

Environmental Assessment Form – Level 2

Geotechnical Investigation - Avoca Lagoon Crossing Transfer Main

This form is an Environmental Impact Assessment under Part 5 of the EP&A Act 1979 and S171 of the EP&A Reg (2021). This form has been prepared with reference to the NSW Department of Planning Environment's Guideline for Division 5.1 Assessments (June 2022), as stipulated under S.170 of the EP&A Reg. This form is to be completed by an Assessing Officer in accordance Council's Environmental Assessment Guideline.

Section A: Work Activity

The below table is a quick reference summary of the **Infrastructure SEPP** only. Check the SEPP using the links provided to confirm your work activity meets the criteria to be permissible without consent.

Water Supply

[Clause 125 SEPP Infrastructure](#)

Water reticulation systems	<input type="checkbox"/>
Water storage facilities (certain zones apply)	<input type="checkbox"/>
Catchment management works	<input type="checkbox"/>
Recreation areas associated with a water storage facility	<input type="checkbox"/>
Water treatment facilities	<input type="checkbox"/>
Dams, reservoirs, weirs, levees, spillways and fishways	<input type="checkbox"/>
Groundwater investigation works, groundwater bore stations, borefields, minewater works and the like	<input checked="" type="checkbox"/>
Access ways	<input type="checkbox"/>
Water intakes, pumping stations, pipelines, channels, tunnels, canals and aqueducts	<input type="checkbox"/>
Gauging and monitoring equipment	<input type="checkbox"/>
Power supply to the water supply system	<input type="checkbox"/>
Hydro-electric power generation equipment and associated connections to the electricity network	<input type="checkbox"/>
Construction works	<input type="checkbox"/>
Emergency works and routine maintenance works	<input type="checkbox"/>
Environmental management works	<input type="checkbox"/>
Schemes for the reuse of water treatment residuals	<input type="checkbox"/>
Maintenance depots	<input type="checkbox"/>

Section B: Nature and Scope

Project Title

Geotechnical Investigation - Avoca Lagoon Crossing Transfer Main

Location Address

Avoca Beach Lagoon, Lot 2 DP 1010173 (Tramway Rd, North Avoca), Lot 7318 DP 1168423 (12 Burns St, Avoca Beach), Lot 7317 DP 1168423 (1CR Tramway Rd, North Avoca), Lots 10-15 DP 20094 (15 Ficus Ave, Avoca Beach).

Location Map

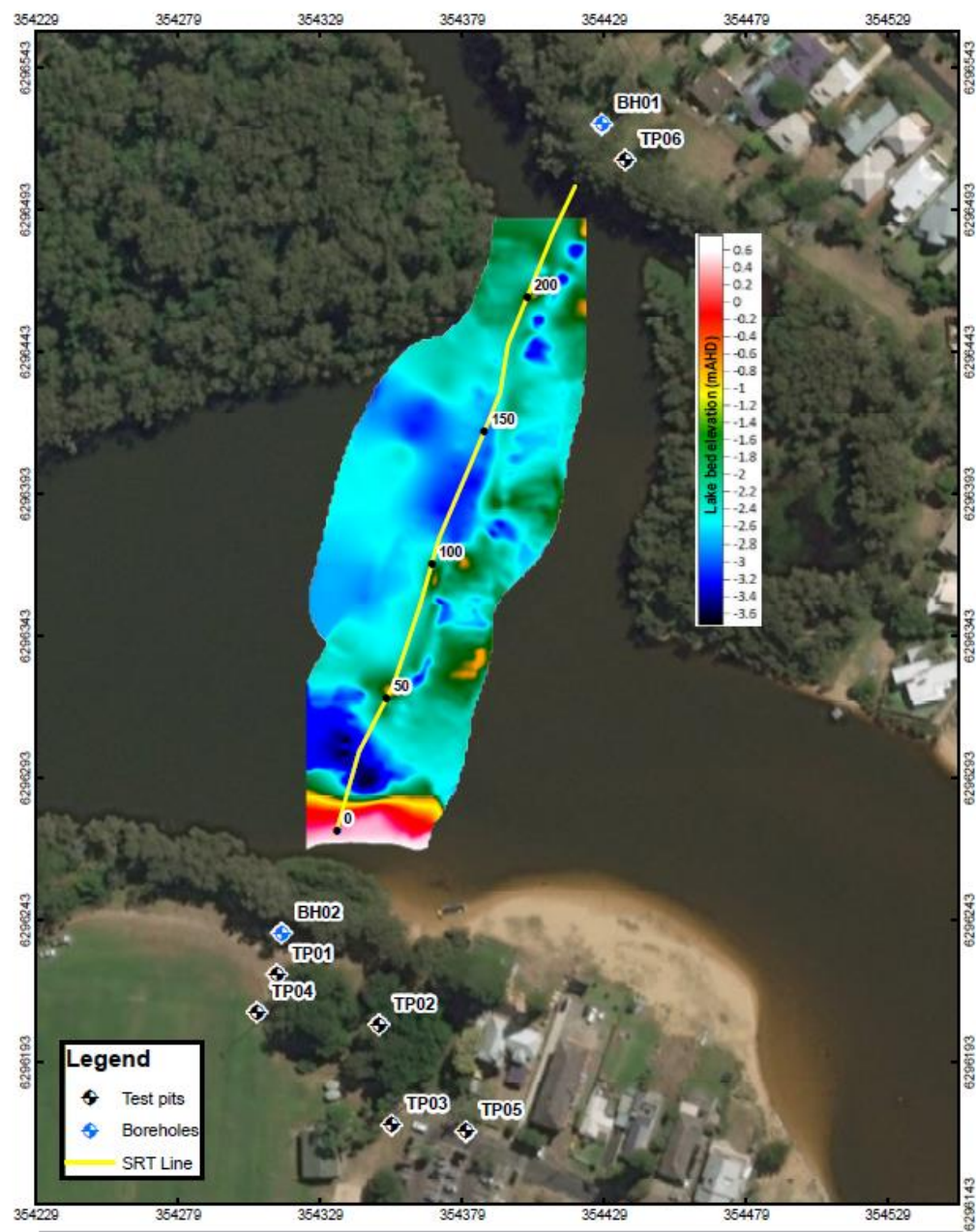


Figure 1: Proposed borehole alignment (GHD, 2020).

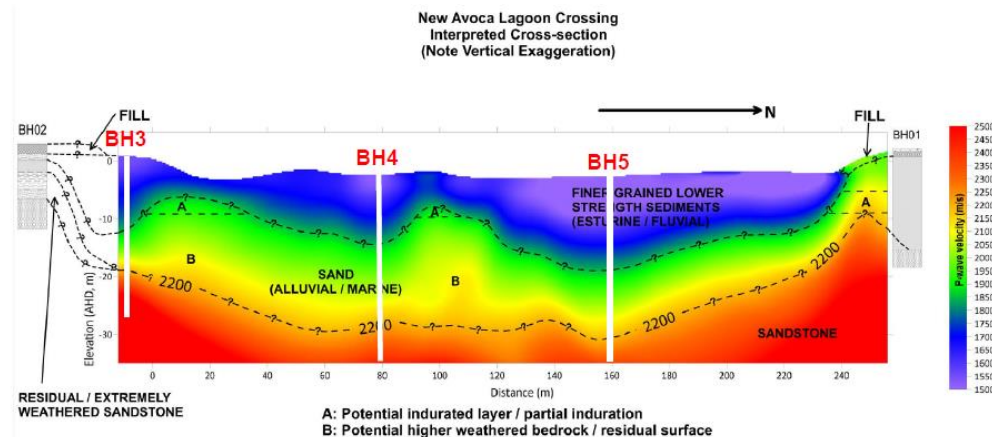


Figure 2: Proposed borehole location along alignment shown in Figure 1 (GHD, 2020).

**Site Zoning (Central
Coast Local
Environmental Plan
2022)**

W1 Natural Waterways

RE1 – Public Recreation

**Description of the
Work Activity**

The proposed activity includes a geotechnical assessment of Avoca Lagoon, drilling Boreholes BH3 (prior to CH 0), BH4 (CH 4) and BH5 (CH 160) through alluvial soils and then diamond cored through rock at Avoca Lagoon along the alignment shown in **Figure 1**.

Boreholes will be drilled using a track mounted rig. This will be positioned on a subcontracted barge for the over-water boreholes. GHD will hire an RTK-GPS to position the boreholes and monitor lagoon water level. The barge will include a floating spill boom and kit. A separate work punt will ferry personnel and materials to and from the barge.

Borehole drilling will be carried out using the following techniques:

- In alluvial soils, rotary wash boring techniques will be utilised. Casing would be used to support upper portions of the borehole (and the water column).
- In recoverable rock, diamond coring techniques would be used.

Upon completion of drilling, the boreholes will be allowed to collapse (fill with sediment). As such, they should be positioned off alignment so as not to be encountered during drilling HDD.

