QMS Fm 121

REVIEW OF ENVIRONMENTAL FACTORS: REF03843

CONCLUSIONS AND SIGN-OFF OF SCOUR PROTECTION WORKS AT YOUNGS CREEK BRIDGE

This report documents the outcomes of the Review of Environmental Factors (REF) undertaken for proposed works comprising of scour protection works at Youngs Creek Bridge, Cordeaux.

The proposed activity has been assessed against the SEPP (Transport and Infrastructure) 2021, and does not require consent under Chapter 2 Division 17 Roads and Traffic.

As the proposed activity does not require development consent, the environmental impacts have been considered in accordance with the environmental assessment requirements of Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In accordance with the requirements of Part 5 of the EP&A Act, the factors listed in Clauses 170 and 171 of the *Environmental Planning and Assessment Regulation 2021* have been taken into account in the consideration of the likely impacts of the proposed activity on the environment.

The results of the REF indicate that the proposed activity will have no significant environmental impacts, provided the safeguards identified in this report are strictly implemented.

If the scope of works or work methods described in this report change significantly, additional environmental assessment must be undertaken by an Environment Strategy Officer.

Works are to commence, and be substantially completed, within 2 years of the REF sign off date. Any substantial works to be undertaken outside this period will require a review of the REF.

Publication Requirements:

The EP&A Regulation (clause 171(4)) requires the REF to be published prior to works commencing (if possible, otherwise within a month) if the activity involves:

- a capital investment value of more than $5 million or,
- an approval or permit for activity that requires approval under:
  - **o FM Act sections 144, 201, 205 or 219, or**
  - o Heritage Act 1977 section 57, or
  - o National Parks and Wildlife Act 1974 section 90 or
  - o Protection of the Environment operations Act 1997 sections 47-49 or 122, or
- if the determining authority considers it to be in the public interest.

Community Consultation was not required.

REF Preparation Sign Off:

I, the undersigned, 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.

REF Preparation:	Jo Glynn	REF Review:	Marina Porteous
Position:	Environment Strategy Officer	Position:	Environment & Quality Coordinator
Signature:		Signature:	
Date:	05-06-2023	Date:	5/6/2023

Design certifies that the Design Specification will incorporate the requirements of this REF:

Name:	Ann Rojanawisut	Name:	Emil Toussis
Position:	*Design Engineer*	Position:	*Senior Designer Engineer*
Signature		Signature:	
Date	06.06.2023	Date:	06/06/2023

Construction certifies that the project will be carried out in accordance with this REF document:

Name:		Name:	
Position:	*Council Officer responsible for Site Management*	Position:	*One up Supervisor*
Signature		Signature:	
Date		Date:	

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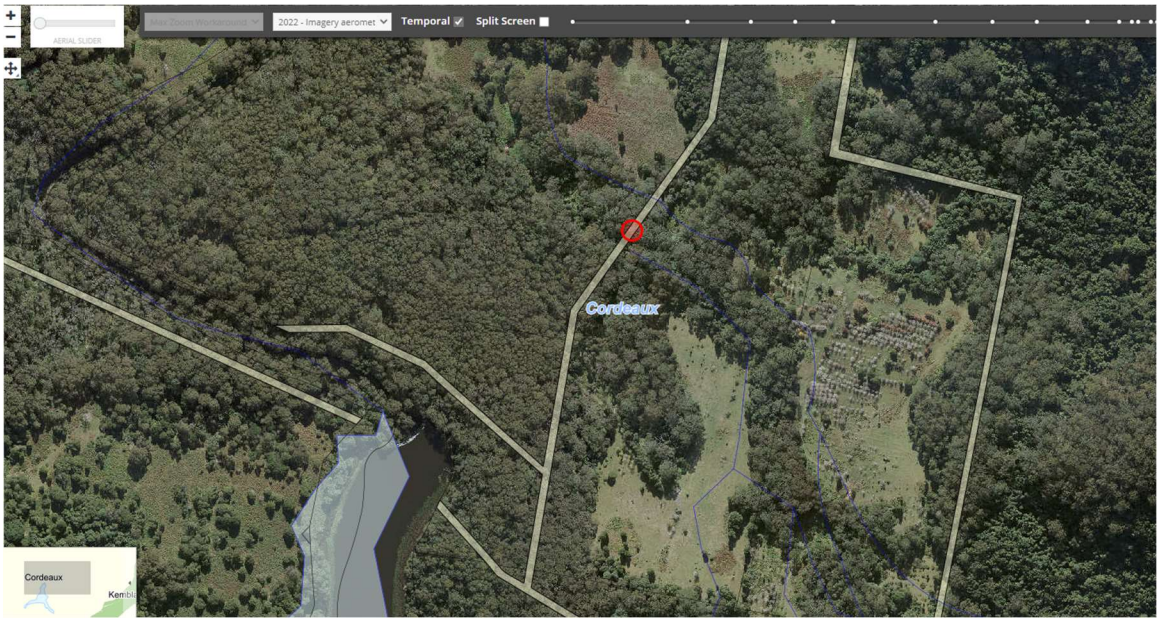
1. INTRODUCTION

As the proposed activity does not require development consent, the environmental impacts have been considered in accordance with the environmental assessment requirements of Part 5 of the EP&A Act. In accordance with the requirements of Part 5 of the EP&A Act, the factors listed in Clause 170 of the *Environmental Planning and Assessment Regulation 2021* have been taken into account in the consideration of the likely impacts of the proposed activity on the environment.

The assessment has been undertaken through impact identification and a risk management assessment. This report documents the outcomes of the assessment and identifies the environmental safeguards that must be implemented in conjunction with the proposal.

2. PROJECT DETAILS

Project Name	**Youngs Creek Bridge – Long Term Scour Protection**
Location	Youngs Creek Bridge Cordeaux Road / Morans Road Coordinates 150.782270 degrees (y), -34.423262 degrees (x) 
Land Ownership	Road Reserve (Cordeaux Road) – Wollongong City Council Adjacent to Water NSW - Part Lot 197 DP 751278, Lot 1 DP 745805, Lot 1 DP 198309
Land Classification	Land on which works are being undertaken is Road Reserve. A small amount of the works may be undertaken on Water NSW land
Project Description	**Scope of works:** Works are required to protect the bridge abutments due to scouring from water. Works involve: 1. Remove built up soil from the bridge deck 2. Construct cross banks across the width of the bridge approaches to restrain water to the bridge deck. 3. Regrade the existing table drains on both sides of the approaching roads and line with basalt/sandstone spalls

	4. Temporary removal of existing guardrail (if necessary) and form spoon drains (mitre drains) in line with the existing drainage tracks to deviate water from table drains away from the bridge by using basalt/sandstone spalls and bio-degradable geo textile underlay. 5. Fill void underneath headstock with no-fines concrete 6. Remove sandbags and place un-grouted boulders to all the sides of bridge abutment to stabilise the existing surface and reduce the water velocities. 7. Reinstate existing guardrail posts using no-fine concrete **Notes**: - There will be removal of existing sandbags and placement of boulders to protect scouring around the bridge abutments, but not within the creek - Area of works: 62m long x 24m wide, some areas will be 0.6m deep of excavation - Refer to Appendix E for Plans and further details/photos - All Conditions of Approval from the Fisheries Permit (Appendix G)
Proposed Start Date & Work Period	2023
Work Equipment & Machinery	Crane, excavator, loading truck and handheld power tools
Proposed work hours	Between 7.00 am and 6.00 pm Monday to Friday 8.00am and 1.00pm Saturday (Refer to Safeguards section in this REF)
Alternative proposals considered	Temporary emergency works have already been undertaken at the site to stabilise the area. These works are the only long term viable proposal, other than keeping the minor works which will only provide short term protection. Therefore, it is concluded that the proposal should proceed.

If the scope of works or works methods described in this report change significantly following the awarding of the works contract, additional EIA must be undertaken. Any revised EIA must be approved by Council's Strategy Environment Officer.

3. ENVIRONMENTAL SAFEGUARDS

Ensure at induction that the work crew are informed of the following site-specific environmental controls and monitor controls throughout the works.

Project Manager	**Prior to construction, notification to Environment Strategy Officer of exact start date and finish date, so that an audit of works may be undertaken.**

Fisheries Permit Requirements

A Fisheries Permit has been issued for these works **PN23/188**– and is attached in **Appendix G**. All Administrative Conditions and On-site Conditions must be completed and implemented, including the following taken from the Permit:

ADMINISTRATIVE CONDITIONS

1) The Acceptance of Conditions form (attached) must be completed and returned to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au before commencing any works authorised by this permit.

Reason – To remove any doubt that the Permit Holder understands and accepts the Conditions before work commences.

***** This Form must be signed by Wollongong Council Design Manager***

2) The Commence Works Notification form (attached) must be completed and sent to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au at least three to five (3-5) days BEFORE the commencement of works authorised by this permit.

Reason - To ensure that local DPI Fisheries staff are aware that the works authorised by this permit are about to commence.

***** This Form must be signed by either Major Projects or City Works Project Manager (as they manage the Consultant/Constructor/Works Crew)***

3) The Active Works Notification form (attached) must be completed and sent to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au at least three to five (3-5) days BEFORE works are complete or machinery is removed from the site. Several colour photographs showing the work site and works completed to date must be included.

Reason – To provide an opportunity for local DPI Fisheries staff to inspect the site whilst machinery is still on site and available to do any remedial work that may be necessary.

***** This Form must be signed by either Major Projects or City Works Project Manager and returned to Fisheries (as they manage the Consultant/Constructor/Works Crew)***

4) This permit (or a true copy) and a copy of the finalised Construction and Environmental Management Plan (CEMP) must be carried by the permit holder or sub-contractor operating on-site at all times during works activity in the permit area.

Reason – DPI Fisheries staff may wish to check compliance of works with imposed conditions.

ONSITE CONDITIONS OF APPROVAL

NATURE AND EXTENT OF WORKS

The permit holder must ensure that all works authorised by this permit are restricted to the permit area and are undertaken in a manner consistent with those described in the: permit application dated 20 April 2023; plans for the works (Wollongong City Council, Dwg No 7158, date 04/23), and Review of Environmental Factors for the works (Wollongong City Council, REF03843). Other works, which have not been described, excepting those activities required by this permit, are not to be undertaken.

Reason – This permit has been granted following an assessment of the potential impacts of the described works upon the aquatic and neighbouring environments. Other works, which were not described in the application have not been assessed and may have significant adverse impacts.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN & OTHER PLANS

A Construction Environmental Management Plan (CEMP) detailing provisions relating to the items listed in this section below, is to be prepared and submitted to the Contact Officer above for approval two weeks prior to any works taking place. The CEMP should consist of simple statements and diagrams of how each factor will be managed on site to achieve the stated aim.

a) Site delineation and marking of "no go" areas (with the aim of keeping the impacted area to a minimum),

b) Sediment and erosion control plan (with the aim of achieving an outcome of "no visible turbid plumes reaching the waterway", for any rainfall event up to a 1 in 2 year Annual Recurrence Interval (ARI) event),

c) Use of temporary crossings or other access works (with the aim of keeping the impacted area to a minimum),

d) Material storage and stockpiling (with the aim of keeping the impacted area to a minimum),

e) Site restoration and clean up (with the aim of ensuring that the impacted area recovers as soon as possible),

f) Site rehabilitation and revegetation (with the aim of ensuring that there are no long-term impacts after works are completed).

All works undertaken are to be consistent with this statement.

Reason – To ensure that appropriate strategies for preventing sediment input to downstream waterways and rehabilitation of aquatic habitats and the riparian zone are proposed and carried out.

SEDIMENT AND EROSION CONTROL

Erosion and sediment mitigation devices are to be erected in a manner consistent with currently accepted Best Management Practice (i.e., *Managing Urban Stormwater: Soils and Construction* 4th Edition, Landcom, 2004) to prevent the entry of sediment into the waterway prior to any earthworks being undertaken. These are to be maintained in good working order for the duration of the bridge abutment repair works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.

Reason – To ensure that sediment generated by the exposure of soil is not transported into the main water body.

WORK IN WATERS

Machinery is not to enter or work from the waterway unless in accordance with works proposed in your application for the permit and the requirements of this permit.

Reason – To ensure minimal risk of water pollution from oil or petroleum products and to minimise disturbance to the streambed substrate.

Only clean rock (no fines) is to be used in construction of works authorised by this permit.

Reason – To avoid fines, clay, and other sediment un-necessarily entering the waterway and potentially impacting on aquatic habitats.

Prior to use at the site and / or entry into the waterway, machinery is to be appropriately cleaned, degreased, and serviced. Spill kits are to be always available on-site during works.

Reason – To reduce the threat of an unintended pollution incident impacting upon the aquatic environment.

TIMING OF WORKS FOR LOW FLOWS

Works are to be undertaken during low flows in the Young Creek (and when the Bureau of Meteorological forecast for the Wollongong region indicates several days of dry weather.

Reason – Timing the works for appropriate conditions can reduce delays and minimise impacts on the aquatic environments.

AVOIDING HARM TO SNAGS AND RIPARIAN VEGETATION

When working near riparian vegetation or water land these areas need to be identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas). Harm to marine vegetation, riparian vegetation or water land outside the work footprint approved under the authority of this permit is not permitted and any harm caused is to be documented and reported to the contact officer. Any harm caused is to be restored in accordance with directions provided by the contact officer.

Reason – To ensure that impacts on aquatic habitat and the riparian zone are minimised.

Material storage and stockpiling is not to be undertaken on water land, marine vegetation (saltmarsh, mangroves, seagrass) or riparian vegetation. Stockpiling must be undertaken in a manner to avoid harm to these types of vegetation or water land. Stockpiles should also be located 20 metres away from adjacent water land. Stockpiles and/or dewatering areas should be appropriately controlled by sediment fencing or other materials prescribed in the "Blue Book" to ensure sediments do not enter the waterway.

Reason – To ensure that impacts on aquatic habitats, the riparian zone and threatened saltmarsh communities are minimised. "Degradation of native riparian vegetation along NSW water courses" (excluding estuarine and marine waters) is listed as a Key Threatening Process (KTP) under the provisions of the FM Act.

No snags or large woody debris from trees and shrubs are to be removed, realigned, or relocated without first obtaining the written authority of the Contact Officer.

Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a KTP under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.

FISH KILL CONTINGENCY

A visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) is to be undertaken daily during the works. Observations of dead or distressed fish are to be immediately reported to the Contact Officer by the Permit Holder. In such a case all works are to cease until the issue is rectified and approval is given to proceed. If requested, the Permit Holder is to commit resources to the satisfaction of the Contact Officer for an effective fish rescue, if in the view of that officer, a fish kill event is imminent and likely to occur within or adjacent to the works area due to conditions associated with weather, water quality and other parameters.

Reason – DPI Fisheries needs to be aware of fish kills so that it can assess the cause and mitigate further incidents in consultation with relevant authorities. They are also potentially contentious incidents from the public perspective. Work practices may need to be modified to reduce the impacts upon the aquatic environment.

Note: Other Conditions of Approval are within the full Permit, in Appendix G.

Environmental Awareness

- The work crew or contractor must have a copy of the REF in the site truck and be fully aware of the REF safeguards to be implemented.
- The work crew or contractor will undergo an induction prior to work commencing and complete the induction checklist. The induction may cover environmental constraints and incident responses. A register of inductions and induction checklist will be maintained and provided if requested.
- Dial Before you Dig (DBYD) as part of this scope preparation. It is expected that the contractor will organise their own DBYD.
- Site meetings may be frequently conducted to identify issues that arise during the works regarding environment, safety, community and production. A register of attendees will be maintained.
- An Environmental Audit may be conducted to assess compliance with the REF and provide feedback on ways to improve work practices.

Erosion & Sediment Control

The proposed works have the potential to create soil erosion and sediment pollution. Prior to works commencing, erosion and sediment controls should be implemented for the duration of the works.

Soil erosion and sediment control should be undertaken in line with *Managing Urban Stormwater: Soils and construction - Volume 1, 4th edition*. These guidelines, commonly known as the 'Blue Book', provide support for councils and industry to reduce the impacts of land disturbance activities on waterways by better management of soil erosion and sediment control. These are to be maintained in good working order for the whole duration of the works, and subsequently until the site has been stabilised and the risk of sediment/materials movement from the site is minimal.

The basic principles of erosion and sediment control are summarised below:

- Assess likely soil and water implications at planning stage.
- Plan for erosion and sediment control concurrently with engineering and landscaping design.
- Install erosion and sediment control measures as a first step in the works program and maintain these in an effective condition throughout the construction phase.
- Concentrate on source controls.
- Control water flow. Divert upslope waters around works and limit slope length to 80m on disturbed lands if rainfall is expected.
- Minimise onsite traffic movements.
- Rehabilitate disturbed lands quickly.

Flora, Fauna and Ecosystems

- **Whilst the area has not been mapped or identified as an EEC area, there is to be no tree removal without further assessment.** To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the study area.
- **The species identified in Appendix C must be noted and if present onsite, the WCC Environment Office must be notified prior to works continuing.**
- The area is potential habitat for snakes and other reptiles. Prior to commencing works each day the area should be visually checked for snakes and other reptiles. If any are observed WIRES (1300 094 737 or info@wires.org.au) are to be contacted for further advice and/or relocation, if the animals do not move on by themselves.
- To ensure the safety of the construction crew, they are to be familiar with the treatment of snake bites – pressure immobilisation technique.
- Site compounds will be located on previously disturbed areas away from vegetation.
- All native birds, reptiles, amphibians and mammals, except the dingo, are protected in NSW. All hollow bearing trees are to be retained.
- If fauna is present on site and there is the need to assess animal condition, obtain advice from Wires on 1300 094 737 or call a licensed wildlife operator.
- If a trench/pit remain open overnight, check for fauna prior to commencing machinery the next morning to prevent injury.
- Check hollow logs, rock crevices and burrows within the work site to prevent injury to fauna.
- Ensure when trimming vegetation that fauna is not injured (particularly heath/bottlebrushes) adjacent to the proposed footpath.

Microbats

(Refer to Microbats Survey, Appendix C for further information)

- Before the works commence, each void/area must be checked for the presence of microbats. **If microbats are found in any of the locations, further environmental advice must be sought.**
- **In the unlikely event that unexpected threatened species or microbats are identified during the project, works should cease, and an ecologist contacted.**
- Site Induction must include the following microbat inspection procedure to deal with unexpected finds of microbats:
  - Immediately stop works in the vicinity of the find.
  - Do not attempt to touch, capture or handle the microbat.
  - Inform others in the area of the presence of the microbat.
  - Inform the WCC representative(s) of the presence of the microbat.
- Vehicle and machinery movement must be confined to established or designated access tracks and pathways. Lay down areas and set up sites are to be located on flat, cleared ground in a manner that minimises impacts on surrounding vegetation.

Fish Habitat

- As the works are within key fish habitat and excavation is required, as such a Fisheries Permit is required. All Conditions of the Permit must be complied with
- If a fish kill or sick fish are observed, the site manager should immediately contact the Fishers Watch Hotline on 1800 043 536 to initiate a fish kill investigation by Fisheries NSW.

Platypus

- A strong positive relationship exists between the amount of cover provided by shrubs, trees and low-growing plants on creek or river banks and the quality of platypus foraging and burrow habitats. Once works is finished, consider re-planting the area with riparian vegetation to provide habitat and overhanging vegetation.
- Particular attention must be given to ensuring sediment plumes and contamination of water does not occur. Do not use sediment fences and boom within the watercourse, as platypus can get trapped and drown. Utilise erosion control mechanisms outside of the water course, before any sediment enters the waterway.
- Inspect for any platypus burrows upstream and downstream of the works for at least 20m in the embankment, prior to works. If a burrow is located, avoid the area, stop works and notify an Environment Officer immediately.
- To avoid damaging platypus burrows, use of heavy machinery within about 10-15 metres of the water's edge should be avoided whenever possible in platypus habitats. Special care should be taken not to disrupt banks or cause them to become compacted in spring and summer when females are raising their young.
- Herbicides used to control riparian weeds should never be allowed to enter the water, either directly or through storm run-off. Areas of bare soil caused by herbicide use should be planted (or reseeded) as soon as possible with appropriate indigenous species.

Tree Protection

- **The design indicates that no trees are required to be removed. If any trees require removal, contact the WCC Environment Officer for further assessment prior to works commencing in that location.** If any trees are proposed to be removed, they should be clearly identified and confirmed prior to removal to reduce risk of erroneous removal of tree.
- **All relevant trees** must be protected using the provision of temporary fencing, barricades or No-Go Zones. These controls must be installed to prevent damage to the trunk or root system from materials; equipment and soil build up around tree base.
- If impact occurs, contact a Level 5 AQF Arborist as soon as possible. Adopt the Arborist remedial recommendation so as to reduce any long-term adverse effect on the tree's health. Tree root systems are essential for the health and stability of the tree.
- The tree protection fencing post should not involve the severance of any roots greater than 50mm in diameter without the prior approval of the Level 5 AQF Arborist.
- Use hand excavation in and around the roots of trees, when encountered. Under the guidance of a Level 5 AQF Arborist, any roots 50mm or less in diameter may be pruned cleanly with a sharp saw. In general roots extend outward from the trunk and occupy irregularly shaped areas 4 to 7 times larger than the projected crown area with an average diameter of two or more times the height of the tree.
- **Pruning must be undertaken in accordance with 'AS4373-2007 Pruning of Amenity Trees'.**
- **Tree protection must be undertaken in accordance with 'AS4970-2009 Protection of Trees on Development Sites'.**
- Ensure that the appropriate protocols are carried out to minimise the spread of weed material during works and when travelling to/from site

Traffic & Access

Appropriate traffic management plan should be implemented and available for audit, including:

- A traffic route for all site vehicles is to be nominated.
- Public safety for access around the site is to be ensured.
- Well-defined work compound must be secured to prevent public access.

