ECM Document ID: 25603259

REVIEW OF ENVIRONMENTAL FACTORS: EP REF-2024/5

CONCLUSIONS AND SIGN-OFF OF BELLAMBI LAGOON EMERGENCY MECHANICAL ENTRANCE OPENING FOR FLOOD MITIGATION

This report documents the outcomes of the Review of Environmental Factors (REF) undertaken for proposed works comprising of flood mitigation works at Bellambi lagoon entrance.

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. The proposed activity has been discussed with NSW DPIRD Fisheries and a permit application has been lodged. The proposed activity has also been discussed Carly Boag and does not require any approvals or consents under any other relevant legislation.

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 months 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

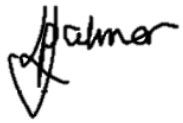
The application did require publication in accordance with EP&A Regulation (clause 171(4)).

Community Consultation was not required.

REF Preparation Sign Off over page

REF Preparation Sign Off:

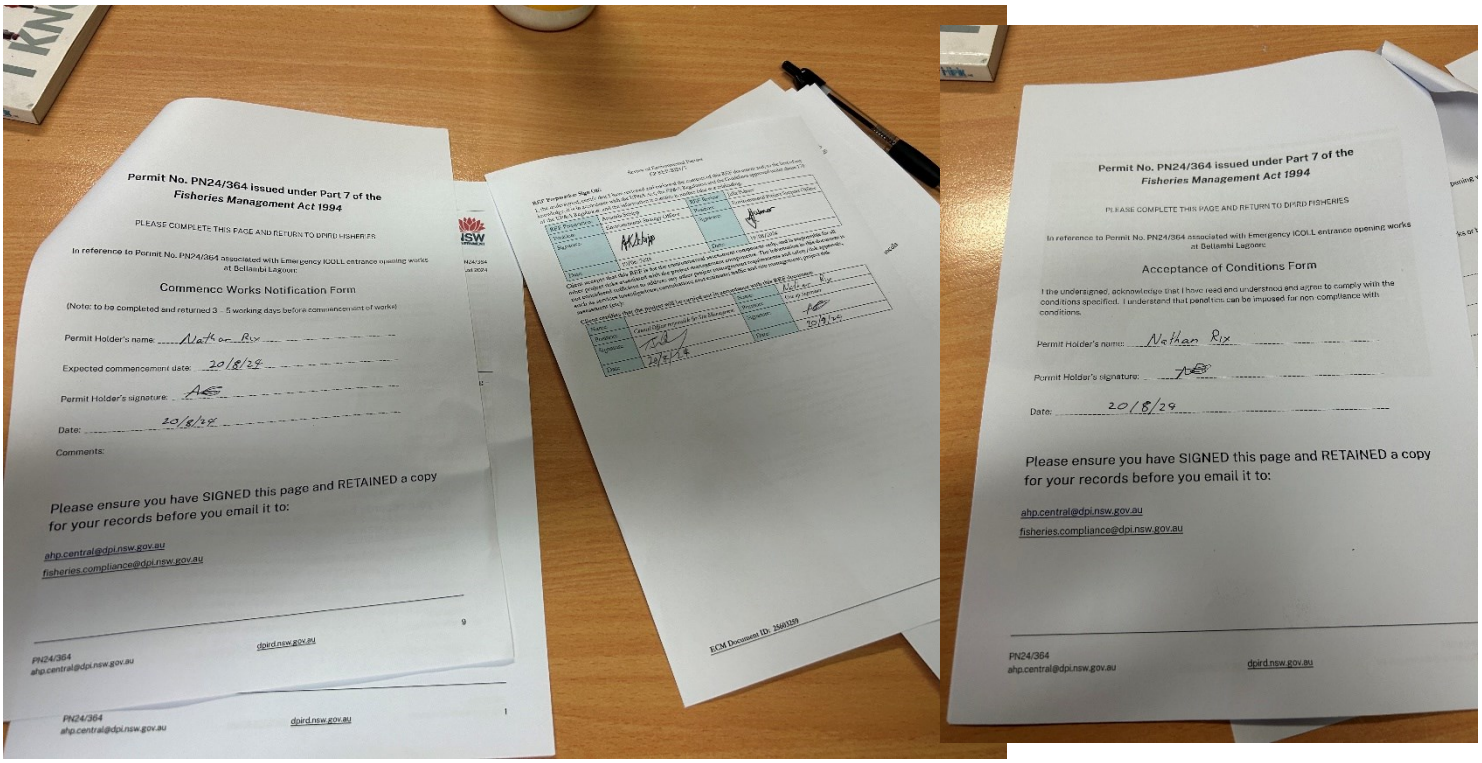
I, the undersigned, certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.

REF Preparation:	Amanda Schipp	REF Review:	Julia Palmer
Position:	Environmental Strategy Officer	Position:	Environmental Project Support Officer
Signature:		Signature:	
Date:	19/08/2024	Date:	19/08/2024

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

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

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



Signed Fisheries to Permit No. PN24/364 and this REF.

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1. INTRODUCTION

As the proposed activity does not require development consent, the environmental impacts have been considered in accordance with the environmental assessment requirements of Part 5 of the EP&A Act. In accordance with the requirements of Part 5 of the EP&A Act, the factors listed in Clause 170 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 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	**Bellambi Lagoon Emergency Mechanical Entrance Opening for Flood Mitigation**
Location	• Lot 6 Murray Road, East Corrimal Lot 6 DP 240541 Wollongong City Council LEP 2009 Zoning: C2 • 1A Morgan Place, Bellambi Lot 7017 Crown DP 1057474 State of NSW, c/- Wollongong City Council LEP 2009 Zoning: RE1 The work area is the entrance to Bellambi Lagoon, which is intermittently transient sand and creekline, adjoined by Bellambi Lagoon, vegetated dunes, open beach, park open space and a carpark and cycleway. The surrounding vegetation is predominantly Coastal Sand Scrub and Beach Spinifex Sand with significant weed infestation on the southern side in the Coastal Sand Scrub. The Lagoon edges upstream are mapped as containing EEC Swamp Oak Floodplain Forest. The work area is mapped as: • Key Fish Habitat • Resilience and Hazards SEPP Coastal Wetland Proximity Area, Coastal Environment Area, Coastal Use Area • Class 5 acid sulfate soil  Red dotted line – vehicle access via Lot 7311 CROWN 1164188 Red Line – area to be opened. See more detailed maps in Appendix A.

Land Ownership	Wollongong Council / Crown Land (Appointed)
Land Classification	Community Land – Natural Area Wetland Crown Land - appointed - managed by Council (included in 32 Crown Reserves Plan of Management). Advice has been received that as works are not proposed outside the area of land management by Council, Crown Lands licence is not required (see Appendix B). A "Risk of Transfer Assessment" will not be undertaken as the works are relatively minor in nature and will not result in any permanent structures.
Project Description	The scope of work is to open Bellambi Lagoon to the ocean, with a 1-metre-wide channel, long enough only to break through the berm, as shown in the map above. Opening is to occur around the high tide, and if possible with rain if it is forecast. Crew place heavy machinery signs, and set up an exclusion zone. Spotters on the beach have 2 way communication to the machine operator. The opening will be sufficient for scouring flow to develop. The backhoe operator will dig a 'pilot' channel from the ocean-ward end toward the lagoon approximately a bucket-width wide with the bed graded to the ocean. The last section of the channel (at the lagoon end) to be opened at the time of the next possible high tide (i.e. the highest possible tide of the day). Initiation of a breakout at this time is likely to result in the most effective and sustained mechanical breakout due to the increasing head difference through the course of the breakout. Swimming not advised signs placed over night in the location.
Project Background and Justification	Recent large ocean swell increased water levels in the lagoon and the height of the berm at the mouth of Bellambi Lagoon is preventing water to flow back out, creating localised flooding around the lagoon. Water levels have been greater than 2.2m for over two weeks. The water is currently over the main walkway and cycle path, forcing children, pedestrians, people in wheelchairs and mobility scooters to use the roadway of the surrounding streets to pass the location. The cycle way is very busy and would be a regular route for children going to and from school. At this level, the water is also surrounding Sydney Water Infrastructure. Water is also close to impacting adjacent private property. 

	 See larger photos in Appendix A. This lagoon is an Intermittently Open and Closed Lagoon (ICOLL) and naturally has fluctuations in water levels. There is not an adopted Entrance Management Policy for this waterway, due to this issue happening so rarely, and impacting fewer properties, as compared other waterways such as Fairy Lagoon and Towradgi Creek. There is commitment to further investigate this issue as part of the Coastal Management Program for the Wollongong coast and estuaries that is current in preparation (process is at Stage 2).
Proposed Start Date & Work Period	August 2024
Work Equipment & Machinery	Hand tools, backhoe or excavator
Proposed work hours	Between 7.00 am and 6.00 pm Monday to Friday 8.00am and 1.00pm Saturday (Refer to Safeguards section)
Alternative proposals considered	The only alternative proposal is not to proceed and await rainfall heavy enough to breach the berm. This may result in higher water levels being reached prior to that breaching, impacting on private properties or long-term impact on Sydney Water Infrastructure. Therefore, it is concluded that the proposal should proceed, as long as the safeguards in this REF and associated Fisheries Permit are strictly implemented.

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**

Foreshore Management

EXTENT OF WORKS

The proposed works must be contained within a nominated footprint. Works are not to spread out over the adjoining vegetated area, rock platform area or beach unnecessarily.

SEDIMENT AND EROSION CONTROL

Erosion and sediment mitigation devices are to be erected in a manner consistent with currently accepted Best Management Practice (i.e. Managing Urban Stormwater; Soils and Construction 4th Edition Landcom, 2004) to prevent entry of sediment into the waterway prior to any earthworks being undertaken.

These are to be maintained in good working order for the whole duration of the proposed works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal.

WORK IN WATERS

- Machinery is not to enter, or work from any waterway.
- If machinery needs to enter into the waterway, it is to be appropriately cleaned, degreased and serviced.
- Spill kits are to be available on site at all times during the works.
- No sediment plumes are to be caused in the waterway outside the immediate works area.
- At the end of each work period, ensure the site is clean so no materials will enter the marine environment during high tides.

AVOIDING HARM TO NATURAL AREAS

- When working near beach, sand dunes or rock platform these areas need to be identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas).
- Material storage and stockpiling is not to be undertaken on beach or rock platform.

CLEAN UP AND SITE RESTORATION

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

- Surplus construction materials and temporary structures (other than silt fences and other erosion sediment control devices) installed during the course of the works are to be removed.

FISH KILL CONTINGENCY

The is a potential for fish kills with this activity. This lagoon system tends to drain, even in natural situations, when it is open to the ocean.

A visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the banks of the waterways) is to be undertaken during and after the works. If a fish kill or sick fish, dead or distressed 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 and report it to the Wollongong Council's Environmental Planning Team.

WORKING ON ROCK PLATFORM/BEACH

During the construction phase the following safeguards should be implemented.

- Vehicle and plant access to the foreshore will be along a nominated track only.

- All vehicles and plant on the rock platform must have soft tyres.
- All major and minor plant to be re-fuelled and preventative maintenance tasks to be carried out prior to their location onto the rock platform. No re-fuelling is to occur on the rock platform or beach sands.
- Absorbent materials (and spill kit) will be kept on site for the duration of works for potential fuel and hydraulic spillages.
- If absorbent materials are utilised these will be bagged and removed off-site to an appropriate waste disposal facility.
- Beach sands and sediment generated from the works will be left on the beach. The natural tidal movements will disperse the material over time.
- If applicable a floating silt curtain shall be provided that encompasses and encloses the work site. Materials used for the waterfront erosion control shall not include anti-fouled surfaces, treated timber or any product that is likely to have an impact on aquatic organisms or the aquatic environment.
- Opening should not be undertaken if wave conditions are dangerous i.e. if Hsig is greater than 4m.

Environmental Awareness

- The work crew or contractor must have a copy of the REF on-site, and be fully aware of the REF safeguards to be implemented.
- The work crew or contractor will undergo an induction prior to work commencing and complete the induction checklist. The induction may cover environmental constraints and incident responses. A register of inductions and induction checklist will be maintained and provided if requested.
- Before You Dig Australia (BYDA) as part of this scope preparation. It is expected that the contractor will organise their own BYDA.
- 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 with the REF and provide feedback on ways to improve work practices.

Erosion & Sediment Control

The proposed works have the potential to create soil erosion and sediment pollution. Prior to works commencing, erosion and sediment controls should be implemented for the duration of the works. The basic principles of erosion and sediment control are summarised below:

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

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 C).
- 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

Flora & Fauna

- Where possible site compounds will be located on previously disturbed areas away from vegetation.
- Minimal vegetation/natural habitat to be disturbed. Consider ground cover/bush regeneration sites/proposed future use of the site.
- All native birds, reptiles, amphibians and mammals, except the dingo, are protected in NSW. All hollow bearing trees are to be retained.
- If fauna is present on site and there is the need to assess animal condition, obtain advice from Wires on 1300 094 737 or call a licensed wildlife operator.
- If a 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.

Fisheries Permit Requirements

A Fisheries Permit has been issued for these works **– PN24/364** – and is attached in **Appendix I**. The following administrative conditions and on-site conditions must be completed or implemented.

ADMINISTRATIVE CONDITIONS

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

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

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

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

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

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

4) This permit (or a true copy) must be carried by the permit holder or sub-contractor operating on-site at all times during works activity in the permit area.

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

NATURE AND EXTENT OF WORKS

5) The permit holder must ensure that all works authorised by this permit are restricted to the permit area and are undertaken in a manner consistent with those described in the: permit application dated 19 August 2024 and Review of Environmental Factors for the works (Wollongong City Council, EP REF-2024/5, 19 August 2024). Other works, which have not been described, except those activities required by this permit, are not to be undertaken.

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

6) This emergency ICOLL entrance opening is to be conducted around the high tide, or on the upper part of a falling tide. Should any variation to this be required, the Departmental Contact Officer for this permit should be contacted to discuss and seek authorisation of this.

   Reason – To increase headloss and scour from the entrance opening event and reduce the risk of flooding associated with opening the waterway on an incoming tide.

WORK IN WATERS

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

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

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

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

AVOIDING HARM TO SNAGS, MARINE AND RIPARIAN VEGETATION

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

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

FISH KILL CONTINGENCY

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

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

Tree Protection

- Refer to the **Tree Protection Plan/Procedure** Appendix D and/or below to prevent tree trunk and root damage (refer to any Arborist Report for specific detail). If impact occurs, contact a Level 5 AQF Arborist as soon as possible. Adopt the Arborist remedial recommendation so as to reduce any long-term adverse effect on the tree's health. Tree root systems are essential for the health and stability of the tree.
- All relevant trees must be protected using the provision of temporary fencing, barricades or No-Go Zones. These controls must be installed to prevent damage to the trunk or root system from materials; equipment and soil build up around tree base.
- The tree protection fencing post should not involve the severance of any roots greater than 50mm in diameter without the prior approval of the Level 5 AQF Arborist.
- Use hand excavation in and around the roots of trees, when encountered. Under the guidance of a Level 5 AQF Arborist, any roots 50mm or less in diameter may be pruned cleanly with a sharp saw. In general roots extend outward from the trunk and occupy irregularly shaped areas 4 to 7 times larger than the projected crown area with an average diameter of two or more times the height of the tree.

  If any tree pruning is required Council's Level 3 Arborist must complete A Tree Environmental Assessment Form prior to the works.

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.
- Refer to the Tree Protection Plan for specific access requirements into the park.

In-Situ Waste Classification Summary

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

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

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

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

Material Removed Off-site / Waste Generation

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

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

Imported Fill Material and Reuse on Site

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

Acid Sulfate Soils

Implement Best Practice Guidelines.

For sampling and identification on site refer to:
https://www.waterquality.gov.au/sites/default/files/documents/sampling-identification-methods_1.pdf

The *Wollongong Local Environmental Plan 2009* Acid Sulfate Soils Map has identified that the site may be affected by Classes 5 Acid Sulfate Soils. Acid Sulfate Soils contain iron sulfides which, when exposed to air due to drainage or disturbance, may produce sulfuric acid and release toxic quantities of iron, aluminium and heavy metals. The Acid Sulfate Soils Map is an indication only and acid sulfate soils may be encountered during the excavation for the proposed development.

Class 4: Acid sulfate soils in a class 4 area are likely to be found beyond 2 metres below the natural ground surface. Any works that extend beyond 2 metres below the natural ground surface, or works which are likely to lower the water table beyond 2 metres below the natural ground surface, will trigger the requirement for assessment and may require management.

Class 5: Acid sulfate soils are not typically found in Class 5 areas. Areas classified as Class 5 are located within 500 metres on adjacent class 1, 2, 3 or 4 land. Works in a class 5 area that are likely to lower the water table below 1 metre AHD on adjacent class 1, 2, 3 or 4 land will trigger the requirement for assessment and may require management.

