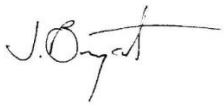
REVIEW OF ENVIRONMENTAL FACTORS (REF)
PROPOSED NEW BRIDGE OVER CONJOLA CREEK
MURRAYS ROAD, CONJOLA

Contents

Document control

Item	Details
Project	Proposed New Bridge over Conjola Creek – Murrays Road, Conjola
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		12/11/2024
	Review	Jeff Bryant		19/11/2024

*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 – City Services
Determining authority / authorities	Shoalhaven City Council – City Services
Required approvals (consents, licences and permits)	"Fisheries Permit" for dredging and reclamation activities – Section 200 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. BACKGROUND AND PURPOSE

1.1 Overview

The proposed activity is the construction of a new bridge (and associated works) on Murrays Road, Conjola over Conjola Creek (Figure 1 to Figure 3 below). The new bridge would be constructed immediately downstream of the existing, heritage-listed bridge that would be retained as a ruin.

Plans of the proposed activity and construction methodology are provided as Appendix A and B respectively. In summary, however, works would involve:

- the protection of the existing, heritage listed bridge
- traffic management
- vegetation removal including 13 trees
- operation of erosion, sediment and pollution controls
- piling involving:
    - driving a 711mm diameter circular hollow section (CHS) with a 20mm welded shoe to lengths prescribed in the plans
    - the use of a 100 tonne crane, hydraulic hammer, and a 13 tonne excavator on a barge within Conjola Creek to drive the CHS
    - the use of an auger to remove soil from inside the CHS to the design depth
    - placement of reinforcement and concrete within the CHS.
- construction of abutments, headstocks and wingwalls involving:
    - excavation
    - management of acid sulfate soils if encountered
    - piling
    - installation of abutments
    - installation of precast wingwalls, wall panels, and pier headstock using a crane
    - backfilling with DGB20 and installation of drainage
- installation of scour protection (500mm diameter rock) in front of the abutment and wingwall
- installation of bridge girders, deck and barriers
- construction of sealed approaches to the bridge.

Murrays Road, Bendalong Mountain Road and the currently unmaintained road verge connecting the two roads would be made trafficable to allow access to properties on the eastern side of the

creek when the cranes are operating this side. This would involve the placement of road base material, reforming, and grading[1]. Vegetation impact would be minimal.

The proposed activity 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.

1.2 Purpose of the Activity

This proposed activity is a component of the NSW Government's Fixing Country Bridges Program. The existing timber bridge is currently in a deteriorated state, necessitating urgent action for the construction of a new bridge parallel to the existing one.

The decision not to dismantle the old bridge stems from its heritage value and distinctive timber construction.

The new bridge would only have two pairs of piers that are aligned with the piers of the existing bridge to mitigate the impact on watercraft navigation within the creek.

The new bridge would have similar soffit and deck levels to minimise changes to flood regimes.

1.3 Location

The proposed activity would be undertaken within the Murrays Road road reserve (Figure 1 below).

Murrays Road was the original road connecting the Princes Highway to Bendalong and its nearby villages. Currently, it is maintained by SCC for approximately 920 metres east of the bridge to provide access to private properties, residences and dairy enterprises.

Murrays Road is connected to Bendalong Mountain Road and Bendalong Road by an unmaintained road reserve of 320 metres (approx.). This connection would be made trafficable[1] to allow alternative access when cranes are temporarily operating from Murrays Road (refer to Section 3.7 Figure 8 p.34) of this REF.

[1] *The upgrade of the connecting road is only for the purposes of the proposed activity and there is no intention by SCC to maintain this section in perpetuity.*

