands or other Class 1-3 fish habitats	N/A
Class 4 – Unlikely key fish habitat	Waterway (generally unnamed) with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free-standing water or pools post rain events (e.g. dry gullies or shallow floodplain depressions with no aquatic flora present).	N/A

Table 4. Key fish habitat and associated sensitivity classification scheme. Green shading = Class within the Subject Site (DPI 2013).

Sensitivity Classification	Characteristics of Sensitivity Class	Features present within the Subject Site
Type 1 – Highly sensitive key fish habitat	▪ *Posidonia australis* (strapweed) ▪ *Zostera, Heterozostera*, *Halophila* and *Ruppia* species of seagrass beds >5m2 in area ▪ Coastal saltmarsh >5m2 in area ▪ Coral communities ▪ Coastal lakes and lagoons that have a natural opening and closing regime (i.e. are not permanently open or artificially opened or are subject to one off unauthorised openings) ▪ Marine Park, an aquatic reserve or intertidal protected area ▪ SEPP 14 coastal wetlands, wetlands recognised under international agreements (e.g. Ramsar, JAMBA, CAMBA, ROKAMBA wetlands), wetlands listed in the Directory of Important Wetlands of Australia ▪ Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in two dimensions, snags greater than 300 mm in diameter or 3 metres in length, or native aquatic plants ▪ Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act ▪ Mound springs	Not present
Type 2 – Moderately sensitive key fish habitat:	▪ *Zostera, Heterozostera, Halophila* and *Ruppia* species of seagrass beds <5m^2 in area ▪ Mangroves ▪ Coastal saltmarsh <5m^2 in area ▪ Marine macroalgae such as *Ecklonia* and *Sargassum* species	Not Present

	▪ Estuarine and marine rocky reefs ▪ Coastal lakes and lagoons that are permanently open or subject to artificial opening via agreed management arrangements (e.g. managed in line with an entrance management plan) ▪ Aquatic habitat within 100 m of a marine park, an aquatic reserve or intertidal protected area ▪ Stable intertidal sand/mud flats, coastal and estuarine sandy beaches with large populations of in-fauna ▪ Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in Type 1 ▪ Weir pools and dams up to full supply	
Type 3 – Minimally sensitive key fish habitat may include	▪ Unstable or unvegetated sand or mud substrate, coastal and estuarine sandy beaches with minimal or no in-fauna ▪ Coastal and freshwater habitats not included in Type 1 or 2 ▪ Ephemeral aquatic habitat not supporting native aquatic or wetland vegetation	Present. Brookvale Creek is a coastal habitat that does not have features listed in Type 1 or 2.