Water Quality

As the works are immediately adjacent to a waterway, specific attention must be given to protection of water quality, and an Emergency Response Procedure must be in place for any spills that enter the waterway.

- **Stockpiling is not acceptable in the catchment area**
- Any waste water is to be contained and removed off site for disposal at an approved facility.
- Waste water is not allowed to enter any stormwater drain or waterway.
- At no time shall any material, soluble or non-soluble, be allowed to enter the waterway.
- A fully equipped spill kit is to be kept on site at all times and, if used, restock spill kit. (Refer to Incident Management Procedure in Appendix D)
- All chemicals and fuels will be stored in suitable bunded areas away from waterways and stormwater pits
- Bunded area capacity will be at least 120% of the largest container within the storage area.
- The stored containers will be identified with appropriate labels.
- The relevant Material Safety Data Sheets (MSDS) will also be kept on site.
- Where possible compounds will be located on previously disturbed areas away from waterways

In-Situ Waste Classification Summary

The desktop investigation has not identified any potential contamination (Intramaps – Contaminated Land; Landfill; Aerial Photographs; Previous Land Use).

All works are to be carried out in accordance with the following procedures (or equivalent if works being undertaken by a contractor):

- **City Works & Services Procedure for Waste Classification & Transportation**
- **Unexpected Finds Procedure – Council Owned Land/Worksites**

Potential contaminants or contamination indicators that should be monitored and reported include asbestos containing material; coal tar; oils; and other chemicals causing discolouration and/or emitting strong odours.

Material Removed Off-site / Waste Generation

In addition to the requirements of the Materials Handling Process, the following specific controls are applicable:

- After dewatering is completed, classify the materials and treat/remove as per classification.
- Any waste generated, including excavated materials, should be removed from the site and disposed of appropriately, according to waste classification.
- General waste (rubbish) is not to be allowed to lie or accumulate on the site. Provide appropriate receptacles (bins) to store all general wastes generated from the works. The receptacles are to be emptied immediately at works completion. Consideration is to be given to the source separation of recyclable and re-useable materials.
- **All dockets/receipts for waste management/disposal are to be kept and copies forwarded to the project manager and/or site coordinator as proof of disposal for environmental audit purposes.**
- Material/waste is not to be stored in any transit locations.

Imported Fill Material and Reuse on Site

- Only Virgin Excavated Natural Material (VENM) can be imported on site. VENM is natural material (clay, gravel, sand, soil or rock fines) that has been excavated or quarried from areas that are not contaminated. A Classification Docket with chemical assessment should be undertaken or requested from the supplier prior to importing the fill.
- Where excavated material cannot be classified as VENM it may be eligible for reuse on site if it is accompanied by appropriate documentation (from a qualified technician) confirming it does not contain any acid sulphate soils, asbestos and/or other potential contaminants.

- **Documents/records of the transport and use of material imported onto site must be kept and submitted to the project manager and/or site coordinator as proof of correct waste management practices and for environmental auditing purposes.**

Fill Material Managed within the Road Reserve

When working within the road reserve the following is applicable:

- Material excavated from within the road reserve must be classified.
- Excavated public road material includes rock; soil; sand; bitumen; asphalt pavement; gravel; slag; fly and bottom ash; concrete; brisk and ceramics.
- If the excavated material contains coal tar or asbestos; or any waste that is classified as hazardous; restricted solid; special or liquid waste, it cannot be reused on the road reserve.
- This excavated material that is not classified as hazardous can be stored and re-used within the road corridor.
- Excavated public road material cannot be applied to private land.

Air Quality & Energy

The machinery chosen is to have been well maintained and is to be operated in a proper and efficient manner to minimise fumes and energy consumption.

Visual Environment

During the work period, the work site and site compound should be maintained in a neat and tidy condition.

Noise & Vibration

- If there is to be any significant noise impacts, neighbouring residents are to be notified.
- The machinery chosen is to have been well maintained and is to be operated in a proper and efficient manner to minimise noise.
- Recommended Office of Environment and Heritage standard hours for construction work:
  - **Normal construction - Monday to Friday 7 am to 6 pm, Saturday 8 am to 1 pm.**
  - **No work on Sundays or public holidays.**
  - Blasting - Monday to Friday 9 am to 5 pm, Saturday 9 am to 1 pm
  - No blasting on Sundays or public holidays.
- Works that may be undertaken outside the recommended standard hours are:
  - The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads
  - Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
  - Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours
  - Public infrastructure works that shorten the length of the project and are supported by the affected community
  - Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

Aboriginal Heritage

- If any previously undetected archaeological site, object or artefact is uncovered or unearthed during the course of any works or activities associated with the proposal, works should cease in the vicinity of that site, object or artefact. Council's Heritage Advisor should be contacted immediately.

Heritage Unexpected Finds

What's an unexpected heritage find? - An 'unexpected heritage finds' can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under relevant legislation such as the NPW Act or Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- Aboriginal stone artefacts, shell middens, burial sites, engraved rock art, scarred trees
- remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts
- remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls
- artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes archaeological human skeletal remains.

In the event that an unexpected heritage finds (the 'find') is encountered on site, contact the following:

- The Contractor/Supervisor will Stop Work Immediately when an unexpected heritage find is encountered.
- The Contractor/Supervisor will cordon off area until Council's Heritage Officer advises that work can recommence.
- The Contractor's Environment Manager will:
  - Manage the process of identifying, protecting and mitigating impacts on the 'find'.
  - Liaise with Council Heritage Officer/Heritage advisor and maybe the relevant authorities on significance of the find, mitigation and regulatory requirements.
  - Complete incident report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
  - Advise Contractor/Supervisor to recommence work.
- Council's Heritage Officer/Heritage advisor will provide expert advice to the Contractor's Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.
- Contractor's Environment Manager will notify Council's ESO of 'find' and manage incident reporting once completed by Contractor's Environment Manager.
- The Department of Planning and Environment – Heritage NSW (for Aboriginal objects) will regulate the care, protection and management of Aboriginal objects and will issue Aboriginal heritage impact permits.
- The Department of Planning and Environment - Heritage NSW (for relics) will regulate the care, protection and management of relics and will issue excavation permits.

4. LEGISLATIVE REQUIREMENTS

The following legislative requirements have been assessed against the proposed works and under the SEPP (Transport and Infrastructure) 2021 the works do not require consent under **Chapter 2 Division 17 Roads and Traffic.**

SEPP (Transport and Infrastructure) 2021
Chapter 2 Infrastructure

2.3 Interpretation - general

(2) In this Chapter –

emergency works means works carried out in response to—

(a) a sudden natural event, including a storm, flood, tree fall, bush fire, land slip or coastal inundation, or

(b) accident, equipment failure or structural collapse, or

(c) damage caused by vandalism, arson or a pollution incident,

provided the works involve no greater disturbance to soil or vegetation than necessary and are carried out in accordance with all applicable requirements of the Blue Book.

(4) If this Chapter provides that development for a particular purpose that may be carried out without consent includes **routine maintenance works**, the following works or activities are (subject to and without limiting that provision) taken to be routine maintenance works if they are carried out for that purpose:

(a) routine repairs to or replacement of equipment or assets,

(b) temporary construction yards,

(c) clearing of vegetation (including any necessary cutting, lopping, ringbarking or removal of trees) and associated rectification and landscaping.

Division 17 Roads and Traffic
Subdivision 1 Roads and road infrastructure facilities

2.107 Definitions

In this Division—

Accredited bus service operator means a person who is—

(a) accredited under Division 1 of Part 2 of the Passenger Transport Act 1990 to carry on a public passenger service, within the meaning of that Act, by means of a bus, or

(b) accredited under Part 2 of the Passenger Transport Act 2014 to operate a public passenger service, within the meaning of that Act, by means of a bus.

AS 1428 means the following publications—

(a) Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General requirements for access—New building work,

(b) Australian Standard AS 1428.2—1992, Design for access and mobility, Part 2: Enhanced and additional requirements—Buildings and facilities,

(c) Australian and New Standard AS/NZS 1428.4.1:2009, Design for access and mobility, Part 4.1: Means to assist the orientation of people with vision impairment—Tactile ground surface indicators,

(d) Australian Standard AS 1428.5—2010, Design for access and mobility, Part 5: Communication for people who are deaf or hearing impaired.

Bus depot means premises used for the servicing, repair, garaging or parking of buses.

Classified road has the same meaning as it has in the Standard Instrument.

Note—the Standard Instrument defines classified road (by reference to the Roads Act 1993) to mean any of the following—

(a) a main road,

(b) a highway,

(c) a freeway,

(d) a controlled access road,

(e) a secondary road,
(f) a tourist road,
(g) a tollway,
(h) a transitway,
(i) a State work.

See the Roads Act 1993 for the meanings of the terms listed above.

Disability Standards means Disability Standards for Accessible Public Transport 2002 made under the Disability Discrimination Act 1992 of the Commonwealth.

Prescribed zone means any of the following land use zones or a land use zone that is equivalent to any of those zones—

(a) B4 Mixed Use,
(b) B6 Enterprise Corridor,
(c) B8 Metropolitan Centre,
(d) IN1 General Industrial,
(e) IN2 Light Industrial,
(f) IN3 Heavy Industrial,
(g) SP1 Special Activities,
(h) SP2 Infrastructure.

Public road means—

(a) any road that is opened or dedicated as a public road, whether under the Roads Act 1993 or any other Act or law, and

(b) any road that is declared to be a public road for the purposes of the Roads Act 1993.

regular bus service means a public passenger service (within the meaning of the Passenger Transport Act 2014) that is conducted by bus according to regular routes and timetables and does not include a tourist service or a community transport service (within the meaning of the Passenger Transport Act 2014).

Road corridor means—

(a) land that is used for the purposes of a road or road infrastructure facilities and owned or managed by a public authority, or

(b) any land in respect of which the Minister has granted approval under Part 3A or Division 5.2 or (before its repeal) Division 4 of Part 5 of the Act, or consent under Part 4 of the Act, for the carrying out of development for the purpose of a road or road infrastructure facilities.

Road infrastructure facilities includes—

(a) tunnels, ventilation shafts, emergency accessways, vehicle or pedestrian bridges, causeways, road-ferries, retaining walls, toll plazas, toll booths, security systems, bus lanes, transit lanes, transitways, transitway stations, rest areas and road related areas (within the meaning of the Road Transport Act 2013), and

(b) associated public transport facilities for roads used to convey passengers by means of regular bus services, and

(c) bus layovers that are integrated or associated with roads (whether or not the roads are used to convey passengers by means of regular bus services), and

(d) bus depots, and

(e) bus stops and bus shelters, and

(f) traffic control facilities (within the meaning of Part 6 of the Transport Administration Act 1988), TfNSW road safety training facilities and safety works, and

(g) premises used for the purposes of testing and inspecting heavy vehicles (within the meaning of the Road Transport Act 2013) under the TfNSW Heavy Vehicle Authorised Inspection Scheme.

2.109 Development permitted without consent—general

(1) 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. However, such development may be carried out without consent on land reserved under the National Parks and Wildlife Act 1974 only if the development—

(a) is authorised by or under the National Parks and Wildlife Act 1974, or

(b) is, or is the subject of, an existing interest within the meaning of section 39 of that Act, or
(c) is on land to which that Act applies over which an easement has been granted and is not contrary to the terms or nature of the easement.

(3) In this section and section 2.112, a reference to development for the purpose of road infrastructure facilities includes a reference to development for any of the following purposes if the development is in connection with a road or road infrastructure facilities—

(a) construction works (whether or not in a heritage conservation area), including—

(i) temporary buildings or facilities for the management of construction, if they are in or adjacent to a road corridor, and

(ii) creation of embankments, and

(iii) extraction of extractive materials and stockpiling of those materials, if—

(A) the extraction and stockpiling are ancillary to road construction, or

(B) the materials are used solely for road construction and the extraction and stockpiling take place in or adjacent to a road corridor, and

(iv) temporary crushing or concrete batching plants, if they are used solely for road construction and are on or adjacent to a road corridor, and

(v) temporary roads that are used solely during road construction,

(b) emergency works or routine maintenance works,

Note—

See section 2.7(4) regarding emergency works and routine maintenance works on land to which clauses 10 and 11 of State Environmental Planning Policy (Coastal Management) 2018 apply.

(c) alterations or additions to an existing road (such as widening, narrowing, duplication or reconstruction of lanes, changing the alignment or strengthening of the road),

(d) environmental management works, if the works are in or adjacent to a road corridor.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Note: This Policy works with the Biodiversity Conservation Act 2016 (BC Act) and the Local Land Services Act 2013 (LLS Act) to create a regulatory framework for the clearing of native vegetation in NSW

Chapter 3 and Chapter 4 Koala Habitat Protection

Chapters 3 and 4 relate to development assessment under Part 4 of the EP&A Act, which requires consent from Council. The subject site occurs within the Wollongong LGA, which is a listed Council area under Schedule 2 of the SEPP. However, the SEPP does not apply to Part 5 'Activities'.

Nonetheless, the site of the works is not mapped and does not contain any Koala feed tree species listed in Schedule 1 of the SEPP requiring further assessment under the *EPBC Act*.

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

A Neutral or Beneficial Effect Assessment for proposed activities by public authorities that are assessed under Part 5 of the *Environmental Planning and Assessment Act 1979*, as specified in Clause 12, has been included in Appendix H.

Local Land Services Act 2013 & SEPP

This SEPP is not applicable for the purpose of section 60B of the act. The area is not listed under section 60E for the purpose of Native Vegetation Regulatory Map or the Draft Native Vegetation map.

Biodiversity Conservation Act 2016 (BC Act)

The BC Act seeks to conserve biological diversity, to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change; to assess the extinction risk of species and ecological communities and identify key threatening processes; and to establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity.

The test for significant impact is described in section 7.3 of the Act. A significant impact also occurs if the activity is carried out in an area of outstanding biodiversity value. If a significant impact is likely to occur, the proponent of the activity must prepare a Species Impact Statement in accordance with section 7.20 or a Biodiversity Development Assessment Report.

Comment:

A BioNet atlas search, within the study area, identified threatened species – see the Flora and Fauna Assessment in Appendix C. Due to the low impact nature of the works, the available of surrounding habitat and no expected direct impact on any threatened species, populations or ecological communities in the Wollongong Local Government Area. **Provided the safeguards identified are implemented, the proposed works are not likely to significantly affect any threatened species, populations or ecological communities listed under the *BC Act* and the preparation of a Species Impact Statement is not warranted.**

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act protects matters of National Environmental Significance (NES), such as threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places (among others). Any actions that will or are likely to have a significant impact on the matters of NES require referral and approval from the Australian Government Environment Minister. Significant impacts are defined by the Commonwealth (ref: http://www.environment.gov.au/epbc/guidelines-policies.html) for matters of NES.

Comment:

Matters of NES have been reviewed within the study area however, the low impact works are not likely to impact on any of the matters identified, therefore no significance assessments were undertaken for these works and no referral to the Commonwealth Department of the Environment is required.

National Parks and Wildlife Act 1974 (NPW Act) – Not Applicable

The NPW Act is administered by the Director-General of the National Parks and Wildlife Services (NPWS), who is responsible for the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others). The main aim of the Act is to conserve the natural and cultural heritage of NSW. The Act aims to conserve the natural and cultural heritage of NSW.

A search of the AHIMS database identified no items of Aboriginal Heritage in the region surrounding the study area (Appendix A). **Council has considered the requirements under the NPWA in relation to Aboriginal Cultural Heritage. An Aboriginal Heritage Impact Permit (AHIP) is not required under the Act, as the Due Diligence Code of Practice for the Protection of Aboriginal Objects (2010) has been followed and documented.**

***Fisheries Management Act 1994* (NSW)**

All endangered, vulnerable and endangered and vulnerable ecological communities or populations have been considered on the Department of Primary Industries website for Threatened Fish

As the works involve excavation within creek banks, an application for a Fisheries Permit was sought and is provided in Appendix G.

***Protection of the Environment Operations Act 1997* (POEO)**

Is the principal environmental protection legislation for NSW that defines 'waste' for regulatory purposes and establishes management and licensing requirements for waste. It defines offences relating to waste and sets penalties. The POEO Act also establishes the ability to set various waste management requirements via the POEO (Waste) Regulation.

Should it be necessary to remove any material from the work site (including sediment), it is considered waste, and must be classified by an appropriate officer, as per *Division 1 Waste Classifications of the* NSW *Protection of the Environment Operations Act 1997* (POEO). Waste may be classified as:

- Special waste
- Liquid waste
- Hazardous waste
- Restricted solid waste
- General solid waste (putrescible)
- General solid waste (non-putrescible)

If it's not possible to separate wastes, the whole waste must be classified according to the highest class of waste. All Waste must be disposed of at an appropriately licenced waste facility as landfill.
The Act 1997 defines VENM as: 'natural material (such as clay, gravel, sand, soil or rock fines):

- that has been excavated or quarried from areas that are not contaminated with manufactured chemicals or process residues, as a result of industrial, commercial, mining or agricultural activities, and
- that does not contain any sulfidic ores or soils or any other waste.'

No other criteria for VENM have been approved. **VENM cannot be 'made' from processed soils. Excavated material that has been stored or processed in any way cannot be classified as VENM.**

Part 7.3 of the Protection of the Environment Operations Act 1997
Appropriate documentation is to be maintained on the type and transport of material / waste.

Waste Avoidance and Resource Recovery Act 2001 (WARR Act)
The Act promotes waste reduction and better use of our resources in NSW and the NSW Waste and Resource Recovery Strategy 2014-21 was released in December 2014. Reducing waste generation and keeping materials circulating within the economy are priorities for NSW. To meet this challenge, the EPA prepares a new WARR Strategy every five years.

Protection of the Environment Operations (Waste) Regulation 2014
Provides for contributions to be paid by occupiers of scheduled waste facilities for each tonne of waste received at the facility or generated in a particular area; exempts certain occupiers or types of waste from these contributions; and allows deductions to be claimed in relation to certain types of waste. It also sets out provisions covering:

- the proximity principle
- record-keeping requirements, measurement of waste and monitoring for waste facilities
- tracking of certain waste
- reporting
- transportation of waste
- transportation and management of asbestos waste
- recycling of consumer packaging
- classification of waste containing immobilised contaminants
- miscellaneous topics.

Department of Environment & Climate Change NSW Fact Sheet: Virgin Excavated Natural Material
Only material excavated from site and classified as VENM may be stored on site for re-use or taken to another construction site for reuse.

Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 – The Excavated Natural Material Order 2014
Where material cannot be classified as VENM and is proposed for re-use on a site, it must be accompanied by appropriate documentation confirming it does not contain acid sulphate soils or other contaminants.

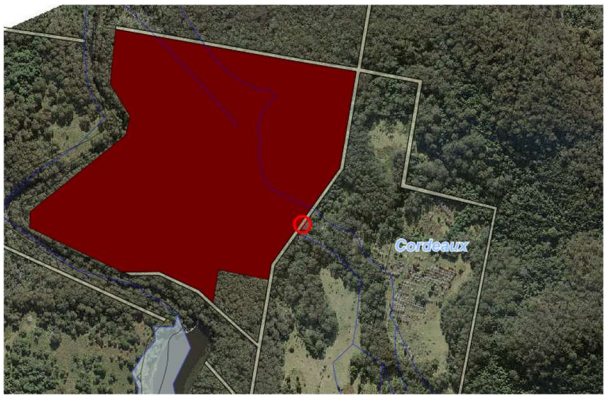
Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 – The Excavated Public Road Material Exemption 2014

Applies to excavated public road material that will be applied/reused to land within the road corridor for road related activities such as construction; maintenance and installation of road infrastructure facilities.

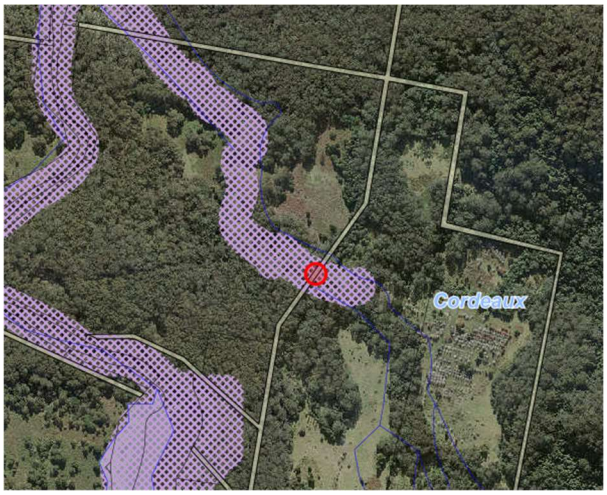
5. ENVIRONMENTAL FACTORS IDENTIFIED AND EVALUATED

The following table has been completed following a site inspection carried out on 8th March 2023 and interrogation of Council's IntraMaps system.

