

QMS Fm 121

REVIEW OF ENVIRONMENTAL FACTORS: REF04074

CONCLUSIONS AND SIGN-OFF OF LADY CARRINGTON ROAD EMBANKMENT COLLAPSE

This report documents the outcomes of the Review of Environmental Factors (REF) undertaken for proposed works comprising of embankment protection works at Lady Carrington Road, Otford.

The proposed activity has been assessed against the SEPP (Transport and Infrastructure) 2021, and does not require consent under Chapter 2 Division 25 Waterway or foreshore management activities.

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. If construction begins more than 1 year after the AHIMs, then the project manager needs to seek an updated AHIMs search prior to the commencement of works.

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


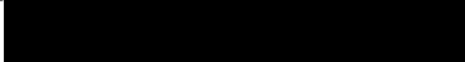
Publication Requirements: The EP&A Regulation ([clause 171\(4\)](#)) requires the REF to be published (on the Portal) prior to works commencing (if possible, otherwise within a month) if the activity involves:

- 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, 200, 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 undertaken and matters have been satisfactorily addressed and included in the drawings (sheet S02).

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:	Louise Hickson	REF Review:	Maria Byrne
Position:	Environment Strategy Officer	Position:	Environment Strategy Officer
Signature:		Signature:	
Date:	15 March 2024	Date:	19 March 2024

Client accepts that this REF is for the environmental assessment component only, and is responsible for all other project risks associated with the project management components. The information in this document is not considered sufficient to address any other project management requirements and safety/risk approvals, such as services investigations; consultation; cost estimate; traffic and site management; project risk assessment (etc):

Name:	James Bowden	Name:	
Position:	Project Coordinator	Position:	Designer Coordinator/Manager
Signature		Signature:	

Review of Environmental Factors
REF04074

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

Name:		Name:	
Position:	<i>Council Officer responsible for Site Management</i>	Position:	<i>One up Supervisor</i>
Signature		Signature:	
Date		Date:	

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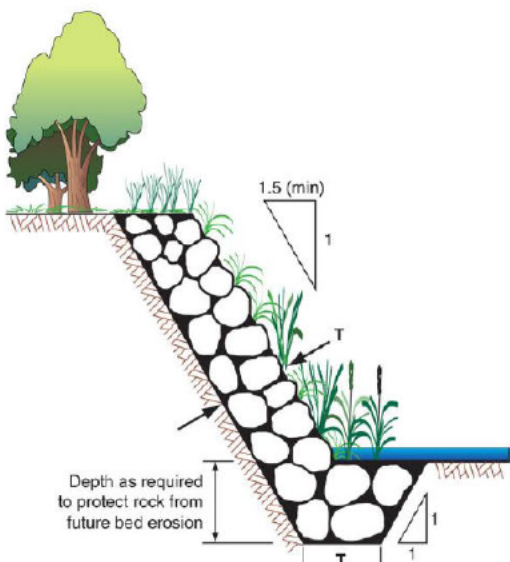
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1. INTRODUCTION

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	Lady Carrington Road Embankment Collapse
Location	Lady Carrington Road, Otford Lot 7 DP 1118520 & Hacking River
Land Ownership	The State of New South Wales (Lot 7 DP 1118520) & Hacking River
Land Classification	Public Land (Lot 7 DP 1118520) & Hacking River
Project Description	<p>Reinstate embankment collapse and provide embankment protection to approximate dimensions: 30m long x 9m wide x 5m height including rock armour and planting.</p>  <p>Advantages:</p> <ul style="list-style-type: none"> Very high scour protection once vegetation is established. Retention of aquatic habitat values. Retention of riparian values. Banks can be steeper than vegetated banks that do not contain rock protection. <p>Disadvantages:</p> <ul style="list-style-type: none"> High installation cost. <p>Use:</p> <ul style="list-style-type: none"> Used on the outside face of high velocity or sharp channel bends. Also, used in areas where both the channel velocity and overbank flow velocities are likely to be very high and thus erosive.

	<p>A 500mm clearing needs to be maintained between the road edge and any rock armour or planting.</p> <p>One lane on Lady Carrington Road is currently closed due to safety concerns and will remain closed while works are undertaken. Traffic management will be in place until the embankment is secure and safe to adjacent footpath and road users.</p> <p>The works require a dredging and reclamation permit under the <i>Fisheries Management Act</i>.</p>
Proposed Start Date & Work Period	ASAP
Work Equipment & Machinery	Excavator, hand tools, power tools, trucks
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	<p>The only alternative proposal is not to proceed. However, as one lane of the road is currently closed due embankment collapse and safety concerns, it is concluded that the proposal should proceed.</p> <p>Alternative designs were considered however flow velocity and flood levels determined that rock armouring was required to protect the embankment from further collapse and ensure the adjacent road is not compromised.</p>

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
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Environmental Awareness

- The work crew or contractor must have a copy of the REF on-site, 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.
- Before You Dig Australia (BYDA) as part of this scope preparation. It is expected that the contractor will organise their own BYDA.
- 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.

Hazardous Materials

N/A

Erosion & Sediment Control – refer to Appendix G for ESCP & Site Management Plan

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

- Where possible site compounds will be located on previously disturbed areas away from vegetation.
- Minimal vegetation/natural habitat to be disturbed. Consider ground cover/bush regeneration sites/proposed future use of the site.
- 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.

Fish Habitat - Refer to Fisheries Requirements below and Permit in Appendix G

- If the works are within key fish habitat and the removal of large woody debris is required, then a Fisheries Permit may be required. Seek advice from the Environment Officer.
- 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

- Refer to the Tree Protection Plan below to prevent tree trunk and root damage (refer to any Arborist Report for specific detail). 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.

- 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.
- 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.
- If any tree pruning is required Council's Level 3 Arborist must complete A Tree Environmental Assessment Form prior to the works.
- Tree protection must be undertaken in accordance with 'AS4970-2009 Protection of Trees on Development Sites'.

Tree Protection Plan

Indicative work zone in red

Indicative tree protection zone in green



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 to **ensure no impacts to vegetation (including tree roots) or soils.**
- Public safety for access around the site is to be ensured.
- Well-defined work compound must be secured to prevent public access. **Works site shed/portaloos to be located on hard-stand areas.**

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.

- 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

Fisheries Permit Requirements

A Fisheries Permit has been issued for these works – PN24/62 – and is attached in Appendix G. The following administrative conditions and on-site conditions must be completed or implemented.

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 and returned to Fisheries as outlined above.**

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 DP/ 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) and returned to Fisheries as outlined above**

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 DP/ 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 (as they manage the Consultant/Constructor/Works Crew) and returned to Fisheries as outline above**

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

Reason - DP/ 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 2 February 2024; plans for the works (Wollongong City Council, PJ-4642 Plan no 7405), and Review of Environmental Factors for the works (Wollongong City Council, REF04074). 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.

6. Where possible along the top of the rock revetment works Lomandra plants are to be planted to that they eventually form a continual vegetated edge along the edge of the bank protection works. This will form a vegetated filter to treat runoff from the road into the river.

Reason - To improve the health of the adjoining waterway as a result of these works.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN & OTHER PLANS

7. 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

8. 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 bank stabilisation works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.

In particular:

- a) Sediment fences are to be kept in place after work is complete. They are to be removed once the

site has been stabilised and the risk of sediment movement is minimal.

- b) A floating sediment curtain is to be erected in a semi-circular arrangement with ends against the bank so as to enclose all drainage water that may wash towards water land from the worksite.
- c) On completion of works all disturbed soil is to be levelled and smoothed and sown with a mixture of sterile grass seeds to encourage rapid revegetation and planted out with native endemic riparian vegetation.

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

DEWATERING

9. The site shall not be dewatered unless a Dewatering Management Plan is prepared and approved by the contact officer. Any Dewatering Management Plan shall specifically consider any potential off-site impacts as a result of the dewatering operations and contain mitigation controls to effectively treat any discharge water to prevent off site pollution of any receiving waters.

Reason - Dewatering poses a significant risk to aquatic animals and needs to be carefully managed.

WORK IN WATERS

10. 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.

11. 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 unnecessarily entering the waterway and potentially impacting on aquatic habitats.

12. 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.

13. A floating boom and attached silt curtain that extends for the full depth of the water column is to be used to isolate the work site and minimise the impacts of turbidity and mobilised sediment during construction. The curtain is to be installed, prior to commencement of any instream works and retained until after the completion of works. The curtain is to be maintained to ensure it operates effectively.

Reason - Minimise the impact of the works and maintain fish passage at the site.

14. Geotextile fabric is to be used to isolate the natural bed of the waterway from any imported clean rock fill or other material used to create a work platform within the bed of the waterway.

Reason - Improve the ability to remove imported clean rock used in the rock platform.

TIMING OF WORKS FOR LOW FLOWS

Works are to be undertaken during low flows in the Hacking River (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

16. 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.

17. 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.

18. 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.

19. On completion of the works the site is to be rehabilitated and stabilised including:

- a) Surplus construction materials and temporary structures (other than silt fences and other erosion and sediment control devices) installed during the course of the works are to be removed.
- b) Disturbed areas are to be reseeded with grass and planted with endemic native species.
Appropriate maintenance of erosion and sediment control devices is to be undertaken until the vegetation has successfully established and the site has stabilised.

Reason - To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.

FISH KILL CONTINGENCY

20. 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 - DP/ 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*.

Construction Environmental Management Plan (CEMP) to be submitted to and approved by DPI Fisheries prior to commencement of work. The CEMP is to incorporate erosion and sediment control measures to be used at the site, dewatering procedures, and site rehabilitation/ revegetation provisions.

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; brick 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.

Acid Sulfate Soils

N/A

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.

European Heritage

- Work is not to impact upon heritage items; in particular, no work shall occur within the boundary or the curtilage of any heritage item or property, until all necessary consultations and approvals have been undertaken / obtained.

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 25 Waterway or foreshore management activities**.

SEPP (Transport and Infrastructure) 2021

Chapter 2

Division 25 Waterway or foreshore management activities

2.164 Definition

In this Division—

waterway or foreshore management activities means—

- (a) riparian corridor and bank management, including erosion control, bank stabilisation, resnagging, weed management, revegetation and the creation of foreshore access ways, and
- (b) instream management or dredging to rehabilitate aquatic habitat or to maintain or restore environmental flows or tidal flows for ecological purposes, and
- (c) coastal management and beach nourishment, including erosion control, dune or foreshore stabilisation works, headland management, weed management, revegetation activities and foreshore access ways, and
- (d) salt interception schemes to improve water quality in surface freshwater systems, and
- (e) installation or upgrade of waterway gauging stations for water accounting purposes.

2.165 Development permitted without consent

(1) Development for the purpose of waterway or foreshore management activities may be carried out by or on behalf of a public authority without consent on any land.

(2) To avoid doubt, subsection (1) does not permit the subdivision of any land.

(3) In this section, a reference to development for the purpose of waterway or foreshore management activities includes a reference to development for any of the following purposes if the development is in connection with waterway or foreshore management activities—

- (a) **construction works,**
- (b) routine maintenance works,
- (c) emergency works, including works required as a result of flooding, storms or erosion,
- (d) environmental management works.

(4) Development for the purpose of temporary works for or associated with drought relief may be carried out by or on behalf of a public authority without consent, but only if the development is—

- (a) carried out on land publicly identified by the Minister for Primary Industries as being in drought, and
- (b) removed, and the area rehabilitated, within 4 months after the date on which the area is no longer so identified.

Note—

Areas of NSW that are in drought are identified on the website of the Department of Primary Industries.

Local Government Act 1993

48 Responsibility for certain public reserves

(1) Except as provided by section 2.22 of the *Crown Land Management Act 2016*, a council has the control of:

- (a) public reserves that are not under the control of any other body or lease from the Crown,
- (b) **public reserves that the Governor, places under the control of the council.**

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. 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. The 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 Act aims to conserve the natural and cultural heritage of NSW.

If there is known impact to Aboriginal heritage, Wollongong City Council must apply to Heritage NSW under section 90A of the *National Parks and Wildlife Act 1974* (NPW Act) for an Aboriginal Heritage Impact Permit (AHIP). Aboriginal community consultation must also be conducted in accordance with clause 60 of the *National Parks and Wildlife Regulation 2019* and the relevant Heritage NSW guidelines.

A search of the AHIMS database identified no items of Aboriginal Heritage in the region surrounding the study area (Appendix A).

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.

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.