Figure 1 Location of the proposed activity

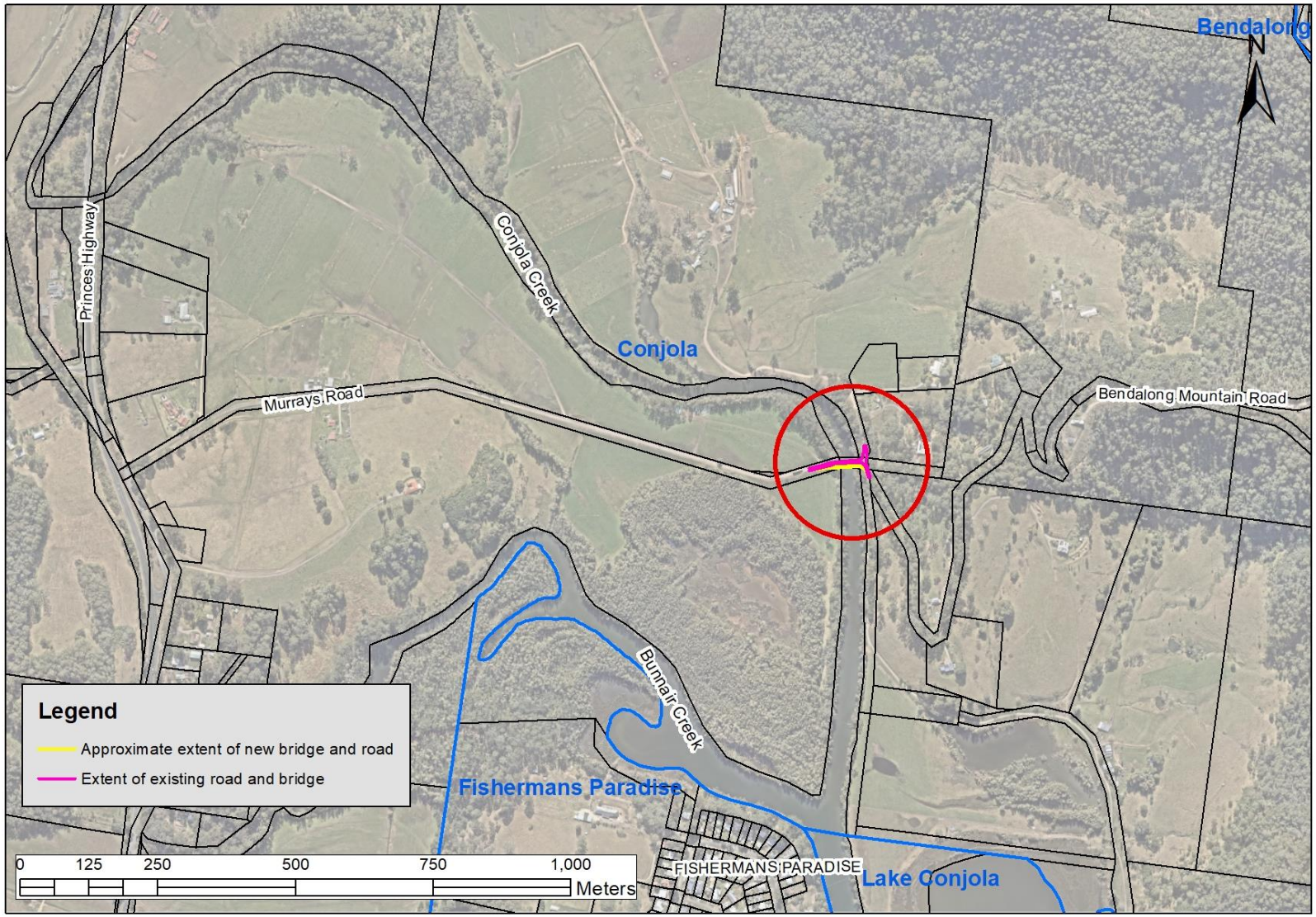


Figure 2 Location of the proposed activity

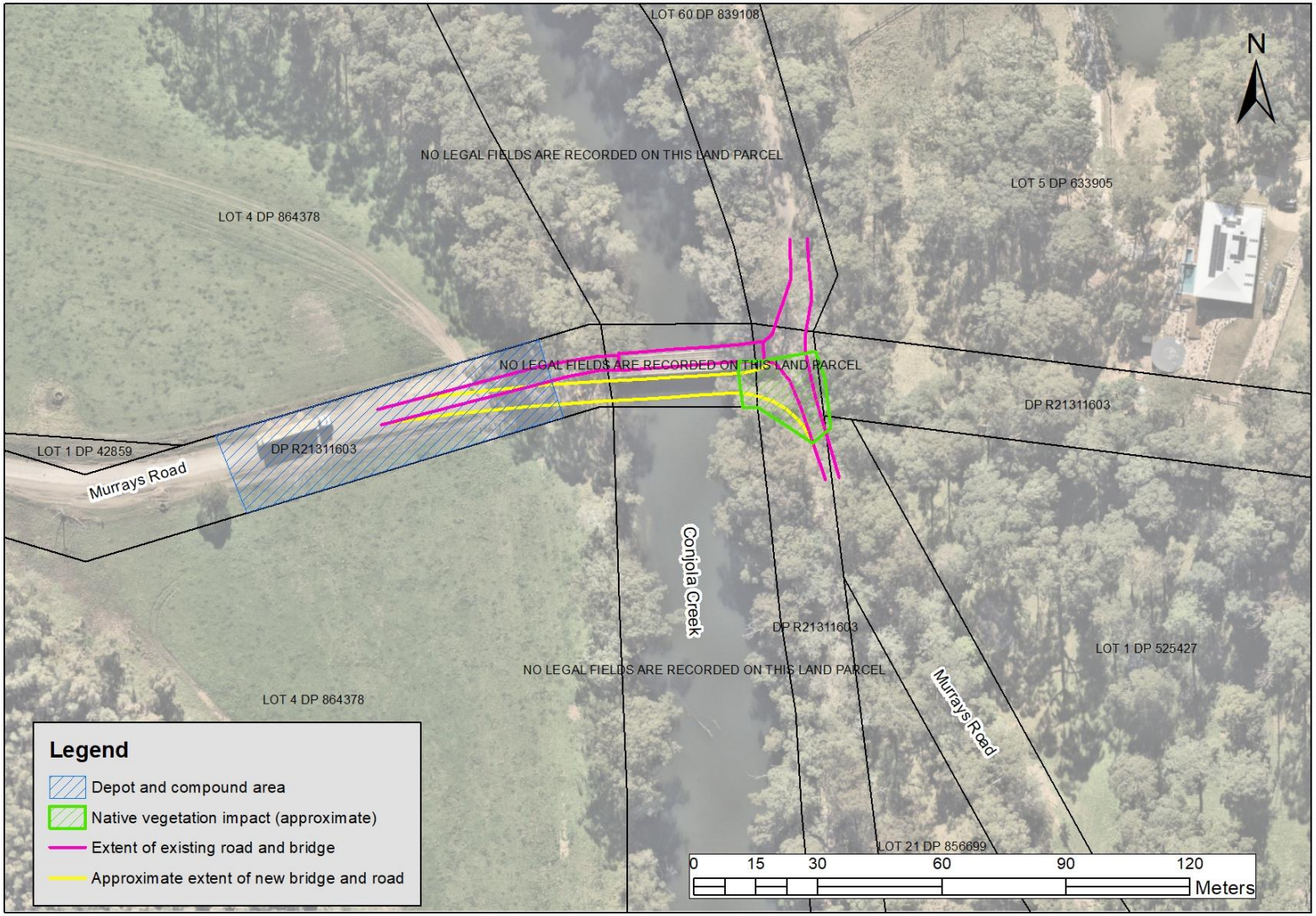
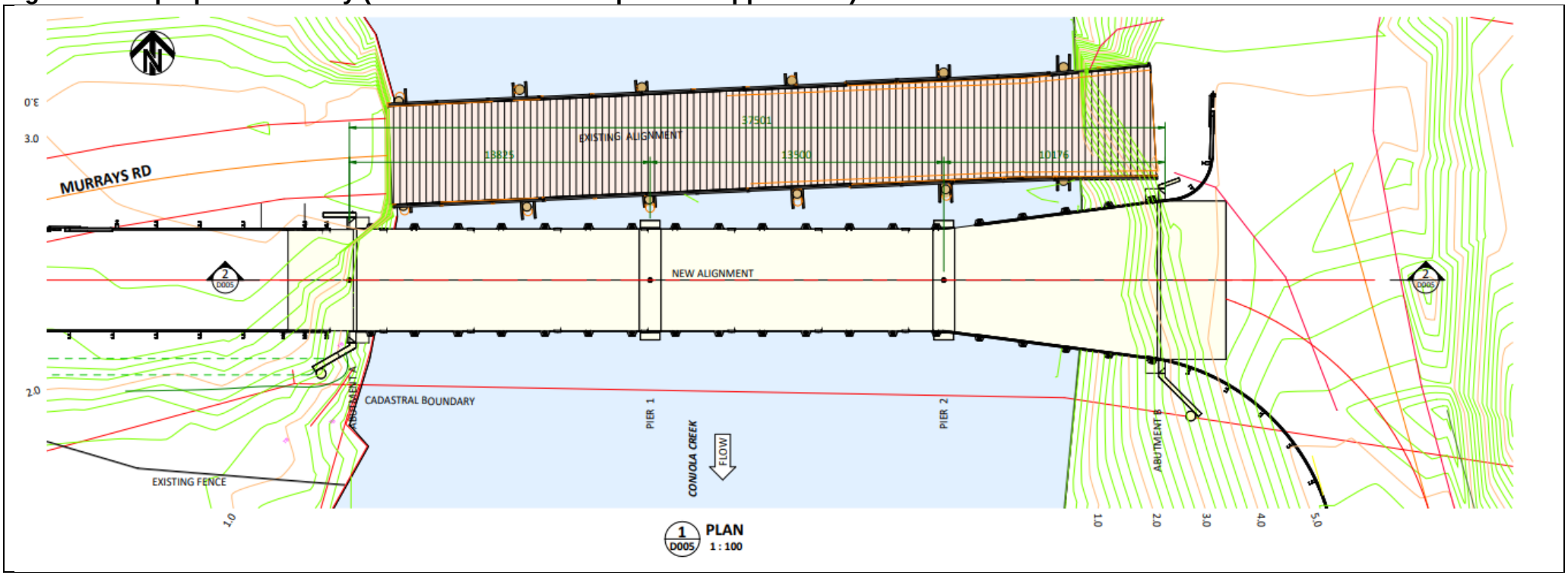
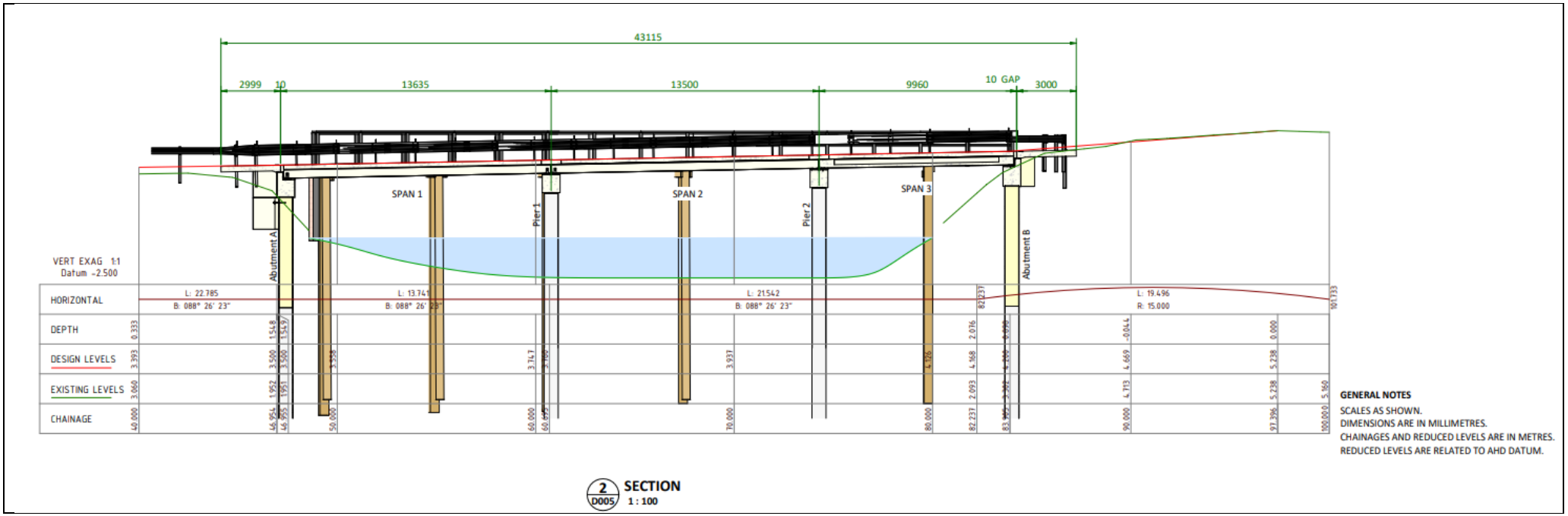
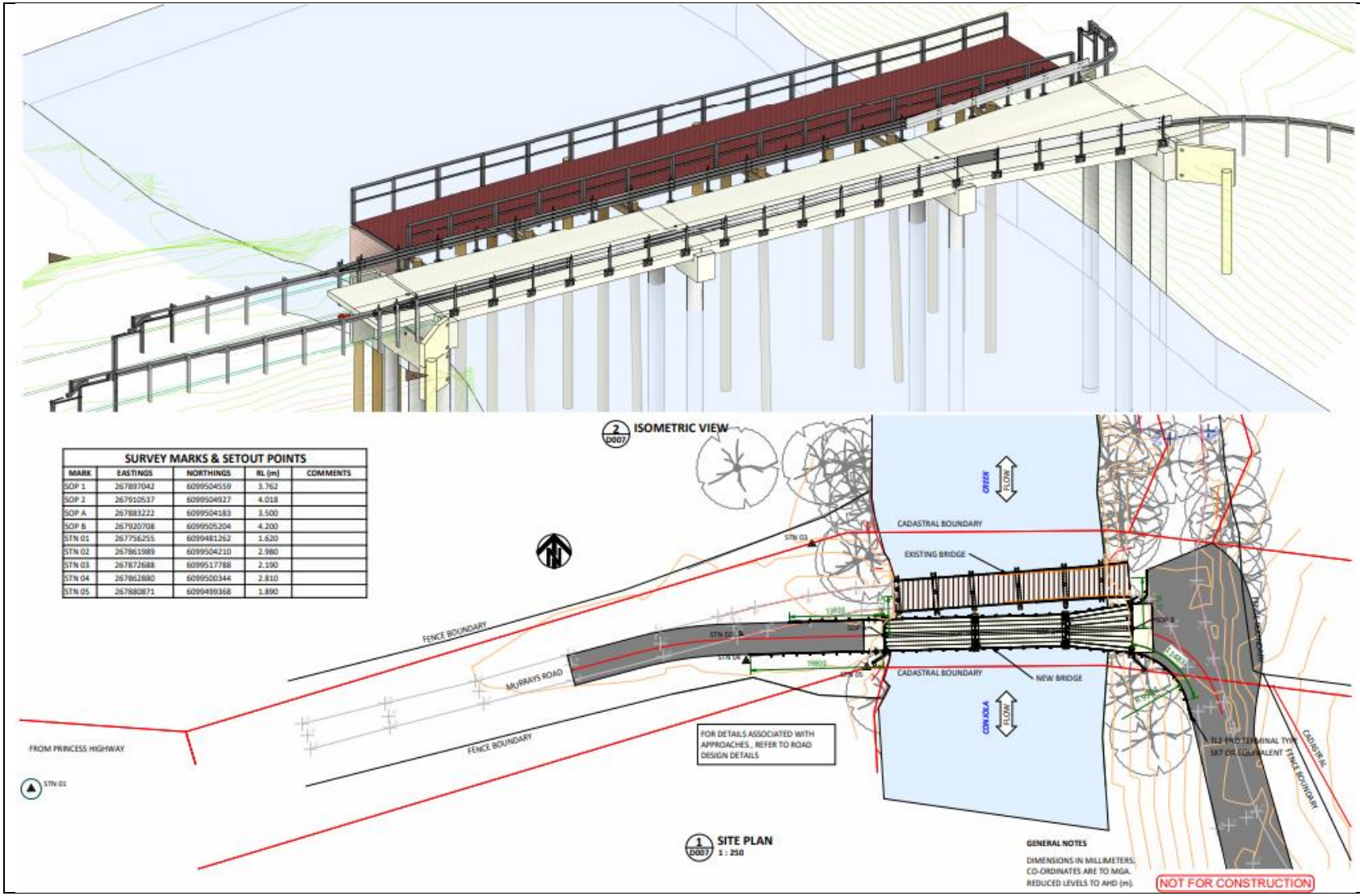


Figure 3 The proposed activity (refer also to detailed plans in Appendix A)





2 / D005 SECTION
1 : 100



2 D007 ISOMETRIC VIEW

SURVEY MARKS & SETOUT POINTS

MARK	EASTINGS	NORTHINGS	RL (m)	COMMENTS
SOP 1	267897042	6099504559	3.762	
SOP 2	267910537	6099504927	4.018	
SOP A	267883222	6099504183	3.500	
SOP B	267920708	6099505204	4.200	
STN 01	267756255	6099481262	1.620	
STN 02	267861989	6099504210	2.980	
STN 03	267872688	6099517788	2.190	
STN 04	267862880	6099500344	2.810	
STN 05	267880871	6099499368	1.890	

1 D007 SITE PLAN
1 : 250

2. Site Description

The site of the proposed activity was assessed by a SCC Environmental Operation Officer on 27 February 2024 and again on 13 November 2024.

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, and investigation of habitat availability for threatened flora and fauna species. A search for Aboriginal heritage objects was also conducted.

Photos of the site are provided in Section 2.4 below.

2.1 Terrestrial Habitat and Features

The proposed activity would be undertaken within the Murrays Road reserve on the southern side of the existing bridge (Figure 1 and Figure 2 above).

The new western bridge approach would be constructed on sparsely vegetated land dominated by pasture grasses and weeds such as Black Thistle *Cirsium vulgare,* Kikuyu *Cenchrus clandestinus,* Couch *Cynodon dactylon,* Paddys Lucerne *Sida rhombifolia,* Strawberry *Fragaria vesca,* and Castor Oil Plant *Richinus communis*. A single Swamp Oak *Casuarina glauca* occurs on this side of the bridge but is unlikely to be impacted.

The new eastern approach would be constructed in Blackbutt *Eucalyptus pilularis* – Turpentine *Syncarpia glomulifera* – Bangalay *E. botryoides* moist open forest on sheltered slopes and gullies, Southern Sydney Basin (Biometric SR516). Species within the area to be impacted include Turpentine, Swamp Mahogany *E. robusta*, Spotted Gum *Corymbia maculata,* Swamp Oak *Casuarina glauca*, Black Wattle *A. mearnsii,* Scentless Rosewood *Synoum glandulosum,* Mock Olive *Notelaea longifolia,* Coffee Bush *Breynia oblongifolila,* Sweet Pittosporum *Pittosporum undulatum,* Orange Thorn *P. multiflorum,* Paddys Lucerne, Common Silkpod *Parsonia straminea,* Spiky-headed Mat-rush *Lomandra longifolia,* and the Common Reed *Phragmites australis.*

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. *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.

Due to the level of disturbance and modification of groundcover through the footprint of the site, no suitable habitat for threatened terrestrial orchids (including *Rhizanthella slateri, Cryptostylis hunteriana* and *Pterostylis vernalis*) was considered to occur. Targeted survey for locally occurring threatened orchids was therefore not warranted.

2.2 Conjola Creek

The proposed activity would be undertaken on Conjola Creek approximately 600 metres upstream of village of Fishermans Paradise and the Bunnair Creek confluence (Figure 1 p.7) and two kilometres to the Lake Conjola estuary. The waterway at this location is anticipated to be brackish.

There are no seagrasses, mangroves or other marine vegetation in the waterway at this location.

At the site of the proposed activity, the creek is approximately 30 metres wide and two metres deep. The water level would, however, fluctuate depending on weather conditions and the condition of the Lake Conjola entrance to the sea.

The bottom substrate comprises alluvial soils of silty sand to an approximate depth of 1.5 metres. Monzonite bedrock is found approximately 10 metres below the water level (D&N Geotechnical 2024).

At the site of proposed activity, the waterway is a 3rd order stream under the Strahler ordering system. Under the NSW Department of Primary Industries – Fisheries' policy document for fish habitat conservation and management (DoPI 2013), the waterway at the site of the proposed activity would be considered Class 1 Major Key Fish Habitat and therefore regulated under the NSW *Fisheries Management Act 1994.*

The site of the proposed activity is flood liable. Refer to Section 3.6 of this REF for assessment of potential impact.

2.3 Soils, Geology and Geomorphology

The Ulladulla 1:250,000 geological map indicates that the site is generally comprising of alluvium deposits of gravel, swamp, and sand dunes underlain by Shoalhaven Group (Conjola Formation) comprising conglomerate, sandstone and silty sandstone. The Shoalhaven 1:100,000 and 1:250,000 Coastal Quaternary geological map and Minview regional NSW geological map indicates that the site is comprised of Holocene floodplain of silt, fluvial sand and clay underlain by Permian sedimentary rocks and minor volcanic rocks including sandstone, conglomerate, shale and coal measures (Sydney Basin). The bedrock, however, was found to be Monzonite, a relatively hard igneous rock, which may be associated with Monzonite intrusions, for which outcrops exist to the north, and south-east, of the site (D&N Geotechnical 2024).

Acid sulfate soil (ASS) investigations carried out by D&N Geotechnical (2024) made the following conclusions:

- There were no indications of actual ASS, with pH values prior to oxidation (pH_F) ranging between 6.7 and 8 with no result recorded below pH 4.
- Whilst pH values after oxidation (pH field oxidised or pH_{FOX}) did not indicate the presence of Potential ASS (as oxidised pH ranged between 3.2 and 7.3 and no sample recorded a pH_{FOX} less than 3, the measured change in pH (between pH_F and pH_{FOX}) in samples BH02 (5.5-5.95) and BH03 (10-10.45) (location of the bridge abutments) was greater than 1 pH unit, potentially indicating the presence of potential

ASS (PASS) or the presence of another oxidisable compound.