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Heritage		
Is there any Aboriginal Heritage within or close proximity to the worksite? (Refer to **AHIMS**)	**Overall impact – LOW**	**No** Refer to Appendix A
Does the site have landscape features that are likely to indicate presence of Aboriginal objects? If the proposed activity is: i. within 200m of waters ii. located within a sand dune system iii. located on a ridge top iv. ridge line or headland v. located within 200m below or above a cliff face vi. within 20m of or in a cave, rock shelter, or a cave mouth vii. is on land that is not disturbed land particularly at any of the above locations		i. Yes ii. No iii. No iv. No v. No vi. No vii. Partially
Is there any European Heritage listed on the current LEP?		**No**
Will these Heritage Items be impacted by the project?		**No**
Water Quality/Erosion & Sedimentation/Demand on Resources/Waste Disposal		
Are the works likely to disturb any acid sulfate soils listed on the Current LEP?	**Overall impact – LOW**	**No**
Are the works to be conducted within 40m of watercourses or any other type of natural water body?		**Yes** Works are immediately adjacent to Youngs Creek
Will the works result in changes to water flow in any way?		**No**
Are the works within a flood affected zone?		**No** The proposal does not represent an increased risk to life or property in regard to flooding
Do the works involve the use or storage within the work areas of fuels or other chemicals		**Possible** Safeguards in place for spills and storage requirements

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
(other than fuels contained within the work vehicles)?		
Will the works create areas of unprotected soil or loose surface for more than 24 hours?		**Possible** Safeguards in place for best-practice
Could the works result in disturbance of contaminated land or contaminated material listed under WCC IntraMaps? 		**Unlikely** The neighbouring property is Water NSW. Area of contamination unknown however unlikely to be present at the site. Safeguards for unexpected finds process in place.
Will the waste generated by the works include hazardous substances (such as lead, asbestos or other substances designated as hazardous by the National Occupational Health and Safety Commission)? Refer to Council's ARO		**Unlikely** No known hazardous substances onsite. Safeguards in place for unexpected finds
Are the works a Coastal Geotechnical risk under Coastal Zone Study under WCC IntraMaps?		**No**
Are the works subject to the *Wollongong Coastal Zone Management Plan 2017*? https://wollongong.nsw.gov.au/__data/assets/pdf_file/0027/36567/Coastal-Zone-Management-Plan-Implementation-Action-Plan.pdf		**No**
Flora & Fauna/Tree Protection/Access/Community Environmental Impacts		
Is any vegetation required to be removed?	**Overall impact – LOW**	Minor understorey vegetation to be removed. Works are primarily on scoured-out cleared areas. No trees to be removed.
Will the work occur within a regulated category listed under Part 5A of *Local Land Services Act* 2013? Refer to the Native Vegetation Regulatory Map.		**No**
SEPP (Biodiversity and Conservation) 2021. Chapter 6 is not relevant as Wollongong is not listed in Schedule 5. Chapters 3 and 4 relate to		**N/A**

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
development assessment which require consent from Council. It is not applicable to 'activities' assessed under Part 5 of the Act. Refer to Koala Habitat Protection Map and Koala self assessment tool for Part 5 'activities' if koala tree removal is proposed.		Wollongong LGA is mapped under the Koala Management Area; however, there are no trees for removal. As such, no assessment for koalas under the EPBC Act required.
Is the area within a Vegetation Community identified in NP-PCT Vegetation Layer under WCC IntraMaps Constraints?		**Yes** MU11: Moist Blue Gum – Blackbutt Forest - Not a listed EEC community. A tall open forest with a predominantly warm temperate rainforest understorey. The most common canopy species are *Eucalyptus saligna*, *E. salignaXbotryoides, E. pilularis* and *Syncarpia glomulifera* subsp. *glomulifera*. Typical rainforest canopy includes *Doryphora sassafras, Cryptocarya glaucescens* and *Acmena smithii*. Shrubs include *Trochocarpa laurina, Pittosporum multiflorum, Breynia oblongifolia* and *Synoum glandulosum* subsp. *glandulosum*. Tree ferns (*Cyathea* spp. and *Dicksonia antarctica*) may also be present in this stratum. Ground cover can be variable depending on the degree of light penetration afforded by the rainforest layer. *Calochlaena dubia, Lomandra longifolia, Doodia aspera, Blechnum cartilagineum, Gymnostachys anceps* and *Oplismenus imbecillis* are common amongst vines and twiners such as *Tylophora barbata, Smilax australis, Pandorea pandorana* subsp. *pandorana* and *Stephania japonica* var. *discolor*. It occurs in the northern catchments of Cordeaux and Cataract on protected slopes underlain by Narrabeen shales and sandstones.
Are the works located on land identified as the Escarpment Management Plan Area under WCC IntraMaps Constraints?		**No**
Is the area within a Habitat Model in WCC IntraMaps Constraints?		**Yes** - Golden-crowned Snake - Greater Glider - Mountain Brushtail Possum - Grey Currawong

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
		- Green Catbird - Red-browed Treecreeper - Logrunner
Do the works occur within Key Fish Habitat? Refer to Threatened Fish Species List. 		**Yes** A Fisheries Permit has been received for the project and is included as part of this REF in Appendix G. All Conditions of Approval must be followed.
Are the works to be conducted within a Natural Area Asset? (Refer to the WCC IntraMaps Environmental Restoration layer)		**No**
Are the works near a seed collection point on the WCC IntraMaps Environmental Restoration layer? 		**No**
Is there any Bush Care or other Environmental Restoration undertaken at the site?		**No**
Is the worksite listed as Bushfire Prone Land under the WCC IntraMaps Planning DCP layer?		**Yes** - Vegetation Category 1 Works will not have an impact on bushfire hazard, and the

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
		nature/materials of the work will not increase bushfire hazards.
Are there any Endangered Ecological Communities or potential habitat for threatened species as listed on the Planning DCP layer or on the BC Act BioNet or the EPBC Act SPRAT on or adjacent to the work site?		**Yes** **Refer to Appendix C for assessment** Mapped EECs of: - MU1 Illawarra Subtropical Rainforest Mapped Threatened Species within a 1km radius: Threatened Species (Fauna) - Gang-Gang Cockatoo - Sooty Owl - Varied Sitella - Yellow-bellied Glider - Greater Glider - Koala - Grey-headed Flying Fox - Rufous Fantail (Migratory Terrestrial) - Black-faced Monarch (Migratory Terrestrial) - White Throated Needle Tail (Migratory Terrestrial) Threatened Species (Flora) - Scrub Turpentine *Rhodamnia rubescens* - Magenta Lilly Pilly *Syzygium paniculatum* - Mittagong Geebung *Persoonia glaucescens*
Amenity / Noise		
Are the works located on land identified as Community Land, on the WCC IntraMaps LEP Community Land Maps?	**Overall impact – LOW**	**No**
Will the works result in a reduction of the aesthetic and/or recreational qualities of the area or restrict the beneficial uses of the area in the future? Refer to Point of Interest in features on the Base Map Information		**N/A**
Will the works cause excess noise?		**No**

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Are the works within the management areas defined by SEPP (Resilience and Hazards) 2021.Chapter 2 - Coastal Management? Refer to https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address		**No**
Any transformation of a locality? Human and non-human environment?		**No**
Does the works fall under SEPP (Transport and Infrastructure) 2021 Exempt Developments?		**No**
Cumulative Impact Assessment - existing or future?		**Minor**
Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act. Issues, objectives, policies and actions identified in local, district and regional plans **Goals** We value and protect our environment We have an innovative and sustainable economy Wollongong is a creative, vibrant city We are a connected and engaged community We have a healthy community in a liveable city We have affordable and accessible transport		**Yes** The proposal is consistent with the objectives and vision of 'Our Wollongong Our Future 2032: Community Strategic Plan' for the LGA. *'From the mountains to the sea, we value and protect our natural environment and we will be leaders in building an educated, creative and connected community.'*

Wollongong City Council's requirements are considered to have been satisfied through the identification and assessment of environmental issues and risks undertaken in this report. Provided there are no changes to the scope of works identified in this report, no further EIA is required.

Appendix A: Aboriginal Heritage Due Diligence Assessment

Council's Intramap records indicated that there was not a possible presence of an Aboriginal heritage item within the vicinity of the proposed works. A NSW Heritage (former OEH) Aboriginal Heritage Information Management System (AHIMS) search was undertaken to confirm the presence of Aboriginal heritage within or close to the works site. **The AHIMS search identifies 0 Aboriginal sites or places recorded in within 200m of the proposed works.**

It was determined that the proposed activity would not harm any Aboriginal heritage due to the following:

- Although the proposed works will disturb the ground surface, the works are a low impact activity on land that has already been disturbed;
- Minor vegetation will need to be removed and all other trees will be protected on site;
- There are no Aboriginal objects located within or close to the site (AHIMS confirmation);
- A REF has been prepared and identifies that if during the course of the works any unknown Aboriginal objects are found, works must cease immediately.

As such, an **Aboriginal Heritage Impact Permit (AHIP) is not required.**

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : REF03843
Client Service ID : 761413

Wollongong City Council
Locked Bag 8821
Wollongong DC New South Wales 2500
Attention: Jo Glynn
Email: jglynn@wollongong.nsw.gov.au

Date: 08 March 2023

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 295968.0 - 296410.0, Northings : 6188490.0 - 6188901.0 with a Buffer of 0 meters, conducted by Jo Glynn on 08 March 2023.

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

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

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

Appendix B: Tree Protection Procedure

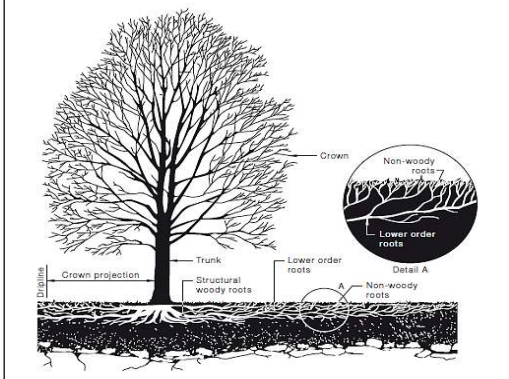


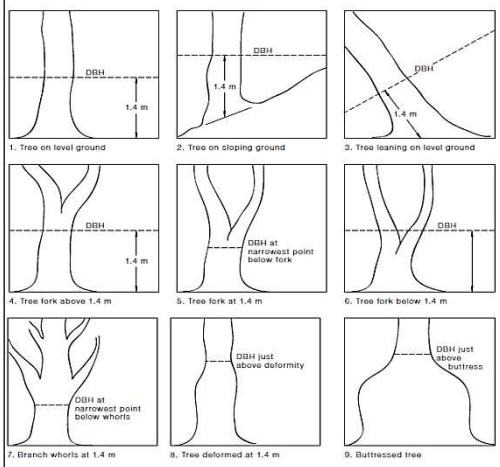
FIGURE B1 STRUCTURE OF A TREE IN A NORMAL GROWING ENVIRONMENT

www.standards.org.au © Standards Australia

A Tree Protection Zone (TPZ) is an important area around the trunk of a tree in which key feeder and stabilising roots can be found just beyond the tree canopy. This area must be protected to prevent instability and minimise loss of health of the woody root system of the tree. **Restricted activities include excavation, storage, dumping of waste and parking of vehicles/plant.**

TPZ standard should be:

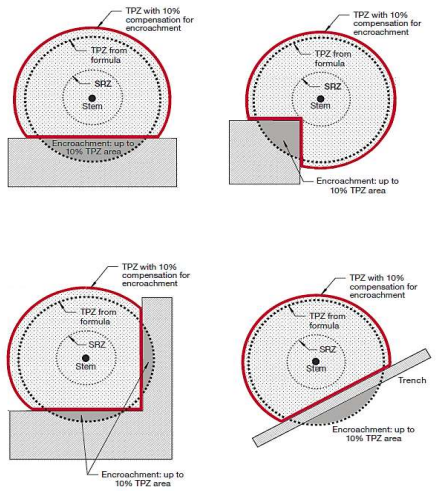
- TPZ = DBH x 12 (Where DBH is the trunk diameter measured at 1.4m above ground).
- Not greater than 15m.
- **TPZ should not be less than 2m nor greater than 15m** (Except where crown protection is required).
- **TPZ of palms, tree ferns, other monocots and cycads should not be less than 1m outside the crown projection.**
- Refer to the Arborist Report for dimensions for the TPZ / Buffers



Due to a range of growing environments the Tree DBH is measured using a range of methods to suit the situation. See adjacent image or Australian Standard AS 4970-2009. Delineate an area with the use of appropriate signage for:

- Protective fencing installed or no-go zones will be created and maintained for the duration of works
- Ground protection (e.g. mulch) if temporary access for machinery is required.

The Structural Root Zone (SRZ) is an area within the TPZ that is particularly significant for stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when major encroachment into a TPZ is proposed. Many factors affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture, rocks, footings etc).



The indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula:

- SRZ radius = (D x 50)0.42 x 0.64 (Where D = trunk diameter in metres measured above the root buttress)

Note: The SRZ for trees with trunk diameter less than 0.15m will be 1.5m

Encroachment into TPZ is sometimes unavoidable:

- Minor encroachment is possible without root investigations. (Must be under 10% of the TPZ area and outside the SRZ)
- Major encroachment is possible if an arborist can prove the tree will be sustained. (Refer to AS 4790 for recommended considerations)

Any additional Encroachment must be reviewed by the Level 5 AQF Arborist for works within the TPZ (E.g. excavation) is possible with variation to the above standards.

Appendix C: Flora and Fauna Assessment

Table of all threatened species and endangered ecological communities listed under the NSW *Biodiversity Conservation Act 2016* and Commonwealth *Environmental Protection & Biodiversity Conservation (EPBC) Act 1999*, within a 1 km radius, has been searched as identified by the threatened fauna & flora and EECs layers in WCC Intramaps on 21st March 2023.

Threatened Species (Fauna)

- Gang-Gang Cockatoo
- Sooty Owl
- Varied Sitella
- Yellow-bellied Glider
- Greater Glider
- Koala
- Grey-headed Flying Fox
- Rufous Fantail (Migratory Terrestrial)
- Black-faced Monarch (Migratory Terrestrial)
- White Throated Needle Tail (Migratory Terrestrial)

Threatened Species (Flora)

- Scrub Turpentine *Rhodamnia rubescens*
- Magenta Lilly Pilly *Syzygium paniculatum*
- Mittagong Geebung *Persoonia glaucescens*

EECs

MU1 Illawarra Subtropical Rainforest

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
Tyto tenebricosa 	Sooty Owl	VP		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum or Sugar Glider. Nests in very large tree-hollows.(OEH)	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Callocephalon fimbriatum 	Gang-gang Cockatoo	V3P	E	The Gang-gang Cockatoo in summer is found in 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, particularly in box-ironbark** assemblages, and often found in urban areas. **Prefers old growth attributes for nesting and roosting.** There have been 197 sightings within Wollongong LGA.	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Tyto tenebricosa	Sooty Owl	VP		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in	**Unlikely** Potential habitat present, but no

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
				the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum or Sugar Glider. Nests in very large tree-hollows.(OEH)	significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Daphoenositta chrysoptera 	Varied Sittella	VP		The Varied Sittella is a small (10 cm) songbird, sedentary and inhabits Eucalypt forests and woodlands, especially those containing **rough barked species and mature smooth barked gums with dead branches, mallee and Acacia woodland.**	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Pycnoptilus floccosus 	Pilotbird	P	V	Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter. Flight is described as fairly weak, though, if disturbed, birds can sometimes ascend into shrubs (but no more than 1–2 m from the ground). Birds forage mostly in pairs for insects, and occasionally eat seeds and fruits. They use their bills and feet to turn and scratch leaf litter for food. Habitat critical to the survival of the Pilotbird includes: **• wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth and • dry sclerophyll forests and woodlands occupying dry slopes and ridges**	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Hirundapus caudacutus 	White-throated Needletail	P	C,J,K	This species is a large (20 cm in length) swift with a thickset, cigar-shaped body, stubby tail and long pointed wings. It is widespread in eastern and south-eastern Australia. Most species spend the non-breeding season in Australasia. In Australia, the species is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	Unlikely Unlikely to be present based on habitat preference, and confined area of works
Rhipidura rufifrons 	Rufous Fantail	P	MM	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (*Eucalyptus microcorys*), Mountain Grey Gum (*E. cypellocarpa*), Narrow-leaved Peppermint (*E. radiata*), Mountain Ash (*E. regnans*), Alpine Ash (*E. delegatensis*), Blackbutt (*E. pilularis*) or Red Mahogany (*E. resinifera*); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; for example near Bega in south-east NSW, where they are	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
				recorded in temperate Lilly Pilly (*Acmena smithi*) rainforest, with Grey Myrtle (*Backhousia myrtifolia*), Sassafras (*Doryphora sassafras*) and Sweet Pittosporum (*Pittosporum undulatum*) subdominants.	
Monarcha melanopsis 	Black-faced Monarch	P	M	The Black-faced Monarch is found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating. Resident in the north of its range, but is a summer breeding migrant to coastal south-eastern Australia, arriving in September and returning northwards in March. The Black-faced Monarch forages for insects among foliage, or catches flying insects on the wing.	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Petauroides volans. 	Greater Glider	P	V	Found in a variety of Eucalypt forests, and utilises the tree hollows of these mature forests. It once occurred in the Eucalypt forests along the entire Illawarra escarpment, but seems to have suffered local extinctions in the Royal National Parks and the northern escarpment around Coalcliff. It has recently been recorded at a number of locations between Cataract Reservoir and Macquarie Pass.	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Petaurus australis 	Yellow Bellied Glider	VP		**Preferred habitats are productive, tall open Sclerophyll forests** where mature trees provide shelter and nesting hollows and year-round food resources are available from a mixture of Eucalypt species.	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Phascolarctos cinereus 	Koala	E	E	In coastal areas, Koalas **feed on the leaves of Tallowwood *Eucalyptus microcorys* and Swamp Mahogany *Eucalyptus robusta.*** Also feed on the leaves of **Forest Red Gum *Eucalyptus tereticornis*, Grey Gum *Eucalyptus punctata*, Monkey Gum *Eucalyptus cypellocarpa*** and **Ribbon Gum *Eucalyptus viminalis***.	**Unlikely** Potential habitat present, but no significant loss proposed. It is unlikely that this species will be impacted due to the nature of the works and minimal/no impact on habitat.
Rhodamnia rubescens	Scrub Turpentine	E4A		Shrub or small tree to 25 m high with reddish/brown, fissured bark. Young stems densely covered in fine hairs. Leaves 5–10 cm long, 2–5 cm wide, upper surface green and sparsely hairy, lower surface paler and sparsely	**Unlikely** No loss of vegetation proposed

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
				to densely hairy. Leaves strongly 3-veined from base with moderately dense, translucent oil dots. Petiole 4–9 mm long. Inflorescences 1–3 per axil, usually 3-flowered with petals 4–6 mm diam. and white. Fruit globose, 5–8 mm diam., red turning black. Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of R. rubescens typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	
Syzygium paniculatum 	Magenta Lilly Pilly	EP	V	Shrub or small tree with flaky bark. Grows in subtropical and littoral rainforest on sandy soils or stabilized dunes near the sea; widely separated localities between Bulahdelah and Jervis Bay.	**Unlikely** No loss of vegetation proposed
Persoonia glaucescens 	Mittagong Geebung	E1P		Erect shrub, young branchlets moderately hairy. Occurs in woodland to dry sclerophyll forest on sandstone; from Picton to Berrima.	**Unlikely** No loss of vegetation proposed

Native Vegetation of the Illawarra Escarpment and Coastal Plain (NVIE&CP 2002)		
Map Unit/Name (NVIE&CP 2002) **Habitat description / characteristic species**	**Ecological Community Status** **(BC Act and EPBC Act)**	**Likelihood of impact**
Illawarra Escarpment Subtropical Rainforest MU1  Illawarra Escarpment Subtropical Rainforest is a tall, closed forest (20-35 m) and can feature large emergent trees. It commonly occurs on the rear of escarpment benches or sheltered gully situations (where deep clay soils, high rainfall and sheltered aspects intersect). Characteristic canopy species include Red Cedar *Toona ciliata,* Native Tamarind *Diploglottis australis,* Giant Stinging Tree *Dendrocnide excelsa* and Brown Beech *Pennantia cunninghamii.* Small-leaved Fig *Ficus obliqua* var. *obliqua* and Rusty Fig *Ficus rubiginosa* can occur as emergents. **Groundcovers** can be sparse	**BC Act:** Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion Includes: **NSW PCT 827 – Illawarra Escarpment Subtropical Rainforest.**  DEC Include Forest Red Gum *Eucalyptus tereticornis*, Thin-leaved Stringybark *Eucalyptus eugenioides*, Woollybutt *Eucalyptus longifolia*, Coast Grey Box *Eucalyptus bosistoana* and White Feather Honey-myrtle *Melaleuca decora.* Occurs throughout the Illawarra coastal plain. **Includes MU1 Illawarra Escarpment Subtropical Rainforest; MU4 Lowland Dry-Subtropical Rainforest**	Unlikely Provided safeguards outlined in this report are in place, it is unlikely that this EEC will be impacted by the works, given the distance from the site and the closed nature of the proposal.

Native Vegetation of the Illawarra Escarpment and Coastal Plain (NVIE&CP 2002)		
with a high proportion of ferns, climbers and forbs, including: *Arthropteris tenella*, Anchor Vine *Palmeria scandens*, Pepper Vine *Piper novae-hollandiae*, Lawyer Vine *Smilax australis*, Southern Melodinus *Melodinus australis*, Settler's Flax *Gymnostachys anceps*, and Giant Maidenhair *Adiantum formosum.* Presence of epiphytic ferns such as Bird's Nest Fern *Asplenium australasicum* and orchids in the canopy and on rocks are also strong characteristic features	**EPBC Act:** **Conservation Status:** Lowland Rainforest of Subtropical Australia (Critically Endangered Ecological Community) – Vegetation occurring in the Illawarra **is NOT included within this listing.**	

5 June 2023

Jo Glynn
Environmental Strategy Officer
Wollongong city Council
41 Burelli St
Wollongong NSW 2500

Dear Jo

Re: Microbat habitat assessment for Youngs Creek Bridge, Cordeaux road, Cordeaux NSW.