5. ENVIRONMENTAL FACTORS IDENTIFIED AND EVALUATED

The following table has been completed following an 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		Yes – within 200m of waters
Is there any European Heritage listed on the current LEP?		No
Will these Heritage Items be impacted by the project?		No – provided safeguards in Section 3 are followed
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 – MEDIUM	No
Are the works to be conducted within 40m of watercourses or any other type of natural water body?		Yes – within a Category 1 riparian corridor
Will the works result in changes to water flow in any way?		No
Are the works within a flood affected zone?		Yes – Section 10.7 flood coding The proposal does not represent an increased risk to life or property in regard to flooding but aims to secure adjacent infrastructure
Do the works involve the use or storage within the work areas of fuels or other chemicals (other than fuels contained within the work vehicles)?		Unknown – refer to safeguards in Section 3

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Will the works create areas of unprotected soil or loose surface for more than 24 hours?		Potentially – refer to safeguards in Section 3
Could the works result in disturbance of contaminated land or contaminated material listed under WCC IntraMaps?		No
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 – refer to safeguards in Section 3
Are the works a Coastal Geotechnical risk under Coastal Zone Study under WCC IntraMaps?		No
Are the works subject to the <i>Wollongong Coastal Zone Management Plan 2017</i> ?		N/A – no longer current
Flora & Fauna/Tree Protection/Access/Community Environmental Impacts		
Is any vegetation required to be removed?	Overall impact – MEDIU M	No
SEPP (Biodiversity and Conservation) 2021. Chapters 3 and 4 relate to development assessment which require consent from Council. <u>Chapter 6 – Water catchments –</u> Sydney Drinking Water Catchment – NorBE tool assessment refer to page 5 at clause 2.2.3 Neutral or Beneficial (water.nsw.gov.au) 2.2.3 Part 5 Activities For new activities under Part 5 of the EP&A Act, including State Significant Infrastructure (SSI), section 171A of the Environmental Planning and Assessment Amendment (Water Catchments) Regulation 2022 requires determining authorities to take into account whether the activity would have a neutral or beneficial effect on water quality before they carry out an activity, and whether the activity is consistent with this guideline, including the incorporation of current recommended practices (Section 4.7).		No - 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 is required. No - not within water catchment area
Is the area within a Vegetation Community identified in NP-PCT Vegetation Layer under WCC IntraMaps Constraints?		No

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Are the works located on land identified as the Escarpment Management Plan Area under WCC IntraMaps Constraints? Illawarra Escarpment State Conservation Area plan of management (nsw.gov.au)		No
Is the area within a Habitat Model in WCC IntraMaps Constraints?		Yes – Golden-crowned Snake, Greater Glider, Green Catbird, Sooty Owl – refer to Appendix C – Flora and Fauna Assessment which concluded no adverse impacts expected provided safeguards are adhered to.
Do the works occur within Key Fish Habitat? Refer to Threatened Fish Species List .		Yes – See safeguards in Section 3 and Fisheries Permit in Appendix H 
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 – the proposal will not change the bushfire risk rating. Work crew to refer to RFS website for bushfire alerts/warnings in relation to working in this area.
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?		No

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
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		No – works will improve the functionality and safety of the area
Will the works cause excess noise?		Potentially during construction – refer to safeguards in Section 3
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/spatial/viewer/#/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?		Yes
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 <u>We value and protect our environment</u> <u>We have an innovative and sustainable economy</u> <u>Wollongong is a creative, vibrant city</u> <u>We are a connected and engaged community</u> <u>We have a healthy community in a liveable city</u> <u>We have affordable and accessible transport</u>		Yes - the proposal is consistent with the objectives and vision of 'Our Wollongong Our Future 2032: Community Strategic Plan' for the LGA. <i>'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.'</i>

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 IntraMaps 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;
- Vegetation will not 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 : REF04074

Client Service ID : 858932

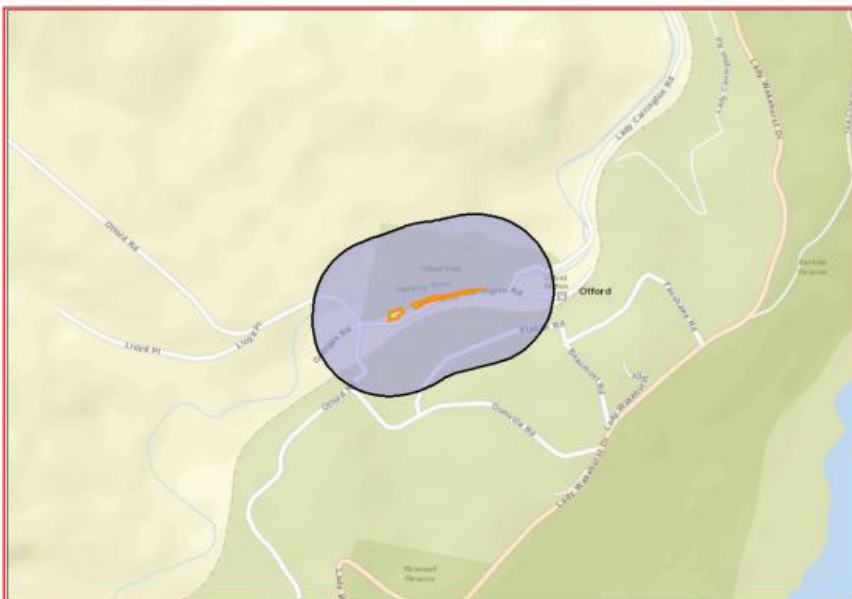
Wollongong City Council
Locked Bag 8821
Wollongong DC New South Wales 2500
Attention: Louise Hickson
Email: lhickson@wollongong.nsw.gov.au

Date: 30 January 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 7, DP:DP1118520, Section : - with a Buffer of 200 meters, conducted by Louise Hickson on 30 January 2024.

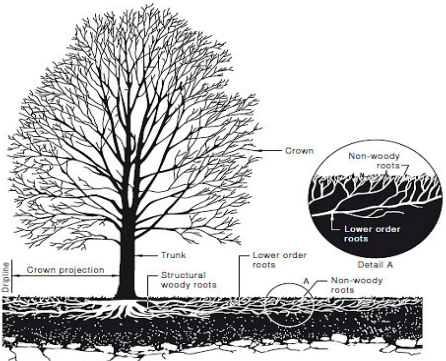
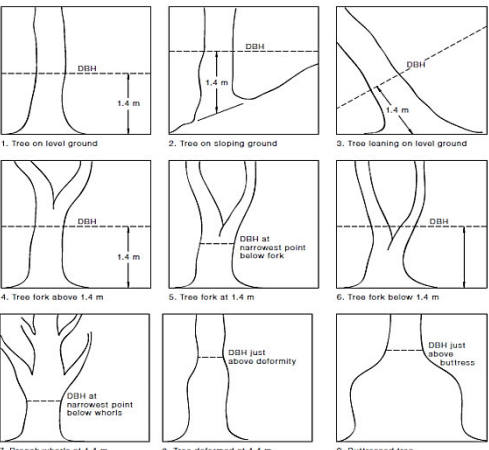
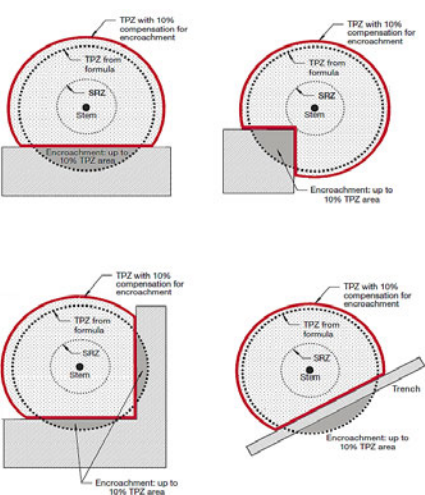
The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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




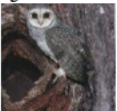

0 Aboriginal sites are recorded in or near the above location.
0 Aboriginal places have been declared in or near the above location. *

Appendix B: Tree Protection Procedure

 <p>FIGURE B1 STRUCTURE OF A TREE IN A NORMAL GROWING ENVIRONMENT</p> <p>www.standards.org.au © Standards Australia</p>	<p>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.</p> <p>TPZ standard should be:</p> <ul style="list-style-type: none">▪ 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
	<p>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:</p> <ul style="list-style-type: none">▪ 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. <p>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).</p>
	<p>The indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula:</p> <ul style="list-style-type: none">▪ SRZ radius = (D x 50)0.42 x 0.64 (Where D = trunk diameter in metres measured above the root buttress) <p>Note: The SRZ for trees with trunk diameter less than 0.15m will be 1.5m</p> <p>Encroachment into TPZ is sometimes unavoidable:</p> <ul style="list-style-type: none">▪ 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) <p>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.</p>

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 2 km radius, has been searched as identified by the threatened fauna & flora and EECs layers in IntraMaps on 30 January 2024. The table also considers the potential habitat at the site for native fauna by using the Habitat Model layer and Key Fish Habitat layer.

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
<i>Cacophis squamulosus</i> 	Golden-crowned Snake	P		Wet forests, under stones, logs and in leaf litter. The continued survival of the Wollongong population may be important to the survival of the species regionally. It was found at Mangerton Park.	Unlikely It is unlikely that this species will be impacted due to the nature and isolation of the works.
<i>Petauroides volans</i> 	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 It is unlikely that this species will be impacted due to the nature and isolation of the works.
<i>Ailuroedus carassirostris</i> 	Green Catbird	P		Listed as uncommon in the Illawarra. It usually inhabits moist forests; including rainforests, though it will venture into more open habitats, including gardens.	Unlikely It is unlikely that this species will be impacted due to the nature and isolation of the works.
<i>Tyto tenebricosa</i> 	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 It is unlikely that this species will be impacted due to the nature and isolation of the works.
 <i>Ornithorhynchus anatinus</i>	Platypus	P		Platypuses are generally solitary, spending their lives either feeding along the bottoms of rivers, streams, and lakes or resting in burrows dug into the banks. Generally, most active around dawn and dusk (crepuscular), platypuses can also be active during the day depending on the season, cloud cover, stream productivity, and even individual preference. Platypuses range in length from 38 to 60 cm (15 to 24 inches); males are generally larger than females. Mating take place in the water from late winter through spring (Aug-Oct). Females construct specially built nursery burrows, where they usually lay two small leathery eggs. Gestation is at least two weeks (possibly up to a month). (Britannica 2021)	Unlikely Provided safeguards in Section 3 are followed.

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.

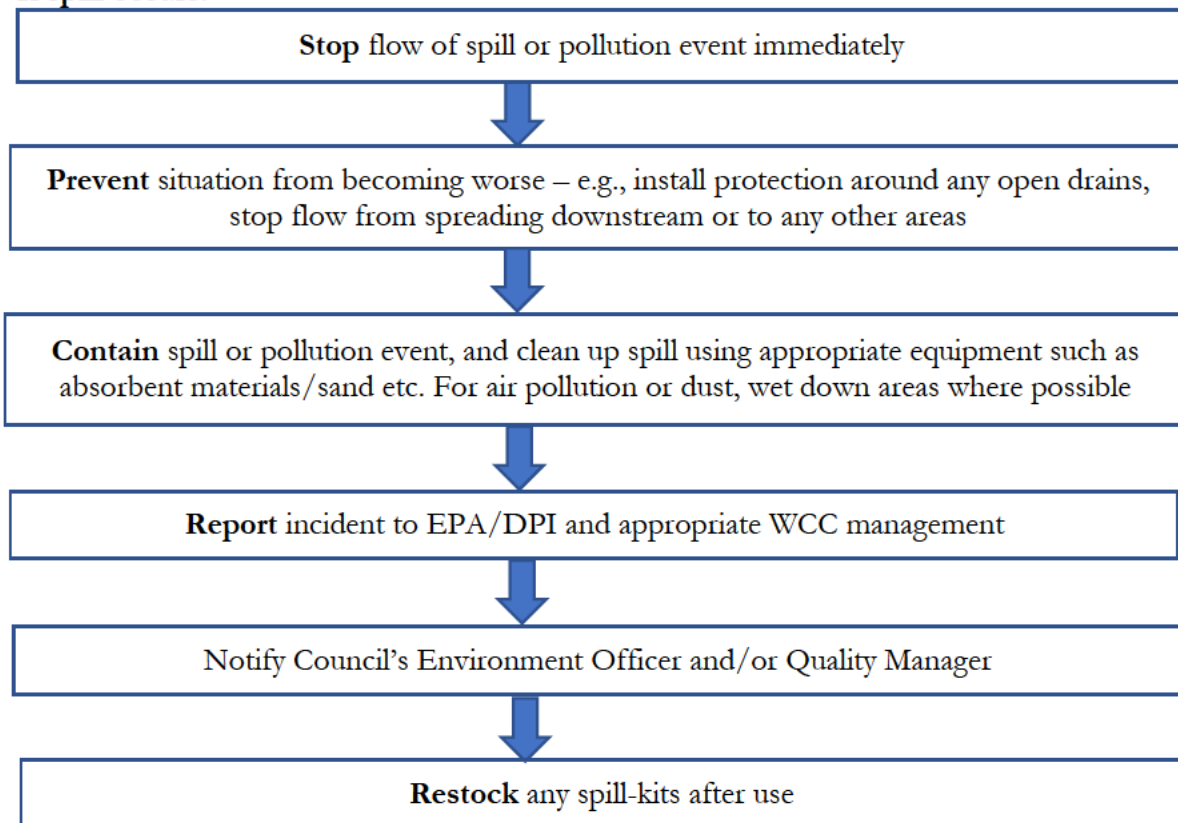
APPLICATION

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:



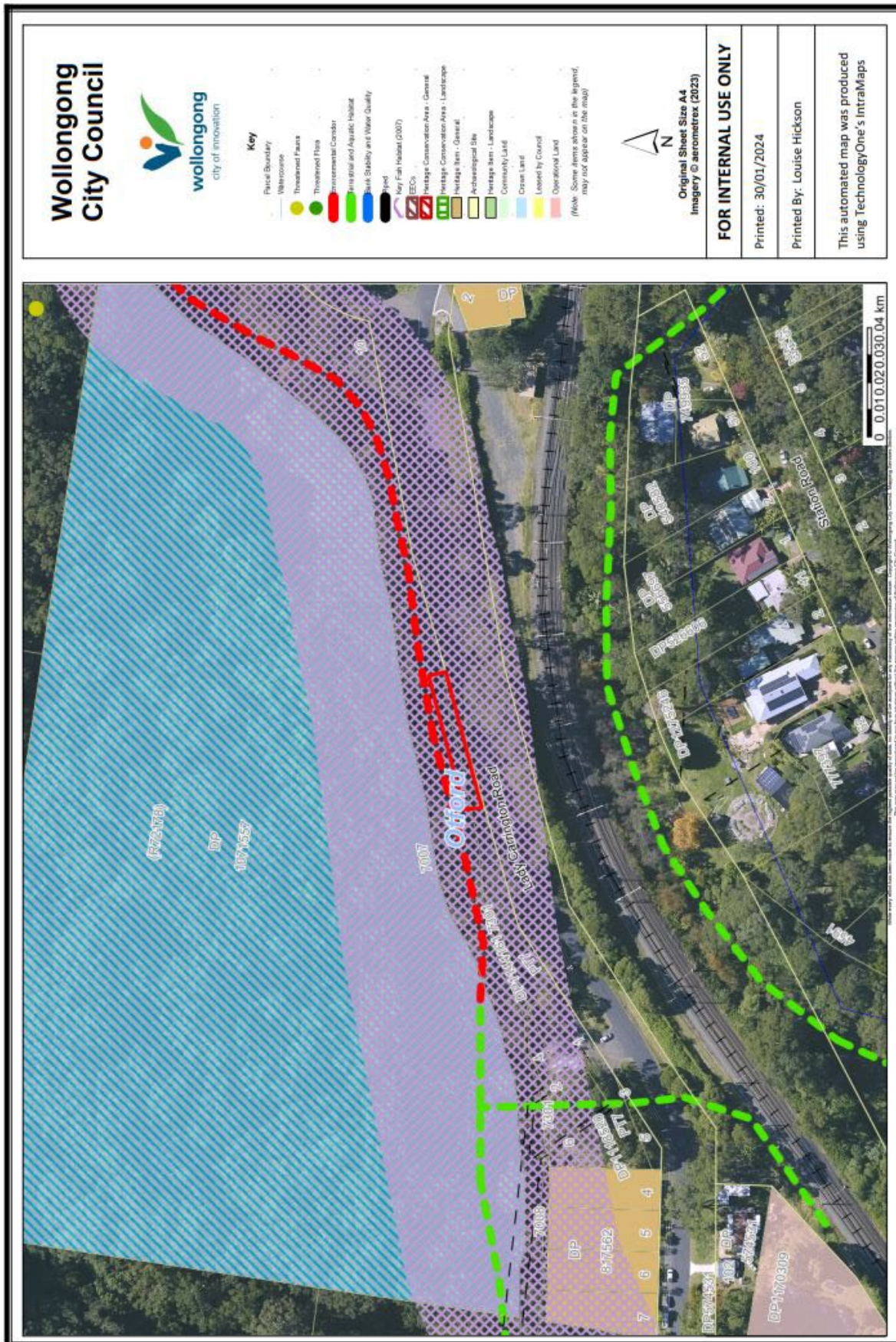
CHECKLIST

- 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





OTFORD SCOUR
PROTECTION
LADY CARRINGTON ROAD,
OTFORD

PJ-4642, PLAN No. 7405

DRAWING SCHEDULE

SHEET No.	DESCRIPTION
S00	COVER SHEET & LOCATION PLAN
S01	GENERAL NOTES SHEET
S02	ESCP & SITE MANAGEMENT PLAN
S03	GENERAL ARRANGEMENT PLAN & DETAILS
S04	CROSS SECTION SHEET 1 OF 2
S05	CROSS SECTION SHEET 2 OF 2



LOCATION PLAN
SCALE: 1:500 @ A1 - 1:1000 @ A3

PRELIMINARY PLAN - NOT FOR CONSTRUCTION

				DATUM AHD	SURVEYOR JD	DRAWN JB	DATE 11/23	APPROVED (FOR COUNCIL USE ONLY)		SCALES	NORTH POINT	CITY OF WOLLONGONG	 DESIGN & TECHNICAL SERVICES Ph 02 42277111	PJ or TR No.		PJ-4642	A1	
				AZIMUTH MGA GDA20	FIELD BOOK	DESIGNED JB	DATE 01/24							SHEET 0 OF 5 SHEETS		ORIGINAL		
2	DETAILED DESIGN	JB	ET	01/24	RELATED PLANS			CHECKED ET						DATE 01/24	DRAWING No.		SHEET No.	ISSUE
1	CONCEPT DESIGN	JB	ET	11/23											7405		S00	
ISSUE		DESCRIPTION			DRAWN	APPR'D	DATE	DATE										

GENERAL

- G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS 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:
GEOTECHNICAL INVESTIGATION REPORT PREPARED BY WCC- GT23.287
SURVEY DRAWINGS PREPARED BY WCC
REF REPORT PREPARED BY WCC – REF 04074
FISHERIES PERMIT PN24/26
WHS SAFETY IN DESIGN REPORT
- 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 SITE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.
- G7. THE BUILDER SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS.
- G8. ALL SERVICE LOCATIONS ON PLANS ARE SCHEMATIC ONLY.
- G9. BUILDER TO DETERMINE AND/OR CONFIRM LOCATION AND DEPTH OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK. ENGINEER TO BE NOTIFIED.
- G10. 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.
- G11. REFERENCES TO SUPERINTENDENT OR PRINCIPAL SHALL BE TAKEN AS WCC REPRESENTATIVE.
- G12. BUILDER OR CONTRACTOR IS RESPONSIBLE FOR ENSURING WORKS ARE UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT STANDARDS.
- G13. REFERENCES TO BUILDER, SUPPLIER OR OTHER PARTIES INVOLVED IN CONSTRUCTION SHALL HAVE THE SAME MEANING AS CONTRACTOR.
- G14. 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.
- G15. A SECTION 138 APPLICATION AND APPROVAL IS REQUIRED PRIOR TO ANY OCCUPATION OF WCC ROAD. (IF OUTSIDE OF EXISTING DEFINED WORK AREA) THIS IS THE RESPONSIBILITY OF THE CONSTRUCTING AGENT.
- G16. THE CONTRACTOR IS TO PROVIDE WORK AS EXECUTED DRAWINGS AT THE COMPLETION OF WORKS. DRAWINGS TO BE PREPARED AND VERIFIED BY A REGISTERED SURVEYOR.

UNDERGROUND UTILITIES AND SERVICES

- U1. COUNCIL HAS IDENTIFIED EXISTING UNDERGROUND SERVICES & UTILITIES IN THE AREA. THE BUILDER SHALL IDENTIFY SERVICE LOCATIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE OCCURS TO THE UNDERGROUND SERVICES THROUGHOUT WORK UNDERTAKEN IN THE CONTRACT.
- U2. THE BUILDER SHALL POTHOLE AND LOCATE ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT ON SITE AND SHALL ENSURE THAT NO DAMAGE OCCURS TO THEM THROUGHOUT WORK UNDERTAKEN IN CONTRACT.

HOLD POINTS, APPROVALS & INSPECTIONS

THE CONTRACTOR SHALL PROVIDE TO THE WCC REPRESENTATIVE 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.

DIGITAL DATA DISCLAIMER

DIGITAL DATA CAN BE MADE AVAILABLE ON REQUEST.

PLEASE NOTE THAT DIGITAL DATA IS ISSUED FOR ASSISTANCE ONLY UNLESS SPECIFICALLY NOTED OTHERWISE. DIMENSIONS, CO-ORDINATES AND OTHER INFORMATION ON DRAWINGS TAKES PRECEDENCE. ALL SET-OUT POINTS ARE TO BE VERIFIED BY CONSULTANT AGAINST CONTRACT DOCUMENTATION AND USED AT CONTRACTORS RISK. WOLLONGONG CITY COUNCIL ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

DIGITAL DATA IS TO BE USED ON A PROJECT SPECIFIC BASIS. A DIGITAL DATA LICENCE IS TO BE SIGNED AND RETURNED TO WOLLONGONG CITY COUNCIL BEFORE ANY DIGITAL DATA IS ISSUED.

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.
- SW4. REFER TO SEDIMENT CONTROL DETAILS.

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 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. 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 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.
- ESM7. 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 S06-11 & S06-12.
- ESM8. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO S06-8 OR S06-9.
- ESM9. 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.
- ESM10. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
- ESM11. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO S06-14) 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.
- ESM12. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
- ESM13. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
- ESM14. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS AND PROVIDE SAFE ACCESS FOR PEDESTRIANS.
- ESM15. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
- ESM16. TRUCKS REMOVING EXCAVATED MATERIAL SHOULD TRAVEL ON DESIGNATED ROUTE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES (NO SEMITRAILERS).
- ESM17. 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.
- ESM18. SITE COMPOUND SHALL PROVIDE FOR ADMINISTRATION FACILITIES, TOILETS AND STORAGE AREAS SUFFICIENT FOR THE PROPOSED CONSTRUCTION OPERATION. THE COMPOUND SHALL BE FENCED AND SECURE.
- ESM19. 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.

- ESM21. 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.
- ESM22. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'.
- ESM23. SITE MANAGEMENT PLAN IS INDICATIVE ONLY BASED ON PRELIMINARY INFORMATION. THE FINAL SITE MANAGEMENT PLAN IS TO BE SUBMITTED AND APPROVED PRIOR TO UNDERTAKING ANY WORKS.

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 AND APPROVED BY WCC REPRESENTATIVE.
- KEEP ALL DOCUMENTS/RECORDS OF THE TRANSPORT AND USE OF MATERIAL IMPORTED ONTO SITE AND FORWARD COPIES TO THE WCC REPRESENTATIVE.

E3 WORKING WITHIN THE ROAD RESERVE

- 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, BRICK AND CERAMICS.
- IF THE EXCAVATED MATERIAL CONTAINS ANY WASTE THAT IS CLASSIFIED AS HAZARDOUS IT CANNOT BE REUSED WITHIN THE ROAD RESERVE.
- EXCAVATED MATERIAL THAT IS NOT CLASSIFIED AS HAZARDOUS CAN BE STORED AND RE-USED IN THE ROAD CORRIDOR.
- EXCAVATED PUBLIC ROAD MATERIAL CANNOT BE APPLIED TO PRIVATE LAND.