- In samples BH01 (11.5-11.95), BH02 (13-13.45) and BH03 (10-10.45), strong reaction ratings were recorded (possibly indicative of Potential ASS) however the measured change in pH was not significant, and pH_{FOX} was neutral to alkaline (*i.e.,* not indicative of Potential ASS).
- Of the three (3) samples submitted for analysis using the CRS suite:
    - Low levels of actual acidity (i.e., 0.01 %S), below the relevant action criteria, were recorded in samples BH01 (8.5-8.95) and BH03 (10-10.45).
    - Reduced inorganic sulfur was not detected above laboratory limits of reporting in samples BH01 (8.5-8.95) and BH03 (10-10.45) and net acidity values did not exceed the relevant action criteria.
    - The concentration of reduced inorganic sulfur (0.09 %S) in sample BH02 (5.5-5.95) did not exceed the relevant action criteria.

Based on the information available, the field screening and testing results do not indicate the presence of ASS in the samples analysed. However, given the indicators of PASS observed in BH02 and BH03 and the concentration of reduced inorganic sulfur in BH02, should soil and sediment materials require off-site disposal as part of the proposed works, further ASS testing should be undertaken to satisfy the requirements of the NSW EPA Waste Classification Guidelines (2014), specifically Part 4 – Acid Sulphate Soils.

2.4 The existing bridge

The existing bridge is a single lane, 30 metre long multi-span timber bridge with an existing internal width of 4.5 metres.

The bridge provides access from the Princes Highway (western) side of the creek to the eastern side where several private properties and residences exist. A local dairy enterprise is also reliant on the bridge to allow cows and trucks to and from pasture areas and milking infrastructure.

Due to the deteriorated state of the bridge, a 30 tonne load restriction is currently in place.

The bridge is listed within the heritage schedules of the Shoalhaven Local Environmental Plan 2014. Refer to Section 3.5 of this REF for more information.

2.5 Photos

Photo 1: The south-western side of the existing bridge where the new bridge and approaches would be constructed.

Photo 2: Native vegetation on the south-eastern side of the existing bridge to be removed for the new bridge.

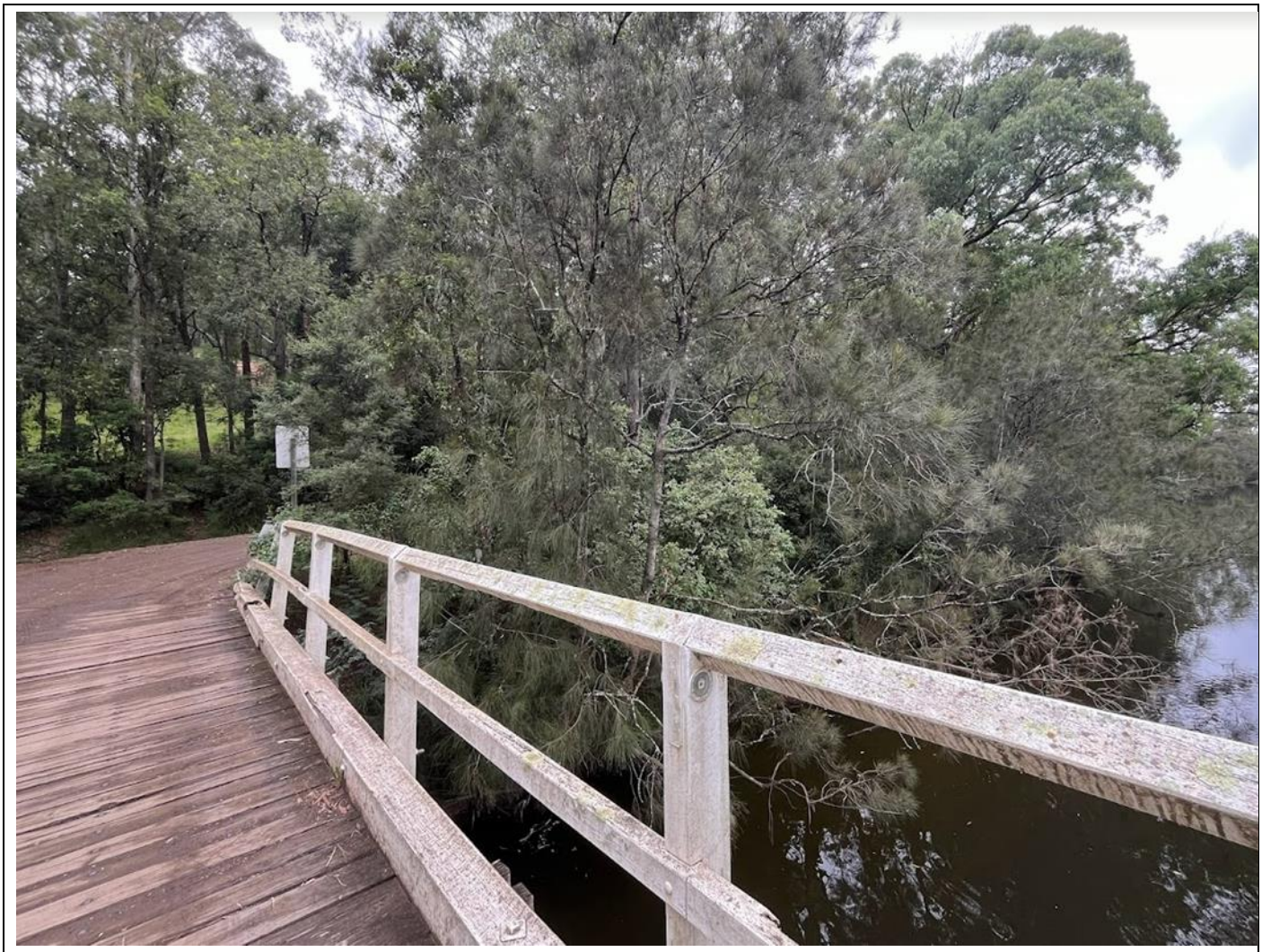


Photo 3: Native vegetation on the south-eastern side of the existing bridge to be removed for the new bridge.

Photo 4: Northern (upstream) side of the existing bridge

Photo 5: Conjola Creek downstream of the bridge

Photo 6: The existing bridge – from the western approach

Photo 7: Western side of the bridge where the site compound, parking and girder casting would be undertkaen

3. ASSESSMENT OF LIKELY IMPACTS ON THE ENVIRONMENT

3.1 Impacts associated with the proposed activity

The proposed activity would involve the following disturbances and direct impacts:

- Impact (including removal) to approximately 200m^2 of vegetation including up to thirteen trees (Figure 4 below).
- Installation of structures within a flood liable waterway.
- Temporary access restrictions.

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

- indigenous heritage
- non-indigenous heritage
- threatened species

Each is discussed below.

3.2 Vegetation Removal

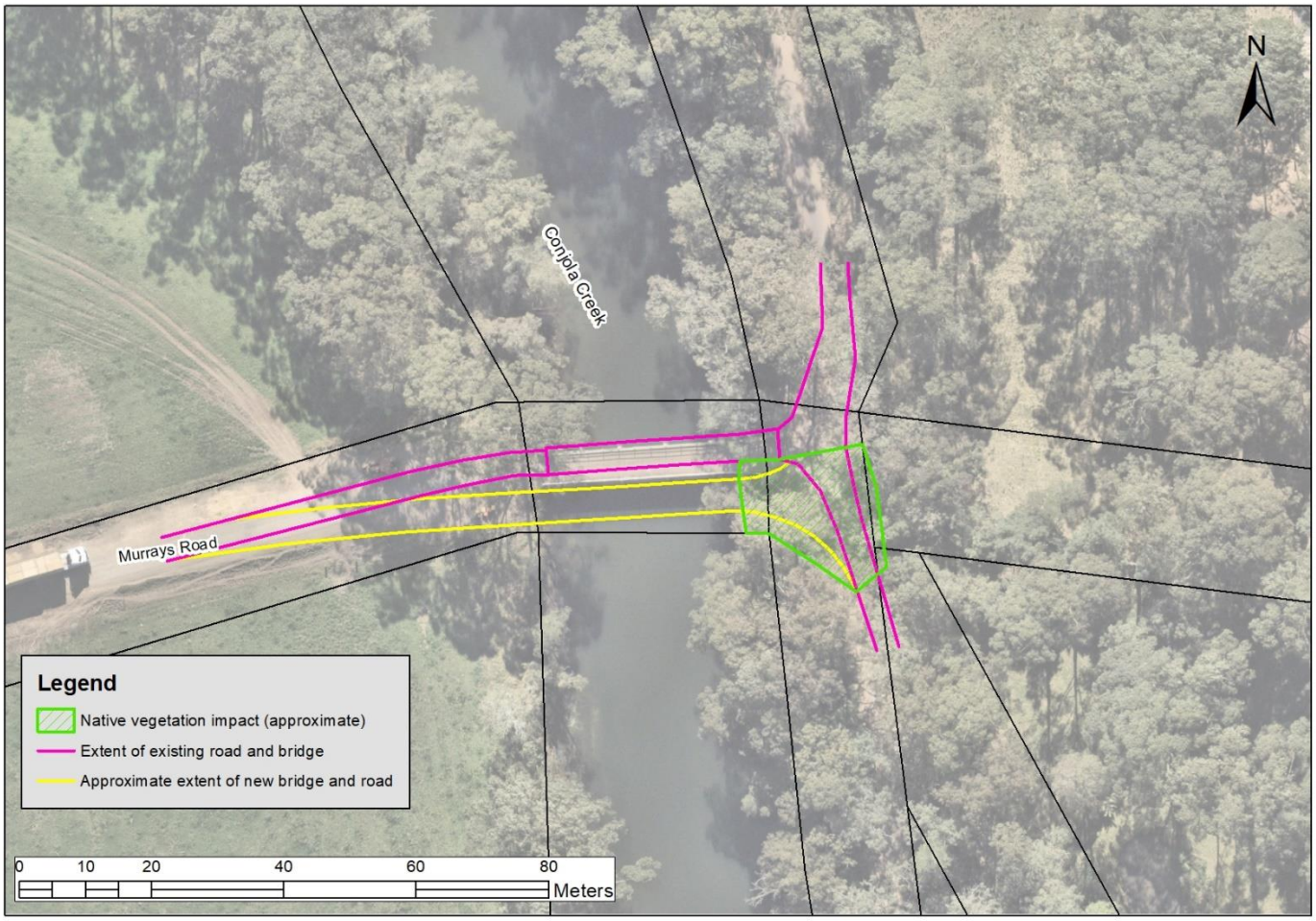
The proposed activity would remove approximately 200m^2 of native vegetation. The vegetation is described in Section 2.1 of this REF.

13 small trees are to be removed to construct the bridge approaches and improve manoeuvrability. These include Swamp Mahogany (5), Spotted Gum (1), and Swamp Oak (7). The impact is not significant for the following reasons:

- There are no plants in this area listed in the threatened species schedules of the NSW *Biodiversity Conservation Act 2016* (NSW BC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The species are common.
- Fauna species listed in the threatened species schedules of the NSW BC Act are not likely to reside in this location or rely on this vegetation for food, refuge or breeding (refer to Section 3.2 of this report).
- The clearing would not have a significant impact on an endangered ecological community listed under the NSW BC Act (refer to Section 3.2 of this report).
- The vegetation does not appear to provide important food sources for locally occurring threatened species and do not appear to contain nests or hollows.
- The vegetation is not mapped on the Biodiversity Values Map administered for the purposes of the NSW *Biodiversity Conservation Act 2016.*
- The vegetation is not mapped on the Terrestrial Biodiversity Map layer ("biodiversity – significant vegetation") in the Shoalhaven Local Environmental Plan (2014) and not mapped as "High Environmental Value" of "Biodiversity Corridors" in the *Illawarra Shoalhaven Regional Plan 2014 (https://www.planning.nsw.gov.au/sites/default/files/2023-03/illawarra-shoalhaven-regional-plan-2041.pdf).*

An environmental impact statement (EIS) is therefore not warranted.

Figure 4 Extent of probable vegetation impact



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.

No threatened freshwater fish species are anticipated to occur in Conjola Creek at the Murrays Bridge locality.

The threatened Greynurse Shark *Carcharias taurus* have been known to enter Lake Conjola from their preferred habitat around Green Island when the entrance is open to the sea. Greynurse Sharks are typically found near the bottom (at depths of 10 to 40 metres) in deep sandy or gravel filled gutters, or in rocky caves (DoPI 2013) this habitat is not present at the site of the proposed activity. Conjola Creek would also be too brackish for this species.

No other species, populations or ecological communities listed in the schedules of the Act are anticipated to occur in Conjola Creek.

The proposal is therefore unlikely to result in any impact on threatened species or their habitat.

As demonstrated in Table 1 below, the proposed activity would not contribute significantly to key threatening processes, as listed under Part 7A of the Act.

The proposed activity therefore does not require an Environmental Impact Statement (EIS) or Species Impact Statement (SIS) under the Act.

