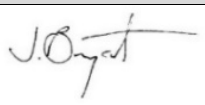
REVIEW OF ENVIRONMENTAL FACTORS (REF)
DANJERA DAM UPGRADES
(RECREATION AREA)

Contents

Document control

Item	Details
Project	Review of Environmental Factors – Danjera Dam Upgrades (Recreation Area)
Client	Shoalhaven Water
Prepared By	City Services, Shoalhaven City Council

Document status

Version	Author / Reviewer*	Name	Signed	Date
V1.0	Author	Jeff Bryant		07/07/2023
	Reviewer	Geoff Young		20/07/2023

*Review and endorsement statement:

“I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading”.

Assessment and approvals overview

Item	Details
Assessment type	Division 5.1 (EP&A Act) - Review of Environmental Factors (REF)
Proponent	Shoalhaven City Council
Determining authority / authorities	Shoalhaven City Council
Required approvals (consents, licences and permits)	N/A
Required publication	Yes. Publication of this REF on Council’s website or on the NSW Planning Portal shall be undertaken as a matter of public interest in accordance with s171(4)(c) of the *Environmental Planning and Assessment Regulation 2021*.

1. PROPOSAL AND LOCATION

1.1 Proposed activity and background information

Shoalhaven Water (Shoalwater) propose to undertake upgrades to the access (Yalwal Rd) and day-use facilities within the Danjera Dam Recreation Area.

The proposed works would involve:

- Upgrade to Yalwal Rd from the entrance of the Danjera Dam Recreation Area through to the end of the former main camping area including:
    - reconstruction of identified sections of unsealed road comprising 200 mm basecourse over compacted existing subgrade, including widening of road where required to achieve nominal widths up to 6.5 m for improved safety and to provide for passing bays;
    - construction of swale drains along access road including combination grassed swale / concrete dish drain / rock-swale between camping area and access road; and 2 x inlet pits with stormwater pipe (525mm and 600mm diameter) beneath access road and with 2 x drainage outlets with scour protection discharging into Danjera Dam below camping area.
- Upgrade to car-parking area with provision for trailer / caravan parking spaces:
    - Treated pine log barrier on lower (western) side;
    - Permeable paving along lower edge of carpark for trailer overhang.
- Upgrade to boat-ramp approach and exit including:
    - Upgrade and widening of identified sections of the access road, with 23 m length of sandstone log retaining wall;
    - Construction swale drains and 375 mm diameter stormwater pipe beneath road with inlet pit and headwall outlet with rock scour protection discharging into Danjera Dam near boat ramp.
    - Reconstruction of the approach to the boat-ramp.
    - Construction of grooved concrete pavement ramp connection between the boat-ramp approach and the upper parallel section of road (with 9 m length of sandstone log retaining wall), to create a looped access. Concrete pavement comprising 150 mm deep reinforced concrete over 100 mm compacted road base over compacted existing subgrade. Interface of concrete ramp to boat-ramp approach to include a 300 mm wide thickened edge to a total depth of 500 mm.
- Construction of new picnic area:
    - Three (3) picnic shelters, each on concrete slabs, with two (2) picnic settings (bench and seats) per shelter;
    - Retaining walls beneath each picnic shelter;
    - Connecting concrete path between picnic shelter slabs and linking to Yalwal Rd at three (3) locations;
    - Balustrade type handrail (1 m high) around picnic area, along the edge of the outer path and the lowest retaining wall.

- Native vegetation removal to facilitate road upgrades including:
    - Removal of up to 35 trees ranging from 10cm to 50cm diameter at breast height (DBH) and native groundcover / shrubs to approx. 875 m^2 total canopy coverage, for road upgrade, construction of concrete pavement connecting to boat ramp approach, and construction of drainage outlets and associated scour protection. No hollow-bearing trees or significant habitat or feed trees would be removed or otherwise impacted on.
    - Replacement planting of endemic trees in suitable locations would be undertaken as a mitigation measure.
- Earthworks including fill for road construction, levelling of picnic shelter locations and upgrade to boat-ramp approach.

More extensive upgrades were previously proposed to be carried out over the site with development consent. In addition to the upgrades currently proposed, this also included upgrade and formalisation of the main camping area; construction of a multi-purpose building with amenities and a new standalone amenities building; construction of an on-site wastewater system; construction of stormwater drainage with bioretention basins servicing the camp area; establishment of asset protection zones around the camp area; construction of new boardwalks and stepped walking tracks; and upgrade to a secondary access road.

Proposed clearing associated with construction of the on-site wastewater management system and the establishment of asset protection zones (in accordance with Planning for Bush Fire Protection requirements) was determined to trigger entry into the Biodiversity Offset Scheme Assessment.

A Biodiversity Development Assessment Report (BDAR) was produced by Council's Environmental Planning & Assessment Team (SCC 2020) to accompany the development application for the proposal.

Shoalwater has since decided to reduce the scope of the proposal to those items listed above. The currently proposed works can be undertaken by or on behalf of Council as development without consent (refer to Section 4 of this REF for planning approvals pathways).

Design plans are provided as Appendix A.

Shoalhaven City Council (SCC) is the proponent and the determining authority under Part 5 of the EP&A Act. The environmental assessment of the proposed activity and associated environmental impacts has been undertaken in the context of Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. In doing so, this Review of Environmental Factors (REF) helps to fulfil the requirements of Section 5.5 of the Act that SCC examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

1.2 Location

The proposed activity would be undertaken within Council operational land (in the context of the NSW *Local Government Act 1993*) within the Danjera Dam Recreation Area, Yalwal Rd, Danjera. Refer to Figures 1 and 2 below.

Details of affected land are provided in Table 1.

Table 1. Property affected by the proposed activity

Lot / DP	Description	Land owner / manager	Other information
Part Lot 4 DP 252335	Danjera Dam Recreation Area, Yalwal Rd, Danjera	Shoalhaven City Council (Shoalhaven Water)	Freehold – Operational Land
Part Lot 5 DP 252335	Danjera Dam Recreation Area, Yalwal Rd, Danjera	Shoalhaven City Council (Shoalhaven Water)	Freehold – Operational Land

Figure 1. Site location of the proposal

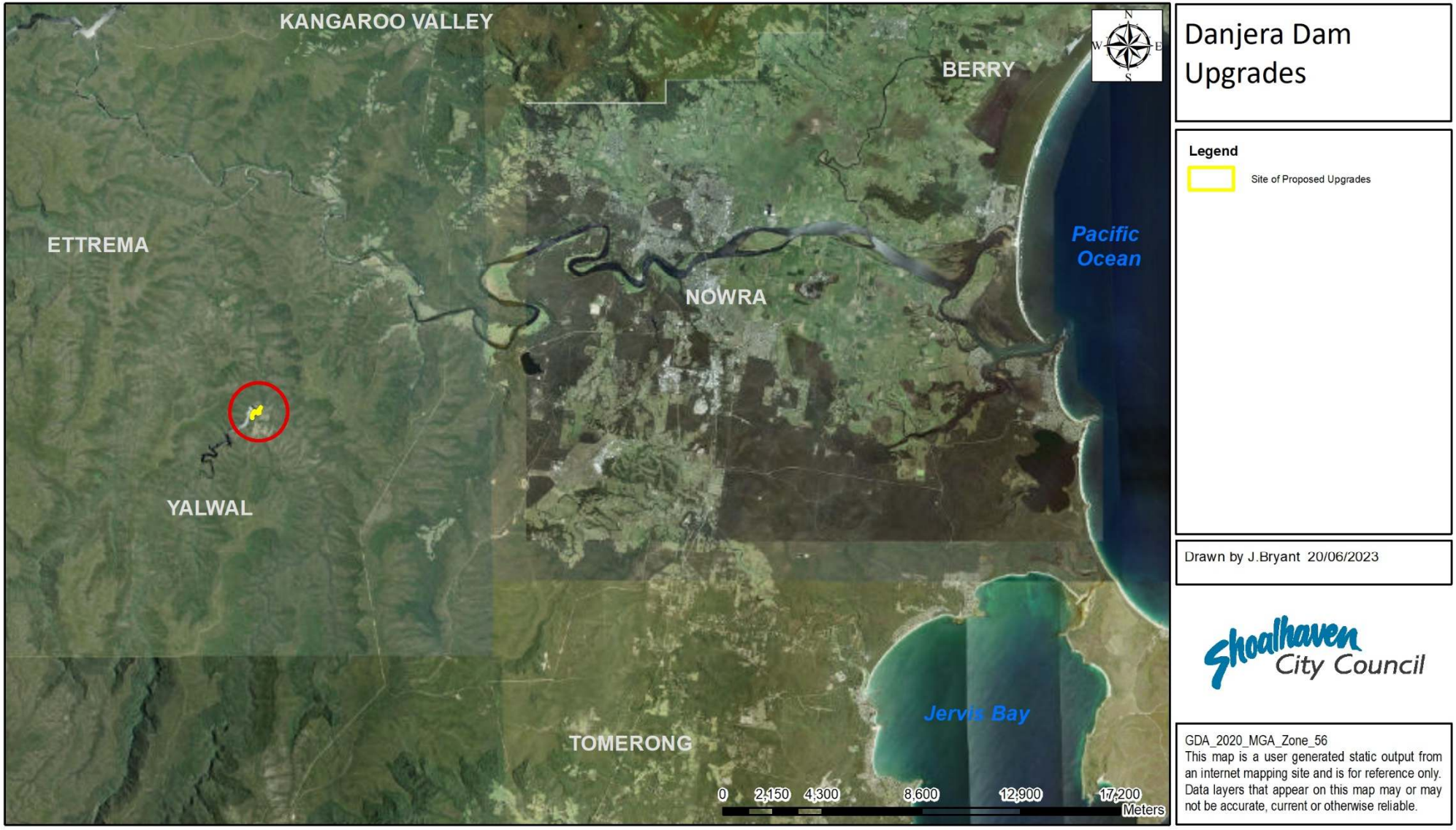


Figure 2. Site of the proposal

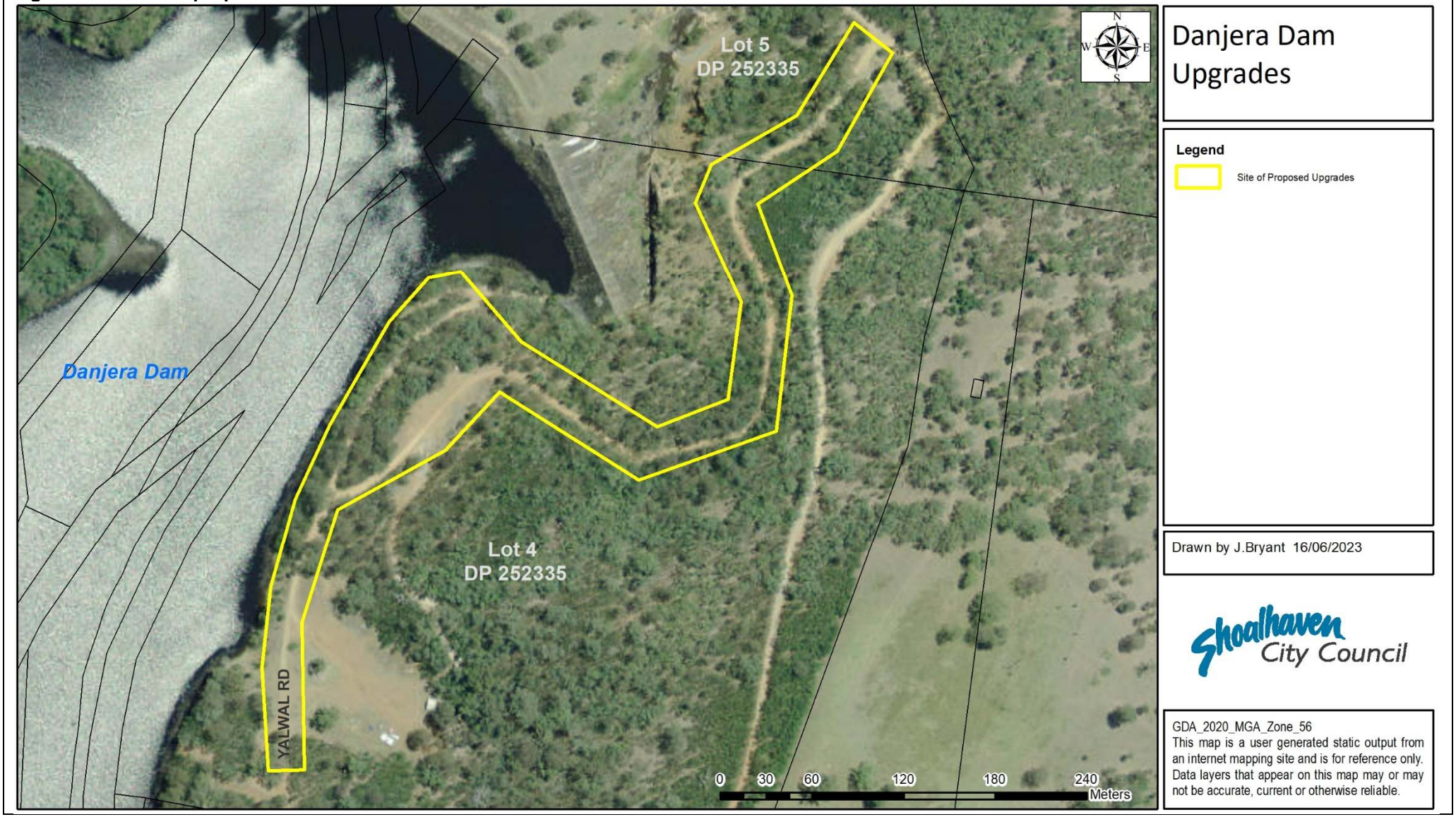


Figure 3. General Arrangement Plan – Recreation Area access road Ch 0-200 m (approx.) (from MIEngineers 2022, Drawing DN190141: C101 (Rev.2))

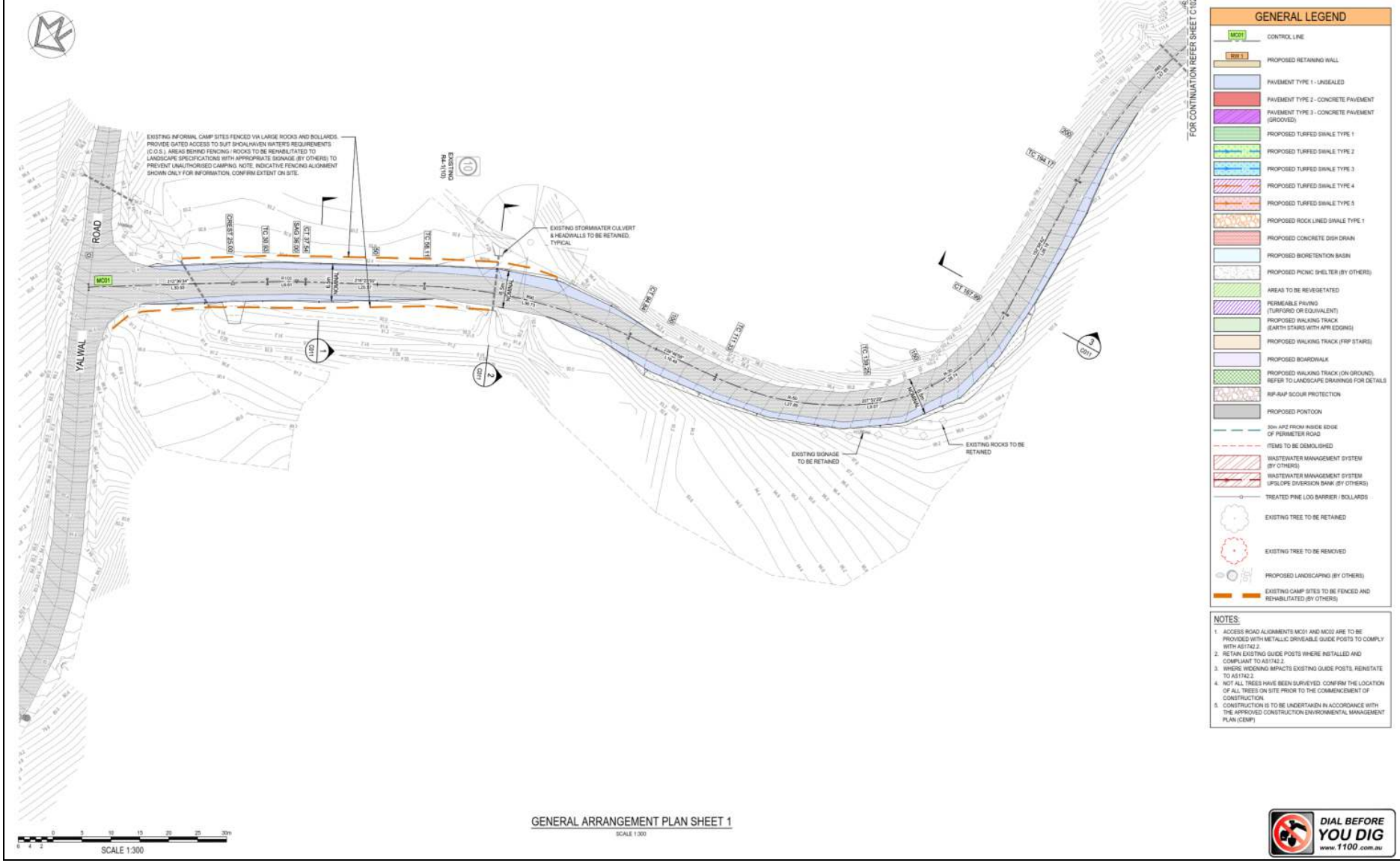


Figure 4. General Arrangement Plan – Recreation Area access road Ch 200-450 m (approx.) (from MIEngineers 2022, Drawing DN190141: C102 (Rev.2))

