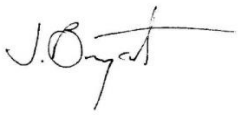
REVIEW OF ENVIRONMENTAL FACTORS (REF)
REPAIR TO RETAINING WALL AND FISH CLEANING FACILITY
SUSSEX INLET LIONS PARK
EDGEWATER AVENUE AND LAKEHAVEN DRIVE, SUSSEX INLET

Contents

Document control

Item	Details
Project	Repair of retaining wall and fish cleaning facility – Lions Park Boat Ramp Reserve – Edgewater Avenue and Lakehaven Drive, Sussex Inlet
Client/Proponent	City Services, Shoalhaven City Council
Prepared By	City Services, Shoalhaven City Council

Document status

Version	Author / Reviewer*	Name	Signed	Date
V1.0	Author	Geoff Young		10/10/2023
	Reviewer	Jeff Bryant		11/10/2023

*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)	"Fisheries Permit" - Section 200 and potentially 205 of the NSW *Fisheries Management Act 1994*.
Required publication	Yes – as per Section 171(4)(b)(i) of the NSW *Environmental Planning and Assessment Regulation 2021*

1. PROPOSAL AND LOCATION

1.1 Overview

The proposed activity is the repair (by replacement) of a 26 metre section of an existing retaining wall and fish-cleaning facility on the shore of Sussex Inlet waterway within the Lions Park Boat Ramp Reserve, Lakehaven Drive, Sussex Inlet (Figure 1 p.8).

The proposed activity would comprise:

- the repair (by replacement) of damaged and deteriorated timber retaining wall with sandstone retaining wall
- reinstatement of damaged gravel flexible pavement
- removal of the existing fish cleaning table and associated undermined slab
- reinstate fish cleaning table with new concrete slab and associated, water supply connections, drainage outlets and shelter footings
- reinstall the shelter above the fish cleaning table.

The retaining wall would be re-constructed using variable, large angular sandstone rock (300mm to 800 mm) over compacted degraded sub-base wrapped in geo-fabric.

Refer to Figure 2 below and Appendix A for design plans.

Works would also involve the implementation of safeguards and mitigation measures prescribed in Section 7 of this Review of Environmental Factors (REF).

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 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.

Note: More substantial works were originally proposed (refer to concept plans D22/512146) including:

- the repair (by replacement) of damaged and deteriorated timber retaining wall with sandstone revetment wall – approximately 63 metres
- installation of 500mm diameter rock headwall at the terminus of existing stormwater pipes
- replacement of light pole
- installation of new concrete footpath

The revetment wall would be constructed using variable sized sandstone logs and blocks for safety, aesthetic appeal and provide habitat for fish and aquatic plants.

As a result of budgetary and planning approval restrictions, the initial concept plans were put on hold until the release and certification of the Coastal Management Program prepared under the NSW *Coastal Management Act 2016* and additional funding.

The proposed activity therefore is an interim measure to repair, by replacement, of a section of the existing retaining wall that has the greatest damage and which is susceptible to further damage.

1.2 Justification and consideration of alternatives

The Lions Park Boat Ramp Reserve provides a deep-water access point for the area. Boating is a popular pastime in the area due to the fishing conditions and resources provided in Sussex Inlet and its waterways. The facilities at the site however have been damaged by successive storm events. The existing timber retaining wall and adjacent concrete slab under the fish cleaning facility have failed. Damage is shown in photos provided in Section 2.4 of this REF.

The proposed sandstone retaining wall would not only increase the safety of the public around the waterway and protect against future storm events but will increase the aesthetic appeal of the site and increase fish habitat. Referencing the document *Environmentally Friendly Seawalls* (DECCW 2009), the sandstone retaining wall would be constructed using natural sandstone rocks of various size to create gradual slope into the water, create voids, roughness and assorted textures within the wall to promote fish and marine plant habitat (DECCW 2009).

The proposed wall is also consistent with the recommendations by the Fish Habitat Network[1] with regard to the replacement of seawalls, *i.e. "…where an old seawall is being replaced, the incorporation of a more gradual slope across the structure (from seaward to landward side) will increase the opportunities for colonisation of surfaces as a wider section of the structure is available at each point over the tidal cycle…the natural surface variations in nearby rock platforms and shorelines can be mimicked in the new structure to provide a range of features including pools, nooks, crannies, benches and platforms."*

The like-for-like repair of the timber retaining walls would not provide the potential habitat for plants, fish and other animals that the proposed sandstone wall would provide. Life expectancy of the like-for-like timber wall would also not be as long.

The replacement of the fish cleaning facility is necessitated by the severe undermining of the concrete slab on which the existing facility is installed.

Doing nothing would be unacceptable to the community and would result in the continual deterioration of the site to a point where safety risks would result in the facility being closed.

1.3 Location

The proposed activity would be undertaken in and on the shore of Sussex Inlet waterway (Figure 1 below) and undertaken on lands described in Table 1 below.

[1] Environmentally friendly erosion protection: seawalls (Fish Friendly Marine Infrastructure) - Fish Habitat Network

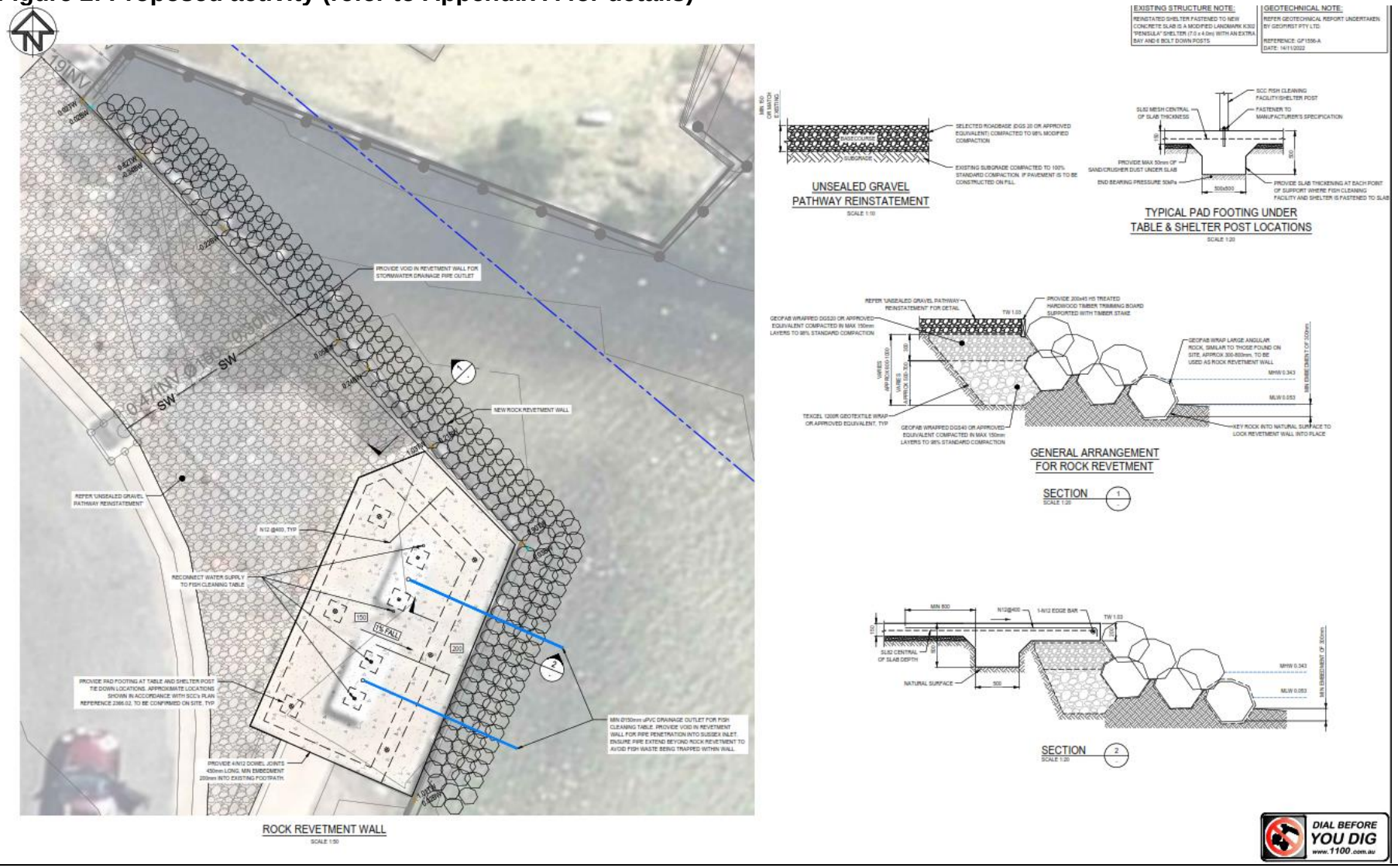
The site of the proposed activity would be accessed via Lakehaven Drive and the Lions Park Boat Ramp Reserve carpark.

Table 1: Lands affected by the proposed activity

Land details	Components of activity	Pertinent land information
Lakehaven Drive	• Fishing table • Sandstone retaining wall • Reinstatement of flexible pavement • Concrete footpath • Replacement / relocation of existing light-poles	• Council road reserve to which SCC is the road authority. • Road reserve assumed to extend to the Mean High Water Mark (MHWM) of Sussex Inlet waterway.
Lot 166 DP 723104 “Sussex Inlet Lions Park”	• Sandstone retaining wall • Depot and site sheds for the proposed activity.	• Crown Reserve R69668. SCC is the appointed Crown Land Manager with designated category of “park” and “natural area”. • Subject of Native Title and Aboriginal Land Rights claims.

Figure 1 Location of the proposed activity

Figure 2: Proposed activity (refer to Appendix A for details)



2. EXISTING ENVIRONMENT

Photos of the site are provided in Section 2.4 below.

The site of the proposed activity was assessed by a SCC Environmental Operation Officer on 14 March 2023.

Investigations involved vegetation and habitat assessment, recording flora species within and immediately adjacent to the proposed activity, determination of vegetation communities including the presence of threatened ecological communities, Aboriginal heritage objects, seagrass and saltmarsh, and investigation of habitat availability for threatened flora and fauna species.

2.1 Terrestrial Habitat and vegetation assessment

The proposed activity site is generally denuded of vegetation as it has been cleared for the existing development comprising retaining walls, fish cleaning facility, carpark, stormwater management systems, access road, and concrete paths. Swamp Oak *Casuarina glauca* regrowth, less than two metres high and 4m^2 in area occurs on the northern part of the activity site. This vegetation would not be impacted (Figure 3 p.11).

Swamp Oak forest occurs upstream/upslope of the stormwater outlet, however, this would not be impacted by the proposed activity (Figure 3 p.11).

The remnant Swamp Oak Forest upstream of the stormwater outlet and the Swamp Oak regrowth patch on the northern extent of the proposed activity may comprise, or may have once comprised the endangered ecological community *Swamp Oak Floodplain Forest of the NSW South Coast, Sydney Basin and South East Corner Bioregions* (hereafter referred to as Swamp Oak Floodplain Forest).