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.

There is potential for temporary odours once the water level lower, as some of the inundated grass has died. Open Space and Environmental Services staff should be notified of work so any concerns/complaints relating to this issue can be addressed.

Visual Environment

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

Noise & Vibration

- If there is to be any significant noise impacts, neighbouring residents are to be notified.
- The machinery chosen is to have been well maintained and is to be operated in a proper and efficient manner to minimise noise.

Recommended Office of Environment and Heritage standard hours for construction work:

- **Normal construction - Monday to Friday 7 am to 6 pm, Saturday 8 am to 1 pm.**
- **No work on Sundays or public holidays.**
- Blasting - Monday to Friday 9 am to 5 pm, Saturday 9 am to 1 pm
- No blasting on Sundays or public holidays.
- Works that may be undertaken outside the recommended standard hours are:
  - The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads
  - Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
  - Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours
  - Public infrastructure works that shorten the length of the project and are supported by the affected community
  - Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

European Heritage

- Work is not to impact upon heritage items; in particular, no work shall occur within the boundary or the curtilage of any heritage item or property, until all necessary consultations and approvals have been undertaken / obtained.
- Works to be carried out with care at or adjacent to an existing heritage monument when undertaking tree management works, as branches are not to be dropped on heritage monuments.

Aboriginal Heritage

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 2 Aboriginal sites or places recorded in within 200m of the proposed works.** Therefore the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW) was followed. See Appendix E.

- The Illawarra Local Aboriginal Land Council will be notified of proposed Lagoon openings prior to works commencing.
- If any previously undetected archaeological site, object or artefact is uncovered or unearthed during the course of any works or activities associated with the proposal, works should cease in the vicinity of that site, object or artefact. Council's Heritage Advisor should be contacted immediately.

Heritage Unexpected Finds

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

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

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

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

- The Contractor/Supervisor will Stop Work Immediately when an unexpected heritage find is encountered.
- The Contractor/Supervisor will cordon off area until Council's Heritage Officer advises that work can recommence.
- The Contractor's Environment Manager will:
  - Manage the process of identifying, protecting and mitigating impacts on the 'find'.
  - Liaise with Council Heritage Officer/Heritage advisor and maybe the relevant authorities on significance of the find, mitigation and regulatory requirements.
  - Complete incident report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
  - Advise Contractor/Supervisor to recommence work.
- Council's Heritage Officer/Heritage advisor will provide expert advice to the Contractor's Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.

- Contractor's Environment Manager will notify Council's ESO of 'find' and manage incident reporting once completed by Contractor's Environment Manager.
- The Department of Planning and Environment – Heritage NSW (for Aboriginal objects) will regulate the care, protection and management of Aboriginal objects and will issue Aboriginal heritage impact permits.
- The Department of Planning and Environment - Heritage NSW (for relics) will regulate the care, protection and management of relics and will issue excavation permits.

4. LEGISLATIVE REQUIREMENTS

The following legislative requirements have been assessed against the proposed works and under the SEPP (Transport and Infrastructure) 2021 the works do not require consent under **Chapter 2 Division 25 Waterway or foreshore management activities.**

SEPP (Transport and Infrastructure) 2021
Chapter 2

2.3 Interpretation—general
…
(2) In this Chapter—
…
emergency works means works carried out in response to—

(a) a sudden natural event, including a storm, flood, tree fall, bush fire, land slip or coastal inundation, or
(b) accident, equipment failure or structural collapse, or
(c) damage caused by vandalism, arson or a pollution incident,

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

2.7 Relationship to other environmental planning instruments
Note—This section is subject to section 3.28(4) of the Act.
(1) Except as provided by subsection (2), if there is an inconsistency between this Chapter and any other environmental planning instrument, whether made before or after the commencement of this Chapter, this Chapter prevails to the extent of the inconsistency.
Note—Subsection (1) does not prevent a local environmental plan from making provision about development of a kind specified in Part 2.3 in a particular zone if the provisions of this Chapter dealing with development of that kind do not apply in that zone.
(2) Except as provided by subsections (3) and (4), if there is an inconsistency between a provision of this Chapter and any of the following provisions of another environmental planning instrument, the provision of the other instrument prevails to the extent of the inconsistency—

(a) sections 2.7, 2.8 and 2.16 of *State Environmental Planning Policy (Coastal Management) 2018*,
(b) all of the provisions of *State Environmental Planning Policy (State Significant Precincts) 2005*.

(3) Section 2.54 of this Chapter prevails over clauses 10 and 11 of *State Environmental Planning Policy (Coastal Management) 2018* to the extent of any inconsistency.
(4) A provision of this Chapter that **permits development for the purpose of emergency works or routine maintenance works to be carried out without consent, or that provides that development for that purpose is exempt development, prevails over clauses 10 and 11 of *State Environmental Planning Policy (Coastal Management) 2018* to the extent of any inconsistency, but only if any adverse effect on the land concerned is restricted to the minimum possible to allow the works to be carried out.**
(5) For the avoidance of doubt, development to which subsection (3) or (4) applies is not declared designated development for the purposes of the Act.

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.

Local Government Act 1993

48 Responsibility for certain public reserves

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

(a) public reserves that are not under the control of any other body or lease from the Crown,

(b**) public reserves that the Governor, places under the control of the council.**

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2 Vegetation in Non-Rural Areas

This is not applicable for the proposed works, which do not involved any vegetation clearing.

Chapter 3 Koala Habitat Protection 2020

Applies to RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry zones. Not applicable to the locations in this REF.

Chapter 4 Koala Habitat Protection 2021

Applies to all zones except RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry. None of the sites represent core koala habitat and it is not anticipated that any koala feed tree species identified in Schedule 1 or any koala use trees identified in Schedule 3 of the SEPP will be impacted by the proposed works.

State Environmental Planning Policy (Resilience and Hazards) 2021

environmental protection works means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.

coastal protection works means— beach nourishment activities or works, and activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters, including (but not limited to) seawalls, revetments and groynes.

The ***coastal zone*** means the area of land comprised of the following coastal management areas—

(a) the coastal wetlands and littoral rainforests area,
(b) the coastal vulnerability area,
(c) the coastal environment area,
(d) the coastal use area.

Chapter 2 Coastal Management

Part 2.2 Development controls for coastal management areas

Comment:

The works are located on land mapped under the SEPP – Coastal Environment Area, Coastal Use Area, Coastal Wetland Proximity Area. However, not located near or within a Coastal Wetland area nor a Littoral Rainforest area/proximity area. Refer to Appendix F for Coastal Management Assessment.

New South Wales *Biodiversity Conservation Act 2016 (BC Act)*

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

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

Comment:

A BioNet atlas search, within the study area, identified threatened species see the Flora and Fauna Assessment, including Assessments of Significance for **Swamp Oak Floodplain Forest** and **Green and Golden Bell Frog**, in Appendix G. 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.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

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

Comment:

Matters of NES have been reviewed within the study area - see the Flora and Fauna Assessment, including Assessments of Significance for **Swamp Oak Floodplain Forest** and **Green and Golden Bell Frog**, in Appendix G. No referral to the Commonwealth Department of the Environment is required.

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

All endangered, vulnerable and endangered and vulnerable ecological communities or populations have been considered on the Department of Primary Industries website for Threatened Fish. An application for a Permit to dredge has been lodged with NSW Department of Primary Industries and Regional Development – Fisheries.

National Parks and Wildlife Act 1974 (NPW Act)

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.

Comment:
A search of the AHIMS database identified 2 items of Aboriginal Heritage in the region surrounding the study area. **Council has considered the requirements under the NPWA in relation to Aboriginal Cultural Heritage. An Aboriginal Heritage Impact Permit (AHIP) is not required under the Act, as the Due Diligence Code of Practice for the Protection of Aboriginal Objects (2010) has been followed and documented. See** Appendix E.

Aboriginal Land Rights Act 1983
Pursuant to s.36 of the *Aboriginal Land Rights Act 1983*, multiple Aboriginal Land Claims have been lodged over land within the Wollongong LGA.
As the claims are currently undetermined, Wollongong City Council has implemented a risk of transfer assessment for Crown Reserves upon which significant capital works are proposed.
Council has considered this risk, which has been determined to be Low and Council has therefore decided to proceed with the proposed works.

***Native Title Act 1993* (NT Act)**
The object of this Act is to participate in the national scheme established by the Commonwealth Government and to validate any past State acts invalidated because of the existence of native title. The proposed act (maintenance works) complies with the applicable provisions of the *Native Title Act 1993* being a valid future act under section 24JA. Council relies on subdivision L to validate the works. As the proposed act does not involve the construction or establishment of a public work, there are no notification requirements.

***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

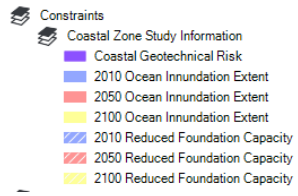
Provides for contributions to be paid by occupiers of scheduled waste facilities for each tonne of waste received at the facility or generated in a particular area; exempts certain occupiers or types of waste from these contributions; and allows deductions to be claimed in relation to certain types of 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.

5. ENVIRONMENTAL FACTORS IDENTIFIED AND EVALUATED

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

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Heritage		
Is there any Aboriginal Heritage within or close proximity to the worksite? (Refer to **AHIMS**)	**Overall impact – LOW**	Yes Refer to Appendix E
Does the site have landscape features that are likely to indicate presence of Aboriginal objects? If the proposed activity is: i. within 200m of waters ii. located within a sand dune system iii. located on a ridge top iv. ridge line or headland v. located within 200m below or above a cliff face vi. within 20m of or in a cave, rock shelter, or a cave mouth vii. is on land that is not disturbed land particularly at any of the above locations		Yes – the site is within 200m of waters (Bellambi Lagoon and ocean) and is located within a sand dune system. Ensure safeguards relating to **Aboriginal Heritage** and **Unexpected Finds** are strictly applied. Refer to Appendix H for the Unexpected Finds Protocol.
Is there any European Heritage listed on the current LEP?		Yes Bellambi Lake and Sandpit Point. Works are only within previously disturbed beach sands and will not impact on the heritage aspect of the Lake/Point.
Will these Heritage Items be impacted by the project?		It is unlikely if the controls in this REF are strictly implemented **-** ensure safeguards relating to **Aboriginal Heritage** are strictly applied**.** See Appendix E.
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**	Unlikely. The works are not likely to reach depths of Class 4 or Class 5 Acid Sulfate Soils nor lower the water table below 1 metre AHD/natural ground surface so very low likelihood of disturbance. However, ensure safeguards relating to **Acid Sulfate Soils** are strictly applied**.**
Are the works to be conducted within 40m of watercourses or any other type of natural water body?		Yes – adjacent to ocean. Ensure safeguards relating to **Water Quality** are strictly applied.
Will the works result in changes to water flow in any way?		Yes – the proposed works will facilitate water escaping into the ocean.

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Are the works within a flood affected zone?		Within the waterway that varies between flowing and dry. The proposal does not represent an increased risk to life or property in regard to flooding. The works will reduce the impacts of 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)?		No, however, refer to **Appendix C** – Incident Management Procedure and ensure safeguards relating to **Water Quality** are strictly implemented.
Will the works create areas of unprotected soil or loose surface for more than 24 hours?		Sand only, and it will be no greater than prior to works where erosion was a natural process. Ensure safeguards relation to **Erosion and Sediment Control** are strictly applied.
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 shows the Crown Land lot that extends northward around Bellambi Point is mapped as contaminated land – "potentially Contaminated Land due to Previous Uses (5402)". This is likely due to the presence of the sewage treatment plant to the north as this is a very long lot. Not considered to affect the areas identified for works under this REF. Ensure safeguards relating to **Asbestos, Contamination** and **In-Situ Waste Classification Summary** are strictly applied, and the Unexpected Finds Protocol is followed in **Appendix H**.
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		N/A – the proposed works do not involve the demolition or maintenance of a building.
Are the works mapped within the Coastal Zone as Geotechnical risk? 		Yes, within inundation and reduced foundation capacity extents. The works will not increase the risk of erosion.
Are the works subject to the *Wollongong Coastal Zone Management Plan 2017*?		CZMP no longer in force – expired 31/12/2023, however this was not within scope of CZMP.

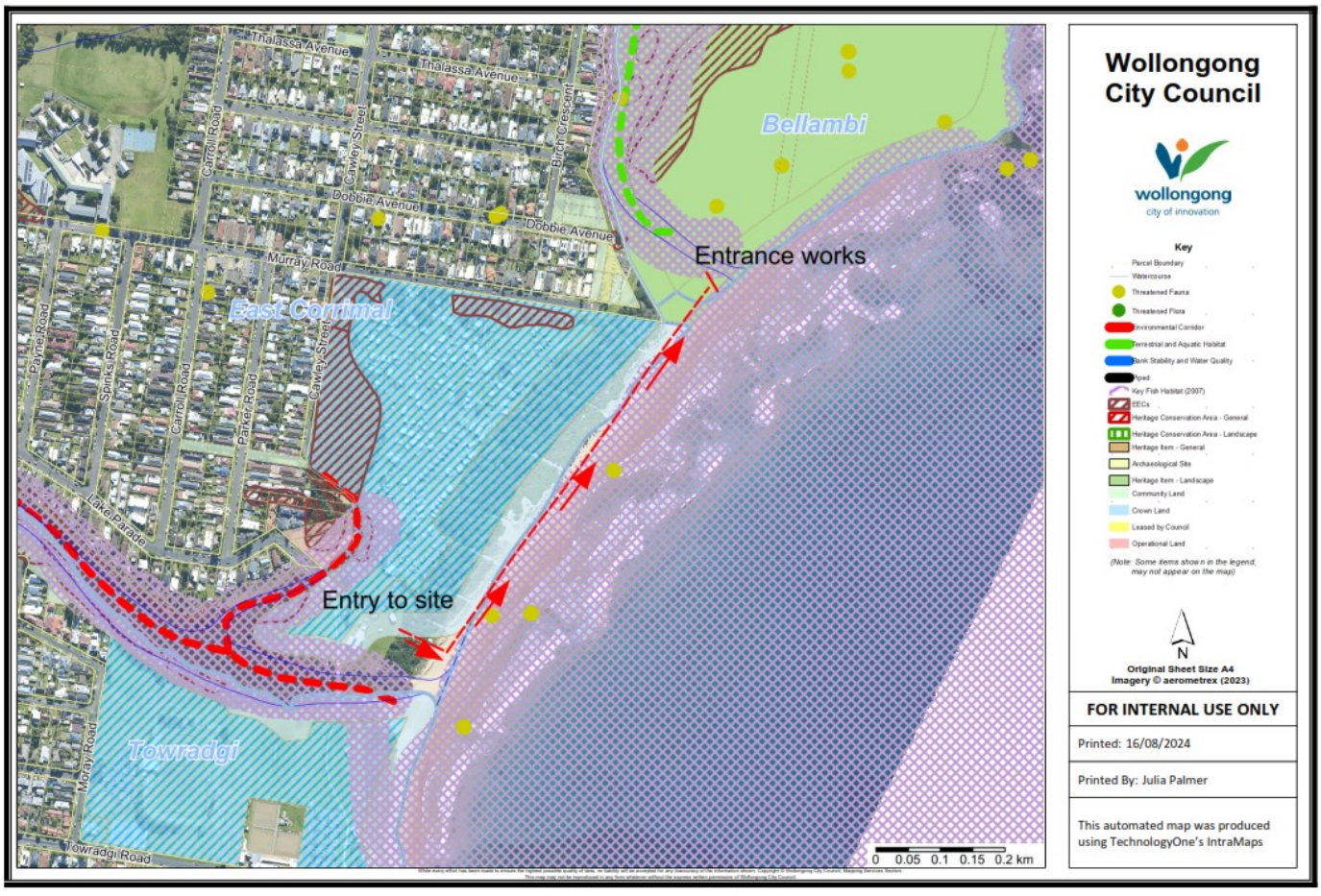
ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
Flora & Fauna/Tree Protection/Access/Community Environmental Impacts		
Is any vegetation required to be removed?	**Overall impact – LOW**	No
Is SEPP (Biodiversity and Conservation) 2021 applicable?		Chapter 4 Applies. However, in this case there are no trees for removal.
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		Yes – mapped as MU57b Beach Sand. Other communities in the broader lagoon area, including Coastal Sand Scrub, Beach Sands Spinifex, Bangalay Sand Forest and Swamp Oak Floodplain Forest. Ensure safeguards relating to **Flora and Fauna** are strictly applied.
Are the works located on land identified as the Escarpment Management Plan Area under WCC IntraMaps Constraints? Illawarra Escarpment State Conservation Area plan of management (nsw.gov.au)		No
Is the area within a Habitat Model in WCC IntraMaps Constraints?		Yes – adjacent to potential habitat for the Large-footed Myotis. No impact is expected, however ensure safeguards relating to **Flora and Fauna** are strictly applied.
Do the works occur within Key Fish Habitat? Refer to Threatened Fish Species List.		Yes Ensure safeguards relating to **Flora and Fauna, Water Quality, Erosion and Sediment Control,** and any requirements under the **Fisheries Permit** for the works are strictly implemented**.**
Are the works to be conducted within a Natural Area Asset? (Refer to the WCC IntraMaps Environmental Restoration layer)		Yes, however no active restoration works occur on the site as it is beach sand/waterway.
Are the works near a seed collection point on the WCC IntraMaps Environmental Restoration layer?		No
Is there any Bush Care or other Environmental Restoration undertaken at the site?		No
Is the worksite listed as Bushfire Prone Land under the WCC IntraMaps Planning DCP layer?		No
Are there any Endangered Ecological Communities or potential habitat for threatened species as listed on the Planning DCP layer or on the BC Act BioNet or the EPBC Act SPRAT on or adjacent to the work site?		Yes – there are no EECs mapped at the location of the proposed works, but there are EECs mapped in the broader lagoon area. See Appendix G for the Biodiversity Assessment.