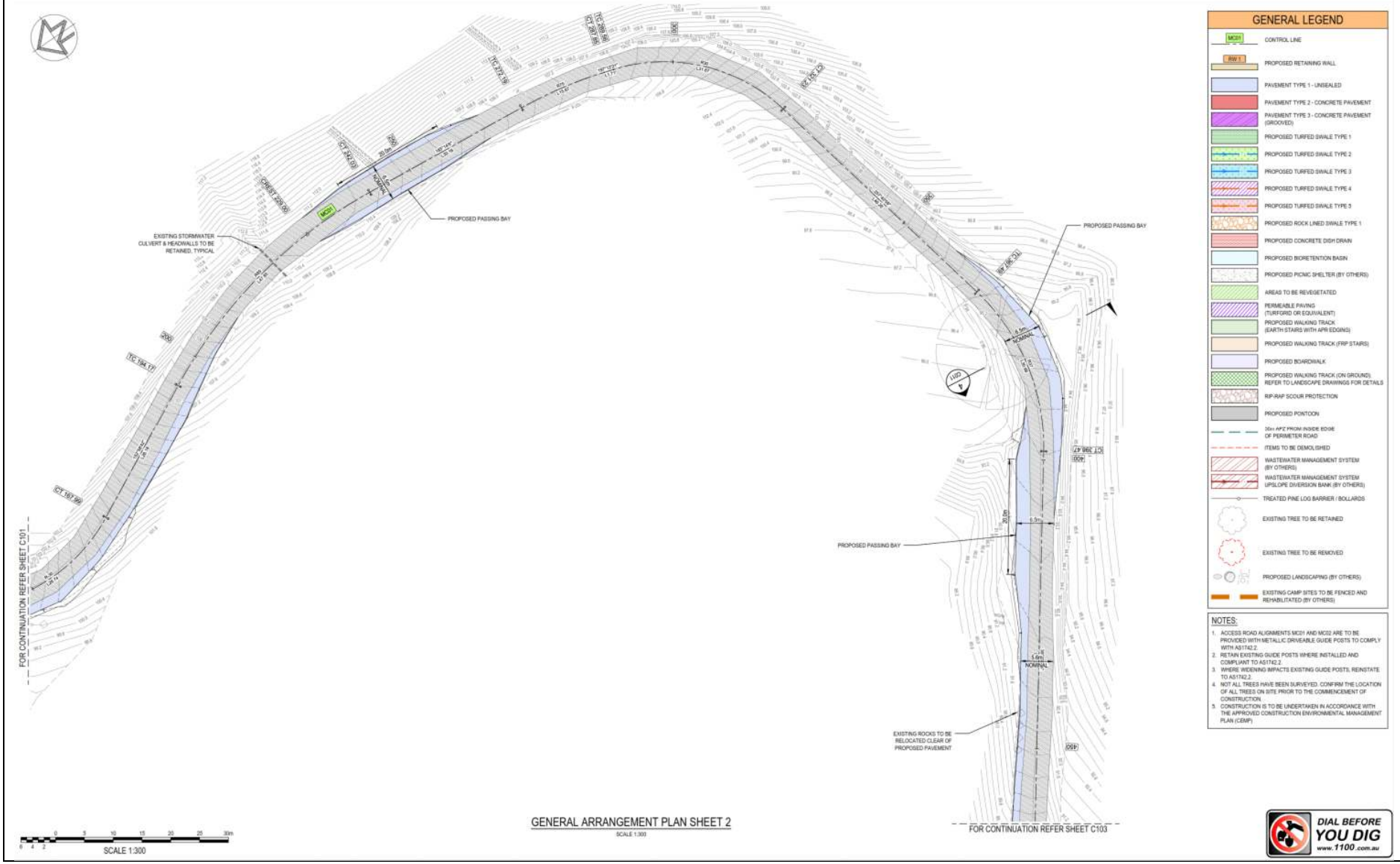


Figure 5. General Arrangement Plan – Recreation Area access road Ch 450-600 m (approx.); proposed carpark; and boat-ramp approach (from MIEngineers 2022, Drawing DN190141: C103 (Rev.2))

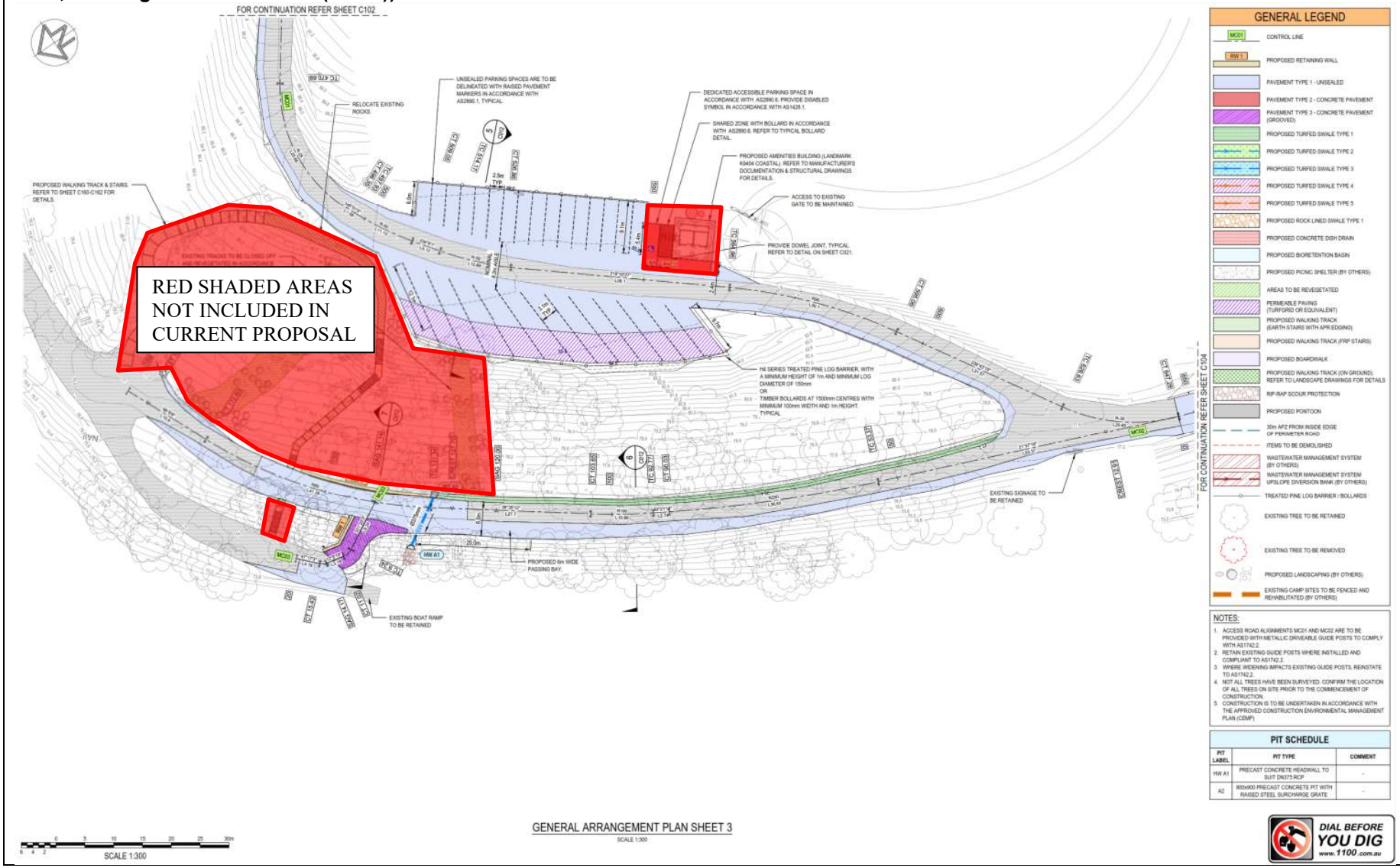
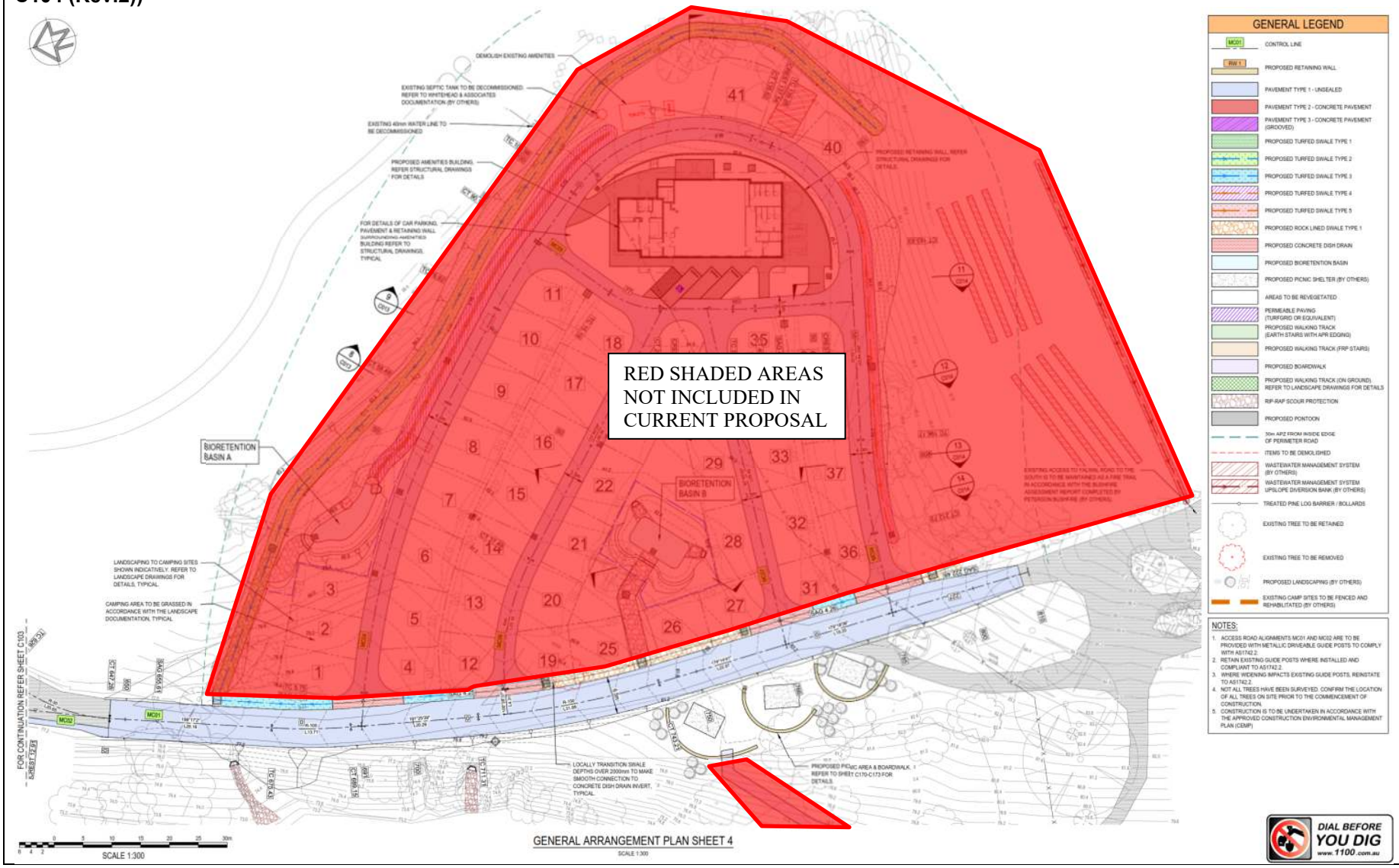


Figure 6. General Arrangement Plan: Recreation Area access road Ch 600-810 m (approx.); and picnic shelters (from MIEngineers 2022, Drawing DN190141: C104 (Rev.2))



2. EXISTING ENVIRONMENT

2.1 Site description

Site investigations were undertaken by a Council Environmental Officer on 1st and 27th June 2023 in consideration of the current proposal. Investigations of the site were also undertaken during November and December of 2018, in association with a BDAR for the previously proposed, more extensive upgrades, and on 8 September 2022 as part of a due diligence assessment for road verge maintenance works.

Investigations involved vegetation and habitat assessment, recording all flora species within and immediately adjacent to the subject site, determination of vegetation communities, targeted survey for potentially occurring threatened flora species (including *Eucalyptus langleyi, Eucalyptus sturgissiana, Hibbertia stricta subsp. furcatula, Prostanthera densa* and *Solanum celatum*) and investigation of habitat availability on site for threatened fauna species and cryptic threatened flora species (including terrestrial orchid *Pterostylis ventricosa*).

The site comprises a network of existing unsealed access roads; a cleared recreation area associated with a camping area; and a boat-ramp on Danjera Dam.

The main access road to the Danjera Dam Recreation Area is referred to as Yalwal Rd, but occurs within Operational Land with no road reserve present within the site.

The main access road is flanked by native forest vegetation (sometimes tending to woodland), generally with some degree of past disturbance evident as relatively young age classes of trees, cleared areas and the presence of exotic invasive flora species or disturbance successional native flora species (e.g. Stinging Nettle and Wattle species).

The main access road leads to and is blocked just beyond, a large, cleared area that in the past has been open to public camping, but is currently open for day-use activities only. This cleared area slopes toward and looks over Danjera Dam, and is surrounded by forest vegetation with disturbed or absent understorey.

The bulk of the cleared area occurs on the high side of the access road. The proposed picnic shelters would occur on gently sloping, cleared land between the main access road and Danjera Dam.

Before reaching the open cleared area, an unsealed informal parking area occurs. Downslope from the parking area, an access road winds back and forth over benches on the slope, to an earth boat-ramp on Danjera Dam.

Photos 1 through 15 show the site, areas affected by the proposal and relevant habitat features.

Photo 1. Access road from Ch. 0 m. Inset: HBT1875 at Ch. 75 m approx. to be protected

Photo 2. Access road at approx. Ch. 140 m showing trees likely to be removed

Photo 3. Access road at approx. Ch. 175 m showing trees likely to be removed

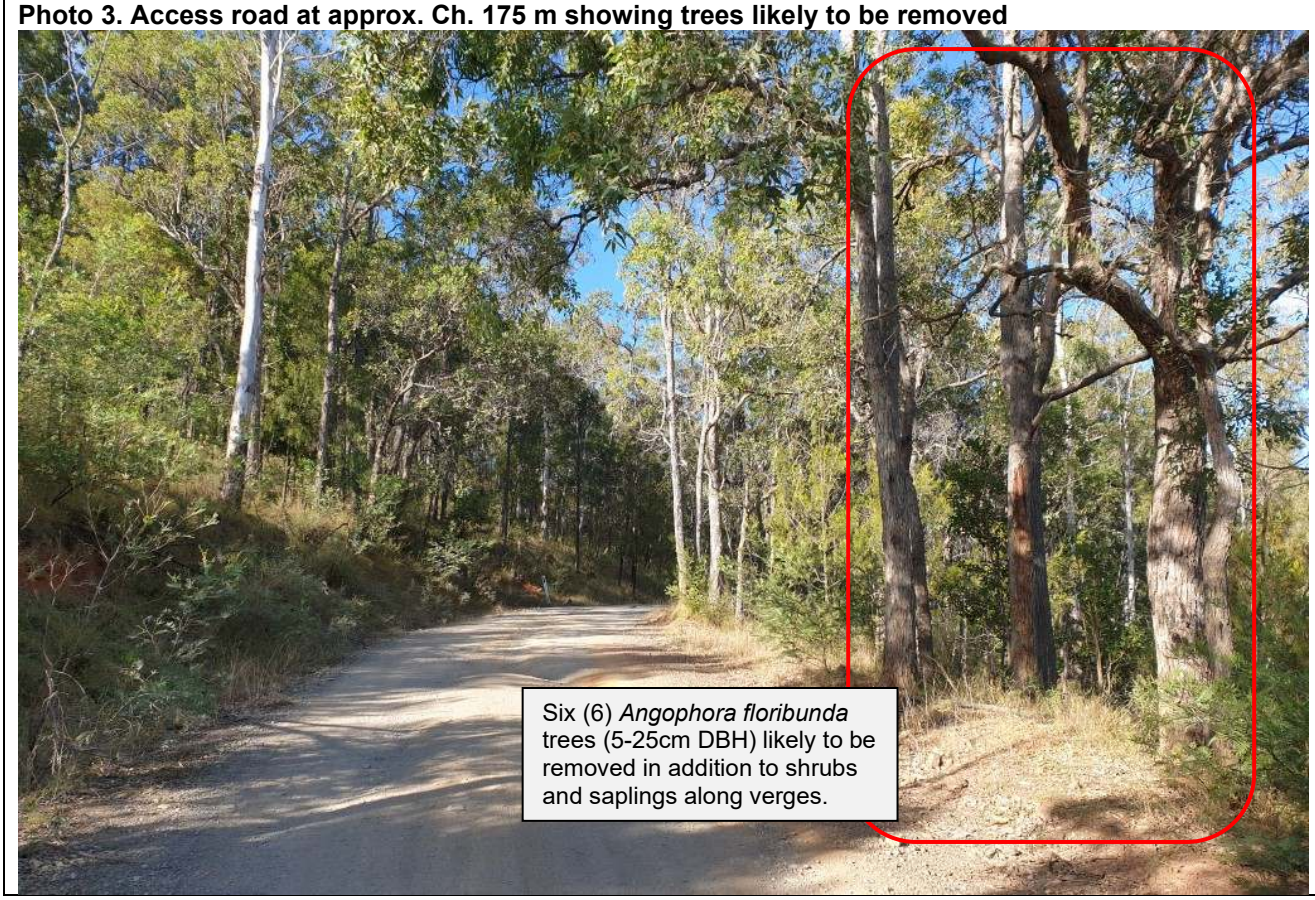


Photo 4. Access road at approx. Ch. 250 m showing trees likely to be removed for passing bay

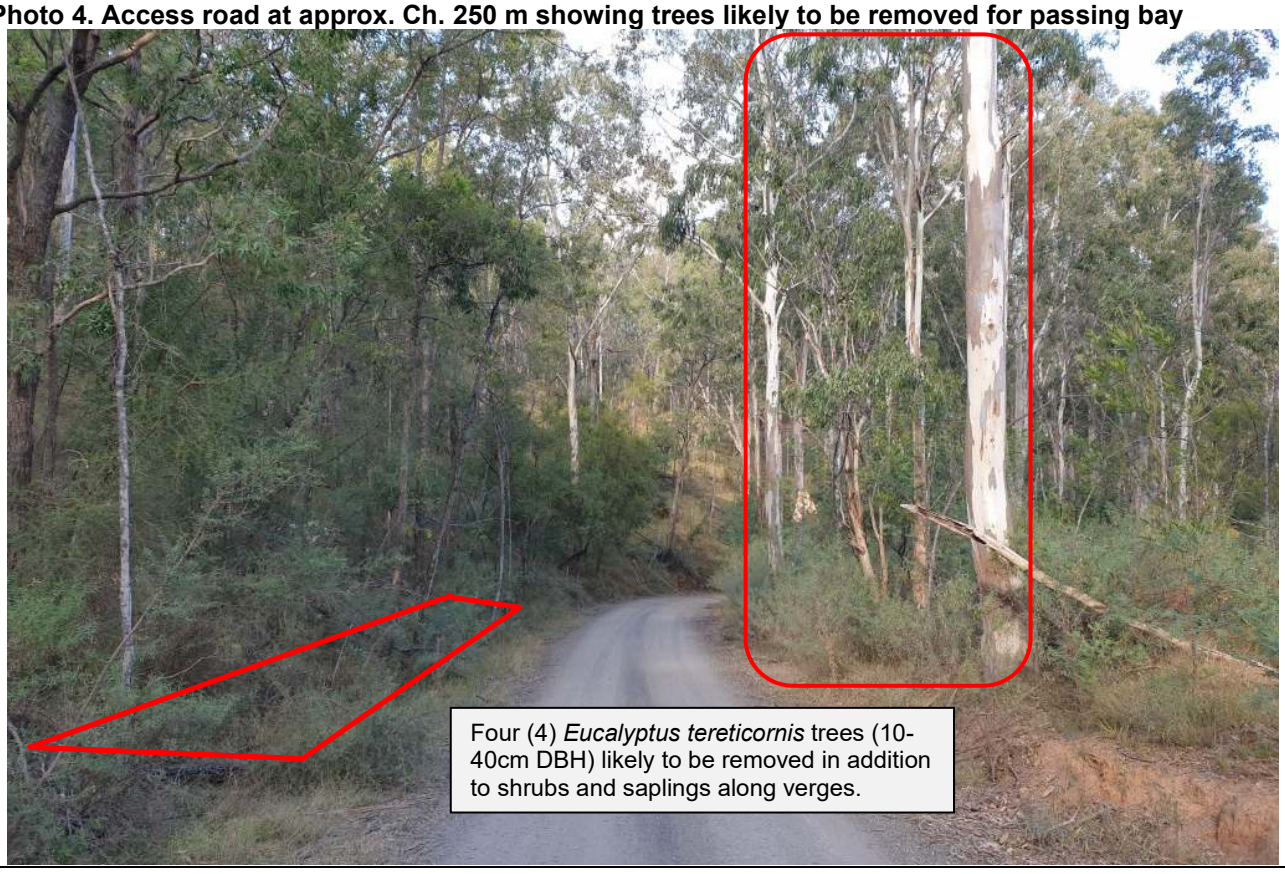


Photo 5. Access road at approx. Ch. 350 m showing Sc02 and HBT1877 (circled in green) to be protected