EARTHWORKS

- EW1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
- EW2. OVER FULL AREA OF EARTHWORKS. CLEAR VEGETATION, RUBBISH, ETC AND STRIP TOP SOIL. REMOVE FROM SITE, EXCEPT TOP SOIL FOR RE-USE.
- EW3. CUT AND FILL OVER THE SITE TO LEVELS REQUIRED.
- EW4. EXCAVATE AND REMOVE ANY SOFT SPOTS ENCOUNTERED OR AREAS WHERE EXISTING ROCK IS CONSIDERED LOWER QUALITY AND SUSCEPTIBLE TO CRACKING, FLAKING AND/OR WATER INTRUSION.
- EW5. FOR ON SITE FILLING AREAS, THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
- EW6. WHERE HARD ROCK IS EXPOSED IN THE EXCAVATED SUB-GRADE, THIS WILL BE INSPECTED AND A DECISION MADE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
- EW7. ALL FILL MATERIALS IMPORTED TO SITE MUST BE PRE-APPROVED FOR USE FROM APPROVED AND APPROPRIATELY LICENCED SUPPLIERS AND SUPPORTED BY ALL RELEVANT DOCUMENTATION.
- EW8. REFER GEOTECHNICAL ENGINEERS REPORT AS PREPARED BY WCC.
- EW9. THE ADEQUACY OF THE SUBGRADE SHALL BE DETERMINED ON SITE BY COUNCIL'S REPRESENTATIVE.

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. ROCKS USED IN THE CONSTRUCTION OF THE WORKS SHALL COMPRISE BASALT, MEETING THE FOLLOWING SPECIFICATION:
(i) ROCK SHALL BE ROUGH AND ANGULAR
(ii) ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2,600kg/m3
(iii) SATURATED POINT LOAD STRENGTH INDEX (IS50) GREATER THAN 15MPa

- AR3. THE DIAMETER AND GRADING OF THE ARMOUR ROCK USED IN THE WORKS SHALL BE AS FOLLOWS:

MINIMUM DIAMETER	0.7m
MEDIAN (50%ILE) DIAMETER	0.75m
MAXIMUM DIAMETER	0.8m

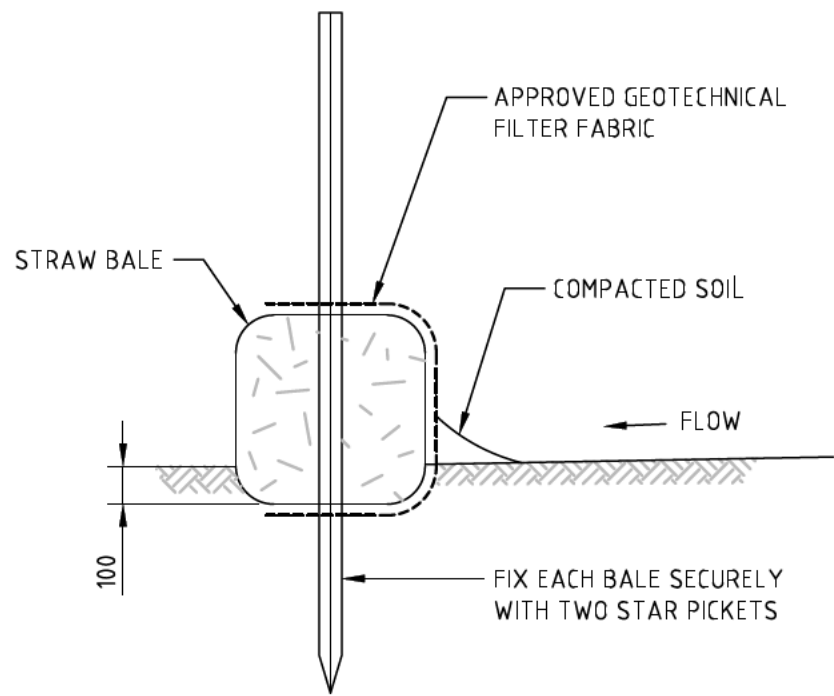
THE DIAMETER OF THE ROCK SHALL BE DEFINED AS THE AVERAGE OF THE MAXIMUM DIMENSION OF THE ROCK TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION. THE RATIO OF MAXIMUM TO MINIMUM DIMENSIONS OF ANY ROCK SHALL NOT EXCEED 2.5.

- 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.

SUGGESTED METHODOLOGY

- CM1. TRAFFIC AND PEDESTRIAN MANAGEMENT PLANS SHALL CONSIDER TRANSPORTATION OF ARMOUR ROCK FROM SUPPLY TO SITE, INCLUDING SIZE LIMITATION TO TRANSPORT VEHICLES THROUGH LOCAL STREETS AND LIMITING NUMBER OF VEHICLE MOVEMENT TO SITE IN ANY DAY. IMPLEMENT TRAFFIC AND PEDESTRIAN MANAGEMENT PLAN.
- CM2. LOCATE ALL UTILITY AND LOCAL SERVICES ON SITE PRIOR TO COMMENCING ANY EXCAVATION.
- CM3. SET UP SEDIMENTATION AND EROSION CONTROL MEASURES ON SITE. SILT BOOMS TO BE PLACED IN HACKING RIVER TO CAPTURE SEDIMENT DISTURBANCE.
- CM4. ARMOUR ROCK EMBANKMENT SHALL BE CONSTRUCTED IN SEQUENCE
(I) EXCAVATION SLUMP AND REGRADE EXISTING BANK
(II) COMPRESS ROCK MATTRESS INTO EMBANKMENT SUBSTRATA TO THE SATISFACTION OF WOLLONGONG CITY COUNCIL GEOTECHNICAL ENGINEER SIGN OFF.
(III) PLACE RIP RAP GEOTEXTILE AND ARMOUR ROCK UP TO AT LEAST RL 98.00 OR HIGHER.
(IV) COMPLETE ROCK ARMOUR TO TOP OF EMBANKMENT AND REPEAT STEPS FOR EXTENT OF EMBANKMENT COLLAPSE.
- CM5. PROTECT ALL EXISTING INFRASTRUCTURE AND RESTORE EMBANKMENT TO PRE-WORK LEVELS AND CONDITION.
- CM6. THE CONTRACTOR SHALL ENSURE SEDIMENT AND MATERIALS FROM CONSTRUCTION OF NEW STABILISATION WORKS ARE TO BE CONTAINED FROM ENTERING THE WATERWAY. CONTRACTOR TO MAKE DUE ALLOWANCE FOR THIS IN THEIR OFFER AND PROVIDE DETAILED METHODOLOGY AT TIME OF TENDER.

NOTE: MINIMISE EXPOSED / TRIMMED BANK AT ANY GIVEN TIME. i.e. UNDERTAKE WORKS SEQUENTIALLY. ENSURE AREA EXPOSED DO NOT EXCEED THE AMOUNT OF ROCK AVAILABLE ON SITE.



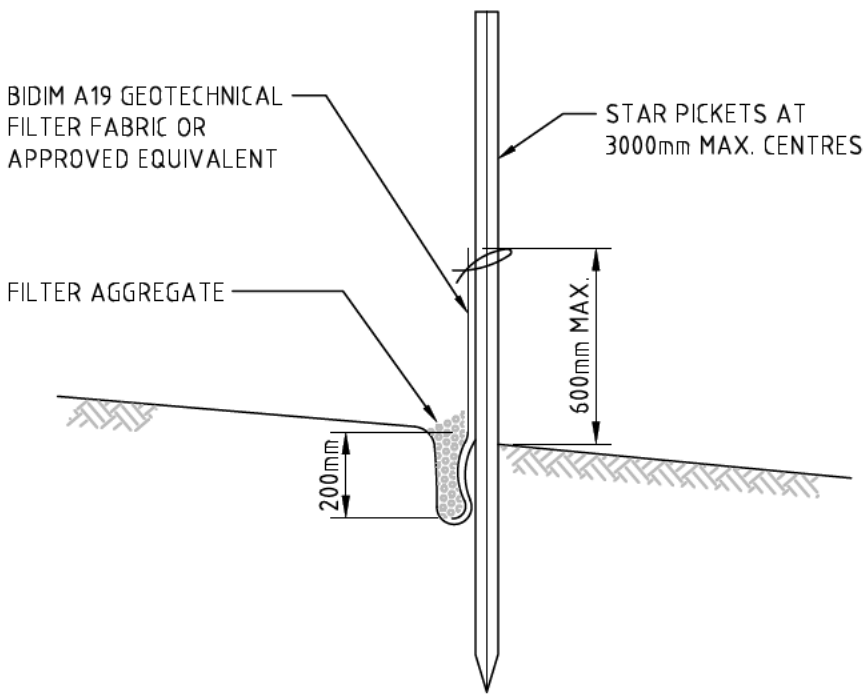
STRAW BALE SEDIMENT TRAP

NOT TO SCALE

STRAW BALE CONSTRUCTION NOTES

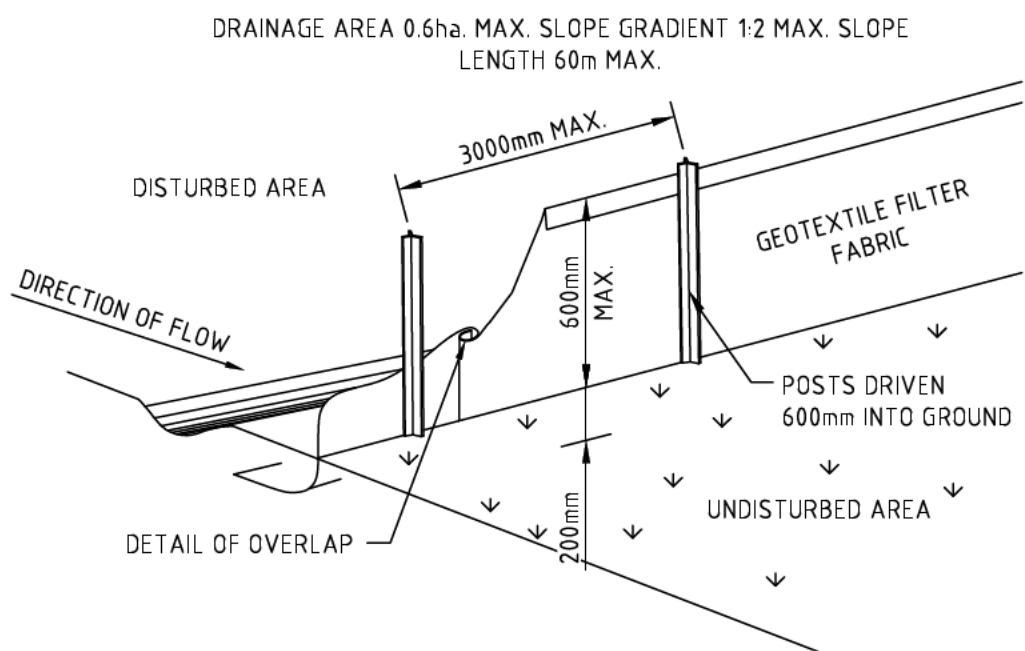
1. CONSTRUCT STRAW BALE FILTER AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE OR THE TOE OF A SLOPE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS TO BE PLACED PARRALEL TO GROUND.
3. MAXIMUM HEIGHT OF FILTER IS ONE BALE.
4. ON SOFT MATERIALS EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 12m STAR PICKETS. ANGLE THE FIRST STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE STAKES 600mm INTO THE GROUND AND FLUSH WITH THE TOP OF THE BALES.
5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER THE BALES SHOULD BE LOCATED 1.5 TO 2m DOWNSLOPE FROM THE TOE OF THE BATTER.