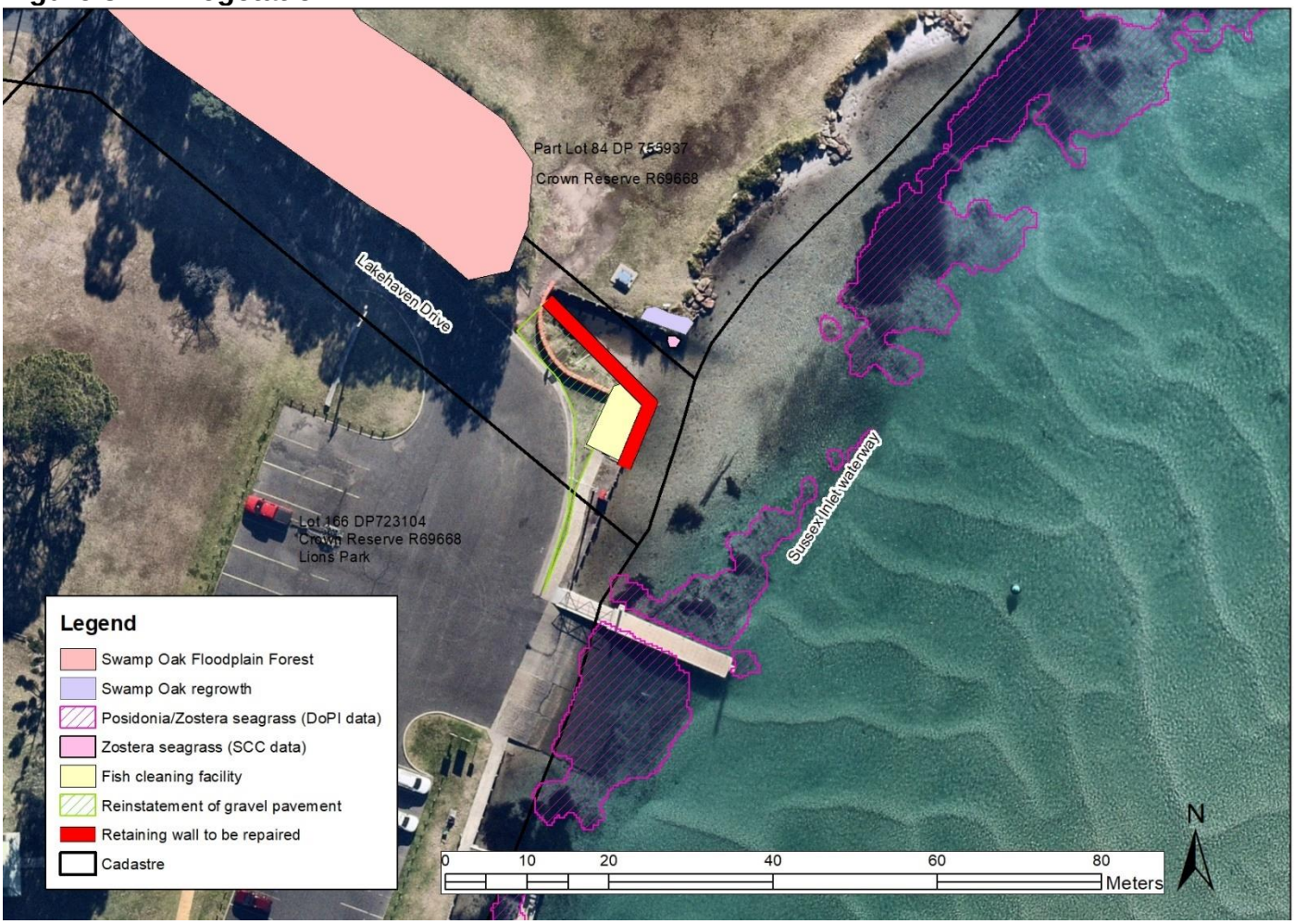
Eelgrass *Zostera* spp. wrack was present both on the shore and in the water and a small patch of live Eelgrass (~1m^2) is extent to the north of the proposed activity site (Figure 3 p.11).

No threatened flora nor suitable habitat for locally occurring threatened orchid species was identified on site during site environmental examinations.

No South-eastern Glossy Black-cockatoo (*Calyptorhynchus lathami lathami*) feed trees (*e.g. Allocasuarina littoralis* with characteristic chewed cones), nor Yellow-bellied Glider (*Petaurus australis*) feed trees (e.g. e.g. *Corymbia gummifera* or *Eucalyptus punctata* with v-shaped feeding scars) occur within or in close proximity to the site. No signs of potential threatened fauna use of the site (e.g. bandicoot diggings, owl white-wash or other threatened fauna scats) were noted.

There are no hollow-bearing trees in the area that would be affected by the proposed activity.

Figure 3 Vegetation



2.2 The waterway

The retaining wall would be re-constructed in the Sussex Inlet waterway which connects the St Georges Basin waterbody with the Tasman Sea between Bherwerre Beach and Farnham Headland. The Inlet is approximately six kilometres in length with the proposed activity site approximately 1.6 kilometres from the entrance. St Georges Basin is a wave dominated barrier estuary with the entrance of the Inlet protected from the northeast by St Georges Headland and partially protected from southerly swells by Farnham Headland to the south and a nearby rock island.

The substrate of the Lake comprises estuarine deposits of silt and medium-grain sand of marine origin. Benthos and signs of benthic life were not observed at the time of inspect but the substrate is likely to support invertebrate infauna and mobile invertebrates (*e.g.* Hermit Crabs, Soldier Crabs). Similarly, fish such as Yellowfin Bream *Acanthopagrus austalis*, Dusky Flathead *Platycephalus fuscus*, Sand Whiting *Sillago cilliata,* Stingaree *Urolophus sp.,* and Weeping Toadfish *Torquigener pleurogramma* would be expected to occur in the waterway at the site of the proposed activity from time to time. Rock Oyster *Saccostrea glomerata* and littorinid snails were present on the existing retaining wall and stormwater structures.

The waterway is mapped by the NSW Department of Primary Industries - Fisheries as 'key fish habitat' for the purposes of the NSW *Fisheries Management Act 1994.*

The site is within flood liable land being mapped by SCC as existing Flood Planning Area for the purposes of the SCC Development Control Plan and Shoalhaven Local Environmental Plan (SLEP).

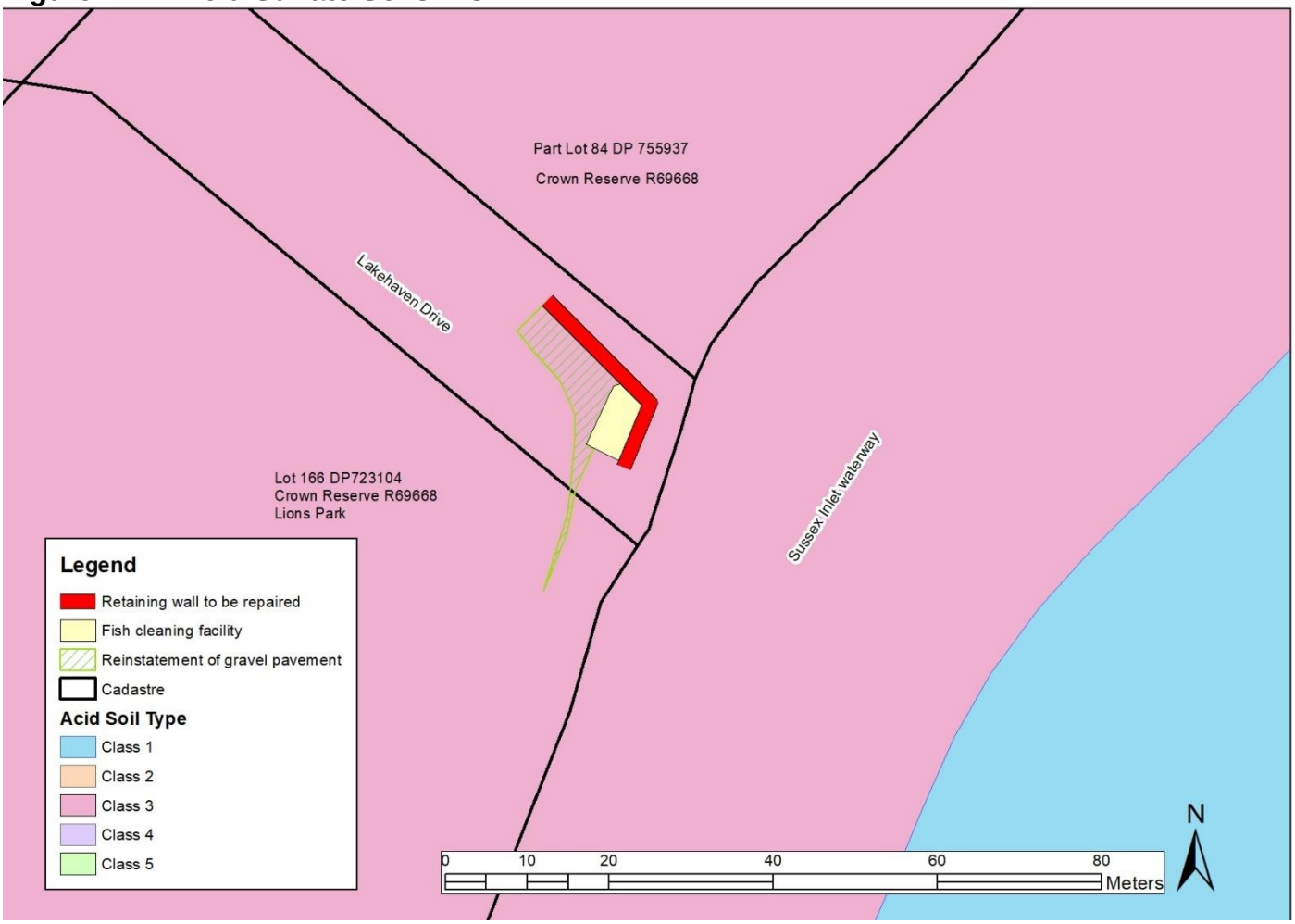
2.3 Geology

Being located on an estuarine tidal-delta flat and estuarine channel, the geology of the proposed activity site comprises estuarine deposits of fine to medium-grained lithic-carbonate-quartz sand (marine-deposited), silt, clay, shell material, and polymictic gravel of a Holocene age (MinView 2023[2]).

Being Holocene and estuarine in origin, the soils at the site have a higher risk of containing iron sulfides which when exposed to oxygen generate sulfuric acid *i.e.* acid sulfate soils. This is reflected in the acid sulfate soil risk map where the site is mapped as "class 3" risk along the shore and "class 1" risk for the estuary bottom sediments (Figure 4 below).

[2] https://minview.geoscience.nsw.gov.au/#/?lon=148.5&lat=-32.5&z=7&l=

Figure 4 Acid Sulfate Soils Risk



2.4 Photos

Photo 1: Damaged retaining wall to be replaced and gravel pavement. Also showing stormwater outlet (right-hand side of photo) which would be furnished with rock headwall and Swamp Oak Forest upslope of the works.

Photo 2: Damaged retaining wall to be replaced and gravel pavement. Also showing Swamp Oak regrowth (left-hand side of the photo) that would not be affected.

Photo 3: Existing fish cleaning facility above undermined concrete slab – both to be replaced

Photo 4: Extent of undermining of fish cleaning facility slab

3. ASSESSMENT OF LIKELY IMPACTS ON THE ENVIRONMENT

3.1 Impacts associated with the proposed activity

The proposal would involve the following disturbance and direct impacts:

- Potential pollution of water during demolition and replacement works.
- Excavation of potentially acid sulfate soils.
- Dredging and reclamation of Sussex Inlet waterway.

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

- threatened species
- indigenous and non-indigenous heritage
- water quality, the riparian zone and key fish habitat
- development of flood liable land

Each is discussed below.

3.2 Pollution

Pollution of the waters could occur during the proposed activity including:

- hydrocarbons *e.g.* oil and fuel spills and leaks
- fines from the cutting of timber.
- fines from rock and deposited sub-base to form the retaining wall.

Cutting of material shall, wherever possible, be conducted on land and all fines and off-cuts to be collected and disposed of off-site.

If cutting needs to occur over water (*e.g.* demolition works), tarps or similar shall be utilised to capture potential contaminants including oils, saw-dust and metal or backfill fines. Battery powered hand-tools would be preferred over two-stroke.

Clean sandstone rock (without fines) shall be used for the retaining wall. This rock shall also be placed on top of non-woven geotextile to separate the introduced material from the existing estuary bed.

The imported degraded sub-base would be encased in geofabric to contain any movement of this material and any fines into the waterway.

The implementation of the above measures as well as the environmental measures prescribed in Section 7 of the REF (*e.g.* spill-kits, hydrocarbon booms, working during lower tide periods) would also minimise potential pollution events and mitigate impacts if they inadvertently occur.