Photo 6. Access road at approx. Ch. 400 m showing tree likely to be removed

Photo 7. Access road at approx. Ch. 500 m showing existing car parking area

Photo 8. Embankment on lower (western) side of carpark showing likely tree removal

Photo 9. Access road to boat-ramp

Photo 10. Approach to boat-ramp

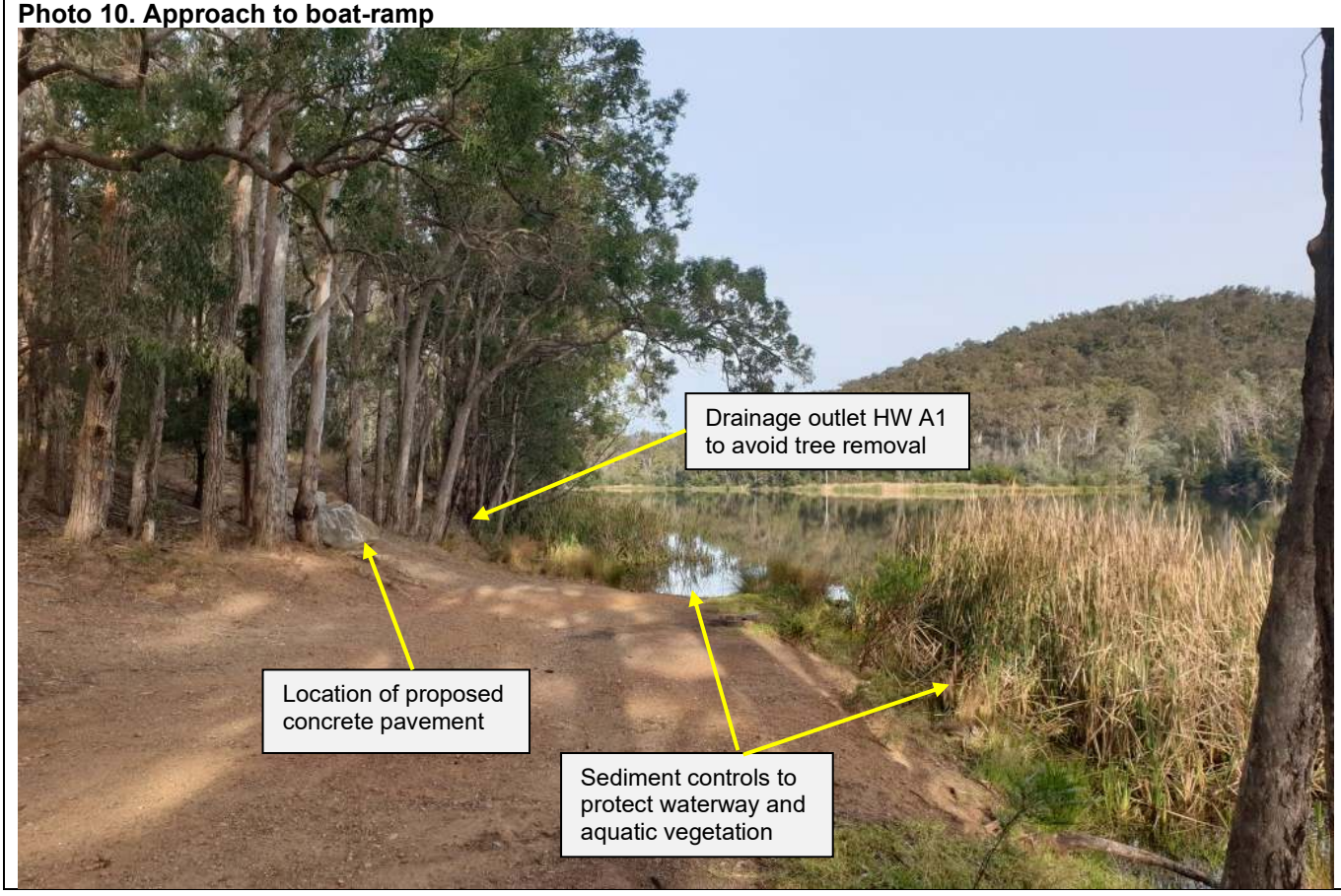


Photo 11. Proposed concrete pavement location, linking to boat-ramp approach

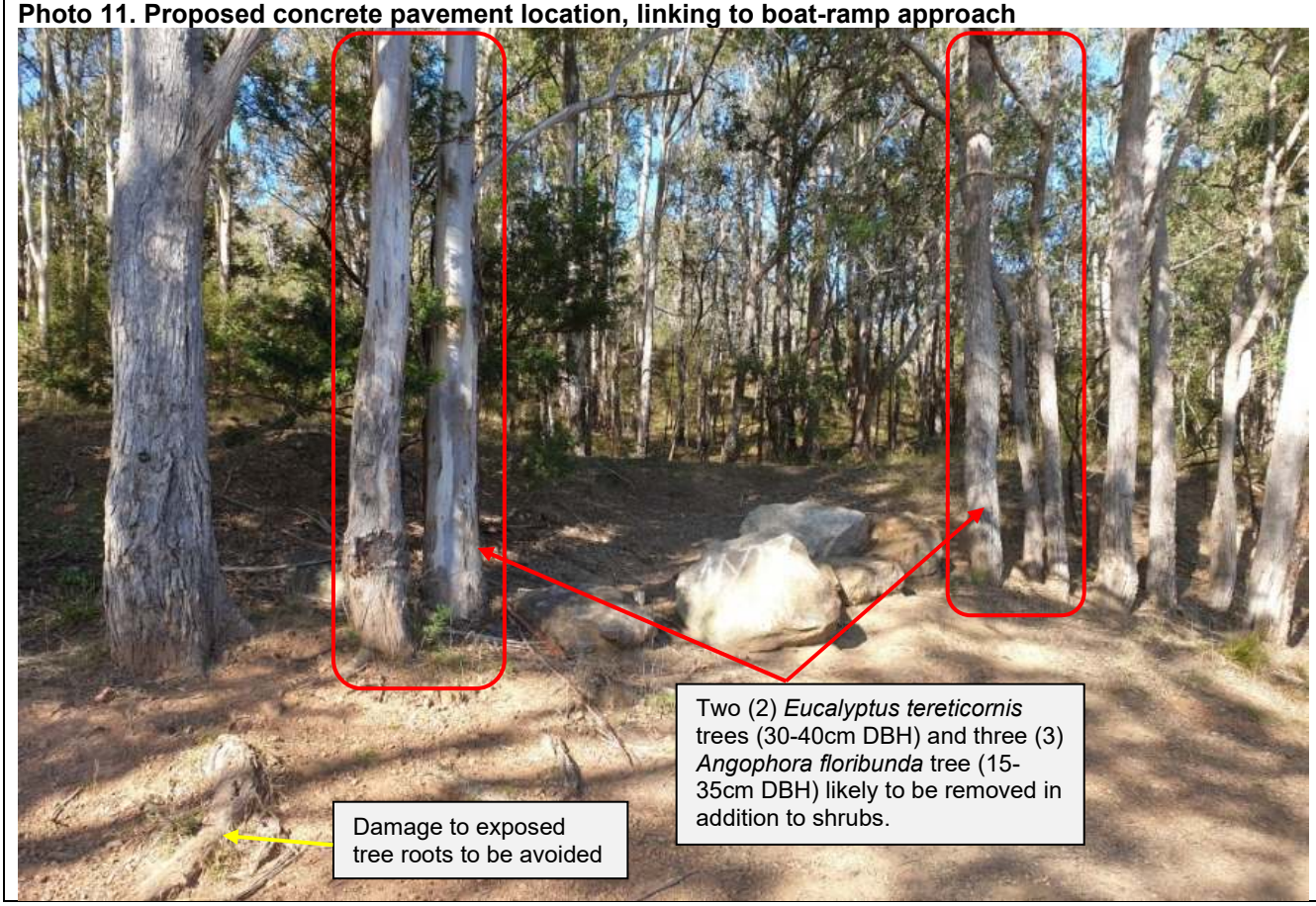


Photo 12. Entrance to camp area facing south (approx.) along access road

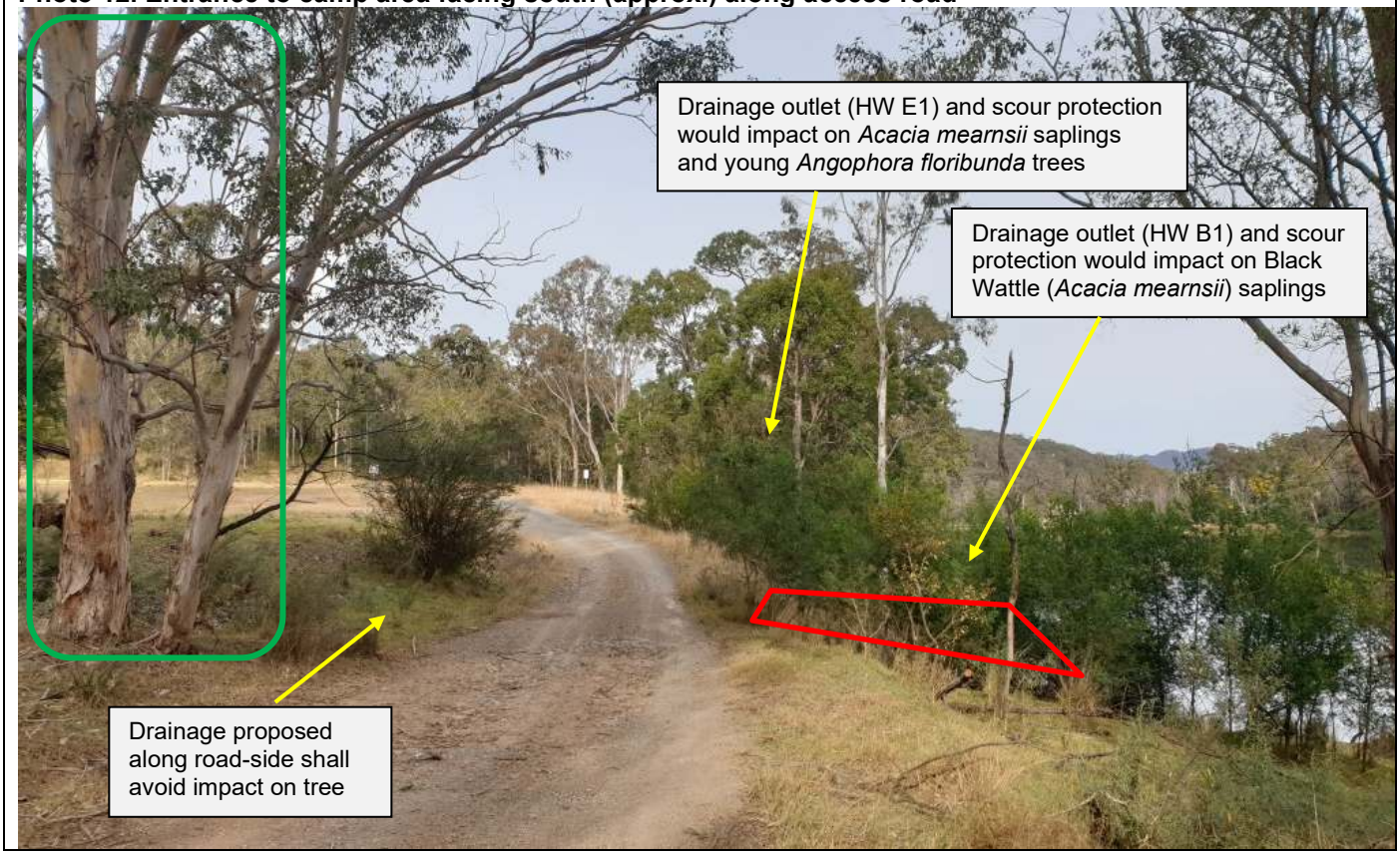


Photo 13. Location of drainage outlet HW E1 and scour protection (facing north approx.)

Photo 14. Cleared, former camping area overlooking Danjera Dam facing north (approx.) along access road

Photo 15. Location of proposed picnic shelters overlooking Danjera Dam

2.2 Habitat and vegetation assessment

Vegetation (NSW Plant Community Type – 2022 revised PCTs) mapped as occurring in proximity to the site (refer to Figure 7) includes:

- PCT3585 Morton Plateau Shrub Forest. This vegetation community is not associated with any Endangered Ecological Community (EEC).
- PCT3447 Shoalhaven Foothills Spotted Gum Forest. This vegetation community is not associated with any Endangered Ecological Community (EEC).
- PCT3258 Sydney Basin Creekflat Blue Gum-Apple Forest. This vegetation community is associated with BC Act listed River-Flat Eucalypt Forest on Coastal Floodplains TEC and Commonwealth EPBC listed River-flat Eucalypt Forest on Coastal Floodplains EEC.
- PCT3493 Southern Highlands Red Gum Forest. This vegetation community is not associated with any BC Act EEC, but is associated with Commonwealth EPBC listed Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion EEC.

The site is predominantly mapped as containing PCT3585, with areas of PCT3447 and PCT3258 occurring adjacent to the site in proximity to the dam.

PCT3585 is described as a mid-height to tall, damp, heathy forest with a tree canopy frequently including *Eucalyptus sieberi*, commonly with *Corymbia gummifera*. The PCT has a dense to mid-dense mid-stratum of heath species which almost always includes *Leptospermum trinervium* and *Bossiaea kiamensis* and the ground layer is comprised of a dense to mid-dense cover of sedges, small ferns and forbs that depend on having periodically damp soils (NSW Government 2023).

During site investigations, no damp heathy forest was found to occur within or in proximity to the site.

PCT3447 is described as being a tall to very tall, dry, shrubby, sclerophyll open forest with a sparse, grassy ground layer found on steep slopes of the Lower Shoalhaven gorge and surrounding tributaries. It typically has a high cover of both *Corymbia maculata* and *Eucalyptus fibrosa*, with a less frequent and sparse cover of *Corymbia gummifera* and *Eucalyptus punctata*, and a sparse mid-stratum of dry shrubs with *Persoonia linearis* almost always present, very frequently with *Daviesia ulicifolia* and commonly *Dillwynia sieberi, Hakea sericea, Acacia ulicifolia* and *Jacksonia scoparia* (NSW Government 2023). Site investigations did not record any of these species.

PCT3258 is described as being a very tall to extremely tall open sclerophyll forest with a sparse mid-stratum of tall acacias and a ground layer of grasses and ferns found on sandy alluvial creek flats in dissected sandstone plateaus mainly in the greater Blue Mountains and recorded locally on creek flats in tributaries of the Shoalhaven River west of Nowra. The tree canopy is variable however very frequently includes *Angophora floribunda* in the canopy or as a small tree. Common eucalypts with a high foliage cover are species from the blue gum eucalypt group, *Eucalyptus deanei* or *Eucalyptus saligna*, occasionally in association with stringybark eucalypts including *Eucalyptus eugenioides*. The mid-stratum is layered, commonly with taller *Acacia parramattensis* or rarely Melaleuca linariifolia, and a sparse lower shrub layer which commonly includes *Breynia oblongifolia*, occasionally with *Bursaria spinosa* and *Persoonia linearis* (NSW Government 2023).

PCT3493 is described as being a tall to very tall sclerophyll open forest with soft-leaved shrubs and a grass and forb-rich ground layer found on isolated volcanic intrusions and shales on the Southern Highlands and surrounding gorges. The tree canopy almost always includes a high cover of *Eucalyptus tereticornis* commonly with *Eucalyptus eugenioides*. Other occasional species include *Angophora floribunda, Eucalyptus punctata* or one of several species from the box eucalypt group including *Eucalyptus moluccana*. The mid-stratum may include a sparse layer of small trees, although species composition is variable. The lower layer of shrubs however almost always includes *Olearia viscidula*, occasionally with other soft-leaved species such as Indigofera australis, *Breynia oblongifolia* and Bursaria spinosa. The mid-stratum also commonly includes one or more of a suite of *Acacia* species, each mostly rarely occurring, of which the most frequent is *Acacia parramattensis*. The ground layer is a mid-dense cover of forbs, grass and climbers, almost always including Desmodium varians, very frequently *Dichondra repens, Microlaena stipoides* and *Cheilanthes sieberi*, commonly with *Solanum prinophyllum, Einadia hastata, Clematis aristata* and *Geitonoplesium cymosum* (NSW Government 2023). PCT3493 is mapped as occurring as small pockets in the vicinity of the site.

Site investigations found that vegetation over the site was characterised as medium to tall sclerophyll forest (in some areas tending to woodland) with a canopy almost exclusively featuring *Angophora floribunda* (Rough-barked Apple) and *Eucalyptus tereticornis* (Forest Red Gum) with occasional *E.eugenioides* (Thin-leaved Stringybark); a shrubby to grassy understorey with the mid-storey strongly dominated by *Olearia viscidula* (Wallaby Weed), and commonly including *Acacia mearnsii* (Black Wattle), *Bursaria spinosa* (Blackthorn), *Austrostipa ramosissima* (Stout Bamboo Grass) and *Dodonaea viscosa* (Sticky Hop Bush); and groundcover dominated by grasses, featuring *Entolasia stricta* (Wiry Panic Grass) and other native grasses including *Eragrostis brownii* (Brown's Lovegrass), *Themeda triandra* (Kangaroo Grass) and *Aristida* spp. (Speargrass).

Flora species recorded over the site during current investigations are listed in table 2.