NOTE: REFER TO SHEET S02 FOR SEDIMENT CONTROL LOCATIONS



SILT FENCE BARRIER DETAIL

NOT TO SCALE



SEDIMENT (SILT) FENCE

NOT TO SCALE

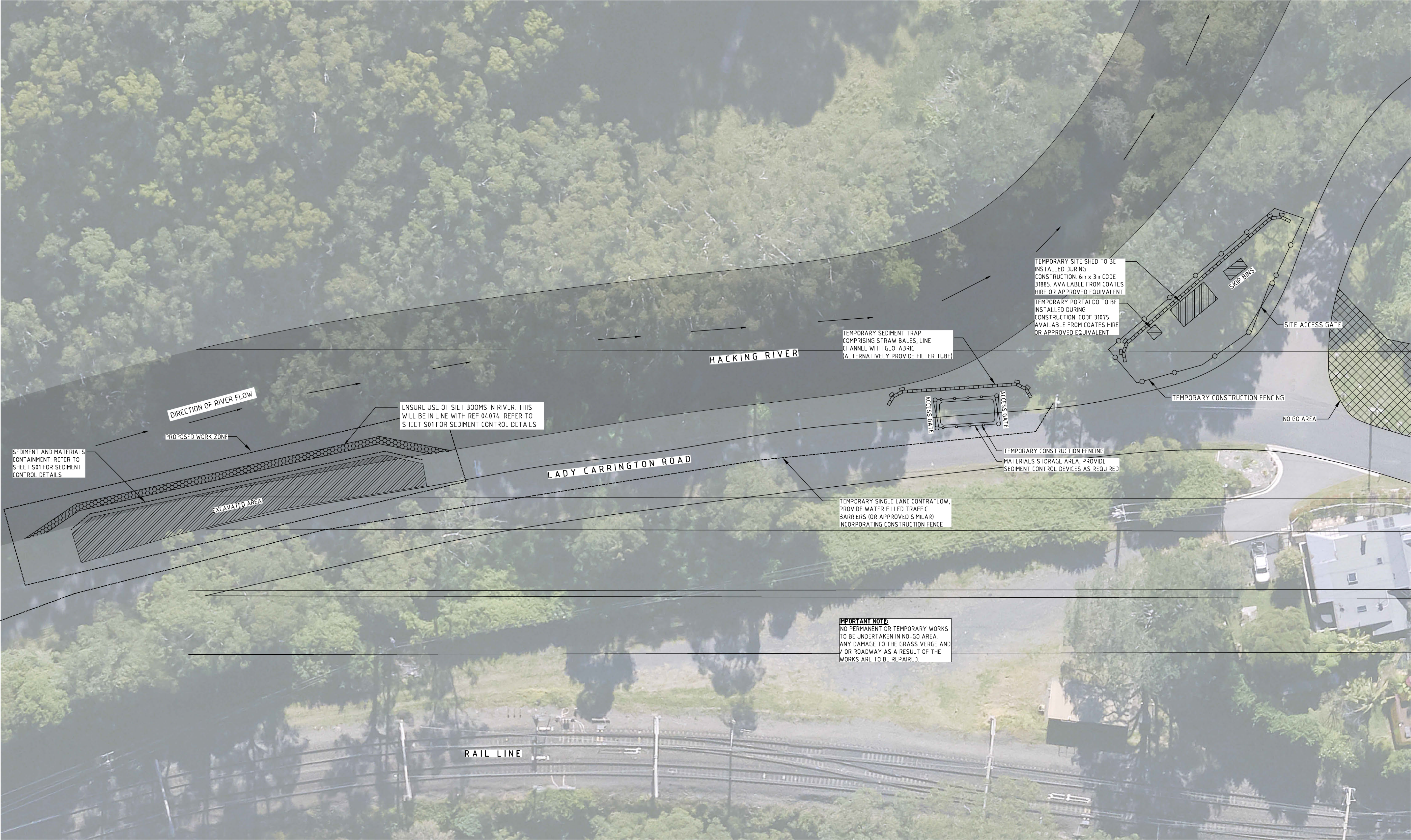
SEDIMENT FENCE CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 15m 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.

NOTE: REFER TO SHEET S02 FOR SEDIMENT CONTROL LOCATIONS

PRELIMINARY PLAN - NOT FOR CONSTRUCTION

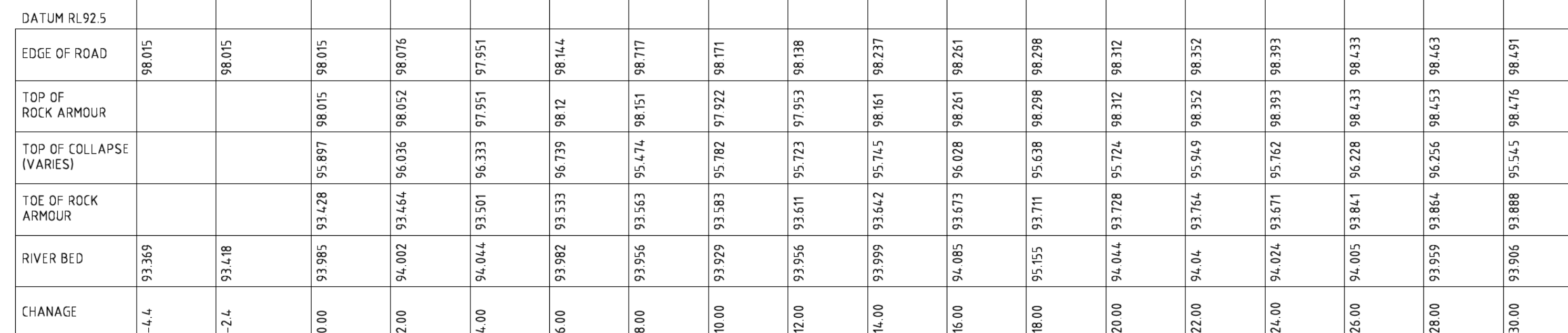
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								AZIMUTH MGA GDA20	FIELD BOOK	DESIGNED JB	DATE 01/24	SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL	7405_S01_2		AS NOTED		SCOUR PROTECTION LADY CARRINGTON ROAD OTFORD GENERAL NOTES SHEET		DESIGN & TECHNICAL SERVICES Ph 02 42277111	SHEET 1 OF 5 SHEETS	ORIGINAL									
2	DETAILED DESIGN			JB	ET	01/24	RELATED PLANS																		DRAWING No.	7405	SHEET No.	S01	ISSUE	2
1	CONCEPT DESIGN			JB	ET	11/23																								
ISSUE	DESCRIPTION				DRAWN	APPR'D	DATE			CHECKED ET	DATE 01/24	DATE																		



ESCP & SITE MANAGEMENT PLAN
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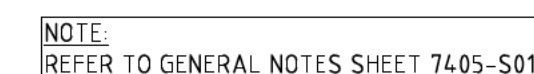
PRELIMINARY PLAN - NOT FOR CONSTRUCTION

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2	DETAILED DESIGN			AZIMUTH MGA GDA20	FIELD BOOK	DESIGNED JB	DATE 01/24							SHEET 2 OF 5 SHEETS		
1	CONCEPT DESIGN			RELATED PLANS		CHECKED ET	DATE 01/24							DRAWING No.	SHEET No.	
ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE										7405	S02	2



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

IMPORTANT NOTE:
WHEN WORKING NEAR 'LIVE' OVERHEAD ELECTRIC LINE(S) ENSURE ALL NECESSARY PRECAUTIONS AND SAFEGUARDS ARE UNDERTAKEN IN ADDITION TO COMPLIANCE WITH ALL LEGISLATIVE AND POWER UTILITY COMPANY REQUIREMENTS (INCLUDING ENDEAVOUR ENERGY PUBLICATION 'WHERE TO DRAW THE LINE ON SAFETY CLEARANCES FROM ELECTRICITY ASSETS - MAY 2023' AND SAFE WORK AUSTRALIA PUBLICATION 'CODE OF PRACTICE WORKING NEAR OVERHEAD POWER LINES 2006')



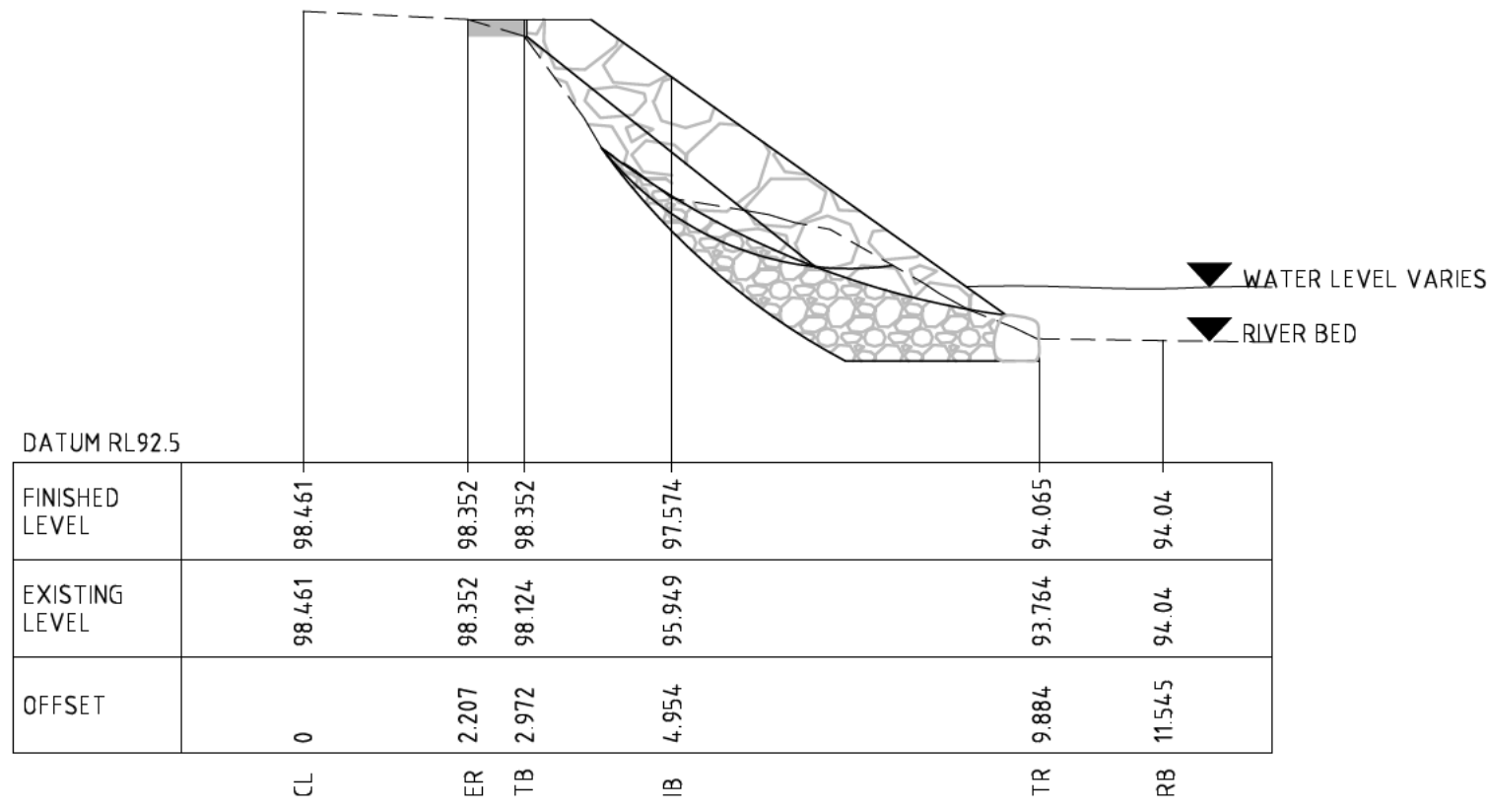
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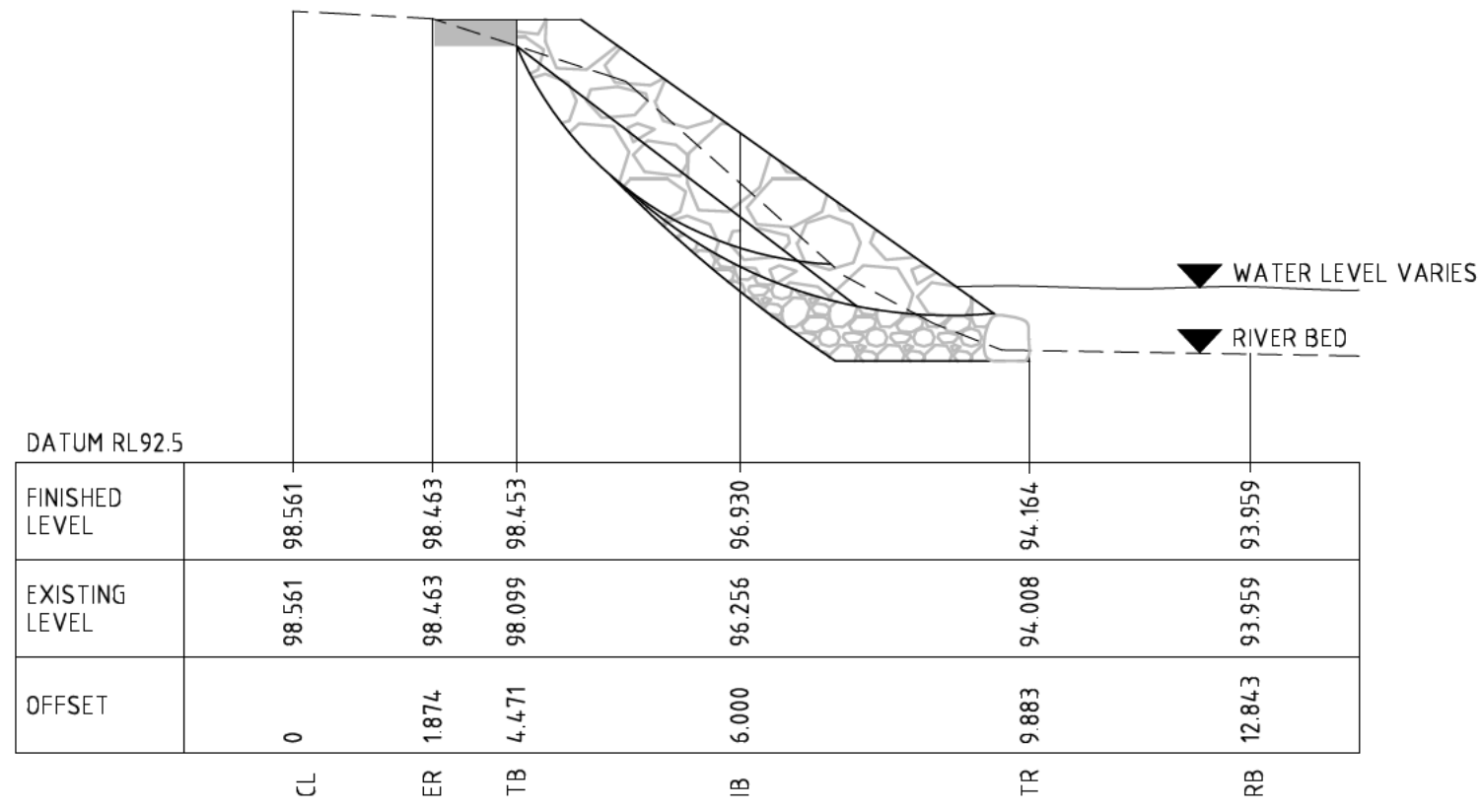