Recirculated water and spoil from the overwater boreholes will be collected in drums placed on the barge and transported back on shore for disposal in accordance with statutory requirements and the environmental protocols to be developed as part of the HSE management plan.

The barge and rig would be loaded into and from the water using a hired crane.

**Description of the
Existing Environment**

GHD have previously prepared a Review of Environmental Factors (REF) for the construction of the new transfer main, titled *CCC - New Avoca Lagoon Crossing Transfer Main Review of Environmental Factors* and dated March 2021 (GHD REF). The GHD REF provides a detailed review of the local environment and has been utilised as a source of information for the following summary of the existing environment.

Geology and Soils

Geotechnical investigations were conducted by GHD (2020), with:

- **South of the lagoon** soils encountered were generally 0.7 m to 0.8 m of dark brown to brown sand fill was encountered. This sand was fine to medium grained and inferred as medium dense to dense.
- **North of the lagoon** soils encountered were generally clay topsoils from 0.3 to 0.4 m depth, underlain by medium dense to dense and to approximately 1.3 to 1.5 m depth.

The proposed activity has been designed to further characterise soils within the lagoon footprint, known to contain fine-grained fluvial / estuarine sediments overlying alluvial sands and sandstone bedrock.

The GHD (2020) Geotechnical Assessment determined that construction of the transfer main would likely intersect acid sulfate soils. The proposed geotechnical works will likely intersect soils containing metal sulfides that are currently covered by water.

The GHD (2020) identified urban land uses, chemical storage and use, contaminated fill material and run-off from road systems as potential contamination sources by concluded that the risk of encountering contaminated soils was low. A search of the NSW Environment Protection Authority (EPA) *Contaminated Land Record* and *List of Notified Sites* on 18 September 2022 did not identify any sites of known contamination. The GHD (2020) determination is therefore considered current and representative for the proposed activity.

Surface Water & Groundwater

Avoca Lagoon is a closed (periodically opened manually) saline lagoon that includes both the suburbs of Avoca Beach and North Avoca. Groundwater was observed at a depth of 1.4 m at North Avoca and 1.1m-1.9m at Avoca Beach by GHD (2020).

The vegetated island (Lot 100 DP 60217 – Crown Land) and large portions of remnant vegetation surrounding Avoca Lagoon has been mapped as a Coastal Wetland under Chapter 2 of the the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) (see **Figure 3**).



Figure 3: Coastal Wetland mapping (blue polygon) at Avoca Lagoon (Geocortex, 2023).

Biodiversity

The GHD REF (2020) did not contain a review of aquatic vegetation / habitat. Riparian and wetland vegetation to the north and south of Avoca Lagoon was determined to constitute Plant Community Type (PCT) 1724 *Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands* and PCT 1727 - *Swamp Oak - Sea Rush - Baumea juncea swamp forest on coastal lowlands of the Central Coast and Lower North Coast* which occur in the northern and southern sections of the proposal. The GHD Assessment utilised Council (Bell, 2019) mapping, with included PCTs decommissioned under a systemic ecological revision undertaken in June 2022. Updated PCT designations are provided below.

PCT 1724

PCT 1724, mapped as occurring along the northern bank of Avoca Lagoon (within the footprint of the proposed activity) and along the northern, southern and eastern portion of the vegetated island located adjacent to the proposed activity, has been amalgamated into PCT 4000 - *Northern Estuarine Paperbark Sedge Forest*. Dominant flora species identified onsite, such as *Melaleuca quinquenervia* (Broad-leaved Paperbark) and *Casuarina glauca* (Swamp Oak) are consistent with this classification. PCT 4000 is associated with *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*, listed as an Endangered Ecological Community (EEC) under the NSW *Biodiversity Conservation Act 2016* (BC Act).

PCT 1727

PCT 1727, mapped as occurring within vegetation west of Bareena Wetland, west of SPS NAMJ and north of Heazlett Park, was split into PCT 3962 *Coastal Floodplain Phragmites Reedland* and PCT 4028 *Estuarine Swamp Oak Twig-rush Forest*

PCT 4028 is associated with *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*, listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*, listed as an EEC under the BC Act.

Aquatic

The proposed activity includes the use of a barge and geotechnical investigation within the Avoca Lagoon, with proposed BH5 occurring immediately adjacent to mapping for *Ruppia sp.* (Sea Tassel), often found in brackish (salt diluted) waters. The extent of *Ruppia sp.* mapping for the Avoca Lagoon is shown in **Figure 4**. The NSW Department of Primary Industries – Fisheries (DPI Fisheries) *Fisheries NSW Spatial Data Portal* (2023) maps the Avoca Lagoon as Key Fish Habitat, while Avoca Lagoon (noting brakish environment) is not mapped within the extent of indicative occurrence for Threatened Freshwater Fish Species.



Figure 4: *Ruppia sp.* mapping within Avoca Lagoon (DPI Fisheries, 2023)

Reasons for undertaking the work activity

The proposed activity follows from 2020 GHD geotechnical report (GHD Ref. 12525777-46764, Rev 0, 3 August 2020) which includes details of a marine geophysical survey and cored boreholes on both banks. The proposed activity has been designed to address the following recommendation outline under the 2020 GHD geotechnical report

"Through rock sections of the HDD, the need for investigation depends on how close the HDD route will pass below possible alluvial / marine sands. There is uncertainty in the inferred top of sandstone level as shown in Figure 2 that translate to risk of hole collapse and frac-out should alluvial / marine sands be encountered in un-cased section of the bore. To mitigate this, the HDD profile could be lowered. If this is not possible, or where it is not possible, overwater drilling (diamond coring with a geotechnical investigation rig on a floating barge) is recommended to better define the top of rock level and characterise soils and rock."

Legislative Context

The proposed activity has thus been designed to address potential risk of hole collapse and frac out during construction of the Avoca Transfer Main via better definition of the top of the sandstone rock layer and alluvial marine sands.

Permissibility - State Environmental Planning Policy (Transport and Infrastructure) 2021(NSW)

The proposed activity includes *"Investigations (including geotechnical and other testing, surveying and the placement of survey marks, and sampling) relating to proposed development or for the purposes of system development or determining the safety or condition of infrastructure"* and is classified as exempt development pursuant to the provisions of Schedule 1 and Section 2.21 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP). The proposed activity can comply with exempt development provisions listed under Section 2.20 of the Transport and Infrastructure SEPP.

Other Legislation

In summary, the proposed activity:

- Is permissible without consent under the Transport and Infrastructure SEPP.
- Has been assessed under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).
- Is permitted under the *Fisheries Management Act 1994* (FM Act) under Council's *Fisheries Permit PN22.255 - Bulk Fisheries Permit and Code of Practice for Maintenance Works* (PN22.255) under Section B1(a) *"Minor works within a waterway that is mapped/defined as Key Fish Habitat can be carried out in accordance with this Code under the accompanying permit in accordance with Part 7 of the FM Act*, whereby Geotechnical Works are included under Section C27 of PN22.255 where:
 - Geotechnical drilling or coring (but not excavating) into the bed or banks of a waterway.
 - All process water must be captured in a tank or bunded area.
 - Machinery may not enter the water or impact marine or riparian vegetation by tracking over it or parking on it.
- Does not constitute a significant impact under the NSW *Biodiversity Conservation Act 2016*.
- Does not require referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
- The proposed activity, with controls listed under this REF, is consistent with assessment criteria under Chapter 2 (Coastal Management) of the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (Hazards and Resilience SEPP).
- Is licenced under the *Crown Land Management Act 2016* [REDACTED]
- Intersects registered Darkinjung Aboriginal Land Claims (ALC) with consent for the proposed works issued by the Darkinjung Local Aboriginal Land Council (DLALC) issued on 13/10/2023.
- The Crown Lands approval contains provisions relating to Native Title under the Commonwealth *Native Title Act 1993*.

Section C: Environmental Impacts and Control Measures

Air

Dust	
1. Details of impacts	3. Control measures
The proposed activity includes geotechnical assessment within an aquatic environment. As such, the risk of adverse dust emissions is low and limited to access and egress by the crane accessing the nearby sewer pump station to lift the floating barge into and out of the lagoon.	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) Speeds on unsealed roads will be limited to 10km/h or less. 2) Groundcover disturbed by the proposed activity will be remedied as soon as practicable. 3) Erosion and sediment controls are to be installed downslope of any ground disturbance capable of being impacted by run-off. ESC are to be installed and maintained in accordance with <i>Managing Urban Stormwater: Soils and construction</i>, the 'Blue Book' (Landcom, 2004). 4) Rehabilitation of disturbed areas using like-for-like material is to occur as soon as practicable following geotechnical works.
2. Impacts without controls	4. Impacts with controls
Insignificant: No or minimal dust generated.	Insignificant: No or minimal dust generated.