Table 2. Flora species recorded within the site

Canopy species *Allocasuarina littoralis* (Black She-oak) *Angophora floribunda* (Rough-barked Apple) *Eucalyptus eugenioides* (Thin-leaved Stringybark) *Eucalyptus tereticornis* (Forest Red Gum) Mid-storey Species *Acacia binervata* (Two-veined Hickory) *Acacia filicifolia* (Fern-leaved Wattle) *Acacia mearnsii* (Black Wattle) *Austrostipa ramosissima* (Stout Bamboo Grass) *Bursaria spinosa* (Blackthorn) *Dodonaea viscosa* subsp. *angustifolia* (Sticky Hop Bush) *Exocarpos cupressiformis* (Cherry Ballart) *Melicytus dentatus* (Tree Violet) *Myrsine variabilis* *Olearia viscidula* (Wallaby Weed) *Trema tomentosa* (Poison Peach)	Groundcover Species *Aristida* spp. (Speargrass). *Carex longebrachiata* (Sedge) *Clematis aristata* (Old Man's Beard) *Commelina cyanea* (Scurvey Weed) *Entolasia stricta* (Wiry Panic Grass) *Eragrostis brownii* (Brown's Lovegrass) *Gahnia aspera* (Rough Saw-sedge) *Geranium* spp. (Cranesbill) *Leucopogon juniperinus* (Prickly Beard Heath) *Lobelia purpurascens* (Whiteroot) *Microlaena stipoides* (Weeping Meadow Grass) *Oplismenus aemulus* (Basket Grass) *Oplismenus imbecillis* (Basket Grass) *Stephania japonica* () *Themeda triandra* (Kangaroo Grass) *Urtica incisa* (Stinging Nettle)

The vegetation present was found to be relatively consistent throughout the site, with the dominant canopy tree changing between *Angophora floribunda* (Rough-barked Apple) and *Eucalyptus tereticornis* (Forest Red Gum).

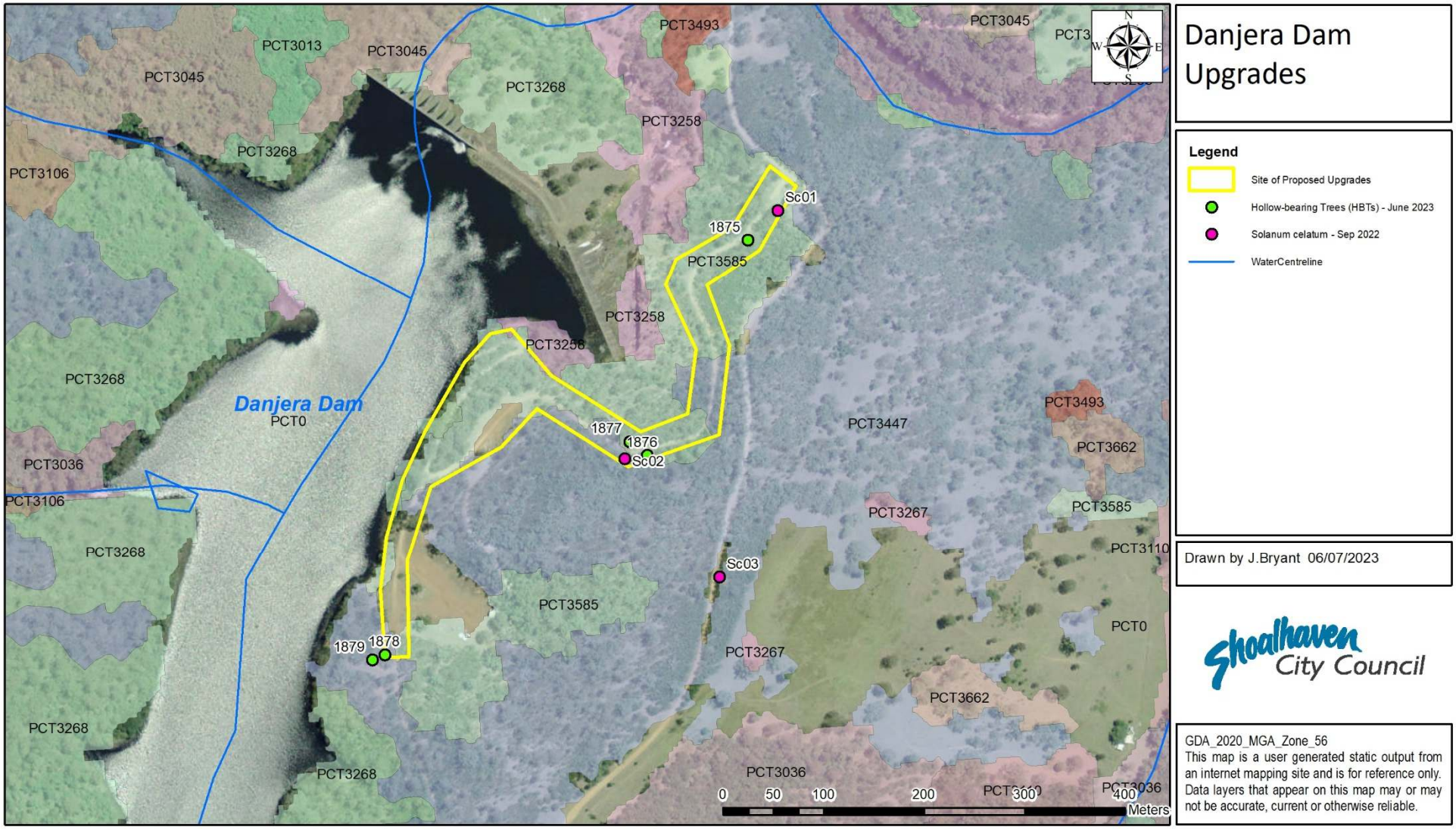
The height (medium to tall, not very tall) and structure of the sclerophyll forest vegetation with canopy dominated by *Angophora floribunda* and *Eucalyptus tereticornis* and the mid-storey strongly dominated by the medium sized shrub *Olearia viscidula* (Wallaby Weed), with groundcover dominated by grasses, fits most closely with PCT3493 Southern Highlands Red Gum Forest. Areas where *Angophora floribunda* is strongly dominant may suggest influence from PCT3258 Sydney Basin Creekflat Blue Gum-Apple Forest, however the height, structure and understorey vegetation remain fairly consistent, so for the purpose of this assessment, vegetation throughout the site is considered to be PCT3493.

Disturbance was evident through much of the site, particularly around camping areas where harvesting of smaller trees for campfires was apparent.

It is unclear to what extent the structural formations of existing vegetation are natural, or a result of historical land management and ongoing disturbance.

Aquatic vegetation along Danjera Dam foreshore in proximity to the site included *Typha orientalis* (Cumbingi)*, Juncus usitatus* (Rush)*, Schoenoplectiella mucronata, Eleocharis sphacelate* (Spike Sedge), with exotic *Cenchrus clandestinus* (Kikuyu grass) occurring along the embankment.

Figure 7. Plant community types (PCTs – eastern NSW 2022 revision) mapped as occurring in proximity to the site and habitat features and threatened flora species recorded during site surveys



2.3 Threatened species, habitat resources and targeted surveys

Targeted survey through areas of suitable habitat was undertaken for *Eucalyptus langleyi, Eucalyptus sturgissiana, Hibbertia stricta subsp. furcatula, Prostanthera densa* and *Solanum celatum.* Habitat assessment was undertaken for threatened terrestrial orchid *Pterostylis ventricosa*.

Solanum celatum was previously recorded in close proximity to the site during targeted surveys associated with the BDAR (SCC 2020). This species tends to die back in cooler months and can remain undetectable outside of the species' flowering period.

As part of the current investigations, additional survey for *S.celatum* was carried out while the species was in flower and readily detectable.

Two *S.celatum* plants (labelled Sc01 and Sc02 on Figure 7) were detected within the site in proximity to the main access track. These locations shall be identified and delineated as protected areas during works.

No other threatened flora species were detected within the site.

Comprehensive targeted survey for *Pterostylis ventricosa* through potential habitat was previously undertaken by the author of this REF and another Council environmental officer, following confirmation of species being in flower on 5 May 2020, as part of investigations for the BDAR (SCC 2020). The species was not detected during these surveys. Further targeted survey for the species was not considered necessary in the current investigations, as suitable habitat for the species does not occur in areas that would be impacted by the current proposal. Additionally, the BDAR had ruled out *P.ventricosa* as a candidate species following targeted survey and conclusion that suitable habitat for the species was not present (SCC 2020).

Five (5) hollow-bearing trees (HBTs – labelled HBT1875 through 1879 on Figure 7) occurring within and immediately adjacent to the site were recorded and mapped. Refer to Figure 7 above. HBT1875 and HBT1877 occur immediately adjacent to the main access road where works are proposed, and these trees would be delineated and protected during works. Other recorded HBTs are beyond the areas of works and are unlikely to be at risk of impact.

Note that the current investigations were focused on the footprint of the current proposal only. Numerous additional HBTs and *S.celatum* plants were recorded over areas affected by – and in proximity to – the footprint of the earlier proposal that was the subject area of the BDAR (SCC 2020). To avoid confusion, these records are not included in the current mapping. Refer to the BDAR if this information is required.

Table 3. Habitat features and threatened species recorded within and in proximity to the site during surveys (locations approximate, taken with hand-held GPS)

Label	Coordinates GDA2020 MGA56		Description
	Easting (m)	Northing (m)	
HBT1875	261410	6132758	Stag tree with multiple hollows: 10cm, 15cm, 20cm, 30cm
HBT1876	261309	6132544	Tree with hollow: 10cm
HBT1877	261292	6132557	Tree with multiple hollows: 15cm, 15cm, 20cm
HBT1878	261049	6132345	Tree with multiple hollows: 15cm, 20cm
HBT1879	261036	6132340	Stag tree with multiple hollows: 3cm, 10cm
Sc01	261440	6132788	*Solanum celatum* shrub
Sc02	261286	6132541	*Solanum celatum* shrub

No Glossy Black Cockatoo (GBC, *Calyptorhynchus lathami*) feed trees (e.g. *Allocasuarina littoralis* with characteristic chewed cones) or sap feed trees with glider scars were recorded in three locations within the site.

No burrows or nests were observed within the footprint of proposed works.

No other signs of potential threatened fauna use of the site (e.g. bandicoot diggings, owl white-wash or other threatened fauna scats) were observed.

As all significant habitat features (including HBTs) would be retained and vegetation removal would not impact on important fauna habitat, food sources or movement corridors, targeted nocturnal fauna surveys were not considered necessary to inform the REF and were therefore not undertaken.

Native vegetation through the site was considered consistent with PCT3493 Southern Highlands Red Gum Forest. This vegetation community is not associated with any EEC listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), but is associated with Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion EEC listed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act* (EPBC Act).

An assessment of the potential for NSW threatened flora and fauna species occurring on-site or otherwise being impacted on by the proposed activity was undertaken (refer to Appendix B).

3. ASSESSMENT OF LIKELY IMPACTS ON THE ENVIRONMENT

3.1 Impacts associated with the proposed activity

The following disturbance and direct impacts are anticipated (refer also to Figure 8):

- Native vegetation removal:
    - Removal of up to 35 trees ranging from 10cm to 50cm diameter at breast height (DBH), and native groundcover / shrubs to approx. 875 m^2 total canopy coverage, for road upgrade, construction of concrete pavement connecting to boat ramp approach, and construction of drainage outlet HWE1 and associated scour protection. No hollow-bearing trees or significant habitat or feed trees would be removed or otherwise impacted on. Replacement planting of endemic trees in suitable areas is prescribed as a mitigation measure.

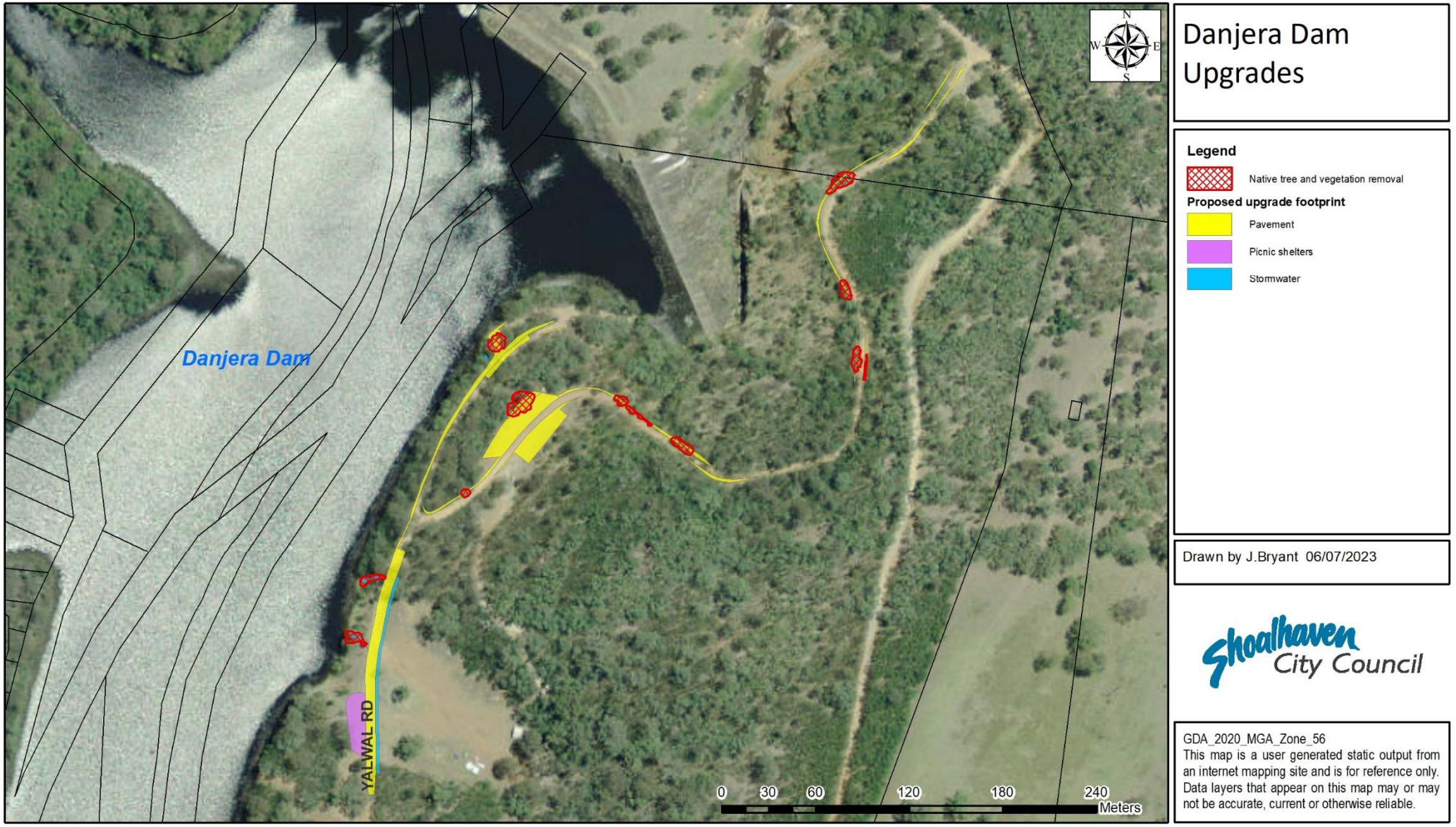
      Other areas within the disturbance footprint include moderately to highly disturbed and modified areas within the existing road footprint and managed grass areas, which contain native grass species, but are not regarded as native vegetation for the purpose of this assessment.
- Earthworks:
    - Excavation for road pavement reconstruction along main access road and boat ramp access road) – generally for 200 mm basecourse over compacted existing subgrade; and construction of swale drains.
    - Excavation of stormwater pipe beneath access roads and construction of 3 drainage outlets with scour protection (2 below camping area and 1 near boat ramp).
    - Excavation for construction of concrete pavement ramp connection to boat-ramp approach, comprising 150 mm deep reinforced concrete over 100 mm compacted road base over compacted existing subgrade. Interface of concrete ramp to boat-ramp approach to include a 300 mm wide thickened edge to a total depth of 500 mm.
    - Excavation for concrete slabs and connecting paths for picnic shelters.
    - Fill for road construction and levelling of picnic shelter locations.

Other potential impacts on the environment, including indirect impacts have been considered, including:

- Impacts on threatened species;
- Impacts on indigenous and non-indigenous heritage;
- Impacts on water quality, the riparian zone and key fish habitat;
- Impacts associated with flood liable land;
- Impacts associated with acid sulfate soils

Each of these is discussed below.

Figure 8. Approximate footprint of proposed upgrades with likely tree and vegetation removal



3.2 Threatened species impact assessment (NSW)

Section 1.7 of the EP&A Act 1979 applies the provisions of Part 7 of the NSW *Biodiversity Conservation Act 2016* (BC Act) and Part 7A of the *NSW Fisheries Management Act 1994* (FM Act) that relate to the operation of the Act in connection with the terrestrial and aquatic environment. Each are addressed below.

3.2.1 Part 7A *Fisheries Management Act 1994*

Part 7A relates to threatened species conservation.

There are no threatened species listed under the FM Act which are mapped as occurring in proximity to the site[1], or likely to occur in proximity to the site.

No works or vehicle movement would occur on or near waterways or riparian corridors, and works are unlikely to result in erosion of sediment or other pollution affecting waterways.

No marine vegetation or threatened marine fauna would be directly impacted on by the proposed activity.

The proposed activity is therefore unlikely to result in any impact on threatened entities or their habitat; or contribute significantly to key threatening processes, as listed under Part 7A of the Act.

3.2.2 Part 7 *Biodiversity Conservation Act 2016*

An assessment of the potential for NSW threatened flora and fauna species occurring on-site or otherwise being impacted on by the proposed activity was undertaken (refer to Appendix B). The following threatened species or endangered ecological communities are known to occur on-site or are considered to have some potential to occur on-site or be otherwise impacted on by the proposed activity:

- *Solanum celatum*
- Rosenberg's Goanna *Varanus rosenbergi*
- Glossy Black-cockatoo *Calyptorhynchus lathami*
- Little Lorikeet *Glossopsitta pusilla*
- White-bellied Sea-Eagle *Haliaeetus leucogaster*
- Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion
- River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Section 7.3 of the BC Act provides a 'five-part' test to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. Each Part is addressed below:

Part A - In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the lifecycle of the species such that a viable local population of the species is likely to be place at risk of extinction.

[1] Fisheries NSW Spatial Data Portal https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal

Solanum celatum

Solanum celatum is a shrub to 1 - 2.5 m high, with grey to white branches which are densely covered with hairs and sparsely armed with prickles. The species grows in rainforest clearings, or in wet sclerophyll forest, normally recorded in disturbed margins and clearings. It is restricted to an area from Wollongong to just south of Nowra, and west to Bungonia. The majority of records are prior to 1960 and the majority of populations are considered likely to have been lost to clearing. Flowers (August to October) are purple and have contrasting orange stamens. Leaves are elliptical to lanceolate, without lobes, 4.6 - 12.5 cm long, 1.5 - 3.5 cm wide, with the upper leaf surface grey-green and lower leaf surface yellowish-white. The fruit is a green, smooth, globular berry, 13 - 16 mm diameter. *Solanum celatum* is a fire sensitive obligate seeder, with adult plants killed by fire and recruitment occurring from a soil stored seed bank (OEH 2018a).