3.3 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* and Part 7A of the *NSW Fisheries Management Act 1994* that relate to the operation of the Act in connection with the terrestrial and aquatic environment. Each are addressed below.

3.3.1 Part 7A *Fisheries Management Act 1994*

Part 7A relates to threatened species conservation. Section 220ZZ provides a "7-Part test of significance" to determine whether a proposed action is likely to significantly affect threatened species, populations or ecological communities and thereby require a species impact statement (SIS). The assessment is provided below:

Part 1 In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is to be placed at risk of extinction.

Several saltwater species listed in the schedules of the Act are known to occur or have occurred on the south coast of NSW[3]:

- Grey Nurse Shark *Carcharias taurus* and Blind Slug *Smeagol hilaris* are listed as Critically Endangered.
- Southern Bluefin Tuna *Thunnus maccoyii* and Scalloped Hammerhead Shark *Sphyrna lewini* are listed as Endangered.
- Great White Shark *Carcharodon carcharia* and Black Rockcod *Epinephalus daemelii* are listed as Vulnerable.
- Green Sawfish *Pristis zijsron* is listed as Presumed Extinct.

Populations of these species have primarily been reduced by over-harvesting, habitat degradation and human interference or hazards (e.g. nets) in habitat.

Grey Nurse Shark

Grey Nurse Sharks *Carcharias taurus* have the potential to enter Sussex Inlet waterway. Grey Nurse Sharks are, however, found predominantly in inshore coastal waters. They have been recorded at various depths, but mainly found in waters between 15 and 40 metres deep. It is unlikely that the species would occur at the site of the proposed activity due to the long, shallow entrance.

Blind Slug

This is a pulmonate (with lung) slug. It has only been collected from a small, isolated location at Merry Beach, south of Ulladulla. The species lives in gravel and cobble filled rocky crevices and beaches at Merry Beach. The proposal would therefore have no effect on the lifecycle of this species.

Southern Bluefin Tuna

The Southern Bluefin Tuna are pelagic fish occurring in the oceanic waters normally on the seaward side of the continental shelf. The proposal would therefore have no effect on the lifecycle of this species.

[3] All threatened species information in Section 3.2.1 sourced from NSW DoPI Threatened Species database: https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current

Scalloped Hammerhead Shark

The Scalloped Hammerhead Shark is a coastal pelagic species with a circum-global distribution in warm temperate and tropical coastal areas. They are known to form large migratory schools and in Australia tend to move as far south as Sydney during the warmer months. The proposal would therefore have no effect on the lifecycle of this species.

Great White Sharks

Great White Sharks are normally found in inshore waters around rocky reefs and islands and often near seal colonies. They have been recorded at varying depths down to 1,200 metres. The proposal would therefore have no effect on the lifecycle of this species.

Black Rockcod

Black Rockcod live in relatively shallow rocky reefs where they are usually found in caves, ledges, gutters and beneath bommies. Small juveniles are often found in coastal rocky pools, and larger juveniles around rocky shores in estuaries. The site of the proposed activity does not provide suitable habitat for any life stage of the Black Rockcod.

The proposal would provide more suitable habitat for juveniles by replacing the timber retaining wall with a wall featuring rock with nooks and crannies.

Green Sawfish

Green Sawfish (presumed extinct in NSW) are bottom dwelling rays commonly found in near-coastal environments including estuaries, river mouths, embankments and along sandy and muddy beaches. It has been recorded in Jervis Bay, but the last confirmed sighting of the species in NSW was in 1972 from the Clarence River at Yamba. The proposal would not directly impact the species and is unlikely to negatively affect suitable habitat for the Green Sawfish, such that the species (if not already extinct) would be impacted.

Part 2 In the case of an endangered population, whether the proposed development or activity is likely to have an adverse effect on the lifecycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

The endangered populations listed under the Act are:

- *Ambassis agassizii* Steindachner Agassiz's glassfish, olive perchlet, western New South Wales population
- *Craterocephalus amniculus* Darling River Hardyhead, Hunter River population
- *Gadopsis marmoratus* river blackfish, Snowy River population
- *Tandanus tandanus* freshwater catfish, eel tailed catfish, Murray-Darling Basin population
- *Posidonia australis* seagrass, Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie populations

These areas would be unaffected by the proposed activity.

Part 3 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.

The endangered ecological communities listed under the Act are:

- Aquatic ecological community in the natural drainage system of the lower Murray River catchment
- Aquatic ecological community in the natural drainage system of the lowland catchment of the Darling River
- Aquatic ecological community in the natural drainage system of the lowland catchment of the Lachlan River
- Aquatic ecological community in the catchment of the Snowy River in NSW

These areas would be unaffected by the proposed activity.

Part 4 In relation to the habitat of a threatened species or ecological community:

I. The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

II. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

III. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

N/A – The area affected by the activity does not provide habitat for threatened species, populations or ecological communities (refer responses to Part 1 through Part 3 above)

Part 5 Whether the proposed development or activity is likely to have an adverse effect on any critical habitat (either directly or indirectly),

The only critical habitat currently on the register is "*Critical Habitat of Grey Nurse Shark"* with listed and mapped areas of:

- Bass Point (Shellharbour)
- Big and Little Seal Rocks
- Fish Rock and Green Island (South West Rocks)
- Julian Rocks (Byron Bay)
- Little Broughton Island (Port Stephens)
- Magic Point (Maroubra)

- Montague Island (Narooma)
- The Pinnacle (Forster)
- Tollgate Islands (Batemans Bay)

These areas would be unaffected by the proposed activity.

Part 6 Whether the proposed development or activity is consistent with a Priorities Action Statement

As demonstrated in Part 1 above, the proposed activity would have no effect on threatened species.

Part 7 Whether the proposed development constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

Key Threatening Process	Assessment
Degradation of native riparian vegetation along NSW water courses	Not applicable – The subject waterway is estuarine. Estuarine and marine waters are excluded from this KTP as the degradation of riparian vegetation in these areas does not adversely affect two or more listed threatened species, populations or ecological communities (Fisheries Scientific Committee 2007).
Hook and line fishing in areas important for the survival on threatened fish species	Not applicable – proposal does not comprise or facilitate hook and line fishing.
Human-caused climate change	Not applicable – the proposal does not contribute to human-caused climate change.
Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams	Not applicable – the proposal does not involve the installation or operation of instream structures that would alter the natural flow regime.
Introduction of fish to waters within a river catchment outside their range	Not applicable – the proposal does not involve releasing fish.
Introduction of non-indigenous fish and marine vegetation to the coastal waters of NSW	Not applicable – the proposal does not involve the introduction of non-indigenous fish.
Removal of large woody debris from NSW rivers and streams	Not applicable – the proposal does not involve the removal of woody debris.
The current shark meshing program in NSW waters	Not applicable – the proposal does not involve shark meshing.

3.3.2 Part 7 *Biodiversity Conservation Act 2016*

Section 7.3 of the 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.

An assessment of the potential for NSW threatened flora and fauna species occurring on-site or otherwise being impacted by the proposal was undertaken (refer to Appendix B). The assessment indicated that the site may provide marginal foraging habitat for the endangered Pied Oystercatcher *Haematopus longirostris* which forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. At lower ends of tidal regime, this habitat is exposed between the existing timber retaining wall and the water.

The species nests on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. Nests are shallow scrapes in sand above the high tide mark, often amongst seaweed, shells and small stones. The site of the proposed activity does not comprise nesting habitat.

Although the proposed activity provides marginal foraging habitat, the proposed development or activity is unlikely 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 for the following reasons:

- The proposed activity would not impact known or potential nesting sites or habitat.
- There are no records of the species at the site.
- In the unlikely event the species is present during construction works, they would likely fly away to numerous alternative nearby sites without direct impact.
- Any disturbance would be localised and within a small area of potential marginal foraging habitat, in a location where vast areas of similar and superior habitat occur nearby which would remain available during works *e.g.* the shore of the Sussex Inlet waterway, St Georges Basin waterbody and Bherwerre Beach.
- Disturbance regularly occurs in these areas resulting from public access, and the launching and retrieval of water vessels and fishing activity making the site less than optimal for species.
- Machinery and truck access to sites would be via the sealed access road and carpark. No other habitat would be removed to facilitate access.

A species impact statement (SIS) or entry into the Biodiversity Offset Scheme (BOS) is therefore not warranted.

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

The remnant Swamp Oak Forest upstream of the stormwater outlet and the Swamp Oak regrowth patch on the northern extent of the proposed activity (Figure 3 p.11) may comprise, or may have once comprised the endangered ecological community *Swamp Oak Floodplain Forest of the NSW South Coast, Sydney Basin and South East Corner Bioregions* (hereafter referred to as Swamp Oak Floodplain Forest).

The proposed activity would not impact this vegetation. The proposal would also not result in the fragmentation or isolation of areas of any EEC and is unlikely to adversely affect the extent or composition of any EEC such that a local occurrence of the EEC would be placed at risk of extinction. As species impact statement (SIS) or entry into the Biodiversity Offset Scheme is therefore not required.

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

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

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.

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 proposal will 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.

There are no key threatening process listed in the NSW *Biodiversity Conservation Act 2016* considered relevant to the proposed activity.

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 will 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 Code') (DECCW 2010) 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.

A search on the Aboriginal Heritage Information Management System (AHIMS) on 18 April 2023 indicated that there are no recorded Aboriginal sites or places in the vicinity of the proposal (refer to AHIMS report below in Figure 5 below).

The site of the proposed activity is within a landscape feature listed in the Due Diligence Code that has a higher propensity for Aboriginal objects *i.e.* within 200 metres of waters. As such a targeted site survey was undertaken on 18 April 2023. No objects were found with at least 80% visibility.

The site of the proposed activity is "disturbed land" or "land already disturbed by previous activity" as defined in the Due Diligence Code (DECCW 2010):

> "*Land is disturbed if it has been the subject of 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 the proposed activity is considered to be highly disturbed land through the previous activities associated with constructing and maintaining the existing retaining wall, stormwater system, carpark, concrete slab, and Lakehaven Drive.

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

Figure 5 Results of AHIMS Aboriginal heritage search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Lakehaven Drive
Client Service ID : 774041

Shoalhaven City Council - Nowra
PO Box 42 Bridge Rd
Nowra New South Wales 2541
Attention: Geoffrey Young
Email: geoff.young@shoalhaven.nsw.gov.au

Date: 18 April 2023

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 280491.0 - 280668.0, Northings : 6105152.0 - 6105364.0 with a Buffer of 0 meters, conducted by Geoffrey Young on 18 April 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. *

3.5 Non-indigenous heritage

No items of local heritage significance or any items on the State Heritage Register or listed in the Shoalhaven Local Environmental Plan occur near the site such that the proposed works might impact them. No further consideration is required.

3.6 Acid Sulfate Soils

The site of the proposed activity is mapped as Class 3 and Class 1 risk for acid sulfate soils (Figure 4 p.13).

The *Shoalhaven Local Environmental Plan 2014* (SLEP) indicates that a risk of exposure of acid sulfate soils exist on land mapped as Class 3 where works occur more than one metre below the natural ground surface or where works by which the watertable is likely to be lowered more than one metre below the natural ground surface. For Class 1 areas any excavation works would carry risk of exposure of acid sulfate soils.

Excavation for the proposed activity would be for:

- keying-in of sandstone rock into the bottom sediment – Class 3 risk area
- installation of sandstone retaining wall – Class 3 risk area
- slab for fish cleaning facility - Class 3 risk area.

Consequently, the material that would be excavated shall be tested for the presence of potential acid sulfate soils. A full Acid Base Account assessment utilising the SPOCAS[4] analysis shall confirm the presence of acidity, potential acidity and liming rate to neutralise the acid prior to disposal. If confirmed as acidic or potentially acidic, an Acid Sulfate Soil Management Plan shall be prepared in accordance with the Acid Sulfate Soil Manual (ASSMAC 1998). This requirement is reflected in the safeguards and environmental impact mitigation measures prescribed in Section 7 of this REF.

