

QMS Fm 121

REVIEW OF ENVIRONMENTAL FACTORS: REF04299

CONCLUSIONS AND SIGN-OFF OF CULVERT REPAIRS AT KOLOONA AVENUE – STAGE 2 SCOUR REPAIRS

This report documents the outcomes of the Review of Environmental Factors (REF) undertaken for proposed works comprising of bank stabilisation at Charcoal Creek, Unanderra.

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.



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.

Preparation:	Louise Hickson	Review:	Jo Glynn
Position:	Environment Strategy Officer	Position:	Environment Strategy Officer
Signature:		Signature:	
Date:	24 February 2025	Date:	

Client accepts that this document 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):

Review of Environmental Factors
REF04299

Name:	Ann Rojanawisut	Name:	
Position:	<i>Project Coordinator</i>	Position:	<i>Designer Coordinator/Manager</i>
Signature		Signature:	
Date		Date:	

Construction certifies that the project will be carried out in accordance with this 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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1. INTRODUCTION

As the proposed is exempt development, the environmental impacts have been considered and an 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	Koloona Avenue Culvert Stage 2 Repairs and Embankment Works
Location	<p>Road Reserve Private land – Lot 160 DP211062, 87 Koloona Avenue, Mount Keira Vacant land – Lot 15 DP225368</p> 
Land Ownership	Wollongong City Council
Land Classification	Community Land, Road Reserve & Private Land (owner's consent received)
Project Description	<ul style="list-style-type: none"> Reinstate embankment and apron due to April flood disaster on downstream (eastern) side of Koloona Avenue bridge. Use of sandstone rocks with geotextile and install rock cushion apron at the downstream side of culverts. Reinstate southern embankment (in green below) – 13m long x 4m high of embankment with 0.5-1.0m deep excavation to clear loose material around the embankment toe. Scour repairs to downstream apron (in purple and blue below) – 14m long x 10m wide x 0.5-1.0m deep excavation to clear deposited rock and sand. To be completed in half sections to avoid blocking fish passage. Blockage is 50% of the fish passage area at any one time. Use of sandbag walls at upstream and downstream sides. Five tonne excavator will be used in the watercourse for rock apron and rock embankment works. Temporary access ramp as shown in pink in the ESCP.

- Sediment control fence for half blockage of fish passage.
- Construction time frame will be 2 weeks for 1st half rock apron, 2 weeks for 2nd half rock apron. The total for all works will be a maximum of 6 weeks.
- Removal of two Casuarina glauca trees in poor health and compromising the structural integrity of the bank.



Proposed Start Date & Work Period	2025
Work Equipment & Machinery	Hand tools for excavation, concrete mix, galvanised handrails, fasteners, signage, hand tools
Proposed work hours	Between 7.00 am and 6.00 pm Monday to Friday 8.00am and 1.00pm Saturday (Refer to Safeguards section)

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
Environmental Awareness	
<ul style="list-style-type: none"> ▪ The work crew or contractor must have a copy of this document in the site truck and be fully aware of the 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. ▪ Check the location of power lines with “Look Up and Live’ app to reduce the risk of injury or death by utilising the free power line safety planning tool. ▪ 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 and provide feedback on ways to improve work practices. 	
Erosion & Sediment Control	
<p>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.</p> <p>Soil erosion and sediment control should be undertaken in line with <i>Managing Urban Stormwater: Soils and construction - Volume 1, 4th edition</i>. 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.</p> <p>The basic principles of erosion and sediment control are summarised below:</p> <ul style="list-style-type: none"> ▪ 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. 	
Hazardous Materials	
N/A	
Flora & Fauna	
<ul style="list-style-type: none"> ▪ 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.

Fish Habitat – refer to conditions in Fisheries Permit (to be obtained)

- 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.

Tree Protection

- Refer to the **Tree Protection Plan/Procedure** at Appendix B and/or below (and any arborist report) to prevent tree trunk and root damage. 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 & Arborist Advice

Indicative work area in red

Indicative tree protection zones in green

Indicative tree removal in red



From: Michael Dellapina <MDellapina@wollongong.nsw.gov.au>
Sent: Monday, 17 February 2025 12:24 PM
To: Ann Rojanawisut <arojanawisut@wollongong.nsw.gov.au>
Cc: Emil Toussis <etoussis@wollongong.nsw.gov.au>
Subject: RE: Koloona Ave Culvert (TR-1243)- Stage 2 - Scour repairs - Tree removal

Hi Ann,

As requested, please see attached Arborist recommendation for the removal of two council trees, at minimum four suitable local native tree species to be planted within the adjacent council land. Please contact me in regarding replacement planting location and tree species, do I use WO3044326 to purchase and arrange council landscape crew to undertake the planting of the trees?

Below image shows tree locations.



Kind Regards



Michael Dellapina | Arborist Public Tree Management
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We acknowledge the Traditional Custodians of the land on which our city is built, the Aboriginal people of Dharawal Country. We recognise and appreciate their deep connection to this land, waters and the greater community.



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 preferred to be located on hard-stand areas.
- Refer to the Tree Protection Plan for specific access requirements into the park.

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

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 **for any material that needs to be removed from the site:**

- After any necessary 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.

<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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 are exempt 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.

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:

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:

The low impact works are not likely to impact on any of the matters identified, therefore no significance assessments were undertaken for these works and no referral to the Commonwealth Department of the Environment is required.

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

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

Byarong Creek is mapped as Key Fish Habitat for the purposes of the Fisheries Management Act 1994. The proposed activity would involve dredging and reclamation which is regulated under Part 7 Division 3 of the Act and will require a Section 200 Permit to be issued by the NSW Department of Primary Industries (Fisheries) before any work can commence.

Section 200 Circumstances in which a local government authority may carry out dredging or reclamation

(1) A local government authority must not carry out [dredging work](#) or [reclamation work](#) except under the authority of a permit issued by the Minister.

(2) This section does not apply to--

(a) work authorised under the [Crown Land Management Act 2016](#), or

(b) work authorised by a relevant [public authority](#) (other than a local government authority).

(3) This section has effect irrespective of any other Act to the contrary.

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.

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

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

5. ENVIRONMENTAL IMPACTS


The following table has been completed following an interrogation of Council's IntraMaps system.


ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Have any environmental impact on a community?	Low	Some nearby community members (particularly residents of Koloona Avenue) may be affected by temporary noise and increased traffic flow, however the proposed activity will benefit the community beyond construction by providing stability to the creek and reassurance that future flood events will not impact on residential or road assets. No other services such as power, water, sewerage, waste etc will be impacted.
Cause any transformation of a locality?	Low	The locality will not change however the proposed activity would make improvements to repair damage caused by previous flood events and provide protection for future events.
Have any environmental impact on the ecosystem of the locality?	Low	No significant habitat features or food resources would be impacted or removed as part of the proposed works. Aquatic ecosystems are not likely to be affected by the proposed activity. Safeguards (Section 3) are in place to reduce the risk of impacts. Further assessments (Appendix C) concluded that the proposed activity would not have a significant impact upon threatened species or endangered ecological communities.
Cause any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Low	In the context of the locality, the visual impact of the activity would be minimal. The proposed activity is an extension to the altered environment, i.e. existing sheet piling works. There would be minimal removal of vegetation. The area affected by the proposed activity has no significant value in terms of science or other environmental qualities. Safeguards in Section 3 reduce the risks beyond the immediate footprint.
Have any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical,	Low	The site of the proposed activity has no significant aesthetic, anthropological, architectural, cultural, historical, scientific or social values. The site does


ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
scientific or social significance or other special value for present or future generations?		not contain any known European or Aboriginal Heritage and as such no further assessments or approvals are required. Safeguards in Section 3 are in place for any unexpected finds.
Have any impact on the habitat of protected animals (within the meaning of the Biodiversity Conservation Act 2016)?	Low	No known fauna habitat will be removed by the activity. The proposed activity would not have a significant impact upon threatened fauna (concluded by further assessments in Appendix C). Safeguards in Section 3 would mitigate indirect impacts to fauna and habitat.
Cause any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Low	There are no species likely to rely on the site of the proposed works to the extent that the proposed works would put them further in danger. Safeguards in Section 3 would minimise the risk of impact on resident fauna, fish, and flora.
Have any long-term effects on the environment?	Low	Proposed works are short-term and the noise generated will occur during normal working hours. The proposed activity would not use hazardous substances or chemicals which may cause cumulative impacts on the environment. Safeguards in Section 3 are in place to minimise short and long-term impacts.
Have any degradation of the quality of the environment?	Low	The proposed activity aims to improve the quality of the environment by reducing ongoing erosion caused by flooding. It is unlikely to trigger any long-term impacts through the input of sediment, contamination, weed dispersal, or introduction of feral animals. Safeguards in Section 3 are in place to mitigate impacts to the environment
Cause any risk to the safety of the environment?	Low	The activity has been proposed to reduce the risk to adjacent residential assets from flood events and to increase safety for community members who use or transit through the reserve.
Cause any reduction in the range of beneficial uses of the environment?	Low	The use of the site will remain unchanged.
Cause any pollution of the environment?	Medium	The proposal would involve a short-term increase in noise during the

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
		construction due to the use of machinery. Safeguards in Section 3 address sediment and erosion control, water and air pollution, spillages, dust, odours and vibration. The proposal does not involve the use, storage or transportation of hazardous substances. Acid Sulfate Soils have not been identified at this site however excavated material will be tested before leaving the site.
Have any environmental problems associated with the disposal of waste?	Low	The excavated material shall be tested and disposed of according to the relevant waste classification.
Cause any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Low	The resources used would not be considered significant or likely to increase demands on current resources such that they would become in short supply.
Have any cumulative environmental effect with other existing or likely future activities?	Low	Safeguards in Section 3 will be implemented to minimise the risk of cumulative environmental effects. There is no further construction activities proposed for this location.
Have any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Low	The proposed activity would have no effect on coastal processes including those projected under climate change conditions.
Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act?	Low	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>
Include any other relevant environmental factors?	N/A	See below
Heritage		
Is there any Aboriginal Heritage within or close proximity to the worksite? (Refer to AHIMS)		No - refer to AHIMS in Appendix A

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
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	Overall impact – LOW	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 implemented
Water Quality/Erosion & Sedimentation/Demand on Resources/Waste Disposal		
Are the works likely to disturb any acid sulfate soils listed on the Current LEP?	Overall impact – LOW	No
Are the works to be conducted within 40m of watercourses or any other type of natural water body?		Yes – within 40m of a category 3 riparian corridor. Safeguards in Section 3 (specifically Erosion & Sediment Control and Water Quality) need to be implemented and adhered to.
Will the works result in changes to water flow in any way?		No
Are the works within a flood affected zone?		Yes - the proposal does not represent an increased risk to life or property in regard to flooding.
Do the works involve the use or storage within the work areas of fuels or other chemicals (other than fuels contained within the work vehicles)?		Unknown – refer to safeguards in Section 3
Will the works create areas of unprotected soil or loose surface for more than 24 hours?		No
Could the works result in disturbance of contaminated land or contaminated material listed under WCC IntraMaps?		A desktop audit via Council’s land information system does not indicate previous uses or constraints that give rise to concerns or the need for further