Odours	
1. Details of impacts	3. Control measures
The proposed activity will include the extraction of estuarine sediments, potentially resulting in odours if not effectively managed.	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) Site machinery are to be maintained as per manufacturers standards and are to be verified as being in operational order, free of potential leaks, prior to use onsite. 2) Site machinery is to be fitted with appropriate filters to limit potential emissions and odours. 3) All chemicals and hazardous materials are to be used and stored in accordance with the user manual and Australian Standards. Safety Data Sheets are to be kept on-site at all times.
2. Impacts without controls	4. Impacts with controls
Minor: Odours generated. Limited to duration of works.	Insignificant: No or minimal odours generated.

Water

Stormwater	
1. Details of impacts	3. Control measures
<p>Borehole drilling and subsequent collapse of the borehole will result in suspended sediment being released into the lagoon, impacting upon local water turbidity.</p> <p>Recirculated water and spoil from the overwater boreholes will be collected in drums placed on the barge and transported back on shore for disposal in accordance with statutory requirements and the environmental protocols to be developed as part of the HSE management plan.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) <u>The Contractor is to be provided with Council's Fisheries Permit PN22.255 - Bulk Fisheries Permit and Code of Practice for Maintenance Works (PN22.255) and are to abide by Controls listed under Fisheries Permit PN22.255. Controls listed under Fisheries Permit PN22.255 are to take precedence over controls listed in this REF wherever conflict occurs (see Appendix 3).</u> 2) All chemicals and hazardous materials are to be used and stored in accordance with the user manual and Australian Standards. Safety Data Sheets are to be kept on-site at all times. 3) Chemicals, fuels, oils and hazardous materials carried onto the barge is to be limited to those that are essential to the aquatic geotechnical works. 4) Sediment booms / silt curtains are to be installed surrounding the proposed drill site prior to geotechnical drilling. 5) The bottom of the silt curtain will be anchored to the lagoon bed to fully encapsulate waters within the proposed works area. 6) If possible, the silt curtain is to be retained surrounding proposed borehole locations until suspended sediments have been allowed to settle. 7) At minimum, the silt curtains surrounding a borehole is to be retained for a period of 6-12 hours to allow settlement of suspended sediments. 8) Excess sediment / material floating on the surface will be removed from the water, stored on the barge, classified as per NSW Environment Protection Authority (EPA) <i>Waste Classification Guidelines</i> and disposed of in a lawful manner. Waste receipts will be retained. 9) Boreholes will not be installed within the alignment of the proposed water transfer main works (increasing risk of collapse for future works). 10) Recirculated water and spoil from the overwater are to be stored in suitable containers, free from leaks and with tight fitting lids. Containers are to be stored in a dry, safe location to remove risk of falling and spilling materials in the adjacent waterway. 11) Works scheduling is to avoid forecast wet weather periods. 12) Spill kits are to be kept on site with plant at all times. Personnel are to be trained in spill kit use.

	13) Standard Drawings for floating silt curtain installation are to be adhered to where practical and are provided in Appendix 5 for reference (source <i>Best Practice Erosion and Sediment Control, Book 6: Standard Drawings</i> – International Erosion Control Association, 2012).
2. Impacts without controls	4. Impacts with controls
Potentially Significant: Stormwater pollution is likely to occur.	Insignificant: Stormwater will potentially contain sediment but will not leave the site.

Groundwater	
1. Details of impacts	3. Control measures
The proposed activity will include the extraction of water within saline sediments.	Controls will be applied as outlined under this REF.
2. Impacts without controls	4. Impacts with controls
Minor: Groundwater resources will be intercepted, impacted or extracted within approved quantities.	Minor: Groundwater resources will be intercepted, impacted or extracted within approved quantities.

Water Bodies	
1. Details of impacts	3. Control measures
<p>The proposed activity will occur within Avoca Lagoon. Impacts will be as detailed under 'Stormwater' section of this REF. There is potential for disruption to local ecology and water quality in the event that adequate water quality (sediment) controls are not in place during and following drilling.</p> <p>Spills of any site chemicals or hydrocarbons further have the potential to enter Avoca Lagoon, causing contamination of surface water and potentially impacting aquatic flora and fauna.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) Controls as per 'Stormwater' section of this REF. 2) The following consultation, required under <i>PN22.255 - Bulk Fisheries Permit</i>, is to be undertaken: <ol style="list-style-type: none"> a) Commence Works Notification – relevant form completed and sent to the Central Coast Fisheries Office at least three (3) days prior to the commencement of works. b) Active Works Notification – relevant form completed and sent to the Central Coast Fisheries Office at least one (1) day prior to the completion of work or removal of machinery from site. c) Post Works Notification - relevant form completed and sent to the Central Coast Fisheries Office within twenty-one (21) days of completion of works at the site. 3) In shallow water, only use self-propelled barges at suitably high tides where adequate clearances are available to prevent disturbances to the lake bed and aquatic habitat. 4) Materials being transported on and off barges must be adequately secured. This includes securing loose

	<p>items on the barge when lifted into the lagoon via crane.</p> <ol style="list-style-type: none"> 5) A spotter is to be used to guide the barge when traversing the lagoon, steering clear of underwater habitat / obstructions that may be in use by local fauna or that may damage the barge if struck. 6) Where possible, soft barriers such as rubber tyres should be fitted to the barge when traversing narrow spaces within the lagoon. 7) The barge is to be secured each night outside the known footprint of <i>Ruppia sp.</i>, as shown on Figure 4. 8) Machinery may not enter the water or impact marine or riparian vegetation by tracking over it or parking on it. 9) No geotechnical drilling is to occur in the banks of Avoca Lagoon.
<p>2. Impacts without controls</p> <p>Minor: Works will be carried out within a water body and may cause minimal or temporary change to the water body.</p>	<p>4. Impacts with controls</p> <p>Minor: Works will be carried out within a water body and may cause minimal or temporary change to the water body.</p>

Soil

Soil Erosion and Disturbance	
1. Details of impacts	3. Control measures
<p>The proposed activity is to be conducted in an aquatic environment, with terrestrial components primarily including mobilisation and demobilisation works, including the following:</p> <ul style="list-style-type: none"> Access / egress to SPS NAMJ (Lot 2 DP 10173) by crane for placement and extraction of the crane into and out of Avoca Lagoon. Stabilisation of the site crane. Access and egress for site personnel to and from the barge via the personal boat. 	<p>In addition to controls previously listed in this REF (ESC, stabilisation, speed control) the following controls will be applied:</p> <ol style="list-style-type: none"> The crane used to float and remove the barge is to be stabilised on flat ground, containing stabilising material (i.e. rock aggregate or sealed) wherever possible to ensure firm surface. Access and egress via the smaller boat (used to access the barge) is to occur via a suitably stabilised location, with installation of erosion and sediment controls (ESC) such as jute matting undertaken where there is risk of bank degradation via wearing of the lagoon bank.
2. Impacts without controls	4. Impacts with controls
Minor: Soils will be disturbed during works.	Insignificant: Incidental disturbance of soils may occur.

Acid Sulfate Soils	
1. Details of impacts	3. Control measures
<p>The proposed activity includes sediment and underlying material extraction for geotechnical investigation, which is highly likely to intersect potential acid sulfate soils. However, the proposed activity will occur underwater, preventing oxidation of acid sulfate soils, with extracted excess material to be stored, classified and removed from site in a legal manner.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> Excess extracted material is to be classified as per EPA guidelines and removed from site as soon as possible following extractions. No stockpiling of potential acid sulfate soils (PASS) is to occur. Waste removal is to occur in a legal manner, delivered to a facility licenced to accept the material and waste receipts are to be retained to be provided to Council.
2. Impacts without controls	4. Impacts with controls
Acid sulphate soils impacts without control measures	Acid sulphate soils impacts with control measures

Land Contamination	
1. Details of impacts	3. Control measures
<p>Council's mapping, the EPA Contaminated Land Record and EPA Litsed of Notified Contaminated Sites was searched on 27/10/2023, with the subject site not listed as having known contamination.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> All staff and contractors are to be trained in the use of spill kits for spills and leaks, which are to be kept onsite with site plant for the duration of works. Any spills, leaks or uncontrolled run-off with potential to leave the subject site or enter the

There is risk of contamination of surface soils and the aquatic environment fo Avoca Lagoon in the event of poor handling of chemicals and / or hydrocarbons or via spills during use of hydrocarbons / chemicals during use.

Under the NSW *Protection of the Environment Operations Act 1997* (POEO Act), the following people have a duty to notify a pollution incident occurring in the course of an activity that causes or threatens material harm to the environment

- a. the person carrying on the activity
- b. an employee or agent carrying on the activity
- c. an employer carrying on the activity
- d. the occupier of the premises where the incident occurs

Notification must be given immediately, i.e. promptly and without delay, after the person becomes aware of the incident. **Material Harm** is defined under Section 147(1) of the POEO Act as:

- (a) *harm to the environment is material if—*
 - (i) *it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
 - (ii) *it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and*
- (b) *loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.*

Notification of pollution incidents occurs as follows (source, NSW EPA 2023):

- 1) *Firstly, call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.*
- 2) *If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order. The 24-hour hotline for each authority is given when available:*
 - a) *the appropriate regulatory authority (ARA) for the activity under the POEO Act (usually the EPA or local authority) – the local authority is a local council of an area under the Local Government Act 1993, the Lord Howe Island Board for Lord*

adjacent aquatic environment are to be controlled and reported to Council's Project Manager immediately upon identification.