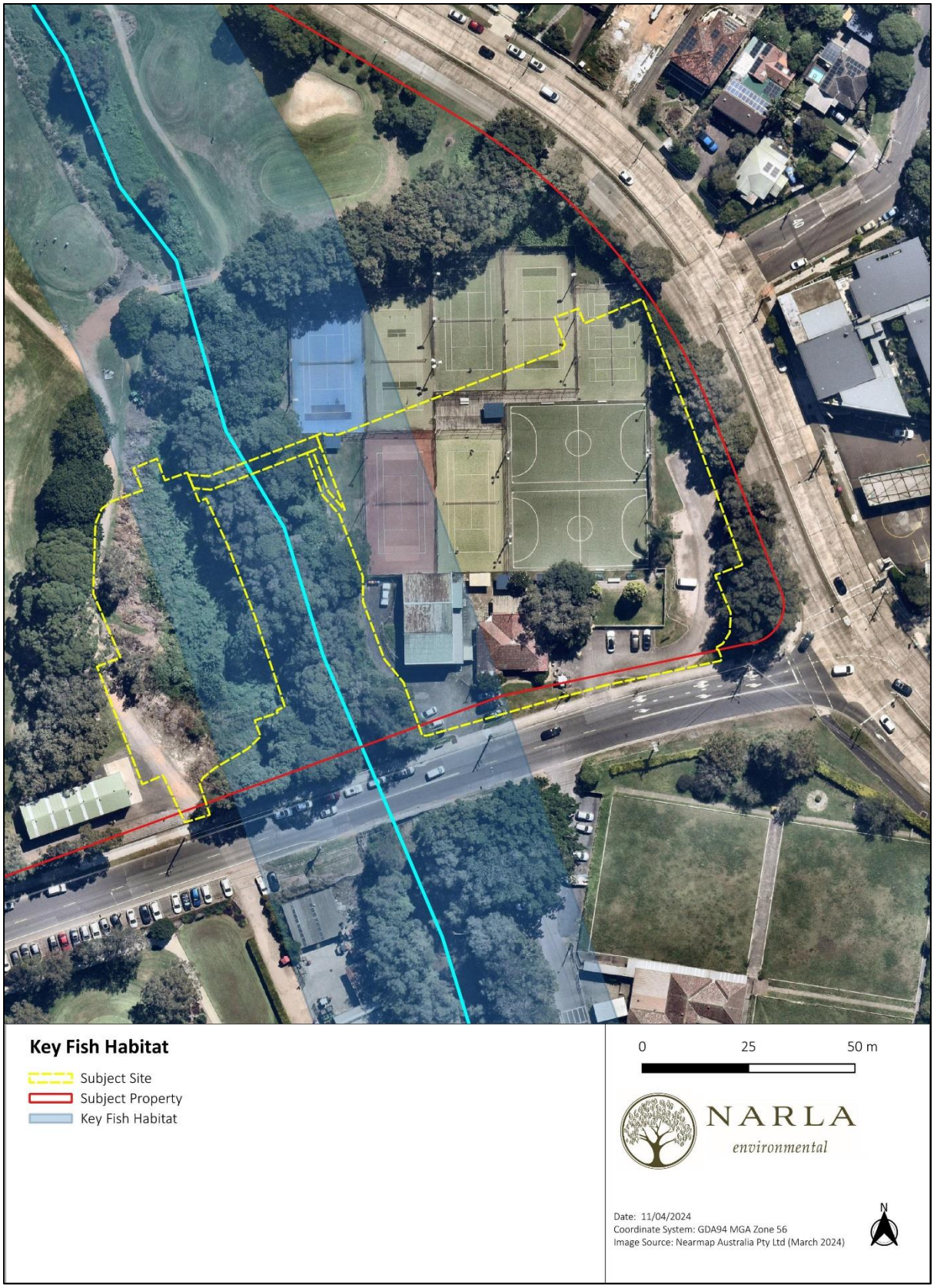

Figure 2. Key Fish Habitat.

5. Vegetation Communities

Field survey conducted by experienced Narla Ecologists validated two (2) vegetation communities within the Subject Site using the Eastern NSW PCT Classification (**Figure 3**, DPE 2024a):

- PCT 4028: Estuarine Swamp Oak Twig-rush Forest; and
- Weeds and Exotics.

The Estuarine Swamp Oak Twig-rush Forest within the Subject Site is characterised as a tall open forest that has undergone historical disturbance, resulting in a weed-dominated understorey. In the canopy layer, *Casuarina glauca* (Swamp Oak) predominates, along with significant quantities of *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Melaleuca linariifolia* (Snow-in-Summer), and *Callistemon salignus* (White Bottlebrush), with occasional occurrences of *Eucalyptus robusta* (Swamp Mahogany) and *Angophora costata* (Smooth-barked Apple). Minor instances of the weeds *Cinnamomum camphora* (Camphor Laurel) and *Erythrina x sykesii* (Coral Tree) are also observed within this layer. The midstratum typically exhibits sparse vegetation, with dominance by *Homalanthus populifolius* (Bleeding Heart), *Pittosporum undulatum* (Sweet Pittosporum), and *Acacia longifolia* (Sydney Golden Wattle). Exotic species present in the midstratum include *Senna pendula* (Valley Senna), *Lantana camara* (Lantana), and *Asparagus aethiopicus* (Asparagus Fern). The ground layer is primarily composed of exotic species, though native species such as *Pteridium esculentum* (Bracken Fern), *Commelina cyanea* (Scurvy Weed), *Lomandra longifolia* (Spiny-head Mat-rush), *Cissus antarctica* (Kangaroo Vine), and *Dichondra repens* (Kidney Weed) are also identified. Predominant exotic species encompass *Ipomoea purpurea* (Common Morning Glory), *Araujia sericifera* (Moth Vine), *Ehrharta erecta* (Panic Veldt Grass), *Ageratina adenophora* (Crofton Weed), *Parietaria judaica* (Pellitory), *Cenchrus clandestinus* (Kikuyu), *Anredera cordifolia* (Madeira Vine), and *Eragrostis curvula* (African Lovegrass).