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
		investigation regarding land contamination. Refer to safeguards in Section 3 for any unexpected finds.
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		No
Are the works mapped within the Coastal Zone as Geotechnical risk? 		No
Are the works subject to the <i>Wollongong Coastal Zone Management Plan 2017</i> ?		CZMP no longer in force – expired 31/12/2023.
Flora & Fauna/Tree Protection/Access/Community Environmental Impacts		
Is any vegetation required to be removed?	Overall impact – LOW	Yes – removal of two <i>Casuarina glauca</i> (Grey She-oak) trees in poor health. Refer to Arborist advice and Tree Reports in Appendix B. Minimum offset planting 2:1 (4 trees) with suitable local native tree species to be planted within the adjacent council land.
Is SEPP (Biodiversity and Conservation) 2021 applicable? State Environmental Planning Policy (Biodiversity and Conservation) 2021 - NSW Legislation Chapters 3 and 4 do not relate to ‘Activities’. Chapter 6 – Water catchments		No Wollongong LGA is mapped under the Koala Management Area; however, there are no koala habitat or feed trees for removal. As such, no assessment for koalas under the EPBC Act is required. The site is not within the Sydney Water Catchment area.
Is the area within a Vegetation Community identified in NP-PCT Vegetation Layer under WCC IntraMaps Constraints? https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/nsw-plant-community-type-classification		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?		No
Is the area within a Habitat Model in WCC IntraMaps Constraints?		Yes – Golden-crowned Snake, Powerful Owl Refer to Assessment in Appendix C which concluded no adverse impacts are expected provided safeguards in Section 3 are implemented and adhered to.
Do the works occur within Key Fish Habitat? Refer to Threatened Fish Species List .		Yes – A Fisheries Permit must be obtained before works can commence. All conditions of the Section 200 Permit must be included in the Construction Environmental Management Plan (CEMP). Refer to safeguards in Section 3. 
Are the works to be conducted within a Natural Area Asset? (Refer to the WCC IntraMaps Environmental Restoration layer)		Yes – Natural Area ID196 Riparian. Natural Areas team are to be advised on tree removal and any revegetation works.
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?		Yes – Byarong Creek Bush Restoration and Weed Tree Removal project
Is the worksite listed as Bushfire Prone Land under the WCC IntraMaps Planning DCP layer? Planning for Bush Fire Protection (nsw.gov.au) CMR1493-Bush-Fire-Environmental-Assessment-Code.pdf (nsw.gov.au) - fire trails etc		No
Are there any Endangered Ecological Communities or potential habitat for threatened species as listed on the Planning		No - however works are adjacent to EEC MU13 Possibly Illawarra and

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
DCP layer or on the BC Act BioNet or the EPBC Act SPRAT on or adjacent to the work site?		<p>South Coast Lowland Forest and Woodland</p> <p>Refer to Appendix C which concluded no adverse impacts are expected provided safeguards are implemented and adhered to.</p> 
Amenity / Noise		
Are the works located on land identified as Community Land, on the WCC IntraMaps LEP Community Land Maps?	Overall impact – LOW	Yes – SiteID 186 Park (Koloona Avenue Reserve)
Will the works cause excess noise?		No
Are the works within the coastal management areas defined by SEPP (Resilience and Hazards) 2021?		No
Does the works fall under SEPP (Transport and Infrastructure) 2021?		Yes

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 : REF04261

Client Service ID : 928864

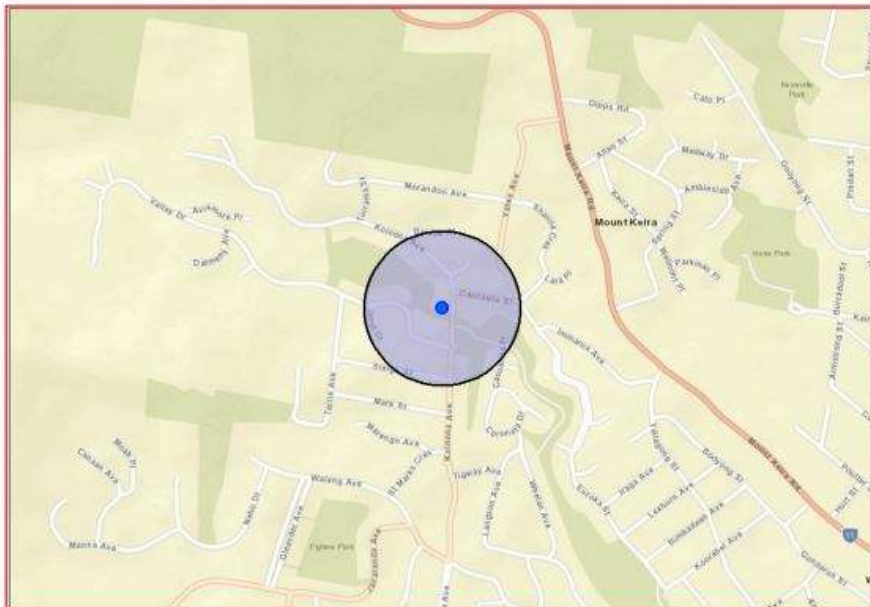
Wollongong City Council
Locked Bag 8821
Wollongong DC New South Wales 2500
Attention: Louise Hickson
Email: lhickson@wollongong.nsw.gov.au

Date: 09 September 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 84 KOLOONA AVENUE MOUNT KEIRA 2500 with a Buffer of 200 meters, conducted by Louise Hickson on 09 September 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.

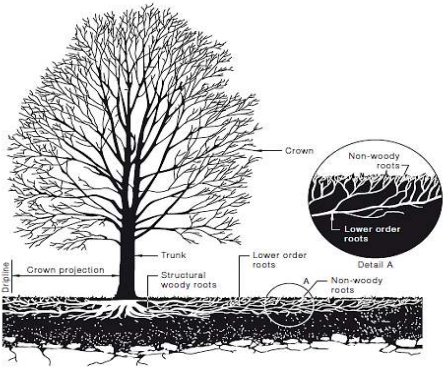
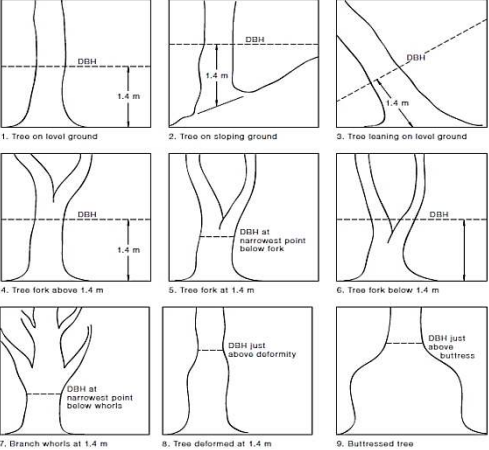
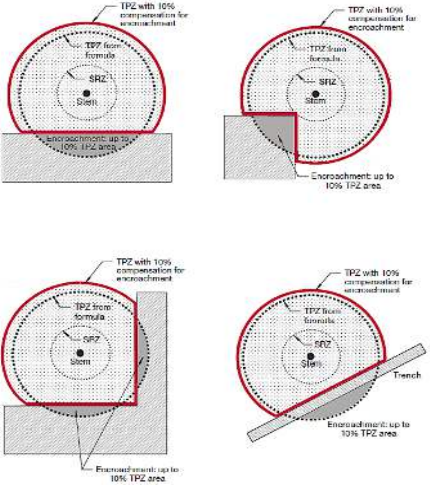


A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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>1. Tree on level ground 2. Tree on sloping ground 3. Tree leaning on level ground 4. Tree fork above 1.4 m 5. Tree fork at 1.4 m 6. Tree fork below 1.4 m 7. Branch whorls at 1.4 m 8. Tree deformed at 1.4 m 9. Buttressed tree</p>	<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>TPZ with 10% compensation for encroachment TPZ with 10% compensation for encroachment TPZ with 10% compensation for encroachment TPZ with 10% compensation for encroachment</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 = $(D \times 50)0.42 \times 0.64$ (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>

Tree

Primary ID:	63276
Asset ID:	
Status:	Removal/Replanting
Common Name:	Grey She-oak
Botanical Name:	Casuarina glauca
Origin:	
Code:	CAGL11
Family:	Casuarinaceae
Genus:	Casuarina
Cultivar:	
Number of Stems:	1
DBH [in]:	22
DBH [cm]:	55
DBH [cm] Stem 1:	
DBH [cm] Stem 2:	
DBH [cm] Stem 3:	
DBH [cm] Stem 4:	
DBH [cm] Stem 5:	
DBH [cm] Stem 6:	
DBH Range:	46-60cm
Tree Height (Estimated) [m]:	16
Height Range:	10-20 Metres
Width:	8
Health:	Poor
Useful Life Expectancy:	5-9 years
Condition (Leaf):	Fair
Canopy Structure:	Poor
Age Class:	Mature
Homewood ID:	
Observations:	twoundpreviousfailure, cwoundpreviousfailure, cincludedbark, cdeadwood, ccdominant, Previous Branch Failures, Weak

Photos



WIN_20250212_07_44_27_Pro.jpg
12/02/2025

	Branch Attachment, Vines
Tree Comments:	Remove tree, at minimum 2 x local native replacements to be planted in adjacent council land/reserve. Tree present poor vitality and structure with several previous 1st order branch failures. Multiple sucker growth 10mm to 200mm diam. emanating from basal root damage extending out to 1m radius. Vine growing throughout crown. Three previous 1st order codominant and included branch failures at branch attachments up to 300mm diam. at 2.1m, 3m and 10m.
Stock Type:	
City Managed:	True
Botanic Gardens ID:	1
Crown Light Exposure:	
Archived:	No
null:	
New Data Field:	
Has Ecobenefits:	No

Location	
Address:	Vacant Land - Koloona Avenue FIGTREE
Address Number:	
Address Street:	
Street Planted:	
Suburb:	
Postcode:	
Organization:	Wollongong City Council
City:	Figtree
Tree Type:	Park
Growing Space:	



WIN_20250212_07_44_45_Pro.jpg
12/02/2025

Land Use:	Park/ Vacant/ Other
Location on Site:	
Planting Site Width:	
Pit Size:	
Park Name:	
Longitude:	150.85563870933
Latitude:	-34.418137372939
Easting:	
Northing:	

Management	
Verified?:	
Tree Works:	Remove
Works Priority:	Moderate
Maintenance Comments:	
Clearance Conflicts:	
Wires:	
Landscape Significance Rating Method:	
Name of Landscape Significance rating method (if other):	
Landscape Significance Rating:	
Retention Value:	
Percent Dieback (%):	
Watch This Tree? :	No
User:	mdellapina
Last Modified:	17/02/2025
Date Added:	12/02/2025
Last Modified User:	mdellapina