Table 1: Key threatening processes – Fisheries Management Act 1994

Key Threatening Process (KTP)	Assessment
Degradation of native riparian vegetation along the 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 of threatened fish species.	Not applicable – the proposed activity does not involve hook and line fishing.
Human-caused climate change.	Not applicable – the proposed activity would not contribute significantly to climate change and would not prevent implementation of the relevant Priorities Action Statement.
Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams.	Not applicable – Bridges and other similar structures that have minimal impact on flow are excluded from the KTP (Fisheries Scientific Committee 2006).
Introduction of fish to waters within a catchment outside their natural range.	Not applicable – the proposed activity does not involve the introduction and movement of fish.
Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales.	Not applicable – the proposed activity does not involve the introduction and movement of non-indigenous fish or marine vegetation.
Removal of large wood debris from New South Wales and rivers and streams.	Not applicable – Currently there is no woody debris present in the works area. The prescribed environmental safeguards (Section 7 of this report) also require that no woody debris is to be removed from the waterway.
The current shark meshing program in New South Wales waters	Not applicable – the proposed activity 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 A). The following species were assessed to require further assessment:

- Southern Myotis *Myotis Macropus*
- Yellow-bellied Glider *Petaurus australis*

Southern Myotis

The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100km inland. The microbat generally roosts in groups of 10 to 15 close to water in caves, mine shafts, hollow-bearing trees, stormwater channels, buildings, wharves, bridges and in dense foliage. The species forages over streams and pools catching insects and small fish by raking their feet across the water surface (OEH 2020).

The area of the proposed activity comprises habitat for the Southern Myotis and the existing bridge comprises potential roosting habitat. The proposed activity however is unlikely to have an adverse effect on the lifecycle of this species such that a viable local population is likely to be place at risk of extinction for the following reasons:

- The proposed activity would not impact known breeding or roosting habitat.
- The existing bridge would be retained, and no hollow-bearing trees would be removed.
- The proposed activity would have no adverse effect on prey availability and foraging habitat.
- The impact on the availability of habitat caused by the proposed activity would be insignificant compared to the amount and quality of habitat in the surrounding areas that would not be impacted by the proposed activity.
- The small amount of vegetation to be removed is insignificant in comparison to the range and flight abilities of the species.
- Works would occur during standard daylight construction hours, so would not impact on the nocturnal feeding periods of this species.

A species impact statement (SIS) and/or entry into the Biodiversity Offset Scheme (BOS) is therefore not required for this species.

Yellow-bellied Glider

The Yellow-bellied Glider (YBG) is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.

The YBG occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils including creek flats. The species feeds primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Extracts sap by incising (or biting into) the trunks of favoured food trees, often leaving a distinctive 'v'-shaped scar. Dens in hollows of large trees. Very mobile and occupy large home ranges between 20 and 85 hectares to encompass dispersed and seasonally variable food resources (OEH 2024).

The area of the proposed activity comprises potential habitat for the species. The proposed activity however is unlikely to have an adverse effect on the lifecycle of this species such that a viable local population is likely to be place at risk of extinction for the following reasons:

- A local population is not known for the area. There are only records within 5 kilometres of the site.
- The proposed activity would not impact known breeding or roosting habitat.
- No hollow-bearing trees would be removed.
- There is no evidence of feeding in the trees with or adjacent to the proposed activity.
- The impact on the availability of habitat caused by the proposed activity would be insignificant compared to the amount and quality of habitat in the surrounding areas that would not be impacted by the proposed activity.
- The small amount of vegetation to be removed is insignificant in comparison to the range of the species.
- Works would occur during standard daylight construction hours, so would not impact on the nocturnal feeding periods of this species.

A species impact statement (SIS) and/or entry into the Biodiversity Offset Scheme (BOS) is therefore not required for this species.

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

Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions ('Swamp Oak Floodplain Forest') is mapped as occurring in the landscape surrounding the proposed activity site (refer to Figure 5 below).

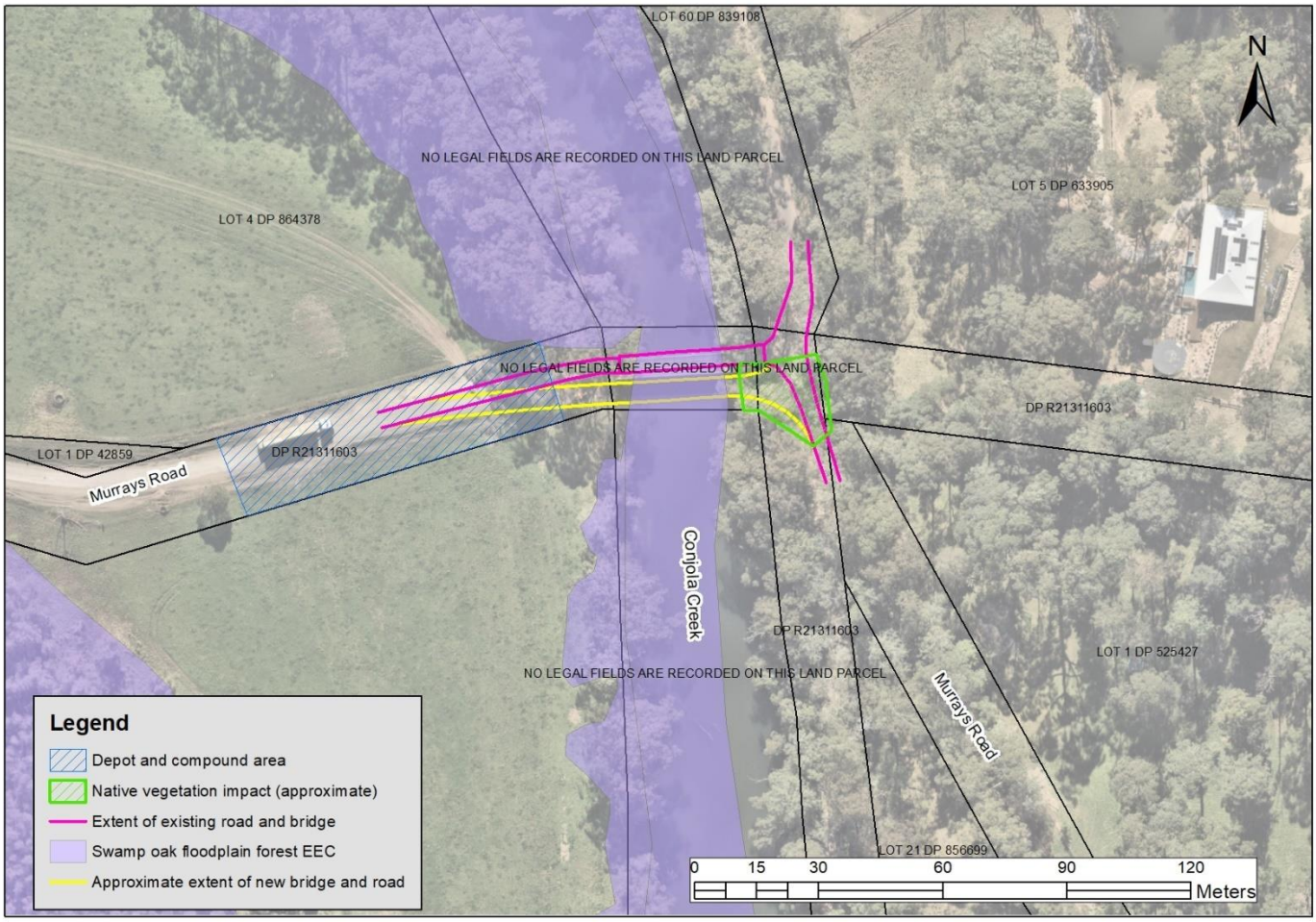
Swamp Oak Floodplain Forest is the name given to the ecological community associated with grey-black clay loams and sandy loams, where the groundwater is saline or subsaline, on waterlogged or periodically inundated flats, drainage lines, like margins and estuarine fringes associated with coastal floodplains.

Swamp Oak Floodplain Forest is not mapped as extending to the area that would be impacted by vegetation removal. Although containing Swamp Oaks, the area that would be impacted is confirmed by site assessment as not comprising the EEC. It does not contain other indicative

species of the EEC and is on the steep banks of the creek above the lower flats on the opposite side of the creek.

The proposal would therefore 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.

Figure 5 Endangered Ecological Communities in proximity to the proposed activity



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 be further 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.

No key threatening processes listed in the NSW *Biodiversity Conservation Act 2016* are considered relevant to the proposed activity. The proposed activity would not involve clearing of native vegetation as defined by the Scientific Committee's determination (OEH 2021), i.e.:

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

Conclusion of the Part 7 Biodiversity Conservation Act 2016 'five-part test'

The proposed activity is unlikely to have a significant impact on threatened species, endangered ecological communities, critically endangered ecological community, and declared areas of outstanding biodiversity values and does not comprise or significantly exacerbate a key threatening process. A species impact statement (SIS) or entry into the Biodiversity Offset Scheme (BOS) is therefore not required.

3.4 Indigenous heritage

Under Section 86 of the NSW *National Parks and Wildlife Act 1974* (NPW Act) it is an offence to disturb, damage, or destroy any Aboriginal object without an Aboriginal Heritage Impact Permit (AHIP). The Act, however, provides that if a person who exercises 'due diligence' in determining that their actions 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 15 November 2024 indicated that there are no recorded Aboriginal sites or places in the vicinity of the proposal (refer to AHIMS report below in Figure 6 below). The search included the proposed minor upgrade of the Murrays Road / Bendalong Mountain Road connection.

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. However, the area could also be described as 'disturbed land' as defined by the Due Diligence Code, i.e.:

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

The proposed activity is within disturbed land as the lands have been subjected to the continued disturbance of human activity and development being being cleared and developed for agricultural activities, and road and bridge construction and maintenance.

An AHIP is not required, and the activity can proceed without an AHIP.

Figure 6 Results of AHIMS Aboriginal heritage search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Murrays bridge 2
Client Service ID : 950858

Shoalhaven City Council - Nowra
PO Box 42 Bridge Rd
Nowra New South Wales 2541
Attention: Geoffrey Young

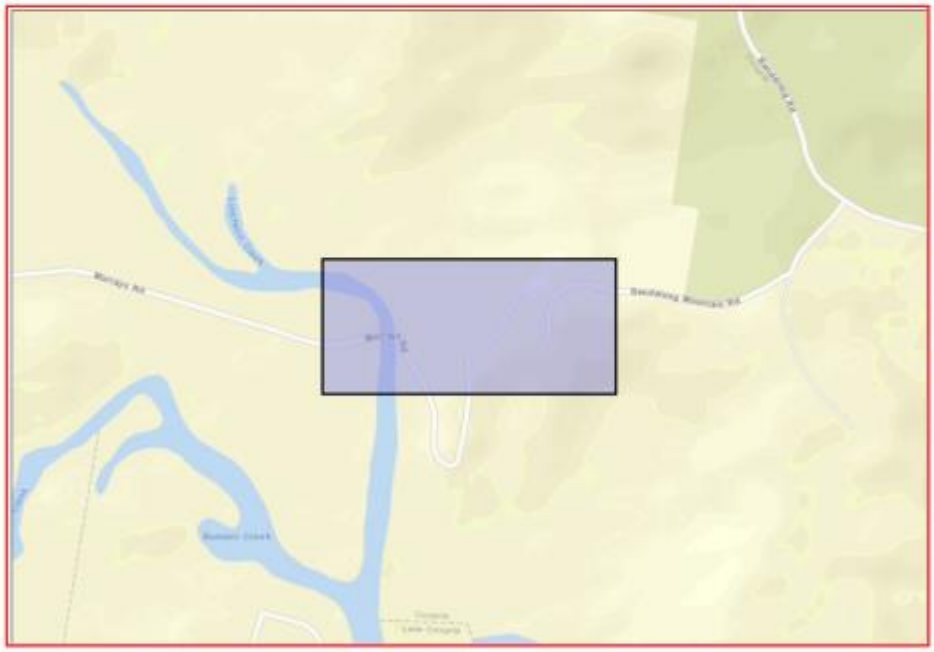
Date: 15 November 2024

Email: geoff.young@shoalhaven.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 267744.0 - 268439.0, Northings : 6099383.0 - 6099692.0 with a Buffer of 0 meters, conducted by Geoffrey Young on 15 November 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

The existing Murrays Road Bridge is a multiple-span timber trestle and beam bridge with a history dating back to the late 19th century. Murrays Road Bridge is listed as a heritage item of local significance in the Shoalhaven Local Environmental Plan 2014 (https://legislation.nsw.gov.au/view/html/inforce/current/epi-2014-0179#sch.5-pt.1 heritage item 164).

The Heritage Assessment prepared by Louise Thom Heritage (2022, Appendix C) for the proposed activity states that:

> *"Murrays Road Bridge provides important physical evidence of the early settlement history of Conjola and the Shoalhaven. The development history of the dairy industry is*

demonstrated through the continuous occupation by the one family up to present times and the importance of the bridge to the farm which was on both sides of Conjola Creek. Murrays Road Bridge has historical association with generations of the Murray family, pioneers of Conjola since 1859 and dairy farmers who continue to farm on both sides of Conjola Creek using the bridge crossing to access both sides of the farm.