PRELIMINARY PLAN - NOT FOR CONSTRUCTION

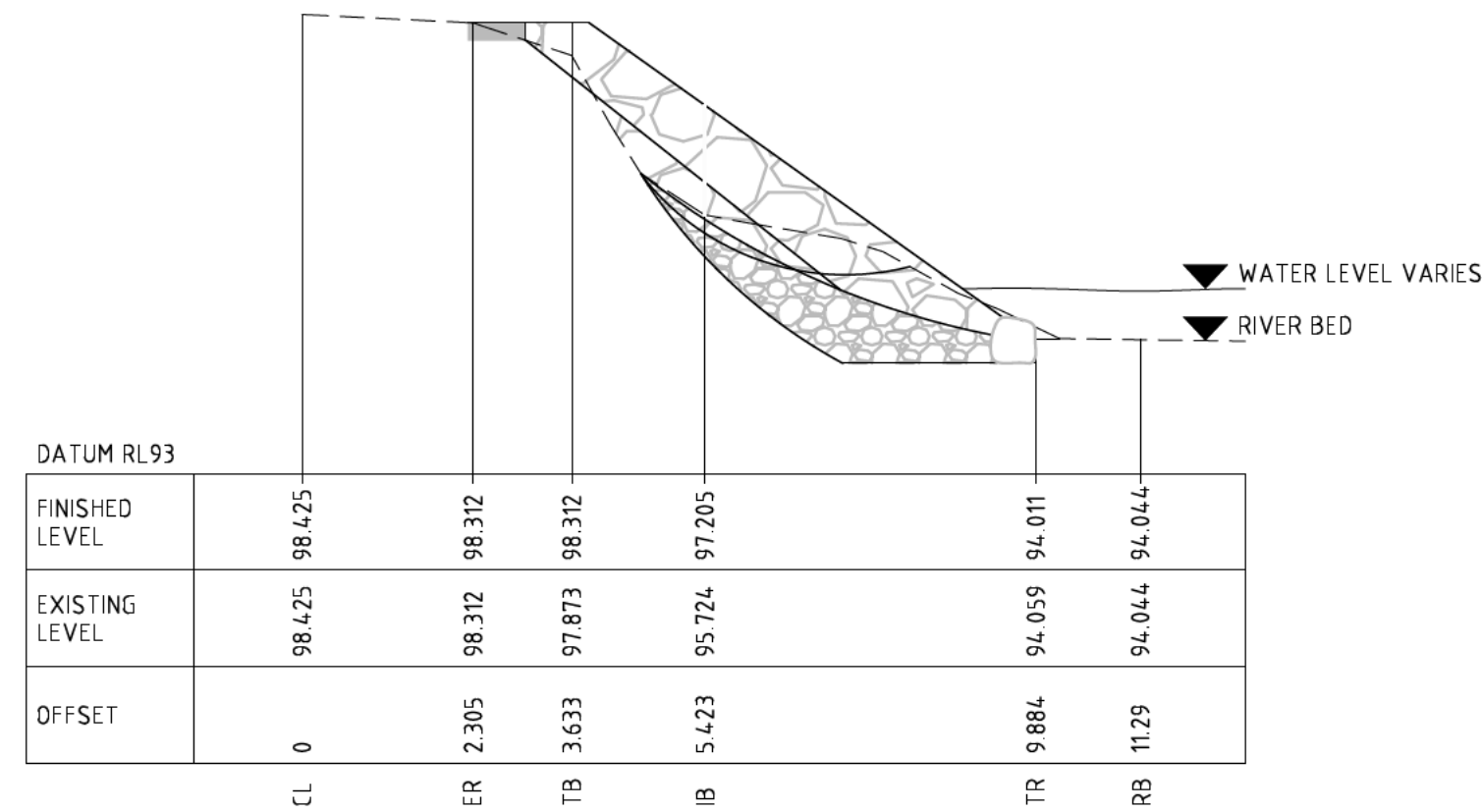
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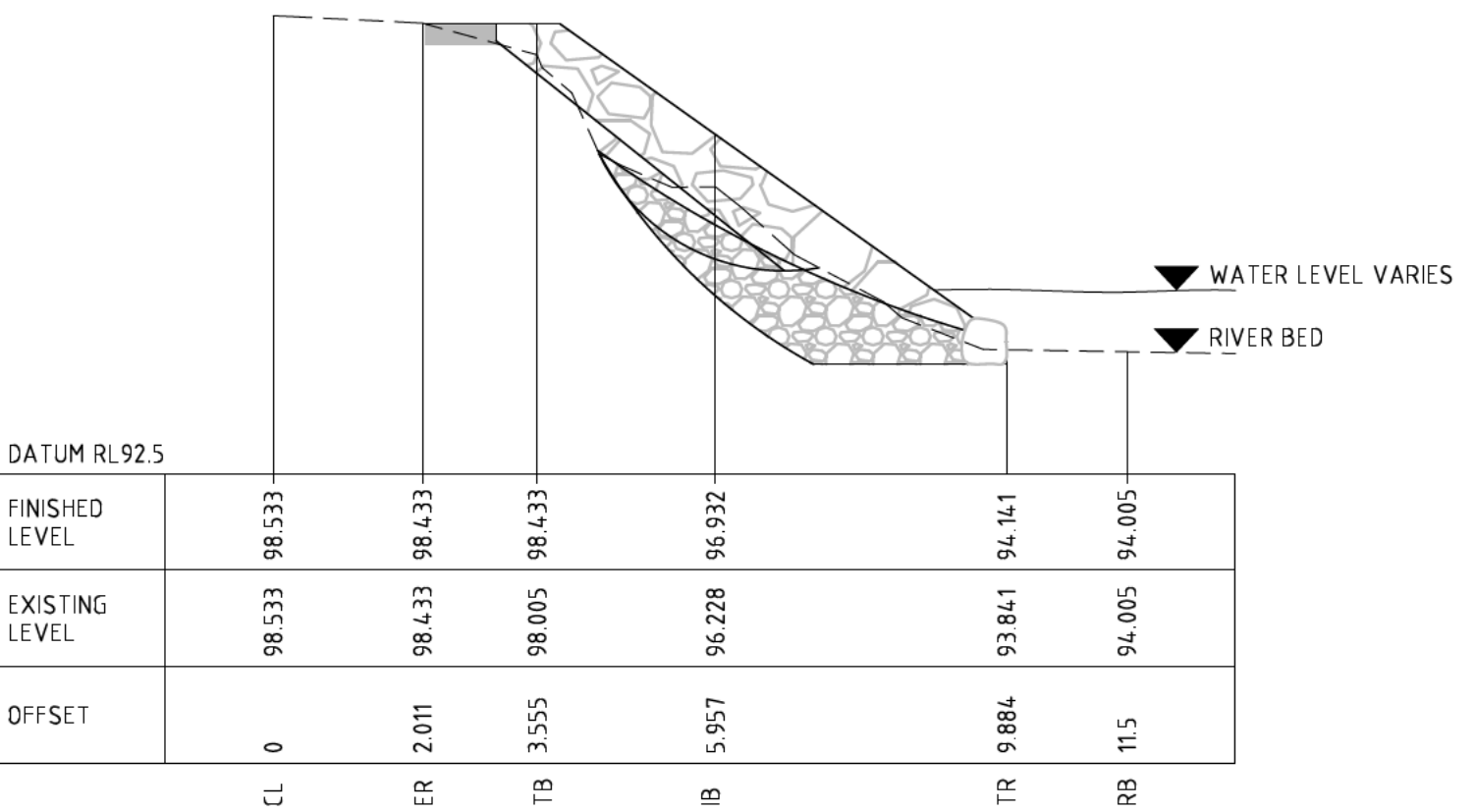
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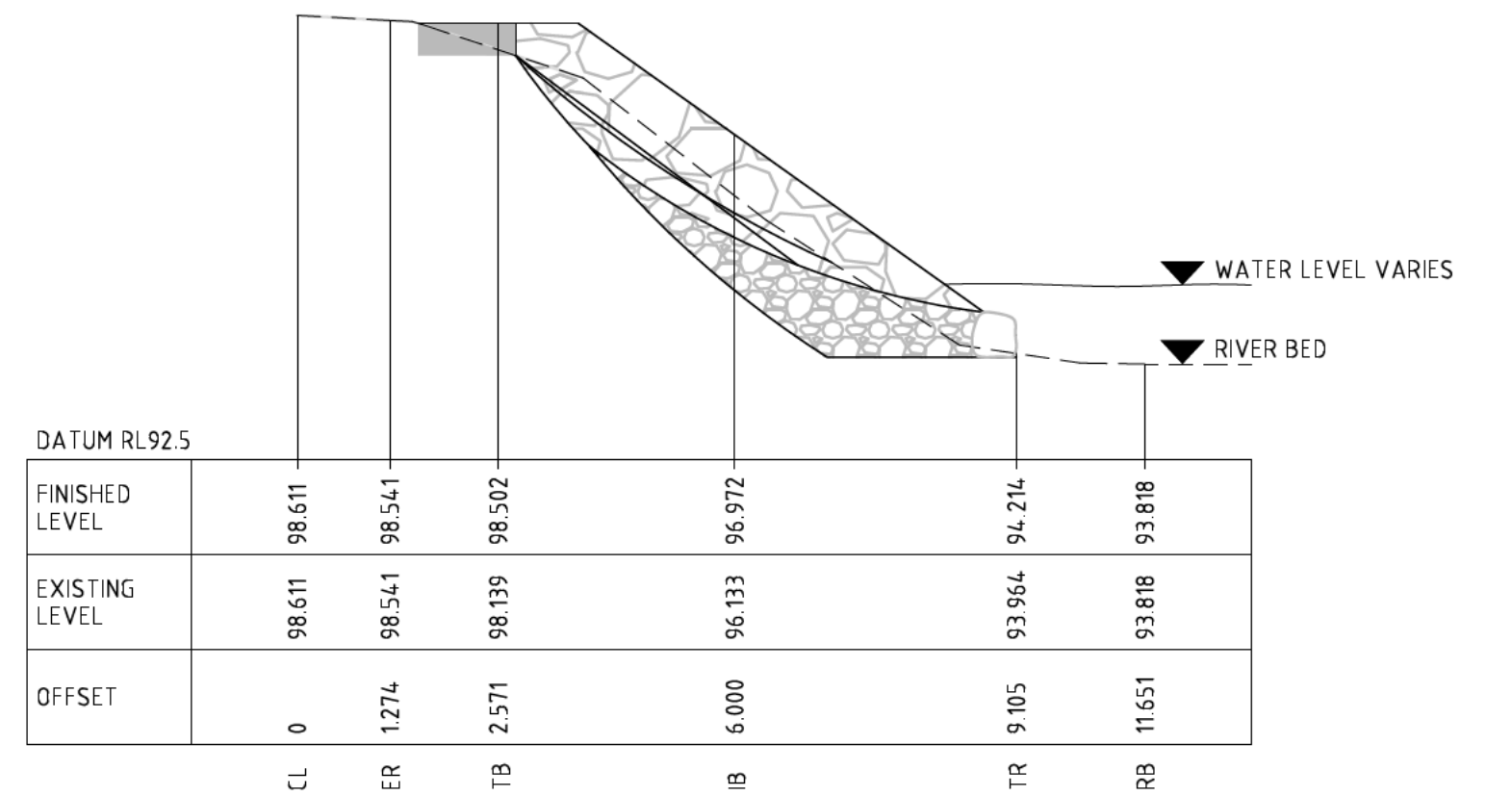
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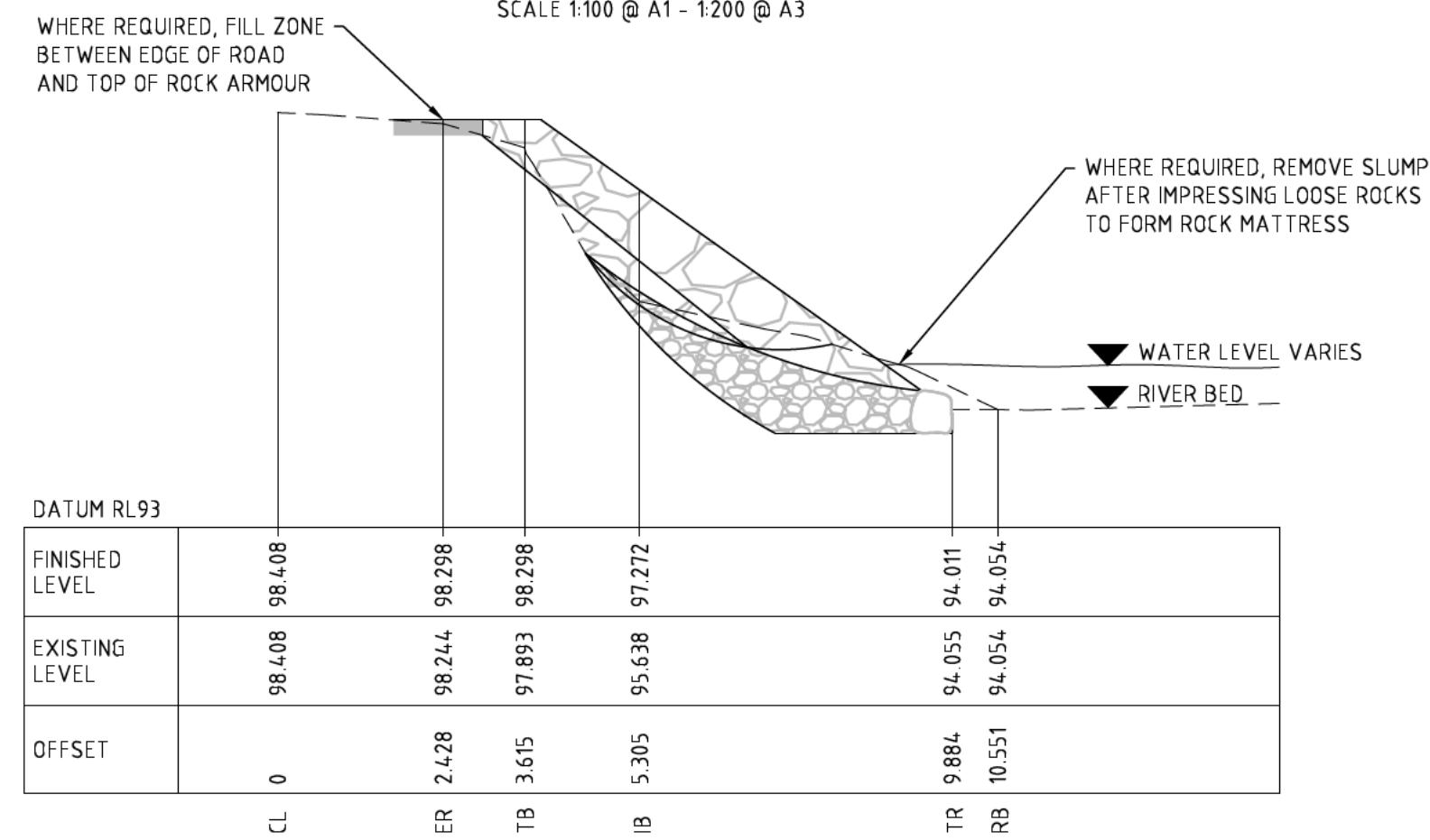