ENVIRONMENTAL FACTOR	Impact L/M/H	Extent, Duration, Type Comment
		Species that occupy ICOLLs have become adapted to fluctuating water levels and opened and closed conditions, as this is a characteristic of these lake and lagoon systems. Ensure safeguards relating to **Flora and Fauna** and **Tree Protection** are strictly applied.
Amenity / Noise		
Are the works located on land identified as Community Land, on the WCC IntraMaps LEP Community Land Maps?	**Overall impact – LOW**	Yes, Community Land and Crown Land managed by Council
Will the works result in a reduction of the aesthetic and/or recreational qualities of the area or restrict the beneficial uses of the area in the future? Refer to Point of Interest in features on the Base Map Information		No - the works will reduce flooding impacts in the area, allowing for the public to use the walkway/cycle path, improving on recreational qualities.
Will the works cause excess noise?		Yes. Temporary equipment use. Ensure safeguards relating to **Noise** are strictly implemented.
Are the works within the coastal management areas defined by SEPP (Resilience and Hazards) 2021?		Mapped as part of the Coastal Use and Environment Area, Wetlands Proximity area – refer to Appendix F.
Any transformation of a locality? Human and non-human environment?		Minor transformation of the beach berm.
Does the works fall under SEPP (Transport and Infrastructure) 2021?		Yes – Chapter 2 Division 25 Waterways or foreshore management activities.
Cumulative Impact Assessment - existing or future?		Minor
Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act. **Goals** We value and protect our environment We have an innovative and sustainable economy Wollongong is a creative, vibrant city We are a connected and engaged community We have a healthy community in a liveable city We have affordable and accessible transport		Yes The proposal is consistent with the objectives and vision of 'Our Wollongong Our Future 2032: Community Strategic Plan' for the LGA. *'From the mountains to the sea, we value and protect our natural environment and we will be leaders in building an educated, creative and connected community.'*

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

Appendix A: Environmental Constraints Aerial / Photographs / Plans

Map 1: Access route (dotted red line) and entrance opening location (solid red line)



Map 2: Environmental Constraints

Photo 1: Flooding cycleway and Sydney Water Infrastructure and fence of adjacent private property

Photo 2: Entrance looking north

Photo 3: Entrance looking east

Appendix B: Crown Lands Email 14 August 2024

RE: Crown Land Licences

Heike Peterlin <heike.peterlin@crownland.nsw.gov.au>
To Mitchell Daly

Reply | Reply All | Forward
Wed 14/08/2024 2:15 PM

[EXTERNAL EMAIL] This email was sent from outside of Wollongong City Council – be cautious, particularly with links and attachments.

Hello Mitchell,

As long as all the works are located wholly within the council managed reserve boundaries, then no additional licence from this department is required.

If the proposed works will be carried out under Part 5 of the EP&A Act and if the related REF needs to be advertised by Council, then this office would appreciate a copy of the REF for our records.

Council as the appointed CLM will need to ensure any applicable obligations under the Aboriginal Land Rights Act 1983 and the Native Title Act 1993 are met/complied with.

Not sure if the works you are proposing are on coastal Crown land, but just in case please note the following available resource:
https://www.crownland.nsw.gov.au/protection-and-management/environmental-management/coastal-crown-land-guidelines

Regards.

Heike Peterlin
Group Leader South East (South East Nowra - Bega)
Crown Lands – Land & Asset Management
Department of Planning, Housing and Infrastructure
T 02 4428 9108 | **E** heike.peterlin@crownland.nsw.gov.au
PO Box 2185, Dangar NSW 2309
www.crownland.nsw.gov.au

NSW GOVERNMENT

Department of Planning, Housing and Infrastructure

NSW GOVERNMENT

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

From: Mitchell Daly <mdaly@wollongong.nsw.gov.au>
Sent: Wednesday, August 14, 2024 1:54 PM
To: Heike Peterlin <heike.peterlin@crownland.nsw.gov.au>
Subject: Crown Land Licences

Hi Heike

When Council is appointed as Crown Land Manager (CLM) and is seeking to undertake environmental/flood prevention works on the land where we are appointed as CLM, is there a requirement for Council to obtain a Crown Land Licence?

If the proposed works fit within the permitted use of the land under the POM and do not require a DA, is Council required to seek approval from Crown Lands?

Regards,

wollongong
city of innovation

Mitchell Daly | Statutory Property Coordinator
Phone +61242278977
Email mdaly@wollongong.nsw.gov.au | **wollongong.nsw.gov.au**

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.

Appendix C: 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.

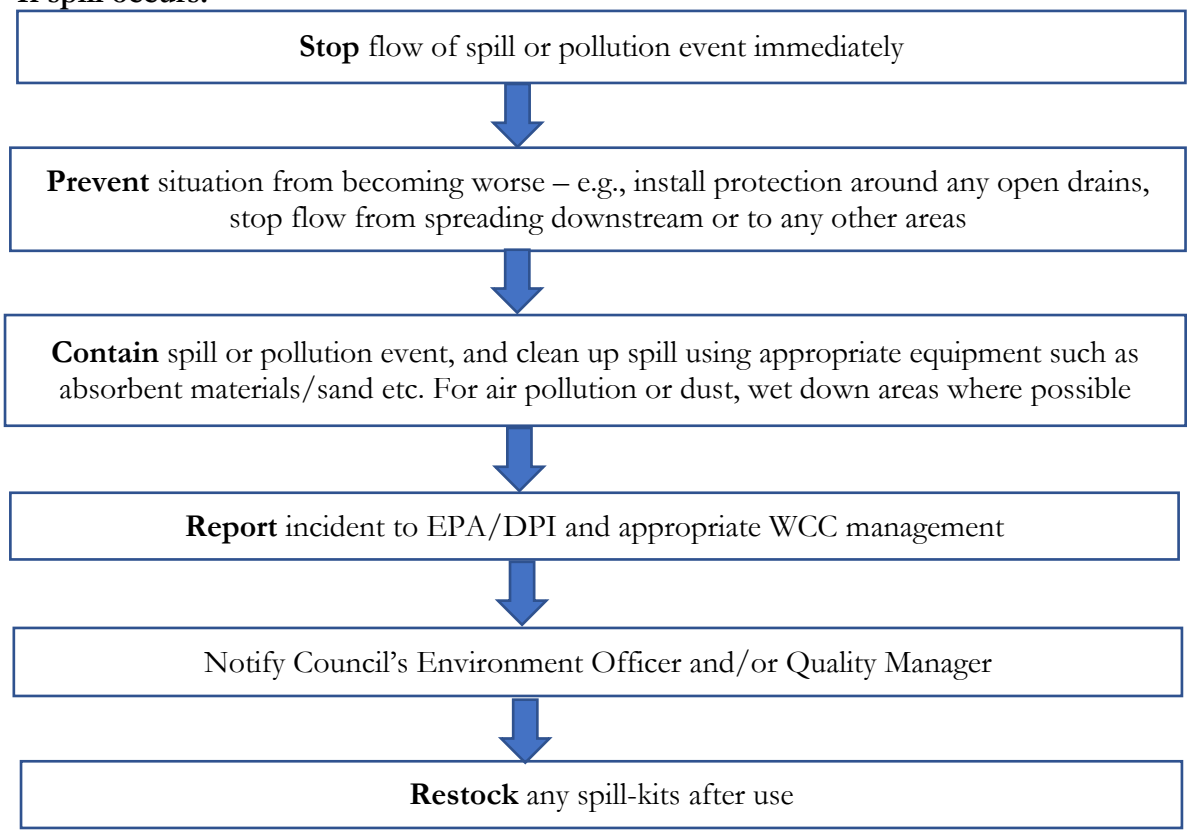
APPLICATION

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 D: Tree Protection Procedure

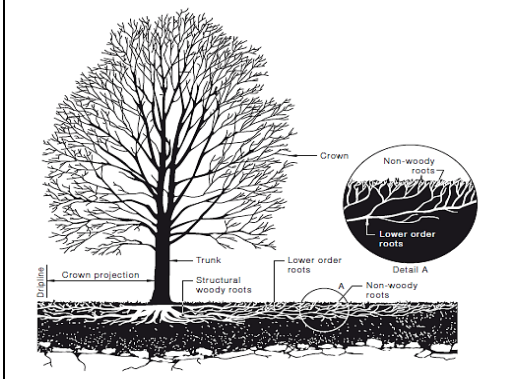
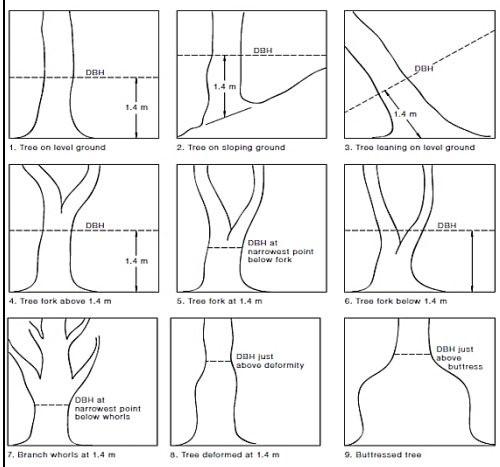


FIGURE B1 STRUCTURE OF A TREE IN A NORMAL GROWING ENVIRONMENT

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

TPZ standard should be:

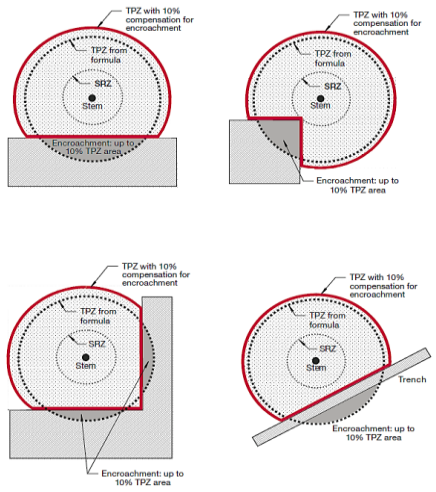
- TPZ = DBH x 12 (Where DBH is the trunk diameter measured at 1.4m above ground).
- Not greater than 15m.
- **TPZ should not be less than 2m nor greater than 15m** (Except where crown protection is required).
- **TPZ of palms, tree ferns, other monocots and cycads should not be less than 1m outside the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



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

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

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



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

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

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

Encroachment into TPZ is sometimes unavoidable:

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

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

Appendix E: Aboriginal Heritage Due Diligence Assessment

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 2 Aboriginal sites or places recorded in within 200m of the proposed works.** Therefore the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW) was followed.

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 land is transient sand that has been disturbed through previous openings of the lagoon, below the mean high tide mark;
- Access for machinery has been limited to disturbed areas with no known sites;
- Vegetation will not need to be removed and all other trees will be protected on site;
- There are no Aboriginal objects located within the proposed works area (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;
- The Illawarra Local Aboriginal Land Council will be notified of proposed Lagoon openings prior to works commencing.

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

See ECM Document 25603148 For Full Aboriginal Heritage Due Diligence Assessment

Appendix F: Coastal Management Assessment

Matters for Consideration under the State Environmental Planning Policy (Resilience and Hazards) 2021	**Yes/No/Comments** Refer to https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address
Division 1 cl. 2.7 **Is the proposal within the Coastal Wetlands and Littoral Rainforests Area?** …development for the purpose of environmental protection works on land identified as "coastal wetlands" or "littoral rainforest" on the Coastal Wetlands and Littoral Rainforests Area Map may be carried out by or on behalf of a public authority without development consent if the development is identified in— (a) the relevant certified coastal management program, or (b) a plan of management prepared and adopted under Division 2 of Part 2 of Chapter 6 of the Local Government Act 1993, or (c) a plan of management under Division 3.6 of the Crown Land Management Act 2016.	No
Division 1 cl. 2.8 **Is the proposal within the Proximity to Coastal Wetlands and Littoral Rainforests Area?** Development consent must not be granted to development on land identified as "proximity area for coastal wetlands" or "proximity area for littoral rainforest" on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on: • the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or • the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest	Yes, the site is within the wetlands proximity area. It is important that all safeguards relating to **Flora and Fauna**, **Water Quality** and **Erosion and Sediment Control** are strictly implemented to ensure that the works will not have an adverse impact on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland, nor the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland.
Division 1 cl. 2.9 **Is the proposal within the Coastal Vulnerability Area?** Development consent must not be granted to development on land that is within the area identified as "coastal vulnerability area" on the Coastal Vulnerability Area Map unless the consent authority is satisfied that: (a) if the proposed development comprises the erection of a building or works—the building or works are engineered to withstand current and projected coastal hazards for the design life of the building or works, and (b) the proposed development—	The Coastal Vulnerability Area is not mapped yet in the SEPP, so these factors must be considered in all SEPP Coastal Management areas until mapping is completed. This project will not alter coastal processes due to its minor and temporary nature of the works. Public access or use of the land will only temporarily be impacted during works.

(i) is not likely to alter coastal processes to the detriment of the natural environment or other land, and (ii) is not likely to reduce the public amenity, access to and use of any beach, foreshore, rock platform or headland adjacent to the proposed development, and (iii) incorporates appropriate measures to manage risk to life and public safety from coastal hazards, and (c) measures are in place to ensure that there are appropriate responses to, and management of, anticipated coastal processes and current and future coastal hazards.	
Division 1 cl. 2.10 **Is the proposal within the Coastal Environment Area?** (1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following: (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment, (b) coastal environmental values and natural coastal processes, (c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1, (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms, (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, (f) Aboriginal cultural heritage, practices and places, (g) the use of the surf zone. (2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that: (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.	Yes **(a)** No expected adverse impact as long as safeguards relating to **Flora and Fauna**, **Water Quality** and **Erosion and Sediment Control** are strictly implemented (b) No expected adverse impact **(c)** No expected adverse impact as long as safeguards relating to **Flora and Fauna**, **Water Quality** and **Erosion and Sediment Control** are strictly implemented **(d)** No expected adverse impact as long as safeguards relating to **Flora and Fauna**, **Water Quality** and **Erosion and Sediment Control** are strictly implemented (e) No expected adverse impact (f) No expected adverse impact (g) No expected adverse impact
Division 1 cl. 2.11 **Is the proposal within the Coastal Use Area?**	Yes

Development consent must not be granted to development on land that is within the coastal use area unless the consent authority: (a) has considered whether the proposed development is likely to cause an adverse impact on the following: (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, (ii) overshadowing, wind funnelling and the loss of views from public places to foreshores, (iii) the visual amenity and scenic qualities of the coast, including coastal headlands, (iv) Aboriginal cultural heritage, practices and places, (v) cultural and built environment heritage, and (b) is satisfied that: (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and (a) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development. (b) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development	(i) No expected adverse impact (ii) No expected adverse impact (iii) No expected adverse impact (iv) No expected adverse impact (v) No expected adverse impact
Division 5 General 2.12 Development in coastal zone generally—development not to increase risk of coastal hazards Development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land. 2.13 Development in coastal zone generally—coastal management programs to be considered Development consent must not be granted to development on land within the coastal zone unless the consent authority has taken into consideration the relevant provisions of any certified coastal management program that applies to the land.	The NSW Coastal Management Act 2016 came into force on 3 April 2018. A Wollongong Coastal Management Program to align with the new legislation is yet to be adopted. A review of Council's coastal hazard mapping extents identifies that the subject site is impacted by coastal inundation and reduced foundation capacity at the 2010/ 2050/2100 timeline. Minimal adverse impacts on either the coastal environment/processes are expected as a result of the proposed works.