3.7 Flooding

The proposed activity would be in flood prone land with a high hazard floodway combined hazard and hydraulic category (Stone, M. *pers.comm.* 2023). Based on the results from the St Georges Basin Flood Study (Stantec 2022), the site of the proposed activity has a 1% Annual Exceedance Probability (AEP) velocity of 1.5m/s. Higher velocities are possible at the stormwater outlet. The site was also determined to have a hazard category “H5” being unsafe to vehicles and people and all buildings vulnerable to structural damage and some building types vulnerable to failure.

As explained in Section 1.1 of this REF, the proposed activity is an interim solution to make the facility safe, usable and less vulnerable to further storm damage. A long-term plan for the site would be established with the certification of the Coastal Management Program under the *Coastal Management Act 2016* currently being prepared. The Coastal Management Program would better consider the flooding regimes in the longer term. In the interim, the proposed activity is required to repair damage to the existing timber retaining wall and make the area safer and useable. In comparison to the existing damaged timber retaining wall, this interim solution would provide increased fortification to the shore.

[4] Suspension Peroxide Oxidisation Combined Acidity and Sulfur.

3.8 EP&A Regulation – Clause 171 matters of consideration

Clause 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. The following assessment in Table 2 below deals with each of the factors in relation to the proposed activity.

Table 2: Clause 171(2) Factors

Does the proposal:	Assessment	Reason
a) Have any environmental impact on a community?	Positive	Although some community members, particularly nearby residents, may be affected by slight increase in noise during construction, the proposed activity would benefit the community and visitors to the area through improved recreational facilities. The proposed activity would not have any impact on other community services and infrastructure such as power, water, waste water, waste management, educational, medical or social services.
b) Cause any transformation of a locality?	Positive	The locality being carpark, stormwater system, foreshore, fishing facility, etc would not change. Indeed, the proposed activity would make improvements to the locality and repair damaged caused by storms.
c) Have any environmental impact on the ecosystem of the locality?	Low adverse	An assessment provided in Section 3.2 of this REF concludes that the proposed activity would not have a significant impact upon threatened species or endangered ecological communities. No significant habitat features would be removed or otherwise impacted. No food resources critical to the survival of a particular species would be removed. 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 through the input of sediment and nutrient into the ecosystem. Environmental safeguards and mitigation measures (Section 7) would be employed to minimise risk of impacts.
d) Cause a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Low adverse / positive	In the context of the locality, with consideration of residential nearby, the visual impact of the activity would be minimal and complimentary. The proposed activity introduces a structure adjacent to a substantially altered environment, *i.e.* residential areas and cleared foreshore. The proposed activity would improve recreational values of and opportunities at the locality. There would be no removal of native vegetation.

Does the proposal:	Assessment	Reason
		The area that would be affected by the proposed activity has no significant value in terms of science or other environmental qualities. 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 site of the proposed activity has no significant aesthetic, architectural, cultural, historical, scientific or social values. As such, the proposed activity would have no impact on these items. 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 proposal. 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).
f) Have any impact on the habitat of protected fauna (within the meaning of the Biodiversity Conservation Act 2016)?	Low adverse	No fauna habitat will be removed by the activity. No important habitat will be removed or otherwise impacted. The potential impact is therefore considered to be insignificant or inconsequential. The proposed activity would not have a significant impact upon threatened fauna (refer to Section 3.2 of this REF). The specified environmental mitigation measures (Section 7) would mitigate indirect impacts to fauna and habitat.
g) Cause any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Negligible	There are no species likely to rely on the site of the proposed works to the extent that modification would put them further in danger. The prescribed environmental safeguards and mitigation measures (Section 7 of this REF) would minimise the risk of impact on resident fauna, fish, and flora.
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. There are no sensitive receivers in the vicinity of the proposed works. The proposed activity would not use hazardous substances or use or generate chemicals which may build up residues in the environment.

Does the proposal:	Assessment	Reason
		The possible impacts have been discussed in detail under Section 3. Refer also to the conclusions and recommendations in Section 7.
i) Cause any degradation of the quality of the environment?	Low-adverse	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 through the input of sediment and nutrient into the ecosystem. The proposal would not intentionally introduce noxious weeds, vermin, or feral animals into the area or contaminate the soil. Environmental safeguards and mitigation measures (Section 7) 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 activity is not anticipated to adversely affect flood behaviour or exacerbate flooding risks.
k) Cause any reduction in the range of beneficial uses of the environment?	Positive	The site and local environment will remain relatively unchanged. The area is currently being used as a boat launching facility in a significantly modified environment. The proposed activity would improve this use and reduce the shore erosion currently occurring.
l) Cause any pollution of the environment?	Low adverse	The proposal would involve a temporary and local increase in noise during the construction phase due to the use of machinery. However this will not affect any sensitive receivers such as residential areas, schools, childcare centres and hospitals. Nearby residents would be notified of noise-generating works. Turbidity, sediment and erosion control in accordance with the Blue Book will be implemented to minimise movement of sediment into the Lake. 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 proposal does not involve the use, storage or transportation of hazardous substances or the generation of chemicals which may build up residues in the environment. The material that would be excavated shall be tested for the presence of potential acid sulfate soils. A full Acid Base Account assessment utilising the SPOCAS analysis shall confirm the presence of acidity, potential acidity and liming rate to neutralise the acid prior to disposal. If necessary,

Does the proposal:	Assessment	Reason
		an acid sulfate soil management plan would be prepared to facilitate treatment.
m) Have any environmental problems associated with the disposal of waste?	Negligible	The waste that would be disposed off-site can be recycled or re-used in accordance with resource recovery exemptions or taken to a licensed waste facility. The material that would be excavated shall be tested for the presence of potential acid sulfate soils. A full Acid Base Account assessment utilising the SPOCAS analysis shall confirm the presence of acidity, potential acidity and liming rate to neutralise the acid prior to disposal. If necessary, an acid sulfate soil management plan would be prepared to facilitate treatment. 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 proposal are not likely to interact. Mitigation measures (Section 7) shall be implemented to minimise the risk of cumulative environmental effects. The current proposal would not significantly affect habitat connectivity or reduce any significant vegetation. No further construction activities are planned for this location.
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.
q) applicable local strategic planning statements, regional strategic plans or district plans made under	Positive	The proposed activity is consistent with the *Shoalhaven 2040* Strategic Land-use Planning Statement, including Planning Priority 2 *Delivering infrastructure* and Planning Priority 7 *Promoting a responsible visitor economy* https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D20/437277.

Does the proposal:	Assessment	Reason
the Act, Division 3.1		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) other relevant environmental factors	n/a	Environmental factors have been addressed in Section 3 of this REF.

4. PLANNING APPROVALS

4.1 NSW 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."*

Section 2.16(2)(a)(iv) of the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) states "*development for the purpose of coastal protection works may be carried out on land to which this Chapter applies by or on behalf of a public authority – (a) without development consent – if the coastal protection works are – (iv) routine maintenance works or repairs to any existing coastal protection works".* In this regard:

- the relevant "Chapter" of the SEPP applies to the site of the proposed activity *i.e. "land within the coastal zone"*
- the proposed activity constitutes "coastal protection works" as defined in both the SEPP and the Coastal Management Act 2016 *i.e. "activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters, including (but not limited to) seawalls, revetments and groynes"*
- the proposed activity is for the repair of existing coastal protection works.

Additionally, Section 2.165(1) of the NSW *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) provides that the "*(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"* . This includes *"emergency works, including works required as a result of flooding, storms or erosion"* (Section 2.165(3)(c)).

With regard to the fish cleaning facility Section 2.73(3)(a)(ii) of the Transport and Infrastructure SEPP states that for parks and public reserves "*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 – (ii) recreation areas and recreation facilities (outdoor).* As a fish cleaning table would be directly related to a recreational pursuit and therefore regarded as a recreational facility, Clause 2.73 of the Transport and Infrastructure SEPP applies, and the proposed activity does not require development consent.

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.

4.2 NSW Coastal Management Act 2016

This Act relates to development and implementation of coastal management programs (CMPs). SCC is currently in the process of developing Coastal Management Plans (CMPs) for coastal

areas of the Shoalhaven in accordance with the Act. The St Georges Basin and Sussex Inlet CMP has not yet been finalised and certified. However, the issues of biodiversity, water quality, Aboriginal community values, access, recreation and tourism, boat navigation, flooding, and climate change have been identified as key issues (displaydoc.aspx (nsw.gov.au) with the damage and erosion and need for the maintenance of the facility acknowledged in the *St Georges Basin, Sussex Inlet, Swan Lake and Berrara Creek Coastal Management Program Foreshore Erosion Assessment* (Advisian 2023). Potential management actions identified in the *Coastal Management Plan Stage 2 Detailed Risk Assessment* for the site is "*design more resilient erosion protection for this foreshore in conjunction with boat ramp upgrade*" (Advisian 2023b). The proposed activity is consistent with this management action.

Section 27 of the Act deals with coastal protection works and matters of consideration when granting development consent for coastal protection works. However as discussed in Section 4.1 above, development consent is not required, and further consideration of the Section 27 is not required.

4.3 Fisheries Management Act 1994

Sussex Inlet waterway is mapped as Key Fish Habitat for the purposes of the *Fisheries Management Act 1994.* The proposed activity would involve reclamation and dredging (placement and 'keying-in' of sandstone rock). Reclamation and dredging is regulated under Part 7 Division 3 of the Act https://legislation.nsw.gov.au/view/html/inforce/current/act-1994-038#pt.7-div.3 and will require a Section 200 Permit to be issued by the NSW Department of Primary Industries – Fisheries prior to any works within the Lake and shore.

There is no live marine vegetation or saltmarsh at the site of the proposed activity. Marine vegetation in the form of seagrass wrack may however be present during the works. Wrack is protected from harm under Section 204A of the Act. 'Harm' includes to "*gather, cut, pull up, destroy, poison, dig up, remove, injure, prevent light from reaching or otherwise harm the marine vegetation, or any part of it"* (s.204). If wrack is present at the time of construction the wrack is to be moved aside and left on-site, otherwise, a Fisheries Permit must be obtained prior to the works that may 'harm' the wrack.

Regarding the other provisions and controls in the Act the proposed activity:

- would not affect declared aquatic reserves (Part 7, Division 2 of the Act);
- would not involve blocking the passage of fish (s.219);
- would not impact mangroves (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 use explosives in a watercourse (Clauses 70 and 71 of the *Fisheries Management (General) Regulation 2019).*

The seven-part test of significance, provided in Section 3.3.1 of this REF, determined that the proposed activity is unlikely to significantly affect threatened species, populations or ecological communities. A species impact statement is not required.

4.4 Local Government Act 1993

The proposed activity would be undertaken on Crown Land Reserve R69668 to which SCC is the appointed land manager under the Act. Section 3.21 of the Act provides that a Council manager can manage its dedicated or reserved Crown land as if it were public community land within the meaning of the NSW *Local Government Act 1993* (LG Act). Under Section 35 of the LG Act, community land is required to be used and managed in accordance with the plan of management (PoM) applying to the land. It is likely that the proposed activity site would be managed under the Generic Community Land PoM – Parks https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D11/116070. The proposed activity is consistent with this PoM as it meets many of the prescribed objectives such as "*To encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities", "To improve pedestrian / cycle access to parks", "To ensure the management and use of parks does not negatively impact on the natural environment"* and "*To maintain parks to ensure the safety of all users".*

4.5 Other

A summary of other relevant legislation and permissibility is provided in Table 3 below.

Table 3: Summary of other relevant legislation and permissibility

NSW STATE LEGISLATION
***Environmental Planning and Assessment Act 1979* (EP&A Act)**
Permissible √ Not permissible ☐
Justification: Both the Hazards and Resilience SEPP and the Transport and Infrastructure SEPP provides for the proposed works to be undertaken without development consent (refer to Section 4.1 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.
Protection of the Environment Operations Act 1997
Permissible √ Not permissible ☐
Justification: 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.