Project no. 39014

Biosis Pty Ltd was commissioned by Wollongong City Council to complete a microbat habitat assessment for a proposed scour protection structure over Youngs Creek, located near Cordeaux Road, Cordeaux in New South Wales (NSW) (the study area).

Biosis understands that Wollongong City Council proposes to construct a scour protection structure to limit impacts to Youngs Creek Bridge during rainfall events. This work will involve embankment stabilisation around the base of the bridge abutments which will require the use of machinery that could cause vibrations to sections of the bridge. It is understood that the sediment around the bridge has formed deep cracking that may be suitable for cave roosting microbat species. Therefore, these proposed works adjacent to the bridge have the potential to indirectly impact the roosting habitat of microbats that may be utilising the bridge. Wollongong City Council has therefore requested an ecological assessment to determine whether the bridge represents potential roosting habitat for microbat species. If the bridge is found to contain roosting habitat for microbats, an assessment of the significance of the proposed impacts and recommendations for control measures for the proposed works are to be provided to Council.

The objective of this microbat habitat assessment is to identify whether the existing bridge provides suitable habitat for any protected or threatened microbat species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the NSW *Biodiversity Conservation Act 2016* (BC Act) and provide recommendations or control measures for the proposed works.

Background

The study area is within Wollongong Local Government Area (LGA) and is located within the Biodiversity Values Map (BV Map) (DPE 2023). Youngs Creek is a fourth order watercourse (Strahler 1964) that flows from the east of the study area through to the west, and is mapped as Key Fish Habitat (DPI 2023) under the *Fisheries Management Act 1994*.

The project will involve the installation of scour protection structures with embankment stabilisation around the base of the bridge abutments. The proposed works will permanently alter sections of Youngs Creek Bridge and there will be multiple mechanical operations surrounding the bridge that could disturb or agitate microbat species that are roosting.

Method

Database and literature review

Prior to completing the field investigation, information provided by Wollongong City Council as well as other key information was reviewed, including:

- The Department of Planning and Environment (DPE) BioNet Atlas of NSW Wildlife for BC Act listed threatened microbats.
- Review of the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool for microbat species listed under the EPBC Act.
- *Wollongong Development Control Plan 2009* (DCP).
- *Wollongong Local Environment Plan 2009* (LEP).
- Relevant site plans.
- Topographic mapping for the location of waterways or similar features.
- *The Native Vegetation of the Sydney Metropolitan Area* (DPE 2016).

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Local Land Services Act 2013* (LLS Act).
- *National Parks and Wildlife Act 1974* (NPW Act).
- *Water Management Act 2000* (WM Act).
- *Biosecurity Act 2015* (Biosecurity Act).
- *Wollongong Local Environmental Plan 2009.*
- *Wollongong Development Control Plan 2009.*

Field investigation

A field investigation of the study area was undertaken on 5 May 2023 by Joel Nicholson (Zoologist) and Julia Hutton (Graduate Ecologist) of Biosis. A habitat-based assessment in line with Section 6.1.2 (Human-made structures and non-native vegetation) of the Biodiversity Assessment Method (DPIE 2020) was completed to determine if the existing bridge provides suitable habitat for threatened microbat species within 5 kilometres. This assessment was filtered according to species descriptions, life history, habitat preference and soil preference to determine those species most likely to be present within the study area.

This assessment included searches for roosting individuals that might be utilising the structure (at the time of survey), signs of recent use (such as guano), echo meter inspections as well as inspection for habitat suitability such as smaller alcoves or holes that might be suitable as roosting habitat. A walkover of the proposed location of the scour protection structures was also undertaken to determine the extent and quality of potential microbat foraging habitat that may be impacted by the proposed works. The level of flooding and/or tidal nature of water flowing under the bridge was also considered as this can limit the suitability of habitat for microbats.

Results

The study area (Appendix 1; Figure 1) is comprised of gabion fencing lining the embankment directly below the bridge, with vegetation on either side (Appendix 2; Photo 1). Youngs Creek is a vegetated riparian watercourse that provides moderate foraging habitat for microbats (Appendix 2; Photo 2). The bridge has one slab of concrete for the abutment on each side of the bridge with sloped soil connecting to the gabion fencing embankment. These concrete abutments contain small crevices and holes.

No microbat species were detected or observed within the study area during the field investigation. All sections of the bridge were inspected with an echo meter and searched for signs of use (fresh scats, guano, and entry marks) and no signs of use were observed. The bridge contained varying levels of potential roosting habitat however no sections were identified as currently in use by microbats.

The southern section of the bridge had one medium sized hole on the eastern section and one small sized hole on the western section of the abutment (Appendix 2; Photo 3). Both holes did provide moderately suitable habitat for roosting microbats primarily due to them being protected with minimal light penetration. At the time of the field investigation, no microbat individuals were present, and no evidence was found for historic use.

Small gaps in the foundation on the underside of the bridge provided low microbat roosting habitat (Appendix 2; Photo 4). The foundation gaps are approximately 20-30 centimetres deep and contain substrate that can provide nooks for roosting. The traffic above the bridge on Cordeaux Rd may cause potential disturbance through vibrations however, due to limited traffic and depth of the concrete, the sound and vibrations of traffic was dulled. No microbat species or signs of historic signs of use were observed within these gaps.

The gabion fencing that forms the embankment was determined to not provide suitable habitat for roosting microbats as it is too exposed to wind and rain and does not provide small alcoves or holes that might accommodate microbats.

Threatened species

Background searches identified 60 threatened fauna species recorded (EES 2023) or predicted to occur (DCCEEW 2023) within 5 kilometres of the study area. Five microbat species were recorded within 5 kilometres of the study area are as follows:

- Eastern False Pipistrelle *Falsistrellus tasmaniensis* (Vulnerable, BC Act).
- Little Bent-winged Bat *Miniopterus australis* (Vulnerable, BC Act).
- Large Bent-winged Bat *Miniopterus orianae oceanensis* (Vulnerable, BC Act).
- Southern Myotis *Myotis macropus* (Vulnerable, BC Act).
- Greater Broad-nosed Bat *Scoteanax rueppellii* (Vulnerable, BC Act).

Based on the size of the study area and the use of echo meter inspections, the survey effort is considered comprehensive to assess habitat presence for the species outlined above. As stated in the results section of this report there are no signs of microbats currently roosting within the potential areas of habitat under the bridge. Taking these factors into consideration, there is a negligible likelihood of impact for the above listed microbat species.

Conclusion and recommendations

Youngs Creek Bridge was found to not be in use by microbats, with no signs of recent or historic roosting. Southern areas of the abutments and gaps on the underside of the bridge were identified as potential moderate quality roosting habitat, however, there are no microbat species currently occupying this area. Given that no microbats species or signs of historic use were detected during the field investigation and that the proposed works will only impact one small area of potential moderate quality habitat on the southern side on the abutments, but not alter the bridge itself, the proposed works are unlikely to impact microbat species within the locality. As the roosting habitat will still be available in the gaps of the underside of the bridge after the completion of works, Wollongong City Council can proceed with proposed works with an unlikely impact on local roosting microbat species.

Given there are requirements for removal and modification of vegetation for the project, recommendations have been provided to minimise disturbance to any surrounding native vegetation and fauna habitat. These recommendations are:

- To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the study area.
- Where possible, any trees to be retained should be protected in accordance with Australian Standard *AS4970 – 2009 Protection of trees on development sites, during construction, operation and decommissioning of the site compound*.
- In the unlikely event that unexpected threatened species are identified during the project, works should cease, and an ecologist contacted.
- Appropriate erosion and sediment control measures should be installed at all sites to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding biodiversity values.

I trust that this advice is of assistance to you however please contact me if you would like to discuss any elements of this ecological advice further.

Yours sincerely

J Nicho

Joel Nicholson

Zoologist

References

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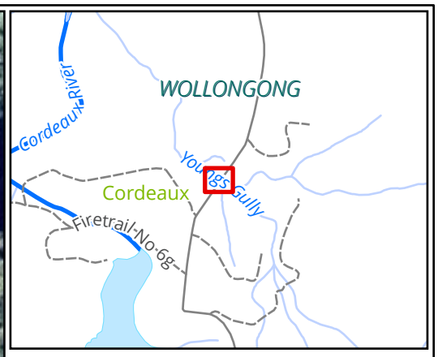
EES 2023. *BioNet the website for the Atlas of NSW Wildlife*, http://www.bionet.nsw.gov.au/.

Strahler A 1964.' Quantitative geomorphology of drainage basins and channel networks' *in* Chow V (ed.), *Handbook of Applied Hydrology*, McGraw-Hill, New York.

Appendices

Appendix 1 Figure 1



Legend

Study area

Watercourse

Figure 1 Ecological features of the study area

0 2 4 6 8 10

Metres

Scale: 1:300 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

Matter: 39014,
Date: 31 May 2023 ,
Prepared for: JN, Prepared by: AM, Last edited by: amackegard
Layout: 39014_F1_EcoFeatures
Project: P:\39000s\39014\Mapping\
39014_YoungsCreekMicrobat.aprx

Acknowledgements: Basemap © Land and Property Information 2016, Imagery Nearmap 2023

Appendix 2 Photos

Photo 1 Underside of Youngs Creek Bridge, with gabion fencing and vegetation on either side

Photo 2 Vegetated riparian zone on the banks of Youngs Creek that provide moderate foraging habitat

Photo 3 **Moderate quality microbat roosting habitat on the south-eastern section of the Youngs Creek Bridge.**

Photo 4 **Gaps in the foundation on the underside of Youngs Creek Bridge that provide nooks for low quality microbat roosting.**

Appendix D: Incident Management Procedure

TITLE

Accidental spills in waterways, marine environments, and constructed drains, plus other air/noise/land pollution events.

PURPOSE

To ensure all practicable means are used to prevent spillage or other pollution during construction or maintenance works near any types of watercourses.

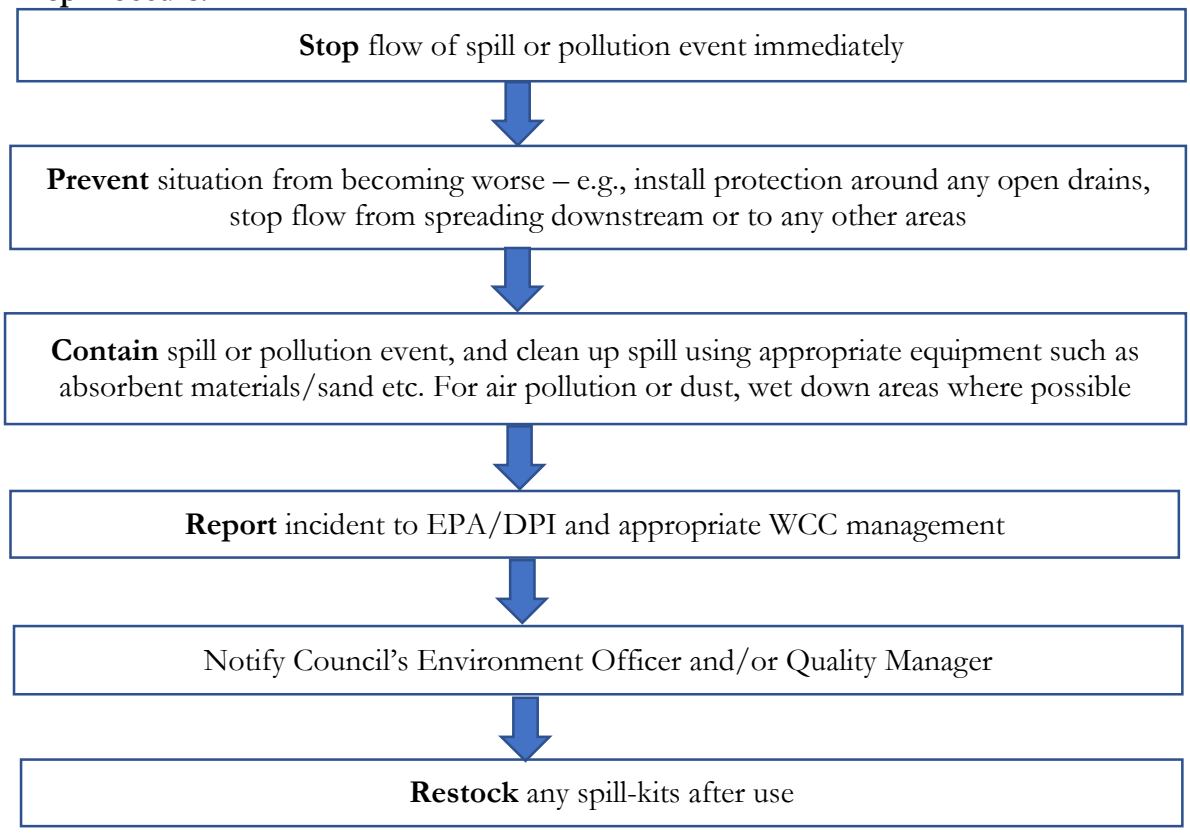
APPLICATION

This procedure applies to all watercourses including coastal water, rivers, lakes, dams, natural watercourses, artificial channels, ditches and gullies, and stormwater drains. It also applies to all air and land pollution incidents.

Project Managers and Works Co-ordinators are to ensure all operators working near water courses are trained in this procedure. Contractors undertaking works should also be aware of the requirements in this procedure.

PROCEDURE

If spill occurs:



CHECKLIST

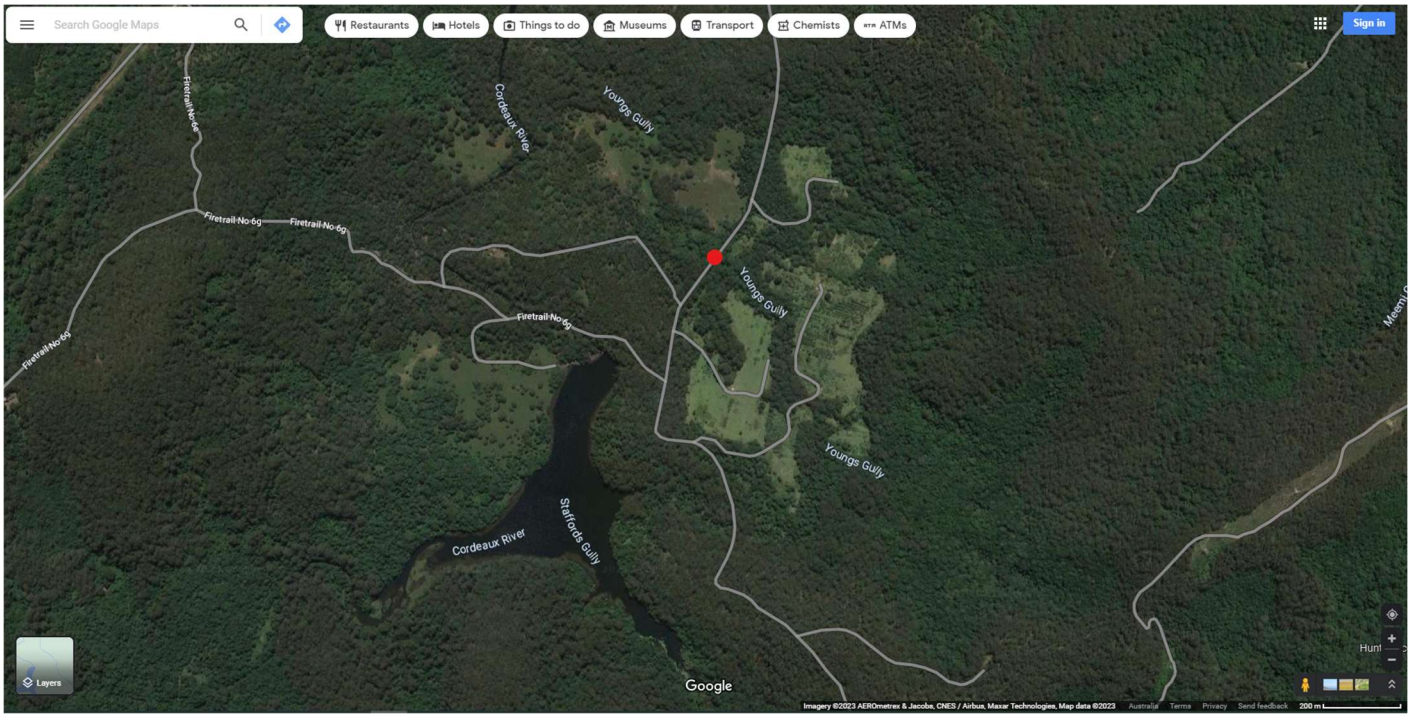
- Spill kit kept at site and kept in order
- All relevant staff at the work site are aware of this Procedure

CORRESPONDANCE AND NOTIFICATION

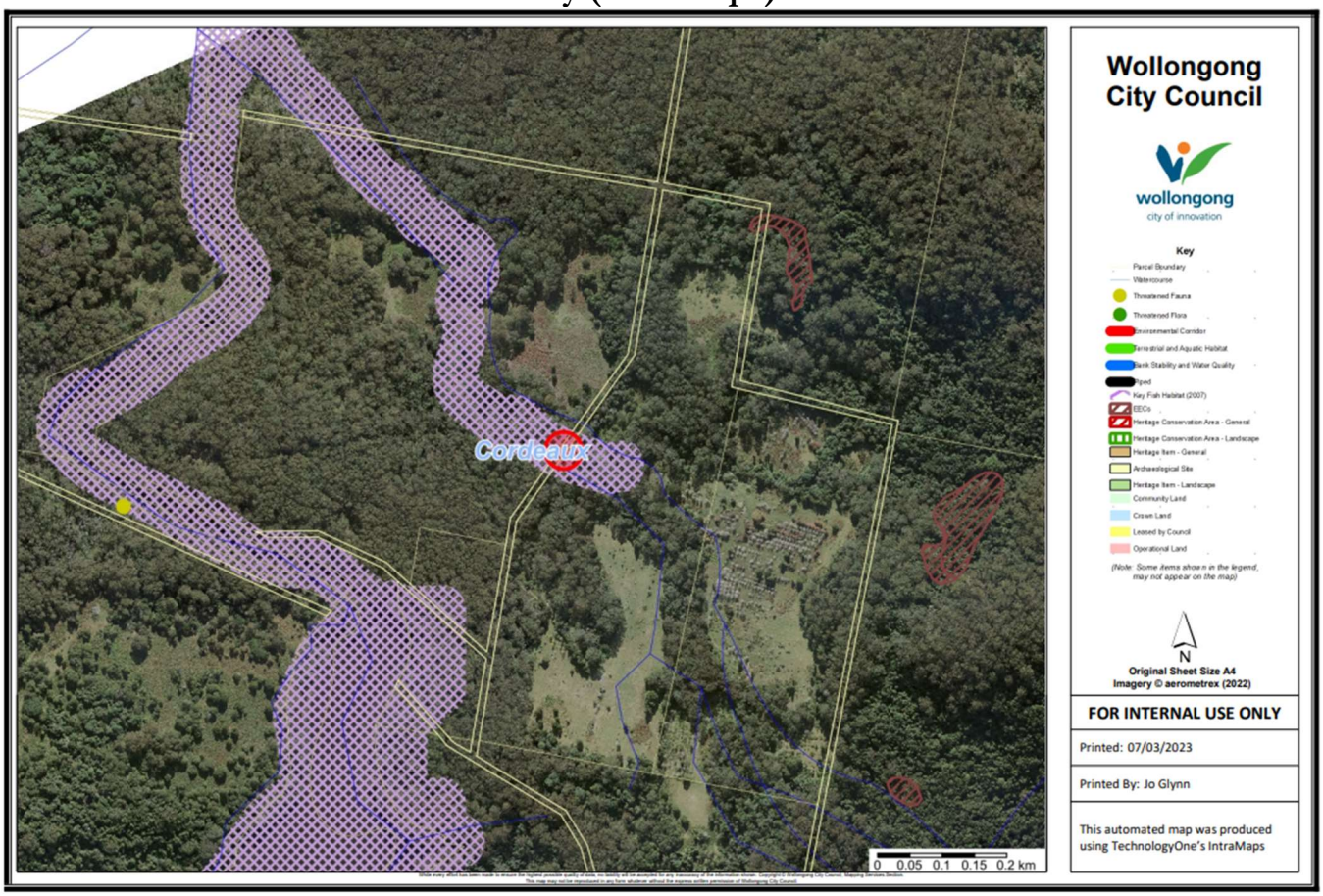
- For all spills in any waterways, air pollution, or land pollution, notify the EPA first and follow all instructions. Notify Environment Officer, and either Manager Project Delivery or Manager City Works.
- For any spills where there is the potential to impact on Key Fish Habitat, or there is a Permit in place from DPI, notify both DPI and EPA and follow any instructions. Notify Environment Officer and either Manager Project Delivery or Manager City Works.