The areas identified as Weeds and Exotics within the Subject Site were predominantly characterized by common garden environmental exotics and noxious weeds, alongside patches of turf and cultivated gardens with planted trees. In the canopy layer, exotic species such as *Phoenix canariensis* (Canary Island Date Palm) and *Harpephyllum caffrum* (Wild Plum) were prevalent. The mid-storey was dominated by exotic species including *Anethum graveolens* (Dill), *Lantana camara* (Lantana), *Solanum nigrum* (Black Nightshade), *Ricinus communis* (Castor Oil Plant), and *Strelitzia nicolai* (Giant White Bird of Paradise). The ground layer was heavily dominated by exotic species, including *Ipomoea purpurea* (Common Morning Glory), *Araujia sericifera* (Moth Vine), *Ehrharta erecta* (Panic Veldt Grass), *Ageratina adenophora* (Crofton Weed), *Parietaria judaica* (Pellitory), *Cenchrus clandestinus* (Kikuyu), *Anredera cordifolia* (Madeira Vine), and *Eragrostis curvula* (African Lovegrass). The only native species within this zone was *Cynodon dactylon* (Bermuda Grass), found in areas of turf.

5.1 Threatened Ecological Communities

5.1.1 Listing under the BC Act: Swamp Oak Floodplain Forest in the NSW North Coast, Sydney Basin and South East Corner Bioregions, Endangered Ecological Community

Estuarine Swamp Oak Twig-rush Forest is associated with to Swamp Oak Floodplain Forest (SOFF) in the Sydney Basin Bioregion Endangered Ecological Community (EEC). Swamp Oak Floodplain Forest is associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains, generally below 20 m (NSW Scientific Committee 2011). The Subject Site occurs on such soils on a costal floodplain below 20m asl, and contains the following diagnostic species:

- *Callistemon salignus;*
- *Casuarina glauca;*
- *Commelina cyanea;*

- *Glochidion ferdinandi;*
- *Lomandra longifolia;* and
- *Melaleuca quinquenervia.*

Therefore, this community within the conforms to the EEC SOFF in the Sydney Basin Bioregion.

5.1.2 Listing under the EPBC Act: Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales

Estuarine Swamp Oak Twig-rush Forest is associated with Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales (CWOF) EEC. In order to be considered a Matter of National Significance, areas of the ecological community must meet both:

- the key diagnostic characteristics (**Table 5**); and
- at least the minimum condition thresholds for Category C (**Table 6**).

As Estuarine Swamp Oak Twig-rush Forest within the Subject Site meets the key diagnostic characteristics and minimum condition thresholds (Category C), this vegetation meets the definition of CWOF EEC.

Table 5. Key Diagnostic Characteristics of Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales.

Key Diagnostic Characteristic	Features Present within the Subject Site?
Occurs from south-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin, or South East Corner bioregions	Yes. The Subject Site is located within the Sydney Basin Bioregion.
Occurs in coastal catchments at elevations up to 50 m ASL, typically less than 20 m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. There are also minor occurrences on coastal dune swales or flats, particularly deflated dunes and dune soaks.	Yes. The Subject Site occurs at <10m asl on a coastal floodplain.
Occurs on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organosols (peaty soils). It may occur in transitional soils (or catenas) where shallow unconsolidated sediments border lithic substrates.	Yes. The Subject Site is mapped as occurring on alluvial soils including loamy sand and peaty soils.
Has an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover of at least 10 per cent.	Yes. Canopy cover is < 10%.
Has a canopy of trees dominated by *Casuarina glauca*	Yes. *Casuarina glauca* is the dominant species.