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12/02/2025



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12/02/2025



WIN_20250212_07_45_13_Pro.jpg
12/02/2025



WIN_20250212_07_46_13_Pro.jpg
12/02/2025



WIN_20250212_07_50_37_Pro.jpg
12/02/2025

Street View





Report Prepared: February 17, 2025

Tree

Primary ID:	63277
Asset ID:	
Status:	Removal/Replanting
Common Name:	Grey She-oak
Botanical Name:	Casuarina glauca
Origin:	
Code:	CAGL11
Family:	Casuarinaceae
Genus:	Casuarina
Cultivar:	
Number of Stems:	1
DBH [in]:	20
DBH [cm]:	50
DBH [cm] Stem 1:	
DBH [cm] Stem 2:	
DBH [cm] Stem 3:	
DBH [cm] Stem 4:	
DBH [cm] Stem 5:	
DBH [cm] Stem 6:	
DBH Range:	46-60cm
Tree Height (Estimated) [m]:	16
Height Range:	10-20 Metres
Width:	5
Health:	Poor
Useful Life Expectancy:	1-4 years
Condition (Leaf):	Fair
Canopy Structure:	Poor
Age Class:	Mature
Homewood ID:	
Observations:	twoundpreviousfailure, tincludedbark, tcodominant, cincludedbark, cdeadwood, ccdominant, Previous

Photos



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12/02/2025

	Branch Failures, Weak Branch Attachment, Vines, Poor Structure
Tree Comments:	Remove tree, at minimum 2 x local native replacements to be planted in adjacent council land/reserve. Tree present poor vitality and structure with several previous 1st and 2nd order branch failures. Vine growing throughout crown. Several previous 1st and 2nd order codominant and included branch failures at branch attachments up to 200mm diam. Previous failure of one codominant main leader.
Stock Type:	
City Managed:	True
Botanic Gardens ID:	1
Crown Light Exposure:	
Archived:	No
null:	
New Data Field:	
Has Ecobenefits:	No

Location	
Address:	Vacant Land - Koloona Avenue FIGTREE
Address Number:	
Address Street:	Koloona Avenue
Street Planted:	
Suburb:	
Postcode:	
Organization:	Wollongong City Council
City:	Figtree
Tree Type:	Park
Growing Space:	
Land Use:	Park/ Vacant/ Other



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12/02/2025

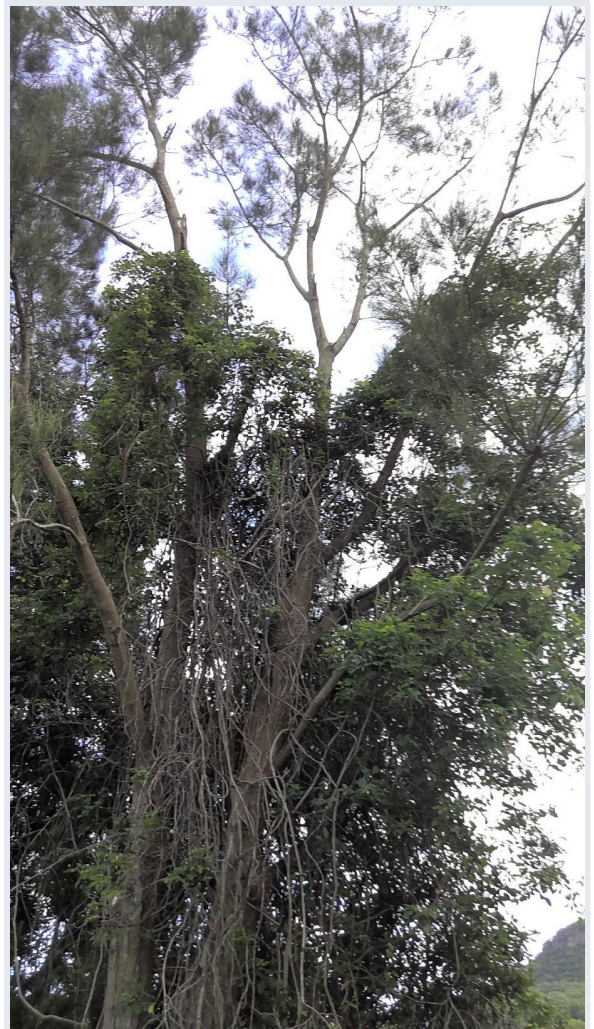
Location on Site:	
Planting Site Width:	
Pit Size:	
Park Name:	
Longitude:	150.85569101241
Latitude:	-34.418148989335
Easting:	
Northing:	

Management	
Verified?:	
Tree Works:	Remove
Works Priority:	Moderate
Maintenance Comments:	
Clearance Conflicts:	
Wires:	
Landscape Significance Rating Method:	
Name of Landscape Significance rating method (if other):	
Landscape Significance Rating:	
Retention Value:	
Percent Dieback (%):	
Watch This Tree? :	No
User:	mdellapina
Last Modified:	17/02/2025
Date Added:	12/02/2025
Last Modified User:	mdellapina

Tree Permit	
Tree Permit Application Number:	
Tree number on site :	
Comment/ Discussion:	
Determination:	
Branch pruning (Order):	
Specific conditions:	



Branch pruning diameter [mm]:
Branch Pruning Class:
Refusal reasons/ Conditions:
Number of replacement trees:
Notes:



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12/02/2025



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12/02/2025



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12/02/2025

Street View








Report Prepared: February 17, 202

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 17 February 2025. 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 Provided safeguards outlined in this report are in place, it is unlikely that this species will be impacted by the works. No suitable habitat.
 <i>Ninox strenua</i>	Powerful Owl	VP		Habitat preference may be a result of distribution of prey (common Ringtail Possums and Greater Gliders). Usually breeds and roosts in closed forest, including rainforests and wet sclerophylls. It roosts by day in dense vegetation comprising species such as <i>Syncarpia glomulifera</i> , <i>Allocasuarina littoralis</i> , <i>Acacia melanoxylon</i> , <i>Angophora floribunda</i> , <i>Exocarpos cupressiformis</i> and a number of eucalypt species.	Unlikely Provided safeguards outlined in this report are in place, it is unlikely that this species will be impacted by the works. No suitable habitat present.

Native Vegetation of the Illawarra Escarpment and Coastal Plain (NVIE&CP 2002)		
Map Unit/Name (NVIE&CP 2002) Habitat description / characteristic species	Ecological Community Status (BC Act and EPBC Act)	Likelihood of impact
 Moist Box-Red Gum Foothills Forest MU13 Moist Box-Red Gum Foothills Forest is dominated by <i>Eucalyptus quadrangulata</i> with <i>E. tereticornis</i> and/or <i>E. saligna</i> . <i>Xybotryoides</i> as infrequent associate species. A low mesic shrub layer is always present. Typical shrub and small tree species are closely affiliated to the Lowland Dry-Subtropical Rainforest assemblages that occur as part of the complex of vegetation on the escarpment foothills. Hardy and/or pioneer rainforest species such as <i>Croton verreauxii</i> , <i>Cassine australis</i> var. <i>australis</i> , <i>Backhousia myrtifolia</i> , <i>Streblus brunonianus</i> and <i>Pittosporum</i> spp. frequently occur. Ground cover is usually a sparse cover of ferns such as <i>Doodia aspera</i> and <i>Pellaea falcata</i> . Moist Red Gum-Box Foothills Forest marks a transition between the Grassy Red Gum forests on exposed slopes and ridges to the Lowland Dry-Subtropical Rainforest complex on richer latite soils, sheltered aspects and rocky scree slopes. It extends from footslopes south of Mt. Keira into Shellharbour LGA	BC Act: Vegetation dominated by <i>Eucalyptus quadrangulata</i> with <i>E. tereticornis</i> may be included within Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion EPBC Act: Conservation Status: Critically Endangered Illawarra and South Coast Lowland Forest and Woodland Ecological Community. Vegetation mapped as MU13 that will be impacted needs to be assessed against EPBC Conservation advice and satisfy 'Key diagnostic characteristics' and 'Condition thresholds and survey guidelines' to determine status.	Unlikely Provided safeguards outlined in this report are in place, it is unlikely that this EEC will be impacted by the works.

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.

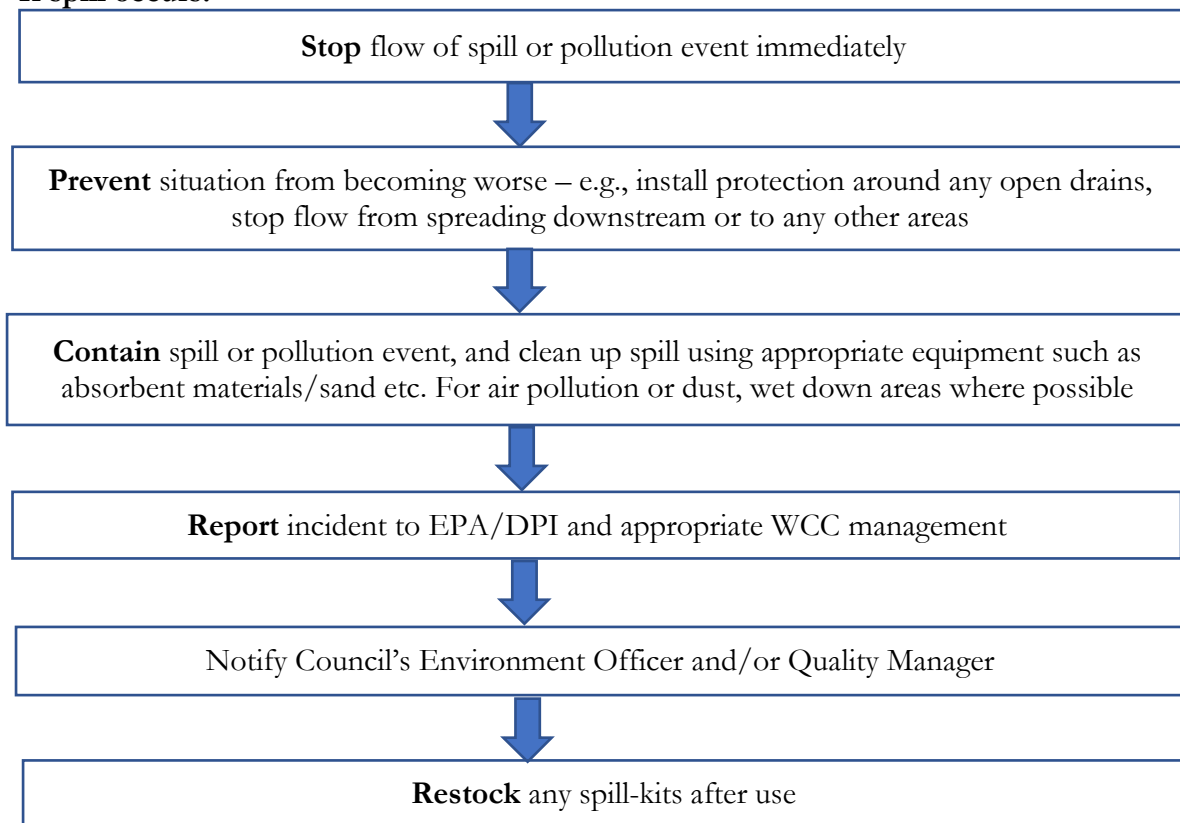
APPLICATION

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:



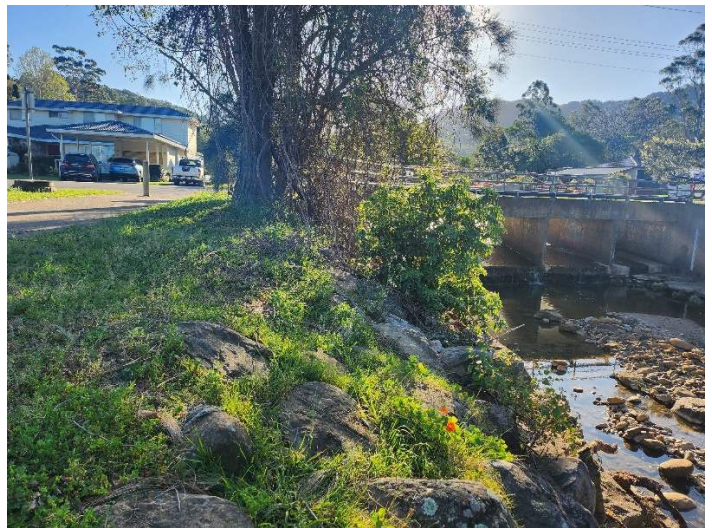
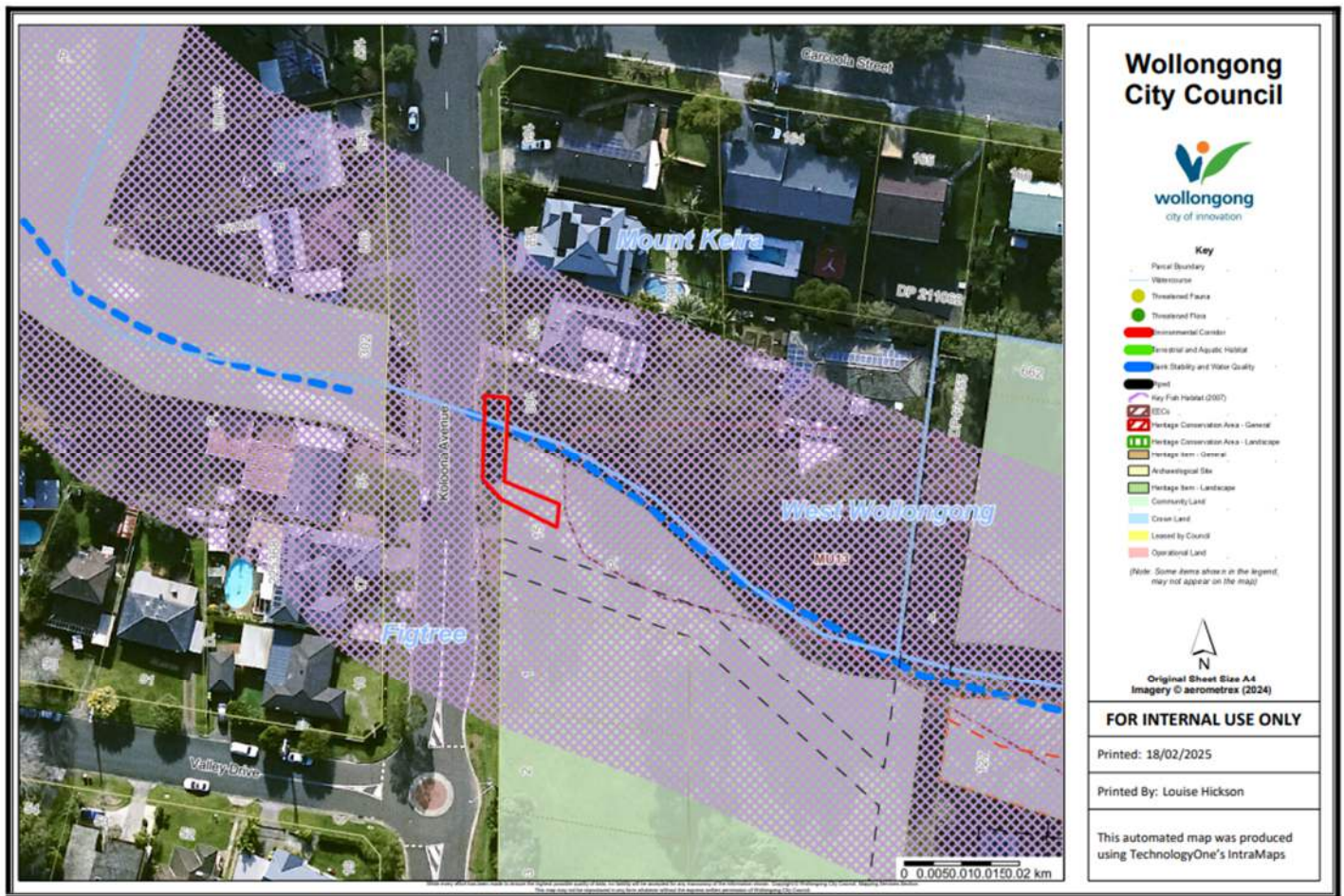
CHECKLIST

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

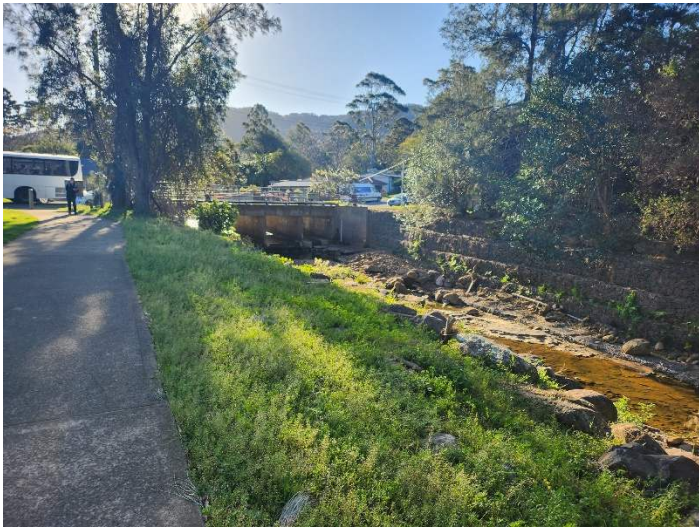
CORRESPONDANCE AND NOTIFICATION

- 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



Review of Environmental Factors
REF04299



Byarong Creek

Kilcoona Avenue

Mount Keira


Figtree

Repair to undermined apron

Repair to rock revetment

Keiraville

West Wollongong

6	ISSUED FOR REF REVIEW	AR	ET	20/02/25	DATUM	SURVEYOR	DRAWN	DATE		SCALES	NORTH POINT		CITY OF WOLLONGONG REPAIRS TO KOLOONA AV CULVERTS – PHASE 2 ROCK REVEITEMENT AND CULVERT APRON REPAIRS BYARONG CREEK, KOLOONA AVENUE, FIGTREE COVER SHEET & LOCALITY PLAN	 DESIGN & TECHNICAL SERVICES Ph 02 42271111	P/J or TR No. TR-1243		A1			
5	ISSUED FOR REF REVIEW	AR	ET	17/02/25	AZIMUTH MGA	FIELD BOOK	DRAWN AR	DATE 02/25		APPROVED (FOR COUNCIL USE ONLY) SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL 7577_S00_6	AS NOTED				DRAWING No. 0 OF 4 SHEETS	SHEET No. 4	ISSUE			
4	ISSUED FOR REF REVIEW	AR	ET	12/02/25														RELATED PLANS	DESIGNED AR	DATE 02/25
3	ISSUE FOR REF AND CONSTRUCTABILITY REVIEWS	AR	ET	26/11/24																
2	ISSUE FOR INFORMATION	AR	ET	19/11/24																
ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE																

GENERAL

- G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO COUNCIL'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.
- G2. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING REPORTS:
GEO TECHNICAL RECOMMENDATION BY WCC- GT24.675
REF REPORT PREPARED BY WCC - REF 4299
WHS SAFETY IN DESIGN REPORT
- G3. ALL MATERIALS AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- G4. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEERS' DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
- G5. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
- G6. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
- G7. THE BUILDER SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS.
- G8. SLABS BEAMS AND WALLS SHALL BE POURED ON THE DAY OF APPROVAL UNLESS PERMISSION IS GIVEN OTHERWISE.
- G9. ALL SERVICE LOCATIONS ON PLANS ARE SCHEMATIC ONLY.
- G10. BUILDER TO DETERMINE AND/OR CONFIRM LOCATION AND DEPTH OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK. ENGINEER TO BE NOTIFIED.
- G11. PROPRIETARY PRODUCTS MAY BE REPLACED WITH EQUIVALENT PRODUCTS, ONLY FOLLOWING REVIEW AND WRITTEN APPROVAL BY WCC REPRESENTATIVE. BUILDER TO PROVIDE SUPPORTING DOCUMENTATION INDICATING EQUIVALENT PROPERTIES FOR WCC REVIEW.
- G12. THIS SITE IS IN A COASTAL ZONE AND THE EFFECTS OF TIDE AND WAVE ACTION MUST BE CONSIDERED. NOTE LEVEL ON DRAWINGS.
- G13. REFERENCES TO SUPERINTENDENT OR PRINCIPAL SHALL BE TAKEN AS WCC REPRESENTATIVE.
- G14. BUILDER OR CONTRACTOR IS RESPONSIBLE FOR ENSURING BUILDING WORKS ARE UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT STANDARDS, PROPRIETARY ITEMS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND ALL STRUCTURES ARE SEALED TO PREVENT THE INGRESS OF RAIN DURING STORM EVENTS
- G15. REFERENCES TO BUILDER, SUPPLIER OR OTHER PARTIES INVOLVED IN CONSTRUCTION SHALL HAVE THE SAME MEANING AS CONTRACTOR.
- G16. 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.
- G17. A SECTION 138 APPLICATION AND APPROVAL IS REQUIRED PRIOR TO ANY OCCUPATION OF WCC ROAD OR FOOTPATH. THIS IS THE RESPONSIBILITY OF THE CONSTRUCTING AGENT.
- G18. AN TfNSW ROL APPLICATION AND APPROVAL IS REQUIRED PRIOR TO ANY OCCUPATION OF RMS ROAD OR PROPERTY. THIS IS THE RESPONSIBILITY OF THE CONSTRUCTING AGENT.
- G19. ALL WORKS SHALL BE SUPERVISED BY PERSONS EXPERIENCED AND QUALIFIED IN THE TYPE OF WORK BEING CARRIED OUT.
- G20. 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 OBTAIN CURRENT "BEFORE YOU DIG AUSTRALIA" INFORMATION PRIOR TO COMMENCING EXCAVATIONS.
- 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.