Local Land Services Act 2013
Permissible √ Not permissible ☐
Justification: Any clearing of vegetation would be of a kind authorised under Section 60O(b)(ii) of the *Local Land Services Act 2013* ("an activity carried out by a determining authority within the meaning of Part 5 of the Act after compliance with that Part."). No separate authorisation under the Act is required.
***National Parks and Wildlife Act 1974* (NP&W Act)**
Permissible √ Not permissible ☐
Justification: • The proposed activity would not encroach into National Park estate. • The Act provides the basis for the legal protection and management of Aboriginal sites in NSW. Under Sections 86 and 90 of the Act it is an offence to disturb an Aboriginal object or knowlingly destroy or damage, or cause the destruction or damage to, an Aboriginal object or place, except in accordance with a permit of consent under section 87 and 90 of the Act. • As there are no recorded sites or visible objects and as the site is on 'disturbed land', the Due Diligence Guidelines (DECCW 2010) requires no further assessment as it is reasonable to conclude that there is a low probability of objects occurring in the area of the proposed activity and an AHIP is not required. Refer to Section 3.4 of this REF for more information.
Biodiversity Conservation Act 2016
Permissible √ Not permissible ☐
Justification: • The proposed activity is unlikely to have a significant impact on species and communities listed in the schedules of the Act (refer to Section 3.2 of this REF). • The proposed development is not within an area declared to be of "outstanding biodiversity value" as defined in the Act. • The design and mitigation measures (Section 7) 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 therefore is not deemed to be *likely to significantly affect threatened species* and an environmental impact statement (EIS) or a Biodiversity Development Assessment Report (BDAR) is not required. 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 will 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.

Aboriginal Land Rights Act 1983

Permissible √ Not permissible ☐

The Crown Reserve over Lot 166 DP723104 (Sussex Inlet Lions Park R69668) is subject to the 7 February 2017 multiple and blanket claims made over all Crown lands in NSW. Although the Act does not preclude the proposed activity, there is a risk that if the claim is successful the infrastructure on the site is also transferred to the claimant or easements or similar may be required. This risk is low as the reserve is unlikely to be 'claimable Crown land' as defined by Section 36 of the Act being lawfully used and occupied (exisiting park, retaining wall, carpark, boating facilities, *etc*) prior to the 2017 claim.

Roads Act 1993

Permissible √ Not permissible ☐

SCC is the road authority for Lakehaven Drive.

Lakehaven Drive is not a 'classified road' to which Section 75 applies (public authorities to notify TfNSW of proposal to carryout work on classified roads).

Water Management Act 2000

Permissible √ Not permissible ☐

Justification:

- 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 proposal would not interfere with the aquifer and therefore an interference licence is not required (s.91F).

Heritage Act 1977

Permissible √ Not permissible ☐

The proposed activity would not disturb an item of state heritage significance. The proposal would constitute 'minor works' under 'Relics of local heritage significance: a guide for minor works with limited impact'. The proposal would not result in any direct impacts on heritage items or values. Works can be undertaken with caution under an applicable exception under s139(1) and (2) of the Act.

COMMONWEALTH LEGISLATION
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EP&BC Act)
Permissible √ Not permissible ☐
Justification: The proposed activity would not be undertaken on Commonwealth land and no matters of National Environmental Significance are likely to be significantly impacted by the proposed activity. The proposed activity is therefore not a controlled action and does not require commonwealth referral.
Commonwealth *Native Title Act 1993*
Permissible √ Not permissible ☐
Justification: • The proposed activity would affect Native Title. • The proposed activity would however comply with the applicable provisions of the *NSW Natave title Act 1993* being valid future acts under Section 24JA or Section 24KA. • As the proposed act involve the construction or extablishment of a public work, Council was required to notify and give the opportunity to comment to the South Coast People as native title claimants. This was undertaken on the 1 June 2023 with the notification period expiring on 29 June 2023. No comments were received. Refer to SCC document D23/267901.

5. CONSULTATION WITH GOVERNMENT AGENCIES

5.1 Transport and Infrastructure SEPP

Section 2.10 – Consultation with councils - development with impacts on council-related infrastructure or services

The proposed activity would:

(a) not have an impact on stormwater management

(b) unlikely generate traffic to an extent that it would strain the capacity of the road system

(c) not involve connection to, or have a substantial impact on the capacity of the sewerage system

(d) not involve connection to, and use of a substantial volume of water from the water supply system

(e) unlikely to cause a disruption to pedestrian or vehicular traffic

(f) not involve excavation of a footpath or road.

Consultation under Section 2.10 is therefore not required.

Section 2.11 – Consultation with councils - development with impacts on local heritage

No impacts to any local heritage item would occur. 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 be on flood liable land. Consequently, a notice of intention was sent to the SCC Senior Floodplain Engineer on 22 March 2023 (D23/147125). A response was received on 3 April 2023 (D23/147125). The response states:

> *"We have reviewed the 80% design drawings associated with the Lakehaven Dr revetment wall & fish cleaning table repairs.*
>
> *The location of the revetment wall & fish cleaning table comprises flood prone land with a High Hazard Floodway combined hazard and hydraulic category. Based on the results from the St Georges Basin Flood Study (Cardno, 2022), the location of the Revetment Wall & Fish Cleaning Table has a 1% AEP velocity of up to 1.5m/s (higher local velocities may be possible from the stormwater outlet) and a H5 "unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure" AEMI hazard category. Hence any structures located within land mapped as flood prone, will need to be carefully designed to withstand these flood velocities and associated hazard.*
>
> *The proposed revetment wall & fish cleaning table works are defined as a Type J "Ancillary Structures" land use type in accordance with Schedule 1 of DCP Chapter G9: Development on Flood Prone Land. Based on the mapped High Hazard Floodway combined hazard and hydraulic category, the following controls would apply to this development and hence should be addressed during further design.*

- *Any proportion of the structure below the Flood Planning Level (FPL) (1% Annual Exceedance Probability (AEP) flood level plus 500mm freeboard) as documented on a Flood Certificate obtained from Council must be built from flood compatible materials.*
- *All electrical installations must be constructed above the FPL or be able to be isolated prior to a flood event.*
- *All structures can withstand forces of floodwaters including debris and buoyancy forces up to a 1% AEP flood event.*

We are assuming that limited filling (if any) is proposed within land mapped as flood prone. If any significant filling was proposed then a hydraulic impact assessment could be required. Given the High Hazard Floodway combined hazard and hydraulic category in this location, filling should be avoided to prevent any adverse flood impacts."

In response MI Engineers (SCC document D23/152215) states:

- All elements of the proposed revetment wall are below the FPL and are flood compatible.
- The proposed activity has been designed to withstand the forces of floodwaters including debris and buoyancy forces up to a 1% AEP flood event.
- Filling is only proposed behind the revetment wall which would not exceed filling levels behind the existing timber retaining wall.

No further consultation is required.

Section 2.13 – Consultation with State Emergency Service (SES) - development with impacts on flood liable land

Although the proposed activity would be on flood liable land, the proposed activity does not constitute a "relevant provision" prescribed in the SEPP (Section 2.13(2) https://legislation.nsw.gov.au/view/html/inforce/current/epi-2021-0732#sec.2.13) . Notification to SES is therefore not required.

Section 2.14 – Consultation with councils - development with impacts on certain land within the coastal zone

The proposal 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 other consultation requirements specified under Section 2.15 of the Transport and Infrastructure SEPP, the proposed activity:

- would not be undertaken adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under that Act
- would not be undertaken on land in Zone E1 National Parks and Nature Reserves on in a equivalent land use zone.
- 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 have an impact on the Willandra Lakes Region World Heritage Property
- would not occur in a Western City operational area specified in the *Western Parkland City Authority Act 2018.*

These prescribed consultation requirements therefore do not apply.

The proposed activity does comprise a fixed or floating structure in or over navigable waters. So, in accordance with Section 2.15(2)(c), a Notice of Intention was forwarded onto Transport for NSW on the 19 April 2023 (SCC reference D23/147318). A response was received on the 5 May 2023 (SCC reference D23/406302). The response confirmed that Transport for NSW have no objection to the proposed activity. However it was stated that "*It is important to note that the proponent, or other entity or contractor acting on their behalf, are not exempt from the provisions of the Marine Safety Act 1998, or any other relevant legislation, an all parties must comply with any direction given by NSW Maritime Authorised officers with regard to safe navigation or the prevention of pollution".* This requirement is included in the environmental impact mitigation measures and safeguards prescribed in Section 7 of this REF.

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

The proposed activity is not a development prescribed in this section (health services facilities, correctional centres, residential accommodation). Consideration of PBP is therefore not required.

5.2 SCC Asset Custodian

The SCC Coastal Management team reviewed the initial concept design and made the following remarks (SCC documents D23/147125 and D23/152201):

- *"The wall shown on the drawings is around 1.5 m high when we thing the wall is closer to 1 m as per the attached photo. There is also a beach exposed at low tide so there might be something off with the survey.*
- *We should look at a cheaper rock revetment solution for the wall rather than the copy paste of Myola, will provide better habitat for intertidal flora and fauna, could even have a saltmarsh bench.*
- *Consider extending the stormwater pipe and filling in the drainage canal to save on wall required.*
- *The shelter for the fish cleaning tables should be replaced.*
- *Patching the cracks in the ramp won't do much, really needs to be replaced with the lower section falling away.*
- *The sandstone clocks and rock will be classed as reclamation and will need to be added to the Fisheries Permit"*

In response MI Engineers state the following (SCC document D23/152215):

- Based on the survey information provided, the difference between the current top and bottom wall survey marks vary but are generally around one metre. However, there are some sections where the wall is over one metre high, especially in the stormwater outlet area. Given the sandstone logs are 0.5m high and the required levelling / excavation by the contractor for the bottom row of log placements, three logs are required for the top of wall to remain along the extent of wall. The dynamic nature of the ground level and anticipated settlement of the logs has also been factored in the three-log high revetment wall. A more accurate existing ground surface line will be displayed on the detailed design elevations and sections.
- The shelter would be reinstalled once the new fish cleaning facility has been constructed.
- Design water levels have been taken from the Sussex Inlet Water level station on the Manly Hydraulics Lab NSW Government website. Given the height of the wall is proposed to match the existing at RL 0.90m, water will overtop during high water events. The adjacent boat ramp however would be at a lower level than the top of the revetment wall and would provide an entrance point for flood water, irrespective of how high the wall is built. The height of the wall would not be increased beyond the existing timber retaining wall level.

Whilst the comments are relevant to the concept design (D22/512146), the proposed activity subject of this REF is an interim solution of much smaller scale to the concept design. Further consultation would be required when more longer-term and more extensive works are proposed.

6. COMMUNITY ENGAGEMENT

In accordance with Council's Community Engagement Policy, the proposal constitutes a *Local Area – Low Impact* activity.

In accordance with the Policy the following engagement actions were undertaken:

- Details of the initial concept plan was uploaded onto SCC's website including contact details https://www.shoalhaven.nsw.gov.au/Projects-Engagement/Major-Projects-Works/Lakehaven-Drive-Sussex-Inlet-Boat-Ramp-Facility-Improvements
- Direct engagement with the community consultative body (Sussex Inlet and Districts Community Forum) who were provided with concept plans and invitation to comment (refer to SCC document D23/73537).

A precis of feedback and SCC response is provided in Table 4 below:

Table 4: Community Engagement

Community Feedback	SCC Response
SCC document D23/94294: 1. Install a box culvert to contain what stormwater doses make its way into the underground system. 2. Installation of a dish drain in the concrete slab for overland flood which all flows to that corner 3. There is a question as to why the concrete slab stop short of the top sandstone block on the revetment wall. This only opens the potential for erosion of the back fill behind the revetment wall. If the concrete slab was extended to close the gap it would help to prevent erosion, be potentially safer for pedestrians and it could even be keyed into the stone. 4. Gaps between the sandstone blocks on the top row of the revetment wall are questionable. They make sense for habitat but not for pedestrian traffic.	1. This would require extensive filling and subsequent hydraulic impact assessment, and a cofferdam, increasing the overall cost. 2. This may be considered in the long-term plan for the area, but would not be undertaken as part of this interim solution. 3. This may be considered in the long-term plan for the area, but would not be undertaken as part of this interim solution. 4. SCC does not support the sealing of surface gaps along the revetment wall due to risks involved with encouraging pedestrian access along this wall.