Table 6. Condition Thresholds for Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales (Green Box indicates condition class).

Vegetation Quality Class	**Large Patch** The patch ≥5 ha	**Medium Patch** The patch ≥2ha and <5 ha	**Small Contiguous Patch** The patch ≥0.5ha and <2ha, and is connected to a larger area of native vegetation of at least 5 ha	**Small Patch** The patch ≥0.5ha and <2ha
High Quality - Predominantly native understorey	Category A	Category B		Category C

<table>
<tr><th>Vegetation Quality Class</th><th>Large Patch
The patch ≥5 ha</th><th>Medium Patch
The patch ≥2ha and <5 ha</th><th>Small Contiguous Patch
The patch ≥0.5ha and <2ha, and is connected to a larger area of native vegetation of at least 5 ha</th><th>Small Patch
The patch ≥0.5ha and <2ha</th></tr>
<tr><td>Non-native species comprise less than 20% of total understorey vegetation cover</td><td></td><td colspan="2"></td><td></td></tr>
<tr><td>Good Quality -Mostly native understorey
Non-native species comprise less than 50% of total understorey vegetation cover and transformer species comprise less than 30% of total understorey vegetation cover*</td><td>Category B</td><td colspan="2">Category C</td><td>N/A</td></tr>
<tr><td>Moderate Quality -Some native understorey
Non-native species comprise less than 80% of total understorey vegetation cover and transformer species comprise less than 50% of total understorey vegetation cover</td><td colspan="2">Category C</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="5">As non-native species comprise less than 80% of total understorey vegetation cover and transformer species comprise less than 50% of total understorey vegetation cover with a patch size >5ha, Estuarine Swamp Oak Twig-rush Forest within the Subject Site conforms to Condition Class C.</td></tr>
</table>

5.1.1 Threatened Ecological Communities: Swamp Oak Floodplain Forest Local Occurrence

Local occurrence is defined as the ecological community that occurs within the study area (OEH 2018). However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated (OEH 2018).

Narla estimated that approximately 5.76 ha of SOFF/CSOF occurs within the locality (the local occurrence) utilising the State Vegetation Type Map (DPE 2022) and field validated vegetation mapping of the Subject Site. The vegetation proposed to be impacted through pruning or removal (0.07ha) on the Subject Site therefore represents approximately 1.23% of the estimated local occurrence of SOFF (**Figure 4**). A Test of Significance has been undertaken under the BC Act and EPBC Act for this EEC and it was found that impacts are not anticipated to be significant (**Appendix B, Appendix C).**

Figure 3. Narla field-validated vegetation mapping.

Figure 4. Swamp Oak Floodplain local occurence.

5.2 Threatened Species

No threatened species are anticipated to be significantly impacted by the proposed works. One (1) threatened species, *Callistemon linearifolius* (Netted Bottle Brush), does occur in close proximity to the site, however it has been purposely avoided. Furthermore, a VMP will be prepared to guide the ongoing management and protection of the species within the vicinity of the works. As a precautionary measure, a Test of Significance under the BC Act has been prepared to consider any indirect impacts to this species (**Appendix D**).

6. Conclusion

This letter Narla Environmental Pty Ltd for the proposed upgrades to the Warringah Recreation Centre provides a comprehensive ecological assessment to address potential biodiversity impacts. The following summary encapsulates the key findings and recommendations based on the preliminary advice before the final submission of the Flora and Fauna Assessment Reports:

- The assessment adheres to the BC Act 2016 and Biodiversity Conservation Regulation 2017, noting that the Biodiversity Offset Scheme (BOS) is not triggered for Part 4 developments as the proposed development will impact approximately 0.07ha of native vegetation, below the threshold for BOS application; and the BOS does not apply for Part 5 developments.
- The project aligns with the requirements of the Warringah Local Environmental Plan 2011 (WLEP) and Warringah Development Control Plan 2011 (WDCP), emphasising the preservation of trees, bushland vegetation, and threatened species.
- The Subject Site contains the endangered ecological community Swamp Oak Floodplain Forest and is proximal to one threatened species, *Callistemon linearifolius* (Netted Bottle Brush), neither of which will not be significantly impacted by the proposed works.