Murrays Road Bridge is an excellent example of a high-level timber beam bridge on trestles. The bridge provides physical evidence of the late 19th century construction of timber beam bridges. The bridge provides an example of a timber beam bridge constructed by the Department of Public Works in the last years prior to local roads and bridges becoming the responsibility of local councils.

Murrays Road Bridge is significant as a crucial piece of infrastructure on the historic road which connected Conjola and Red Head until the Bendalong Road was upgraded in the 1970s. The road and the bridge were historically important in the timber industry providing a route for timber trucks from timber mills such as Davis's Mill at Red Head.

The bridge provides evidence of the change in administration of roads and bridges in the early twentieth century when responsibility for local roads and bridges was transferred from the State to local councils. The bridge has historical association with Clyde Shire Council who was responsible for its upkeep from 1907 to 1948 during which time the bridge provided access over Conjola Creek on the road from Conjola to Red Head (Bendalong). The bridge has historic association with Shoalhaven Shire and Shoalhaven City Council who have maintained the bridge since 1948.

The Murrays Road Bridge has special association for the Murray family for whom it has historic and practical significance. The bridge contributes to the sense of place of Conjola Creek and is valued by the local community.

The Murrays Road Bridge is a rare example of a high-level timber beam bridge on trestles constructed in the late 19th century in the Shoalhaven. The bridge is the only surviving operational timber beam bridge left in the Shoalhaven. Once extremely common the bridge type is now believed to be rare in NSW. "

The conclusion of the report emphasises the heritage value of Murrays Road Bridge, recognizing it as a rare and intact timber beam bridge of high local significance. Two conservation options were presented, recommending that SCC either retains the bridge through necessary repairs or construct a new bridge alongside while preserving the timber bridge as a ruin.

SCC decided to construct a new bridge alongside while preserving the timber bridge as a ruin. This was to build a more robust structure requiring less maintenance whilst improving the approaches to and from the bridge with increased manoeuvrability for larger vehicles.

As prescribed in Section 7 of this REF, safeguards and measures would be in place to protect the heritage bridge including complying with load limits, preventing vehicle access onto the bridge when the new bridge becomes operational, and installing plywood protection barriers during piling activities.

Interpretative signage would also be installed to communicate the significance of the bridge and its retention as a ruin.

3.6 Flooding

The site of the proposed activity is flood liable.

A significant length of Murrays Road to the west of the bridge has an elevation lower than the current bridge deck level. During large flood events, floodwater leaves Conjola Creek and inundates Murrays Road before flood levels reach the existing deck level. Hence there would be little benefit from raising the Murrays Rd bridge soffit and deck levels, unless Murrays Rd was also raised which is not proposed and is unlikely to happen. Given the flash flood nature of the Lake Conjola catchment, the time of isolation for residents on Murrays Rd is also relatively short (Stone *pers.comm.* 2024).

Hydraulic analysis conducted for the proposed activity by Andes Engineering (2024b) concluded the following:

- The new bridge has been designed to match deck thickness of the existing bridge with similar soffit levels.
- Due to the less piers on the new bridge, hydraulic conductivity would be improved.
- Upstream afflux levels would not significantly change with the new bridge along beside the retained bridge.
- The new bridge is estimated to have flood immunity for storms up to 2% AEP events - although Murrays Road approach from the west would be underwater prior to the bridge being underwater at 10% AEP.
- The maximum stream velocity is estimated to be no greater than 2.0m/s. Based on this stream velocity, the estimated scour depth within the pier locations is 0.9 m for storm events with 1%AEP.
- The new bridge has been designed for the modelled maximum stream forces under flood.

It was further determined that the new bridge would not have negative upstream or downstream effects and would not result in negative effects to the existing, heritage-listed bridge (Andes Engineering 2024).

As the compound and depot would be within flood liable land, the construction contractor should develop a flood management plan to prescribe actions to monitor weather situations and their response should a flood event occur, *i.e.* moving plant and equipment, stockpiles, fuels, toilets, site sheds onto higher ground.

Consultation with SCC's Flood Engineers and NSW State Emergency Services has been undertaken in accordance with the *State Environmental Planning Policy (Transport and Infrastructure) 2021.* Details are provided in Section 5.1 of this REF.

3.7 Access restrictions

To construct the eastern abutments and associated works, a 100-tonne crane would have to operate from Murrays Road (Figure 7 below). This would result in access restrictions to properties south along Murrays Road for approximately two weeks. To mitigate this impact, Bendalong Mountain Road would be made trafficable to allow access to properties to and from Bendalong Road. This includes the 320m (approx.) of road not currently maintained by SCC linking Murrays

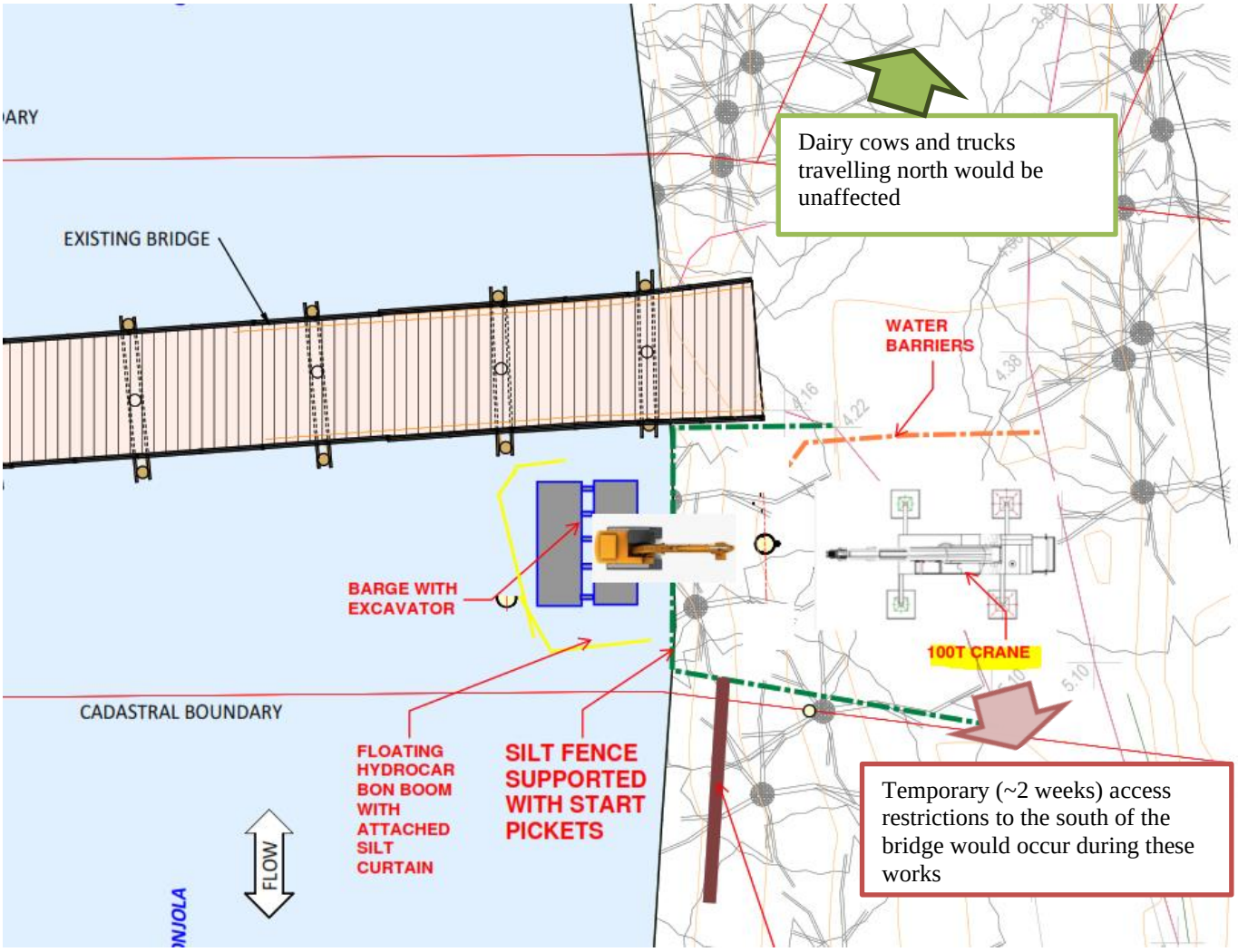
Road and Bendalong Mountain Road[2] (Figure 8 below). Princes Highway can then be reached from Bendalong Road which is a sealed public road.

The upgrade would not require clearing of native vegetation, only the placement of road-base material and grading.

Affected residents, occupants, and owners have been, and will continue to be, consulted regarding these arrangements.

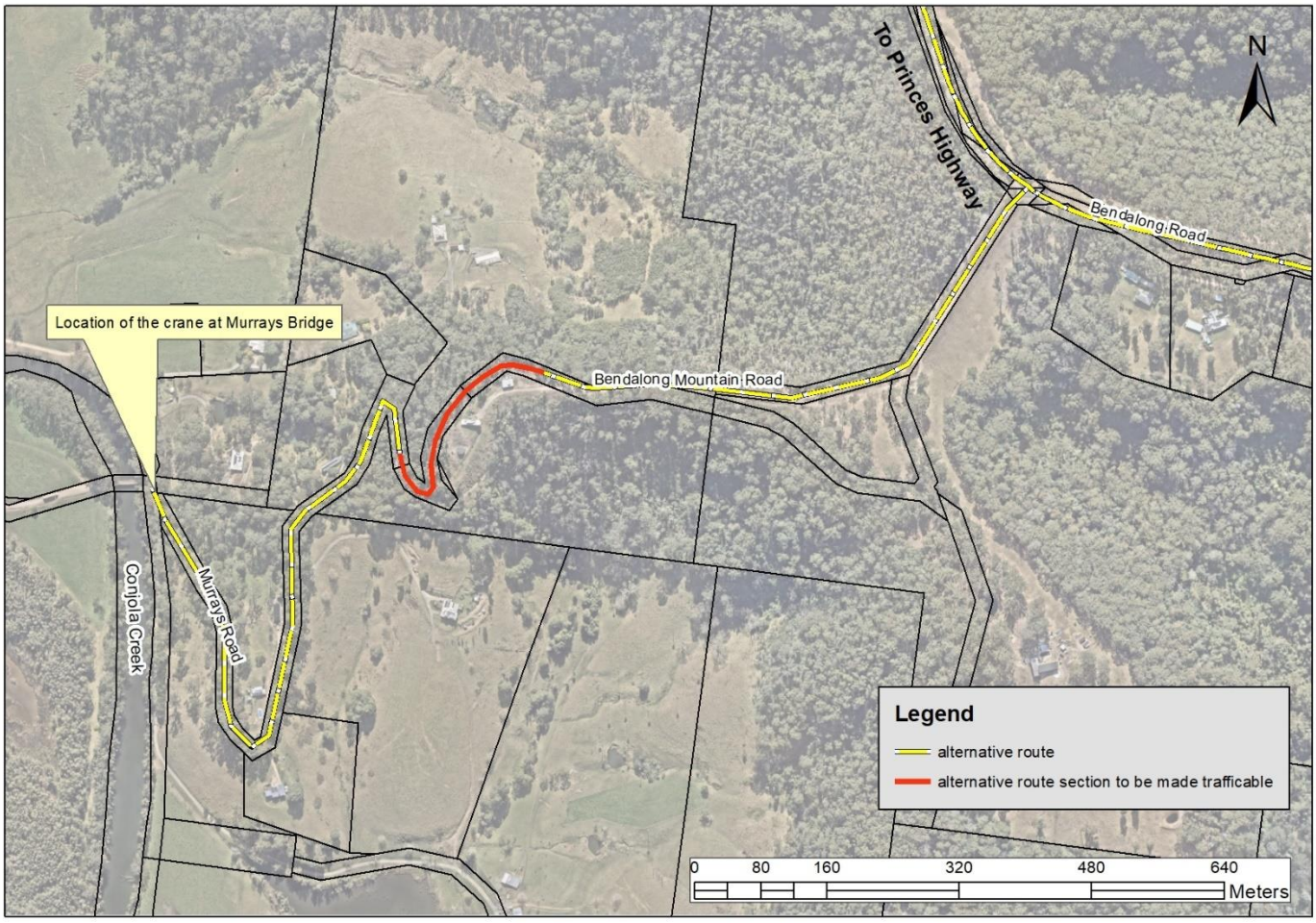
The dairy enterprise would be unaffected by this temporary access restriction as the private access roads to the north leading to the pasture and milking infrastructure would not be utilised (Figure 7 below).

Figure 7 Location of crane on the eastern side of the new bridge that would result in temporary access restrictions



[2] *NB: The upgrade of the 320 metres is only for the purposes of the proposed activity and there is no intention by SCC to maintain this section in perpetuity.*

Figure 8 Alternative access in place when crane is operating on Murrays Road



3.8 EP&A Regulation – Section 171 matters of consideration

Section 171(2) of the *Environmental Planning and Assessment Regulation 2021* lists the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment under Part 5 of the EP&A Act. The following assessment in Table 2 below deals with each of the factors in relation to the proposed activity.