The change from the concept plans to the interim solution was notified on the SCC website stating: "*August 2023 update – due to limited construction funds the current focus of the works is to address the damage to the fish cleaning facility, repair the most at-risk sections of the revetment wall and prevent further deterioration of the bank.*"

As prescribed in Section 7 of this REF, SCC will continue to update the community through the SCC website and directly through the community consultative body.

7. ENVIRONMENTAL SAFEGUARDS AND MEASURES TO MINIMISE IMPACTS

Safeguard / Measure	Responsibility
Works planning, approvals, consultation & notification	
1. A Fisheries Permit shall be obtained for the dredging, reclamation prior to commencement of works.	SCC Project Manager (PM), SCC Environmental Operations Officer (EOO), and Construction Contractor
2. This REF shall be published on the NSW Planning Portal.	SCC EOO
3. The community shall be regularly updated on the progress of the proposed activity through SCC website and through the community consultative body.	SCC PM
4. The material that would be excavated shall be tested for the presence of potential acid sulfate soils. A full Acid Base Account assessment utilising the SPOCAS analysis shall confirm the presence of acidity, potential acidity and liming rate to neutralise the acid prior to disposal. If necessary, an acid sulfate soil management plan shall be prepared to facilitate treatment.	Construction Contractor
Site Establishment	
5. 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 i.e. water diversion, minimising disturbance, erosion control, sediment capture and rapid re-establishment.	Site Manager; Construction Contractor
6. A hydrocarbon floating boom with high-vis reflective surface or banding and turbidity curtain shall be installed in the waterway around the work site and: a. the curtain shall be installed prior to the commencement of the activity. b. a minimum of one curtain shall be installed to form a perimeter around the works site. c. the turbidity curtain shall be affixed so that there are no breaches or gaps between the curtain, hydrocarbon boom, and shoreline interface.	Construction Contractor

Safeguard / Measure	Responsibility
d. the curtain shall be appropriately managed throughout the duration of the works. The primary curtain shall continually be monitored for visible signs of fuel spills or turbidity plumes, the perimeter of the curtain shall be inspected prior to undertaking the works each day and following a major rainfall or stormwater event. e. If the turbidity curtain is damaged and/or breached and pollution of the surrounding waters is imminent, all work shall immediately cease. Works shall not recommence until turbidity in the vicinity of the works area has returned to baseline conditions, the curtain repaired or replaced and the cause of the damage/breach is established and preventative measures implemented. f. Prior to the removal of the turbidity curtain and hydrocarbon floating boom, any sediment / turbidity shall be allowed to settle to further minimise the dispersion of suspended sediments.	
7. A Construction Environmental Management Plan (CEMP) for the proposed activity shall be prepared to address the prescribed safeguards and measures within this REF and any conditions specified in the Fisheries Permit and Crown Lands Licence.	Construction Contractor
Construction works	
8. Works shall be compliant with the conditions of the Fisheries Permit.	SCC PM and Construction Contractor
9. All parties must comply with any direction given by authorised officers of the Transport for NSW Maritime, NSW Department of Primary Industries, and NSW Environment Protection Authority with regard to safe navigation and the prevention of pollution.	SCC PM and Construction Contractor
10. Works within the waterway shall be undertaken in the lower half of the tidal cycle	Construction Contractor
11. The contractor shall maintain public access to the nearby boat ramp.	Construction Contractor
12. Erosion and sediment controls and the hydrocarbon boom and silt curtain shall be maintained in good working order	Construction Contractor

Safeguard / Measure	Responsibility
for the duration of the works and subsequently until the site has been stabilised and the risk of erosion, sediment dispersal or hydrocarbon pollution (fuels and oils) is minimal.	
13. Eelgrass wrack shall be left on site (can be moved).	Construction Contractor
14. An emergency spill kit shall be always kept on-site with procedures to contain and collect any leakage or spillage of fuels, oils, greases, etc form plant and equipment.	Construction Contractor
15. Staff working at the site will be instructed to stop work immediately on identification of any suspected Aboriginal heritage artefact. If any objects are found, NSW Department of Planning, Industry and Environment (ph:131 555) shall be contacted.	Construction Contractor
16. Noise-generating construction activities shall be limited to the following hours to limit noise and traffic impacts to adjacent residents: 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 5:00 pm Saturdays.	Construction Contractor
17. Clean rock (without fines) shall be used for the sandstone rock retaining wall. This rock shall also be placed on top of non-woven geotextile to separate the introduced material from the existing estuary bed.	Construction Contractor
18. If cutting needs to occur over water (e.g. demolition works), tarps or similar shall be utilised to capture potential contaminants including oils, saw-dust and metal or backfill fines. Battery powered hand-tools would be preferred over two-stroke.	Construction Contractor
19. The imported degraded sub-base shall be encased in geofabric to contain any movement of this material and associated fines into the waterway.	Construction Contractor
20. Any stockpiles of soil shall be located at least 10 metres away from the waterway and any stormwater flow-paths with erosion and sediment controls in place in accordance with the ‘Blue Book’ (Landcom 2004).	Construction Contractor
21. Any waste shall be managed, transported, stored, collected and disposed of in an environmentally satisfactory manner	Construction Contractor

Safeguard / Measure	Responsibility
pursuant to NSW *Protection of the Environment Operations Act 1997,* and that all reasonable measures regarding the control and prevention of pollution and waste from being introduced into the estuary are implemented.	
22. Everyone working on site shall be instructed to stop work immediately on identification of any suspected Aboriginal heritage object. If any objects are found, NSW Department of Planning, Industry and Environment (ph:131 555) shall be contacted.	Construction and Contractor and SCC PM
Post construction	
23. An asset form must 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.	SCC PM
24. Any post-construction conditions of the Fisheries Permit shall be accomplished.	SCC or EOO

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 City Council to repair an existing retaining wall and fish cleaning facility at the Lions Park Boat Ramp Reserve at Lakehaven Drive, Sussex Inlet.

In consideration of the proposal 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 will be any significant environmental impact as a result of the proposed work and an Environmental Impact Statement is not required for the proposed works.
2. The proposed activity will 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. A Fisheries Permit and a Crown Lands licence is required. No additional statutory approvals, licences, permits and 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:

Troy Punnett
District Engineer - Southern
Shoalhaven City Council Date: 27/5/24

9. REFERENCES

Advisian 2023 *St Georges Basin, Sussex Inlet, Swan Lake and Berrara Creek Coastal Management Program: Foreshore Erosion Assessment.* Unpublished report for Shoalhaven City Council https://doc.shoalhaven.nsw.gov.au/LinkGeneratorAPI/record/8975303/preview_latest_final_version_pdf

Advisian 2023b *St Georges Basin, Sussex Inlet, Swan Lake and Berrara Creek Coastal Management Program: Stage 2 Detailed Risk Assessment.* Unpublished report for Shoalhaven City Council https://doc.shoalhaven.nsw.gov.au/LinkGeneratorAPI/record/8577084/preview_latest_final_version_pdf

ASSMAC (Acid Sulfate Soils Management Advisory Committee) 1998 *Acid Sulfate Soils Manual.* ISBN 0 7347 0000 8

DECCW (Department of Environment, Climate Change and Water, NSW) 2010 Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales. Available at: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/634694/Policy-and-guidelines-for-fish-habitat.pdf

Fisheries Scientific Committee 2007 *Determination: Degradation of Native Riparian Vegetation along New South Wales Water Courses.* *https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/636534/FR19-riparian-vegetation.pdf*

Landcom 2004 *Managing Urban Stormwater: Soils and Construction – Volume 1.* Published by Landcom ISBN 0-97520-3037 https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon

Stantec 2022 *Final Report: St Georges Basin Flood Study.* Unpublished report for Shoalhaven City Council (SCC reference D22/425433) https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D22/425410

Personal communications

Mark Stone 2023 Lead – Floodplain Management, Shoalhaven City Council

APPENDIX A – The Activity

DO NOT SCALE

MIENGINEERS

SYDNEY OFFICE
Level 1, 83 - 89 Renwick Street, Redfern 2016
Tel (02) 8396 6565

SOUTH COAST OFFICE
49 Berry Street, Nowra NSW 2541
Tel (02) 4423 0566

WOLLONGONG OFFICE
Suite 3, 128/134 Crown Street, Wollongong NSW 2500
Tel (02) 4423 0566

www.miengineers.com

INTERIM ROCK REVETMENT WALL REMEDIATION

LAKEHAVEN DRIVE, SUSSEX INLET
CONSTRUCTION SET

LOCALITY PLAN
N.T.S.

SCC REFERENCE

5571.01
5571.02
5571.03

DRAWING INDEX

DIAL BEFORE YOU DIG www.1100.com.au

REVISION	AMENDMENTS	DATE	CKD	APP
3	ISSUED FOR CONSTRUCTION	26.09.23	TS	TS
2	ISSUED FOR CONSTRUCTION	22.08.23	TS	TS
1	ISSUED FOR CONSTRUCTION	09.08.23	TS	TS
A	ISSUED FOR REVIEW	02.06.23	TS	TS

CLIENT:
- APPROVED FOR USE -
Shoalhaven City Council
PLAN REFERENCE
5571.01

ARCHITECT:

MIENGINEERS
SYDNEY OFFICE
Suite 2.06, 68 York St,
Sydney NSW 2000 Australia
Tel (02) 8396 6565

SOUTH COAST OFFICE
49 Berry Street, Nowra NSW 2541
Tel (02) 4423 0566

WOLLONGONG OFFICE
Suite 3a, 128-134 Crown Street,
Wollongong NSW 2500
Tel (02) 4423 0566

MIENGINEERS.COM

PROJECT :
INTERIM ROCK REVETMENT WALL REMEDIATION
LAKEHAVEN DRIVE, SUSSEX INLET
CONSTRUCTION SET

DRAWING NAME:
COVER SHEET

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
TS	SP	-	A1

DRAWING STATUS	DRAWING No.
CONSTRUCTION	S001

PROJECT No.	REVISION:
DN220291	3

DO NOT SCALE

NOTE:

SERVICES LOCATION LOCATION COMPLETED TO QUALITY LEVEL C & D. PHYSICAL FEATURES SUCH AS PITS AND HYDRANTS WERE LOCATED BY DETAILED SURVEY

SITE PLAN

SCALE 1:200

DIAL BEFORE YOU DIG www.1100.com.au

REVISION	AMENDMENTS	DATE	CKD	APP
3	ISSUED FOR CONSTRUCTION	26.09.23	TS	TS
2	ISSUED FOR CONSTRUCTION	22.08.23	TS	TS
1	ISSUED FOR CONSTRUCTION	09.08.23	TS	TS
A	ISSUED FOR REVIEW	02.06.23	TS	TS

CLIENT:

- APPROVED FOR USE -
Shoalhaven City Council

PLAN REFERENCE
5571.02

ARCHITECT:

MIENGINEERS

SYDNEY OFFICE
Suite 2.06, 68 York St,
Sydney NSW 2000 Australia
Tel (02) 8396 6565

SOUTH COAST OFFICE
49 Berry Street, Nowra NSW 2541
Tel (02) 4423 0566

WOLLONGONG OFFICE
Suite 3a, 128-134 Crown Street,
Wollongong NSW 2500
Tel (02) 4423 0566