Although the development will necessitate the removal and pruning of native vegetation, revegetation is proposed to enhance the long-term survival of the community present. A Vegetation Management Plan (VMP) should be implemented for the continued enhancement and protection of the Estuarine Swamp Oak Twig-rush Forest within and adjacent to the Subject Site as well as for those areas encroaching into waterfront land.

Sincerely,

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7. References

Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970)

Department of Planning and Environment (DPE) (2022) State Vegetation Type Map

Department of Planning and Environment (DPE) (2024a) BioNet Vegetation Classification. https://www.environment.nsw.gov.au/research/Visclassification.htm

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Department of Planning and Environment (DPE) (2024c) Biodiversity Values Map and Threshold Tool

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Landcom (2004) Managing Urban Stormwater: Soils and Construction 'The Blue Book', Volume 1, Fourth Edition, New South Wales Government, ISBN 0-9752030-3-7

Northern Beaches Council (2011a) Warringah Development Control Plan (WDCP)

Northern Beaches Council (2011b) Warringah Environmental Plan (WLEP)

NSW Government Spatial Services (NSW SixMaps) (2024) NSW Government Land & Property Information Spatial Information Exchange map viewer, https://six.nsw.gov.au/

PlantNET (2024) The NSW Plant Information Network System, Royal Botanic Gardens and Domain Trust, Sydney. http://plantnet.rbgsyd.nsw.gov.au

Webber Architects (2024) Masterplan for Warringah Recreation Centre

Appendix A. Masterplan for Warringah Recreation Centre (Webber Architects, 2024).

Appendix B. Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF)

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF)		
BC Act Status: Endangered Ecological Community		
(a) in the case of a threatened species, whether the proposed development or activity 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,	Not applicable – Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF) is not a species	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	(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	The proposed activity is not 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. In total, 0.07ha of this community will be impacted which accounts for less than 1.23% of the local occurrence of this community. Large areas of this community will continue to exist in the adjoining landscape.
	(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,	The proposed activity is not likely to modify the composition of SOFF substantially and adversely such that its local occurrence is likely to be placed at risk of extinction. In total, 0.07ha of the local occurrence of the EEC is proposed to be impacted. The vegetation to be cleared is in poor condition with a predominately exotic ground layer with common canopy and mid-storey species present, making it unlikely the composition of the community within the locality would be reduced.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	Approximately 0.07ha will be removed to accommodate the proposed activity.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of	The 0.07ha SOFF to be impacted located on the edge of an existing patch adjacent to a road. The removal

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF)		
BC Act Status: Endangered Ecological Community		
	habitat as a result of the proposed development or activity, and	of this small amount of vegetation is not expected to lead to any further fragmentation.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	All areas that support viable patches of SOFF are important. However, impacts to the patch in question will not cause significant fragmentation or isolation of the EEC as representative vegetation will continue to occur throughout the locality. Impacts to 0.19ha of the EEC is highly unlikely to decrease the long-term survival of the community.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The proposed activity is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The following Key Threatening Processes (KTPs) listed under Schedule 4 of the BC Act are relevant to the protection of potential habitat in the scope of the proposed activity within the Subject Site for this EEC: Clearing of native vegetation; ▪ Invasion of native plant communities by exotic perennial grasses; and ▪ Invasion, establishment and spread of Lantana (*Lantana camara*).	
References NSW Department of Planning and Environment (DPE) (2021) Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – profile. NSW Government (2021) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 4: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf		

Appendix C. EPBC Act Assessment of Significant Impact for Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland

Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland (CSOF)	
EPBC Act Status: Endangered Ecological Community	
Significant impact criteria An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:	
• reduce the extent of an ecological community	The proposed development is not likely to reduce the extent of the ecological community. The proposed subdivision will result in the removal of approximately 0.07ha of CSOF which makes up approximately 1.23% of the community within the Subject Property. The extent of CSOF to be removed is in poor condition and is expected to persist in the broader Subject Property and locality.
• fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	It is not likely that CSOF within the Subject Site will become fragmented. Vegetation consisting of CSOF will persist directly adjacent to the Subject Site to the north and the south. A small pedestrian bridge will be built within the patch however connectivity is expected to remain either side of the bridge.
• adversely affect habitat critical to the survival of an ecological community	The proposed development will not adversely affect habitat critical to the survival of CSOF. The extent of CSOF to be removed is in poor condition due to the invasion of weeds. It is not expected the removal of 0.07ha will significantly impact the long-term survival of the ecological community in the locality.
• modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The proposed development will not modify or destroy abiotic factors necessary for the survival of CSOF. The proposed activities will result in the removal/management of approximately 0.07ha of CSOF. The removal of this small amount of vegetation is not likely to have any impact on groundwater or surface water drainage patterns, particularly through the implementation of the CMP during the construction until revegetation works are complete.
• cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	The proposed development will result in the removal of approximately 0.07ha of CSOF. The vegetation to be cleared is in poor condition with a predominately exotic ground layer with common canopy and mid-storey species present, making it unlikely the composition of the community within the locality would be reduced within the locality.
• cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: – assisting invasive species, that are harmful to the listed ecological community, to become established, or – causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	The proposed development will not cause a substantial reduction in the quality or integrity of CSOF. The extent of CSOF to be removed is 3.3% of the local occurrence and consists of a predominately exotic ground layer.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland (CSOF)	
EPBC Act Status: Endangered Ecological Community	
• interfere with the recovery of an ecological community	It is not expected that the removal of 0.19ha of CSOF will interfere with the recovery of this community given the implementation of the impact mitigation measures as outlined in this report.
References: Department of the Environment and Energy (2018). Conservation advice (incorporating listing advice) for the Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community. Canberra: Department of the Environment and Energy.	

Appendix D. BC Act Assessment of Significance (5-part Test) for *Callistemon linearifolius* (Netted Bottlebrush)

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Callistemon linearifolius* (Netted Bottlebrush)		
BC Act Status: Vulnerable		
(a) in the case of a threatened species, whether the proposed development or activity 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,	The proposed activity will not require the removal of any individuals. The proposed activity will impact 0.07ha of suitable habitat for the species. At least 5.6ha of suitable habitat in the form of Swamp Oak Floodplain Forest will continue exist within the broader locality. It is not likely that this will 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.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	(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	Not applicable.
	(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,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	0.07ha of potential recruitment habitat is expected to be impacted by the proposed activity.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The suitable habitat is already highly fragmented. It is not anticipated that the area of habitat will not become more fragmented or isolated from other areas of habitat as a result of the proposed activity.
	(iii) the importance of the habitat to be removed, modified, fragmented, or isolated to the long-term survival of the species or ecological community in the locality,	The proposed activity is expected to impact 0.07ha of potential recruitment habitat. Given that there is only two individuals present (that will be retained) and the habitat is already highly fragmented from other populations within the broader locality, the removal of this habitat is unlikely to significantly affect the long-term survival of the species in the locality.

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Callistemon linearifolius* (Netted Bottlebrush)	
BC Act Status: Vulnerable	
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The proposed activity is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The following Key Threatening Processes (KTPs) listed under Schedule 4 of the BC Act are relevant to the protection of potential habitat in the scope of the proposed activity within the Subject Site: ▪ Clearing of native vegetation The proposed activity will see a temporary increase in the impact on clearing of native vegetation however any impacts will be minimised where possible. A VMP will be prepared to rehabilitate and improve the ecological condition of the Subject Site.
References NSW Government (2017) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 4: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf NSW Scientific Committee (2000) Callistemon linearifolis – vulnerable species listing.	

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