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.

ENVIRONMENTAL SITE MANAGEMENT

- ESM1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING 'BLUE BOOK' - SOILS & CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS 'SD'.
- ESM2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
- ESM3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM. SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.
- ESM4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEEDING FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
- ESM5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. COUNCIL'S REPRESENTATIVE MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.
- ESM6. ALL DISTURBED AREAS ARE TO BE TRIMMED, LEVELED, TURFED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.
- ESM7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
- ESM8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.
- ESM9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.
- ESM10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE. SILT FENCE MATERIAL, PLASTIC SHEETING OR MEMBRANE MUST BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
- ESM11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
- ESM12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
- ESM13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
- ESM14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
- ESM15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
- ESM16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
- ESM17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
- ESM18. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
- ESM19. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS).
- ESM20. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM COUNCIL'S REPRESENTATIVE.
- ESM21. SITE COMPOUND SHALL PROVIDE FOR ADMINISTRATION FACILITIES, TOILETS AND STORAGE AREAS SUFFICIENT FOR THE PROPOSED CONSTRUCTION OPERATION. THE COMPOUND SHALL BE FENCED AND SECURE.
- ESM22. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMIC. CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
- ESM23. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH COUNCIL'S REPRESENTATIVES REQUIREMENT.
- ESM24. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHILE DRAINING. MATERIAL TO BE RESPARED ON FOOTPATHS AFTER FINAL TRIMMING.
- ESM25. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS. UNLESS OTHERWISE NOTED BY COUNCIL'S REPRESENTATIVE AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
- ESM26. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH 'TNSW. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.' TO BE SUBMITTED AND RELEASED BY WCC REPRESENTATIVE.
- ESM27. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'
- ESM28. 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.

GENERAL

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

EARTHWORKS

- EW1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
- EW2. OVER FULL AREA OF EARTHWORKS, CLEAR VEGETATION, RUBBISH, SLABS ETC. AND STRIP TOP SOIL. AVERAGE 200mm THICK. 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 DURING COMPACTION AND REPLACE WITH APPROVED FILL COMPACTED IN LAYERS. THE WHOLE OF THE EXPOSED SUBGRADE AND FILL SHALL BE COMPACTED TO 95% STANDARD MINIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT $\pm 2\%$.
- 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. FILLING SHALL CONSIST OF SOUND GRANULAR FILL. FILL SHOULD BE FREE FROM RUBBISH, PLASTIC, TIMBER, CLAY OR LARGE PIECES WHICH WOULD PREVENT COMPACTION.
- EW8. ALL FILL MATERIALS IMPORTED TO SITE MUST BE PRE-APPROVED FOR USE FROM APPROVED AND APPROPRIATELY LICENCED SUPPLIERS AND SUPPORTED BY ALL RELEVANT DOCUMENTATION.
- EW9. COMPACTION TESTING SHALL BE CARRIED OUT AT THE RATE OF 2 TESTS PER 1000SQ METRES PER LAYER BY A REGISTERED NATA LABORATORY. THE COSTS OF TESTING AND RE-TESTING ARE TO BE ALLOWED FOR BY THE BUILDER.
- EW10. BATTERS TO BE AS SHOWN, OR MAXIMUM 1 VERT : 4 HORIZ. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL PAVEMENT.
- EW11. THE ADEQUACY OF THE SUBGRADE SHALL BE DETERMINED ON SITE BY COUNCIL'S REPRESENTATIVE.

SURVEY

- SU1. WCC IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY SURVEY INFORMATION PROVIDED ON THIS DRAWING.
- SU2. ALL LEVELS ARE TO A.H.D.
- SU3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
- SU4. THE SURVEY INFORMATION ON THIS DRAWING HAS BEEN PROVIDED BY WCC.
- SU5. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.

ARMOUR ROCK WORKS

- AR1. GROUND TO BE ADEQUATELY EXCAVATED AND SHAPED WITH REMOVAL OF ANY ROCKS WITH SHARP EDGES PRIOR TO LAYING OF GEOTEXTILE FILTER UNDERLAY.
- AR2. CLEAR BEACH IN FRONT OF PROPOSED ROCK WALL OF ALL LOOSE AND SCAFFERED CONCRETE BLOCKS.
- AR3. ROCKS USED IN THE CONSTRUCTION OF THE WORKS SHALL COMPRISE SANDSTONE, MEETING THE FOLLOWING SPECIFICATION:
- (i) ROCK SHALL BE ROUGH AND ANGULAR
 - (ii) ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2,300kg/m³
 - (iii) SATURATED POINT LOAD STRENGTH INDEX (I₅₀) GREATER THAN 15MPa
- AR4. THE DIAMETER AND GRADING OF THE ARMOUR ROCK USED IN THE WORKS SHALL BE AS FOLLOWS, UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.

ROCK SIZING			
	AT EMBANKMENT (EXCEPT AT TOE)	AT TOE OF EMBANKMENT	AT OUTLET APRON
MINIMUM DIMENSION	0.5m	0.7m	0.5m
MEDIAN (d_{50}) DIAMETER	0.6m	0.9m	0.6m
MAXIMUM DIMENSION	0.8m	1.3m	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.

- AR5. ROCK ARMOUR UNITS SHALL BE CAREFULLY PLACED IN A SOUND INTERLOCKING ARRANGEMENT.
- AR6. ALL PLACEMENT SHALL BE SUPERVISED BY PERSON OR PERSONS EXPERIENCED IN THIS TYPE OF WORK.
- AR7. CONTRACTOR TO PROVIDE VERIFICATION OF THE ABOVE WITH EACH DELIVERY.

NO FINES CONCRETE

- N1 STRENGTH GRADE 10 MPa
N2 TYPE GP CEMENT
N3 AGGREGATE SIZE - 20mm
N4 VOID RATIO 30 - 50%
N5 CEMENT:AGGREGATE RATIO 1:6
N6 WATER CEMENT RATIO - 0.4:0.45
N7 DENSITY RANGE BETWEEN 1600kg/m³ - 2100kg/m³

CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARYED BY THE CONTRACT DOCUMENTS.

C2. **CONCRETE QUALITY**
ALL CEMENT TO BE TYPE GP, GENERAL PURPOSE CEMENT IN ACCORDANCE WITH AS3972.

C4. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3600.

THE CONTRACTOR SHALL FORWARD TO COUNCIL DELIVERY DOCKETS IDENTIFYING CONCRETE PROPERTIES, STRENGTH GRADE AND COMPLIANCE WITH AS 3972 FOR EACH CONCRETE TRUCK DELIVERY TO SITE. CONCRETE SLUMP TEST SHALL BE CARRIED OUT ON EACH CONCRETE TRUCK DELIVERY. DOCKETS AND TEST RESULTS SHALL BE PROVIDED BY THE CONTRACTOR TO COUNCIL WITHIN ONE WORKING DAY OF THE RESPECTIVE TRUCK DELIVERY.

- PAIRS OF STANDARD CONCRETE CYLINDERS SHALL BE TAKEN AND TESTED (AT 7 AND 28 DAYS) BY THE CONTRACTOR FOR EACH CONCRETE PLACEMENT UNLESS OTHERWISE DIRECTED BY COUNCIL. TEST RESULTS SHALL BE PROVIDED BY THE CONTRACTOR TO COUNCIL WITHIN THREE WORKING DAYS OF COMPLETING THE TESTING OF PAIRED CYLINDERS.

ELEMENT	STRENGTH GRADE (MPa)	SLUMP (mm)	MAXIMUM AGGREG. SIZE (mm)
ALL (INCL. AT TOE OF EMBANKMENT)	25	80	10
AT EMBANKMENT	REFER TO NO-FINES CONCRETE		

- C5. CONCRETE SHALL BE PROPORTIONED TO LIMIT DRYING SHRINKAGE TO 600 MICROSTRAIN AT 56 DAYS IN ACCORDANCE WITH AS 1012.13. WHEN REQUESTED BY COUNCIL, TESTING SHALL BE CARRIED OUT FOR EACH CONCRETE BATCH TO BE PLACED ON SITE AS PART OF THE WORKS AND FOR EACH CONCRETE COMPRESSIVE STRENGTH GRADE AND TESTED IN ACCORDANCE WITH AS 1012. TESTING RESULTS ARE TO BE FORWARDED TO COUNCIL.
- C6. DETAILS OF THE PROPOSED MIX TO BE SUBMITTED & APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE.
- C7. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS NOTED OTHERWISE.
- C8. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES. NO FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF COUNCIL'S REPRESENTATIVE.
- C15. REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF COUNCIL'S REPRESENTATIVE.
- C18. THE CONCRETE SHALL BE PLACED IN SUCH A MANNER TO AVOID SEGREGATION OR LOSS OF MATERIALS. MAXIMUM FALL OF CONCRETE = 1500mm OR USE ENCLOSED CHUTES OR SIMILAR.
- C19. SULPHATE RESISTANT CONCRETE TO BE USED.

PROVIDE ADMIXTURE FOR WATERPROOFING IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION. XYPEX OR EQUIVALENT.