Table 2: Section 171(2) Factors

Does the proposal:	Assessment	Reason
a) Have any environmental impact on a community?	Positive – long term Medium adverse short term during access restrictions	The purpose of the proposed activity is to replace a deteriorated timber bridge (which has identified structural defects) with a new, more durable bridge. Temporary inconvenience would result through the construction process, but the existing bridge would generally remain in service to enable continued access to properties in either side of the bridge.

Does the proposal:	Assessment	Reason
		Alternative access for property owners and residents along Murrays Road on the eastern side of the bridge would be made available whilst Murrays Road is closed for crane operations. The dairy enterprise operating north of the eastern side of the bridge would be unaffected (refer to Section 3.7 of this REF for more detail). The proposed activity would not have any impact on other community services and infrastructure such as power, waste water, waste management, educational, medical or social services.
b) Cause any transformation of a locality?	Low adverse	The locality current use would remain unchanged *i.e.* Murrays Road waterway crossing.
c) Have any environmental impact on the ecosystem of the locality?	Low adverse	An assessment provided in Section 3 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 significantly 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 the visual impact of the activity would be minimal. Removal of vegetation and fauna habitat will be minimal, occurring on existing edges and not resulting in significant fragmentation of habitat. 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,	Medium adverse	Although the existing heritage listed bridge would be retained, the new modern bridge next to it may detract from potential aesthetics of the area. The existing heritage listed bridge will be protected during construction but will be retained as a ruin without further maintenance. interpretative signage will be installed as per

Does the proposal:	Assessment	Reason
cultural, historical, scientific, or social significance or other special value for present or future generations?		recommendations of the Heritage Assessment (refer to Section 3.5 of this REF for more information) The new bridge would have no deleterious impact on the old bridge (refer to Section 3.6 for more information). 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	A small area of potential fauna habitat will be removed by the activity. However, no threatened 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 3.3 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 activity. The proposed activity would not use hazardous substances or use or generate chemicals which may build up residues in the environment. The possible impacts have been discussed in detail under Section 3. 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 significantly 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.

Does the proposal:	Assessment	Reason
		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 (refer to Section 3.6 of this REF for more information.
k) Cause any reduction in the range of beneficial uses of the environment?	Positive	The site and local environment will remain relatively unchanged. The proposal is consistent with the existing land use. The site use as a waterway crossing would be improved.
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 schools, childcare centres and hospitals. Minor sediment disturbance within Conjola Creek may result from installation of abutments and piles with associated excavation, but this is anticipated to be minimal. Sediment and erosion control in accordance with the Blue Book will be implemented to minimise movement of sediment into waterways. 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.
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. 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)	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.

Does the proposal:	Assessment	Reason
which are, or are likely to 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. The site of the proposed activity is not in a coastal hazard zone.
q) applicable local strategic planning statements, regional strategic plans or district plans made under the Act, Division 3.1	Positive	The proposed activity is consistent with the *Shoalhaven 2040* Strategic Land-use Planning Statement, including Planning Priority 2 *Delivering infrastructure* https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D20/437277. The activity is not inconsistent with the Illawarra Shoalhaven Regional Plan 2041 https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/Plans-for-your-area/Regional-plans/Illawarra-Shoalhaven-Regional-Plan-05-21.pdf and does not impact any areas mapped in the Planning Statement as “high environmental value” or “habitat corridor”.
r) other relevant environmental factors	n/a	Environmental factors have been addressed in Section 3 of this REF.

4. PERMISSIBILITY AND 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."*

In this regard, Section 2.109(1) of the NSW *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) states that "*Development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land" (* https://legislation.nsw.gov.au/view/html/inforce/current/epi-2021-0732#sec.2.109 *).* As the proposed activity would for the purposes of a road (The Wool Road) by a public authority, *i.e.* SCC, Section 2.109(1) of the T&I 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 Roads Act 1993

SCC is the roads authority for Murrays Road and Bendalong Mountain Road and the currently unmaintained connecting road.

Under Section 71 of the Act, a roads authority may carry out road work on any public road for which it is the roads authority.

Under Section 88, a roads authority may, despite any other Act or law to the contrary, remove or lop any tree or other vegetation that is on or overhanging a public road if, in its opinion, it is necessary to do so for the purpose of carrying out road work or removing a traffic hazard.

4.3 NSW Fisheries Management Act 1994

Conjola Creek is regarded as "Key Fish Habitat" for the purposes of the Act.

Some of the components of the works comprises dredging and reclamation as defined in the Act, such as piling, scour protection, abutments, and wingwalls

Section 200 of the Act prescribes circumstances where a local government can carry out dredging and reclamation, *i.e.*:

- Under the authority of a permit ("Fisheries Permit"), or
- Work authorised under the Crown Land Management Act 2016, or
- Work authorised by a relevant public authority (other than a local government authority).

Under the *Policy and guidelines for fish habitat conservation and management* (DoPI 2013), DoPI Fisheries focuses the application of the Act and Regulations and associated policies and guidelines on "key fish habitats". Issue of a Fisheries Permit is typically required for activities constituting dredging or reclamation within or with potential to impact areas identified as Key Fish Habitat. As the site is mapped as Key Fish Habitat, a Fisheries Permit will be required for the installation of the abutments, scour protection and piling.

With regard to other provisions of the Act The proposed activity would not:

- affect declared aquatic reserves (Part 7, Division 2 of the Act)
- involve blocking the passage of fish within KFH (s.219)
- impact mangroves and certain other marine vegetation (Part 7, Division 4)
- involve disturbance to gravel beds where salmon or trout spawn (s.208 of the Act)
- involve the release of live fish (Part 7, Division 7)
- involve the construction of dams and weirs (s.218)
- use explosives in a watercourse (Clauses 70 and 71 of the *Fisheries Management (General) Regulation 2019).*

A Fisheries Permit would therefore only be required for the dredging and reclamation work.

4.4 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: The T&I SEPP provides for the proposed works to be undertaken without development consent (refer above). In circumstances where development consent is not required, the environmental assessment provisions outlined in Part 5 of the Act are required to be complied with. This REF fulfils this requirement.
State Environmental Planning Policy (Hazards and Resilience) 2021
Permissible √ Not permissible ☐
Justification: The proposed activity is not mapped as comprising coastal wetlands or littoral rainforest for the purpose of this SEPP. Other considerations of the SEPP are not applicable to the proposed activity.

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 2016 ("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 knowingly 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' and not in a landscape that would have a higher propensity for heritage objects, 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 3.3 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.

Water Management Act 2000

Permissible √ Not permissible ☐

Justification:

- Local councils are exempt from s.91E(1) of the Act in relation to all controlled activities 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).

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 be undertaken within a road reserve. Native Title can reasonable be assumed to have previously been extinguished over these lands.

5. CONSULTATION WITH GOVERNMENT AGENCIES

5.1 Transport and Infrastructure SEPP 2021 requirements (T&I SEPP)

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

The proposed activity involves stormwater management within a road reserve. The proposed activity however would be undertaken by the staff managing roads (City Services). No consultation is therefore required.

The proposed activity would:

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

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

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

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

(e) involve the excavation of, or a footpath adjacent to, a road for which the proponent is not responsible for the maintenance of the road or footpath.

No consultation is therefore required.

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

There would be no heritage objects or places significantly impacted by the proposed activity (refer to Section 3.5 of this REF for more information).

Section 2.12 – Consultation with councils - development with impacts on flood liable land

In accordance with Section 2.12 of the T&ISEPP, a notice of intention was sent to SCC's Senior Flood Engineer on 21 December 2023. Of particular relevance in the response (SCC document reference D23/525511):

- *"Firstly, it is great to hear that there are plans to undertake some flood investigations. As a minimum this is required to determine design flood velocities for the structural design of the bridge, abutments, piers and scour analysis.*
- *Council have developed hydrologic and hydraulic models for the Lake Conjola catchment already. Refer Lake Conjola Flood Study (2007) and Lake Conjola Floodplain Risk Management Study & Plan (2013) reports on Councils website at the following link. https://www.shoalhaven.nsw.gov.au/Access-to-Information/Environment/Flood-Studies. These reports should be referenced in the RFT.*
- *The hydrologic and hydraulic models already developed for the Lake Conjola catchment can be utilised for any flood investigations for the bridge design and this will significantly reduce the complexity and cost of any flood investigations. These flood models have been*

calibrated and prepared in accordance with NSW Government requirements. These models can be provided to the consultant undertaking the flood investigations at no cost following a digital data licence agreement being signed for the project. The hydrologic model for the Lake Conjola catchment is fit for purpose for this project and includes the full range of design events. Unfortunately the hydraulic model does not extend upstream of Fishermans Paradise as per the image below. Hence the hydraulic model would need to be extended upstream to the Princes Hwy, with the Murrays Rd and ideally Princes Hwy bridges included. This would be relatively cheap and easy to do, noting that some bathymetric survey may be required if not already available from DPE. This approach would result in fit for purpose models developed relatively easily and at low cost.

- *It is noted that a significant length of Murrays Rd to the west of the bridge has an elevation lower than the current Murrays Rd bridge deck level. During larger flood events, floodwater leaves Conjola Creek and inundates Murrays Rd well before flood levels reach the existing Murrays Rd Bridge deck level. Hence there would be little benefit with regard to improved flood immunity achieved from raising the Murrays Rd bridge, unless Murrays Rd was also raised which is unlikely to ever happen. Given the flash flood nature of the Lake Conjola catchment, the time of isolation for residents on Murrays Rd is relatively short.*
- *Further to the above comment, it is understood that the existing Murrays Rd Bridge may be retained in place for heritage reasons, and the new bridge would be constructed adjacent to the existing bridge (location upstream or downstream of existing bridge to be determined based on geometric design considerations etc.) Hence it is recommended that the bridge design and any flood investigations commence based on the assumption that the new and existing bridges would have a similar bridge deck level and soffit level, and ideally less piers. This would avoid any adverse flood impacts associated with the adjacent bridges having different levels – resulting in a much thicker effective bridge deck thickness during a flood event. This scenario with similar bridge levels may also achieve the intended flood immunity, noting this will be higher than the approach road. If the proposed bridge deck and soffit levels are similar to the existing bridge, then the hydraulic assessment will be largely just required to identify design flood velocities for the structural design of the bridge, abutments, piers and scour analysis.*

- *If the new bridge adopts a different bridge deck and soffit level than the existing bridge, then afflux maps would be required for a range of design events up to 1% AEP to identify if there are any adverse flood impacts. It is noted that afflux maps ideally need to consider changes to peak flood level, hazard and flood function – as these characteristics can impact flood evacuation and safety considerations.*
- *The RFT should require that the consultant provide all hydrologic and hydraulic model setup files and post-processed results to Council at the completion of the project. This information will be helpful for other Council flood investigations.*

In response, the proposed new bridge retains similar soffit and deck levels as the existing bridge and less piers than the existing.

Based on this, a draft Hydraulic and Flooding Report was prepared by Andes Engineering (2024) was submitted to SCC's Senior Flood Engineer for comment. After the review, a final report was prepared and resubmitted to the Flood Engineer (provided as Appendix D of this REF). No further engagement is required.

The report concluded that the deck level of the new bridge would be submerged during a 1% Annual Exceedance Probability (AEP) event. However, the western approach of Murrays Road is likely to be submerged well before then. The construction of the new bridge is also anticipated to have no detrimental effects to the adjacent heritage bridge. Further information regarding the potential hydraulic / flooding effects is provided in Section 3.6 of this REF.

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

In accordance with Section 2.13 of the T&ISEPP, a notice of intention was sent to NSW State Emergency Services on 18 November 2024 (SCC reference D24/4975213). No response has been received. SCC shall however consider any response to the notice.

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

The proposed activity comprises a fixed or floating structure in or over navigable waters. In accordance with Section 2.15 of the TISEPP, a notice of intention was sent to TfNSW – Maritime on 19 June 2024 (SCC document reference D24/254747). A response was received on 5 July 2024 (SCC document reference D24/486560). Of particular importance the response states:

> "*… In regard to the operational phase of the proposed new bridge, due to the nature of the waterway at this location and known vessel operating profile, which is confined to small powered vessels and passive craft (canoes / kayaks), and the new bridge resulting in no*

reduction in channel width or vertical clearance due to the soffit of the new bridge being equivalent to the existing bridge, Maritime have no objections, ongoing requirements (bridge design or otherwise) or further comments relating to this element of the development, assessed on the grounds of impacts to safe navigation.

However, the construction phase of the new bridge will require further Maritime consultation and consent relating to the implementation of waterway management to facilitate the safe completion of the construction works. As the works are in, on and over navigable waters and may impact navigation, the proponent, or any agent acting on their behalf, will be required to formulate and implement an approved marine traffic management plan (MTMP). Maritime can be contacted to provide further advice and guidance on the requirements pertaining to this element of the development once the appropriate stage of planning has been reached and the construction methodology finalised."