MIENGINEERS.COM

PROJECT :
INTERIM ROCK REVETMENT WALL REMEDIATION
LAKEHAVEN DRIVE, SUSSEX INLET
CONSTRUCTION SET

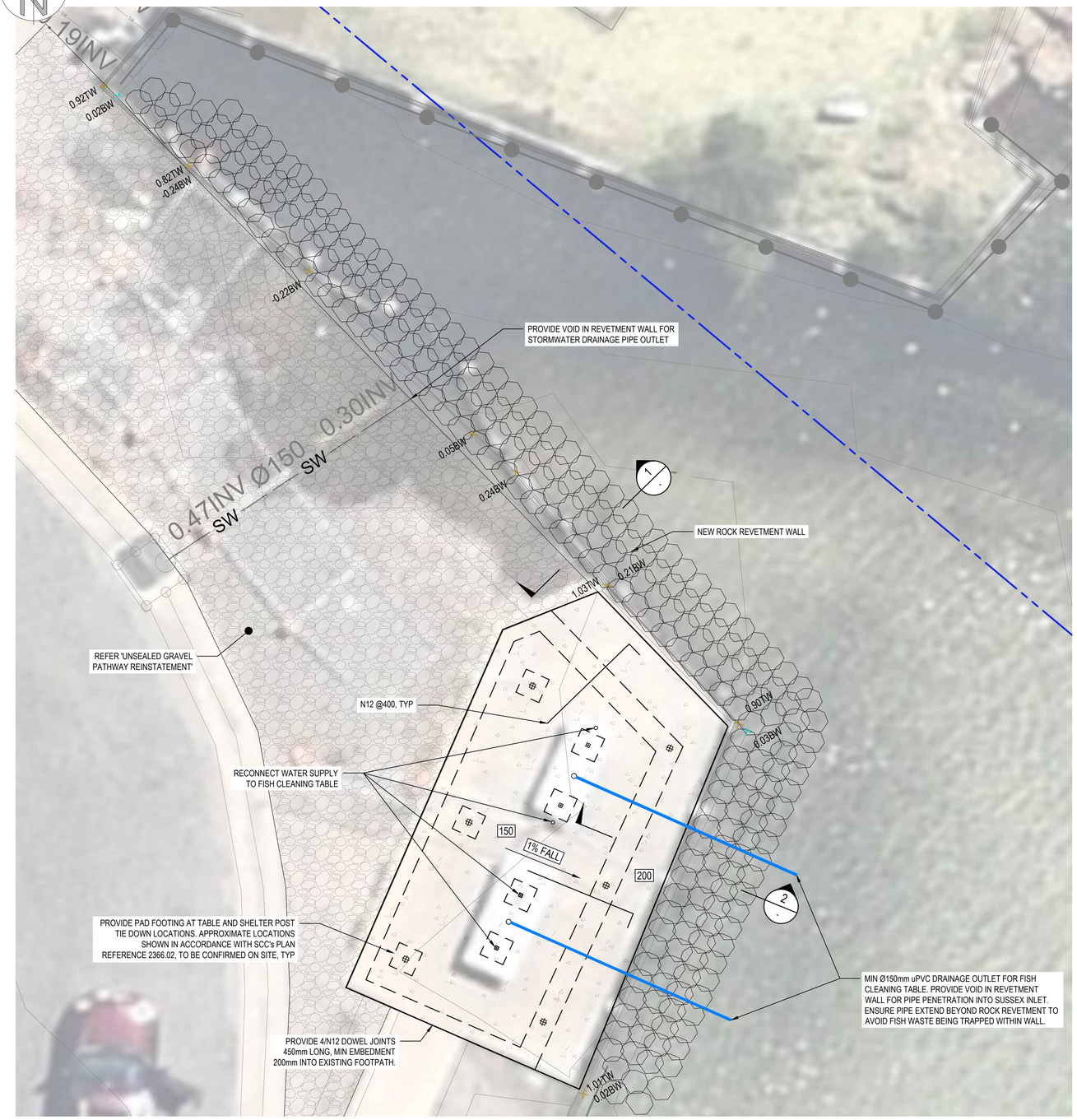
DRAWING NAME:
SITE PLAN

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
TS	SP	1:200	A1

DRAWING STATUS	DRAWING No.
CONSTRUCTION	S005

PROJECT No.	REVISION:
DN220291	3

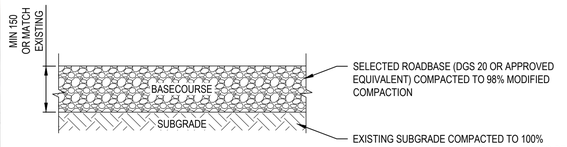
DO NOT SCALE



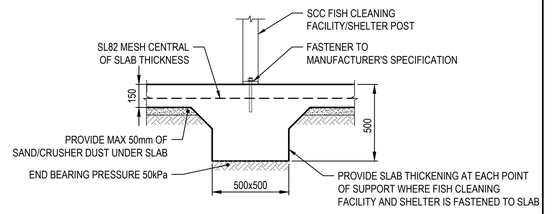
ROCK REVETMENT WALL
SCALE 1:50

EXISTING STRUCTURE NOTE:
REINSTATED SHELTER FASTENED TO NEW CONCRETE SLAB IS A MODIFIED LANDMARK K302 "PENISULA" SHELTER (7.0 x 4.0m) WITH AN EXTRA BAY AND 6 BOLT DOWN POSTS

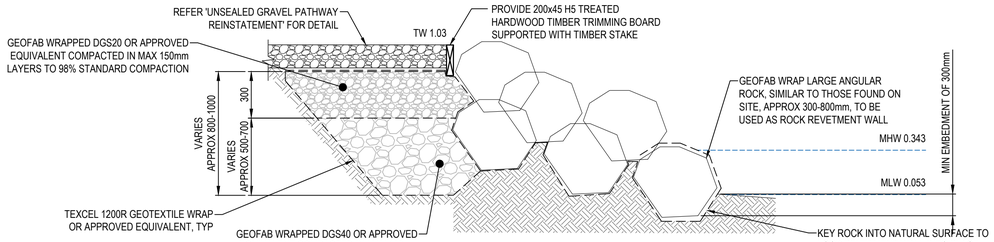
GEOTECHNICAL NOTE:
REFER GEOTECHNICAL REPORT UNDERTAKEN BY GEOFIRST PTY LTD.
REFERENCE: GF1556-A
DATE: 14/11/2022



UNSEALED GRAVEL PATHWAY REINSTATEMENT
SCALE 1:10

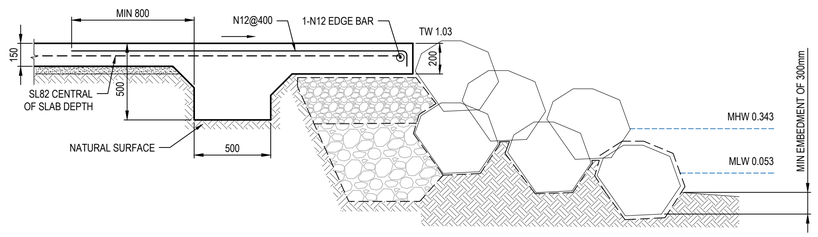


TYPICAL PAD FOOTING UNDER TABLE & SHELTER POST LOCATIONS
SCALE 1:20



GENERAL ARRANGEMENT FOR ROCK REVETMENT

SECTION 1
SCALE 1:20



SECTION 2
SCALE 1:20

DIAL BEFORE YOU DIG www.1100.com.au

REVISION	AMENDMENTS	DATE	CKD	APP
3	ISSUED FOR CONSTRUCTION	26.09.23	TS	TS
2	ISSUED FOR CONSTRUCTION	22.08.23	TS	TS
1	ISSUED FOR CONSTRUCTION	09.08.23	TS	TS
A	ISSUED FOR REVIEW	02.06.23	TS	TS

CLIENT: - APPROVED FOR USE - Shoalhaven City Council
PLAN REFERENCE 5571.03

ARCHITECT:

MIENGINEERS
SYDNEY OFFICE
Suite 2.06, 68 York St,
Sydney NSW 2000 Australia
Tel (02) 8396 6565
SOUTH COAST OFFICE
49 Berry Street, Nowra NSW 2541
Tel (02) 4423 0566
WOLLONGONG OFFICE
Suite 3a, 128-134 Crown Street,
Wollongong NSW 2500
Tel (02) 4423 0566
MIENGINEERS.COM

PROJECT: INTERIM ROCK REVETMENT WALL REMEDIATION
LAKEHAVEN DRIVE, SUSSEX INLET
CONSTRUCTION SET

DRAWING NAME: ROCK REVETMENT WALL

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
TS	SP	NOTED	A1

DRAWING STATUS	DRAWING No.
CONSTRUCTION	S015

PROJECT No.	REVISION:
DN220291	3

APPENDIX B - Likelihood of Occurrence Table (NSW Threatened Species)

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 on 19/4/2023) 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

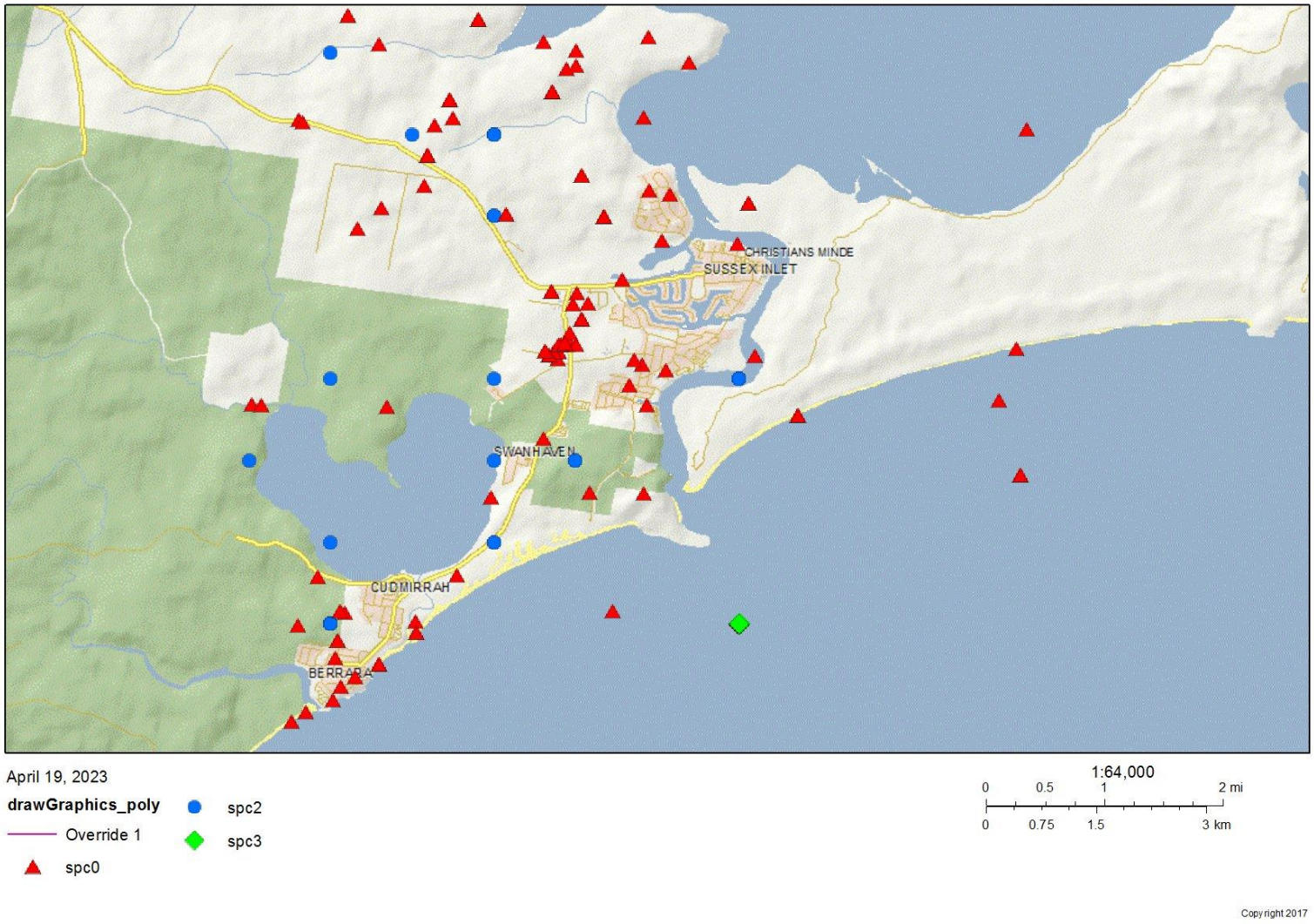
1. Unlikely – Species, population or ecological community is not likely to occur. Lack of previous recent (<25 years) records and suitable potential habitat limited or not available in the study area.
2. Likely – Species, population or ecological community could occur and study area is likely to provide 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).