Appendix G: 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. The results of Bionet and Protected Matters searches have also been factored into the below. The table also considers the potential habitat at the site for native fauna by using the Habitat Model layer and Key Fish Habitat layer.

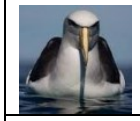
Scientific Name	Common Name	BC Act	EPBC Act	Habitat Requirements	Likelihood of Impact
FROGS					
Litoria aurea 	Green and Golden Bell Frog	Endangered	Vulnerable	Marshes, dams, streamsides, particularly those containing bulrushes *Typha* spp. or spikerushes *Eleocharis* spp. Optimum habitat includes water bodies which are unshaded, free of predatory fish *Gambusia holbrooki*, have a grassy area nearby and diurnal sheltering sites available such as vegetation and/or rocks.	There are historical sightings of GGBF (>20 years) in the Lagoon area. There is potential habitat in the surrounding area. See Assessment of Significance below.
Heleioporus australiacus 	Giant Burrowing Frog	Vulnerable	Vulnerable	Preference for sandstone ridge top habitat and broader upland valleys. Associated with small headwater creek lines and slow flowing to intermittent creek lines. Vegetation is typically woodland, open woodland and heath. Has also been observed in artificial pond structures that have naturalised over time and are still surrounded by other undisturbed habitat. The frog occurs generally within the escarpment area.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
REPTILES					
Hoplocephalus bungaroides 	Broad-Headed Snake	Endangered	Endangered	Exposed sandstone outcrops and benching, the vegetation is mainly woodland, open woodland and/or heath in these areas. The snakes utilise rock crevices during the cooler months and tree hollows during summer.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
MARINE					
Natator depressus 	Flatback turtle		Vulnerable Marine Migratory	The Flatback Turtle has a low domed, fleshy carapace (shell) with reflexed margins and is grey, pale grey-green or olive in colour (Bustard 1972; Cogger 1996, 2000; Limpus 1971). The Flatback Turtle is found only in the tropical waters of northern Australia, Papua New Guinea and Irian Jaya (Spring 1982; Zangerl et al. 1988). (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Dermochelys coriacea 	Leatherback Turtle/Leathery Turtle	Endangered	Endangered	A very large sea turtle up to 3 m long with heavy paddle-shaped limbs lacking claws. Occurs in inshore and offshore marine waters. Feed on jellyfish. Number of sightings in southern waters suggests species actively seeks temperate feeding grounds, rather than occurring only as stray vagrants. Nesting occurs in eastern Australia in summer between December and January	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

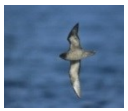
Eretmochelys imbricata 	Hawksbill Turtle		Vulnerable	A pelagic species, the Hawksbill Turtle migrates up to 2400 km between foraging areas and nesting beaches. The Illawarra is not a listed breeding site for this species.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Caretta– Caretta 	Loggerhead Turtle	Endangered	Endangered	Loggerhead Turtles are ocean dwellers, foraging in deeper water for fish, jellyfish and bottom-dwelling animals. The female comes ashore to lay her eggs in a hole dug on the beach in tropical regions during the warmer months.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Chelonia mydas 	Green Turtle	Vulnerable	Vulnerable	Ocean dwelling species spending most of its life at sea. Carnivorous when young but as adults they feed only on marine plant material. Eggs laid in holes dug in beaches throughout their range and scattered nesting records along the NSW coast.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, so changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Arctocephalus forsteri 	New Zealand Fur Seal	Vulnerable	Marine	Although the Australian and New Zealand populations show some genetic differences, their morphologies are very similar, and thus they remain classed as a single species. The species occurs in Australia and New Zealand. It is found in the coastal waters and on the offshore islands of southern Australia, from the south-west corner of Western Australia to just east of Kangaroo Island in South Australia, and also in southern Tasmania and the subantarctic Macquarie Island. Small populations are forming in Bass Strait and coastal waters of Victoria and New South Wales as far as the mid-north coast.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
 *Arctocephalus pusillus doriferus*	Australian Fur-seal	Vulnerable	Marine	Reported to have bred at Seal Rocks, near Port Stephens and Montague Island in southern NSW. Haul outs are observed at isolated places along the NSW coast. Prefers rocky parts of islands with flat, open terrain. Prefer rocky parts of islands or beaches.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Epinephelus daemelii	Black Rockcod, Black Cod, Saddled Rockcod		Vulnerable	Adult Black Rockcod can grow to 2 m in length, and are highly variable in colour depending on the environment. Fish in coastal reefs are usually banded and mottled in colour, while those in estuaries are uniformly dark, sometimes black. The species is found in warm temperate and subtropical parts of the south-western Pacific. In NSW, it occurs along the coast, including Lord Howe Island. The Black Rockcod is a territorial species that inhabits caves, gutters and crevices. They are usually found in depths up to 50 m, although individuals have been collected from below 100 m. (DPI)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, so changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

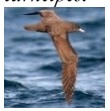
Hippocampus whitei	White's Seahorse, Crowned Seahorse, Sydney Seahorse		Endangered Marine	White's Seahorse is endemic to the east coast of Australia. Colour can range from ranges from very dark brown to pale tan but is highly variable as the species is known to change colour depending on their mood and the habitat colouration it is living on. Favouring shallow-water estuarine habitats, it is currently known to occur in eight estuaries on the NSW Coast, but is most abundant in Port Stephens, Sydney Harbour and Port Hacking. it can be found occurring in coastal embayments and estuaries. It is known to occur from depths of 1 m to 18 m. (DPI and DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, so changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Prototroctes maraena	Australian Grayling		Vulnerable	The Australian Grayling is a slender fish varying in colour from silvery with an olive-grey back and whitish belly, to olive green or brownish in the back with a darker mid-lateral streak and greyish fins. The species has large eyes, which are usually bright yellow, a rounded snout and a small head (Barnham 1998; DPI 2006). Currently, the Australian Grayling occurs in streams and rivers on the eastern and southern flanks of the Great Dividing Range, from Sydney, southwards to the Otway Ranges of Victoria and in Tasmania. The species is found in fresh and brackish waters of coastal lagoons (Cadwallader & Backhouse 1983; DPI 2006; Jenkins et al. 2009). (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, so changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Seriolella brama	Blue Warehou		Conservation Dependent	Blue warehou are dark bluish green above, somewhat iridescent, with a silvery white belly. They have a small head, plump body, and a blackish spot by the pectoral fin. Commonly found at about 50 cm in length. Blue warehou are a bentho-pelagic species that inhabits continental shelf and slope waters. Adults can be found at depths from 50-300 metres. Blue warehou are a schooling fish and usually aggregate close to the sea bed. Juveniles can sometimes be found schooling close to the surface in estuaries, often in association with jellyfish. (AFMA)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, so changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
MAMMALS					
Phascolarctos cinereus 	Koala	Endangered	Endangered	In coastal areas, Koalas feed on the leaves of Tallowwood *Eucalyptus microcorys* and Swamp Mahogany *Eucalyptus robusta.* Also feed on the leaves of Forest Red Gum *Eucalyptus tereticornis*, Grey Gum *Eucalyptus punctata*, Monkey Gum *Eucalyptus cypellocarpa* and Ribbon Gum *Eucalyptus viminalis*.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Cercartetus nanus 	Eastern pygmy possum	Vulnerable		Found in a broad range of habitats from rainforest through Sclerophyll (including Box Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Feeds mostly on the pollen and nectar from Banksias, Eucalypts, Bottlebrushes and understorey plants. Also soft fruits and insects. Nests in tree hollows, under bark of Eucalypts and abandoned bird nests.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Dasyurus maculates 	Spotted Tailed Quoll	Vulnerable	Endangered	Inhabits sclerophyll forest and woodlands, coastal heathlands and rainforests. Habitat requirements include den sites (ie. Hollow logs, tree hollows, rock outcrops or caves) and an abundance of birds, small mammals and large areas of intact vegetation. Breeding between April and July.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Isoodon obesulus obesulus 	Southern Brown Bandicoot (Eastern)	Endangered	Endangered	Occurs in a variety of habitats including heathland, shrub land, dry Sclerophyll forest with healthy understorey, sedge land and woodland. Lives in areas of sandy soil with low vegetation that is uses as cover.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Petaurus norfolkensis 	Squirrel Glider	Vulnerable		Two sightings reported in the Cataract and Avon catchments, Royal National Parks and recent records from the Wedderburn area. This species is often difficult to identify from the common Sugar Glider so it may exist in small numbers above the escarpment.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Petauroides volans 	Southern Greater Glider	Endangered	Endangered	Found in a variety of Eucalypt forests and utilises the tree hollows of these mature forests. The Southern Greater Glider, the Final Determination discusses that recent taxonomic work has spilt what was previously described as the one species in the genus ie Greater Glider Petauroides volans into two species with the Southern Greater Glider 'the only Greater Glider species that occurs in NSW'. Most records of the species in Wollongong LGA are in the water catchment and NPWS estate on the Woronora Plateau, with scattering of records on the Illawarra Escarpment foothills. The most recent record is from 2021 around Dombarton/Kembla Grange Estate.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Petaurus australis 	Yellow Bellied Glider	Vulnerable	Vulnerable	Preferred habitats are productive, tall open Sclerophyll forests where mature trees provide shelter and nesting hollows and year-round food resources are available from a mixture of Eucalypt species.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pseudomys novaehollandiae 	New Holland Mouse		Vulnerable	A small, burrowing native rodent, a social animal, living predominantly in burrows. It is known to inhabit open heathland, open woodlands with a heathland understorey, and vegetated sand dunes.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Pteropus poliocephalus 	Grey-headed flying-fox	Vulnerable	Vulnerable	The Grey-Headed Flying-Fox has a variety of habitats including rainforests, tall sclerophyll forests and woodlands, heaths and swamps. Urban gardens with cultivated fruit crops also provide habitat for this species. The species feeds on flowers from *the Eucalyptus, gummifera, E. muellerana, E. globoidea and E. botryoides*, and fruits from a wide range of rainforest trees, including Fig.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Myotis macropus (formally Myotis adversus) 	Southern myotis (formerly Large footed myotis)	Vulnerable		The Large-footed myotis tend to roost in caves, tree hollows, under bridges, in mines, road culverts and stormwater drains near permanent water. They prefer vegetated low lying, undulating land. Colonies are usually less than 15 in number. This species feed on small fish, prawns and aquatic macro-invertebrates like water boatman, backswimmers and whirligig beetles. They fly 15-100 cm above the water and trawl through the water with their feet. They will also hunt flying insects that congregate around water. Dominant males form a harem in the colony with 1 male and up to 12 females. Known to born up to two young per year, one in October and the other in January.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Chalinolobus dwyeri 	Large-eared Pied Bat	Vulnerable	Endangered	Fourteen sightings found in a wide range of habitats, including wet and dry Eucalypt forest, Cypress (*Callitris*) forest and sub-alpine woodland. It is a cave-roosting species, though it has also been detected roosting in disused mine shafts, overhangs. It seems to prefer the 'twilight' areas of caves, and may dependent on sandstone outcrops.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
BIRDS					
Hirundapus caudacutus 	White-throated Needletail	Vulnerable	Vulnerable Marine Migratory	This species is a large (20 cm in length) swift with a thickset, cigar-shaped body, stubby tail and long pointed wings. It is widespread in eastern and south-eastern Australia. Most species spend the non-breeding season in Australasia. In Australia, the species is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Diomedea exulans 	Wandering Albatross	Endangered	Vulnerable Marine Migratory	The Wandering Albatross is marine, pelagic and aerial. In the Australasian region, it occurs inshore, offshore and in pelagic waters. It flies within 15 m of the sea surface, using the updraft from wave fronts for lift. It breeds on islands. (DOE)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Thalassarche cauta 	Shy Albatross	Endangered	Endangered Marine Migratory	Occurs in subantarctic and subtropical waters. Some birds migrate to waters off South Africa or South America. They occur over continental shelves around continents. The species does enter harbours and bays. The species flies low to moderately high, using updraft from wave fronts for lift. They nest on level or gently sloping ledges, summits, slopes and caves of rocky islets and stacks, usually in broken terrain with little soil and vegetation. There is 2017 record of the species at Belmore Basin and the observation is Wildlife Rehab with no other sighting notes to indicate if the bird was dead, alive, rescued or other.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thalassarche carteri	Indian Yellow-nosed Albatross		Vulnerable Marine Migratory	The head and neck of the Yellow-nosed Albatross are white, with a small dusky patch before the eye, a narrow white line bordering the rear of the eye and extending beneath. The tail is grey, becoming darker with wear. The Indian Yellow-nosed Albatross forages mostly in the southern Indian Ocean where it is particularly abundant off Western Australia (Marchant & Higgins 1990). In the Australasian region, the species occupies inshore and offshore waters (Latham 1980; Storr 1964; Swanson 1983), particularly where there are calm seas and light winds (Cox 1973; Storr 1964). (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thalassarche salvini	Salvin's Albatross		Vulnerable Marine Migratory	Marine species occurs in shelf-waters around breeding islands. During the non-breeding seasons birds have been observed over continental shelves around commercial fishing vessels and grounds. They nest on slope vegetation with tussocks and succulents.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thalassarche cauta steadi 	White capped Albatross		Vulnerable Marine Migratory	The White-capped Albatross is a marine species and occurs in subantarctic and subtropical waters such as New Zealand. They may show that some birds migrate to eastern Bass Strait and some to the areas around South Africa	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thalassarche melanophris 	Black-browed Albatross	Vulnerable	Vulnerable Marine Migratory	The black-browed albatross is circumpolar in the southern oceans, and it breeds on 12 islands throughout that range. The black-browed albatross feeds on fish, squid, crustaceans, carrion, and fishery discards. This species has been observed stealing food from other species. This species normally nests on steep slopes covered with tussock grass and sometimes on cliffs; however, on the Falklands it nests on flat grassland on the coast. They are an annual breeder laying one egg from between 20 September and 1 November, although the Falklands, Crozet, and Kerguelen breeders lay about three weeks earlier.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

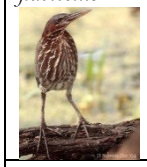
Diomedea antipodensis 	Antipodean Albatross	Vulnerable	Vulnerable Marine Migratory	They disperse over the Tasman Sea and South Pacific Ocean as far as the coast of South America. The Antipodean Albatross is marine, pelagic and aerial and may approach the edge of pack-ice. It sleeps and rests on ocean waters when not breeding. The Antipodean Albatross nests in open patchy vegetation, such as among tussock grassland or shrubs on ridges, slopes and plateaus.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Diomedea gibsoni 	Gibson's Albatross	Vulnerable	Vulnerable Marine	This species regularly occurs off the NSW coast from Green Cape to Newcastle. Although representing a small proportion on its total foraging area, potential forage in NSW waters during the winter is nonetheless considered significant for the species. Forage for Gibson's Albatross is extremely patchy, both spatially and temporally, and individuals traverse great distances in search of food. This species feeds pelagically on squid, fish and crustaceans.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Diomedea epomophora epomophora (sensu stricto) 	Southern Royal Albatross		Vulnerable Marine Migratory	The Southern Royal Albatross is migratory, and possibly circumpolar. It occurs in all sectors of the Southern Ocean. The Southern Royal Albatross is marine and pelagic. It occurs in subantarctic, subtropical and occasionally Antarctic waters. The Southern Royal Albatross nests on flat or gently sloping ground on slopes, ridges, gullies and plateau of large islands, and on the summits of islets.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Ardenna pacifica 	Wedge-tailed Shearwater		Marine Migratory	A coastal and pelagic species found in tropical and sub-tropical waters covering the Indian and Pacific Oceans. Breeds on island and the birds return in mid-August to early September when they establish pair bonds, dig out, prepare and defend potential nesting burrows.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Puffinus tenuirostris 	Short-tailed Shearwater		Marine Migratory	The shearwater is the most abundant Australian seabird. Their colonies are usually found on headlands and islands covered with tussocks and succulent vegetation such as pigface and ice plant. Headlands allow for easy take-off and landing.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Ardenna grisea	Sooty Shearwater		Vulnerable Marine Migratory	The Sooty Shearwater is a large, robust sea bird, with a wingspan up to 105 cm and a weight of up to 1 kg. The head, upper body, upper wing and tail of the Sooty Shearwater are uniformly dark brown-grey. It often appears all dark at sea, except for the under-wing. In Australia, the Sooty Shearwater breeds on islands off New South Wales (NSW) and Tasmania. In Australian waters, the Sooty Shearwater has been recorded in areas with sea surface-temperatures of 8.7-22.0° C (Reid et al. 2002). (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Puffinus carneipes. 	Flesh-footed Shearwater	Vulnerable	Marine Migratory	The Flesh-footed Shearwater mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters. Individuals also pass through the tropics and over deeper waters when on migration. Pairs breed on islands in burrows on sloping ground in coastal forest, scrubland, shrubland or grassland.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Calonectris leucomelas 	Streaked Shearwater		Marine Migratory	This species occurs in inshore waters in the Pacific Ocean. It migrates towards southern Australia and mainly feeds on fish and squid.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Macronectes halli. 	Northern Giant Petrel	Vulnerable	Vulnerable Marine Migratory	The Northern Giant Petrel visits areas off the Australian mainland mainly during the winter months (from May to October). Immature and some adult birds are commonly seen during this period in offshore and inshore waters on the east coast. The Northern Giant Petrel eats seal, whale, and penguin carrion, and seal placenta. Kelp is also recorded in its diet.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pterodroma cervicalis	White-necked Petrel		Marine	A large pelagic petrel with long wings and a long, thick bill. The dark "M" pattern on the wings contrasts with the gray back. The underwings are mostly white (eBird). Ranges over subtropical and tropical waters of the South Pacific.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Fregata ariel 	Lesser Frigatebird		Marine Migratory	The lesser frigatebird is a lightly built seabird with brownish-black plumage, long narrow wings and a deeply forked tail. Breeding seems to occur between May and December in the Australian region. They nest in trees (on Christmas Island) and both sexes contribute to nest building and incubation and feeding of the young. One egg is laid which takes 6–7 weeks to hatch.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Haliaeetus leucogaster 	White Bellied Sea Eagle	Vulnerable	Marine	Birds have been recorded at or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs, salt marsh and sewage ponds. They also occur at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest (including rainforest) and even urban areas. Breeding territories are located close to water, and mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest (including rainforest), closed scrub or in remnant trees on cleared land. Given the widespread distribution of the species, it is possible that	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, and some sitings recorded in the past. Changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