Appendix E: Environmental Constraints Aerial / Photographs / Plans

Location Plan



Environmental Constraints Summary (IntraMaps)



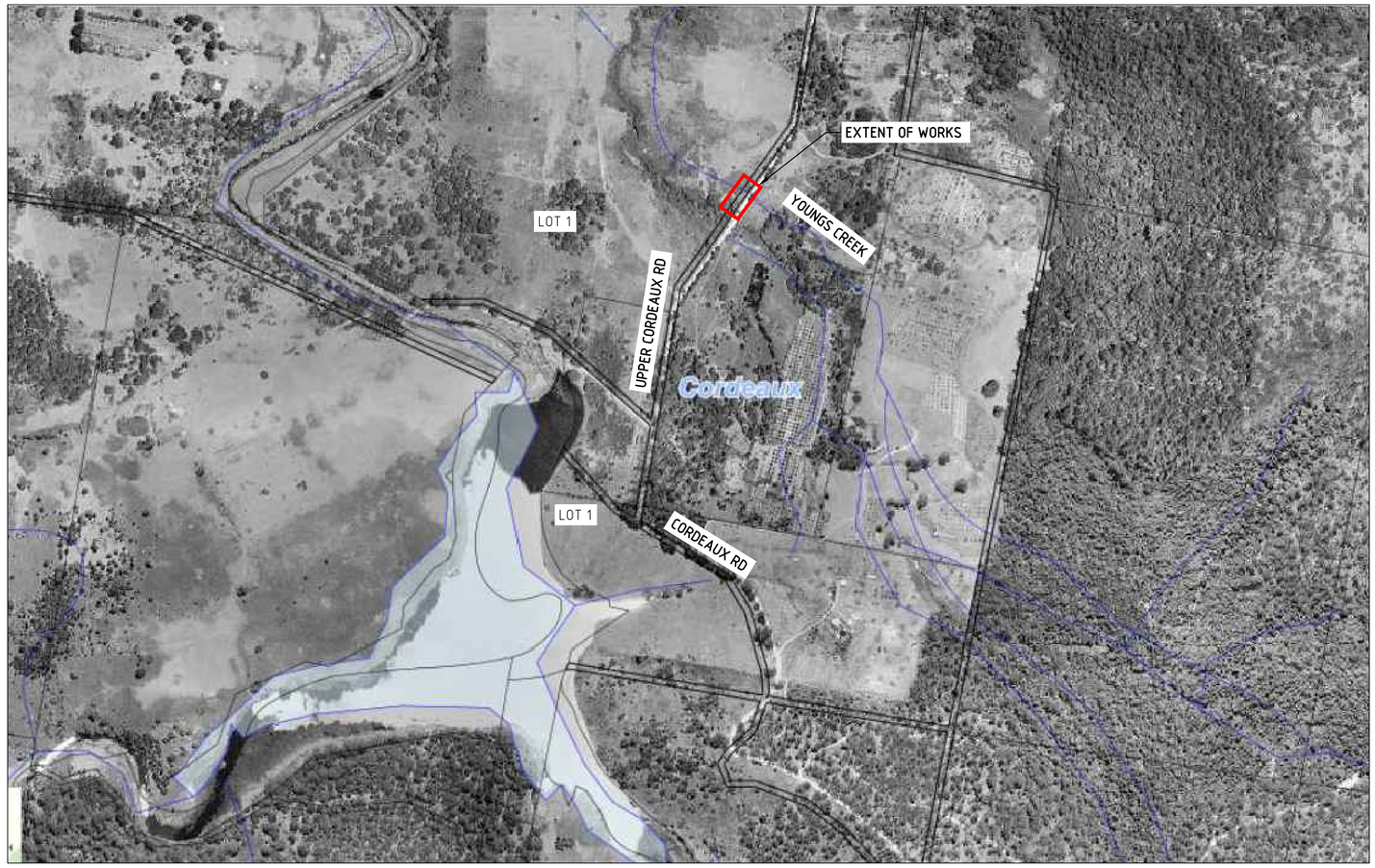
Site Photos

wollongong
city of innovation

LONG TERM SCOUR PROTECTION

YOUNG CREEK BRIDGE, UPPER CORDEAUX ROAD CORDEAUX

TR-824 PLAN No. 7158



LOCALITY PLAN
NOT TO SCALE

DRAWING SCHEDULE

SHEET No.	DESCRIPTION
S00	COVER SHEET & LOCALITY PLAN
S01	NOTES
S02	SITE MANAGEMENT PLAN
S03	NORTH PROTECTION WORK PLAN
S04	SOUTH PROTECTION WORK PLAN
S05	EAST ELEVATION
S06	WEST ELEVATION

ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE
4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
3	UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	AR	SD	27/10/22
2	ISSUED FOR CLIENT REVIEW	AR	NM	27/07/22
1	ISSUED FOR ENVIRONMENTAL REVIEW	AR	NM	11/11/21

DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK -
RELATED PLANS

DRAWN JB ..... DATE 04/23
DESIGNED AR ..... DATE 09/22
CHECKED ET ..... DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)
SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL
Toussia
7158_S00_3
DATE 6/04/2023

ISO 9001 Quality Management

SCALES: AS NOTED
NORTH POINT: NORTH

CITY OF WOLLONGONG
LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
COVER SHEET & LOCALITY PLAN

wollongong city of innovation
DESIGN & TECHNICAL SERVICES
Ph 02 42277111

PJ or TR No. TR-824 | A1 ORIGINAL
SHEET 0 OF 6 SHEETS
DRAWING No. 7158 | SHEET No. S00 | ISSUE 4

0 10 20 30 40 50 60 70 80 90 100mm ON ORIGINAL PLAN

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL/ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO COUNCIL'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.

G2. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING REPORTS:
- REF REPORT PREPARED BY WCC – REF **???**
- GEOTECHNICAL ADVICE VIA AN EMAIL, GT21.359 and GT22.339

G3. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.

G4. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEERS' DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.

G5. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.

G6. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

G7. THE BUILDER SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS.

G8. SLABS BEAMS AND WALLS SHALL BE POURED ON THE DAY OF APPROVAL UNLESS PERMISSION IS GIVEN OTHERWISE.

G9. ALL SERVICE LOCATIONS ON PLANS ARE SCHEMATIC ONLY.

G10. BUILDER TO DETERMINE AND/OR CONFIRM LOCATION AND DEPTH OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK.
ENGINEER TO BE NOTIFIED.

G11. PROPRIETARY PRODUCTS MAY BE REPLACED WITH EQUIVALENT PRODUCTS, ONLY FOLLOWING REVIEW AND WRITTEN APPROVAL BY WCC REPRESENTATIVE. BUILDER TO PROVIDE SUPPORTING DOCUMENTATION INDICATING EQUIVALENT PROPERTIES FOR WCC REVIEW.

G12. REFERENCES TO SUPERINTENDENT OR PRINCIPAL SHALL BE TAKEN AS WCC REPRESENTATIVE.

G13. BUILDER OR CONTRACTOR IS RESPONSIBLE FOR ENSURING BUILDING WORKS ARE UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT STANDARDS, PROPRIETARY ITEMS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND ALL STRUCTURES ARE SEALED TO PREVENT THE INGRESS OF RAIN DURING STORM EVENTS

G14. REFERENCES TO BUILDER, SUPPLIER OR OTHER PARTIES INVOLVED IN CONSTRUCTION SHALL HAVE THE SAME MEANING AS CONTRACTOR.

G15. THE CONTRACTOR IS RESPONSIBLE FOR ALL TESTING AS SPECIFIED IN THE CONTRACT DOCUMENTS TO DEMONSTRATE COMPLIANCE. THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH COMPLIANCE TESTING.

G16. A SECTION 138 APPLICATION AND APPROVAL IS REQUIRED PRIOR TO ANY OCCUPATION OF WCC ROAD OR FOOTPATH. THIS IS THE RESPONSIBILITY OF THE CONSTRUCTING AGENT.

G17. AN RMS ROL APPLICATION AND APPROVAL IS REQUIRED PRIOR TO ANY OCCUPATION OF RMS ROAD OR PROPERTY. THIS IS THE RESPONSIBILITY OF THE CONSTRUCTING AGENT.

G18. ALL WORKS SHALL BE SUPERVISED BY PERSONS EXPERIENCED AND QUALIFIED IN THE TYPE OF WORK BEING CARRIED OUT.

FORMWORK

FR1. THE DESIGN, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK AND FALSEWORK IS THE RESPONSIBILITY OF THE BUILDER.

FR2. DESIGN AND CONSTRUCTION AND STRIPPING TIMES SHALL COMPLY WITH AS 3610 AND AS 3600 UNLESS OTHERWISE APPROVED BY COUNCIL'S REPRESENTATIVE.

FR3. THE FORMWORK SHALL BE DESIGNED TO RELY ON NO RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT PRIOR APPROVAL FROM THE PROJECT DESIGN ENGINEER.

FR4. DESIGN INFORMATION CONCERNING THE FOUNDATION FORMWORK SHALL BE DETERMINED FROM THE CONDITIONS EXISTING ON SITE AT THE TIME OF CONSTRUCTION. REFER ALSO TO THE GEOTECHNICAL REPORT WHERE AVAILABLE.

FR5. PROVIDE A 20mm FILLET AT ALL CORNERS.

NO FINES CONCRETE

N1 STRENGTH GRADE 15 MPa
N2 TYPE GP CEMENT
N3 AGGREGATE SIZE - 20mm
N4 VOID RATIO 20 – 30%
N5 CEMENT:AGGREGATE RATIO 1:6
N6 WATER CEMENT RATIO – 0.4-0.45
N7 DENSITY RANGE BETWEEN 1800kg/m^3 – 2100kg/m^3

ARMOUR ROCK WORKS

AR1. GROUND TO BE ADEQUATELY EXCAVATED AND SHAPED WITH REMOVAL OF ANY ROCKS WITH SHARP EDGES PRIOR TO LAYING OF GEOTEXTILE FILTER UNDERLAY.

AR2. CLEAR BEACH IN FRONT OF PROPOSED ROCK WALL OF ALL LOOSE AND SCATTERED CONCRETE BLOCKS.

AR3. THE DIAMETER OF THE ROCK SHALL BE DEFINED AS THE AVERAGE OF THE MAXIMUM DIMENSION OF THE ROCK TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION. THE RATIO OF MAXIMUM TO MINIMUM DIMENSIONS OF ANY ROCK SHALL NOT EXCEED 2.5.

AR4. ROCK ARMOUR UNITS SHALL BE CAREFULLY PLACED IN A SOUND INTERLOCKING ARRANGEMENT.

AR5. ALL PLACEMENT SHALL BE SUPERVISED BY PERSON OR PERSONS EXPERIENCED IN THIS TYPE OF WORK.

WASTE AND CONTAMINATION NOTES

A WASTE CLASSIFICATION HAS NOT BEEN CARRIED OUT FOR THIS SITE. HOWEVER, IF POTENTIAL CONTAMINATES ARE DISCOVERED DURING WORKS A WASTE CLASSIFICATION MUST BE CARRIED OUT BY THE CONTRACTOR , IN ACCORDANCE WITH REGULATORY REQUIREMENTS.

E1 REMOVING EXCAVATED MATERIAL FROM SITE
- ANY WASTE GENERATED, INCLUDING EXCAVATED MATERIALS, SHOULD BE REMOVED FROM THE SITE AND DISPOSED OF APPROPRIATELY, ACCORDING TO THE WASTE CLASSIFICATION.
- GENERAL WASTE (RUBBISH) IS NOT TO BE ALLOWED TO LIE OR ACCUMULATE ON THE SITE.
- KEEP ALL DOCKETS/RECEIPTS FOR WASTE MANAGEMENT/DISPOSAL AND FORWARD COPIES TO THE WCC REPRESENTATIVE.

E2 IMPORTING FILL MATERIAL TO SITE
- ONLY VIRGIN EXCAVATED NATURAL MATERIAL (VENM) CAN BE IMPORTED ON SITE UNLESS APPROPRIATE TESTING AND DOCUMENTATION IS PROVIDED.
- KEEP ALL DOCUMENTS/RECORDS OF THE TRANSPORT AND USE OF MATERIAL IMPORTED ONTO SITE AND FORWARD COPIES TO THE WCC REPRESENTATIVE.

GENERAL
- THE COSTS FOR ALL TESTING AND CLASSIFICATION IS THE RESPONSIBILITY OF THE CONTRACTOR.
- SPECIFIC INFORMATION AND REQUIREMENTS ARE NOTED IN THE REF WHICH IS APPENDED TO THIS DOCUMENTATION.
- THE REF MUST BE READ AND ALL RECOMMENDATIONS ADOPTED TO FULFIL ENVIRONMENTAL REQUIREMENTS FOR THIS SITE.

HOLD POINTS, APPROVALS & INSPECTIONS

THE CONTRACTOR SHALL PROVIDE TO THE WCC REPRESENTATIVE A MINIMUM OF 2 WORKING DAYS' NOTICE FOR ANY INSPECTION AND 14 DAYS FOR ANY REVIEWS OF SHOP DRAWINGS AND ALTERNATIVE DESIGNS.

NO FURTHER WORK SHALL OCCUR ON THE COMPONENT OF WORK TO BE INSPECTED OR APPROVED, UNTIL THE WCC REPRESENTATIVE RELEASES THE HOLD POINT IN WRITING.

FOR MANDATORY HOLD POINTS REFER TO HOLD AND WITNESS POINT SCHEDULE.

ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE
4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
3	UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	AR	SD	27/10/22
2	ISSUED FOR CLIENT REVIEW	AR	NM	27/07/22
1	ISSUED FOR ENVIRONMENTAL REVIEW	AR	NM	11/11/21

0 10 20 30 40 50 60 70 80 90 100mm ON ORIGINAL PLAN

DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK –
RELATED PLANS

DRAWN JB DATE 04/23
DESIGNED AR DATE 09/22
CHECKED ET DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)
SENIOR DESIGN ENGINEER
STRUCTURAL/ARCHITECTURAL
Toussis
7158_S01_3
DATE 6/04/2023

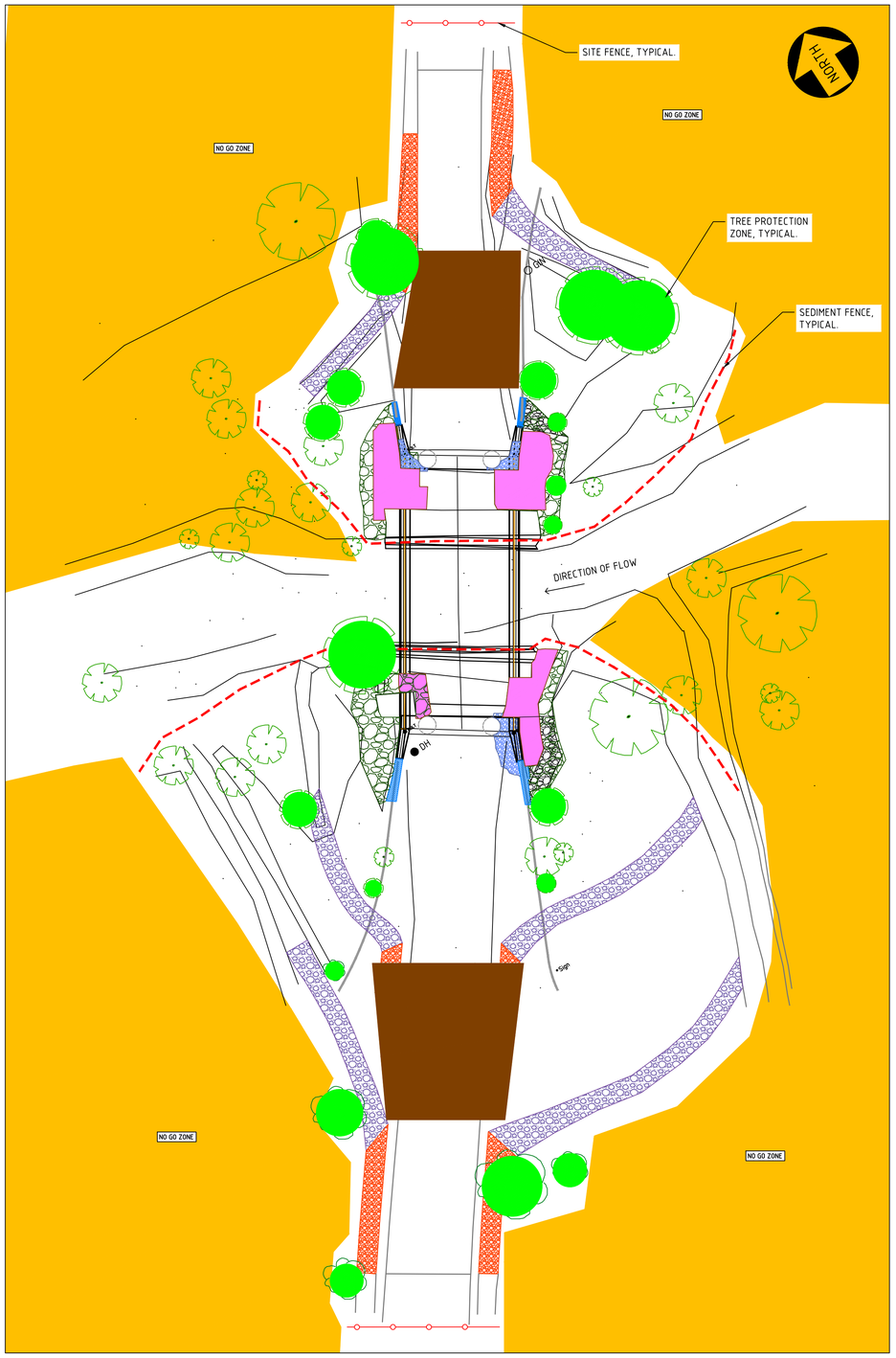
ISO 9001 Quality Management

SCALES: AS NOTED
NORTH POINT: .

CITY OF WOLLONGONG
LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
GENERAL NOTES

wollongong city of innovation
DESIGN & TECHNICAL SERVICES
Ph 02 42277111

PJ or TR No. TR-824
SHEET 1 OF 6 SHEETS
DRAWING No. 7158
SHEET No. S01
ISSUE 4
A1 ORIGINAL



SITE MANAGEMENT PLAN

SCALE 1:150 @ A1 - 1:300 @ A3

ENVIRONMENTAL SITE MANAGEMENT

ESM1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD".

ESM2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.

ESM3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM, SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.

ESM4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.

ESM5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. COUNCIL'S REPRESENTATIVE MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.

ESM6. ALL DISTURBED AREAS ARE TO BE TRIMMED, LEVELED, TURFED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.

ESM7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.

ESM8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.

ESM9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.

ESM10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.

ESM11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.

ESM12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.

ESM13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.

ESM14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.

ESM15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.

ESM16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.

ESM17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.

ESM18. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.

ESM19. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS).

ESM20. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM COUNCIL'S REPRESENTATIVE.

ESM21. SITE COMPOUND SHALL PROVIDE FOR ADMINISTRATION FACILITIES, TOILETS AND STORAGE AREAS SUFFICIENT FOR THE PROPOSED CONSTRUCTION OPERATION. THE COMPOUND SHALL BE FENCED AND SECURE.

ESM22. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.

ESM23. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH COUNCIL'S REPRESENTATIVES REQUIREMENT.

ESM24. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.

ESM25. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY COUNCIL'S REPRESENTATIVE AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.

ESM26. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH TFNSW 'TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.' TO BE SUBMITTED AND RELEASED BY WCC REPRESENTATIVE.

ESM27. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'

SOIL AND WATER MANAGEMENT

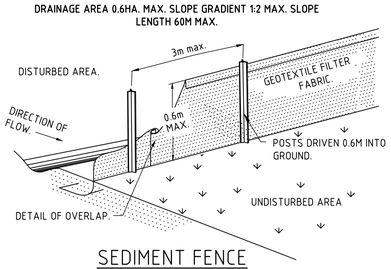
SW1. SEDIMENT POLLUTION RESULTING FROM EXCAVATION WORK SHALL BE MINIMISED BY INSTALLING SEDIMENT CONTROL DEVICES IMMEDIATELY DOWNSTREAM OF THE PROPOSED WORKS IN ACCORDANCE WITH THE REF/SEE PREPARED BY WCC.

SW2. SEDIMENT CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD". SILT CONTROL DEVICES ARE TO BE INSTALLED PRIOR TO CONSTRUCTION ACTIVITY, EFFECTIVELY MAINTAINED THROUGHOUT CONSTRUCTION, AND TO BE REMOVED ONLY AFTER THE WORK AREA HAS BEEN SATISFACTORILY COMPLETED.

SW3. ADVICE CONTAINED IN ALL APPROPRIATE DOCUMENTATION IS TO BE FOLLOWED.

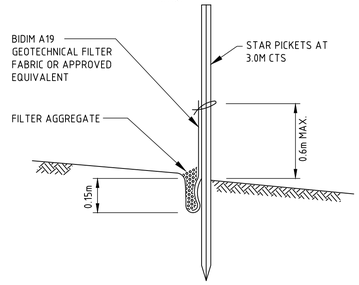
SEDIMENT FENCE CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS IN GROUND 3m APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.



SEDIMENT FENCE

N.T.S.



SILT FENCE BARRIER DETAIL

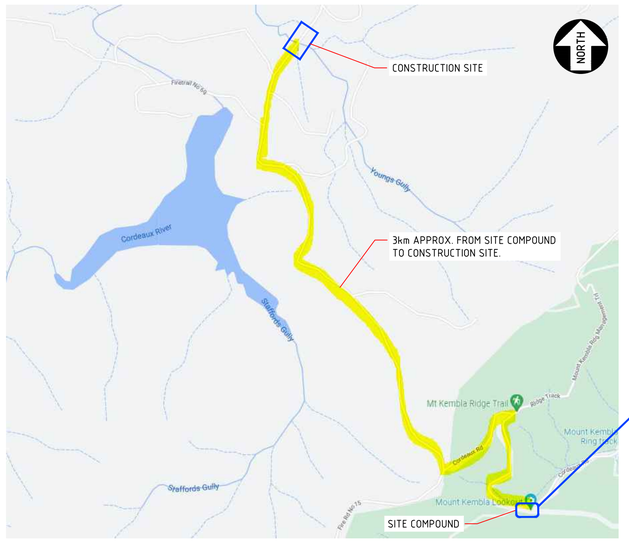
N.T.S.