- 3) A register of spills and leaks, including details regarding (but not limited to) the chemical type, estimated quantity, and spill management undertaken is to be maintained onsite and provided to Council's Project Manager and / or Environmental Manager at the completion of works / upon request.
- 4) If re-fuelling or maintenance of machinery, vehicles or equipment occurs on-site, the area is to be bunded, with spill kits maintained and ready for immediate use. Any oils/fuels/chemicals are to be stored in bunded areas.
- 5) No refuelling is to occur onsite unless refuelling offsite is unfeasible, refuelling of the equipment in-situ is standard practice and suitable controls are in place to prevent accidental leaks and / or spills.
- 6) Only suitably trained and qualified personnel are to handle potentially contaminating substances.
- 7) Potentially contaminating substances are not to be stored on the barge overnight but may be stored indoors of the Sewer Pump Station at Lot 2 DP 10173 providing secondary containment is provided.
- 8) Call 000 in the event of any spills and / or incidents that present an immediate threat to human health or property.
- 9) Works are to cease with immediate spill management to be undertaken where a spill occurs.
- 10) Councils Project Manager is to be advised of any spills that do not meet the threshold of Material Harm for potential further management and investigation.
- 11) Council's Environmental Manager and [REDACTED] are to be contacted in the event of a spill of potential material harm for further notification, reporting and management.
- 12) **Note:** any spill that enters a waterway is to be treated as a potential emergency and presenting material harm to the environment.

*Howe Island, or the Western Lands
Commissioner for the Western Division (except
any part of the Western Division within the area
of a local council)*

- b) the EPA, if it is not the ARA – phone Environment
Line on 131 555*
- c) the Ministry of Health via the local Public Health
Unit – see
www.health.nsw.gov.au/publichealth/infectious/phus.aspx*
- d) SafeWork NSW (formerly WorkCover) – phone
13 10 50*
- e) the local authority if this is not the ARA*
- f) Fire and Rescue NSW – phone 1300 729 579*

*Note: If the situation warranted calling 000 as a
first point of notification, you do not need to ring
Fire and Rescue NSW again.*

Council is the ARA for the proposed activity.

2. Impacts without controls

Other: Type in space below.

4. Impacts with controls

Other: Type in space below.

The land is not known to be contaminated.

Biodiversity

Native Animals (Fauna)	
1. Details of impacts	3. Control measures
<p>The proposed activity does not include the removal of potential terrestrial fauna habitat, with terrestrial impacts including traversal along existing disturbed areas and trimming of vegetation where required for safe access by the float and crane.</p> <p>The proposed activity includes temporary disturbance to the bed of Avoca Lagoon at three (3) locations. Impacts include three (3) boreholes, with the proposed works designed to reduce the potential for negative impacts from the approved construction of a transfer main underneath the lagoon.</p> <p>The proposed activity will result in short-term increase turbidity and total suspended solids (TSS) within the surrounds of the proposed boreholes. Increases in TSS and turbidity, depending on scale, have potential to impact upon aquatic flora and the visibility and breathing (via gills) of aquatic flora. However, impacts will be temporary and, with effective controls, limited to the proposed works area plus water-based controls. As such, long term impacts upon the viability of local fauna populations will be negligible.</p> <p>Bareena Wetland, located east of the proposed activity, is known <i>Litoria aurea</i> (Green and Golden Bell Frog) habitat. The proposed activity does not intersect Bareena Wetland, adjacent riparian vegetation or adjacent grasses. Access will need to be controlled to ensure no impacts to Green and Golden Bell Frogs, noting this species is more active and mobile during warmer months. Notable information regarding the Green and Golden Beel Frog includes (NPWS, 2003):</p> <ul style="list-style-type: none"> • <i>Males mainly call between September and January however frogs will take advantage of favourable conditions outside these times and be heard calling.</i> • <i>During inactivity periods, Green and Golden Bell Frogs may also be found taking refuge under or inside objects (both natural and 'man-made') in the vicinity of their habitat.</i> • <i>Foraging habitat requirements include tall, dense, grassy vegetation and tussock forming vegetation is known to be used for foraging and shelter (A. Hamer pers. comm.; A. White pers. comm.).</i> 	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) Controls relating to water quality as detailed in this REF. 2) The proposed silt curtain area is to be of minimum area to allow safe and practical completion of the proposed activity. 3) Contractor handover and site inductions are to include reminders of the importance of in-water silt curtains and that silt-curtains should be maintained as long as possible following geotechnical works to allow settling of disturbed sediments. 4) No tree removal is permitted, with trimming to occur in accordance with the provisions of AS 4373-2007 (or the latest version). 5) The three boreholes are currently proposed outside of riparian vegetation and the banks of Avoca Lagoon, being located within open water. <u>However, in the event that boreholes are to occur within the banks or shallow-water environment (e.g. <1m depth) of Avoca Lagoon, a suitably experienced ecologist is to conduct a pre-works inspection for aquatic and semi-aquatic fauna.</u> 6) Vehicles and machinery used in the proposed activity are to be free of foreign materials such as soil, seeds and plant material to prevent potential spread of harmful pathogens and fungi. 7) For potentially contaminated materials and equipment used in geotechnical assessment (source <i>Hygiene guidelines Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants</i>, NSW DPIE 2020) - Spray or soak potentially-contaminated materials with disinfectant Leave for 30 seconds before proceeding. Where practical, rinse with clean water. Where practical, ensure all clothing, footwear, tools and equipment are dry before proceeding.

- *Over-wintering sites are another important habitat component that requires consideration in any site assessment. Such habitat provides protection from disturbance during the cooler months of the year when individuals enter a period of quiescence/inactivity and become torpid. Such sites include the bases of dense vegetation tussocks, beneath rocks, timber, within logs or beneath ground debris including human refuse such as sheet iron etc (Pyke and White 2001; R. Wells pers. comm.; A. Hamer pers. comm.). Such sites may be adjacent to the breeding sites but may also be some distance away. The full range of possible habitat used for this purpose is not well understood and so assessments should be mindful of this information gap.*

2. Impacts without controls

Minor: Fauna habitat may be disturbed.

4. Impacts with controls

Minor: Fauna habitat may be disturbed.

Native Vegetation (Flora)**1. Details of impacts**

Impacts as per 'Native Animals (Fauna)' including no tree removal but some vegetation trimming may occur.

Proposed borehole BH5 will intersect mapping for *Ruppia* sp. There will be minor impacts to *Ruppia* sp. within the geotechnical drill area, with impacts to surrounding *Ruppia* to be negligible due to the short scale of works. The overall impact upon the viability of *Ruppia* inside the silt curtain will be dependent on settling time of sediment.

3. Control measures

The following controls will be applied:

- 1) Controls as listed in other sections of this REF.
- 2) The area of works will be kept to the minimum to safely complete the proposed activity.
- 3) Any anchoring or mooring structure used to secure the barge is to occur outside the mapped extent of *Ruppia* sp. and is to avoid Bareena Wetland, with suggested location provided in.



Figure 5: Possible anchoring location (red) and Ruppia mapping (green) (DPI Fisheries, 2023).

2. Impacts without controls

Minor: Native vegetation will be pruned or cleared.

4. Impacts with controls

Minor: Native vegetation will be pruned or cleared.

Aquatic Ecology

1. Details of impacts

Impacts as per 'Native Animals (Fauna)' and 'Native Vegetation (Flora)' including impacts to *Ruppia sp.*

A search of the Australian Government: Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) on 27 October 2023 identified the potential for *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion ecological community occurring within Avoca Lagoon, however NSW DPI Mapping has not identified *Posidonia australis* seagrass as a macrophyte that is present within the lagoon (2000 – 2019).

2. Impacts without controls

Minor

3. Control measures

The following controls will be applied:

- 1) Controls as listed in other sections of this REF.
- 2) The Contractor is to be provided with Council's Fisheries Permit PN22.255 - Bulk Fisheries Permit and Code of Practice for Maintenance Works (PN22.255) and are to abide by Controls listed under Fisheries Permit PN22.255. Controls listed under Fisheries Permit PN22.255 are to take precedence over controls listed in this REF wherever conflict occurs (see **Appendix 3**).

4. Impacts with controls

Insignificant

Threatened Species & Ecological Communities

1. Details of impacts

NSW listed Threatened species (BC Act) known to occur within 2km of the proposed activity are provided in **Appendix 1**, while **Appendix 2** lists known and modelled (under Commonwealth Protected Matters Search Tool – 27/10/2023) threatened and marine species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), noting the proposed activity occurs within a marine environment, excluding access.