Atlas Map


CHRISTIANS MINDE
SUSSEX INLET
SWANHAVEN
CUDMIRRAH
BERRARA
April 19, 2023
drawGraphics_poly
Override 1
spc0
spc2
spc3
1:64,000
0 0.5 1 2 mi
0 0.75 1.5 3 km
Copyright 2017

Species name	*Status*	*Habitat requirements (www.environment.nsw.gov.au)*	*Likelihood of presence within areas impacted by the activity*
FLORA			
Narrow-leafed Wilsonia *Wilsonia backhousei*	Vulnerable BC Act	This is a species of the margins of salt marshes and lakes.	Not likely – no suitable habitat. Not detected at the site during site investigations
Biconvex Paperbark *Melaleuca biconvexa*	Vulnerable BC Act and EPBC Act	Biconvex Paperbark is only found in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Not likely – no suitable habitat. Not detected at the site during site investigations.
Nowra Heath Myrtle *Triplarina nowraensis*	Endangered BC Act and EPBC Act	There are five known populations of Nowra Heath Myrtle. Three of these form a cluster to the immediate west of Nowra. A fourth, much smaller population is found 18km south-west of Nowra in the Boolijong Creek Valley. The fifth population is located north of the Shoalhaven River on the plateau above Bundanon. Nowra Heath Myrtle occurs on poorly drained, gently sloping sandstone shelves or along creek lines underlain by Nowra Sandstone. The sites are often either treeless or have a very open tree canopy due to the impeded drainage.	Not likely – no suitable habitat. Not detected at the site during site investigations.
Leafless Tongue Orchid *Cryptostylis hunteriana*	Vulnerable BC Act and EPBC Act	Larger populations typically occur in woodland dominated by Scribbly Gum, Silvertop Ash, Red Bloodwood and Black Sheoak and appears to prefer open areas.	Not likely – no suitable habitat. Highly disturbed site.
Pterostylis ventricosa	Endangered BC Act	Predominantly 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 moderately dense low heath, open sedges and grasses, leaf litter, and mosses on	Not likely – no suitable habitat. Highly disturbed site.

		outcropping rock. Small moss gardens are a commonly associated micro-habitat feature in most habitats. Soil type ranges from moisture-retentive grey silty loams to grey sandy loams. Sometimes found in skeletal soils on sandstone rock shelves.	
Tangled Bedstraw *Rhodamnia rubescens*	Endangered BC Act	In NSW (and ACT Territory in Jervis Bay), Tangled Bedstraw has been recorded in Turpentine forest and coastal Acacia shrubland.	Not likely – no suitable habitat. Not detected at the site during site investigations.
AMPHIBIANS			
Green and Golden Bell Frog *Litoria aurea*	Endangered BC Act Vulnerable EPBC Act	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.)	Not likely – no suitable habitat.
REPTILES			
Green Turtle *Chelonia mydas*	Vulnerable BC Act and EPBC Act	Ocean-dwelling species spending most of its life at sea.	Not likely – no suitable habitat.
BIRDS			
White-throated Needletail *Hirundapus caudacutus*	Vulnerable and 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	Possibly occurring over or in proximity to the site, but unlikely to utilise or rely on available habitat within the site.

		as ridges and sand-dunes. They are sometimes recorded above islands well out to sea.	
Southern Giant Petrel *Macronectes giganteus*	Endangered BC Act and EPBC Act	The Southern Giant Petrel has a circumpolar pelagic range from Antarctica to approximately 20° S and is a common visitor off the coast of NSW. Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands, including Macquarie and Heard Islands and in Australian Antarctic territory. Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer.	Not likely – no suitable habitat
Northern Giant Petrel *Macronectes halli*	Vulnerable NSW BC Act and EPBC Act	The Northern Giant-Petrel has a circumpolar pelagic distribution, usually between 40-64ºS in open oceans. Their range extends into subtropical waters (to 28ºS) in winter and early spring, and they are a common visitor in NSW waters, predominantly along the south-east coast during winter and autumn.	
White-bellied Sea-Eagle *Haliaeetus leucogaster*	Vulnerable BC Act	The habitat for this species is characterised by the presence of large areas of open water including larger rivers, swamps, lakes and the sea. 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.	Possible – but not likely to be affected by the proposed activity as no vegetation removal is proposed. The species are transient and far ranging. It is possible that the species would fly over the site from time to time or to rest briefly. The proposed activity is unlikely to impact the species as the area does not provide important or useful habitat for the species. The species use of the site (flying over or resting) would not be affected by the proposal. No further assessment is therefore required.
Eastern Osprey *Pandion cristatus*	Vulnerable BC Act	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Possible – but not likely to be affected by the proposed activity as no vegetation removal is proposed. The species are transient and far ranging. It is possible that the species would fly over the site from time to time or to rest briefly. The proposed activity is unlikely to impact the species as the

			area does not provide important or useful habitat for the species. The species use of the site (flying over or resting) would not be affected by the proposal. No further assessment is required.
Sooty Oystercatcher Haematopus fuliginosus	Vulnerable NSW BC Act	Shore bird – breeds in sand or coral scrapes on offshore islands. Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries.	Not likely – no suitable habitat
Pied Oystercatcher *Haematopus longirostris*	Endangered NSW BC Act	Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. Nests are shallow scrapes in sand above the high tide mark, often amongst seaweed, shells and small stones.	Potential – suitable foraging habitat exists at the base of the existing timber retaining wall.
Eastern Hooded Dotterel *Thinornis cucullatus cucullatus*	Critically Endangered NSW BC Act Vulnerable EPBC Act	In south-eastern Australia Eastern Hooded Dotterels prefer sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beachcast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting. Occasionally Hooded Plovers are found on tidal bays and estuaries, rock platforms and rocky or sand-covered reefs near sandy beaches, and small beaches in lines of cliffs. They regularly use near-coastal saline and freshwater lakes and lagoons, often with saltmarsh. They often nest within 6 m of the fore-dune, mostly within 5 m of the high-water mark, but occasionally among or behind dunes.	Not likely – no suitable habitat
Sooty Tern *Onychoprion fuscata*	Vulnerable NSW BC Act	The Sooty Tern is found over tropical and sub-tropical seas and on associated islands and cays around Northern Australia. In NSW only known to breed at Lord Howe Island. Occasionally seen along coastal NSW, especially after cyclones. Breeds in large colonies in sand or coral scrapes on offshore islands and cays including Lord Howe and Norfolk Islands.	Not likely – no suitable habitat
Gang-gang Cockatoo *Callocephalon fimbriatum*	Vulnerable NSW BC Act, Endangered Commonwealth EPBC Act	In summer and spring the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-iron bark assemblages, or in dry forests in coastal areas and often found in urban areas.	Not likely – no suitable habitat

Glossy Black Cockatoo *Calyptorhynchus lathami*	Vulnerable NSW BC Act	The species inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak *Allocasuarina littoralis* and Forest Sheoak *A.torulosa* are important foods.	Not likely – no suitable habitat.
Little Lorikeet *Glossopsitta pusilla*	Vulnerable NSW *BC* Act	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. 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.	Not likely – no suitable habitat.
Powerful Owl *Ninox strenua*	Vulnerable NSW *BC* Act	Coastal Woodland, Dry Sclerophyll Forest, wet sclerophyll forest and rainforest- Can occur in fragmented landscapes Roosts in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda,* Cherry Ballart Exocarpus cupressiformis and a number of eucalypt species. requires old growth elements-hollow bearing tree resources for nesting and prey resource. Nests in large tree hollows in large eucalypts that are at least 150yrs old. Often in riparian areas. Large home range	Possible occurring at the site. However, no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat without food sources essential to the species.
Masked Owl – *Tyto novaehollandiae*	Vulnerable *NSW BC Act*	Dry eucalypt forests and woodlands from sea level to 1100 m. Inhabits forest but often hunts along the edges of forests, including roadsides. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. Requires old growth elements-hollow bearing tree resources for nesting and prey source.	Possible occurring at the site. However, no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed.

			• The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat without food sources essential to the species.
Sooty Owl *Tyto tenebricosa*	Vulnerable NSW BC Act	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests	Unlikely to occur. No suitable habitat present on site.
Eastern Bristlebird *Dasyornis brachypterus*	Endangered NSW BC Act and Commonwealth EPBC Act	Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. In northern NSW the habitat occurs in open forest with dense tussocky grass understorey and sparse mid-storey near rainforest ecotone; all of these vegetation types are fire prone.	Unlikely to occur. No suitable habitat present on site.
Regent Honeyeater *Anthochaera phrygia*	Endangered NSW BC Act and Critically Endangered Commonwealth EPBC Act	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes	Unlikely to occur. No suitable habitat present on site.

Varied Sittella *Daphoenositta chrysoptera*	Vulnerable *NSW BC Act*	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland	Unlikely to occur. No suitable habitat present on site.
MAMMALS			
Spotted-tailed Quoll *Dasyurus maculatus*	Vulnerable BC Act and Endangered EPBC Act	Recorded across a range of habitat types. Qualls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites	Unlikely to occur. No suitable habitat present.
Koala *Phascolarctos cinereus*	Vulnerable BC Act	The koala inhabits eucalypt woodland and forest.	Unlikely to occur. No suitable habitat present.
Eastern Pygmy-possum *Cercartetus nanus*	Vulnerable BC Act	Found in a broad range of habitats from rainforest through sclerophyll forest and woodland, bust in most areas woodlands and heath appear to be preferred. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. The species shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, dreys or thickets of vegetation	Unlikely to occur. No suitable habitat present.
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. No suitable habitat present.
Southern Greater Glider *Petauroides volans*	Endangered NSW BC Act and Commonwealth EPBC Act	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelters during the day in tree hollows and will use up to 18 hollows in their home range.	Unlikely to occur. No suitable habitat present.

Grey-headed Flying-fox *Pteropus poliocephalus*	Vulnerable BC Act and EPBC Act	The species occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feeds on the nectar and pollen native trees, in particular *Eucalypts, Melaleuca* and *Banksia,* and fruits of rainforest trees and vines.	Possibly could occur at the site. However, no further assessment is required as: • The site is not a camp. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat and not useful to the species. • The species will not reduce the amount of food or breeding resources nor create barriers to movement
Eastern Coastal Free-tailed Bat *Micronomus norfolkensis*	Vulnerable BC Act	The bat is found along the east coast from south Queensland to southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures.	Possibly could occur at the site. However no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site.
Eastern False Pipistrelle *Falistrellus tasmaniensis*	Vulnerable BC Act	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Possibly could occur at the site. However no further assessment is required as:

			• The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site.
Southern Myotis *Myotis Macropus*	Vulnerable BC Act	The species is found in the coastal band from-west of Australia, across the top-end and south to western Victoria. Generally roost in groups of 10 to 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish by raking their feet across the water surface.	Possibly could occur at the site. However, no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site.
Greater Broad-nosed Bat *Scoteanax rueppellii*	Vulnerable BC Act	The species is found mainly in the gullies and river systems that drains the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest and rainforest, though it is commonly found in tall wet forest. Although this species usually roosts in tree hollows, it is also been found in buildings.	Possibly could occur at the site, however, no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality.

			• No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site.
Southern Right Whale *Eubalaena australis*	Endangered NSW BC Act and Commonwealth EPBC Act	Whale that lives in the open ocean.	Not likely to occur.
Sperm Whale *Physeter macrocephalus*	Vulnerable NSW BC Act	Whale that lives in the open ocean.	Not likely to occur