TEMPORARY SITE NOTE

1. TEMPORARY SITE SHED TO BE INSTALLED DURING CONSTRUCTION 6m x 3m CODE 31885. AVAILABLE FROM COATS HIRE OR EQUIVALENT.
2. TEMPORARY PORTALOO TO BE INSTALLED DURING CONSTRUCTION CODE 31075. AVAILABLE FROM COATS HIRE OR EQUIVALENT.
3. SITE SHED AND LAY DOWN AREA IS TO COMPLY WITH ANY ELECTRICAL EASEMENT RESTRICTIONS.

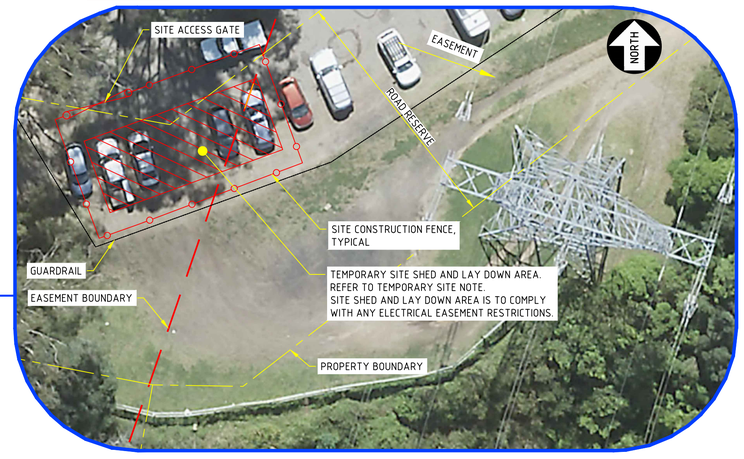
LEGEND

- SILT FENCE
- SITE FENCE
- TREE PROTECTION ZONE REFER TO REF ????
- TEMPORARY SITE SHED AND LAY DOWN AREA
- NO GO ZONE
- EXISTING SANDBAGS
- NO-FINES CONCRETE TO REINSTATE GUARDRAIL POST, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE SIDE FACING THE ROAD.
- NO-FINES CONCRETE TO FILL VOID AT HEADSTOCK, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE INNER SIDES.
- 1000 WIDE APPROXIMATE TABLE DRAIN WITH UN-GROUTED Ø100-150 BASALT SPALLS, 250mm THICK (OR 1.5 TIMES ROCK SIZE)
- 1000 WIDE APPROXIMATE SPOON DRAIN WITH UN-GROUTED Ø200-250 BASALT SPALLS, 400mm THICK (OR 1.5 TIMES ROCK SIZE), UNDERLAID WITH JUTE BIO DEGRADABLE GEO TEXTILES.
- Ø500-600mm BASALT UN-GROUTED BOULDERS, 900mm THICK (OR 1.5 TIMES ROCK SIZE), UNDERLAID WITH JUTE BIO DEGRADABLE GEO TEXTILES.
- CROSS BANK/ BERM MADE OF RECYCLED ASPHALT PROFILING AS PER TFNSW'S SPECIFICATION.



SITE COMPOUND LOCALITY PLAN

NOT TO SCALE



SCALE 1:250 @ A1 - 1:500 @ A3

ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE
4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
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0 10 20 30 40 50 60 70 80 90 100mm ON ORIGINAL PLAN

DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK -
RELATED PLANS

DRAWN JB DATE 04/23
DESIGNED AR DATE 09/22
CHECKED ET DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)
SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL
Toussis 7158_S02_3
DATE 6/04/2023

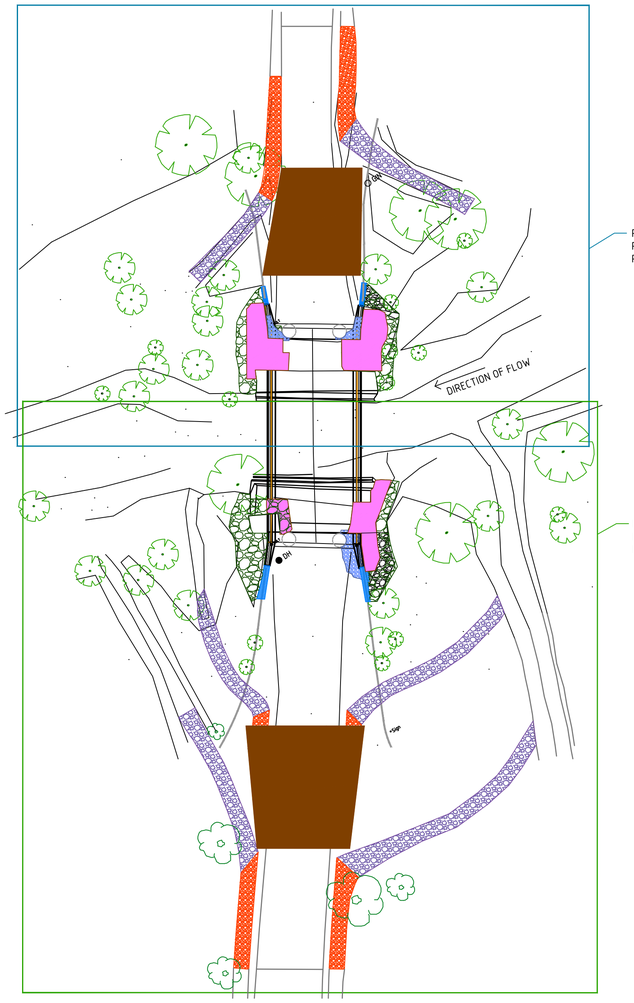
ISO 9001 Quality Management

SCALES: AS NOTED
NORTH POINT:

CITY OF WOLLONGONG
LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
SITE MANAGEMENT PLAN

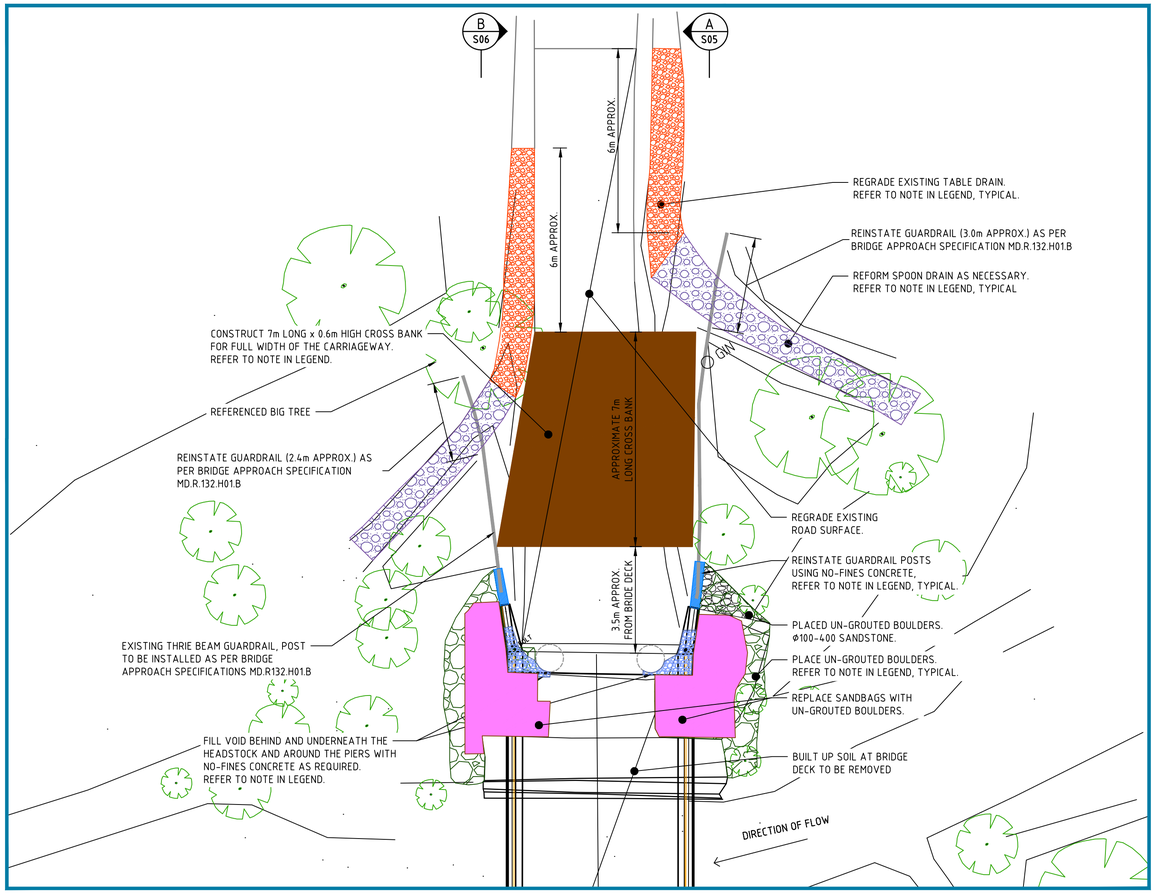
wollongong city of innovation
DESIGN & TECHNICAL SERVICES Ph 02 42277111

PJ or TR No. TR-824
SHEET 2 OF 6 SHEETS
A1 ORIGINAL
DRAWING No. 7158
SHEET No. S02
ISSUE 4



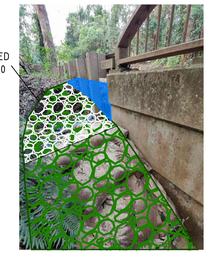
PROTECTION WORK PLAN

SCALE 1:200 @ A1 - 1:400 @ A3



NORTH PROTECTION WORK PLAN

SCALE 1:100 @ A1 - 1:200 @ A3



NORTH WEST CORNER -1

NORTH WEST CORNER - 2

NORTH EAST CORNER - 2

LEGEND

- NO-FINES CONCRETE TO REINSTATE GUARDRAIL POST, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE SIDE FACING THE ROAD.
- NO-FINES CONCRETE TO FILL VOID AT HEADSTOCK, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE INNER SIDES.
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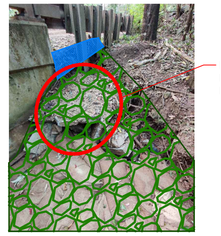
- CROSS BANK/ BERM MADE OF RECYCLED ASPHALT PROFILING AS PER TfNSW'S SPECIFICATION.
- EXISTING SANDBAGS

NORTH ABUTMENT



NORTH EAST CORNER -1

NORTH EAST CORNER - 3

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DATUM AHD	SURVEYOR MK	DRAWN JB	DATE 04/23
AZIMUTH MGA	FIELD BOOK -	DESIGNED AR	DATE 09/22
RELATED PLANS		CHECKED ET	DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)

SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL

DATE 6/04/2023

bsi ISO 9001 Quality Management

SCALES: AS NOTED

NORTH POINT

CITY OF WOLLONGONG

LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
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NORTH PROTECTION WORK PLAN

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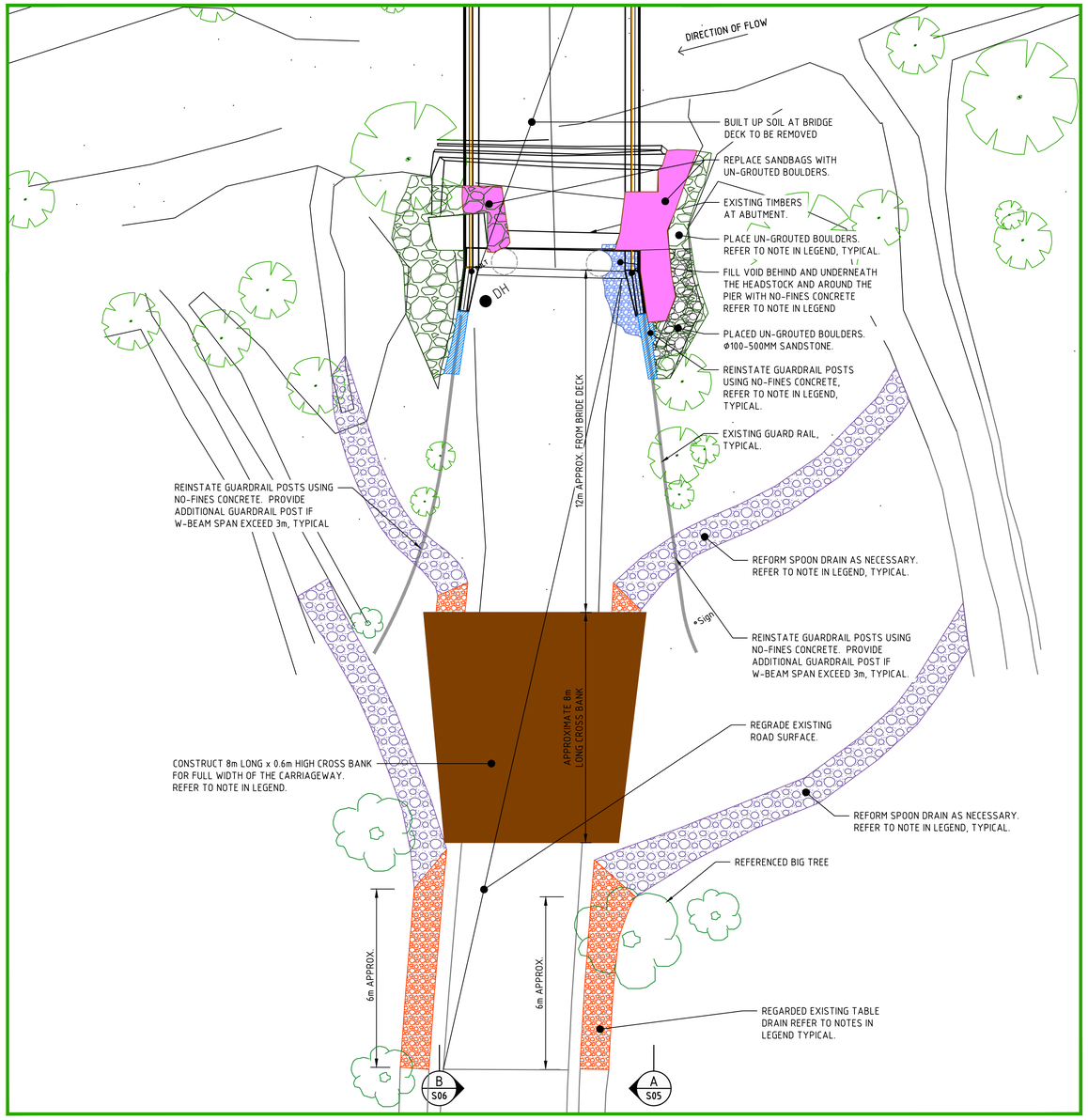
SHEET 3 OF 6 SHEETS

DRAWING No. 7158

SHEET No. S03

ISSUE 4

A1 ORIGINAL



SOUTH PROTECTION WORK PLAN

SCALE 1:100 @ A1 - 1:200 @ A3

LEGEND

- NO-FINES CONCRETE TO REINSTATE GUARDRAIL POST, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE SIDE FACING THE ROAD.
- NO-FINES CONCRETE TO FILL VOID AT HEADSTOCK, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE INNER SIDES.
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- EXISTING SANDBAGS

SOUTH ABUTMENT

SOUTH EAST CORNER-1

SOUTH EAST CORNER-2

SOUTH WEST CORNER-1

SOUTH WEST CORNER-2

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4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
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2	ISSUED FOR CLIENT REVIEW	AR	NM	27/07/22
1	ISSUED FOR ENVIRONMENTAL REVIEW	AR	NM	11/11/21

0 10 20 30 40 50 60 70 80 90 100mm ON ORIGINAL PLAN

DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK -
RELATED PLANS

DRAWN JB DATE 04/23
DESIGNED AR DATE 09/22
CHECKED ET DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)
SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL
Toussia 7158_S04_3
DATE 6/04/2033

ISO 9001 Quality Management

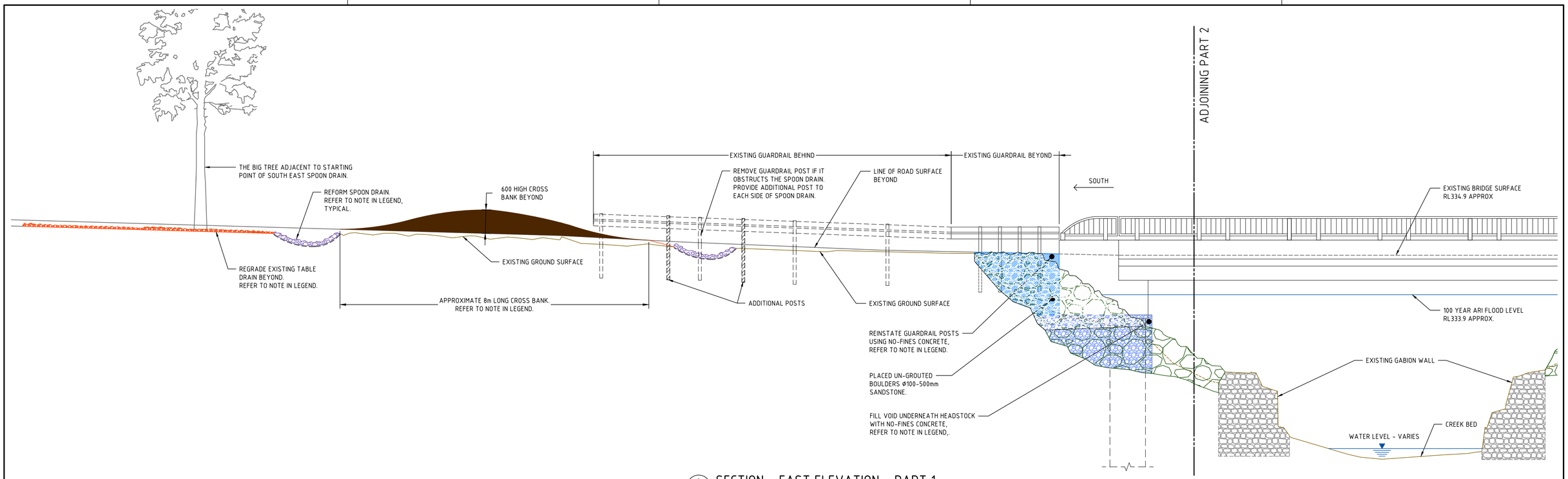
SCALES: AS NOTED
NORTH POINT

CITY OF WOLLONGONG

LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
SOUTH PROTECTION WORK PLAN

wollongong city of innovation
DESIGN & TECHNICAL SERVICES Ph 02 42277111

PJ or TR No. TR-824
SHEET 4 OF 6 SHEETS
A1 ORIGINAL
DRAWING No. 7158
SHEET No. S04
ISSUE 4



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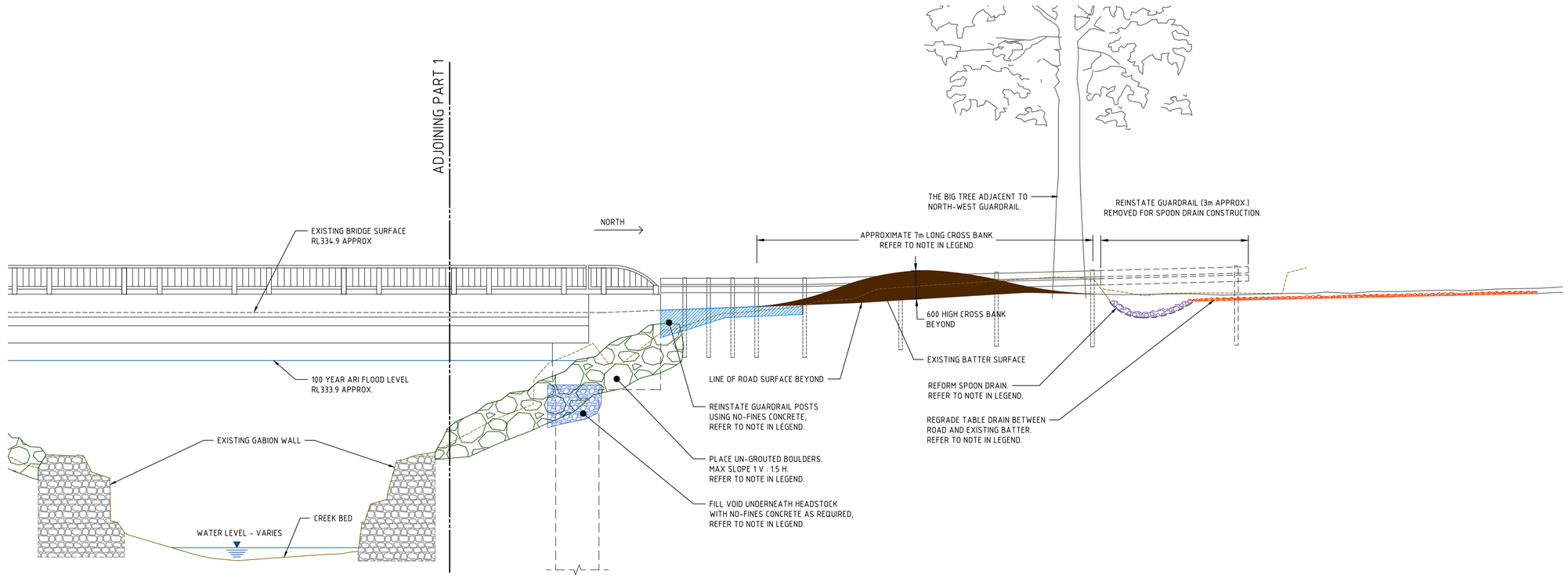