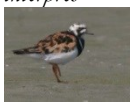
				the sea-eagle may occur in one or more of the threatened communities listed under the EPBC Act 1999.	
Pandion cristatus 	Eastern Osprey	Vulnerable		The Eastern Osprey has contracted in south-eastern Australia since settlement. There is a single historical breeding report from Saint Georges Basin in NSW (North 1912). Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. (NSW Gov OEH)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, and some sitings recorded in the past. Changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Hieraaetus morphnoides 	Little Eagle	Vulnerable		The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. There have been eight sightings of this species within Wollongong LGA.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Falco hypoleucos 	Grey Falcon	Vulnerable	Vulnerable	The Grey Falcon breeds in areas receiving over 500 mm annual rainfall. It preys on birds, mostly granivorous parrots and pigeons, and mammals (Marchant and Higgins, 1993). It nests in the old nests of other birds, particularly those of other raptors, laying 2-3 eggs. The nests chosen are usually in the tallest trees along watercourses, particularly River Red Gum *Eucalyptus camaldulensis* (Marchant and Higgins, 1993, T. Aumann).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Lophoictinia isura. 	Square-tailed kite	Vulnerable		The Square-tailed Kite typically inhabits the coastal forested and wooded lands dominated by Woollybutt *Eucalyptus longifloria,* Spotted Gum *E. maculata* or Peppermint Gum *E. elata*, *E. smithii.* The species has also been sighted in forests containing *Angophora spp. and Callitris spp.* with a shrubby understorey and Box-Ironbark woodland (Debus & Czechura 1989). This specialist hunter prefers passerines, especially honeyeaters, and insects in the tree canopy, picking most prey items from the outer foliage. Breeding season is from July to February. Nesting sites are generally located along or near watercourses, in the fork or on a large, horizontal limb of *Angophora spp.or Eucalypt spp.* (Cameron 1992; Jolly 1989).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Fregetta grallaria grallaria 	White-bellied Storm-Petrel	Vulnerable	Vulnerable	The White-bellied Storm-Petrel has been recorded on continental shelf waters between Wooli and Nambucca Heads in 1975, 40km off Coffs Harbour and off Wollongong in 1985. Breeding has been recorded within the Lord Howe Island group (Marchant & Higgins 1990). When feeding, White-bellied Storm-Petrels will fly immediately above the surface taking food by dipping. Their diet is comprised of squid and crustaceans (Hutton 1991).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Ardea ibis 	Cattle Egret		Marine	The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It has been recorded on earthen dam walls and ploughed fields. It is commonly associated with the habitats of farm animals, particularly cattle, but also pigs, sheep, horses and deer. They have sometimes been observed in swamps with tall emergent vegetation (Marchant & Higgins 1990; Morton et al. 1989).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Onychoprion fuscata 	Sooty Tern	Vulnerable		Occasionally seen along coastal New South Wales, especially after cyclones. Breeds in large colonies in sand or coral scrapes on offshore islands and cays. The Sooty Tern is a pelagic bird, that is, a bird that lives in open oceans and normally only comes ashore to breed. It preys on small fish and squid.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, and some sitings recorded in the past. Changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Sterna bergii 	Crested Tern		Marine	Crested Terns are found throughout Australia. They form small to large flocks, often with other species, along coastal areas. They are seldom seen on inland waterways, preferring islands, beaches, lakes and inlets.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Sterna albifrons 	Little Tern	Endangered		From September to November it breeds in spring and summer along the entire east coast and is seen until May, with only occasional birds seen in winter months. Almost exclusively coastal, preferring sheltered environments. Nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands. The nest is a scrape in the sand, which may be lined with shell grit, seaweed or small pebbles.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Sterna hirundo	Common Tern		Marine Migratory	Common Terns are medium-sized and slender sea-terns (total length 31–37 cm; adult weight 110–145 g) with long narrow wings and a long, deeply forked tail (with the tips of the tail-streamers falling level with the folded wing-tips). In Australia, Common Terns are mainly found	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are

				along the eastern coast, where they are widespread and common from south-eastern Queensland to eastern Victoria (extending south-west to Port Albert), though less often recorded south of Port Hacking in NSW. Common Terns are marine, pelagic and coastal. In Australia, they are recorded in all marine zones, but are commonly observed in near-coastal waters, both on ocean beaches, platforms and headlands and in sheltered waters, such as bays, harbours and estuaries with muddy, sandy or rocky shores. However, off Wollongong, NSW, Common Terns were recorded in all marine zones but generally recorded in offshore and pelagic waters, 11–55 km from shore. (DCCEEW)	implemented, it is unlikely that this species will be impacted by the works.
Sterna striata	White-fronted Tern		Marine	The White-fronted Tern has grey back and wings with white everywhere else except a black cap. The tail is grey and deeply forked, extending past the wing tips. The White-fronted Tern is distributed along the south-east coast of Australia, and in New Zealand. They can occur as far north as Bribie, Moreton and Stradbroke Islands in QLD, and all around the coast to the Coorong and the south coast of Kangaroo Island in SA. The White-fronted Tern occurs in coastal seas and exposed rocky costs. They can be found also in sandy beaches of sheltered coasts such as bays, harbours, estuaries and lagoons (this is less frequent in Australia than New Zealand). (Australian Museum)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Hydroprogne caspia 	Caspian Tern		Marine Migratory	The largest tern in Australia, the Caspian Tern has long, slender backswept wings and a slightly forked tail. The heavy bill is red with a dusky tip. It has a widespread occurrence and can be found in both coastal and inland habitat (Higgins & Davies 1996).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Sternula nereis nereis 	Fairy Tern		Vulnerable	The Fairy Tern nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline. The bird roosts on beaches at night.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Botaurus poiciloptilus 	Australasian Bittern (Also known as Brown Bittern)	Endangered	Endangered	Frequents reed beds, and other vegetation in water such as cumbungi, lignum and sedges. The Australasian bittern is a secretive, stocky, heron-like bird, living in wetlands where it forages. Bitterns are very well camouflaged and can be difficult to spot in the reeds and rushes. On occasion they will even sway in time with reeds to blend into their surroundings. The distinctive booming call of males gives them away.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Ixobrychus flavicollis 	Black Bittern	Vulnerable		The Black Bittern inhabits terrestrial and estuarine wetlands, generally where there is permanent fresh water. It also prefers wetlands with dense vegetation including sledges, rushes, and reeds though it may also occur in similar habitats in estuarine situations with either swamp (*Casuarina glauca*) or River Oak (*Casuarina cunninghamiana subspecies cunninghamiana*).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Burhinus grallarius 	Bush stone-curlew	Endangered		Bush Stone-curlews are birds standing 50–60 centimetres high, with long gangly legs, large yellow eyes, and grey-streaked upper parts. Their colouring makes them hard to see in bushland, especially in the dusky shadows and evenings, when they are most active. The curlew's range in south-eastern Australia is now largely confined to grassy woodlands and farmland.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Numenius madagascariensis 	Eastern Curlew or Curley		Critically Endangered Marine Migratory	Most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sand flats, often with beds of sea grass. The birds are often recorded among salt marsh and on mudflats fringed by mangroves, and sometimes use the mangroves. This species does not breed anywhere in Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Haematopus fuliginosus 	Sooty Oyster-catcher	Vulnerable		Breeding resident with an Illawarra population of around 100 birds. Usually inhabits coastal rock platforms, and regularly breeds on the Five Islands. Occasionally frequents sandpits and tidal mudflats, mostly not when breeding.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, and some sitings recorded in the past. Changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Haematopus longirostris 	Pied Oyster-catcher	Endangered		Uncommon breeding resident of estuaries, beaches and tidal mudflats. There are thirteen recorded sites within the Wollongong LGA.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding lagoon area, and some sitings recorded in the past. Changes in water level may have a possible impact, but this is a typical occurrence for this ICOLL. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Gallinago hardwickii 	Latham's Snipe		Vulnerable Marine Migratory	In Australia the Latham's Snipe is a single, dispersed non-breeding population (Garnett & Crowley 2000). They usually inhabit open, freshwater wetlands, bogs etc with low, dense vegetation (Frith et. al. 1977; Naarding 1983; Weston 2006, pers. comm.). Also they occur in saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity (Frith et al. 1977; Naarding 1983).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

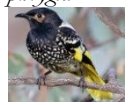
Calidris alba 	Sanderling	Vulnerable	Marine Migratory	Rare summer migrant, mainly on ocean beaches. There have been fourteen recorded sightings within the LGA. Utilises broad ocean beaches of firm sand 'where waves ebb and flow', depositing strands and heaps of seaweed; often near river mouths; also inlets, tidal mudflats, coastal lagoons.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pluvialis squatarola 	Grey Plover		Vulnerable Marine Migratory	Grey Plovers occur almost entirely in coastal areas, where they usually inhabit sheltered embayments, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons. They also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes. (Marchant & Higgins 1993 and references therein). On their breeding grounds they inhabit tundra (Dement'ev & Gladkov 1951). They usually roost in sandy areas, such as on unvegetated sandbanks or sand-spits on sheltered beaches or sheltered estuaries or lagoons (Jaensch et al. 1988; Pegler 1983).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Calidris ruficollis 	Red-necked Stint		Marine Migratory	It is distributed along most of the Australian coastline with large densities on the Victorian and Tasmanian coasts. The Red-necked Stint has been recorded in all coastal regions, and found inland in all states when conditions are suitable. This species does not breed in Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Charadrius bicinctus. 	Double Banded Plover		Marine Migratory	Found on littoral, estuarine and fresh or saline terrestrial wetlands and also salt marsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers. It is also found on sea grass beds, especially *Zostera,* which, when exposed at low tide.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Charadrius ruficapillus. 	Red Capped Plover		Marine	The nest site of the Red Capped Plover is a shallow scrape on a beach or stony area, nearly always close to water. Sometimes the nest is protected by a small plant or some rubbish. The eggs are usually well camouflaged.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thinornis cucullatus cucullatus	Eastern Hooded Dotterel/ Plover	Critically Endangered	Vulnerable Marine	The Easter Hooded Dotterel is pale-coloured and is unmistakable in having a prominent black hood and throat, a white collar, and a contrasting black-tipped red bill, a red eye-ring and short orange legs. The hooded plover (eastern) is a small Australian beach nesting bird. It mainly occurs on wide beaches backed by dunes with large amounts of seaweed and jetsam, creek mouths and inlet entrances. Nests are found	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

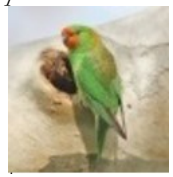
				above the high water mark on flat beaches, on stony terraces, or on sparsely vegetated dunes.	
Arenaria interpres 	Ruddy Turnstone		Vulnerable Marine Migratory	The Ruddy Turnstone is found on coastal regions with exposed rock coast lines or coral reefs. It also lives near platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches. It can, however, be found on sand, coral or shell beaches, shoals, cays and dry ridges of sand or coral. It has occasionally been sighted in estuaries, harbours, bays and coastal lagoons, among low salt marsh or on exposed beds of sea grass, around sewage ponds and on mudflats. Does not breed in Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Limosa lapponica 	Bar-tailed Godwit		Marine Migratory	The Bar Tailed Godwit is found mainly in coastal habitats such as large intertidal sand flats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of sea grass and, sometimes, in nearby salt marsh. It has been sighted in coastal sewage farms and salt works, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass, such as farmland, paddocks and airstrips. This species does not breed anywhere in Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pluvialis fulva. 	Pacific Golden Plover		Marine Migratory	Usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Usually occur on beaches, mudflats and sand flats (sometimes in vegetation such as mangroves, low salt marsh such as Sarcocornia, or beds of sea grass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in salt works. Also recorded on islands, sand and coral cays and exposed reefs and rocks.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Charadrius leschenaultia 	Greater Sand-plover	Vulnerable	Marine Migratory	Rare summer migrant, with only one or two individuals any given year. Utilises wide, sandy or Shelly beaches; sand spits, tidal mudflats, reefs, sand-cays, mangroves, salt marsh, dune wilderness, bare paddocks; seldom far inland. This species does not breed in Australia and there has been six sightings recorded within the LGA.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Tringa nebularia 	Common Greenshank		Endangered Marine Migratory	It is seen singly or in small to large flocks in a variety of coastal and inland wetlands. Wary, noisy and excitable, the Common Greenshank bobs its head in alarm and flushes with ringing calls. (Higgins & Davies 1996). The Common Greenshank does not breed in Australia. (Higgins & Davies 1996).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Limicola falcinellus 	Broad-billed sandpiper	Vulnerable		Rare summer migrant. Utilises tidal mudflats, reefs, salt marsh, freshwater wetlands, sewage ponds; favours muddy ooze. There have been three recorded sightings within the LGA. One of these sites is at Coniston Beach near Bank Street.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Calidris canutus 	Red Knot		Vulnerable Marine Migratory	Bonn, Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA). The Red Knot is common in all the main suitable habitats around the coast of Australia (Barrett et al. 2002b; Minton, C.D.T. 2002, pers. comm.; Watkins 1993). In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Tringa incana	Wandering Tattler		Marine Migratory	The Wandering Tattler is a vagrant in the East Asian-Australasian Flyway and is uncommon in Australia, although it may sometimes be overlooked (Bamford et al. 2008; Higgins and Davies 1996). There are a few records from around Darwin and as a passage migrant in Torres Strait, and along the east coast, often on offshore or nearshore islands and reefs, south as far as Moruya. The distribution and status of this species in Asia and Australia is poorly known, partly because of confusion with the Grey-tailed Tattler (Bamford et al. 2008; Higgins & Davies 1996). The Wandering Tattler is generally found on rocky coasts with reefs and platforms, points, spits, piers, offshore islands and shingle beaches or beds. It is occasionally seen on coral reefs or beaches, and tends to avoid mudflats (Higgins & Davies 1996). Foraging habitat is among rocks or shingle, or in shallow pools at edges of reefs or beaches, mainly along the tideline. Wandering Tattlers have been recorded roosting or perching on top of boulders surrounded by or close to water (Higgins & Davies 1996). (DCCEEW)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Actitis hypoleucos 	Common Sandpiper		Marine Migratory	A small sandpiper of 19–21 cm in length with a wingspan of 32–35 cm. The species has a prominent white eye-ring and indistinct dark eye-stripe from the bill to the rear of the ear coverts. White patches amongst darker feathers on the sides of the breast area are also notable. The species has a long tail that extends behind the wings when at rest, short legs, and a medium length bill (Higgins & Davies 1996). Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (Blakers et al. 1984; Higgins & Davies 1996). The species utilises a wide range of	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

				coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. (DCCEEW)	
Calidris melanotos 	Pectoral Sandpiper		Marine Migratory	Roosting known to occur in area. From the high Arctic this species migrates through the Americas to winter in southern South America. A slight deviation will lead to birds tracking down to Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit		Endangered	The bar-tailed godwit (western Alaskan) is a large migratory shorebird. It has a long neck with a very long upturned bill which is characterized by a dark tip and pinkish base. All non-breeding plumages have a uniform upper pattern, with a dark back and upper rump. The bar-tailed godwit (both subspecies combined) has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria. The bar-tailed godwit (western Alaskan) occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. (Aus Gov Threatened Species Scientific Committee)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Rostratula australis 	Australian Painted Snipe	Endangered	Endangered Marine	The Australian Painted Snipe has been recorded at wetlands in all states of Australia (Barrett et al. 2003; Blakers et al. 1984; Hall 1910b). It is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, NSW, Victoria and south-eastern South Australia.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Anous stolidus	Common Noddy		Marine Migratory	In Australia, the Common Noddy occurs mainly in ocean off the Queensland coast, but the species also occurs off the north-west and central Western Australia coast. The species is also rarely encountered off the coast of the Northern Territory, where only one breeding location with about 100-130 birds is known (Chatto 2001). The species also occurs on Norfolk, Lord Howe, Christmas and Cocos-Keeling Islands (Higgins & Davies 1996). During the breeding season, the Common Noddy usually occurs on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand. Birds may nest in bushes, saltbush, or other low vegetation. They may also nest on the ground in Pigface (Carpobrotus spp.) or grass, on bare rock, on top of rocks protruding above vegetation, on shingle beaches, among coral rubble or in sand close to grassy areas. During the non-breeding period, the species occurs in groups throughout the pelagic zone (open ocean) (Higgins & Davies 1996).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Circus assimilus 	Spotted Harrier	Vulnerable		Occurs in grassy open woodland including Acacia remnants, riparian woodland and grassland. A medium-sized, slender bird of prey having an owl-like facial ruff and long bare yellow legs. Builds a stick nest in a tree and lays eggs in spring. Preys generally on terrestrial mammals, birds and reptiles. The upperparts are blue-grey with dark barring and the wingtips are black. The face, inner wing patch and underparts are chestnut. The long tail is boldly banded with a wedge-shaped tip.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Oxyura australis. 	Blue-billed Duck	Vulnerable		It is generally only during summer or in drier years that they are seen in coastal areas. It prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Apus pacificus 	Fork-tailed Swift		Marine Migratory	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. The Fork-tailed Swift is almost exclusively aerial, flying from less then 1 m to at least 300 m above ground and probably much higher. The Fork-tailed Swift usually arrives in Australia around October; some arrive early in September, however, this is rare.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Phaethon lepturus lepturus 	White-tailed Tropicbird		Marine Migratory	Breeding populations of the White-tailed Tropicbird throughout the Indian Ocean are widely dispersed, with most colonies separated by hundreds of kilometres (Corre & Jouventin 1999). At the species level, the White-tailed Tropicbird occupies marine habitats in tropical waters with sea-surface temperatures of more than 22°C.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Merops ornatus 	Rainbow Bee-eater		Marine	Resident in coastal and subcoastal northern Australia; regular breeding migrant in southern Australia, arriving September to October, departing February to March, some occasionally present April to May (Pizzey and Knight 1997). Occurs in open country, chiefly at suitable breeding places in areas of sandy or loamy soil: sand-ridges, riverbanks, road-cuttings, sandpits, occasionally coastal cliffs (ibid). Nest is a chamber the end of a burrow, up to 1.6 m long, tunneled in flat or sloping ground, sandy back or cutting (ibid).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo		Migratory	The adult male has a grey head, breast and upperparts. The belly is creamy-white with dark bars. The legs and feet are orange-yellow and there is a bare yellow ring around the eye. Adult females and juveniles occur in two morphs. The grey morph is similar to the male but has a brownish wash on the breast. The rufous morph is reddish-brown above, paler on the underparts and with strong dark bands all over	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

				including the rump. The exact extent of its wintering range is uncertain due to its secretive habits and the difficulty of separating it from the Himalayan cuckoo and other similar species. It is believed to include northern and eastern Australia. It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. (Atlas of Living Australia)	
Ptilinopus regina 	Rose-crowned Fruit-Dove	Vulnerable		Rose Crowned Fruit Doves occur mainly in sub-tropical and dry rainforest and occasionally in moist Eucalypt forest and swamp forest, where fruit is plentiful. They are shy pigeons, not easy to see amongst the foliage, and are more often heard than seen. Some populations are migratory in response to food availability numbers in North Eastern NSW increase during spring and summer then decline in April or May.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Ptilinopus superbus 	Superb fruit-dove	Vulnerable		Inhabits rainforest and similar closed forests eating the fruits of many tree species such as figs and palms and may also forage in *Eucalypt* or *Acacia* Woodlands e.g. *Syncarpia glomulifera* where there are plentiful fruit bearing trees. Breeding takes place from September to January. The nest is a structure of fine interlocked forked twigs and is usually 5-30 meters up in the canopy. Three individual sightings recorded at Mt Pleasant, Keiraville and Mangerton area.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Anthochaera phrygia  *Formerly known as Xanthomyza phrygia*	Regent Honeyeater	Critically Endangered	Critically Endangered	Most records appear to be in late spring and summer, so it may continue to be a casual visitor to flowering trees in the area, though the winter flowering Swamp Mahogany is also an important resource in other localities. The species favours Box Ironbark Eucalypt associations, though also utilised wet lowland coastal forests dominated by Swamp Mahogany, Spotted Gum and Riverine Casuarina woodlands. Remnant stands of timber and street trees also provide important habitat at certain times.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Grantiella picta 	Painted Honey Eater	Vulnerable	Vulnerable	The Painted Honeyeater is found in dry open forests and woodlands, and is strongly associated with mistletoe. It may also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation. It has been seen in urban parks and gardens where large Eucalypts trees are available for the Painted Honey Eater. It forages on mistletoe, particularly *Amyema spp.* mainly in upper canopies of trees. It feeds mainly on mistletoe berries but also eats nectar from the flowers and insects. The honeyeater nest is a flimsy cup of plant material and spider web in foliage (OEH).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Glossopsitta pusilla 	Little Lorikeet	Vulnerable		Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina. Nesting season extends from May to September and in years when flowering is prolific (OEH).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Lathamus discolour 	Swift parrot	Endangered	Critically Endangered Marine	The Swift Parrot inhabits dry sclerophyll eucalypt forests and woodlands. It occasionally occurs in wet sclerophyll forests. Individuals or small groups may be expected to occur infrequently in areas with fruiting trees, including gardens. The Swift Parrot breeds only in Tasmania and predominantly forages within habitats that have been cleared and classified as endangered ecological communities (OEH).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Neophema chrysostoma	Blue-winged Parrot	Vulnerable	Vulnerable Marine	Upper body and breast dark green, wings blue, belly yellow-green. Face yellow with a blue stripe across the forehead. Tail green and blue with a yellow edge. Body up to 23 cm long. Blue-winged Parrots are nomadic, moving to different areas depending on the availability of grasses and herbs. Found in woodlands, coastal heaths and grasslands. (Atlas of Living Australia)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Callocephalon fimbriatum 	Gang-gang Cockatoo	Endangered	Endangered	The Gang-gang Cockatoo in summer is found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open Eucalypt forests, particularly in box-ironbark assemblages, and often found in urban areas. Prefers old growth attributes for nesting and roosting. There have been 197 sightings within Wollongong LGA.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Calyptorhynchus lathami lathami 	South-eastern Glossy Black Cockatoo	Vulnerable	Vulnerable	The Glossy Black Cockatoo characteristically inhabits forests on sites with low soil nutrient status, reflecting the distribution of key *Allocasuarina* species. The drier forest types with intact and less rugged landscapes are preferred by the Glossy Black Cockatoo. The Glossy Black Cockatoo is probably the most specialised member of its family feeding exclusively on seeds extracted from the wooden cones of Casuarinas.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Coracina lineata 	Barred Cuckoo-shrike	Vulnerable		Recorded at the Wollongong Botanic Gardens and Thirroul. The occasional individual may be expected to occur in Wollongong, particularly in fruiting fig trees. It is restricted to lowland (below 500 metres) rainforests, including subtropical, dry and littoral, and isolated fruiting trees.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Petroica phoenicea 	Flame Robin	Vulnerable		The Flame Robin breeds in upland moist eucalypt forests and woodlands in areas of open understorey. It migrates in winter to more open lowland grassland and open woodland. The Robin forages on invertebrates taken from the ground, tree trunks, logs and other coarse woody debris. The Robin builds an open cup nest near the ground in a ledge or shallow cavity in a tree, stump or bank.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Dasyornis brachypterus 	Eastern Bristlebird	Endangered	Endangered	The Eastern Bristlebird is a cover dependent and fire sensitive species. It occurs in dense heaths and woodlands of both the coast and plateau. It was last recorded in the Wollongong LGA west of Mt. Kembla during the 1960's. There is a remote possibility that the species may still exist in the catchment areas of wet heath or mallee (OEH).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pachyptila turtur subantarctica	Fairy Prion		Vulnerable Marine	The fairy prion (southern) breeds on Macquarie Island and a number of other subantarctic islands outside of Australia. There are 80 to 250 breeding pairs in Australia and a global population of 80 000. In Australia, breeding is recorded on two rock stacks off Macquarie Island and on the nearby Bishop and Clerk Island. The population may have been larger prior to the arrival of black rats on Macquarie Island. The subspecies digs burrows among rocks or low vegetation in which to nest. Burrows may be dug below mat forming herbs. Feeds by plucking food from the ocean surface. Some individuals may migrate towards New Zealand and southern Australia in winter	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Monarcha melanopsis 	Black-faced Monarch		Marine Migratory	The Black-faced Monarch is found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating. Resident in the north of its range, but is a summer breeding migrant to coastal south-eastern Australia, arriving in September and returning northwards in March. The Black-faced Monarch forages for insects among foliage, or catches flying insects on the wing.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Monarcha trivirgatus	Spectacled Monarch		Marine Migratory	It is found in Australia, Indonesia, and Papua New Guinea. Its natural habitats are subtropical or tropical moist lowland forests, subtropical or tropical mangrove forests, and subtropical or tropical moist montane forests. (Atlas of Living Australia)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

Motacilla flava (potentially Motacilla tschutschensis)	Yellow Wagtail		Marine Migratory	It is a slender 15–16 cm long bird, with the characteristic long, constantly wagging tail of its genus. The breeding adult male is basically olive above and yellow below. In other plumages, the yellow may be diluted by white. The heads of breeding males come in a variety of colours and patterns depending on subspecies. This species breeds in the East Palearctic and has a foothold in North America in Alaska. Populations migrate to south Asia and Australia. Vagrant individuals occur around the winter quarters at migration time. This insectivorous bird inhabits open country near water, such as wet meadows. It nests in tussocks, laying 4–8 speckled eggs.(Atlas of Living Australia)	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Myiagra cyanoleuca 	Satin Flycatcher		Marine Migratory	Utilises heavily vegetated gullies in forests, taller woodlands, usually above shrub layer; during migration, coastal forests, woodlands, mangroves, trees in open country, gardens.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Rhipidura rufifrons 	Rufous Fantail		Marine	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (*Eucalyptus microcorys*), Mountain Grey Gum (*E. cypellocarpa*), Narrow-leaved Peppermint (*E. radiata*), Mountain Ash (*E. regnans*), Alpine Ash (*E. delegatensis*), Blackbutt (*E. pilularis*) or Red Mahogany (*E. resinifera*); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; for example near Bega in south-east NSW, where they are recorded in temperate Lilly Pilly (*Acmena smithi*) rainforest, with Grey Myrtle (*Backhousia myrtifolia*), Sassafras (*Doryphora sassafras*) and Sweet Pittosporum (*Pittosporum undulatum*) subdominants.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works..
Ninox strenua 	Powerful Owl	Vulnerable		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 *Syncarpia glomulifera, Allocasuarina littoralis, Acacia melanoxylon, Angophora floribunda, Exocarpus cupressiformis* and a number of eucalypt species.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Nixos connivens 	Barking Owl	Vulnerable		Individuals may occasionally occur as vagrants, particularly on the plains in the southern part of the LGA. Usually inhabits dry open Eucalypt forests and woodlands, preferring riparian vegetation, where it roosts in dense foliage during the day. It nests in hollows, usually of large Eucalypts trees OEH).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Tyto tenebricosa	Sooty Owl	Vulnerable		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area.

				small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum or Sugar Glider. Nests in very large tree-hollows (OEH).	Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Tyto novaehollandiae 	Masked Owl	Vulnerable		The Masked Owl may occur in areas above the escarpment, particularly along the edges of the more open woodlands. It inhabits large hollows for roosting and open areas for hunting. It lives in dry Eucalypt forests and woodlands from sea level to 1100m. A forest owl, but often hunts along the edges of forests, including roadsides. It will use large tree hollows or even caves for nesting.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
PLANTS					
Caladenia tessellata 	Thick Lip Spider Orchid Daddy Long Legs	Endangered	Vulnerable	Generally found in grassy Sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Cryptostylis hunteriana 	Leafless Tongue-orchid	Vulnerable	Vulnerable	This species may occur in a wide variety of habitats including heathlands, heathy woodlands, sedgelands, *Xanthorrheoa* spp. plains, dry sclerophyll forests, forested wetlands, freshwater wetlands, grasslands, grassy woodlands, rainforests and wet sclerophyll forests. Soils are generally considered to be moist and sandy; however, this species is also known to grow in dry or peaty soils.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Persicaria elatior	Knotweed, Tall Knotweed	Vulnerable	Vulnerable	Knotweed is an erect herb growing to 90 cm tall, with stalked, glandular hairs (i.e. they are knobbed when seen under a lens) on most plant parts. Its leaves are up to 11 cm long and 30 mm wide. A sheath encircles the stem at the base of each leaf, which is characteristic of the *Polygonaceae* family. Its tiny flowers are in long, narrow spikes up to 5 cm long. The pink flower-segments are less than 4 mm long (NSW DECCW 2005ov). Knotweed is known from the North Coast, Central Coast and South Coast Botanical Subdivisions in New South Wales (NSW) and Moreton Pastoral District in south-east Queensland (NSW undated; Queensland Herbarium 1999). Knotweed has been collected from five sites in South-east NSW including: Mt Dromedary (an old record) (NSW DECCW 2005ov); Moruya State Forest (SF), near Turlinjah (NSW DECCW 2005ov); the Upper Avon River catchment, north of Robertson (NSW DECCW 2005ov); Bermagui (NSW DECCW 2005ov); Picton Lakes (NSW DECCW 2005ov). Knotweed normally grows in damp places, including coastal with swampy areas (Quinn et al. 1995); along watercourses, streams and lakes (NSW	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

				DECCW 2005ov); swamp forest (NSW DECCW 2005ov); disturbed areas (NSW DECCW 2005ov). (DCCEEW)	
Pimelea spicata 	Spiked Rice Flower	Endangered	Endangered	In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. It has been in disturbed areas that would have previously supported Cumberland Plain Woodland Vegetation Community. In the Illawarra, it occurs on clay soils on coastal headland in *Themeda triandra* grassland with low native shrubs present.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Pterostylis gibbosa 	Illawarra Greenhood	Endangered	Endangered	Occurs in forest or woodland with poorly drained soils. Associated vegetation is woodland dominated by *Eucalyptus tereticornis* (Forest Red Gum) and *Melaleuca decora* (White Feather Honey-myrtle) with an open grassy understorey. It is associated with the Lowland Woolybutt-*Melaleuca* Forest (MU24).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Thesium australe 	Austral Toadflax	Vulnerable	Vulnerable	Erect perennial herb to 40 cm high, pale green to yellow-green, glabrous; stems 1-several, little-branched, wiry, striate. Grows in grassland or woodland, often in damp sites.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Rhodamnia rubescens 	Scrub Turpentine	Critically Endangered	Critically Endangered	Occurs in coastal districts north from Batemans Bay and occasionally extend inland onto escarpments up to 600 m in areas with rainfall. Flowers in late winter through to spring with a peak in October and fruits in December.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
Syzygium paniculatum 	Magenta Lilly Pilly	Endangered	Vulnerable	Shrub or small tree with flaky bark. Grows in subtropical and littoral rainforest on sandy soils or stabilized dunes near the sea; widely separated localities between Bulahdelah and Jervis Bay.	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location. There is potential habitat in the surrounding area, however the works are not likely to impact that habitat. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.
POPULATIONS					
Gossia acmenoides 	The Scrub Ironwood population in the Sydney Basin Bioregion	Endangered		Found primarily in Eucalyptus forest, health and low shrubland often in damp or moist sites. May occur in northern Illawarra on rocky ridges and areas of outcrops (including the military reserve lands and the Royal and Heathcote National Parks).	There is no suitable habitat at or in the immediate vicinity of the entrance opening works location or surrounding lagoon area. Provided safeguards outlined in this REF are implemented, it is unlikely that this species will be impacted by the works.