The proposed activity does not include tree removal (noting presence of EEC Vegetation), with impacts limited to temporary drilling and sedimentation control at three locations within Avoca Lagoon. Controls have been included to control and contain possible turbidity and TSS impacts, minimising impacts upon aquatic flora and fauna, including threatened flora and fauna that may occur within Avoca Lagoon.

The Green and Golden Bell Frog is known to occur in the area, with controls in place to mitigate any impacts upon this species, such as that the local breeding population (located at Bareena Wetland) would be avoided and the viability of the population would not be compromised.

With reference to the above, the proposed activity is not considered to *likely to significantly affect threatened species or ecological communities, or their habitats* as per the test of significance under Section 7.3(1) of the BC Act.

The proposed activity will not impact upon an area of declared outstanding biodiversity value as per Section 7.2(1)(c) of BC Act.

Serious and Irreversible Impacts (SAIL) –

Consideration of threatened flora, fauna and ecological communities at risk of Serious and Irreversible Impacts (SAIL) is required under Section 6.5 of the BC Act. Assessment is undertaken pursuant to clause 6.7 of the *NSW Biodiversity Conservation Regulation 2017* and the NSW DPE (formerly Department of Planning, Industry and Environment – DPIE) guideline Guidance to assist a decision maker to determine a serious and irreversible impact (2019), with consideration of the following Principles:

3. Control measures

The following controls will be applied:

- 1) Controls as listed in this REF.
- 2) Access / egress to and from the barge each day should occur via disturbed, managed lands within the existing sewer pump station at Lot 2 DP 1010173, avoiding grassed areas immediately west of Bareena Wetland.

- **Principle 1:** The impact will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline
- **Principle 2:** The impact will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size
- **Principle 3:** The impact is made on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution
- **Principle 4:** The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity, and therefore its members are not replaceable.

The proposed activity, with controls, will not result in SAIL to threatened species noted as being at risk of SAIL by NSW DPE. **Appendix 1** identifies species at risk of SAIL previously recorded in the locality of the proposed activity, including species with potential to occur at the proposed activity site.

2. Impacts without controls

Insignificant: Threatened species or EECs may be in the area but will not be disturbed.

4. Impacts with controls

Insignificant: Threatened species or EECs may be in the area but will not be disturbed.

Weeds & Pests

1. Details of impacts

The proposed activity does not include removal of native, terrestrial remnant native vegetation parcels that has potential to disturb and propagate existing weeds

3. Control measures

The following control measures will be applied:

- 1) If present on-site and disturbance is expected, weed control and removal is to be in accordance with DPI's NSW Weed Control Handbook for each weed species. Non-chemical control options to be used where possible if viable.
- 2) If weeds with a high biosecurity risk are identified, notify a Council biosecurity/weeds officer immediately.
- 3) Machinery, vehicles and equipment are to be inspected prior to entry / exit to site, with loose material removed, to manage the risk of weed spread/dispersal.

2. Impacts without controls

Weeds and pest impacts without control measures

4. Impacts with controls

Weeds and pest impacts with control measures

Conservation Areas & Corridors	
1. Details of impacts	3. Control measures
The proposed activity occurs within disturbed, managed land, with controls in place to reduce aquatic impacts and associated aquatic fauna movements.	Application of controls listed under this REF.
2. Impacts without controls	4. Impacts with controls
Minor	Minor

Heritage

Aboriginal Heritage

1. Details of impacts

The proposed activity footprint is managed by the Darkinjung Local Aboriginal Land Council (LALC), a search of the National Native Title Tribunal register of Native Title Claims, Determinations and Indigenous Land Use Agreements does not indicate the the subject site is impacted by any of these provisions.

Native title may be claimed in areas where it has not been extinguished, such as

- vacant (or unallocated) Crown land
- parks and public reserves
- beaches
- some leases (such as non-exclusive pastoral leases)
- land held by government agencies
- some land held for Aboriginal and Torres Strait Islander communities and
- oceans, seas, reefs, lakes, rivers, creeks and other waters that are not privately owned.

A search of the NSW DPE Aboriginal Heritage Information Management System (AHIMS) on 27 October 2023 identified two known Aboriginal Sites within the vicinity of the proposed activity (see **Figure 6** for search area).

AHIMS Search Date: 27 October 2023

AHIMS Search ID: [REDACTED]

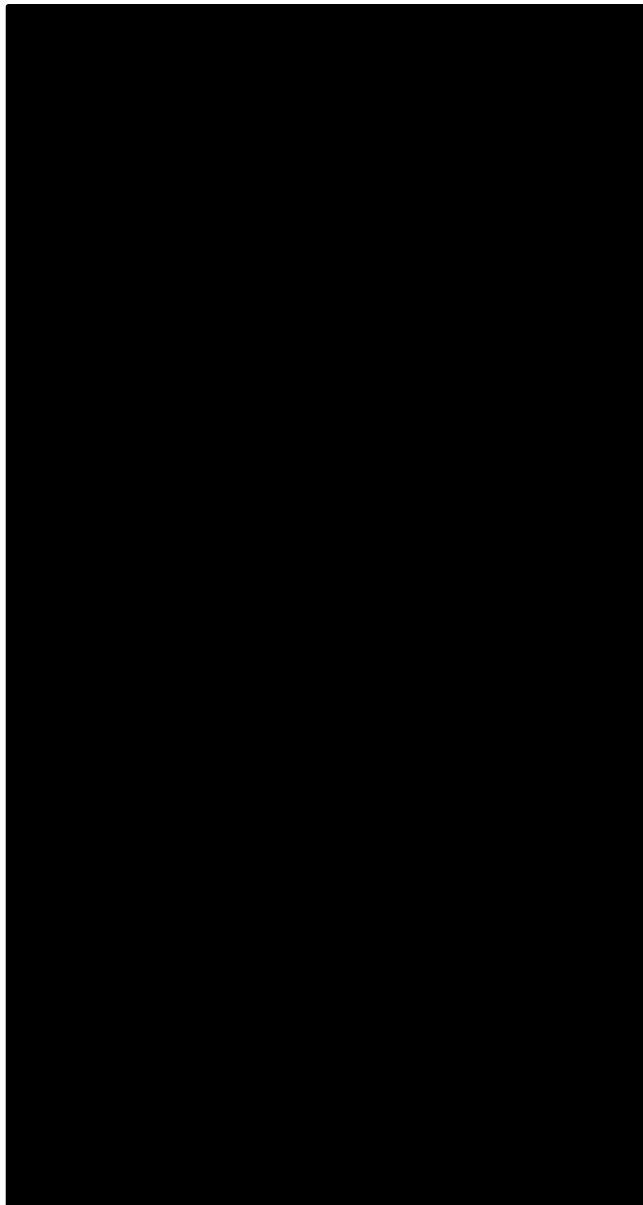
Virtus Heritage (Virtus) prepared a *Due Diligence Aboriginal Archaeological Assessment* (Due Diligence Assessment) (dated 19 April 2021) for the proposed installation of a transfer main, the proposed works to which the proposed geotechnical assessment relates. The Virtus Due Diligence assessed the potential for impact to known and unknown items of Aboriginal heritage resultant from the proposed transfer main. Preparation of the Due Diligence Assessment included a site inspection (9 July 2020) undertaken alongside a representative of the Darkinjung LALC, with the draft Due Diligence reviewed by Darkinjung LALC prior to finalisation. No Aboriginal items were identified during the site inspection. In accordance with the recommendations of the Due Diligence Assessment, an Aboriginal Cultural Heritage Assessment is currently being prepared for the water transfer main project.

Known Aboriginal Sites in the area include:

3. Control measures

The following control measures will be applied:

- 1) If any Aboriginal heritage items or sites are identified during construction, works must cease immediately, the site is to be fenced off and Council's Project Manager and the Environmental Reporting Hotline are to be contacted to proceed with the correct management and reporting (*note – Schedule 2 of Crown Lands [REDACTED] provides essential notification and reporting requirements*).
- 2) No works are to resume until communicated by Council's Project Manager / Environmental Project Manager.



The proposed activity will not impact the above listed sites. Access to the proposed activity will not include tree removal or groundworks, with vegetation impacts including trimming over overhanging limbs where required for access.

Section 7.5 of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010)* (Due Diligence Guideline) outlines low impact activities that do not explicitly require Due Diligence. Section 7.5 equates to works listed under clause 58 of the NSW *National Parks and Wildlife Regulation 2019* (NPW Regulation). The proposed geotechnical assessment constitutes 'downhole logging' and is listed under clause 58(g)(iii) of the NPW Regulation. It is further noted that the proposed geotechnical works occur within the Avoca Lagoon, an aquatic environment

where lake sediments are subject to disturbance by water movement.