A S03 SECTION - EAST ELEVATION - PART 2
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LEGEND

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- NO-FINES CONCRETE TO FILL VOID AT HEADSTOCK, WRAPPED WITH GEOTEXTILE FILTER FABRIC UNDER AND TO THE INNER SIDES.
- 1000 WIDE APPROXIMATE TABLE DRAIN WITH UN-GROUTED Ø100-150 BASALT SPALLS, 250mm THICK (OR 1.5 TIMES ROCK SIZE)
- 1000 WIDE APPROXIMATE SPOON DRAIN WITH UN-GROUTED Ø200-250 BASALT SPALLS, 400mm THICK (OR 1.5 TIMES ROCK SIZE), UNDERLAID WITH JUTE BIO DEGRADABLE GEO TEXTILES.
- Ø500-600mm BASALT UN-GROUTED BOULDERS, 900mm THICK (OR 1.5 TIMES ROCK SIZE), UNDERLAID WITH JUTE BIO DEGRADABLE GEO TEXTILES.
- CROSS BANK/ BERM MADE OF RECYCLED ASPHALT PROFILING AS PER TFNSW'S SPECIFICATION.
- EXISTING SANDBAGS

ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE
4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
3	UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	AR	SD	27/10/22
2	ISSUED FOR CLIENT REVIEW	AR	NM	27/07/22
1	ISSUED FOR ENVIRONMENTAL REVIEW	AR	NM	11/11/21

DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK -
RELATED PLANS

DRAWN JB DATE 04/23
DESIGNED AR DATE 09/22
CHECKED ET DATE 04/23

APPROVED (FOR COUNCIL USE ONLY)
SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL
C.Toussis
7158_S05_3
DATE 6/04/2023

bsi. ISO 9001 Quality Management

SCALES: AS NOTED
NORTH POINT

CITY OF WOLLONGONG

LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
EAST ELEVATION

wollongong city of innovation
DESIGN & TECHNICAL SERVICES Ph 02 42277111

PJ or TR No. TR-824 | A1 ORIGINAL
SHEET 5 OF 6 SHEETS
DRAWING No. 7158 | SHEET No. S05 | ISSUE 4

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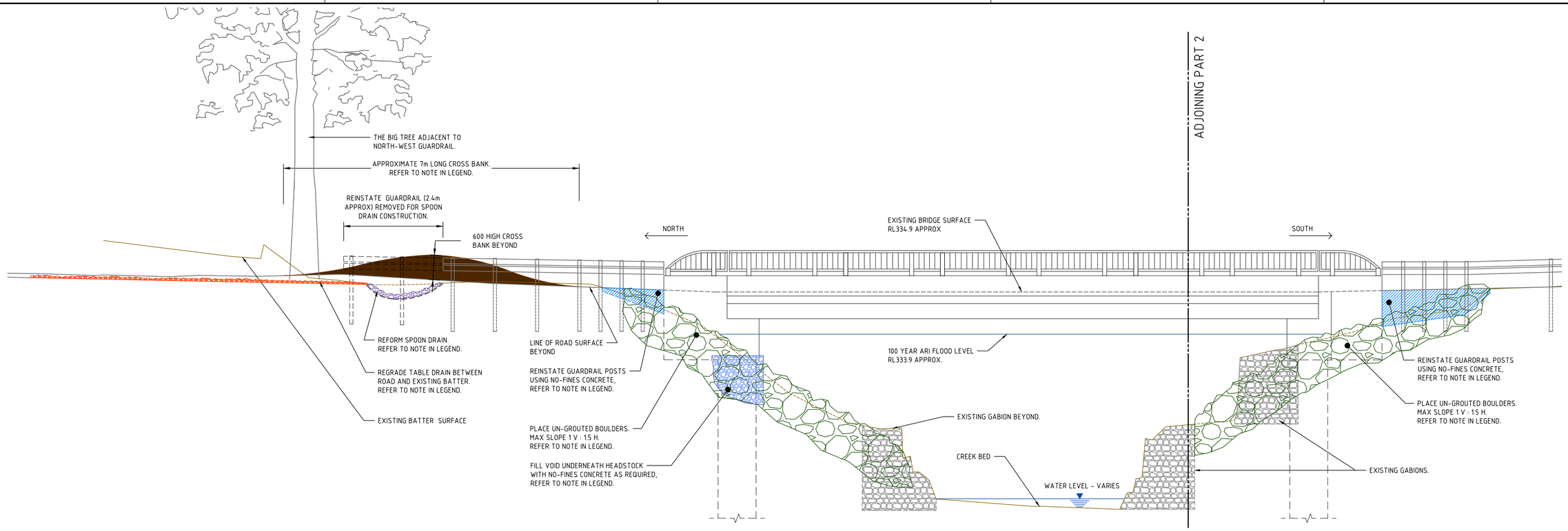

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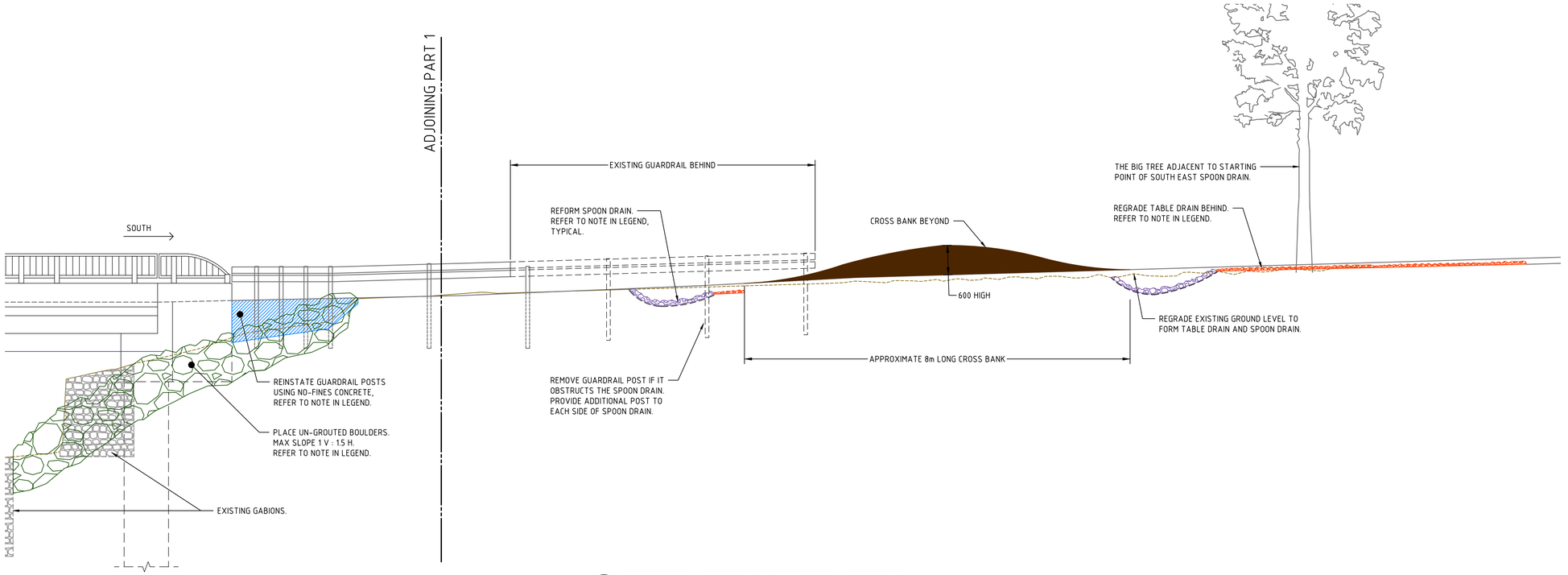

LEGEND

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- EXISTING SANDBAGS

B S04 **SECTION - WEST ELEVATION - PART 2**
SCALE 1:50 @ A1 - 1:100 @ A3

ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE
4	FURTHER UPDATED ISSUE FOR ENVIRONMENTAL AND CLIENT REVIEW	JB	ET	06/04/23
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DATUM AHD | SURVEYOR MK
AZIMUTH MGA | FIELD BOOK -
RELATED PLANS

DRAWN JB — DATE 04/23
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DATE 6/04/2023

bsi. ISO 9001 Quality Management

SCALES: AS NOTED
NORTH POINT

CITY OF WOLLONGONG

LONG TERM SCOUR PROTECTION
YOUNGS CREEK BRIDGE, UPPER CORDEAUX RD
CORDEAUX
WEST ELEVATION

wollongong city of innovation
DESIGN & TECHNICAL SERVICES Ph 02 42277111

PJ or TR No. TR-824 | A1 ORIGINAL
SHEET 6 OF 6 SHEETS
DRAWING No. 7158 | SHEET No. S06 | ISSUE 4

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Appendix F: Standard Operating Procedures-Unexpected Finds Protocols

Description of Work:	**Unexpected Find Procedure – Council Owned Land/Worksites**

This procedure has been developed to outline the process to be followed in the event that an unexpected find (hazard) is identified.

Hazards that may be encountered could be Asbestos material, contaminated soils, or archaeology/heritage finds.

In most cases the finds would occur during excavation operations on a worksite

In some instances ACM may be left by MOP's or work its way up through the ground

Main Hazards:

- **Exposure to Contaminated soils (Asbestos Containing Materials (ACM), chemicals, Acid Sulphate)**
- **Exposure to ACM or chemicals to public**
- **Damage to archaeology/heritage artefacts**

PPE REQUIRED –: ***Standard PPE for daily tasks, in event of unexpected find for ACM or substances, will require P2 disposable mask & hazard tape to provide barrier to prevent access by staff/public or to isolate area if archaeological/Heritage find***

*** If unexpected find is ACM**

Note: P2 masks not suitable if employee has a beard – prevents sealing

SAFETY RULES

- In event of unexpected find – cease work immediately
- Isolate the worksite
- Keep public away
- Contact Supervisor/Coordinator

Permits: (associated with task)

- Asbestos Removal Control Plan if asbestos material identified as Friable and is to be removed by licenced contractor

Checklists: (associated with task)

- Waste Classification Docket as reference

Team Training / Skills Required:

- Asbestos Awareness
- Waste Classification Docket
- Collection and disposal of Asbestos Containing Material (ACM) under 10Sq mtrs (optional for nominated staff)

References:

- WHS Regulations 2011 Chapter 8
- COP How to Safely Remove Asbestos
- COP How to Manage & Control Asbestos in the Workplace
- Managing Asbestos in or on soil (Wkcvr 2014)

Relevant Documentation:

Asbestos and Hazardous Materials Guidelines – Corporate

Sampling materials request form

Clearance certificate - Asbestos or Contaminated soils

SOP Collection & Disposal of Bonded Asbestos Containing Material (ACM) under 10SQ mtrs

1. PRE-Operation (must include environmental controls)

- If site is a construction site (K&G, Road, Drainage etc.) Waste Classification process and/or CEMP/REF to be checked/recorded
- Do a visual inspection of site prior to works commencing – looking for loose ACM, soil discoloration/smell.

2. Operation

- In the event of an unexpected find of contaminated material or archaeological/heritage artefacts (through excavations), cease work immediately
- If the find is considered to be illegal dumping which may contain asbestos or hazardous material, contact the customer service team (42277111) and provide details of the location, size and type of material – do not attempt to remove or "sift" through the material
- In the event excavated material is loaded onto truck and then material is suspected ACM:_

  > If on site, tip the load back onto the site and go through assessment process,

  > If the load has been transported to another site and suspected ACM is identified prior to tipping the load, contact the Coordinator/Supervisor who will assess the load and determine if a qualified person is required to provide advice on management of the load.

  > If the material has been unloaded offsite and suspected material found Coordinator/Supervisor to assess if ACM, type and amount, option to collect & remove if bonded and under 10sqmtrs or contact qualified person to provide advice

  Note: Depending on the condition of the material, the load may require wetting down to minimise dust/contamination until a management plan has been developed
- Isolate the immediate work area (barriers or Hazard tape)
- Where required contact the Supervisor and/or Coordinator, provide details to determine if they need to attend the site
- An assessment of the find is to be undertaken if potential ACM identify if bonded or friable
- If contaminated soil contact Environment Planning Manager (ESP) 42277574 to attend and assess
- If Archaeological or Heritage find contact Strategic Project Officer (ESP) 42277524 to attend and assess the find.
- Based on the find and assessment a suitably qualified person may be required to attend the site and advise what action should be taken
- Where required a sampling materials request is to be completed and issued to the qualified person
- Keep the area isolated until a determination is made – qualified person will provide advice on best option(s)
- In the event the unexpected find is confirmed as contaminated material or heritage artefact, record the details in Pathways (Action Request generated)
- Qualified person provides results of testing or assessment and develops an action plan
- If identified as Bonded ACM and is under 10sq Mtrs in content, trained WCC personnel can collect and bag as per SOP (Collection & Removal of Bonded ACM under 10Sq mtrs)
- If after all tests and searches have been completed and the material is not ACM or archaeological then continue works as normal & file the survey report on the project file
- If material is identified as ACM or Archaeological then the Action Request is updated through Pathways via Coordinator/project manager, record details of the find in the project file
- If the Asbestos material is considered to be a potentially significant hazard to employees or the public the supervisor/coordinator is to contact their manager and provide details and through consultation with council officers determine how to manage
- For Friable ACM, Archaeological, Heritage or other contaminated soil, an action plan is to be developed by the qualified person to manage the site. This may include temporary measure of barricades, tape, Geo Textile or plastic sheeting
- Works to be undertaken as per Action Plan, this may be by WCC personnel or specialist contractors depending on the action plan developed by the qualified person

- Where required a clearance certificate (ACM/Soil) is to be issued by a competent person and a copy sent to Land Use Planning for recording on the 149 Contaminated Land Register, a copy of the clearance certificate to be placed on the project file
- Advise crew/staff of the clearance certificate
- Update the Action Request information
- Planned Works to then continue
- For Archaeological or Heritage finds, an action plan to be implemented by qualified person which will include any references to clearances or other permits that may be required.
- Refer to "management of suspected or known asbestos contaminated stockpiles (short term storage only) for management of all unexpected finds requiring stockpiling

3. POST-Operation

- Pathways request to be closed off
-

Supervisor Name:	**Date:**
Print Name:	**Signature of worker:**

Record of induction/training to be recorded in Divisional HPE container **-925.09. ***.and in site diary if applicable

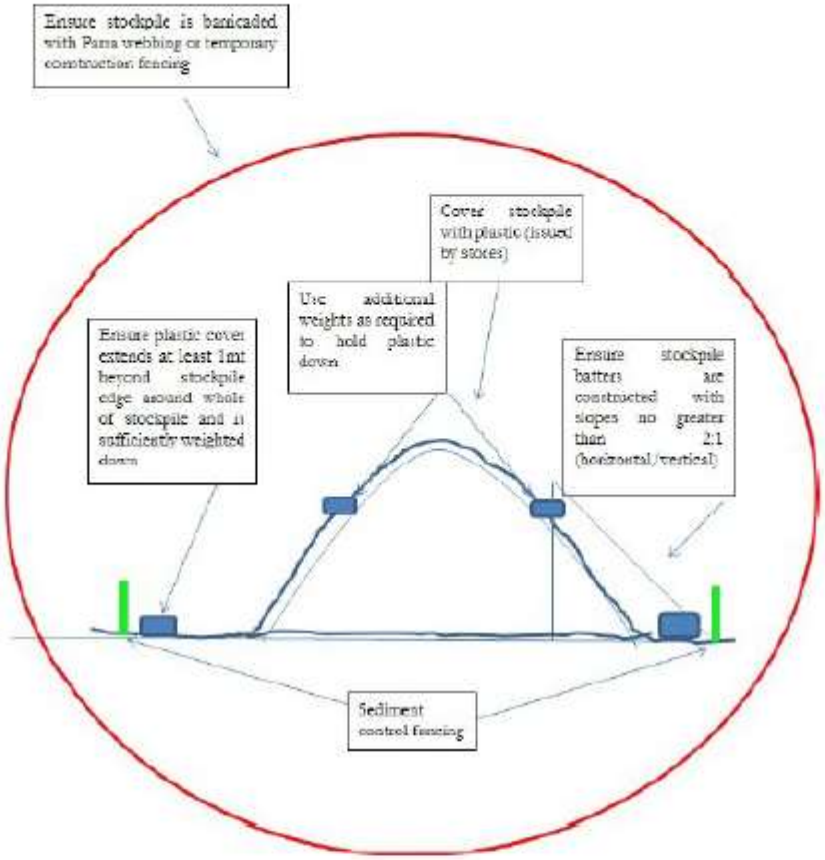
Bonded ACM

Contaminated soils (Sulphates)

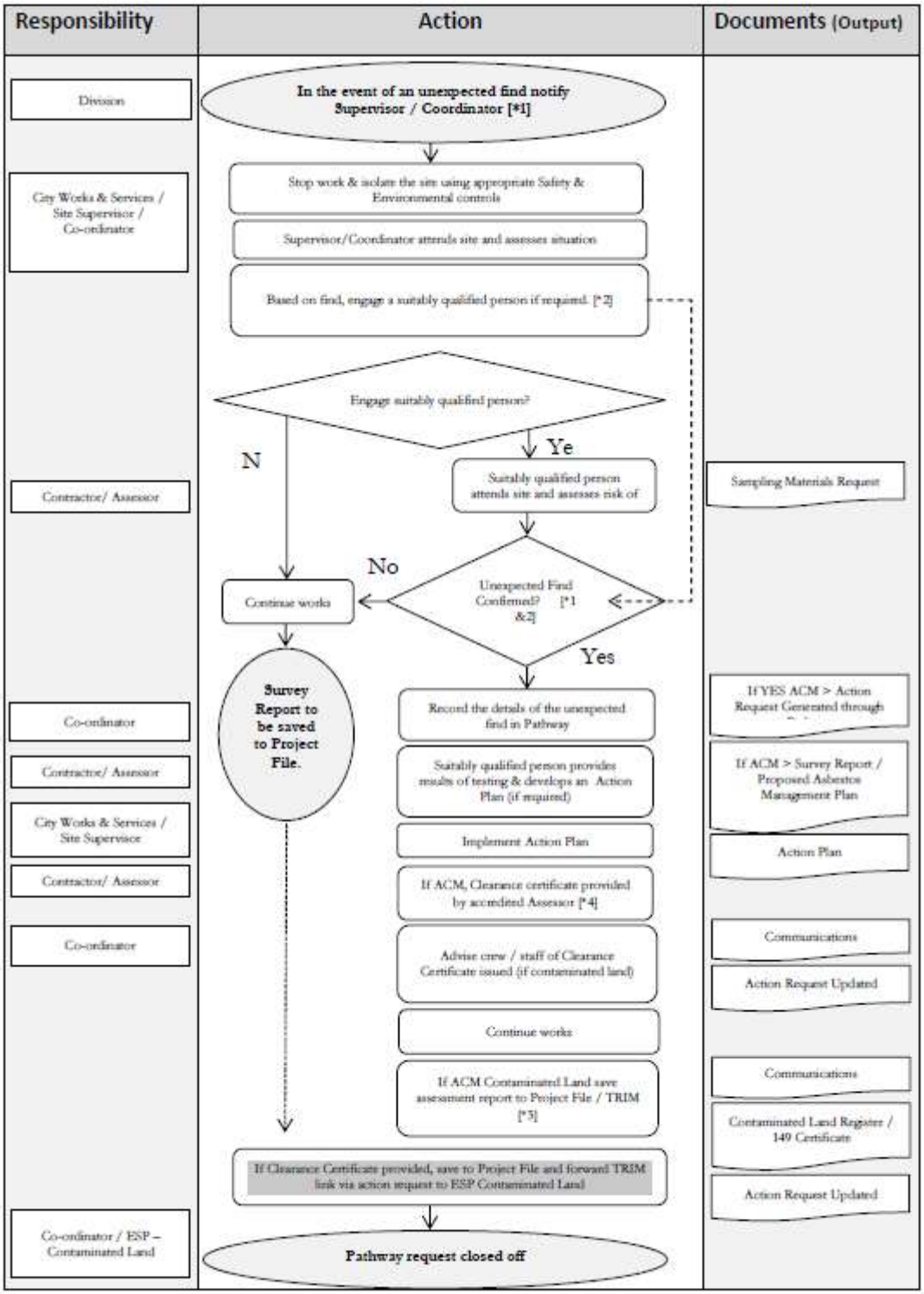
Archaeological & heritage finds

Friable Asbestos – in no circumstances is this material to be touched – must be a licenced removalist

Management of Suspected or Known Asbestos Contaminated Stockpiles (Short-term Storage Only)



This diagram applies to suspected or confirmed asbestos contaminated stockpiles awaiting removal by a licenced contractor



Notes:
[1] Unexpected finds associated to Contaminated Land include: Hazardous Substances – ACM (Asbestos Contaminated Material), Archaeology / Heritage, Contaminated Soil – ASS (Acid Sulphate soil)
[2] If ACM and under 10sqm bonded, Council employees to collect and remove find > refer to Process Chart [Z14/65578] & SOP [Z15/26538]
[3] If reportable to Contaminated land Unit > refer to Process Chart [Z14/465578] & SOP [TO DO]??
[4] Planning + Environment > Environmental Strategy + Planning > Contaminated Land email is contaminatedland@wollongong.nsw.gov.au

Appendix G: Fisheries Permit

Department of Primary Industries
Department of Regional NSW

PN23/188
26 April 2023

General Manager
Wollongong City Council
41 Burelli Street
WOLLONGONG NSW 2500

Attn: Ann Rojanawisut

Re: Fisheries Permit PN23/188 – Dredging and reclamation – bridge abutment repair – Cordeaux Rd/Morans Road bridge over Youngs Creek

Dear Ms Rojanawisut,

I refer to your application dated 20 April 2023 for a permit under Part 7 of the *Fisheries Management Act 1994* (FM Act). DPI Fisheries, a division of NSW Department of Primary Industries, assesses applications for dredging and reclamation in accordance with Part 7 of the FM Act, Part 14 of the *Fisheries Management (General) Regulation 2019* and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013)*.