	south of the Georges River				

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**
Escarpment Blackbutt Forest MU16  Occurs on steep escarpment slopes, spurs and foothills of the northern escarpment. It is a tall to very tall forest supporting a canopy dominated by *Eucalyptus pilularis, E.botryoides* and *Syncarpia glomulifera subsp. Glomulifera.* A small tree layer of *Allocasuarina torulosa, Acacia maidenii, Pittosporum undulatum and synoum glandulosum subsp. Glandulosum* is consistently found within this community. Example locations include Stanwell Tops, Stanwell Park, Buttenshaw Drive, Coledale, Foothills at Austinmer, Thirroul and Woonona; Bulli Pass; West Corrimal; Tarawanna; Mangerton and Blackbutt Reserve.	**BC Act:** Southern Sydney Sheltered Forest on Transitional Sandstone Soils in the Sydney Basin Bioregion – **EEC** Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – **EEC**  DEC **EPBC Act:** Littoral Rainforest and Coastal Vine Thicket – **Critically Endangered**	Not in close proximity to the works. The works are limited to a small area and will not impact on vegetation. Provided safeguards outlined in this REF are implemented, it is unlikely that this EEC will be impacted by the works.
Coastal Grassy Red Gum Forest MU23  Purrungully Park This community is usually found on the Illawarra coastal plain and escarpment foothills. Characteristic tree species include Forest Red Gum *Eucalyptus tereticornis*, Thin-leaved Stringybark *Eucalyptus eugenioides*, Rough-barked Apple *Angophora floribunda,* Coast Grey Box *Eucalyptus bosistoana* and Prickly-leafed Paperbark *Melaleuca styphelioides*. The understorey contains shrubs and grassy groundcovers dependent on fire frequency and location. Floodplain vegetation dominated by *Casuarina* species or rainforests on latite soils are not part of this community. East Corrimal, Towradgi, Bellambi, Fairy Meadow, Gwynneville, Unanderra, Spring Hill near Masters Road, Brownsville, Dapto Purrungully Woodland, Albion Park Croom Reserve, Blackbutt Forest Reserve, Yallah Penrose Mount Brown; Avondale; Marshall Mount. Includes MU24 Lowland Woollybutt-Melaleuca Forest & MU23 Coastal Grassy Red Gum Forest	**BC Act:** Illawarra Lowlands Sydney Basin Associated NSW 3327 – Illawarra Grassy Forest  Grassy Woodland in the Bioregion – **EEC** PCTs: Lowland Red Gum 3330 – South Coast Lowland Woollybutt Grassy Forest **EPBC Act:** Illawarra and South Coast Lowland Forest and Woodland ecological community – **Critically Endangered**	Not in close proximity to the works. The works are limited to a small area and will not impact on vegetation. Provided safeguards outlined in this REF are implemented, it is unlikely that this EEC will be impacted by the works.

Native Vegetation of the Illawarra Escarpment and Coastal Plain (NVIE&CP 2002)		
Coastal Sand Bangalay – Blackbutt Forest MU33  Include Bangalay (Eucalyptus botryoides) and Coast Banksia (Banksia integrifolia subsp. integrifolia), while Blackbutt (Eucalyptus pilularis) and Lilly Pilly (Acmena smithii) may occur in more sheltered situations, and Swamp Oak (Casuarina glauca) may occur on dunes. North Wollongong, Bellambi Lagoon, Windang Perkins Beach, Primbee Korrongulla Wetland.	**BC Act:** Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions – **EEC** Associated NSW PCTS: 3546 – Coastal Sands Littoral Scrub-Forest 3638 – South Coast Sands Bangalay Forest **EPBC Act:** Not listed.  DEC	Not in close proximity to the works. The works are limited to a small area and will not impact on vegetation. Provided safeguards outlined in this REF are implemented, it is unlikely that this EEC will be impacted by the works.
Alluvial Swamp Mahogany Forest MU35  Forest dominated by Swamp mahogany (*E. robusta*) and/or Bangalay (*E. botryoides*) and Swamp Oak (*Casuarina glauca*) on alluvial depressions, terraces, and riparian strips in estuarine environments. Distinctive combination of swampy ground cover species including Tall saw sedge (*Gahnia clarkei*), Common reed (*Phragmites australis*), and Tall sedge (*Carex appressa*). Distinctive combination of swampy ground cover species including Tall saw sedge (*Gahnia clarkei*), Common reed (*Phragmites australis*), and Tall sedge (*Carex appressa*).	**BC Act:** Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – **EEC** River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions – **EEC** **EPBC Act:** Coastal Swamp Sclerophyll Forest of NSW and South East QLD – **Endangered** River-Flat Eucalypt Forest on Coastal Floodplains of Southern NSW and Eastern Victoria – **Critically Endangered** The EPBC RFEFCF can be a tricky one to separate out from Swamp Sclerophyll Forest on Coastal Floodplains EEC (MU35 - Alluvial Swamp Mahogany Forest, such as at Bellambi Lagoon). The site at Bellambi Wetlands adjoining Bellambi Lagoon is aligned to other Alluvial Moist Swamp Mahogany Forests found at Gosford and Wyong on the Central Coast (1995).  DEC	Not in close proximity to the works. The works are limited to a small area and will not impact on vegetation. Provided safeguards outlined in this REF are implemented, it is unlikely that this EEC will be impacted by the works.
Coastal Swamp Oak (Casuarina) Forest MU36  Coastal Swamp Oak Forest most often supports a simple forest structure with tree dominates as ***Casuarina glauca*** Swamp Oak and ***Melaleuca ericifolia*** Swamp Paperbark. The rush *Phragmites australis* is a regular component of the understorey with the sedge *Juncus kraussii* subsp. *australiensis* and forbs *Atriplex australasica* and *Commelina cyanea* also common. The EPBC River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions is now listed under the EPBC Act as 'critically endangered'. Swamp Oak Floodplain Forest EEC (MU36 - Coastal Swamp Oak Forest, such as at Puckeys Estate) and in this case where there isn't a distinct transition from dominance of Swamp Oak to Eucalyptus species.	**BC Act:** Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions –**EEC** **EPBC Act:** Coastal Swamp Oak (Casuarina glauca) Forest of NSW and South East Queensland – **Endangered** The River-Flat Eucalypt Forest On Coastal Floodplains Of Southern New South Wales And Eastern Victoria –  DEC	This community is mapped as occurring in Bellambi Lagoon. See Assessment of Significance below.

Native Vegetation of the Illawarra Escarpment and Coastal Plain (NVIE&CP 2002)		
	Critically Endangered - may overlap with The Coastal Swamp Oak Forest.	
Estuarine Alluvial Wetland MU53  Estuarine Alluvial Wetlands occur in small pockets of low-lying poorly drained soils on the coastal floodplains and estuaries. They are easily recognisable by a thick cover of rushes such as Common reed (*Phramites australis*), Cumbungi rush (*Typha orientalis*), *Juncus krausii* subsp. *australiensis* and Tall spike rush (*Eleocharis sphacelata*). They are characterised by low isolated trees of Swamp Oak (*Casuarina glauca*) and Prickly-leaved tea-tree (*Melaleuca stypheliodes*). No species listed as threatened. Component of the Sydney Coastal Estuary Swamp Forest Complex (EEC	**BC Act:** Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – **EEC** **EPBC Act:** Not listed.	This community is mapped as occurring in Bellambi Lagoon. See Assessment of Significance below.
EPBC Act Protected Matters Search EECs not captured in Intramaps		
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion The Illawarra–Shoalhaven subtropical rainforest ecological community occurs south of Sydney in NSW, in the Sydney Basin IBRA3 Bioregion. It occurs in the Illawarra, Jervis and Sydney Cataract (SYB12, SYB14 and SYB10) IBRA subregions, and just over the borders into Burragorang (SYB09), Moss Vale (SYB11) and Ettrema (SYB13) subregions; it may also occur elsewhere in the Sydney Basin Bioregion, in other subregions. The majority of the ecological community occurs in the Illawarra IBRA Subregion (SYB12). Much of the ecological community occurs between Stanwell Park and Gerringong (where it was termed the Illawarra Brush6 by Mills & Jakeman (1995)). The ecological community is generally a low to moderately tall closed rainforest. It has a dense mixed tree canopy (canopy cover typically ≥70% on average for a patch in relatively good condition) and a sparse shrub layer (Mills & Jakeman 1995). The groundcover is often sparse, except in moister areas (Tozer et al. 2010). At lowland sites, particularly on latite, the ground can be largely covered by rock, often with little soil being visible (Mills & Jakeman 1995); as opposed to bench sites on the escarpment, where ferns are usually abundant and there are few surface rocks.	**Critically Endangered**	Not in close proximity to the works. The works are limited to a small area and will not impact on vegetation. Provided safeguards outlined in this REF are implemented, it is unlikely that this EEC will be impacted by the works.

Assessments of Significance

Swamp Oak Floodplain Forest

NSW status: Endangered Ecological Community
BC Act Name: Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner
Commonwealth status: Endangered
EPBC Act name: Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland
Associated mapping units: MU36 - Swamp Oak Floodplain Forest, MU39 - Coastal Sand Freshwater Wetland, MU53 – Estuarine Alluvial Wetland
Swamp Oak Floodplain Forest (SOFF) of the New South Wales North Coast, Sydney Basin and South East Corner occurs on the coastal floodplains of NSW and is listed under the *BC Act* as an endangered ecological community and listed under the *Environmental Protection and Biodiversity Act* 1999 as endangered. The community generally occurs below 20m (rarely above 10m) elevation. It is associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. The structure of the community may vary from open forests to low woodlands, scrubs or reedlands with scattered trees. It has a dense to sparse tree layer in which *Casuarina glauca* (swamp oak) is the dominant species.

Assessment of Significance under the *BC Act*

The following factors must be taken into account in making a determination under Section 7.3 of the *NSW Biodiversity Conservation Act (2016)*:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Does not apply.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

The proposed opening of the lagoon entrance will not directly interfere with SOFF, as the entrance works are to be conducted in the sand dune area away from this community. However, frequent water level fluctuations arising from entrance opening could potentially affect the extent and composition of the wetlands. This is however unlikely, given that the mechanical opening is to be conducted under conditions similar to a natural opening and the surrounding wetlands are likely to have adapted to a history of entrance openings under similar conditions. Therefore, the proposed activity will not significantly impact the occurrence and composition of the EEC or place it at risk of extinction in the locality.

(c) in relation to the habitat of a threatened species or ecological community:

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

No habitat of SOFF is proposed to be removed. The proposed action will not result in significant modification or removal of the community as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings. The proposed

activity will not result in the SOFF habitat becoming fragmented or isolated in a way that may impact on the long-term survival of the EEC.

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

SOFF along Bellambi Lagoon are already present in fragments and the issue of further fragmentation or isolation is not critical. However, it is unlikely that the community will be further fragmented or isolated as a result of the mechanical opening as no significant impact on these communities has been predicted.

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

There is little likelihood for the SOFF to be removed, modified, fragmented or isolated as a result of the mechanical opening.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

The activity is not being carried out in or in proximity to a declared area of outstanding biodiversity value, declared in accordance with Part 3 of the BC Act.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The key threatening process relevant to the proposed action is alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands. However, the SOFF in the area are likely to have adapted to the changed hydrological conditions as there has been a history of the lagoon being open and closed under natural conditions.

Conclusion

The proposed action is unlikely to have a significant effect on SOFF in the study area.

Based on the test of significance above, it is concluded that the proposed activity is unlikely to significantly negatively impact any potential occurrence of the SOFF in the study area and therefore:

- There is no statutory requirement for a species impact statement to be prepared according to Part 7 Division 5 of the BC Act.
- It will not be necessary to voluntarily consider the preparation of a biodiversity development assessment report according to Section 6.12 of the BC Act as the alternative to a species impact statement.

References

State of New South Wales (Department of Planning and Environment) (2022), Swamp *oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions - profile*, https://threatenedspecies.bionet.nsw.gov.au/profile?id=10945, viewed 18 August 2024.

Assessment of Significance under the *Environmental Protection and Biodiversity Act 1999*

The following factors must be taken into account in making a determination under the *EPBC Act*-

An action, in this case mechanical opening of Bellambi Lagoon, is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

Reduce the extent of an ecological community

No species in the SOFF ecological community are proposed for removal. The extent of this community is unlikely to be reduced as a result of the mechanical opening because the wetlands in the area are likely to have adapted to the changed hydrological conditions with a history of the lagoon being open and closed under natural conditions.

Therefore, the proposed activity is not likely to lead to a long-term decrease in the size of the community.

Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines

SOFF along Bellambi Lagoon are already present in fragments, and no part of the SOFF community are proposed for removal so no fragmentation will occur. It is unlikely that the community will be further fragmented or isolated as a result of the mechanical opening.

Adversely affect habitat critical to the survival of an ecological community

To date, no critical habitat has been declared for SOFF under the EPBC Act or its equivalent under the BC Act. The proposed action will not result in significant modification or removal of the community as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns

The proposed action will not result in significant modification or removal of the EEC as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting

No significant species in the ecological community are proposed for removal and the entrance works closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **assisting invasive species, that are harmful to the listed ecological community, to become established, or**
- **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community,**

The proposed works will not introduce invasive species or pollutants.

Interfere with the recovery of an ecological community.

It is unlikely that the proposed action will interfere with the recovery of SOFF as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Conclusion

It is concluded there is unlikely to be a significant impact on the ecological community. A referral to the Department of the Environment for a decision on an impact to a Matter of National Environmental Significance **is not** required.

References

Department of Environment (2023), *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community - SPRAT Profile*, http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=142 , viewed 18 August 2024.

Green and Golden Bell Frog (*Litoria aurea*)

NSW status: Endangered
Commonwealth status: Vulnerable
The Green and Golden Bell Frog (GGBF) is an endemic species found only on the east coast of Australia. A relatively large, stout frog, ranging in size from approximately 45 mm to approximately 100 mm snout to vent length. Diagnostic features are a gold or creamish white stripe running along the side, extending from the upper eyelids almost to the groin, with a narrow dark brown stripe beneath it, from nostril to eye. It also has blue or bluish-green colour on the inside of the thighs. The colour of the body varies. Usually a vivid pea-green, splotched with an almost metallic brassy brown or gold. The backs of some individuals may be almost entirely green; in others golden-brown markings may dominate.

- Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.).
- Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available.
- Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.
- The species is active by day and usually breeds in summer when conditions are warm and wet.
- Males call while floating in water and females produce a raft of eggs that initially float before settling to the bottom, often amongst vegetation.
- Tadpoles feed on algae and other plant-matter; adults eat mainly insects, but also other frogs.
- Preyed upon by various wading birds and snakes.

Large populations are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast and therefore, the GGBF is not at its limit of distribution. Within the Wollongong Local Government Area, the species is well-known from Port Kembla to Woonona. There are historical records for the presence of the GGBF in the Bellambi Lagoon area (>20 years old).

Assessment of Significance under the *BC Act*

The following factors must be taken into account in making a determination under Section 7.3 of the *NSW Biodiversity Conservation Act (2016)*:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Considering there are only historical records for the presence of the GGBF in the Bellambi Lagoon area (>20 years old), this suggests that the potential for the occurrence of the GGBF in the Bellambi Lagoon is low. Nevertheless, the significance of the proposed works on any potential occurrence of the species in the Bellambi Lagoon area must be considered. The proposed opening of the lagoon entrance will not directly interfere with those parts of the wetlands where the species can potentially be present, as the entrance works are to be conducted in the sand dune area away from these habitats. However, frequent water level fluctuations arising from entrance opening could potentially affect the extent and composition of the wetlands. This is however unlikely, given that the mechanical opening is to be conducted under conditions similar to a natural opening and the surrounding wetlands are likely to have adapted to a history of entrance openings under similar conditions. Therefore, the proposed activity will not significantly impact the potential habitat or life cycle of the GGBF to place the species at risk of extinction in the locality.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A

(c) in relation to the habitat of a threatened species or ecological community:

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

The proposed action will not result in significant modification or removal of the wetland habitats which the GGBF can potentially inhabit as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

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

Wetlands along Bellambi Lagoon are already present in fragments and the issue of further fragmentation or isolation is not critical. However, it is unlikely that the wetlands will be further fragmented or isolated as a result of the mechanical opening as no significant impact on these communities has been predicted.

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

There is little likelihood for the wetlands to be removed, modified, fragmented or isolated as a result of the mechanical opening.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

The activity is not being carried out in or in proximity to a declared area of outstanding biodiversity value, declared in accordance with Part 3 of the BC Act.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The key threatening process relevant to the proposed action is alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands. However, the wetlands in the area are likely to have adapted to the changed hydrological conditions as there has been a history of the lagoon being open and closed under natural conditions.

Conclusion

The proposed action is unlikely to have a significant effect on any potential occurrence of the GGBF in the study area.