Figure 6: AHIMS Search undertaken 27/10/2023, [redacted]

2. Impacts without controls

Minor: An Item or Place of Aboriginal heritage significance is known within the locality.

4. Impacts with controls

Minor: An Item or Place of Aboriginal heritage significance is known within the locality.

Local & State Heritage – Not Applicable

Comment

A search of the Heritage NSW *State Heritage Inventory* on 27 October 2023 did not identify any Local and State Heritage Places that have potential to be impacted by the proposed activity.

Miscellaneous

Waste & Stockpiles	
1. Details of impacts	3. Control measures
<p>Recirculated water and spoil from the overwater boreholes will be collected in drums placed on the barge and transported back on shore for disposal in accordance with statutory requirements and the environmental protocols to be developed as part of the HSE management plan.</p> <p>There is risk of potential loss of spoil in the surrounding natural environment in the event of poor site management.</p> <p>The proposed activity does not include the stockpiling of materials or excavated material.</p>	<p>Controls have been included in this REF for the classification, management and legal disposal of waste generated by the proposed activity.</p>
2. Impacts without controls	4. Impacts with controls
<p>Minor: Large volumes or special types of waste & stockpiles.</p>	<p>Insignificant: Incidental waste & stockpiles.</p>

Community Disturbance & Visual	
1. Details of impacts	3. Control measures
<p>The proposed activity will require access via Tramway Rd, North Avoca by a crane, light vehicles and a float for the barge to be used for the proposed activity. In addition, the proposed activity will require exclusion zones to be established around the geotechnical rig for both safety and the installation of environmental controls. This has potential to impact upon the Avoca Aquafun Business, the Avoca Kayak Club and other events scheduled to occur in the area.</p> <p>A letterbox drop for residents of Tramway Rd (to Lake St intersection) and along Lake Street was undertaken on 6 September 2023, with local businesses consulted with by Council's Community Liaison team. A site meeting between Council and the owners of Aquafun was undertaken on 26 October 2023, highlighting dates to be avoided while confirming that Aquafun operations can continue outside the safety exclusion zone of the proposed activity.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> 1) Affected businesses and neighbours will be notified of the proposed activity as soon as possible prior to commencement. Where possible, given that the majority of consultation has occurred and dates are restricted, seven days notice is to be given to impacted residents and / or businesses. 2) The operator of the barge and geotechnical rig is to remain away of nearby public activities and the associated safety requirements. 3) Aquafun Avoca scheduling is to be accounted for when the final date of works is confirmed. 4) Site personnel are to be reminded of courteous behaviour and the use of appropriate language when working in the vicinity of members of the public. 5) Vehicles and site machinery are to be kept in good working order. 6) Site inductions are to include reminders of courteous and legal driving and parking behaviours. 7) Work site traffic control, signage and fencing of construction areas to be in accordance with SafeWork NSW requirements. 8) Keep site clean and tidy with appropriate waste management.

	<p>9) Remove spoil and waste as soon as possible to lessen the visual impact of the construction on the community.</p> <p>10) Council's is to be contacted in the event of a community complaint for review of potential additional controls.</p> <p>11) The Contractor is to maintain a complaints record detailing the following (at minimum):</p> <ol style="list-style-type: none"> Date of complaint. Nature of complaint. Time Council were notified. Action undertaken to resolve issue.
2. Impacts without controls	4. Impacts with controls
Minor: The community will be moderately disturbed during works or for short term periods.	Insignificant: The community is likely to be disturbed during works or for short term periods.

Economic – Not Applicable	Comment
Other than use of local businesses, the proposed activity does not have a substantial economic impact.	
Environmental Hazards – Not Applicable	Comment
The proposed activity occurs in an aquatic environment. While flooding may impact site access and egress, controls included in this REF (e.g. works scheduling) have been included to address this risk.	

Noise & Vibration	
1. Details of impacts	3. Control measures
<p>The proposed activity will generate noise through vehicle movements, barge movements, machinery operation and geotechnical drilling. These impacts will be temporary and occur within EPA recommended hours to reduce intrusive noise impacts, however there may be periods where drilling and site works disturb the closest receivers.</p> <p>Avoca Lagoon contains existing underwater services that will need to be identified and avoided during the proposed activity.</p> <p>The final project will not create additional / new noise or vibrations to the local area.</p>	<p>The following controls will be applied:</p> <ol style="list-style-type: none"> Application of controls under this REF (see 'Community Disturbance & Visual') for controls pertinent to noise mitigation / management. Works are to be undertaken within the EPA timeframes of 0700-1800 weekdays and 0800-1300 Saturdays with no works on Sunday or Public Holidays. Works outside these hours require prior approval from Council and may require public consultation. The Contractor will undertake a Dilapidation Report prior to the commencement of work. Workers should be aware that they are likely to be within ear-shot of residents and should modify voice levels, conversation topics and bad language to avoid upsetting residents. All equipment used on the site is to be fitted with appropriate noise and exhaust muffling equipment to ensure that the machinery operates below the acceptable minimum level noise generation levels.

	<p>5) Existing services are to be identified for avoidance prior the commencement of the proposed activity.</p> <p>6) Works undertaken in the vicinity of existing services are to have regards to potential impacts of vibration.</p> <p>7) Suitable stabilisation of any infrastructure potentially impacted by the proposed activity will be undertaken.</p> <p>8) Vehicles and machinery are to be shut down when not in use (i.e. do not leave idling).</p>
2. Impacts without controls	4. Impacts with controls
Minor: Noise and/or vibration will be generated during works and will impact nearby receivers.	Minor: Noise and/or vibration will be generated during works and will impact nearby receivers.

Chemicals	
1. Details of impacts	3. Control measures
<p>During works there is potential for spills of petrol, oils, lubricants and other substances from machinery and equipment, which could then enter the surrounding environment.</p> <p>Potential impacts can be controlled though standard mitigation measures.</p>	Application of controls listed under this REF.
2. Impacts without controls	4. Impacts with controls
Insignificant: HC&DG will be stored and handled during works.	Insignificant: HC&DG will be stored and handled during works.

Climate Change – Not relevant to this project	Comment
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The proposed activity includes short-term works and will not be impacted by, or contribute to (aside from incidental emissions from machinery) climate change.

Cumulative or Additional Impacts	
1. Details of impacts	3. Control measures
<p>Road construction works were identified on Tramway Rd during the initial site inspection and letter drop on 6 September 2023. However a subsequent inspection on 29 October 2023 noted that roadworks were complete and traffic control on Tramway Rd was no longer being utilised.</p> <p>A Crown Lands Licence has been obtained from DPE – Crown Lands ([REDACTED])</p>	<p>The following controls will be applied:</p> <p>1) <u>All Conditions listed under the Crown Lands Licence (administered under the Crown Land Management Act 2016 – [REDACTED]) are to be adhered to where relevant to the proposed works.</u></p> <p>2) In the event roadworks within North Avoca (or other works) with potential to impact the proposed activity are noted as occurring, Council's Project Manager is to contact the relevant Construction</p>

	Manager / Project Manager to minimise conflicts and potential impacts upon surrounding residents.
2. Impacts without controls	4. Impacts with controls
Cumulative & additional impacts without control measures	Cumulative & additional impacts with control measures

Section D: Additional Information

<p>Date of site inspection (and attendees)</p>	<p>6/09/2023</p> <p>26/10/2023</p>
<p>Who is the relevant land owner/asset manager?</p>	<p>The proposed activity occurs on Avoca Lagoon, a Crown Waterway.</p> <p>Lot 7317 DP 1168423 are Lot 7318 DP 1168423 are Crown Land ([REDACTED]) under the Management of Council.</p> <p>Lot 2 DP 1010173 is owned by Council and contains an existing Sewer Pump Station (SPS NAMJ).</p>
<p>Concurrences, approvals, licences and/or permits</p>	<p>A Crown Lands Licence [REDACTED] has been obtained for the proposed activity, including consent from Darkinjung Local Aboriginal Land Council with multiple Aboriginal Land Claims in the area. Conditions listed under the Crown Lands Licence are to be adhered to as relevant to the proposed works.</p> <p>The proposed activity is permitted under the FM Act under Council's <i>Fisheries Permit PN22.255 - Bulk Fisheries Permit and Code of Practice for Maintenance Works</i> (PN22.255) under Section B1(a) "Minor works within a waterway that is mapped/defined as Key Fish Habitat can be carried out in accordance with this Code under the accompanying permit in accordance with Part 7 of the FM Act, whereby Geotechnical Works are included under Section C27 of PN22.255 where:</p> <ul style="list-style-type: none"> • Geotechnical drilling or coring (but not excavating) into the bed or banks of a waterway. • All process water must be captured in a tank or bunded area. • Machinery may not enter the water or impact marine or riparian vegetation by tracking over it or parking on it. <p>A copy of PN22.255 - <i>Bulk Fisheries Permit</i> is provided in Appendix 3. It is the responsibility of the Contractor to adhere to controls listed under PN22.255 - <i>Bulk Fisheries Permit</i> throughout the proposed activity.</p>
<p>Consultation</p>	<p>Consultation undertaken to date includes:</p> <ul style="list-style-type: none"> • Letterbox drop to residents along Tramway Rd (to Lake Street intersection) and along Lake Street, North Avoca, on 6 September 2023. This included direct