This application attracts a minimum fee of $358.00. The fee comprises $179.00 application fee plus $179.00 for the first three hours of assessment. An invoice of $358.00 has been raised and will be emailed separately.

The environmental assessment has been completed and it has been determined that a permit can be issued. The permit is attached and takes effect on receipt of payment.

Please note that the attached permit providing authorisation under the *Fisheries Management Act 1994*, to undertake dredging and/or reclamation (s.200 or s.201), and/or harm marine vegetation (s.205) does not provide authorisation under any Act or planning instrument. It is the applicant's responsibility to ensure they have all appropriate approvals and landowner consents before the works occur. This may include, but is not restricted to, development consent under the *Environmental Planning & Assessment Act*, landowners' consent and/or a licence under the *Crown Lands Management Act 2016*, and a controlled activity approval under the *Water Management Act 2000*.

Please carefully read and note the conditions included in the permit. **If you agree that all the conditions are reasonable, appropriate, and achievable, you must sign and date the attached form (Acceptance of Conditions) and return it to the Departmental Contact Officer as soon as possible. If you believe that you cannot comply with all the Conditions, then you must not commence work.** Instead, you should contact the Departmental Contact Officer listed on the first page of the permit so that your concerns can be considered.

If you intend to have the work undertaken by a contractor, please ensure that the contractor receives a full copy of the permit and understands the importance of abiding by the conditions. As the permit holder, you are responsible for ensuring compliance with all conditions therein and with any other legislative obligations. **Breaching a condition of a permit can incur an on-the-spot penalty notice of $500 of up to $11,000 through the courts in accordance with clause 225 of the *Fisheries Management (General) Regulation 2019.***

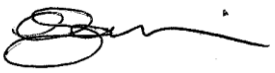
The extent of work is to be restricted to that outlined in the application and plans submitted to the Department. **If for any reason, other works are required, or the works need to be extended to other areas, you must seek specific approval beforehand.** DPI Fisheries will require a justification for these variations and may charge additional assessment fees as outlined in the permit application. Similarly, **please note the expiry date** on the permit. If the works are not completed by the expiry date you will need to obtain an extension. **Requests for an extension after the expiry date will incur the $179.00 permit application fee. Requests for an extension before the expiry date will not incur an application fee.**

DPI Fisheries, places particular importance upon the need to minimise the harm to the natural environment both at the work site and in downstream/adjacent waters. The Department expects implementation of Best Management Practice with respect to erosion and sediment control as outlined in the publication "Managing Urban Stormwater: Soils and Construction" (4th Edition Landcom, 2004), commonly referred to as "The Blue Book" (see https://www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon).

The extent and magnitude of works is such that I have included a condition requiring the preparation of a Construction Environmental Management Plan (CEMP) to be submitted to and approved by DPI Fisheries prior to the commencement of works. The CEMP is to incorporate erosion and sediment control measures to be used at the site, dewatering procedures, and site rehabilitation / revegetation provisions.

If you have any queries regarding this permit, please contact Carla Ganassin on 4222 8342 or carla.ganassin@dpi.nsw.gov.au.

Sincerely



Carla Ganassin

Senior Fisheries Manager, Coastal Systems

DPI Fisheries

Authorised delegate of the Minister of Primary Industries

Permit under Part 7 of the *FISHERIES MANAGEMENT ACT 1994*

Permit	Permit Number	**PN23/188**
	Expiry Date	Unless cancelled or suspended sooner, this permit shall remain in force until **26 April 2025**
Permit Holder:		Wollongong City Council 41 Burelli St (Locked Bag 8821), Wollongong DC, NSW 2500 Contact person: Jo Glynn Phone: 4227 7523 Email: jglynn@wollongong.nsw.gov.au
Permit Area:		Cordeaux Rd/Morans Rd bridge over Youngs Creek **(Refer to Attachment 1)**
Permit Activity:		Dredging and reclamation in association with or in relation to bridge abutment repair works
Departmental Contact Officer:		Carla Ganassin Ph: 4222 8342 Email: carla.ganassin@dpi.nsw.gov.au
District Fisheries Officer:		Daniel Minter Ph: 4220 8499 Email: daniel.minter@dpi.nsw.gov.au

This permit is subject to the following Conditions:

ADMINISTRATIVE CONDITIONS

1) The **Acceptance of Conditions** form (attached) must be completed and returned to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au before commencing any works authorised by this permit.

   Reason – To remove any doubt that the Permit Holder understands and accepts the Conditions before work commences.

2) The **Commence Works Notification** form (attached) must be completed and sent to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au at least three to five (3-5) days BEFORE the commencement of works authorised by this permit.

   Reason - To ensure that local DPI Fisheries staff are aware that the works authorised by this permit are about to commence.

3) The **Active Works Notification** form (attached) must be completed and sent to ahp.central@dpi.nsw.gov.au and fisheries.compliance@dpi.nsw.gov.au at least three to five

(3-5) days BEFORE works are complete or machinery is removed from the site. Several colour photographs showing the work site and works completed to date must be included.

Reason – To provide an opportunity for local DPI Fisheries staff to inspect the site whilst machinery is still on site and available to do any remedial work that may be necessary.

4) This permit (or a true copy) and a copy of the finalised Construction and Environmental Management Plan (CEMP) must be carried by the permit holder or sub-contractor operating on-site at all times during works activity in the permit area.

Reason – DPI Fisheries staff may wish to check compliance of works with imposed conditions.

NATURE AND EXTENT OF WORKS

5) The permit holder must ensure that all works authorised by this permit are restricted to the permit area and are undertaken in a manner consistent with those described in the: permit application dated 20 April 2023; plans for the works (Wollongong City Council, Dwg No 7158, date 04/23), and Review of Environmental Factors for the works (Wollongong City Council, REF03843). Other works, which have not been described, excepting those activities required by this permit, are not to be undertaken.

Reason – This permit has been granted following an assessment of the potential impacts of the described works upon the aquatic and neighbouring environments. Other works, which were not described in the application have not been assessed and may have significant adverse impacts.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN & OTHER PLANS

6) A Construction Environmental Management Plan (CEMP) detailing provisions relating to the items listed in this section below, is to be prepared **and submitted to the Contact Officer above for approval two weeks prior to any works taking place.** The CEMP should consist of simple statements and diagrams of how each factor will be managed on site to achieve the stated aim.

   a) Site delineation and marking of “no go” areas (with the aim of keeping the impacted area to a minimum),

   b) Sediment and erosion control plan (with the aim of achieving an outcome of “no visible turbid plumes reaching the waterway”, for any rainfall event up to a 1 in 2 year Annual Recurrence Interval (ARI) event),

   c) Use of temporary crossings or other access works (with the aim of keeping the impacted area to a minimum),

   d) Material storage and stockpiling (with the aim of keeping the impacted area to a minimum),

   e) Site restoration and clean up (with the aim of ensuring that the impacted area recovers as soon as possible),

   f) Site rehabilitation and revegetation (with the aim of ensuring that there are no long-term impacts after works are completed).

   All works undertaken are to be consistent with this statement.

   Reason – To ensure that appropriate strategies for preventing sediment input to downstream waterways and rehabilitation of aquatic habitats and the riparian zone are proposed and carried out.

SEDIMENT AND EROSION CONTROL

7) Erosion and sediment mitigation devices are to be erected in a manner consistent with currently accepted Best Management Practice (i.e., *Managing Urban Stormwater: Soils and Construction* 4th Edition, Landcom, 2004) to prevent the entry of sediment into the waterway **prior to** any earthworks being undertaken. **These are to be maintained in good working order for the duration of the bridge abutment repair works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.**

   Reason – To ensure that sediment generated by the exposure of soil is not transported into the main water body.

WORK IN WATERS

8) Machinery is not to enter or work from the waterway unless in accordance with works proposed in your application for the permit and the requirements of this permit.

   Reason – To ensure minimal risk of water pollution from oil or petroleum products and to minimise disturbance to the streambed substrate.

9) Only clean rock (no fines) is to be used in construction of works authorised by this permit.

   Reason – To avoid fines, clay, and other sediment un-necessarily entering the waterway and potentially impacting on aquatic habitats.

10) Prior to use at the site and / or entry into the waterway, machinery is to be appropriately cleaned, degreased, and serviced. Spill kits are to be always available on-site during works.

    Reason – To reduce the threat of an unintended pollution incident impacting upon the aquatic environment.

TIMING OF WORKS FOR LOW FLOWS

11) Works are to be undertaken during low flows in the Young Creek (and when the Bureau of Meteorological forecast for the Wollongong region indicates several days of dry weather.

    Reason – Timing the works for appropriate conditions can reduce delays and minimise impacts on the aquatic environments.

AVOIDING HARM TO SNAGS AND RIPARIAN VEGETATION

12) When working near riparian vegetation or water land these areas need to be identified and appropriately delineated as “No Go” areas (with the aim of avoiding harm to these areas). Harm to marine vegetation, riparian vegetation or water land outside the work footprint approved under the authority of this permit is not permitted and any harm caused is to be documented and reported to the contact officer. Any harm caused is to be restored in accordance with directions provided by the contact officer.

    Reason – To ensure that impacts on aquatic habitat and the riparian zone are minimised.

13) Material storage and stockpiling is not to be undertaken on water land, marine vegetation (saltmarsh, mangroves, seagrass) or riparian vegetation. Stockpiling must be undertaken in a manner to avoid harm to these types of vegetation or water land. Stockpiles should also be located 20 metres away from adjacent water land. Stockpiles and/or dewatering areas should be appropriately controlled by sediment fencing or other materials prescribed in the “Blue Book” to ensure sediments do not enter the waterway.

Reason – To ensure that impacts on aquatic habitats, the riparian zone and threatened saltmarsh communities are minimised. "Degradation of native riparian vegetation along NSW water courses" (excluding estuarine and marine waters) is listed as a Key Threatening Process (KTP) under the provisions of the FM Act.

14) No snags or large woody debris from trees and shrubs are to be removed, realigned, or relocated without first obtaining the written authority of the Contact Officer.

Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a KTP under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.

FISH KILL CONTINGENCY

15) A visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) is to be undertaken daily during the works. **Observations of dead or distressed fish are to be immediately reported to the Contact Officer by the Permit Holder.** In such a case all works are to cease until the issue is rectified and approval is given to proceed. If requested, the Permit Holder is to commit resources to the satisfaction of the Contact Officer for an effective fish rescue, if in the view of that officer, a fish kill event is imminent and likely to occur within or adjacent to the works area due to conditions associated with weather, water quality and other parameters.

Reason – DPI Fisheries needs to be aware of fish kills so that it can assess the cause and mitigate further incidents in consultation with relevant authorities. They are also potentially contentious incidents from the public perspective. Work practices may need to be modified to reduce the impacts upon the aquatic environment.

IMPORTANT NOTE:

In the event of any inconsistency between the conditions of this approval and:

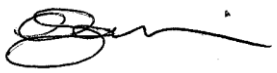
- the drawings / documents referred to above, the conditions of this approval prevail to the extent of the inconsistency.
- any Government publication referred to in this permit, the most recent document shall prevail to the extent of the inconsistency; and
- the proponent's mitigation measures outlined in the application; the conditions of this approval prevail to the extent of the inconsistency.

STOP WORK ORDERS

A Fisheries Officer or other appropriate delegate, who has reasonable cause to suspect that the conditions of this permit have not been complied with, **may order the work to stop immediately.** The order may be given to the permit holder or any person who informs the officer that they are acting in any capacity on behalf of the permit holder. Any damage caused to the habitat outside the specified permit area, or the carrying out of works not in accordance with the conditions specified in this permit and/or the application and that were accepted by the permit holder, could result in a breach of the *Fisheries Management Act 1994* or *Regulations*, and penalties of up to $220,000 may apply. Orders may also be made requiring work to rectify any damage caused by unauthorised works. **Breaching a condition of a permit can incur an on-the-spot penalty notice**

of $500 or up to $11,000 through the courts pursuant to clause 225 of the *Fisheries Management (General) Regulation 2019.*

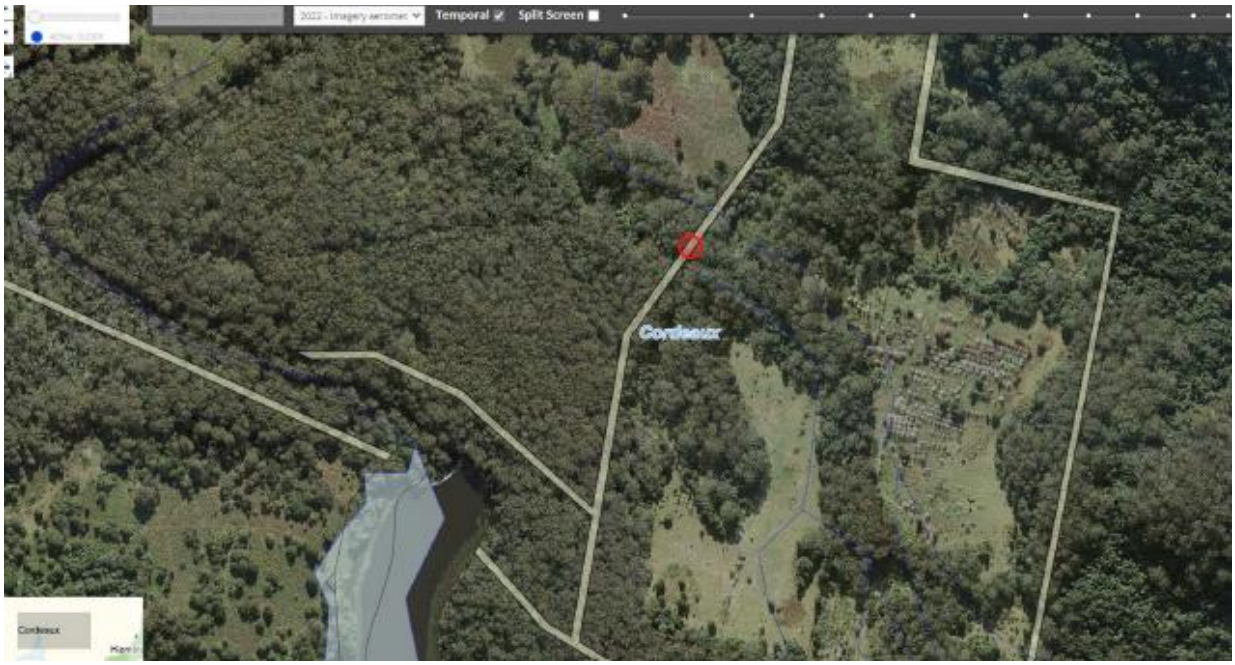
Sincerely



Carla Ganassin
Senior Fisheries Manager, Coastal Systems
DPI Fisheries
Authorised delegate of the Minister of Primary Industries

26 April 2023

Attachment 1 – Location diagram of works authorised under PN23/188



Permit No. PN23/188 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN23/188 associated with bridge abutment repair works to be undertaken at Cordeaux Rd/Morans Rd crossing of Youngs Creek:

Acceptance of Conditions Form

I the undersigned, acknowledge that I have read and understood and agree to comply with the conditions specified. I understand that penalties can be imposed for non-compliance with conditions.

Permit Holder's name: _____

Permit Holder's signature: _____

Date: _____

Please ensure you have SIGNED this page and RETAINED a copy for your records before you email it to:

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au

Permit No. PN23/188 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN23/188 associated with bridge abutment repair works to be undertaken at Cordeaux Rd/Morans Rd crossing of Youngs Creek:

Commence Works Notification Form

(Note: to be completed and returned 3 – 5 working days before commencement of works)

Permit Holder's name: _____

Expected commencement date: _____

Permit Holder's signature: _____

Date: _____

Comments:

Please ensure you have SIGNED this page and RETAINED a copy for your records before you email it to:

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au

Permit No. PN23/188 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN23/188 associated with bridge abutment repair works to be undertaken at Cordeaux Rd/Morans Rd crossing of Youngs Creek:

Active Works Notification Form

(Note: to be completed and returned 3 – 5 working days before completion of works or before machinery in removed from the site)

Permit Holder's name: _____

Anticipated completion date: _____

Permit Holder's signature: _____

Date: _____

Comments:

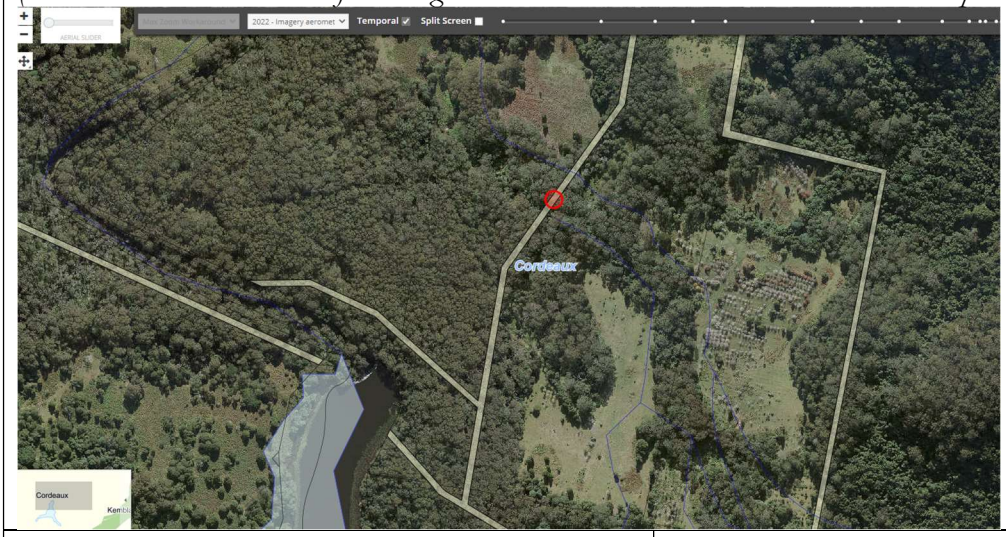
Please ensure you have SIGNED this page and RETAINED a copy for your records before you email it to:

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au

Appendix H: NorBE Assessment

A Neutral or Beneficial Effect Assessment for proposed activities by public authorities that will be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979*, as specified in Clause 12 of the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011.

<table>
<tr><td colspan="2">NorBE assessment – will there be a neutral of beneficial effect on water quality?
(Assessment must consider surface and ground waters and must consider construction & operational stages.)
 
</td></tr>
<tr><td>1. Are there any identifiable potential impacts on water quality?

What pollutants are likely?
Major potential pollutants are sediments (fine and coarse), nitrogen, phosphorus, pathogens and hazardous chemicals and contaminants such as oil/fuel.
At what stage do the impacts occur?
ie during construction and/or post construction?</td><td>Yes
▪ The works include ground disturbance and sedimentation must be avoided. There are adequate controls in section 3 of the REF that must be implemented if required.
▪ Potential impacts include contaminants such as machinery oil/fuel spills, and sediments (fine & coarse).
▪ Impact may occur during construction only. No impacts are expected after the works are complete.</td></tr>
<tr><td>2. For each pollutant list the safeguards needed to prevent or mitigate potential impacts on water quality (these may be WaterNSW endorsed current recommended practices (CRPs) and/or equally effective other practices)?</td><td>Safeguards for these are identified in Section 3 of this REF, and Appendix D Incident Management Procedure. Safeguards include:
▪ Prior to works commencing, erosion and sediment controls should be implemented for the duration of the works.
▪ Stockpiling is not acceptable in the catchment area.
▪ At no time shall any material be allowed to enter the waterway or stormwater drainage system.
▪ A fully equipped spill kit is to be kept on site during the works.</td></tr>
<tr><td>3. Will the safeguards be adequate for the time required? How will they need to be maintained?</td><td>Safeguards for soil erosion and sediment control will be undertaken in line with Managing Urban Stormwater: Soils and construction - Volume 1, 4th edition.
If the spill kit is used it must be restocked as soon as possible.</td></tr>
</table>

4. Will all **impacts** on water quality be effectively **contained on the site** by the identified **safeguards** (above) and not reach any watercourse, waterbody or drainage depression? Or will **impacts** on water quality be **transferred outside the site** for treatment? How? Why?	**Yes** Water quality will be effectively be managed by a specialised consultant that will ensure the REF safeguards are implemented.
5. Is it likely that a **neutral or beneficial effect** on water quality will occur? Justify	**Yes** A neutral effect on water quality is likely if the control measures are fully implemented from Section 3 of this REF.
Prepared by/date: Jo Glynn – 21st March 2023	

Reference: https://www.waternsw.com.au/__data/assets/pdf_file/0004/134194/NorBE-User-Guide-for-Councils-2022.PDF