Based on the test of significance above, it is concluded that the proposed activity is unlikely to significantly negatively impact any potential occurrence of the GGBF in the study area and therefore:

- There is no statutory requirement for a species impact statement to be prepared according to Part 7 Division 5 of the BC Act.
- It will not be necessary to voluntarily consider the preparation of a biodiversity development assessment report according to Section 6.12 of the BC Act as the alternative to a species impact statement.

References

State of New South Wales (Department of Planning and Environment) (2023), *Green and Golden Bell Frog - profile*, https://threatenedspecies.bionet.nsw.gov.au/profile?id=10483, viewed 18 August 2024.

Assessment of Significance under the *Environmental Protection and Biodiversity Act 1999*

The following factors must be taken into account in making a determination under the *Environmental Protection and Biodiversity Act 1999*-

An action, in this case mechanical opening of Bellambi Lagoon, is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of a population

Considering there are only historical records for the presence of the GGBF in the Bellambi Lagoon area (>20 years old), this suggests that the potential for the occurrence of the GGBF in the Bellambi Lagoon is low. Nevertheless, the significance of the proposed works on any potential occurrence of the species in the Bellambi Lagoon area must be considered. The proposed opening of the lagoon entrance will not directly interfere with those parts of the wetlands where the species can potentially be present, as the entrance works are to be conducted in the sand dune area away from these habitats. However, frequent water level fluctuations arising from entrance opening could potentially affect the extent and composition of the wetlands. This is however unlikely, given that the mechanical opening is to be conducted under conditions similar to a natural opening and the surrounding wetlands are likely to have adapted to a history of entrance openings under similar conditions. Therefore, the proposed activity is not likely to lead to a long-term decrease in the size of a population.

Reduce the area of occupancy of the species

The area of wetlands along Bellambi Lagoon are unlikely to be reduced as a result of the mechanical opening because, the wetlands in the area are likely to have adapted to the changed hydrological conditions with a history of the lagoon being open and closed under natural conditions.

Fragment an existing population into two or more populations

Wetlands along Bellambi Lagoon are already present in fragments and the issue of further fragmentation or isolation is not critical. However, it is unlikely that the wetlands will be further fragmented or isolated as a result of the mechanical opening as no significant impact on these communities has been predicted.

Adversely affect habitat critical to the survival of a species

The proposed action will not result in significant modification or removal of the wetland habitats which the GGBF can potentially inhabit as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings. To date, no critical habitat has been declared for the GGBF under the *EPBC Act*.

Disrupt the breeding cycle of a population

Disruption to the breeding cycle of any potential GGBF in the Bellambi Lagoon area is unlikely given that the mechanical opening is to be conducted under conditions similar to a natural opening and the surrounding wetlands are likely to have adapted to a history of entrance openings under similar conditions.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The proposed action will not result in significant modification or removal of the wetland habitats which the GGBF can potentially inhabit as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat

The proposed activities are not likely to result in invasive species and reduce potential harm to the GGBF and its habitat.

Introduce disease that may cause the species to decline

The proposed activities will not introduce disease.

Interfere with the recovery of the species.

It is unlikely that the proposed action will interfere with the recovery of GGBF as the entrance works will be carried out under conditions which closely resemble a natural opening and to which the habitats are likely to have adapted over a history of such openings.

Conclusion

It is concluded there is unlikely to be a significant impact on the species. A referral to the Department of the Environment for a decision on an impact to a Matter of National Environmental Significance **is not** required.

References

Department of Environment (2023), *Litoria aurea — Green and Golden Bell Frog - SPRAT Profile*, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1870, viewed 18 August 2024.

Appendix H: Standard Operating Procedures-Unexpected Finds Protocols

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

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

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

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

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

Main Hazards:

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

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

*** If unexpected find is ACM**

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

SAFETY RULES

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

Permits: (associated with task)

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

Checklists: (associated with task)

- Waste Classification Docket as reference

Team Training / Skills Required:

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

References:

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

Relevant Documentation:

Asbestos and Hazardous Materials Guidelines – Corporate

Sampling materials request form

Clearance certificate - Asbestos or Contaminated soils

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

1. PRE-Operation (must include environmental controls)

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

2. Operation

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

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

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

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

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

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

3. POST-Operation

- Pathways request to be closed off
-

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

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

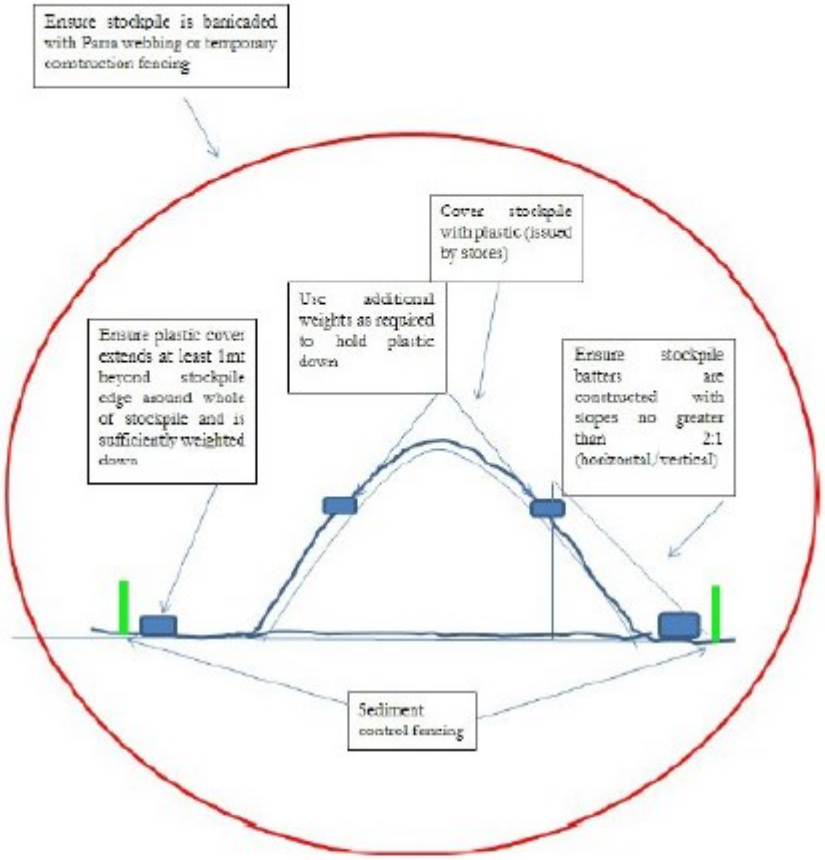
Bonded ACM

Contaminated soils (Sulphates)

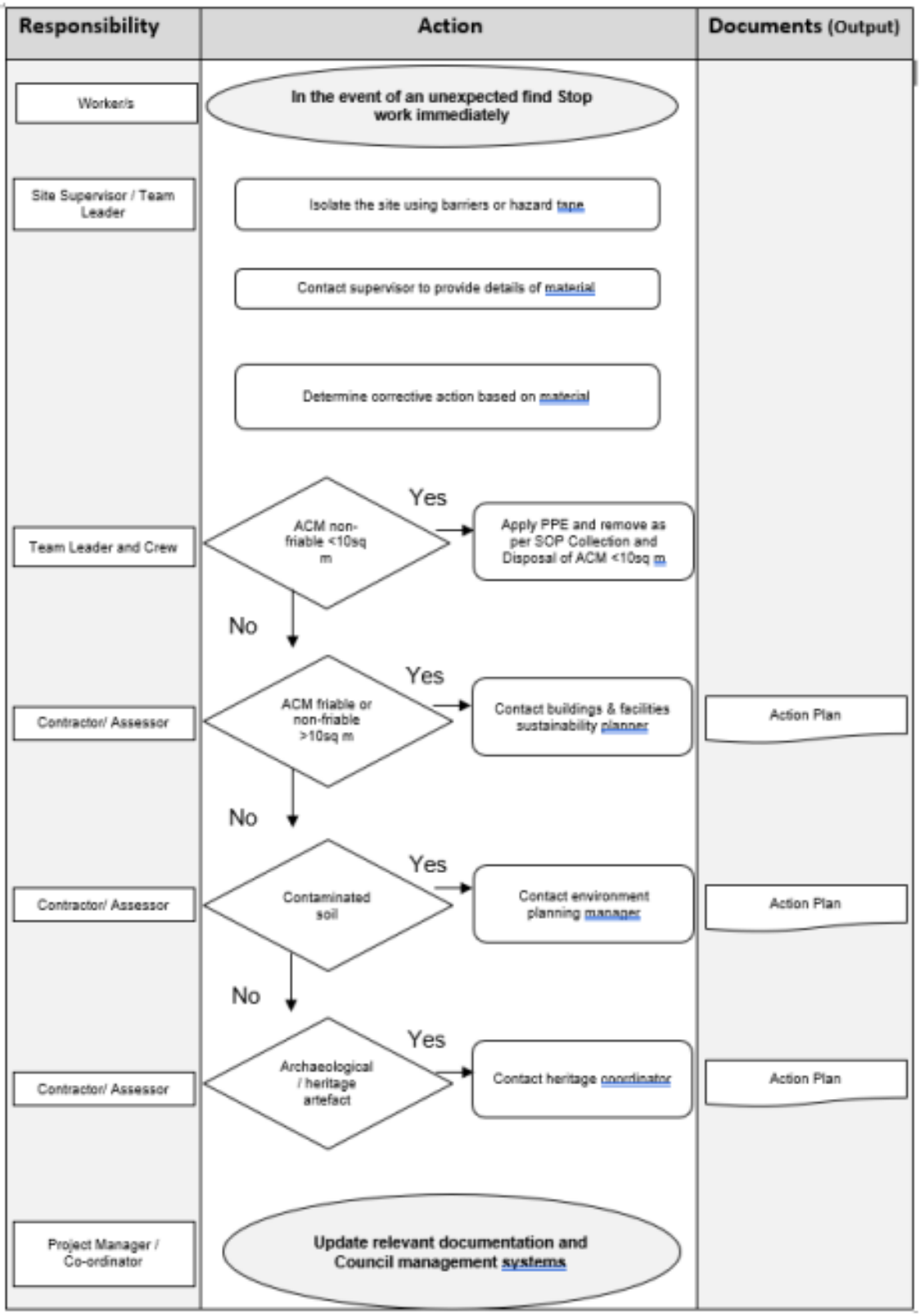
Archaeological & heritage finds

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

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



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


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

Appendix I: Fisheries Permit

(note photos of signed pages on Page 2 of this REF)

Department of Primary Industries
And Regional Development

PN24/364
19 August 2024

General Manager
Wollongong City Council
41 Burelli Street
WOLLONGONG NSW 2500
via email: aschipp@wollongong.nsw.gov.au

Attn: Nathan Rix

Re: Fisheries Permit PN24/364 – Dredging and reclamation – ICOLL Entrance Emergency Opening – Bellambi Lagoon

Dear Mr Rix,

I refer to your application dated 19 August 2024 for a permit under Part 7 of the *Fisheries Management Act 1994* (FM Act). Department of Primary Industries and Regional Development (DPIRD) Fisheries, assesses applications for dredging and reclamation works, harm marine vegetation and obstruction of fish passage in accordance with Part 7 of the FM Act, Part 14 of the *Fisheries Management (General) Regulation 2019* and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013)*.

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

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

Please note that the attached permit providing authorisation under the *Fisheries Management Act 1994*, to undertake dredging and/or reclamation (s.200 or s.201), and/or harm marine vegetation (s.205) does not provide authorisation under any Act or planning instrument. It is the applicant's responsibility to ensure they have all appropriate approvals and landowner consents before the works occur. This may include, but is not restricted to, development consent under the *Environmental Planning & Assessment Act 1979*, landowners' consent and/or a licence under the

Crown Lands Management Act 2016, and a controlled activity approval under the *Water Management Act 2000*.

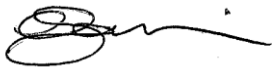
Please carefully read and note the conditions included in the permit. **If you agree that all the conditions are reasonable, appropriate, and achievable, you must sign and date the attached form (Acceptance of Conditions) and return it to the Departmental Contact Officer as soon as possible.** **If you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

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

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

If you have any queries regarding this permit, please contact Carla Ganassin at carla.ganassin@dpi.nsw.gov.au or 0447 644 357.

Sincerely



Carla Ganassin

Senior Fisheries Manager, Coastal Systems

DPIRD Fisheries

Authorised delegate of the Minister of Primary Industries

Permit under Part 7 of the
FISHERIES MANAGEMENT ACT 1994

Permit	Permit Number	PN24/364
	Expiry Date	Unless cancelled or suspended sooner, this permit shall remain in force until **19 August 2026**
Permit Holder:		**Wollongong City Council** 41 Burelli St (Locked Bag 8821), Wollongong DC NSW 2500 Contact person: Louise Hickson Phone: 4227 7352 Email: lhickson@wollongong.nsw.gov.au
Permit Area:		Entrance of Bellambi Lagoon, East Corrimal **(Refer to Attachment 1)**
Permit Activity:		Dredging and reclamation for ICOLL entrance opening
Departmental Contact Officer:		Carla Ganassin Ph: 0447 644 357 Email: carla.ganassin@dpi.nsw.gov.au
District Fisheries Officer:		Daniel Minter Ph: 4220 8499 Email: daniel.minter@dpi.nsw.gov.au

This permit is subject to the following Conditions:

ADMINISTRATIVE CONDITIONS

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

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

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

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

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

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

4) This permit (or a true copy) must be carried by the permit holder or sub-contractor operating on-site at all times during works activity in the permit area.

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

NATURE AND EXTENT OF WORKS

5) The permit holder must ensure that all works authorised by this permit are restricted to the permit area and are undertaken in a manner consistent with those described in the: permit application dated 19 August 2024 and Review of Environmental Factors for the works (Wollongong City Council, EP REF-2024/5, 19 August 2024). Other works, which have not been described, except those activities required by this permit, are not to be undertaken.

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

6) This emergency ICOLL entrance opening is to be conducted around the high tide, or on the upper part of a falling tide. Should any variation to this be required, the Departmental Contact Officer for this permit should be contacted to discuss and seek authorisation of this.

   Reason – To increase headloss and scour from the entrance opening event and reduce the risk of flooding associated with opening the waterway on an incoming tide.

WORK IN WATERS

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

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

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

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

AVOIDING HARM TO SNAGS, MARINE AND RIPARIAN VEGETATION

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

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

FISH KILL CONTINGENCY

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

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

IMPORTANT NOTE:

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

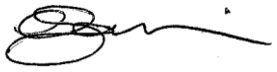
- the drawings / documents referred to above, the conditions of this approval prevail to the extent of the inconsistency.
- any Government publication referred to in this permit, the most recent document shall prevail to the extent of the inconsistency; and
- the proponent's mitigation measures outlined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

STOP WORK ORDERS

A Fisheries Officer or other appropriate delegate, who has reasonable cause to suspect that the conditions of this permit have not been complied with, **may order the work to stop immediately.** The order may be given to the permit holder or any person who informs the officer that they are

acting in any capacity on behalf of the permit holder. Any damage caused to the habitat outside the specified permit area, or the carrying out of works not in accordance with the conditions specified in this permit and/or the application and that were accepted by the permit holder, could result in a breach of the *Fisheries Management Act 1994* or *Regulations*, and penalties of up to $220,000 may apply. Orders may also be made requiring work to rectify any damage caused by unauthorised works. **Breaching a condition of a permit can incur an on-the-spot penalty notice of $500 or up to $11,000 through the courts pursuant to clause 225 of the *Fisheries Management (General) Regulation 2019.***

Sincerely



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

19 August 2024

Attachment 1 – Location diagram of works authorised under PN24/364

Permit No. PN24/364 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPIRD FISHERIES

In reference to Permit No. PN24/364 associated with Emergency ICOLL entrance opening works at Bellambi Lagoon:

Acceptance of Conditions Form

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

Permit Holder's name: _____

Permit Holder's signature: _____

Date: _____

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

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au

Permit No. PN24/364 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPIRD FISHERIES

In reference to Permit No. PN24/364 associated with Emergency ICOLL entrance opening works at Bellambi Lagoon:

Commence Works Notification Form

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

Permit Holder's name: _____

Expected commencement date: _____

Permit Holder's signature: _____

Date: _____

Comments:

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

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au

Permit No. PN24/364 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COMPLETE THIS PAGE AND RETURN TO DPIRD FISHERIES

In reference to Permit No. PN24/364 associated with Emergency ICOLL entrance opening works at Bellambi Lagoon:

Active Works Notification Form

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

Permit Holder's name: _____

Anticipated completion date: _____

Permit Holder's signature: _____

Date: _____

Comments:

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

ahp.central@dpi.nsw.gov.au

fisheries.compliance@dpi.nsw.gov.au