	<p>conversations with the resident of Lot 992 DP 834058 (1 Tramway Rd, North Avoca).</p> <ul style="list-style-type: none"> • Consultation between Aquafun and Council's Community Liaison Manager is ongoing, with a site meeting undertaken on 26 October 2023. • Ongoing consultation is to be undertaken in accordance with this REF. <p>The following consultation, required under <i>PN22.255 - Bulk Fisheries Permit</i>, is to be undertaken:</p> <ol style="list-style-type: none"> 1) Commence Works Notification – relevant form completed and sent to the Central Coast Fisheries Office at least three (3) days prior to the commencement of works. 2) Active Works Notification – relevant form completed and sent to the Central Coast Fisheries Office at least one (1) day prior to the completion of work or removal of machinery from site. 3) Post Works Notification - relevant form completed and sent to the Central Coast Fisheries Office within twenty-one (21) days of completion of works at the site.
Other relevant information	N/A
Replacement Planting	No vegetation removal currently proposed. Any vegetation removal will include 1:1 replacement, subject to landowner permission.
Project Handover	<p>This REF will be provided to the Project Manager and Geotechnical Contractor.</p> <p>Environmental control measures will be communicated to site personnel as part of the site induction.</p> <p>It is the responsibility of the Geotechnical Contractor to provide the Project Manager with a summary of the state of the subject site, environmental rehabilitation and site restoration works undertaken prior to the works completion handover with Council.</p>

Section E: Authorisation

I have assessed the routine work activity in accordance with this Level 2 EA Form and the Environmental Assessment Guideline. The work activity meets the Level 2 EA criteria and has been assessed to have a minor environmental impact.

Register this EA in CCC's corporate record keeping system and use the Precipitous 'Environmental Assessment – Level 2 – Project Name – Date'. 4Task this EA for approval to an Authorising Officer via a workflow. Ensure that the control measures committed to in this EA are feasible and effectively communicated to those persons who will be undertaking the work activity.

Assessing Officer

Brad Deane

PositionEnvironmental Project
Manager**Section**

Asset Delivery

Date

8/11/2023

I have reviewed the Environmental Assessment for the work activity and concur with the Environmental Assessment that the work activity is for minor works and will have a minor environmental impact. The activity is approved to proceed in accordance with the control measures committed to within this EA.

Authorising Officer

Stephen Legge

Position

Section Manager

Section

Asset Delivery

Date

9/11/2023

Authoriser's Checklist (Optional)

Peer Reviewer Signature (Optional)

Appendix 1: Threatened Species known to occur within 2km of proposed activity (Source: DPE BioNet, 29/08/2023)

Class	Scientific Name	Common Name	NSW Status	Commonwealth Status
Fauna				
Amphibia	<i>Litoria aurea</i>	Green and Golden Bell Frog	Endangered,	Vulnerable
Aves	<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered (SAII)	Critically Endangered
Aves	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	Vulnerable	Vulnerable
Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	
Aves	<i>Gygis alba</i>	White Tern	Vulnerable	
Aves	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	Vulnerable	
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Vulnerable, Protected	
Aves	<i>Ixobrychus flavicollis</i>	Black Bittern	Vulnerable	
Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	Vulnerable	
Aves	<i>Ninox connivens</i>	Barking Owl	Vulnerable	
Aves	<i>Ninox strenua</i>	Powerful Owl	Vulnerable	
Aves	<i>Pandion cristatus</i>	Eastern Osprey	Vulnerable	
Aves	<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	Vulnerable
Aves	<i>Tyto tenebricosa</i>	Sooty Owl	Vulnerable (SAII)	
Mammalia	<i>Arctocephalus forsteri</i>	New Zealand Fur-seal	Vulnerable	
Mammalia	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Vulnerable	Endangered
Mammalia	<i>Eubalaena australis</i>	Southern Right Whale	Endangered	Endangered
Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	

Class	Scientific Name	Common Name	NSW Status	Commonwealth Status
Mammalia	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable,	
Mammalia	<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable (SAII)	
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable (SAII)	
Mammalia	<i>Myotis macropus</i>	Southern Myotis	Vulnerable	
Mammalia	<i>Petauroides volans</i>	Southern Greater Glider	Endangered	Endangered
Mammalia	<i>Petaurus australis</i>	Yellow-bellied Glider	Vulnerable	Vulnerable
Mammalia	<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	
Mammalia	<i>Phascolarctos cinereus</i>	Koala	Endangered	Endangered
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable
Mammalia	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	
Reptilia	<i>Caretta caretta</i>	Loggerhead Turtle	Endangered (SAII)	Endangered
Reptilia	<i>Chelonia mydas</i>	Green Turtle	Vulnerable	Vulnerable
Reptilia	<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered (SAII)	Endangered
Flora				
Asteraceae	<i>Senecio spathulatus</i>	Coast Groundsel	Endangered	
Euphorbiaceae	<i>Chamaesyce psammogeton</i>	Sand Spurge	Endangered	
Fabaceae (Faboideae)	<i>Pultenaea maritima</i>	Coast Headland Pea	Vulnerable	
Myrtaceae	<i>Melaleuca biconvexa</i>	Biconvex Paperbark	Vulnerable	Vulnerable
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	Critically Endangered (SAII)	Critically Endangered

Class	Scientific Name	Common Name	NSW Status	Commonwealth Status
Myrtaceae	<i>Rhodomyrtus psidioides</i>	Native Guava	Critically Endangered	Critically Endangered
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	Endangered	Vulnerable
Proteaceae	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	Vulnerable	Vulnerable

**Appendix 2: Protected Matters Search Tool Threatened and Marine Species – 10km Buffer,
27/10/2023 (DCCEEW, 2023).**

Table 1: Threatened Species Known and Modelled to Occur within 10km of Proposed Activity - PMST (DCCEEW, 27/10/2023).