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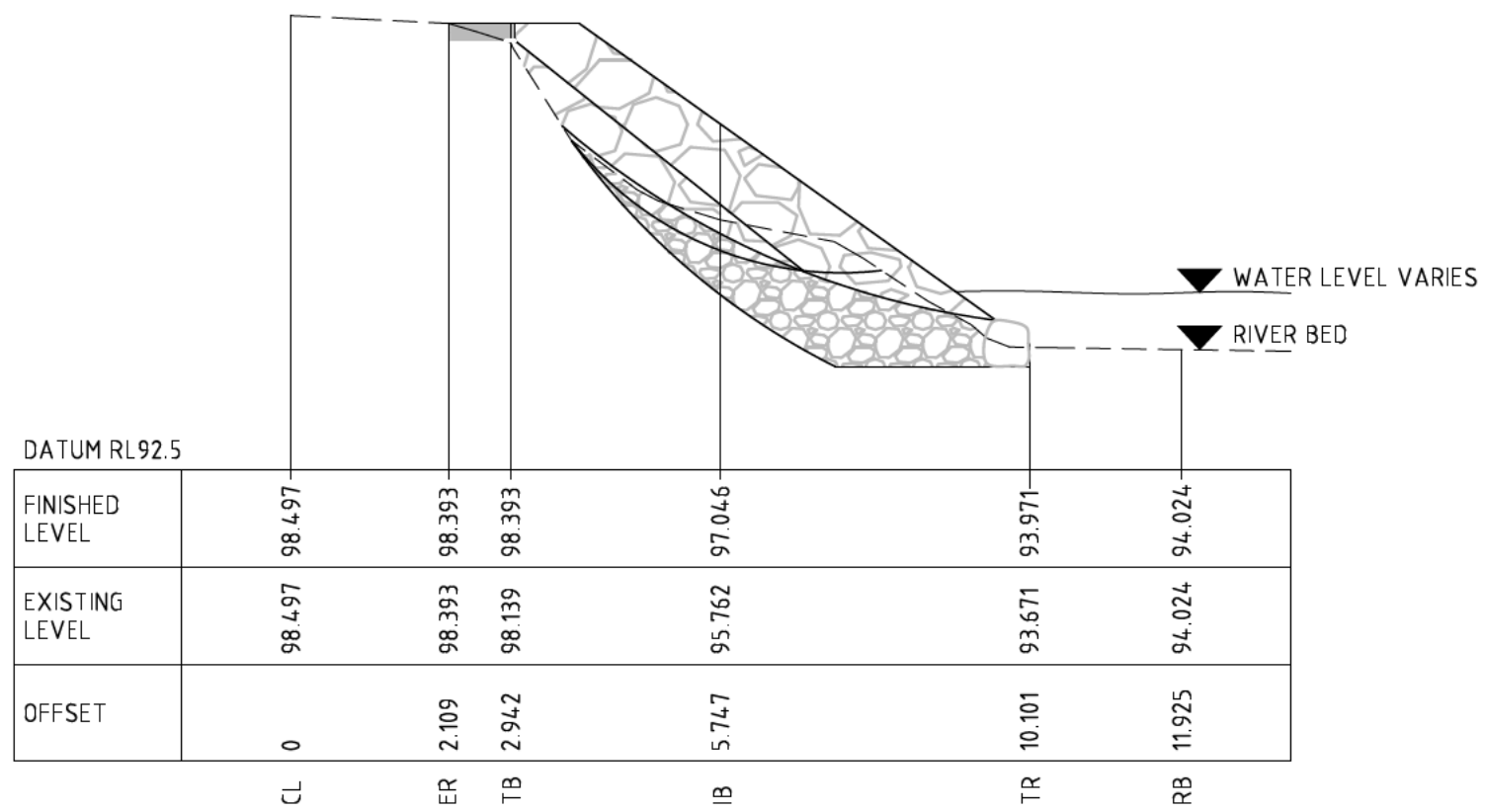
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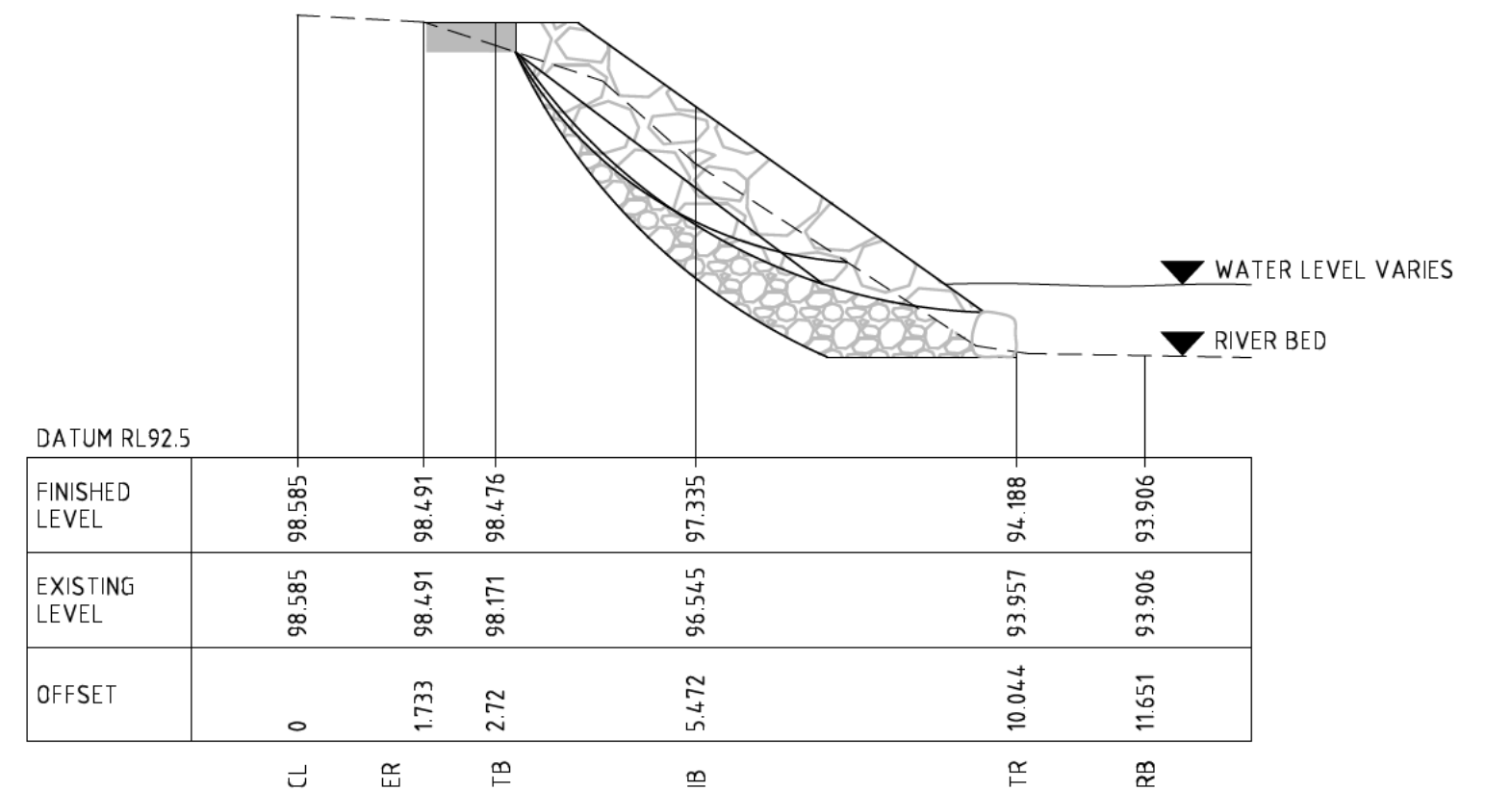
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CROSS SECTION - CHAINAGE 18.000
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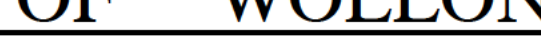