A Maritime Traffic Management Plan was submitted to TfNSW – Maritime for approval on 18 November 2024 (SCC reference document D24/497559). Formal Approval shall be obtained prior to any boat and barge work.

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 an 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.

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

The proposed activity would not be undertaken on Bushfire Prone Land and is not a development prescribed in this section (health services facilities, correctional centres, residential accommodation). Consideration of PBP is therefore not required.

6. COMMUNITY ENGAGEMENT

The Murrays Bridge is only used by a small number of residents, property owners and a dairy farm enterprise on the eastern side of Conjola Creek. Engagement of these residents and property owners shall be direct through letters and direct contact.

Residents and property owners along Murrays Road and Bendalong Mountain Road shall be contacted and provided details regarding the commencement of works, commencement of access restrictions and the arrangements for alternative access. Contact details for the Construction Contractor and SCC Project Manager shall also be provided.

No further community engagement is considered necessary.

7. ENVIRONMENTAL SAFEGUARDS AND MEASURES TO MINIMISE IMPACTS

Note that safeguards / measures are prescribed unless otherwise stated.

Safeguard / Measure	Responsibility
Works planning, approvals, consultation and notification	
1. A Fisheries Permit shall be obtained for dredging and reclamation prior to such works occurring.	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. Consideration shall be given to any response from NSW SES with regard to the notice of intention submitted to the organisation (SCC document D24/497513)	SCC Project Consultant (PM), SCC Environmental Operations Officer (EOO), and Construction Contractor
4. The Maritime Traffic Management Plan shall be approved by TfNSW – Maritime prior to any boat and barge work within Conjola Creek.	SCC Project Consultant and Construction Contractor
5. As the compound and depot would be within flood liable land, the Construction Contractor shall develop a flood management plan to prescribe actions to monitor weather situations and their response should a flood event be predicted, *e.g.* moving plant and equipment, stockpiles, fuels, toilets, site sheds onto higher ground.	Construction Contractor
6. Residents and property owners along Murrays Road and Bendalong Mountain Road shall be contacted and provided details regarding the commencement of works, commencement of access restrictions and the arrangements for alternative access. Contact details for the Construction Contractor and Project Manager shall also be provided.	Project Manager and Construction Contractor
Site establishment	
7. Any machinery, vehicles and stockpiles utilised during construction shall be stored and / or operated within the project footprint and existing cleared areas only. Works, machinery and vehicles shall not encroach into the canopies of trees that are to be retained and protected.	Construction Contractor
8. A Construction Environmental Management Plan (CEMP) for the proposed activity shall be prepared / amended to address the prescribed safeguards and	Construction Contractor

Safeguard / Measure	Responsibility
measures within this REF and any conditions specified in the Fisheries Permit.	
9. 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.	Construction Contractor
10. Hydrocarbon floating booms with turbidity curtains shall be installed in the Creek around the barge and containing the abutment construction areas 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 area that would be disturbed on each embankment, and shall not be installed across the creek . c. the turbidity curtain shall be affixed so that there are no breaches or gaps between the curtain, hydrocarbon boom, and shoreline interface. d. the boom and curtain shall be appropriately managed throughout the duration of the works. The boom and 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 boom and 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.	Construction Contractor

Safeguard / Measure	Responsibility
11. In the event that any wildlife be significantly disturbed or injured during works, Council's Environmental Officers are to be contacted or if unavailable, Wildlife Rescue – South Coast should be contacted on 0418 427 214, to rescue and relocate the animal(s).	Construction Contractor
Construction works	
12. Vegetation removal shall be undertaken only to the extent required to carry out the works.	Construction Contractor
13. Works shall be compliant with all the conditions of the Fisheries Permit	Construction Contractor and Project Manager
14. The approved Waterway Traffic Management Plan and Flood Plan shall be implemented.	Construction Contractor
15. 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* .	Construction Contractor
16. No major equipment maintenance works shall be undertaken on-site.	Construction Contractor
17. To avoid the risk of pollution from machinery, refuelling shall generally be done off site, however if refuelling on site is required, due care shall be taken to avoid spilling fuel and a tray shall be used to catch any accidentally spilt fuel.	Construction Contractor
18. Piling works are to be conducted during normal working hours and outside peak holiday periods such as NSW school holidays, Easter, and other long weekends	Construction Contractor
19. Closure of Murrays Road for the construction of the eastern abutments shall be limited to two weeks with the Bendalong Mountain Road alternative access open and trafficable to conventional 2WD vehicles.	Construction Contractor
20. Emergency Services (Police, Ambulance, Rural Fire Service, SES) shall be informed of the temporary road closure and given at least two weeks notice. This can be achieved through SCC's Local Emergency Management Officer.	Construction Contractor, SCC Project Manager
21. The contractor shall maintain access across the old bridge during construction for the dairy farm enterprise unless prior arrangements are made with the farmer.	Construction Contractor
22. If trees and any vegetation (except to a minor extent) requires removal in the upgrade of the Murrays Road/Bendalong Mountain Road connection, a separate environmental assessment shall be conducted	Construction Contractor, Project Manager, and SCC EOO.

Safeguard / Measure	Responsibility
23. 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 Environment and Heritage (ph:131 555) shall be contacted.	Construction Contractor
24. Stockpiles of any excavated earthen material shall be in existing cleared areas and more than 10 metres from the creek and any trees that are to be retained.	Construction Contractor
25. Any waste shall be managed, transported, stored, collected and disposed of in an environmentally satisfactory manner 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.	Construction Contractor
26. Should soil and sediment materials require off-site disposal as part of the proposed works, further ASS testing should be undertaken to satisfy the requirements of the NSW EPA Waste Classification Guidelines (2014), specifically Part 4 – Acid Sulphate Soils.	Construction Contractor
27. Upon completion of works, disturbed land shall be stabilised with jute mush, turf, hydromulch, seeding or similar.	Construction Contractor
28. All parties shall comply with any direction given by authorised officers of the Transport for NSW, Department of Primary Industries, and NSW Environment Protection Authority with regard to safe navigation and the prevention of pollution.	Construction Contractor and Project Manager.
29. Any woody debris extant outside the works area shall be left in-situ.	Construction Contractor
30. The existing heritage bridge shall be protected during construction by complying with prescribed load limits and installing plywood barriers during piling activities.	Construction Contractor
Post construction	
31. The existing heritage bridge shall be left as a ruin with the installation of barriers to prevent vehicle and cow access and have interpretative signage installed to communicate the significance of the bridge and its retention as a ruin. The nature, style and fabric of the barriers should complement the heritage values of the bridge and not detract from it.	Project Manager

Safeguard / Measure	Responsibility
32. An asset form shall be trimmed to file 44574E on commissioning of the new bridge in accordance with POL15/8 Asset Accounting Policy section 3.1.4 and POL16/79 Asset Management Policy section 3.3.	Construction Contractor
33. Any post-construction conditions of the Fisheries Permit shall be accomplished	Construction Contractor and Project Manager

8. SIGNIFICANCE EVALUATION & DECISION STATEMENT

This Review of Environmental Factors has assessed the likely environmental impacts, in the context of Part 5 of the *Environmental Planning and Assessment Act 1979*, of a proposal by Shoalhaven City Council to construct a new bridge on Murrays Road, Conjola over Conjola Creek.

In consideration of the proposal as described in Section 1, 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 shall be obtained for all dredging and reclamation works. No other 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:

Craig Exton
Manager – Technical Services
Shoalhaven City Council Date: 29/11/2024

9. REFERENCES

Andes Engineering 2024 *Flood Assessment for Murrays Bridge.* Unpublished report for Fortec Australia and SCC. D24/466892

Andes Engineering 2024 *Murrays Bridge over Conjola Creek 5km East of Princes Highway on Murrays Road, Fishermans Paradise.* Unpublished report of Fortec and SCC. SCC document reference D24/495847 D24/495847 - Design report - Murrays Bridge Replacement - Conjola Creek Conjola

D&N Geotechnical 2024 *Geotechnical Investigation Report: Murrays Bridge Replacement, Conjola NSW*. Unpublished report for Fortec Australia and SCC. SCC document reference D24/489759 D24/489759 - Geotechnical report - Murrays Bridge Replacement - Conjola Creek Conjola

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.environment.nsw.gov.au/research-and-publications/publications-search/due-diligence-code-of-practice-for-the-protection-of-aboriginal-objects-in-new-south-wales

DoPI (Department of Primary Industries, NSW) 2013 *Policy and Guidelines for Fish Habitat Conservation and Management.* ISBN 978 1 74256 283 https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/634694/Policy-and-guidelines-for-fish-habitat.pdf

DoPI (Department of Primary Industries, NSW) 2013 *Factsheet: Greynurse Shark (Sarcharias taurus). https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/635053/Primefact-582-Greynurse-shark.pdf*

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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

Louise Thom Heritage 2022 *Murrays Road Bridge, Murrays Road, Conjola.* Unpublished report for SCC. SCC document reference D24/487273 D24/487273 - Murrays Bridge Heritage Assessment - Louise Thom Heritage Consultant

NSW Scientific Committee 2011 *Final Determination - swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological listing.*

NSW EPA (NSW Environment Protection Authority) 2014 *Waste Classification Guidelines. Part 4: Acid Sulfate Soils. https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wasteregulation/140798-acid-sulfate-soils.pdf*

OEH (Office of Environment and Heritage, NSW) 2020 *Southern Myotis – profile* *https://threatenedspecies.bionet.nsw.gov.au/profile?id=10549*

OEH (Office of Environment and Heritage, NSW) 2024 *Yellow-bellied Glider – profile* *https://threatenedspecies.bionet.nsw.gov.au/profile?id=10601*

Personal communications

Stone, Mark 2024 Shoalhaven City Council Senior Flood Engineer (SCC document reference D23/525511 D23/525511 - Correspondence - Senior Flood Engineer - Murrays Bridge replacement - Conjola Creek)

APPENDIX A: THE PROPOSED ACTIVITY

D24/498670 - Plans for inclusion into REF - new Murrays Road Bridge - Conjola Creek Conjola

APPENDIX B: METHODOLOGY

D24/498673 - Murrays Bridge Replacement - Construction Methodology for inclusion into REF

APPENDIX C: HERITAGE ASSESSMENT (LOUISE THOM HERITAGE 2022)

D24/487273 - Murrays Bridge Heritage Assessment - Louise Thom Heritage Consultant

APPENDIX D: FLOOD REPORT

D24/466892 - Hydraulic Report - AE2426-R-02 - Fixing Country Bridges Round 2B - Conjola - Murrays Rd - Murrays Bridge - CH 1.635 - Andes Engineering

APPENDIX E: NSW THREATENED SPECIES LIKELIHOOD OF OCCURRENCE TABLE

The table of likelihood of occurrence (below) 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 Office of Environment and Heritage (OEH) Wildlife Atlas) around the subject site (search undertaken on 13 November 2024). Ecology information has been obtained from the Threatened Species Profiles on the NSW OEH website (www.threatenedspecies.environment.nsw.gov.au).

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 EP&A Act 5-Part Test 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. An EP&A Act 5-Part Test and/or EPBC Act significance assessment is required for this species, population or ecological community.

Endangered Ecological Community name	***Status***	***Likelihood of presence within areas impacted by the activity***
Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions	Endangered - *NSW* BC *Act*	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Endangered - *NSW* BC *Act* Vulnerable - Commonwealth *EPBC Act*	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	Endangered - *NSW* BC *Act*	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion	Endangered - NSW BC Act Critically Endangered - Commonwealth EPBC Act	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Illawarra Subtropical Rainforest in the Sydney Basin Bioregion	Endangered - *NSW* BC *Act* Critically Endangered - Commonwealth *EPBC Act*	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered - NSW BC Act Critically Endangered - Commonwealth EPBC Act	Does not occur on-site and is not mapped as occurring in close proximity to the site.
Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	Endangered - *NSW* BC *Act* Endangered - Commonwealth *EPBC Act*	May occur nearby. Refer to Section 3.3.2 of this REF.

Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	Endangered - NSW BC Act	Does not occur on-site and is not mapped as occurring in close proximity to the site.