Solanum celatum was previously recorded in close proximity to the site during targeted surveys associated with the BDAR (SCC 2020). This species tends to die back in cooler months and can remain undetectable outside of the species' flowering period.

Photo 16. *Solanum celatum* photographed on site while in flower

As part of the current investigations, additional survey for *S.celatum* was carried out while the species was in flower and readily detectable.

Two *S.celatum* plants (labelled Sc01 and Sc02 on Figure 7) were detected within the site in proximity to the main access track.

No *S.celatum* occurs within the footprint of the proposed works.

The locations of Sc01 and Sc02 shall be identified and delineated as protected areas during works to ensure that the plants are not impacted on accidentally.

No direct impacts on *S.celatum* are likely to occur as a result of the proposal.

No indirect impacts such as soil compaction, sediment movement, or changes to hydrology or microclimate as a result of the proposal would occur in proximity to *S.celatum*.

It is therefore considered unlikely that *Solanum celatum* would be impacted by the proposed works and the proposed activity is unlikely to have an adverse effect on the lifecycle of the species such that a viable local population of either of these species is likely to be place at risk of extinction.

Rosenberg's Goanna (*Varanus rosenbergi*)

Rosenberg's Goanna reaches up to 1.5 metres in length. It is dark grey above, finely spotted with yellow or white, and with paired, blackish cross-bands from the neck to the end of the tail. The pairs of narrow, regular bands around the entire length of the tail is a distinguishing feature, separating it from the more common Lace Monitor *V. varius*, which has very wide, light and dark bands towards the tip of the tail. Rosenberg's Goanna also has distinct, finely barred "lips", whereas the Lace Monitor has far broader bands around the snout. A pale-edged black stripe runs from the eyes, across the ears and onto the neck. Juveniles are brighter in colour, having an orange wash on the sides of the face and body. Rosenberg's Goanna occurs on the Sydney Sandstone in Wollemi National Park to the north-west of Sydney, in the Goulburn and ACT regions and near Cooma in the south. There are records from the South West Slopes near Khancoban and Tooma River. It also occurs in South Australia and Western Australia. Rosenberg's Goanna is found in heath, open forest and woodland. The species is associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat. It feeds on carrion, birds, eggs, reptiles and small mammals. Shelters are in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens. The species is generally slow moving, but runs along the ground when pursued (as opposed to the Lace Monitor, which climbs trees). On the tablelands it is likely only to be seen on the hottest days. This goanna lays up to 14 eggs in a termite mound; the hatchlings dig themselves out of the mounds (OEH 2022e).

Potential habitat for Rosenberg's Goanna occurs within and in proximity to the site.

Lace Monitors were recorded during previous site investigations associated with the BDAR (SCC 2020), but Rosenberg's Goanna was not observed.

No termite mounds were noted within the site during investigations.

No termite mounds, hollow logs, rock crevices, burrows or other important habitat for the species would be impacted by the proposal. No substantial impacts on potential prey species or habitat are likely.

Impact on vegetation would be limited to existing disturbed edges and would not result in fragmentation of habitat or impacts on movement corridors.

No barriers to movement would be introduced that might affect this species.

It is therefore considered unlikely that Rosenberg's Goanna would be impacted by the proposed works and the proposed activity is unlikely to have an adverse effect on the lifecycle of the species such that a viable local population of either of these species is likely to be place at risk of extinction.

Threatened parrots and cockatoos: Glossy Black-cockatoo (*Calyptorhynchus lathami*) and Little Lorikeet (*Glossopsitta pusilla*)

The Glossy Black-cockatoo (*Calyptorhynchus lathami*) inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of She-oak occur. Black She-oak (*Allocasuarina littorali*s) and Forest She-oak (A. torulosa) are important foods. Inland populations feed on a wide range of She-oaks, including Drooping She-oak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping She-oak, but also recorded in open woodlands dominated by Belah (*Casuarina cristat*a). The species feeds almost exclusively on the seeds of several species of she-oak (Casuarina and Allocasuarina species), shredding the cones with the massive bill. Glossy Black-cockatoo is dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May (OEH 2022a). Potential nest trees contain hollows that are; (i) at least 8 m above the ground; and (ii) in stems with a diameter of at least 30 cm; and (iii) hollow diameter is at least 15 cm; and (iv) stem angle is at least 45 degrees, and may be near-vertical or vertical (NSW Government 2022).

The Little Lorikeet forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. The species feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards. The Little Lorikeet is gregarious, travelling and feeding in small flocks (<10), though often with other lorikeets. Flocks numbering hundreds are still occasionally observed and may have been the norm in past centuries. The species roosts in treetops, often distant from feeding areas. Nests are in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina. The nesting season extends from May to September. In years when flowering is prolific, Little Lorikeet pairs can breed twice, producing 3-4 young per attempt. However, the survival rate of fledglings is unknown (OEH 2022c).

Potential foraging habitat (i.e. *Allocasuarina littoralis*) for Glossy Black Cockatoo occurs scattered rarely over vegetated parts of the site, however, no evidence of feeding (crushed cones) was observed. No *A.littoralis* occurs in the footprint of proposed disturbance.

Potential foraging habitat (i.e. Eucalypt and Angophora trees) for Little Lorikeet occurs throughout vegetated parts of the site.

Suitable nesting habitat for each of these birds is available in hollow-bearing trees present within and in proximity to the site.

Neither of these species were observed within the site during targeted or general surveys associated with the BDAR (SCC 2020) or current investigations.

The proposal would involve removal of approximately 35 Eucalypt and Angophora trees from existing, disturbed edges and would not result in fragmentation of habitat or impacts on movement corridors.

Extensive suitable habitat for these species occurs within Moreton National Park and forested Crown Land which is contiguous with the site. The area of vegetation removal required as part of the proposal would be negligible in the context of surrounding, contiguous vegetation.

No *Allocasuarina littoralis* trees would be removed or otherwise impacted on.

No hollow-bearing trees would be removed or otherwise impacted on.

No barriers to movement would be introduced that might affect these species.

These species are highly mobile and unlikely to be affected in any way by the undertaking of works or the proposed upgrades.

It is therefore considered unlikely that the Glossy Black Cockatoo and Little Lorikeet would be impacted by the proposed works and the proposed activity is unlikely to have an adverse effect on the lifecycle of the species such that a viable local population of either of these species is likely to be place at risk of extinction.

White-bellied Sea-Eagle (*Haliaeetus leucogaster*)

The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. It occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). The species feeds mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. It hunts its prey from a perch or whilst in flight (by circling slowly, or by sailing along 10–20 m above the shore). Prey is usually carried to a feeding platform or (if small) consumed in flight, but some items are eaten on the ground. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as ‘guard roosts’. Nests are large structures built from sticks and lined with leaves or grass. Typically, two eggs are laid between June and September with young birds remaining in the nest for 65-70 days. The White-bellied Sea-Eagle may be solitary, or live in pairs or small family groups consisting of a pair of adults and dependent young. (OEH 2019)

Suitable foraging habitat exists for White-bellied Sea Eagle over the dam, in proximity to the site, and potential nesting habitat occurs in within taller forest areas.

This species was not observed within the site during targeted or general surveys associated with the BDAR (SCC 2020) or current investigations.

No large stick nests were observed in trees during current or previous site investigations.

The proposal would involve removal of approximately 35 Eucalypt and Angophora trees from existing, disturbed edges and would not result in fragmentation of habitat or impacts on movement corridors. No suitably large trees for nesting of White-bellied Sea-Eagle would be removed.

Extensive suitable habitat for these species occurs within Moreton National Park in proximity to Danjera Dam, contiguous with the site. The area of vegetation removal required as part of the proposal would be negligible in the context of surrounding, contiguous vegetation.

No barriers to movement would be introduced that might affect these species.

No active nests shall be removed.

The species is highly mobile and unlikely to be affected in any way by the undertaking of works or the proposed upgrades.

It is therefore considered unlikely that White-bellied Sea Eagle would be impacted by the proposed works and the proposed activity is unlikely to have an adverse effect on the lifecycle of the species such that a viable local population of either of these species is likely to be place at risk of extinction.

Part 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***
- ***(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***

Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion

Illawarra Lowlands Grassy Woodland occurs on relatively gently sloping to undulating lands less than about 200 m elevation on Berry Siltstone, Budgong Sandstone and Quaternary alluvium. This community comprises vegetation types that occupy the Illawarra coastal plain and escarpment foothills. Characteristic tree species in the Illawarra Lowlands Grassy Woodland are *Eucalyptus tereticornis, Eucalyptus eugenioides, Eucalyptus longifolia, Eucalyptus bosistoana* and *Melaleuca decora*. The understorey is not necessarily grassy as moist forest vegetation types are also included within this broad community. Common shrub species include *Acacia mearnsii* and *Dodonaea viscosa* subsp. *angustifolia* (OEH 2022b; NSW Scientific Committee 2011a).

River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Riverflat Eucalypt Forest is found on the river flats of the coastal floodplains, associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. It generally occurs below 50 m elevation, but may occur on localised river flats up to 250 m above sea level. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. While the composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include *Eucalyptus tereticornis* (forest red gum)*, E. amplifolia* (cabbage gum), *Angophora floribunda* (rough-barked apple) and *A. subvelutina* (broad-leaved apple). *Eucalyptus baueriana* (blue box), *E. botryoides* (bangalay) and *E. elata* (river peppermint) may be common south from Sydney, *E. ovata* (swamp gum) occurs on the far south coast, *E. saligna* (Sydney blue gum) and *E. grandis* (flooded gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain. A layer of small trees may be present, including *Melaleuca decora, M. styphelioides* (prickly-leaved teatree), *Backhousia myrtifolia* (grey myrtle), *Melia azaderach* (white cedar), *Casuarina cunninghamiana* (river oak)

and *C. glauca* (swamp oak). Scattered shrubs include *Bursaria spinosa*, *Solanum prinophyllum, Rubus parvifolius, Breynia oblongifolia, Ozothamnus diosmifolius, Hymenanthera dentata, Acacia floribunda* and *Phyllanthus gunnii*. The groundcover is composed of abundant forbs, scramblers and grasses including *Microlaena stipoides, Dichondra repens, Glycine clandestina, Oplismenus aemulus, Desmodium gunnii, Pratia purpurascens, Entolasia marginata, Oxalis perennans* and *Veronica plebeia*. The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic shrubs, grasses, vines and forbs. The combination of features that distinguish River-Flat Eucalypt Forest on Coastal Floodplains from other endangered communities on the coastal floodplains include: its dominance by either a mixed eucalypt canopy or by a single species of eucalypt belonging to either the genus *Angophora* or the sections *Exsertaria* or *Transversaria* of the genus *Eucalyptus*; the relatively low abundance or sub-dominance of *Casuarina* and *Melaleuca* species; the relatively low abundance of *Eucalyptus robusta*; and the prominent groundcover of soft-leaved forbs and grasses. Soil is less waterlogged than with Swamp Sclerophyll Forest (OEH 2022d; NSW Scientific Committee 2011b).

While vegetation on the site is floristically similar to both Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion and River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, under the 2022 revised NSW Plant Community Type (PCT) classifications, the on-site vegetation community was found to align most closely with PCT3493 Southern Highlands Red Gum Forest (refer to section 2.2 for more information).

The underlying geology of the site is mapped as Yalwal Volcanics with bands of basalt running through (refer to Figure 9). This characteristic further confirms the vegetation as being PCT3493 (found on isolated volcanic intrusions and shales on the Southern Highlands and surrounding gorges), and contrasts against Illawarra Lowlands Grassy Woodland EEC (occuring on relatively gently sloping to undulating lands on Berry Siltstone, Budgong Sandstone and Quaternary alluvium of the Illawarra coastal plain and escarpment foothills) and Riverflat Eucalypt Forest EEC (occurring on periodically inundated alluvial river flats, drainage lines and river terraces of the coastal floodplains, associated with silts, clay-loams and sandy loams).

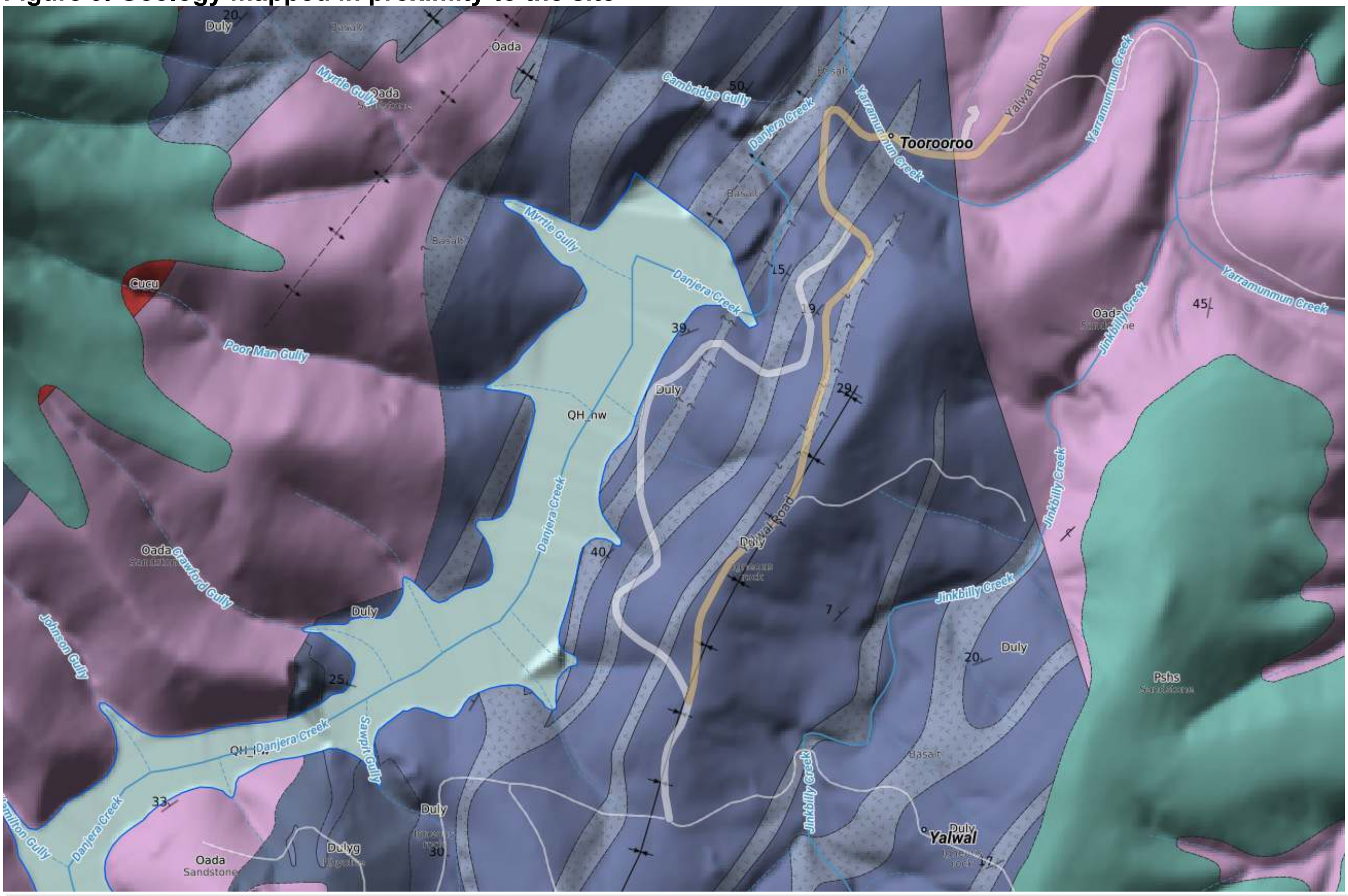
PCT3493 is not associated with any BC Act EEC, but is associated with Commonwealth EPBC listed Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion EEC. An assessment of

significance for Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion EEC has been undertaken in section 3.3 of this REF.

It is therefore concluded that no endangered ecological community listed under the BC Act occurs on site.

The proposal would therefore not result in the fragmentation or isolation of areas of any BC Act EEC, nor adversely affect the extent or composition of any BC Act EEC such that a local occurrence of the EEC will be placed at risk of extinction.

Figure 9. Geology mapped in proximity to the site



NSW surface geology - rock units (19)

Actions	nsw_code	unit_name	all_stratigraphy	province	sub_province	dominant_litho	igneous_type	age_range	top_end_age_r
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Oada	Abercrombie Formation	/Adaminaby Grou	Lachlan Orogen	Eastern Lachlan	Sandstone		La2b (Lancefieldi	458.4
	QH_hw	Anthropogenic stored water, pc	/Anthropogenic (	Cenozoic Sedime	Anthropolith	Anthropogenic r		Quaternary (base	0.0
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Dulyg	Grassy Gully Rhyolite Member	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Rhyolite		Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly	Yalwal Volcanics	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Igneous rock	A-type	Middle Devonian	358.9
	Duly_b	Yalwal Volcanics - basalt	/Ungrouped East	Lachlan Orogen	Eastern Lachlan	Basalt		Middle Devonian	358.9

Source: ***https://minview.geoscience.nsw.gov.au/#/***

Part C - In relation to the habitat of a threatened species or ecological community:

(iii) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity

(iv) 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

(v) 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.

No important habitat for threatened species would be removed or otherwise significantly impacted (see Part A).

No EEC would not be fragmented or isolated, nor removed or modified to an extent that would affect the long-term survival of the EEC occurring in the locality (refer to Part B).

The proposed activity would therefore not affect the long-term survival of any threatened species or endangered ecological community in the locality.

Part 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).

No "*areas of outstanding biodiversity values"* have been declared in the City of Shoalhaven.

Part 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.

Key threatening processes listed in the NSW *Biodiversity Conservation Act 2016* considered relevant to the proposed activity include:

- Clearing native vegetation

Clearing of native vegetation is listed as a key threatening process, defined by the Scientific Committee's determination (OEH 2021) as:

> *"the destruction of a sufficient proportion of one or more strata (layers) within a stand or stands of native vegetation so as to result in the loss, or long-term modification, of the structure, composition and ecological function of a stand or stands."*

Clearing of native vegetation has been shown to:

- cause widespread fragmentation of ecological communities;
- reduce the viability of ecological communities by disrupting ecological functions;
- result in the destruction of habitat and loss of biological diversity;
- lead to soil and bank erosion, increased salinity and loss of productive land.

The proposal would require the removal of up to 35 trees and native groundcover / shrubs to approx. 875 m^2 total canopy coverage along disturbed verges and existing native vegetation edges and would not result in fragmentation of habitat or impacts on movement corridors.

No removal of hollow-bearing trees or other significant habitat features would occur as part of the proposal.