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CROSS SECTION - CHAINAGE 30.000
SCALE 1:100 @ A1 - 1:200 @ A3

ABBREVIATIONS
CL - CONTROL LINE
ER - EDGE OF ROAD
TB - TOP OF BANK
IB - INTERMEDIATE BANK
TR - TOE OF ROCK ARMOUR
RB - RIVER BED

PRELIMINARY PLAN - NOT FOR CONSTRUCTION

						DATUM AHD	SURVEYOR JD	DRAWN JB	DATE 11/23	APPROVED (FOR COUNCIL USE ONLY)		SCALES	NORTH POINT	CITY OF WOLLONGONG	 DESIGN & TECHNICAL SERVICES Ph 02 42277111	PJ or TR No. PJ-4642		A1	
						AZIMUTH MGA GDA20	FIELD BOOK	DESIGNED JB	DATE 01/24	SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL		SHEET 5 OF 5 SHEETS	AS NOTED			SCOUR PROTECTION LADY CARRINGTON ROAD OTFORD CROSS SECTION SHEET 2 OF 2	DRAWING No.	SHEET No.	ORIGINAL
2	DETAILED DESIGN							CHECKED ET	DATE 01/24	7405_S05_2									
1	CONCEPT DESIGN																		
ISSUE	DESCRIPTION					DRAWN	APPR'D	DATE										2	

Appendix F: Standard Operating Procedures-Unexpected Finds Protocols

Description of Work:	Unexpected Find Procedure – Council Owned Land/Worksites	
<p>This procedure has been developed to outline the process to be followed in the event that an unexpected find (hazard) is identified.</p> <p>Hazards that may be encountered could be Asbestos material, contaminated soils, or archaeology/heritage finds.</p> <p>In most cases the finds would occur during excavation operations on a worksite</p> <p>In some instances ACM may be left by MOP's or work its way up through the ground</p> <p>PPE REQUIRED –: <i>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</i></p> <div></div> <p>* If unexpected find is ACM</p> <p>Note: P2 masks not suitable if employee has a beard – prevents sealing</p> <p>SAFETY RULES</p> <ul style="list-style-type: none">▪ In event of unexpected find – cease work immediately▪ Isolate the worksite▪ Keep public away▪ Contact Supervisor/Coordinator	<p>Main Hazards:</p> <ul style="list-style-type: none">▪ Exposure to Contaminated soils (Asbestos Containing Materials (ACM), chemicals, Acid Sulphate)▪ Exposure to ACM or chemicals to public▪ Damage to archaeology/heritage artefacts	
<p>Permits: (associated with task)</p> <ul style="list-style-type: none">▪ Asbestos Removal Control Plan if asbestos material identified as Friable and is to be removed by licenced contractor	<p>Checklists: (associated with task)</p> <ul style="list-style-type: none">▪ Waste Classification Docket as reference	
<p>Team Training / Skills Required:</p> <ul style="list-style-type: none">▪ Asbestos Awareness▪ Waste Classification Docket▪ Collection and disposal of Asbestos Containing Material (ACM) under 10Sq mtrs (optional for nominated staff)	<p>References:</p> <ul style="list-style-type: none">▪ 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)	
<p>Relevant Documentation:</p> <p>Asbestos and Hazardous Materials Guidelines – Corporate</p> <p>Sampling materials request form</p> <p>Clearance certificate - Asbestos or Contaminated soils</p> <p>SOP Collection & Disposal of Bonded Asbestos Containing Material (ACM) under 10SQ mtrs</p>		

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)

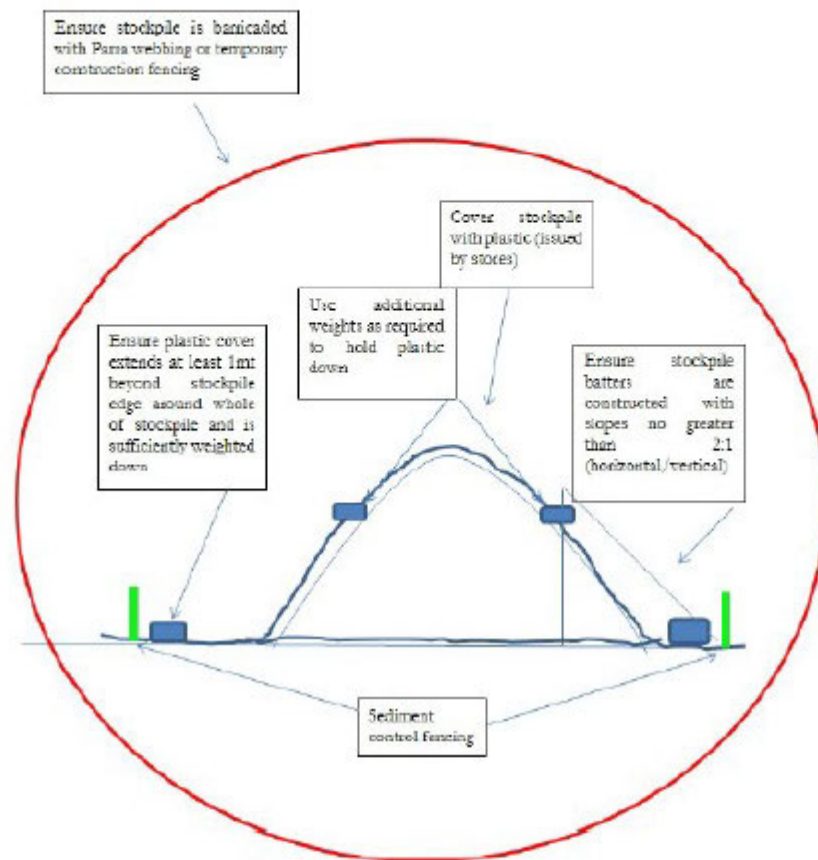


Archaeological & heritage finds



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 licensed contractor

Responsibility	Action	Documents (Output)
Worker/s	In the event of an unexpected find Stop work immediately	
Site Supervisor / Team Leader	Isolate the site using barriers or hazard tape	
	Contact supervisor to provide details of material	
	Determine corrective action based on material	
Team Leader and Crew	<p>ACM non-friable <10sq m</p> <p>Yes → Apply PPE and remove as per SOP Collection and Disposal of ACM <10sq m</p> <p>No →</p>	
Contractor/ Assessor	<p>ACM friable or non-friable >10sq m</p> <p>Yes → Contact buildings & facilities sustainability planner</p> <p>No →</p>	Action Plan
Contractor/ Assessor	<p>Contaminated soil</p> <p>Yes → Contact environment planning manager</p> <p>No →</p>	Action Plan
Contractor/ Assessor	<p>Archaeological / heritage artefact</p> <p>Yes → Contact heritage coordinator</p> <p>No →</p>	Action Plan
Project Manager / Co-ordinator	Update relevant documentation and Council management systems	

Appendix G: Fisheries Permit

PN24/62
15 February 2024

General Manager
Wollongong City Council
41 Burelli Street
WOLLONGONG NSW 2500

Attn: Louise Hickson

Re: Fisheries Permit PN24/62– Dredging and reclamation– bank protection works – Hacking River -
Lady Carrington Drive, Otford (Lot 7 DP 118520)

Dear Sir Madam,

I refer to your application dated 2 February 2024 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-edition>).

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 Agriculture

Permit under Part 7 of the
FISHERIES MANAGEMENT ACT 1994

Permit	Permit Number	PN24/62
	Expiry Date	Unless cancelled or suspended sooner, this permit shall remain in force until 15 February 2025
Permit Holder:	Wollongong City Council 41 Burelli St (Locked Bag 8821), Wollongong DC, NSW 2500 Contact person: Louise Hickson Phone: 4227 7352 Email: lhickson@wollongong.nsw.gov.au	
Permit Area:	Hacking River – Lady Carrington Road, Otford (Lot DP 1118520) (Refer to Attachment 1)	
Permit Activity:	Dredging and reclamation works in association with or in relation to bank protection 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 2 February 2024; plans for the works (Wollongong City Council, PJ-4642 Plan no 7405), and Review of Environmental Factors for the works (Wollongong City Council, REF04074). 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.

- 6) Where possible along the top of the rock revetment works Lomandra plants are to be planted to that they eventually form a continual vegetated edge along the edge of the bank protection works. This will form a vegetated filter to treat runoff from the road into the river.

Reason - To improve the health of the adjoining waterway as a result of these works.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN & OTHER PLANS

- 7) 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

- 8) 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 bank stabilisation works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.

In particular:

- a) Sediment fences are to be kept in place after work is complete. They are to be removed once the site has been stabilised and the risk of sediment movement is minimal.
- b) A floating sediment curtain is to be erected in a semi-circular arrangement with ends against the bank so as to enclose all drainage water that may wash towards water land from the worksite.
- c) On completion of works all disturbed soil is to be levelled and smoothed and sown with a mixture of sterile grass seeds to encourage rapid revegetation and planted out with native endemic riparian vegetation.

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

DEWATERING

- 9) The site shall not be dewatered unless a Dewatering Management Plan is prepared and approved by the contact officer. Any Dewatering Management Plan shall specifically consider any potential off-site impacts as a result of the dewatering operations and contain mitigation controls to effectively treat any discharge water to prevent off site pollution of any receiving waters.

Reason – Dewatering poses a significant risk to aquatic animals and needs to be carefully managed.

WORK IN WATERS

- 10) 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.

- 11) 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.

- 12) 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.

- 13) A floating boom and attached silt curtain that extends for the full depth of the water column is to be used to isolate the work site and minimise the impacts of turbidity and mobilised sediment during construction. The curtain is to be installed, prior to commencement of any instream works and retained until after the completion of works. The curtain is to be maintained to ensure it operates effectively.

Reason – Minimise the impact of the works and maintain fish passage at the site.

- 14) Geotextile fabric is to be used to isolate the natural bed of the waterway from any imported clean rock fill or other material used to create a work platform within the bed of the waterway.

Reason – Improve the ability to remove imported clean rock used in the rock platform.

TIMING OF WORKS FOR LOW FLOWS

- 15) Works are to be undertaken during low flows in the Hacking River (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

- 16) 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.

- 17) 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.

- 18) 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.

- 19) On completion of the works the site is to be rehabilitated and stabilised including:

- a) Surplus construction materials and temporary structures (other than silt fences and other erosion and sediment control devices) installed during the course of the works are to be removed.
- b) Disturbed areas are to be reseeded with grass and planted with endemic native species. Appropriate maintenance of erosion and sediment control devices is to be undertaken until the vegetation has successfully established and the site has stabilised.

Reason – To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.

FISH KILL CONTINGENCY

20) 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 Agriculture

15 February 2024

Attachment 1 – Location diagram of works authorised under PN24/62



**Permit No. PN24/62 issued under Part 7 of the
Fisheries Management Act 1994**

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN24/62 associated with bank protection works to be undertaken at
Hacking River - Lady Carrington Drive, Otford:

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: GLENN WHITTAKER - MANAGER PROJECT DELIVERY

Permit Holder's signature: Glenn Whittaker

Date: 29/2/24

**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. PN24/62 issued under Part 7 of the
*Fisheries Management Act 1994***

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN24/62 associated with bank protection works to be undertaken at
Hacking River - Lady Carrington Drive, Otford:

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. PN24/62 issued under Part 7 of the
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PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN24/62 associated with bank protection works to be undertaken at
Hacking River - Lady Carrington Drive, Otford:

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. PN24/62 issued under Part 7 of the
*Fisheries Management Act 1994***

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN24/62 associated with bank protection works to be undertaken at
Hacking River - Lady Carrington Drive, Otford:

Active Works Notification Form

(Note: to be completed and returned 3 – 5 working days before completion of works or before
machinery is 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