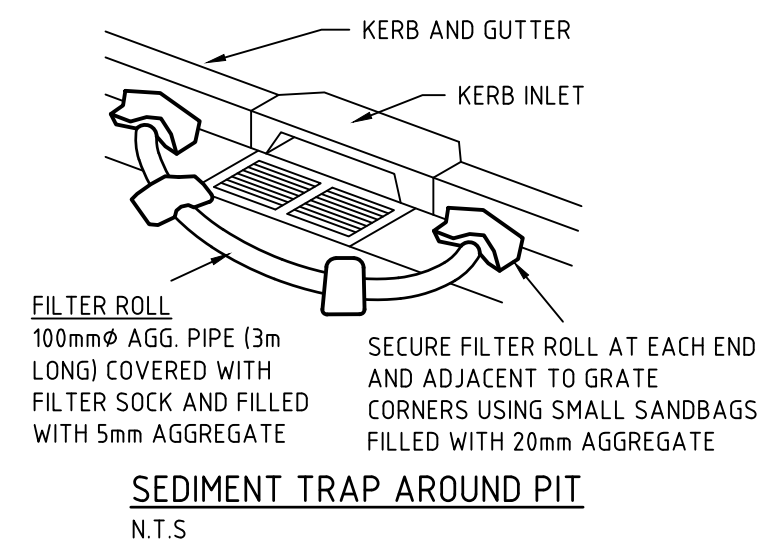
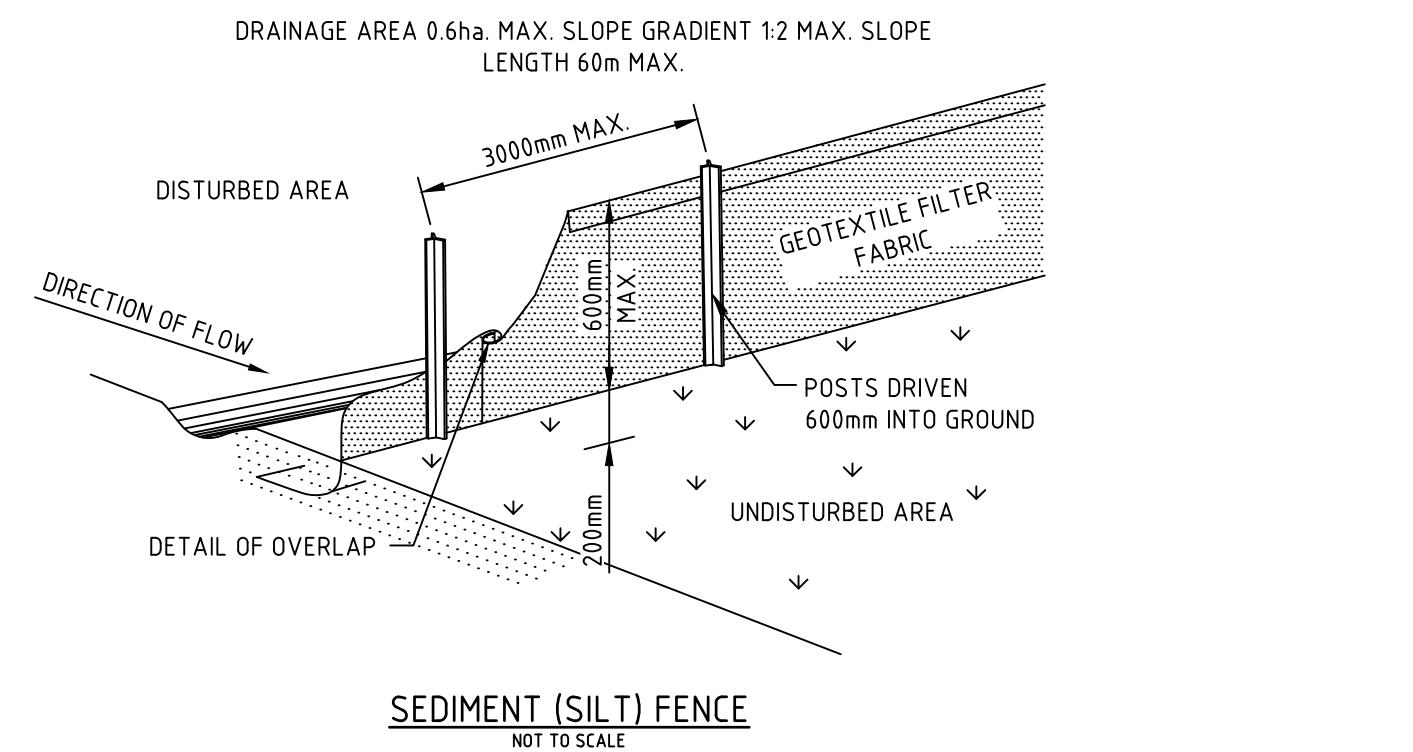
HOLD POINTS, APPROVALS & INSPECTIONS

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

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

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

6	ISSUED FOR REF REVIEW	AR	ET	20/02/25	DATUM AHD	SURVEYOR HB	DRAWN AR	DATE 02/25	APPROVED (FOR COUNCIL USE ONLY)		SCALES	NORTH POINT	CITY OF WOLLONGONG REPAIRS TO KOLOONA AV CULVERTS – PHASE 2 ROCK REVETMENT AND CULVERT APRON REPAIRS BYARONG CREEK, KOLOONA AVENUE, FIGTREE NOTES SHEET	 DESIGN & TECHNICAL SERVICES Ph 02 42277111	PJ or TR No. TR-1243		A1
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- ESM14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
- ESM15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
- ESM16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
- ESM17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
- ESM18. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
- ESM19. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS).
- ESM20. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM COUNCIL'S REPRESENTATIVE.
- ESM21. SITE COMPOUND SHALL PROVIDE FOR ADMINISTRATION FACILITIES, TOILETS AND STORAGE AREAS SUFFICIENT FOR THE PROPOSED CONSTRUCTION OPERATION. THE COMPOUND SHALL BE FENCED AND SECURE.
- ESM22. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSURES ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
- ESM23. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUND ON THE UPWILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH COUNCIL'S REPRESENTATIVES REQUIREMENT.
- ESM24. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.
- ESM25. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY COUNCIL'S REPRESENTATIVE AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
- ESM26. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH TfNSW 'TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.' TO BE SUBMITTED AND RELEASED BY WCC REPRESENTATIVE.
- ESM27. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'



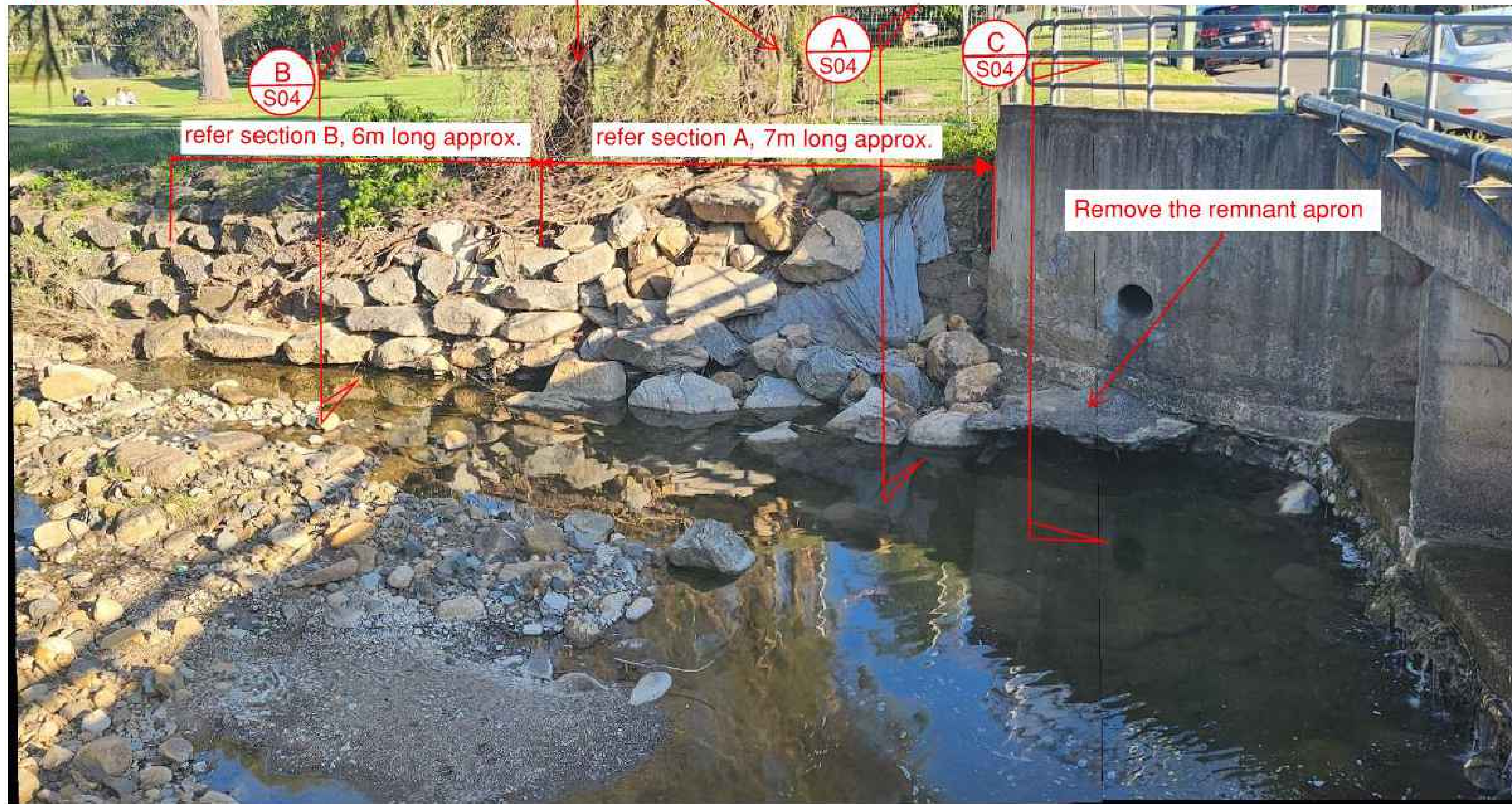
FILTER ROLL
100mm ϕ AGG. PIPE (3m LONG) COVERED WITH FILTER SOCK AND FILLED WITH 5mm AGGREGATE

SECURE FILTER ROLL AND ADJACENT TO GRAD CORNERS USING SMALL FILLED WITH 20mm AGG.