Removal of vegetation on the embankment of Danjera Dam would be minimal and would be to facilitate construction of three drainage outlets with scour protection which would stabilise the embankment in these locations.

The impact of the proposal with regard to clearing of native vegetation, is not considered to be significant as it is unlikely to lead to:

- destruction of habitat causing a loss of biological diversity and extinction of species or loss or local genotypes;
- fragmentation of populations resulting in limited gene flow between small, isolated populations, reduced potential to adapt to environmental change and loss or severe modification of the interactions between species;
- riparian zone degradation such as bank erosion leading to sedimentation that affects aquatic communities – the riparian corridor would be stabilised as a result of the works;
- disturbance of habitat which may permit the establishment and spread of exotic species which may displace native species;
- loss of leaf litter, removing habitat for a wide variety of vertebrates and invertebrates; or
- significant reduction of habitat for threatened species or ecological communities.

3.3 Matters of National Environmental Significance (Commonwealth EPBC Act 1999)

A Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Report was generated on 6th July 2023. An EPBC Protected Matters Report provides general guidance on matters of national significance and other matters protected by the EPBC Act in the area selected.

Of those threatened species and endangered ecological communities reported as likely occurring or having habitat within the area of the report, the following were considered to have potential habitat on the site and requiring of further assessment:

- Glossy Black-cockatoo *Calyptorhynchus lathami* (V)
- Illawarra and South Coast Lowland Forest and Woodland ecological community (CE)

(CE – Critically Endangered; E – Endangered; V – Vulnerable; M – Migratory).

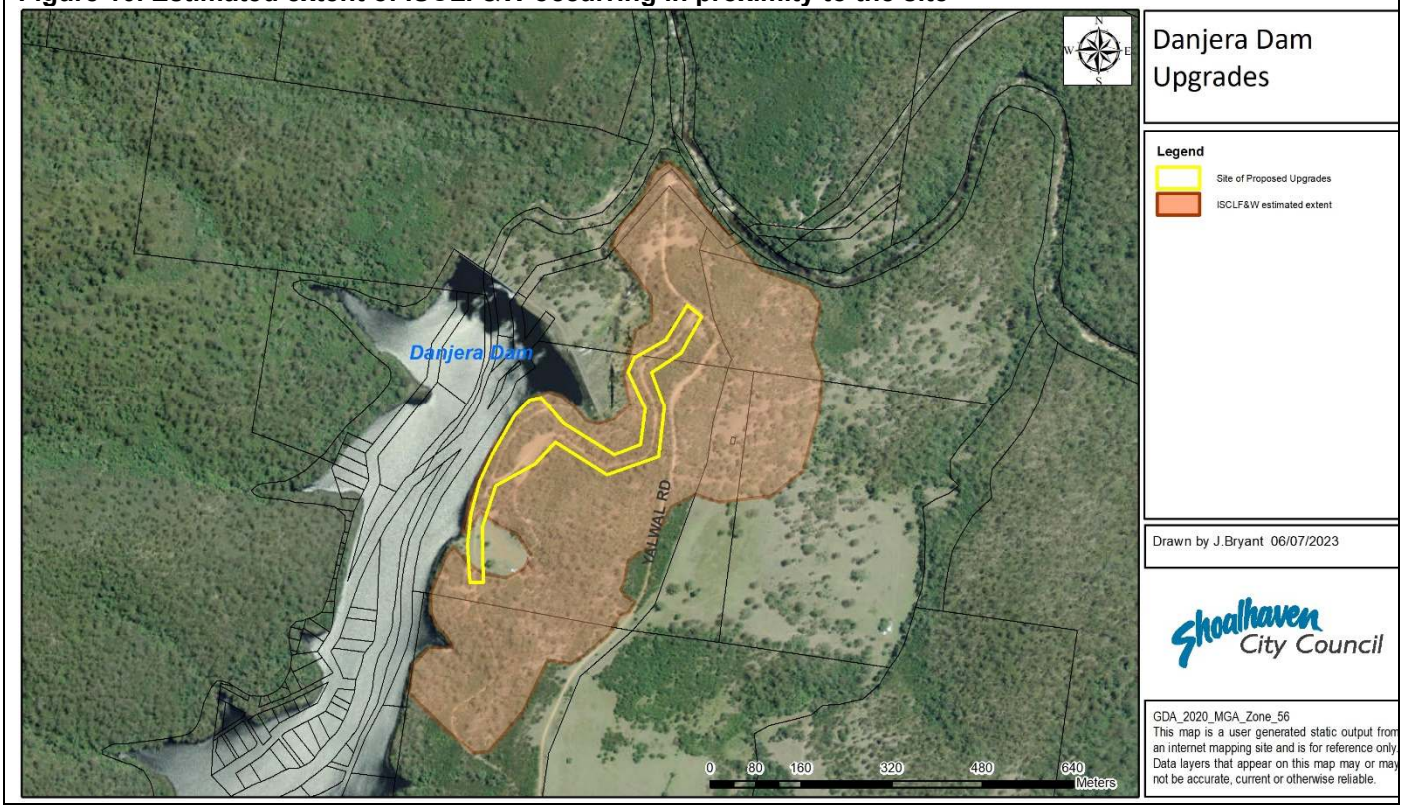
Note that vegetation community PCT3493 is associated with EPBC listed Upland Basalt Eucalypt Forests of the Sydney Basin Bioregions endangered ecological community (NSW Government 2023). Upland Basalt Eucalypt Forests of the Sydney Basin Bioregions are generally tall, open eucalypt forests found on igneous rock (predominately Tertiary basalt and microsyenite) in, or adjacent to, the Sydney Basin Bioregion. The ecological community occurs in areas of high rainfall, generally ranging from 950 to 1600 mm/year, typically at elevations between 650 and 1050 m above sea level, although it has been recorded at elevations as low as 350 m at the back of the Illawarra Escarpment in the Upper Nepean. The canopy is typically dominated by *Eucalyptus fastigata* (Brown Barrel), *E. viminalis* (Ribbon Gum) and *E. radiata subsp. radiata* (Narrow-leaved Peppermint) (TSSC 2011). The vegetation and non-floristic characteristics of the site do not align with this ecological community and as such, it was excluded from the significant impact assessment. The ecological community on site is not consistent with this EEC and is instead considered to be Illawarra and South Coast Lowland Forest and Woodland ecological community.

Illawarra and South Coast Lowland Forest and Woodland (ISCLF&W) ecological community comprises eucalypt forest or woodlands with at least 10% foliage cover (typically dominated by *Eucalyptus tereticornis* (Forest Red Gum) or *E.longifolia* (Woollybutt), and sometimes by

Angophora floribunda (Rough-barked Apple); *E. bosistoana* (Coast Grey Box); *E. eugenioides* (Thin-leaved Stringybark); *E. globoidea* (White Stringybark); a grassy ground layer and/or a shrub layer as well as a small tree layer; occurring below approximately 350 m ASL, on the coastal plain or foothills between the immediate coastal strip and the escarpment, within the state of New South Wales; in the Jervis, Ettrema and Illawarra subregions of the Sydney Basin Bioregion and the Bateman subregion of the South East Corner Bioregion (DEC 2016). The vegetation and non-floristic characteristics of the site align with this ecological community and as such, it was included in the significant impact assessment.

A contiguous patch of approximately 3.0 Ha ISCLF&W was estimated to occur over and extending beyond the site (Figure 10). Note that this estimate was based on limited investigation outside the extent of the site of the current and previous proposals, and includes assumptions based on streetview images and aerial photography.

Figure 10. Estimated extent of ISCLF&W occurring in proximity to the site



Additional species listed under the Act, including migratory species, may occur occasionally within the vicinity of the proposed activity but would not be affected by the proposal.

Refer also to Likelihood of Occurrence Table in Appendix B.

A significant impact assessment of EPBC listed threatened entities was undertaken in Table 4.

Table 4. EPBC Significant impact assessment

Vulnerable species - Significant impact criteria Species to consider: • **Glossy Black-cockatoo (GBC)**	
Criteria	***Assessment***
lead to a long-term decrease in the size of an important population of a species	The proposed activity will not directly impact on a known local population of GBC, will not affect or disrupt breeding, will not impact on breeding habitat, and will not impact on potential foraging habitat or movement corridors. Refer to Section 3.2.2 for more information.
reduce the area of occupancy of an important population	No
fragment an existing important population into two or more populations	No
adversely affect habitat critical to the survival of a species	No important habitat for this species will be impacted by the proposed activity. No potential breeding or potential foraging habitat for GBC would be impacted. Refer to Section 3.2.2 for more information.
disrupt the breeding cycle of an important population	Works would not affect breeding habitat. Refer above and to Section 3.2.2 for more information.
modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No important habitat will be impacted by the proposed activity. Refer to Section 3.2.2 for more information.
result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No invasive species will be introduced
introduce disease that may cause the species to decline	No disease will be introduced
interfere substantially with the recovery of the species	No
Critically endangered and endangered ecological communities - Significant impact criteria Communities to consider: **Illawarra and South Coast Lowland Forest and Woodland ecological community (ISCLF&W)**	
Criteria	***Assessment***
reduce the extent of an ecological community	ISCLF&W occurs in the Jervis, Ettrema and Illawarra subregions of the Sydney Basin Bioregion and the Bateman subregion of the South East Corner Bioregion. The proposal would involve removal of approx. 35 trees and understorey vegetation to a total canopy extent of approx. 875 m2 along existing edges, within a contiguous patch of ISCLF&W estimated to be approx. 3 Ha (2.9% loss). The proposed vegetation removal would not result in complete removal of the patch, nor fragmentation and would not occur on the extremities of the EEC's extent. The proposed vegetation removal would therefore not reduce the 'extent' of the EEC, would not fragment and would not affect the recovery or increase the likelihood of extinction of the EEC.
fragment or increase fragmentation of an ecological community, for example by	No. See above.

clearing vegetation for roads or transmission lines adversely affect habitat critical to the survival of an ecological community	
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	No. Proposed drainage would occur as upgrades to existing swales and eroded drainage lines. No substantial effect on groundwater levels or localised hydrology would occur.
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	No. Impacts would occur on existing edges and would not impact on species composition.
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	No. The proposal would not introduce or promote the growth of invasive species or other impacts which would affect the integrity or occurrence of the EEC.
interfere with the recovery of an ecological community	No
Summary	The proposal would result in the removal of approx. 2.9% of a patch of ISCLF&W from existing disturbed edges and would not introduce impacts that would negatively affect species composition, vegetation integrity or occurrence of the EEC. It is therefore considered unlikely that the proposal would adversely affect the extent or composition of *Illawarra and South Coast Lowland Forest and Woodland Ecological Community* such that a local occurrence of the EEC will be placed at risk of extinction.

Conclusion of EPBC Significant Impact Assessment

The proposal is therefore unlikely to have an adverse effect on a vulnerable, endangered, critically endangered or migratory species or its habitat, nor on the extent or integrity of an endangered ecological community such that its local occurrence is likely to be placed at risk of extinction.

No other matters of significance, i.e.:

- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;

- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions; or
- a water resource, in relation to coal seam gas development and large coal mining development;

would be affected as a result of the proposed activity.

Further assessment and referral to the Commonwealth is therefore not required.

3.4 Indigenous heritage

Under Section 86 of the NSW *National Parks and Wildlife Act 1974* (NPW Act) it is an offence to disturb, damage, or destroy any Aboriginal object without an Aboriginal Heritage Impact Permit (AHIP). The Act, however, provides that if a person who exercises 'due diligence' in determining that their actions would not harm Aboriginal objects has a defence against prosecution if they later unknowingly harm an object without an AHIP (Section 87(2) of the Act). To effect this, the NSW Department of Environment, Climate Change and Water have prepared the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wale*s (hereafter referred to as the 'Due Diligence Guidelines) to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for an AHIP.

Landscape features that are regarded as indicating a higher potential for Aboriginal objects, as outlined in the NSW Department of Environment, Climate Change and Water's Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010) include:

- within 200m of waters, or
- located within a sand dune system, or
- located on a ridge top, ridge line or headland, or
- located within 200m below or above a cliff face, or
- within 20m of or in a cave, rock shelter, or a cave mouth.

The site occurs within 200m of where Danjera Creek would have occurred prior to the construction of Danjera Dam.

A search on the Aboriginal Heritage Information Management System (AHIMS) on 7th Julyl 2023 returned no records of Aboriginal sites occurring in proximity to the site of the proposal (refer to Figure 11).

Figure 11. AHIMS basic search results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Danjera Dar
Client Service ID : 79834

Shoalhaven City Council - Nowra

Date: 07 July 202

PO Box 42 Bridge Rd
Nowra New South Wales 2541

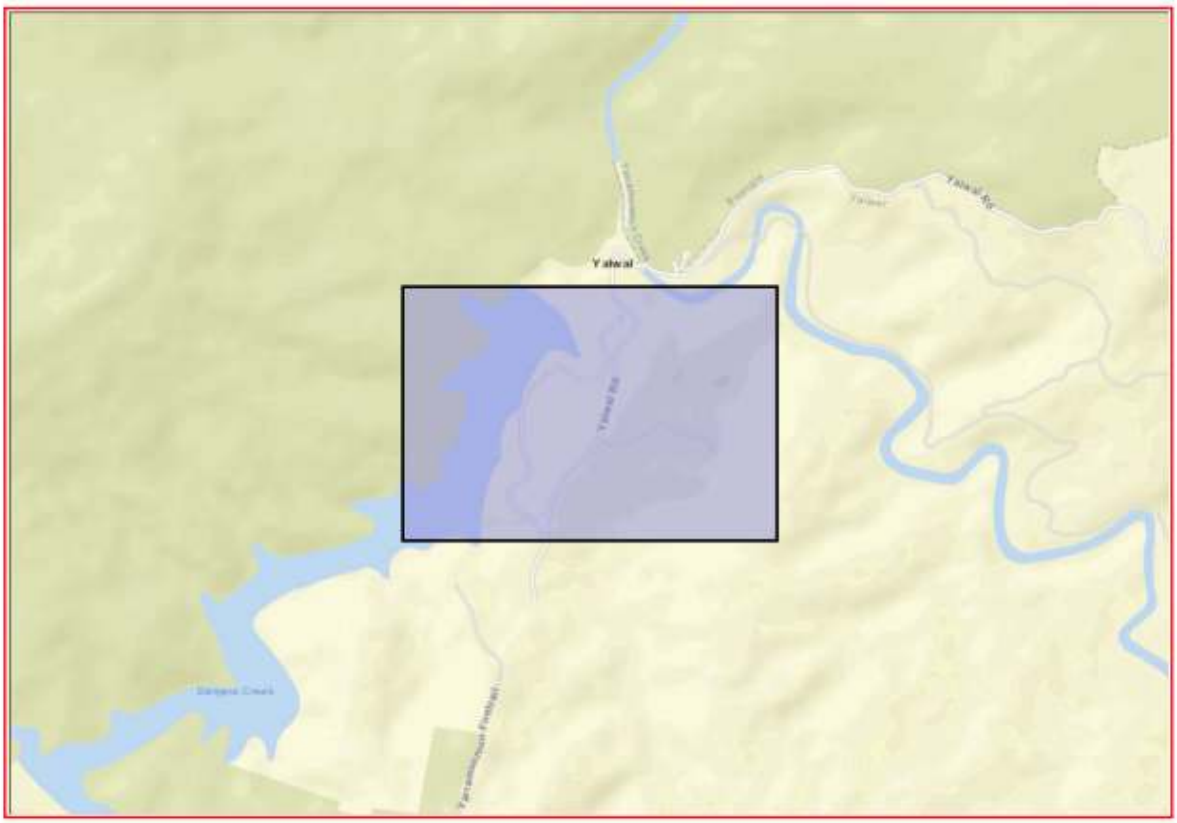
Attention: Jeff Bryant

Email: jeff.bryant@shoalhaven.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.927, 150.3794 - Lat, Long To : -34.9182, 150.3949, conducted by Jeff Bryant on 07 July 2023.

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:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

The Due Diligence Guidelines define disturbed land as follows:

> *"Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks."*

The site of proposed works is within existing disturbed land which has been cleared and modified. As such, it is reasonable to conclude that there is a low probability of objects occurring in area.

As the proposal would occur on disturbed land and would not impact any recorded Aboriginal sites or places, the Due Diligence Guidelines requires no further assessment, an AHIP is not required and the activity can proceed with caution.

3.5 Non-indigenous heritage

A heritage listing exists over adjacent Part Lot 1 DP 252335 (approx. 50 m to the south of the proposal site) for "*Former Yalwal gold mine, township site and cemetery"* (NSW Heritage ID: 2390859).

The place is of historical significance as the site of the extensive Yalwal Creek silver and gold mine that was established in 1849 (silver) and 1852 (gold). It is also the site of a mining township was located on the west bank of Danjera Creek.

The site contains the remains of an early gold and silver mine, including deep shafts, tunnels, adits and open cuts. A number of sites provide good examples of quartz mining techniques. A 5 head, post war stamper is located on the shores of the dam below the mines. The site also contains remains of the the Yalwal Cemetery with gravestones dating from the late 1890s into the early 1900s and the 100-year-old Fletcher's Butcher Shop.

The scale and nature of the surviving evidence illustrates the complexity of mining operations and the contribution the mine made to the economy of the Shoalhaven district. The mine has the potential to illustrate late nineteenth and early twentieth century reef mining techniques.

The site is attributed local significance (Shoalhaven) and is also assessed as historically and scientifically rare at a State level[2].

Heritage items noted under the listing occur either side of Sawpit Gully, with the cemetery located over 750 m to the south of the site of the current proposal.

No works would occur in close proximity to listed heritage items, such that there is any risk of impact.

There is some, albeit low, potential for relics to occur within the site.

Excavation permit exceptions under s139(4) of the *Heritage Act 1977* have been published in the NSW *Government Gazette* (Number 59 – Planning and Heritage, Friday, 18 February 2022), which are applicable to relics of local significance (i.e. not State significance).

Exception under clause 2(b) is for "*Any disturbance or excavation of land that constitutes minor works involving limited impact to relics of local heritage significance, in accordance with 'Relics of*

[2] Source: https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=2390859

local heritage significance: a guide for minor works with limited impact' published by Heritage NSW " (https://www.heritage.nsw.gov.au/assets/Relics-of-Local-heritage-significance-a-guide-to-minor-works-with-limited-impact.pdf).

As the scale and nature of excavation associated with the proposal would be relatively small; would not occur in, or in close proximity to, a known relic location; and would occur in a previously disturbed area, it is considered that the proposal constitutes 'minor works' under *'Relics of local heritage significance: a guide for minor works with limited impact'*, and clause 2(b) is applicable.

It is therefore concluded that the proposal would not result in any direct impacts on heritage items or values associated with "*Former Yalwal gold mine, township site and cemetery"*, and works can be undertaken with caution under an applicable exception from an excavation permit under s139(1) and (2) of the *Heritage Act 1977*.