Species name	***Status***	***Habitat requirements (www.environment.nsw.gov.au)***	***Likelihood of presence within areas impacted by the activity***
FLORA			
Scrub Turpentine *Rhodamnia rubescens*	Endangered NSW BC Act and Critically Endangered EPBC Act	Species is found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Unlikely to occur. No suitable habitat present within the site. Not identified as occurring at the site during site inspections.
Leafless Tongue Orchid *Cryptostylis hunteriana*	Vulnerable NSW BC Act and EPBC Act	The larger populations typically occur in woodland dominated by Scribbly Gum *Eucalyptus sclerophylla*, Silvertop Ash (*E. sieberi*), Red Bloodwood *Corymbia gummifera* and Black Sheoak *Allocasuarina littoralis*; appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid *C. subulata* and the Tartan Tongue Orchid *C. erecta*.	Unlikely to occur. No suitable habitat present within the site.
AMPHIBIANS			
Green and Golden Bell Frog *Litoria aurea*	Vulnerable *EPBC Act* Endangered *NSW* BC *Act*	Marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat for the species includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), with a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas (OEH 2017).	Unlikely to occur. No suitable habitat present within the site.
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 as ridges and sand-dunes. They are sometimes recorded above islands well out to sea.	Possibly occurring over or in proximity to the site, but unlikely to utilise or rely on available habitat within the site.
Gibson's Albatross *Diomedea gibsoni*	Vulnerable BC Act and EPBC Act	Breeding is confined to New Zealand. The species regularly occurs off the NSW coast form Green Cape to Newcastle. The species feeds pelagically (open ocean) on squid, fish and crustaceans.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
Shy Albatross *Thalassarche cauta*	Vulnerable BC Act and EPBC Act	The Shy Albatross is circumpolar in distribution, occurring widely in the southern oceans. Islands off Australia and New Zealand provide breeding habitat. The specie is pelagic (open ocean) inhabiting tropical and subtropical marine waters.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
Black-browed Albatross *Thalassarche cauta*	Vulnerable NSW BC Act and EPBC Act	The Black-browed Albatross has a circumpolar range over the southern oceans, and are seen off the southern Australia coast mainly during winter. Spends most of its time at sea, breeding on small isolated islands. This species feeds on fish, crustaceans, offal, and squid.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
Black Bittern *Ixobrychus flavicollis*	Vulnerable NSW BC Act	The Black Bittern inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may	Unlikely to occur within the site. No suitable breeding or foraging habitat present.

		occur in flooded grassland, forest, woodland, rainforest and mangroves. Roosts in trees or on ground amongst dense reeds, nests in branches overhanging water	
White-bellied Sea-Eagle *Haliaeetus leucogaster*	*NSW* BC *Act* Vulnerable Migratory *EPBC Act*	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterized by the presence of large areas of open water (larger rivers, swamps, lakes, the sea). Birds have been recorded in (or flying over) a variety of terrestrial habitats. The species is mostly recorded in coastal lowlands, but can occupy habitats up to 1400 m above sea level on the Northern Tablelands of NSW and up to 800 m above sea level in Tasmania and South Australia. Birds have been recorded at or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds. They also occur at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No breeding habitat.
Little Eagle *Hieraaetus morphnoides*	Vulnerable *NSW* BC Act	Occupies open eucalypt forest, woodland or open woodland. She-oak or acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No stick nests in proposed works site.
Square-Tailed Kite *Lophoictinia isura*	*Vulnerable NSW* BC *Act*	Summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses large hunting ranges of more than 100km2. Breeding is from July to February, with nest sites generally located along or within 200m of riparian areas, near watercourses, in a fork or on large horizontal limbs.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site.
Eastern Osprey *Pandion cristatus*	Vulnerable NSW 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	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the

		dead crowns of live trees, usually within one kilometre of the sea.	site. No stick nests in proposed works site.
Sooty Oystercatcher *Haematopus fuliginosus*	Vulnerable NSW BC *Act*	Shore bird. Found around the entire Australian coast, including offshore islands, being most common in Bass Strait. Small numbers of the species are evenly distributed along the NSW coast. The availability of suitable nesting sites may limit populations. Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide for foods such as limpets and mussels. Breeds in spring and summer, almost exclusively on offshore islands, and occasionally on isolated promontories. The nest is a shallow scrape on the ground, or small mounds of pebbles, shells or seaweed when nesting among rocks.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
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.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
Lesser Sand-plover *Charadrius mongolus*	*EPBC Act:* Endangered *NSW BC Act:* Vulnerable	In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species feeds mostly on extensive, freshly-exposed areas of intertidal sandflats and mudflats in estuaries or beaches, or in shallow ponds in saltworks. They roost near foraging areas, on beaches, banks, spits and banks of sand or shells and occasionally on rocky spits, islets or reefs. The species does not breed in Australia.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.

Eastern Hooded Dotteral (Hooded Plover) *Thinornis cucullatus cucullatus*	*NSW* BC *Act:* Critically Endangered *EPBC Act:* Vulnerable	In south-eastern Australia Hooded Plovers 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. Hooded Plovers forage in sand at all levels of the zone of wave wash during low and mid-tide or among seaweed at high-tide, and occasionally in dune blowouts after rain. At night they favour the upper zones of beaches for roosting. When on rocks they forage in crevices in the wave-wash or spray zone, avoiding elevated rocky areas and boulder fields. In coastal lagoons they forage in damp or dry substrates and in shallow water, depending on the season and water levels. In eastern Australia, Hooded Plovers usually breed from August to March on sandy ocean beaches strewn with beachcast seaweed, in a narrow strip between the high-water mark and the base of the fore-dunes. 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.	Unlikely to occur within the site. No suitable breeding or foraging habitat present.
Eastern Curlew *Numenius madagascariensis*	Critically Endangered *EPBC Act*	Most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms (Marchant & Higgins 1993). The numbers of Eastern Curlew recorded during one study were correlated with wetland areas. Mainly forages on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with seagrass, often	Unlikely to occur within the site. No suitable habitat present.

		near mangroves, on saltflats and in saltmarsh, rockpools and among rubble on coral reefs, and on ocean beaches near the tideline. The birds are rarely seen on near-coastal lakes and in grassy areas. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. It occasionally roosts on reef-flats, in the shallow water of lagoons and other near-coastal wetlands. Eastern Curlews are also recorded roosting in trees and on the upright stakes of oyster-racks.	
Little Tern *Sternula albifrons*	Endangered NSW BC Act Migratory EPBC Act	Mostly exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records). Nests in small, scattered colonies in low dunes or on sandy beaches just above the high tide mark near estuary mouths or adjacent to coastal lakes and islands. Nests in a scrape in the sand, which may be lined with shell grit, seaweed or small pebbles.	Unlikely to occur within the site. No suitable habitat present.
Gang-gang Cockatoo *Callocephalon fimbriatum*	Vulnerable NSW BC Act	Tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas. preferring more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. Favours old growth attributes for nesting and roosting	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site to any significant. No hollow-bearing trees are present.
Glossy Black-cockatoo *Calyptorhynchus lathami*	Vulnerable NSW BC Act	The species inhabits open forest and woodlands of the coast where stands of she-oak occur. In the locality the species feed almost exclusively on the seeds of the black she-oak *Allocasuarina littoralis* shredding the cones with their bill.	Unlikely to occur within the site. No suitable habitat present. No breeding or foraging habitat present.
Little Lorikeet *Glossopsitta discolor*	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. Forages primarily in the canopy of open *Eucalyptus*	Unlikely to occur within the site. No suitable habitat present. No breeding or foraging habitat present.

		forest and woodland, yet also finds food in *Angophora, Melaleuca* and other nectar and fruit bearing trees.	
Swift Parrot *Lathamus discolour*	Endangered EPBC Act Endangered NSW BC Act	Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box E. albens. Commonly used lerp infested trees include Inland Grey Box E. microcarpa, Grey Box E. moluccana and Blackbutt E. pilularis. Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum Eucalyptus globulus.	Unlikely to occur within the site. No suitable habitat present. No breeding or foraging habitat present.
Eastern Ground Parrot *Pezoporus wallicus wallicus*	Vulnerable NSW BC Act	The Ground Parrot occurs in high rainfall coastal and near coastal low heathlands and sedgelands, generally below one metre in height and very dense (up to 90% projected foliage cover).	Unlikely to occur within the site. No suitable habitat present.
Barking Owl *Ninox connivens*	Vulnerable NSW BC Act	The Barking Owl inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in tis habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (*e.g.* western NSW) due to the higher density of prey found on these fertile riparian soils. Roosts in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. Breeds in hollows of large, old trees	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No breeding habitat (hollow-bearing trees).
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*	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site to any significant extent.

		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	No breeding habitat (hollow-bearing trees).
Sooty owl *Tyto tenebricosa*	Vulnerable NSW BC Act	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forest.	Unlikely to occur within the site. No suitable habitat present.
Brown Treecreeper *Climacteris picumnus victoriae*	Vulnerable NSW BC Act	The Brown Treecreeper is fond in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum Forest bordering wetlands.	Unlikely to occur within the site. No suitable habitat present.
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	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site to any significant extent. No breeding habitat.
Scarlet Robin *Petroica boodang*	Vulnerable NSW BC Act	The Scarlet Robin is primarily a resident in dry forests and woodlands, but some adults and young birds disperse to more open habitats after breeding.	Unlikely to occur within the site. No suitable habitat present.
Pink Robin *Petroica rodinogaster*	Vulnerable NSW BC Act	The Pink Robin inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site to any significant extent. No breeding habitat.

MAMMALS			
Spotted-tailed Quoll *Dasyurus maculatus*	Vulnerable NSW BC Act and Endangered EPBC Act	The species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.	Unlikely to occur within the site. No suitable habitat present.
Grey-headed Flying-fox *Pteropus poliocephalus*	Vulnerable NSW BC Act and EPBC Act	Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 kilometres of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. The species feeds on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia,* and fruits of rainforest trees and vines	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. Nearest roost is approximately five kilometres away in Yatte Yattah Nature Reserve. The site does not provide a food source for the species.
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris*	Vulnerable NSW BC *Act*	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March, when a single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No roosting habitat or food resources affected.
Eastern Coastal Free-tailed Bat *Micronomus norfolkensis*	Vulnerable NSW BC Act	Occur 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 on in man-made structures.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No roosting habitat or food resources affected.
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	Vulnerable NSW BC Act	Prefers moist habitats, with trees taller than 20m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the

			site. No roosting habitat or food resources affected.
Southern Myotis *Myotis macropus*	Vulnerable NSW BC Act	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.	May occur on-site and nearby. Refer to Section 3.2 of this report.
Golden-tipped Bat *Phoniscus papuensis*	Vulnerable NSW BC Act	Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. Also recorded in tall open forest, *Casuarina*-dominated riparian forest and coastal *Melaleuca* forests.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No roosting habitat or food resources affected.
Greater Broad-nosed Bat *Scoteanax rueppellii*	Vulnerable NSW BC Act	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range. The species utilises a variety of habitats from woodland to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forests. Although this species usually roosts in tree hollows, it has been found in buildings.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No roosting habitat or food resources affected.
Large Bent-winged Bat *Miniopterus orianae oceanensis*	Vulnerable NSW BC Act	Caves are the primary roosting habitat, but also use derelict mines, stormwater tunnels, buildings and other man-made structures. The species form discrete populations centred on a maternity cave that is used annually. At other times of the year, populations disperse within about 300 km range of maternity caves.	Possibly occurring over or in proximity to the site, but unlikely to utilise available habitat within the site. No roosting habitat or food resources affected.
Southern Brown Bandicoot (eastern) *Isoodon obesulus obesulus*	Endangered NSW BC Act and EPBC Act	They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils.	Unlikely to occur within the site. No suitable habitat present.
Koala *Phascolarctos cinereus*	Endangered NSW BC Act and EPBC Act	The koala inhabits eucalypt woodland and forests.	Unlikely to occur within the site. No suitable habitat present.

Eastern Pygmy-possum *Cercartetus nanus*	Vulnerable NSW BC Act	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred.	Unlikely to occur within the site. No suitable habitat present.
Yellow-bellied Glider *Petaurus australis*	Vulnerable NSW BC Act and EPBC Act.	Occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Feeds primarily on plant and insect exudates, including nectar, sap, honeydew and mana with pollen and insects providing protein	May occur on-site and nearby. Refer to Section 3.3.2 of this report.
Squirrel Glider *Petaurus norfolcensis*	Vulnerable NSW BC Act	The Squirrel Gliders inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Require abundant tree hollows for refuge and nest sites.	Unlikely to occur within the site. No suitable habitat present.
Greater Glider *Petauroides Volans*	Endangered EPBC Act	The greater glider is an arboreal nocturnal marsupial, predominantly solitary and largely restricted to eucalypt forests and woodlands of eastern Australia. It is typically found in highest abundance in taller, montane eucalypt forests of fertile soils with relatively old trees and abundant hollows.	Unlikely to occur within the site. No suitable habitat present.
Long-nosed Potoroo *Potorous tridactylus*	Vulnerable NSW BC Act and EPBC Act	The species inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	Unlikely to occur within the site. No suitable habitat present.
Australian Fur-seal *Arctocephalus pusillus doriferus*	Vulnerable NSW BC Act	Prefers rocky parts of islands with flat open terrain.	Unlikely to occur within the site. No suitable habitat present.
Southern Right Whale *Eubalaena australis*	Endangered NSW BC Act and EPBC Act	Temperate and subpolar oceanic waters of the Southern Hemisphere, with a circumpolar distribution between about 20°S and 55°S with some records further south to 63°S.	Unlikely to occur within the site. No suitable habitat present.
Sperm Whale *Physeter macrocephalus*	Vulnerable NSW BC Act	Wide, but patchy distribution from the tropics to the edge of the polar pack-ice in both hemispheres. Concentrations of Sperm Whales tend to occur where the seabed rises steeply from a greater depth, beyond the continental shelf.	Unlikely to occur within the site. No suitable habitat present.