SEDIMENT TRAP AROUND PIT
N.T.S

6	ISSUED FOR REF REVIEW	AR	ET	20/02/25	DATUM AHD	SURVEYOR HB	DRAWN AR	DATE 02/25	<div>APPROVED (FOR COUNCIL USE ONLY)</div> <div>bsiISO 9001 Quality Management Systems CERTIFIED</div>	SCALES	NORTH POINT	<div>CITY OF WOLLONGONG</div> <div>REPAIRS TO KOLOONA AV CULVERTS - PHASE 2 ROCK REVETMENT AND CULVERT APRON REPAIRS BYARONG CREEK, KOLOONA AVENUE, FIGTREE EROSION AND SEDIMENT CONTROL PLAN</div>	<div><div>wollongong city of innovation</div></div> <div>DESIGN & TECHNICAL SERVICES Ph 02 42277111</div>	PJ or TR No. TR-1243		A1				
5	ISSUED FOR REF REVIEW	AR	ET	17/02/25	AZIMUTH MGA	FIELD BOOK -	RELATED PLANS	DESIGNED AR		DATE 02/25	SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL 7577_S02_6			AS NOTED		SHEET 2 OF 4 SHEETS	DRAWING No. 7577	SHEET No. S02	ISSUE	ORIGINAL
4	ISSUED FOR REF REVIEW	AR	ET	12/02/25																
3	ISSUE FOR REF AND CONSTRUCTABILITY REVIEWS	AR	ET	26/11/24																
2	ISSUE FOR INFORMATION	AR	ET	19/11/24																
ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE																

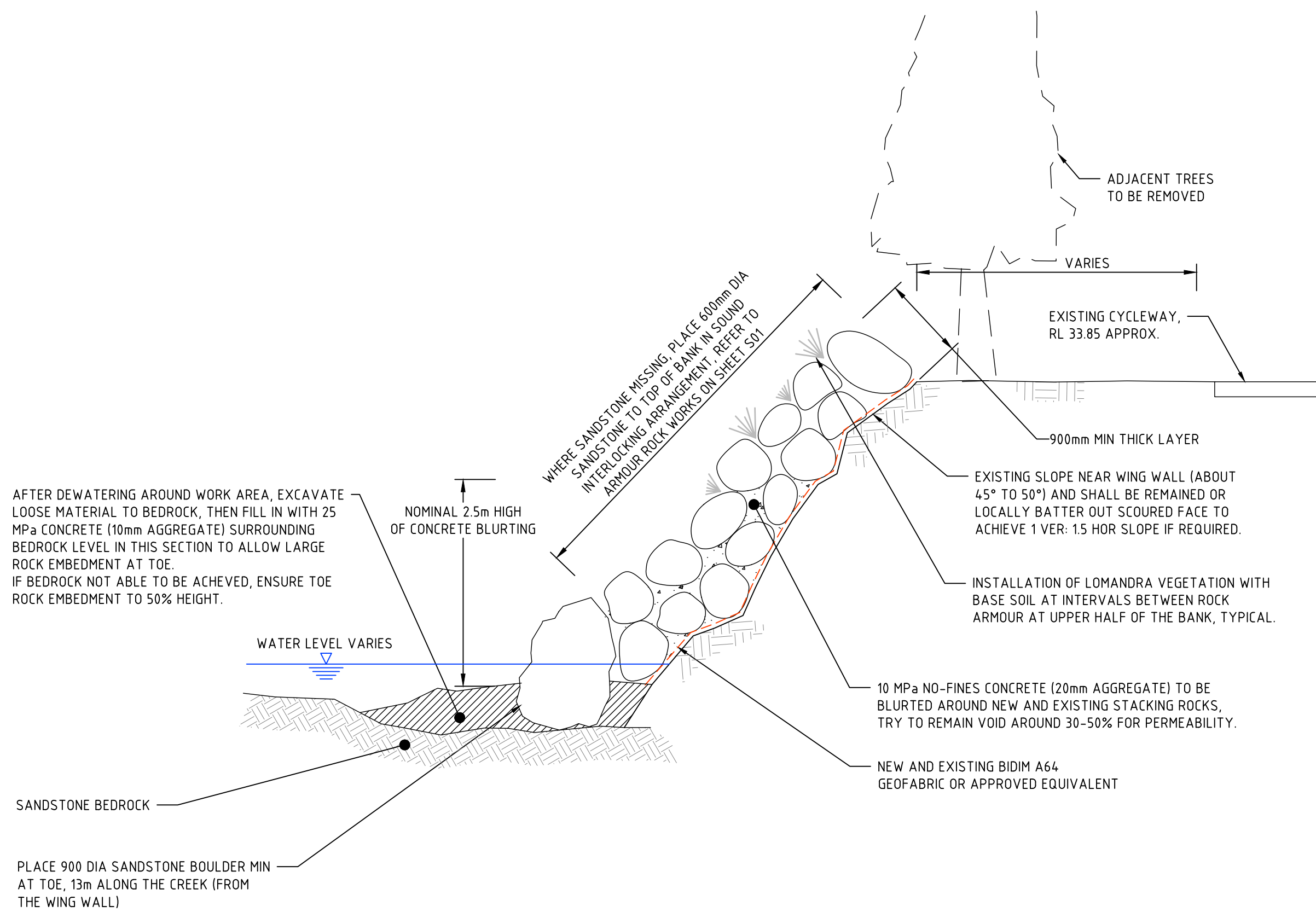
All two Grey She-oak trees to be removed and revegetate with 4 (min) suitable local native trees to meet public tree management policy and urban green strategy. New trees to be planted within the adjacent council land. CityWorks to contact WCC arborist (AQF 5) in regarding replacement planting location and tree species.



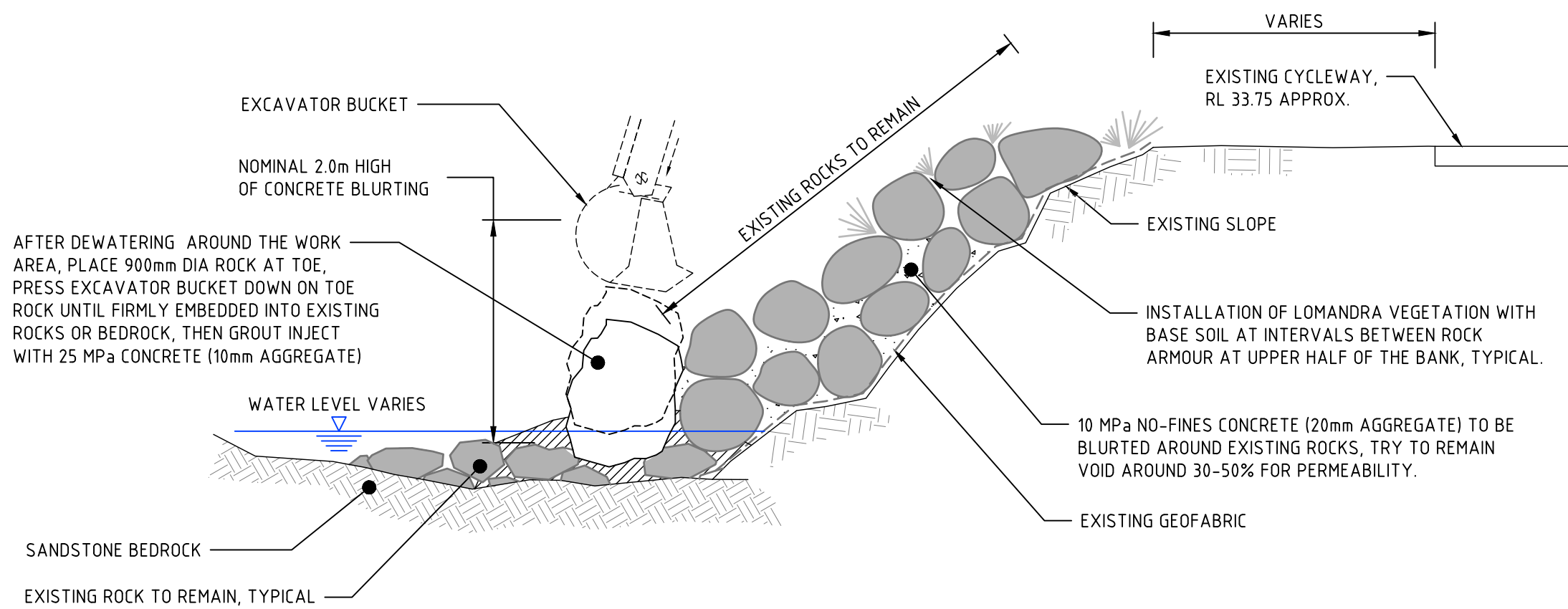
GENERAL ARRANGEMENT DIAGRAM

PRE-FINAL DESIGN ISSUE																	
6	ISSUED FOR REF REVIEW	AR	ET	20/02/25	DATUM AHD	SURVEYOR HB	DRAWN AR	DATE 02/25	<div></div>	SCALES	NORTH POINT	CITY OF WOLLONGONG	<div> DESIGN & TECHNICAL SERVICES Ph 02 42277111</div>	PJ or TR No.		TR-1243	A1
5	ISSUED FOR REF REVIEW	AR	ET	17/02/25	RELATED PLANS AZIMUTH MGA FIELD BOOK -	DESIGNED AR	DATE 02/25	SHEET 3 OF 4						4	SHEETS	ORIGINAL	
4	ISSUED FOR REF REVIEW	AR	ET	12/02/25		7577 S03.6	AS NOTED	DRAWING No.						SHEET No.	ISSUE		
3	ISSUE FOR REF AND CONSTRUCTABILITY REVIEWS	AR	ET	26/11/24													
2	ISSUE FOR INFORMATION	AR	ET	19/11/24													
ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE													

NOTES:
REFER TO GENERAL
NOTES SHEET 7577-S01



A TYPICAL SECTION AT EMBANKMENT BETWEEN 0-7m FROM SOUTH-EAST WING WALL
S03 SCALE 1:50 @ A1 - 1:100 @ A3



B TYPICAL SECTION AT EMBANKMENT BETWEEN 7-13m APPROX. FROM SOUTH-EAST WING WALL
S03 SCALE 1:50 @ A1 - 1:100 @ A3

RECOMMENDED CONSTRUCTION METHOD:

AT EMBANKMENT

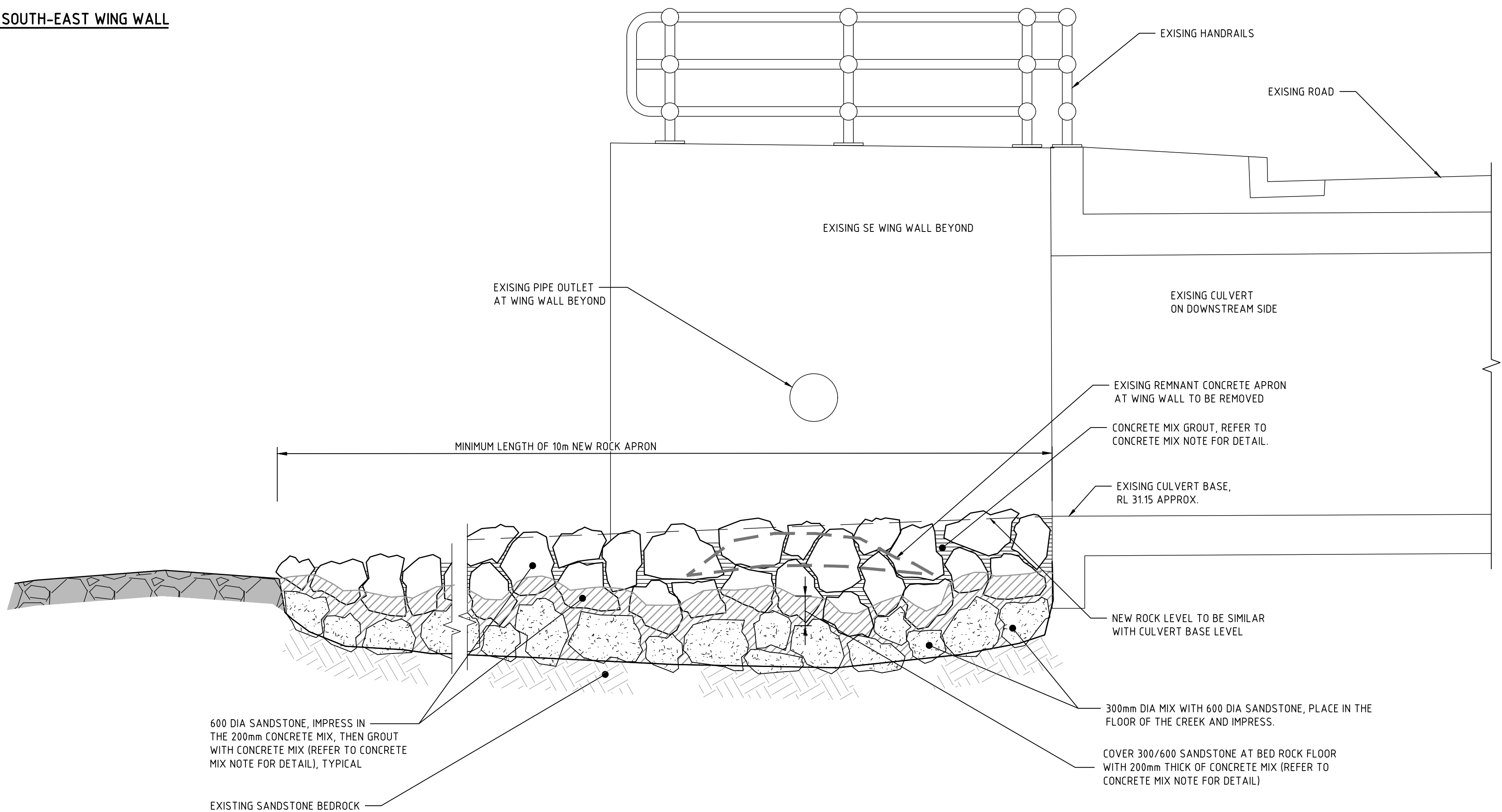
1. REMOVE 2 GREY SHE-OAK TREES FOR ACCESS.
2. DEWATER AROUND WORK AREA.
3. FOR WORKS ADJACENT TO WINGWALL TO 7m (REFER TO SECTION-A)
 - 3.1 EXCAVATE LOOSE MATERIAL TO BEDROCK, THEN PLACE 900 DIA (MIN) SANDSTONES AT TOE.
 - 3.2 FILL IN WITH N25 CONCRETE (10mm AGGREGATE) SURROUNDING BEDROCK LEVEL. IF TOE ROCKS ARE NOT BE ABLE TO REACH BEDROCK, ENSURE THAT THE TOE ROCKS ARE EMBEDDED TO N25 CONCRETE TO 50% ROCK HEIGHT.
 - 3.3 PLACE BIDIM A64 GEOFABRIC WHERE MISSING.
 - 3.4 FILL THE FAILED WALL WITH 600 DIA SANDSTONE BOULDERS, STACKED SIMILARLY.
 - 3.5 BLURT 10 MPa NO-FINE CONCRETE (20mm AGGREGATE) AROUND NEW AND EXISTING ROCKS UP TO 2.5m HIGH FROM CONCRETED BED, TRY TO REMAIN 30-50% VOID.
4. FOR WORKS BETWEEN 7m AND 13m (REFER TO SECTION-B)
 - 4.1 PLACE 900 DIA (MIN) SANDSTONE AT TOE.
 - 4.2 PRESS EXCAVATOR BUCKET DOWN ON TOE ROCK UNTIL FIRMLY EMBEDDED INTO EXISTING ROCKS OR BEDROCK.
 - 4.3 GROUT INJECT WITH 25 MPa CONCRETE (10mm AGGREGATE).
 - 4.4 BLURT 10 MPa NO-FINE CONCRETE (20mm AGGREGATE) AROUND EXISTING ROCKS UP TO 2.0m HIGH FROM CREEK BED, TRY TO REMAIN 30-50% VOID.

AT APRON

1. DEWATER HALF THE CULVERT AT A TIME BY SANDBAG AND DIVERSION. THIS WILL NOT DRY BACK ANY STRUCTURAL FOOTINGS HERE.
2. SCRAPE BACK THE DEPOSITED ROCK AND SAND TO BEDROCK LEVEL. IF THERE IS A SKIM OF SAND REMAINING, IT IS ACCEPTABLE.
3. BREAK OFF THE REMNANT APRON AND REMOVE (OR RE-PURPOSE INTO THE CREEK FLOOR).
4. REFER TO SECTION-C, PLACE 300 / 600 DIA SANDSTONE IN THE FLOOR OF THE CREEK AND IMPRESS.
5. SKIM OVER THE SANDSTONE WITH 200mm OF N25 MPa CONCRETE (10mm AGGREGATE), MIX WITH FIBRE SIKAFIBER PP-48 AT 4 kg/m³, SLUMP 80mm.
6. PACK 600mm DIA SANDSTONE AROUND THE SOUTHERN WINGWALL AND FULLY INJECT BEHIND WITH N25 CONCRETE.
7. IMPRESS 600mm SANDSTONE TO PRODUCE A RAMPED ROUGH BOUND ROCK APRON TO CULVERT BASE LEVEL, THEN GROUT AS PER ABOVE MIX, PREFERABLY NOT TO BE COMPLETELY VOID FILLED.

UNDERGROUND UTILITIES AND SERVICES



- U1. COUNCIL HAS IDENTIFIED EXISTING UNDERGROUND SERVICES & UTILITIES IN THE AREA. THE BUILDER SHALL OBTAIN CURRENT "BEFORE YOU DIG AUSTRALIA" INFORMATION PRIOR TO COMMENCING EXCAVATIONS.
- 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.




C TYPICAL SECTION AT DOWNSTREAM APRON
S03 SCALE 1:50 @ A1 - 1:100 @ A3

- NOTE:
1. CONCRETE MIX: 25 MPa CONCRETE (10mm AGGREGATE), MIX WITH FIBRE SIKAFIBER PP-48 AT 4 kg/m³, SLUMP 80mm.
 2. ROCK EMBANKMENT ADJACENT TO WING WALL NOT SHOWN FOR CLARITY.

PRE-FINAL DESIGN ISSUE

6	ISSUED FOR REF REVIEW	AR	ET	20/02/25	DATUM AHD	SURVEYOR HB	DRAWN AR	DATE 02/25	APPROVED (FOR COUNCIL USE ONLY)		SCALES	NORTH POINT	CITY OF WOLLONGONG REPAIRS TO KOLOONA AV CULVERTS – PHASE 2 ROCK REVETMENT AND CULVERT APRON REPAIRS BYARONG CREEK, KOLOONA AVENUE, FIGTREE DETAILS	 DESIGN & TECHNICAL SERVICES Ph 02 42277111	PJ or TR No. TR-1243		A1
5	ISSUED FOR REF REVIEW	AR	ET	17/02/25	AZIMUTH MGA	FIELD BOOK -	DESIGNED AR	DATE 02/25	SENIOR DESIGN ENGINEER STRUCTURAL/ARCHITECTURAL		SHEET 4 OF 4 SHEETS				ORIGINAL		
4	ISSUED FOR REF REVIEW	AR	ET	12/02/25	RELATED PLANS		CHECKED ET	DATE 02/25	7577_S04_6		DRAWING No. 7577	SHEET No. S04			ISSUE		
3	ISSUE FOR REF AND CONSTRUCTABILITY REVIEWS	AR	ET	26/11/24													
2	ISSUE FOR INFORMATION	AR	ET	19/11/24													
ISSUE	DESCRIPTION	DRAWN	APPR'D	DATE													

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>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>PPE REQUIRED -- Standard PPE for daily tasks, in event of unexpected find for ACM or substances, will require P2 disposable mask & hazard tape to provide barrier to prevent access by staff/public or to isolate area if archaeological/Heritage find</p> <div>  </div> <p>* If unexpected find is ACM 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>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)

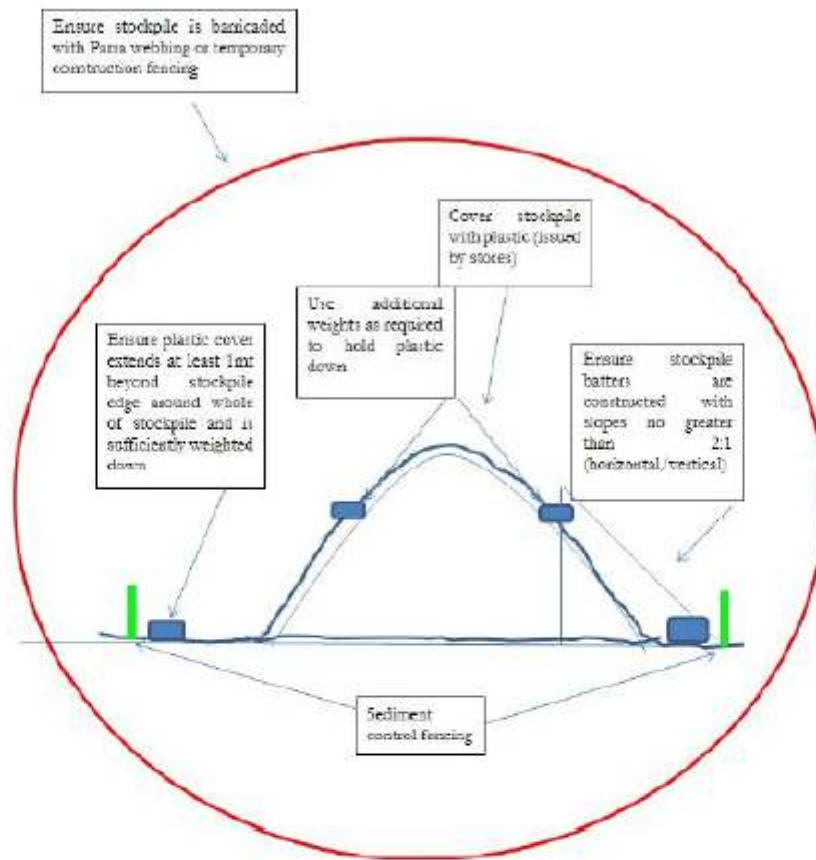


Archaeological & heritage finds



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	<div> <div>ACM non-friable <10sq m</div> <div>Yes</div> <div>Apply PPE and remove as per SOP Collection and Disposal of ACM <10sq m</div> </div> <div> <div>No</div> </div>	
Contractor/ Assessor	<div> <div>ACM friable or non-friable >10sq m</div> <div>Yes</div> <div>Contact buildings & facilities sustainability planner</div> </div> <div> <div>No</div> </div>	Action Plan
Contractor/ Assessor	<div> <div>Contaminated soil</div> <div>Yes</div> <div>Contact environment planning manager</div> </div> <div> <div>No</div> </div>	Action Plan
Contractor/ Assessor	<div> <div>Archaeological / heritage artefact</div> <div>Yes</div> <div>Contact heritage coordinator</div> </div>	Action Plan
Project Manager / Co-ordinator	Update relevant documentation and Council management systems	