In the event that any relics are found during works, notification to NSW Heritage Council is required under s146 of the *Heritage Act 1977.*

3.6 Riparian corridors, Key Fish Habitat & Water quality

A Category 1 riparian corridor occurs over the majority of the site, associated with Danjera Dam (refer to Figure 12).

Removal of vegetation on the embankment of Danjera Dam would be minimal, would occur where existing drainage lines and erosion is present, and would be to facilitate construction of three drainage outlets with scour protection which would stabilise the embankment in these locations.

Replacement planting of endemic trees in suitable locations would be undertaken as a mitigation measure.

Key Fish Habitat (KFH) is mapped as occurring over the site in association with Danjera Dam (Figure 12). The proposal does not involve dredging or reclamation and no works would occur on or affecting water-land as defined by the *Fisheries Management Act 1994*.

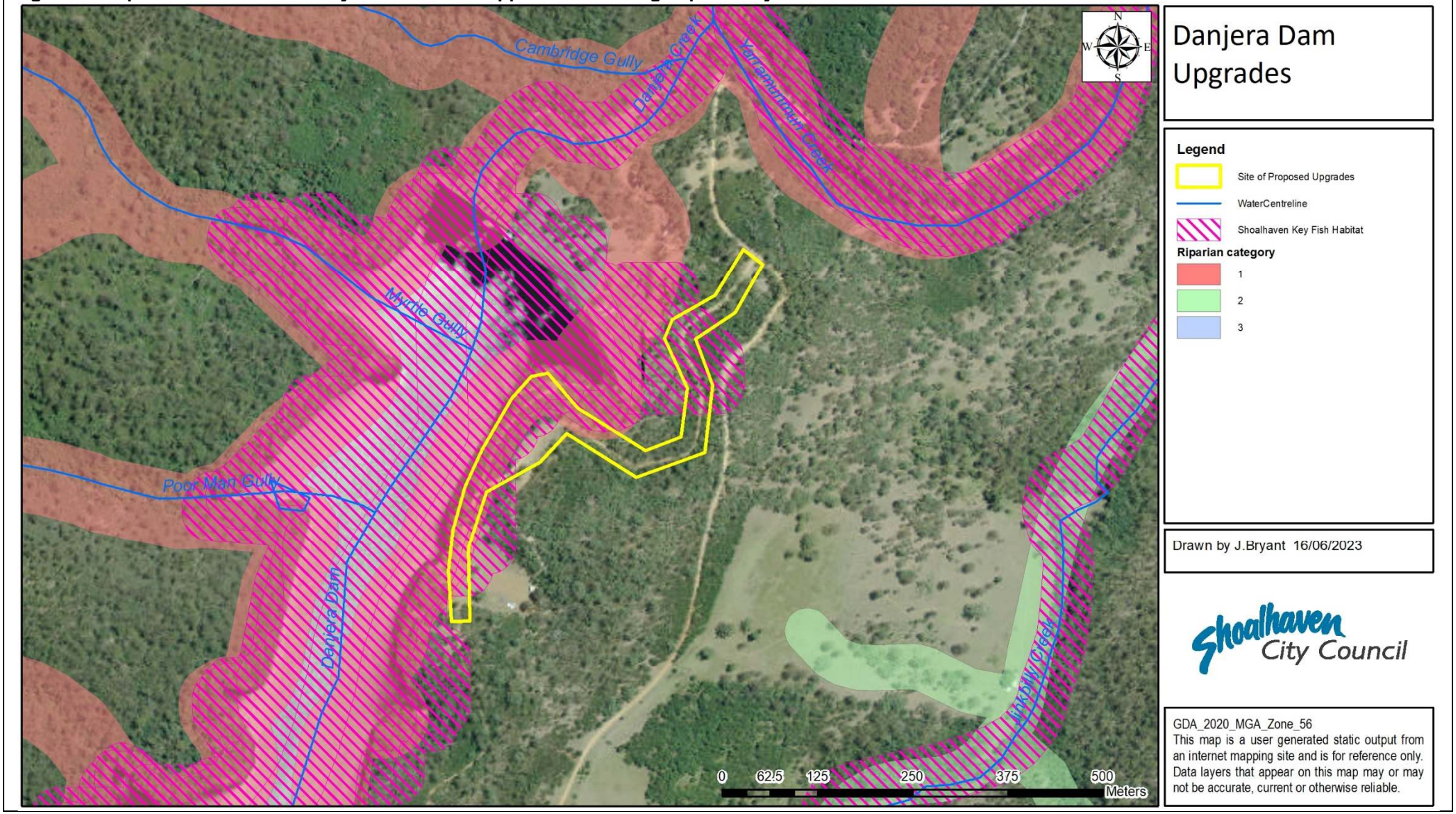
Reconstruction of the existing road pavement over the boat ramp approach would be contained within the existing road.

Sediment and erosion control devices would be installed and maintained during works to manage potential impacts on water quality.

The proposal would therefore not result in the movement of sediment which might impact on water quality.

No further assessment is required.

Figure 12. Riparian corridors and Key Fish Habitat mapped as occurring in proximity to the site



3.7 Other considerations

In the context of this environmental assessment, the area to be affected by the proposed activity:

- is not an Aboriginal Place in the context of the NSW National Parks and Wildlife Act 1974
- is not mapped as being flood liable
- is not mapped as potential Acid Sulfate Soil hazard
- is not mapped as potentially contaminated land

3.8 EP&A Regulation – Section 171 matters of consideration

Section 171(2) of the *Environmental Planning and Assessment Regulation 2021* lists the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment under Part 5 of the EP&A Act. These matters are addressed in Table 4.

Table 4. Section 171 Matters of consideration

Does the proposal:	Assessment	Reason
a) Have any environmental impact on a community?	Positive	The proposed activity involves upgrade to the access and day-use facilities of the Danjera Dam Recreation Area to improve safety and enhance user-experience. The proposed activity would not have any impact on other community services and infrastructure such as power, water, wastewater, waste management, educational, medical or social services.
b) Cause any transformation of a locality?	Negligible / Positive	The locality's current use would remain unchanged, but with improved road and boat-ramp access and new picnic shelters.
c) Have any environmental impact on the ecosystem of the locality?	Low adverse	Vegetation clearing associated with the proposal would involve the removal of approx. 35 trees and native groundcovers / shrubs to facilitate the upgrades. All impacts on native vegetation would occur on existing, disturbed edges. The five-part test of significance (Section 3.2 of this REF) concludes that the proposed activity would not have a significant impact on threatened species or endangered ecological communities. No significant vegetation or significant habitat would be impacted on. No food resources critical to the survival of a particular species would be removed. Aquatic ecosystems are not likely to be negatively affected by the proposed activity and any long-term or long-lasting

		impact related to potential input of sediment and nutrient into the ecosystem would be reduced as a result of the proposed activity. Refer to prescribed environmental safeguards and mitigation measures (Section 7 of his REF).
d) Cause a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Negligible	The proposed activity is consistent with the existing land uses. No significant habitat would be impacted on by the proposed activity. In the context of the locality, the visual impact of the proposed activity is considered to be minimal. Scientific and environmental qualities of the site would not be affected. The proposed activity would have no impact on these values.
e) Have any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific, or social significance or other special value for present or future generations?	Negligible	The proposed activity would have no impact on aesthetic, architectural, historical, scientific or social values. No items in the vicinity of the work site which are listed on the State Heritage Register and the Shoalhaven Local environmental Plan would be impacted by the proposed activity (refer to Section 3.5 of this REF). The site is not within an Aboriginal Place declared under the National Parks and Wildlife Act 1974. In accordance with the NSW Department of Environment, Climate Change and Water's Due Diligence Code of Practice, the proposed activity does not require an Aboriginal Heritage Impact Permit as the activity is unlikely to harm an Aboriginal artefact. Refer to Section 3.4 of this REF for more information.
f) Have any impact on the habitat of protected fauna (within the meaning of the Biodiversity Conservation Act 2016)?	Low-adverse	All impacts on native vegetation would occur on existing, disturbed edges. No significant vegetation or significant habitat would be removed or otherwise impacted on by the proposed activity. No food resources critical to the survival of a particular species would be removed. The five-part test of significance, provided in Section 3.2 above, concludes that the proposed activity would not have a significant impact on threatened fauna. The prescribed environmental safeguards and mitigation measures (Section 7) would mitigate indirect impacts on fauna and habitat including through control of sediment.
g) Cause any endangering of any species of animal, plant or other form	Negligible	The five-part test of significance, provided in Section 3.2 above, concludes that the proposed activity would not have a significant impact on threatened fauna.

of life, whether living on land, in water or in the air?		There are no species likely to rely on areas to be impacted on by the proposed works, to the extent that modification would put them further in danger. The prescribed environmental safeguards and mitigation measures (Section 7) would minimise the risk of impact on resident fauna.
h) Have any long-term effects on the environment?	Negligible	Works would be relatively short term and the noise generated will occur during normal working hours. The proposed activity would not use hazardous substances or use or generate chemicals which may build up residues in the environment. The possible impacts have been discussed in detail under Section 3 of this REF. Refer also to the conclusions and recommendations in Section 7 of this REF.
i) Cause any degradation of the quality of the environment?	Low-adverse	The proposed activity requires vegetation removal, but would not result in fragmentation or loss of significant habitat. Aquatic ecosystems are not likely to be affected by the proposed activity and there is not likely to be any long-term or long-lasting impact associated with input of sediment and nutrient into the ecosystem. The proposed activity would not intentionally introduce noxious weeds, vermin, or feral animals into the area or contaminate the soil. Environmental safeguards and mitigation measures (Section 7 of this REF) would be employed to minimise risk of impacts.
j) Cause any risk to the safety of the environment?	Negligible	The proposed activity would not involve hazardous wastes and would not lead to increased bushfire or landslip risks. The proposed activity would not adversely affect flood or tidal regimes or exacerbate flooding risks. The prescribed environmental safeguards and mitigation measures in Section 7 of this REF.
k) Cause any reduction in the range of beneficial uses of the environment?	Negligible / Low adverse	The proposed activity would occur primarily within existing disturbed areas, with only minimal encroachment into edges of native vegetation. The proposed activity is consistent with the existing land use. The proposed activity is not anticipated to result in further degradation of the site or surrounding land. Construction of proposed picnic shelters and connecting paths would exclude other uses in the location of this component of the proposal, but is consistent with the

		existing land use and consistent with the management objectives of the site.
l) Cause any pollution of the environment?	Negligible	It is unlikely that the activity (including the environmental impact mitigation measures) would result in water or air pollution, spillages, dust, odours, vibration or radiation. The proposed activity would not involve the use, storage or transportation of hazardous substances or the generation of chemicals which may build up residues in the environment. The risk of contamination and spills from powered hand tools including fuel would be minimised through prescribed environmental safeguards and mitigation measures (Section 7 of this REF).
m) Have any environmental problems associated with the disposal of waste?	Negligible	There would be no trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the NSW *Protection of the Environment Operations Act 1997*.
n) Cause any increased demands on resources (natural or otherwise) which are, or are likely to become, in short supply?	Negligible	The amount of resources that would be used are not considered significant and would not increase demands on current resources such that they would become in short supply.
o) Have any cumulative environmental effect with other existing or likely future activities?	Negligible	The assessed low adverse or negligible impacts of the proposed activity are not likely to interact. Prescribed environmental safeguards and mitigation measures (Section 7 of this REF) shall be implemented to minimise the risk of cumulative environmental effects. The proposed activity would not significantly affect habitat connectivity or reduce any significant vegetation.
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	Negligible	The proposed activity would have no effect on coastal processes including those projected under climate change conditions. The site is not located in a coastal hazard area.
q) Any applicable local strategic planning statement, regional strategic plan or district strategic plan made	Positive	The proposed activity is consistent with the *Shoalhaven 2040* Strategic Land-use Planning Statement, including the maintenance of infrastructure which Council is responsible for under Planning Priority 2 *Delivering infrastructure*

under Division 3.1 of the Act		https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D20/437277. The activity is not inconsistent with the Illawarra Shoalhaven Regional Plan 2041 https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/Plans-for-your-area/Regional-plans/Illawarra-Shoalhaven-Regional-Plan-05-21.pdf
r) Any other relevant environmental factors	N/A	

4. PLANNING APPROVALS PATHWAY

4.1 Environmental Planning & Assessment Act 1979

Section 4.1 (Development that does not need consent) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) states that:

> *"If an environmental planning instrument provides that specified development may be carried out without the need for development consent, a person may carry the development out, in accordance with the instrument, on land to which the provision applies."*

In this regard, clause 2.73(3) of the NSW *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP) provides (underline added for emphasis):

> *"Any of the following development may be carried out by or on behalf of a public authority without consent on land owned or controlled by the public authority—*
>
> *(a) development for any of the following purposes—*
>
> *(i) roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,*
>
> *(ii) recreation areas and recreation facilities (outdoor), but not including grandstands…"*

Additionally, clause 2.74(1) TISEPP provides that:

> *"Development for any of the following purposes that is carried out in the prescribed circumstances is exempt development—*
>
> *(a) construction or maintenance of—*
>
> *…*
>
> *(viii) seats, picnic tables, barbecues, bins (including frames and screening), shelters or shade structures…"*

Note that clause 2.67 of TISEPP provides that:

> *"Development for any purpose referred to in section 2.73(3) may be carried out without consent on operational land by or on behalf of a council."*

And clause 2.68(1) of TISEPP provides that:

> *"Development for any purpose referred to in section 2.74(1) is exempt development if carried out on operational land by or on behalf of a council."*

In consideration of proposed stormwater works, clause 2.137 of TISEPP provides that:

> *"(1) Development for the purpose of stormwater management systems may be carried out by or on behalf of a public authority without consent on any land.*

Additionally, clause 2.165 TISEPP provides that:

> *"(1) Development for the purpose of waterway or foreshore management activities may be carried out by or on behalf of a public authority without consent on any land.*
>
> *…*
>
> *(3) In this section, a reference to development for the purpose of waterway or foreshore management activities includes a reference to development for any of*

the following purposes if the development is in connection with waterway or foreshore management activities—

(a) construction works,

(b) routine maintenance works,

(c) emergency works, including works required as a result of flooding, storms or erosion,

(d) environmental management works."

As the proposed activity does not require development consent, and as it constitutes an 'activity' for the purposes of Part 5 of the EP&A Act, being carried out by (or on behalf of) a public authority, environmental assessment under Part 5 of the EP&A Act is required. This REF provides this assessment and ensures that Council as determining authority in consideration of the activity, meets its obligation under s5.5 of the EP&A Act, to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

4.2 Biodiversity Conservation Act 2016

The proposed development complies with the *Biodiversity Conservation Act 2016* for the following reasons:

- The proposed activity is unlikely to have a significant impact on threatened species and/or threatened ecological communities listed in the schedules of the Act. There is, therefore, no requirement to 'opt in' to the Biodiversity Offset Scheme.
- The design and mitigation measures (Section 7 of this REF) would ensure that no *serious and irreversible impacts on biodiversity values* (as defined by the BC Act) occur at the site of the proposed activity.
- The proposed activity is not within an area declared to be of "outstanding biodiversity value" as defined in the Act and Regulations.

Because of the above considerations, neither a species impact statement nor a biodiversity development assessment report is required for the proposed activity.

It is also a defence to a prosecution for an offence under Part 2 of the Act (harming animals, picking plants, damaging the habitat of threatened species or ecological communities *etc*) if the work was essential for the carrying out of an activity by a determining authority within the meaning of Part 5 of the Environmental Planning and Assessment Act 1979 after compliance with that Part.

The activity would not remove vegetation that is listed under Schedule 1 Threatened Species, Schedule 2 Threatened ecological communities and Schedule 6 Protected Plants. Therefore, the activity is considered permissible as this REF has been prepared and determined in accordance with the EP&A Act.

Refer to Section 3.2 for more information.

4.3 Other

A summary of other relevant legislation and permissibility is provided in Table 5 below.

Table 5. Summary of other relevant legislation and permissibility

NSW STATE LEGISLATION
***Environmental Planning and Assessment Act 1979* (EP&A Act)**
Permissible √ Not permissible ☐
The Transport & Infrastructure SEPP provides for the proposed works to be undertaken without development consent (refer above). In circumstances where development consent is not required, the environmental assessment provisions outlined in Part 5 of the Act are required to be complied with. This REF fulfils this requirement.
Shoalhaven Local Environmental Plan 2014 (SLEP)
Permissible √ Not permissible ☐
Under the SLEP the proposed activity may have required development consent. The provisions of Transport and Infrastructure SEPP however, prevail over the SLEP where there is an inconsistency by virtue of Section 3.28 of the EP&A Act. Consequently, development consent is not required.
State Environmental Planning Policy (Resilience and Hazards) 2021
Permissible √ Not permissible ☐
The proposed activity would be undertaken within an area which is not mapped for the purpose of the SEPP. Other considerations of the SEPP are not applicable to the proposed activity.
Wilderness Act 1987
Permissible √ Not permissible ☐
The proposed activity is not located within a wilderness area declared under this Act.
Protection of the Environment Operations Act 1997
Permissible √ Not permissible ☐
The proposed activity does not constitute scheduled development work or scheduled activities as listed in Schedule 1 of the Act. The proposed activity therefore does not require an environmental protection licence.
Fisheries Management Act 1994
Permissible √ Not permissible ☐
The proposed activity: • would not affect declared aquatic reserves (Part 7, Division 2 of the Act); • would not involve dredging and reclamation in Key Fish Habitat (Part 7, Division 3);

- would not involve blocking the passage of fish (s.219);
- would not impact on mangroves and marine vegetation (Part 7, Division 4);
- would not involve disturbance to gravel beds where salmon or trout spawn (s.208 of the Act);
- does not involve the release of live fish (Part 7, Division 7);
- does not involve the construction of dams and weirs (s.218);
- would not result in the blocking of the passage of fish;
- would not impact on declared threatened species of endangered ecological communities (Part 7A);
- does not constitute a declared key threatening process (Part 7A); and
- would not use explosives in a watercourse (Clauses 70 and 71 of the *Fisheries Management (General) Regulation 2019).*

Heritage Act 1977

Permissible √ Not permissible ☐

The proposed activity would not affect any item of state or local heritage significance. Refer to s3.5 of this REF for more information.

Water Management Act 2000

Permissible √ Not permissible ☐

- Local councils are exempt from s.91E(1) of the Act in relation to all controlled activites that they carry out in, on or under waterfront land by virtue of clause 41 of the *Water Management (General) Regulation 2018.*
- The proposed activity would not interfere with the aquifer and therefore an interference licence is not required (s.91F).

COMMONWEALTH LEGISLATION

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EP&BC Act)

Permissible √ Not permissible ☐

The proposed activity would not be undertaken on Commonwealth land and no matters of National Environmental Significance are likely to be significantly impacted on by the proposed activity (Section 3.3). The proposed activity is therefore not a controlled action and does not require commonwealth referral.

Commonwealth *Native Title Act 1993*

Permissible √ Not permissible ☐

The proposed activity would occur entirely on freehold operational land. Native Title is assumed extinguished. No procedural rights are applicable.

5. CONSULTATION WITH GOVERNMENT AGENCIES

5.1 Transport & Infrastructure SEPP

Note that consultation under Chapter 2, Part 2.2 of the Transport & Infrastructure SEPP applies only to relevant development undertaken as development without consent under the provisions of Chapter 2.

Section 2.10 Consultation with Councils – Development with impacts on council-related infrastructure or services

The proposal would not involve changes to or impacts on: traffic generation; or the sewerage system; and would not involve excavation of a footpath or public road.

The proposal would involve minor changes to a public place and localised stormwater in the vicinity of a water supply dam. The land and asset custodian, Shoalhaven Water, is planning and would be undertaking the proposal.

Consultation under section 2.10 is therefore not required.

Section 2.11 Consultation with Councils – Development with impacts on local heritage

The proposed activity would not impact on any local heritage item (refer to Section 3.5 of this REF).

Consultation under section 2.11 is therefore not required.

Section 2.12 Consultation with Councils – Development with impacts on flood liable land

The proposed activity would not occur on land which is mapped as being flood liable and the proposed activity is unlikely to change flood patterns other than to a minor extent.

Consultation under section 2.12 is therefore not required.

Section 2.13 – Consultation with State Emergency Service—development with impacts on flood liable land

The proposed activity would not occur on land which is mapped as being flood liable.

Consultation under section 2.13 is therefore not required.

Section 2.14 Consultation with Councils – Development with impacts on certain land within the coastal zone

The proposed activity would not occur within a coastal vulnerability area. Consultation is therefore not required.

Section 2.15 – Consultation with public authorities other than councils

In consideration of the consultation requirements specified under section 2.15 of the Transport & Infrastructure SEPP, the proposed activity:

- would not be undertaken on or adjacent to land reserved under the *National Parks and Wildlife Act 1974* or in Zone C1 or in equivalent zones.
- does not comprise a fixed or floating structure in or over navigable waters
- would not increase the amount of artificial light in the night sky and located on land within the dark sky region as identified on the dark sky region map
- would not be undertaken within Defence communications facility buffer (only relevant to the defence communications facility near Morundah)
- would not be undertaken on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*
- would not occur on or impact on the Willandra Lakes Region World Heritage Property
- would not occur within a Western City operational area specified in the *Western Parkland City Authority Act 2018*

Consultation requirements specified under section 2.15 of the Transport & Infrastructure SEPP therefore do not apply.

Section 2.16 – Consideration of Planning for Bush Fire Protection (PBP)

The proposed activity is not a type applicable to this clause *i.e.* health services facilities, correctional centres and residential accommodation. Consideration of PBP is therefore not required.

Summary

No consultation requirements under Chapter 2, Part 2.2 of the Transport & Infrastructure SEPP are applicable.

6. COMMUNITY ENGAGEMENT

In accordance with Council's Community Engagement Policy, the proposed activity constitutes a *Local Area – Low Impact* activity. Formal community engagement is not required.

7. ENVIRONMENTAL SAFEGUARDS AND MEASURES TO MINIMISE IMPACTS

Note that all safeguards are prescribed unless otherwise stated.

Safeguard / Measure	Responsibility
Works planning, approvals, consultation & notification	
1. An appropriate traffic management plan shall be developed and implemented for any works occurring on Yalwal Rd and internal access roads of the Recreation Area.	Construction contractor
2. This REF shall be published on Council's website or the NSW Planning Portal in accordance with s171(4) EP&A Regulation.	SCC Environmental Officer
Site establishment	
3. Machinery access, construction compound (if required), vehicles and stockpiles shall be located within existing cleared areas of the Recreation Area in areas approved by the land manager (or delegate) only.	Construction contractor;
4. Works areas shall be delineated or barricaded with signage as appropriate to discourage public access during works.	Construction Contractor
5. Machinery, vehicles and stockpiles shall not encroach into native vegetation. A buffer of minimum 3m to tree trunks shall be maintained.	Construction Contractor
6. The contractor shall keep an emergency spill kit on-site at all times with procedures to contain and collect any leakage or spillage of fuels, oils and greases from plant and equipment.	Construction contractor
7. To avoid the risk of pollution from machinery, no refuelling shall occur on embankments or within 20 m of waterways and watercourses. Due care shall be taken to avoid spilling fuel and a tray shall be used to catch any accidentally spilt fuel.	Construction contractor
8. Erosion Erosion and sediment controls in accordance with the 'Blue Book' (Landcom 2004) shall be installed and maintained to prevent the entry of sediment into waterways. Erosion and sediment controls shall be maintained in good working order for the duration of the works and subsequently until the site has been stabilised and the risk of erosion is minimal.	Construction contractor
Construction works	
9. Native vegetation removal shall be strictly undertaken only to the extent required to carry out the proposed works.	Construction contractor

Safeguard / Measure	Responsibility
Trees shall be retained to every practical extent.	
10. Tree protection measures in accordance with AS4970 – *Protection of trees on development sites* shall be implemented to minimise the risk of impact to the structural root zones of trees to be retained.	Construction contractor
11. Habitat trees and threatened flora species identified in Figure 7 of this REF shall be located, delineated and protected during works.	Construction contractor; SCC Environmental Officer
12. Pruning of trees where required is to be undertaken in accordance with AS 4373-1996 "Pruning of Amenity Trees".	Construction contractor
13. Woody material shall be spread into adjacent vegetation as habitat.	Construction contractor
14. In the event that any wildlife be significantly disturbed or injured during works, Council's Environmental Officers are to be contacted on 4429 3405, or if unavailable, Wildlife Rescue – South Coast should be contacted on 0418 427 214, to rescue and relocate the animal(s).	Construction contractor
15. In the event that any Aboriginal heritage objects are found, NSW Department of Planning, Industry and Environment (ph:131 555) shall be contacted.	Construction contractor
16. In the event that any relics are found during works, notification to NSW Heritage Council is required under s146 of the Heritage Act 1977. Refer to: https://www.heritage.nsw.gov.au/applications/historical-archaeology/notification-of-discovery-of-a-relic-s146/	Construction contractor
17. If engineering fill is imported to the site, all conditions prescribed in the applicable Resource Recovery Exemptions shall be complied with, including: • ensuring the producer of the waste has complied with the applicable Order such as testing and validation • ensuring the material has met all chemical and other material requirements specified in the applicable Order • keeping a written record of the following for a period of six years: o the quantity of material received o the name and address of the supplier	Construction contractor
18. If Virgin Excavated Natural Material (VENM) is taken to the site (*i.e.* without chemical testing and validation): a. the material must meet the definition of VENM (http://www.epa.nsw.gov.au/waste/virgin-material.htm) b. the supplier must fill out and complete the *VENM Certificate*	Construction contractor

Safeguard / Measure	Responsibility
The completed *VENM Certificate* shall be kept for at least six years and provided to the EPA upon any request.	
19. Any waste generated on site shall be reused in accordance with relevant Resource Recovery Orders and Exemptions, or otherwise disposed of at a licenced waste facility.	Construction Contractor
20. Remediation of compound and stockpile areas shall involve removal of all stockpiled material, dressing and turfing or seeding of grassed areas as appropriate to return the area to its existing state prior to works.	Construction Contractor
Post construction	
21. Replacement planting of trees shall be undertaken at a minimum ratio of 3 replacement trees for every 1 tree (10cm DBH or greater) removed. Replacement trees shall be species endemic to the site (i.e. *Eucalyptus tereticornis, Angophora floribunda* and / or *E.eugenioides*); shall be local provenance sourced to every practical extent; shall be planted by a suitably qualified and experienced bush regeneration or landscape contractor; shall be protected with tree guards or wire cages as appropriate; and shall be maintained as required for a minimum of 6 months. Suitable planting locations shall be determined by the ShoalWater Land Manager (or delegate), ShoalWater Project Manager and Council's Environmental Officer.	ShoalWater Land Manager; ShoalWater Project Manager; SCC Environmental Officer
22. An asset form shall be trimmed to file 44574E on commissioning of the assets in Accordance with POL15/8 Asset Accounting Policy section 3.1.4 and POL16/79 Asset Management Policy section 3.3.	ShoalWater Project Manager;

8. SIGNIFICANCE EVALUATION & DECISION STATEMENT

This Review of Environmental Factors has assessed the likely environmental impacts, in the context of Part 5 of the Environmental Planning and Assessment Act 1979, of a proposal by Shoalhaven Water for upgrades to the access (Yalwal Rd) and day-use facilities within the Danjera Dam Recreation Area.

In consideration of the proposed activity as described in Section 1, in accordance with any design plans referred to in this report, and assuming the implementation of all proposed safeguards and mitigation measures (Section 7), it is determined that:

1. It is unlikely that there would be any significant environmental impact as a result of the proposed activity and an Environmental Impact Statement is not required.
2. The proposed activity would not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats, and a Species Impact Statement / BDAR is not required.
3. No statutory approvals, licences, permits or external government consultations are required.
4. The proposed activity may proceed.

In accepting and adopting this REF, Shoalhaven City Council commits to ensuring the implementation of the proposed safeguards and mitigation measures identified in this report (Section 7) to minimise and/or prevent detrimental environmental impacts.

Determined by:

Robert Horner

Executive Manager – Shoalhaven Water

Shoalhaven Water Utility Date: 31 July 2023

9. REFERENCES

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APPENDIX A – Design Plans

“DANJERA DAM CAMPING AREA UPGRADE”
Civil Engineering Design – Drawing set DN190141
MIEngineers 2022
Council reference: D23/262666

APPENDIX B – Threatened Species Likelihood of Occurrence

NSW Threatened Species Likelihood of Occurrence Table

The table of likelihood of occurrence evaluates the likelihood of threatened species to occur on the subject site. This list is derived from previously recorded species within a 5 km radius (taken from NSW BioNet Atlas) around the subject site. Ecology information unless otherwise stated, has been obtained from the *Threatened Biodiversity Profile Search* on the NSW OEH (Office of Environment & Heritage) online database (https://www.environment.nsw.gov.au/threatenedspeciesapp/).

Likelihood of occurrence in study area

1. Unlikely – Species, population or ecological community is not likely to occur. Lack of previous recent (<25 years) records and suitable potential habitat limited or not available in the study area.
2. Likely – Species, population or ecological community could occur and study area is likely to provide suitable habitat. Previous records in the locality and/or suitable potential habitat in the study area.
3. Present – Species, population or ecological community was recorded during the field investigations.

Possibility of impact

1. Unlikely – The proposal would be unlikely to impact this species or its habitats. No NSW *Biodiversity Conservation Act 2016* "Test of Significance" or EPBC Act significance assessment is necessary for this species.
2. Likely – The proposal could impact this species, population or ecological community or its habitats. A NSW *Biodiversity Conservation Act 2016* "Test of Significance" and/or EPBC Act significance assessment is required for this species, population or ecological community.

Note that where further assessment is deemed required, this is undertaken within the REF as a Test of Significance (in the case of NSW listed species) or an EPBC Significant Impact Assessment (in the case of Commonwealth listed species).

Endangered Ecological Community name	***Status***	***Likelihood of presence within areas impacted by the activity***
Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion (BC Act) Illawarra and south coast lowland forest and woodland ecological community (EPBC Act)	Endangered - NSW *BC Act* Critically Endangered - Commonwealth *EPBC Act*	Characteristic vegetation occurs, although no associated PCT is mapped as occurring on site. Further assessment has been undertaken in s3.2.2 and s3.3 of this REF.
Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (BC Act) *Illawarra– Shoalhaven subtropical rainforest of the Sydney Basin Bioregion* (EPBC Act)	Endangered - NSW BC Act Critically Endangered - Commonwealth EPBC Act	No characteristic vegetation or associated PCT occurs on-site.
River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (BC Act) River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (EPBC Act)	Endangered - NSW *BC Act* Critically Endangered - Commonwealth EPBC Act	Associated PCT3258 Sydney Basin Creekflat Blue Gum-Apple Forest is mapped as occurring on site with characteristic landscape features occurring. Further assessment has been undertaken in s3.2.2 and s3.3 of this REF.
Robertson Basalt Tall Open-forest in the Sydney Basin and South Eastern Highlands Bioregions (BC Act)	Critically Endangered – NSW BC Act	No characteristic vegetation or associated PCT occurs on-site.
Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (BC Act) Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (EPBC Act)	Endangered - NSW *BC Act* Endangered - Commonwealth *EPBC Act*	No characteristic vegetation or associated PCT occurs on-site.

Species name	*Status*	*Habitat requirements (www.environment.nsw.gov.au)*	*Likelihood of presence within areas impacted by the activity*
FLORA			
Eucalyptus langleyi *Albatross Mallee*	NSW BC Act Vulnerable EPBC Act Vulnerable	Found in Mallee shrub land on poorly drained, shallow, sandy soils on sandstone.	A conspicuous plant. Not detected during survey.
Eucalytpus sturgissiana *Ettrema Mallee*	Vulnerable NSW BC Act	The Ettrema Mallee is mostly restricted to the Northern Budawang Range in Morton National Park, with a few occurrences on the nearby coastal plain. Usually grows as an emergent in low shrub-heath. Grows on sandy, swampy soils. Little is known of this species' ecology.	A conspicuous plant. Not detected during survey.
Hibbertia stricta subsp. *furcatula*	NSW BC Act Endangered	Habitat of the Southern Sydney population is broadly dry eucalypt forest and woodland. This population appears to occur mainly on upper slopes and above the Woronora River gorge escarpment, at or near the interface between the Lucas Heights soil landscape and Hawkesbury sandstone. Toelken & Miller (2012) note that the species usually grows in 'gravelly loam or clay soil in heath under open woodland'. Habitat of the South Coast population is poorly recorded, but appears to be dry sclerophyll forest or woodland associations in sandy soils over sandstone.	A conspicuous plant. Not detected during survey.
Prostanthera densa *Villous Mint-bush*	Vulnerable EPBC Act Vulnerable NSW BC Act	Villous Mintbush is generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea. Plants regenerate from rootstock after fire and flower within the first year or two.	A conspicuous plant. Not detected during survey.

Pterostylis ventricosa	Critically endangered NSW BC Act	edominantly in more open areas of tall coastal eucalypt forest often dominated by one or more of the following tree species:- Turpentine, Spotted Gum, Grey Ironbark, Blackbutt, White Stringybark, Scribbly Gum and Sydney Peppermint. Often favours more open areas such as along powerline easements and on road verges where the tree overstorey has been removed or thinned. Grows in a range of groundcover types, including moderatley dense low heath, open sedges and grasses, leaf litter, and mosses on outcropping rock. Soil type ranges from moisture retentive grey silty loams to grey sandy loams. Sometimes found in skeletal soils on sandstone rock shelves	No suitable habitat occurs. Not detected during previous targeted surveys. Refer to s2.3 for more information.
Solanum celatum	NSW BC Act Endangered	Grows in rainforest clearings or in wet sclerophyll forests. Flowers August to October and produces fruit between December and January. Normally recorded in disturbed margins and clearings.	Species was recorded on site. Further assessment has been undertaken in s3.2.2 of this REF.
REPTILES			
Broad-headed Snake *Hoplocephalus bungaroides*	Endangered *NSW* BC *Act* Vulnerable *EPBC Act*	The Broad-headed snake is largely confined to Triassic and Permian sandstones, including Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately 250 km of Sydney. They are a nocturnal species that shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. It moves from the sandstone rocks to shelter in crevices or hollows in large trees within 500 m of escarpments in summer. Feeds mostly on geckoes and small skinks; will also eat frogs and small mammals occasionally.	Unlikely to occur. No suitable habitat present.
Rosenberg's Goanna Varanus rosenbergi	NSW BC Act Vulnerable	Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens.	Possibly occurring within or in proximity to the site. Further assessment has been undertaken in s3.2.2 of this REF.

MICRO-CHIROPTERAN BATS Note: no threatened microbats were recorded during targeted surveys associated with BDAR (SCC 2020). No records of any threatened microbat species occur within 5km of the site. No potentially important habitat would be impacted. Further assessment is not warranted.			
BIRDS			
Glossy Black-cockatoo *Calyptorhynchus lathami*	Vulnerable *NSW* BC *Act*	The GBC inhabits open forest and woodlands of the coast where stands of she-oak occur. In the Jervis Bay region they feed almost exclusively on the seeds of the black she-oak *Allocasuarina littoralis*, shredding the cones with their bill	Possibly occurring within or in close proximity to the site. Further assessment has been undertaken in Section 3.2.2.
Little Lorikeet *Glossopsitta pusilla*	Vulnerable NSW BC ACT	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina	Possibly occurring within or in close proximity to the site. Further assessment has been undertaken in Section 3.2.2.
White-bellied Sea-Eagle Haliaeetus leucogaster	NSW BC Act Vulnerable Migratory EPBC Act	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterized by the presence of large areas of open water (larger rivers, swamps, lakes, the sea). Birds have been recorded in (or flying over) a variety of terrestrial habitats. The species is mostly recorded in coastal lowlands, but can occupy habitats up to 1400 m above sea level on the Northern Tablelands of NSW and up to 800 m above sea level in Tasmania and South Australia. Birds have been recorded at or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds. They also occur at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland,	Possibly occurring within or in close proximity to the site. Suitable nesting habitat present within the site. Further assessment has been undertaken in Section 3.2.2.

		forest (including rainforest) and even urban areas. Breeding has been recorded on the coast, at inland sites, and on offshore islands. Breeding territories are located close to water, and mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest (including rainforest), closed scrub or in remnant trees on cleared land. Forages over large expanses of open water; this is particularly true of birds that occur in coastal environments close to the sea-shore, where they forage over in-shore waters. However, the White-bellied Sea-Eagle will also forage over open terrestrial habitats (such as grasslands). Birds may move to and congregate in favorable sites during drought or food shortage.	
White-throated Needletail Hirundapus caudacutus	Migratory EPBC Act	Almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks. In coastal areas, they are sometimes seen flying over sandy beaches or mudflats, and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes. They are sometimes recorded above islands well out to sea.	Unlikely to occur. No suitable habitat present on site.
MAMMALS			
Brush-tailed Rock-wallaby *Petrogale penicillata*	NSW BC Act Endangered EPBC Act Vulnerable	Occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night. Highly territorial and have strong site fidelity with an average home range size of about 15 ha.	Unlikely to occur within or in close proximity to site. No important habitat would be affected.

Yellow-bellied Glider - *Petaurus Australis*	Vulnerable *NSW* BC *Act*	Forest with old growth elements. Large Eucalypt Hollows for denning- Inhabits mature or old growth Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia mid storey. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Extract sap by incising (or biting into) the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar. Very mobile and occupy large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food resources.	Unlikely to occur within or in close proximity to site. No sap feed tree species occur within or in proximity to the site. No incised trees occur in proximity to the site. The species has not been recorded in proximity to the site, including during nocturnal surveys associated with the BDAR (SCC 2020). No potentially important habitat including hollow-bearing trees would be affected.