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
85267	<i>Sphyrna lewini</i>	Scalloped Hammerhead	Shark	Likely	Species or species habitat likely to occur within area	Conservation Dependent					Species Profile and Threat Database (SPRAT)	In feature area
68453	<i>Galeorhinus galeus</i>	School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark	Shark	May	Species or species habitat may occur within area	Conservation Dependent					Species Profile and Threat Database (SPRAT)	In feature area
69402	<i>Thunnus maccoyii</i>	Southern Bluefin Tuna	Fish	Likely	Species or species habitat likely to occur within area	Conservation Dependent					Species Profile and Threat Database (SPRAT)	In feature area
69374	<i>Seriola lalandi</i>	Blue Warehou	Fish	Known	Species or species habitat known to occur within area	Conservation Dependent					Species Profile and Threat Database (SPRAT)	In feature area
15763	<i>Rhodamnia rubescens</i>	Scrub Turpentine, Brown Malletwood	Plant	Known	Species or species habitat known to occur within area	Critically Endangered					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
68751	<i>Carcharias taurus</i> (east coast population)	Grey Nurse Shark (east coast population)	Shark	Likely	Foraging, feeding or related behaviour likely to occur within area	Critically Endangered					Species Profile and Threat Database (SPRAT)	In feature area
847	<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
19162	<i>Rhodomyrtus psidioides</i>	Native Guava	Plant	Known	Species or species habitat known to occur within area	Critically Endangered					Species Profile and Threat Database (SPRAT)	In feature area
84724	<i>Thelymitra adorata</i>	Wyong Sun Orchid	Plant	May	Species or species habitat may occur within area	Critically Endangered					Species Profile and Threat Database (SPRAT)	In buffer area only
82338	<i>Anthochaera phrygia</i>	Regent Honeyeater	Bird	Known	Species or species habitat known to occur within area	Critically Endangered					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
862	<i>Calidris tenuirostris</i>	Great Knot	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
744	<i>Lathamus discolor</i>	Swift Parrot	Bird	Known	Species or species habitat known to occur within area	Critically Endangered			Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
856	<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
12533	<i>Cynanchum elegans</i>	White-flowered Wax Plant	Plant	Likely	Species or species habitat likely to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In buffer area only
1060	<i>Macronectes giganteus</i>	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
879	<i>Charadrius mongolus</i>	Lesser Sand Plover, Mongolian Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
56780	<i>Asterolasia elegans</i>	null	Plant	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In buffer area only
768	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Bird	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
19006	<i>Persoonia hirsuta</i>	Hairy Geebung, Hairy Persoonia	Plant	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In buffer area only
64960	<i>Prostanthera junonis</i>	Somersby Mintbush	Plant	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In buffer area only
66632	<i>Macquaria australasica</i>	Macquarie Perch	Fish	May	Species or species habitat	Endangered					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					may occur within area						Database (SPRAT)	
11768	<i>Rhizanthella slateri</i>	Eastern Underground Orchid	Plant	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
1763	<i>Caretta caretta</i>	Loggerhead Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
75184	<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Mammal	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
36	<i>Balaenoptera musculus</i>	Blue Whale	Mammal	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)	In feature area
40	<i>Eubalaena australis</i>	Southern Right Whale	Mammal	Likely	Species or species habitat likely to	Endangered	Migratory (as <i>Balaena glacialis australis</i>)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					occur within area							
89224	<i>Thalassarche cauta</i>	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
77037	<i>Rostratula australis</i>	Australian Painted Snipe	Bird	Likely	Species or species habitat likely to occur within area	Endangered			Listed - overfly marine area (as <i>Rostratula benghalensis</i> (sensu lato))		Species Profile and Threat Database (SPRAT)	In feature area
7528	<i>Genoplesium baueri</i>	Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid	Plant	Likely	Species or species habitat likely to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
85104	<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Mammal	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
64958	<i>Prostanthera askania</i>	Tranquillity Mintbush, Tranquillity Mintbush	Plant	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
942	<i>Erythroriorchis radiatus</i>	Red Goshawk	Bird	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
1768	<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
67093	<i>Melanodryas cucullata cucullata</i>	South-eastern Hooded Robin, Hooded Robin (south-eastern)	Bird	May	Species or species habitat may occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
66240	<i>Hippocampus whitei</i>	White's Seahorse, Crowned Seahorse, Sydney Seahorse	Fish	Likely	Species or species habitat likely to occur within area	Endangered			Listed		Species Profile and Threat Database (SPRAT)	In feature area
26033	<i>Pterodroma leucoptera leucoptera</i>	Gould's Petrel, Australian Gould's Petrel	Bird	May	Species or species habitat	Endangered					Species Profile and Threat	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					may occur within area						Database (SPRAT)	
855	<i>Calidris canutus</i>	Red Knot, Knot	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
254	<i>Petauroides volans</i>	Greater Glider (southern and central)	Mammal	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
1001	<i>Botaurus poiciloptilus</i>	Australasian Bittern	Bird	Known	Species or species habitat known to occur within area	Endangered					Species Profile and Threat Database (SPRAT)	In feature area
64457	<i>Thalassarche eremita</i>	Chatham Albatross	Bird	May	Foraging, feeding or related behaviour may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64456	<i>Diomedea sanfordi</i>	Northern Royal Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
91564	<i>Acacia terminalis</i> subsp. <i>Eastern Sydney</i> (G.P.Phillips 126)	Sunshine Wattle (Sydney region)	Plant	May	Species or species habitat may occur within area	Endangered (listed as <i>Acacia terminalis</i> subsp. <i>terminalis</i> MS)					Species Profile and Threat Database (SPRAT)	In buffer area only
1061	<i>Macronectes halli</i>	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
18800	<i>Acacia pubescens</i>	Downy Wattle, Hairy Stemmed Wattle	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
877	<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
67036	<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	Bird	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
929	<i>Falco hypoleucos</i>	Grey Falcon	Bird	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64460	<i>Thalassarche bulleri</i>	Buller's Albatross, Pacific Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
82273	<i>Thalassarche bulleri platei</i>	Northern Buller's Albatross, Pacific Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable			Listed (as <i>Thalassarche</i> sp. nov.)		Species Profile and Threat Database (SPRAT)	In feature area
86380	<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	Bird	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
66645	<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (northern)	Mammal	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64470	<i>Carcharodon carcharias</i>	White Shark, Great White Shark	Shark	Known	Species or species habitat known to	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					occur within area							
68449	<i>Epinephelus daemeli</i>	Black Rockcod, Black Cod, Saddled Rockcod	Fish	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
68511	<i>Baloskion longipes</i>	Dense Cord-rush	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
59398	<i>Stagonopleura guttata</i>	Diamond Firetail	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
15460	<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	Plant	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
1944	<i>Mixophyes iteratus</i>	Giant Barred Frog, Southern Barred Frog	Frog	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
5831	<i>Persicaria elatior</i>	Knotweed, Tall Knotweed	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
21407	<i>Tetratheca juncea</i>	Black-eyed Susan	Plant	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
34	<i>Balaenoptera borealis</i>	Sei Whale	Mammal	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)	In buffer area only
15202	<i>Thesium australe</i>	Austral Toadflax, Toadflax	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
1942	<i>Mixophyes balbus</i>	Stuttering Frog, Southern Barred Frog (in Victoria)	Frog	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
87600	<i>Petaurus australis australis</i>	Yellow-bellied Glider (south-eastern)	Mammal	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
5583	<i>Melaleuca biconvexa</i>	Biconvex Paperbark	Plant	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64463	<i>Thalassarche salvini</i>	Salvin's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
26179	<i>Prototroctes maraena</i>	Australian Grayling	Fish	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64462	<i>Thalassarche steadi</i>	White-capped Albatross	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
82270	<i>Diomedea antipodensis gibsoni</i>	Gibson's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable			Listed (as <i>Diomedea gibsoni</i>)		Species Profile and Threat Database (SPRAT)	In feature area
89289	<i>Notamacropus parma</i>	Parma Wallaby	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
1766	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
682	<i>Hirundapus caudacutus</i>	White-throated Needletail	Bird	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
1973	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	Frog	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
470	<i>Grantiella picta</i>	Painted Honeyeater	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
12233	<i>Prostanthera densa</i>	Villous Mintbush	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
183	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat	Mammal	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
186	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Mammal	Known	Roosting known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
66680	<i>Rhincodon typus</i>	Whale Shark	Shark	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)	In feature area
37	<i>Balaenoptera physalus</i>	Fin Whale	Mammal	Likely	Foraging, feeding or related behaviour likely to	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					occur within area							
6870	<i>Micromyrtus blakelyi</i>	null	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
225	<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Mammal	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
96	<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila	Mammal	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
8575	<i>Acacia bynoeana</i>	Bynoe's Wattle, Tiny Wattle	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
1075	<i>Phoebastria fusca</i>	Sooty Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64464	<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					occur within area						Database (SPRAT)	
89221	<i>Diomedea epomophora</i>	Southern Royal Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
67062	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
726	<i>Neophema chrysostoma</i>	Blue-winged Parrot	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable			Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
1182	<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	Reptile	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64445	<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)	Bird	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
525	<i>Pycnoptilus floccosus</i>	Pilotbird	Bird	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
89223	<i>Diomedea exulans</i>	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
55086	<i>Diuris praecox</i>	Newcastle Doubletail	Plant	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
19533	<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
20307	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry	Plant	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
66472	<i>Thalassarche melanophris</i>	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
59257	<i>Natator depressus</i>	Flatback Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
5818	<i>Melaleuca deanei</i>	Deane's Melaleuca	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
13132	<i>Rutidosia heterogama</i>	Heath Wrinklewort	Plant	May	Species or species habitat may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
2119	<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid, Daddy Long-legs	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
1870	<i>Litoria aurea</i>	Green and Golden Bell Frog	Frog	Known	Species or species habitat known to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
82950	<i>Sternula nereis nereis</i>	Australian Fairy Tern	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
64438	<i>Fregetta grallaria grallaria</i>	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
19186	<i>Grevillea shiressii</i>	null	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In buffer area only
64459	<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
64458	<i>Diomedea antipodensis</i>	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64450	<i>Pterodroma neglecta neglecta</i>	Kermadec Petrel (western)	Bird	May	Foraging, feeding or related behaviour may occur within area	Vulnerable					Species Profile and Threat Database (SPRAT)	In feature area
1765	<i>Chelonia mydas</i>	Green Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Table 2: Marine Species Known and Modelled to Occur within 10km of Proposed Activity - PMST (DCCEW, 27/10/2023).

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
1061	<i>Macronectes halli</i>	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
25545	<i>Pluvialis fulva</i>	Pacific Golden Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
872	<i>Arenaria interpres</i>	Ruddy Turnstone	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
875	<i>Calidris alba</i>	Sanderling	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
66242	<i>Histiogamphelus briggsii</i>	Crested Pipefish, Briggs' Crested	Fish	May	Species or species habitat				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
		Pipefish, Briggs' Pipefish			may occur within area						Database (SPRAT)	
874	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
877	<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
1060	<i>Macronectes giganteus</i>	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
879	<i>Charadrius mongolus</i>	Lesser Sand Plover, Mongolian Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
66217	<i>Filicampus tigris</i>	Tiger Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
848	<i>Numenius minutus</i>	Little Curlew, Little Whimbrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
66214	<i>Festucalex cinctus</i>	Girdled Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
825	<i>Anous stolidus</i>	Common Noddy	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
1066	<i>Pachyptila turtur</i>	Fairy Prion	Bird	Known	Species or species habitat known to occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
82849	<i>Sternula albifrons</i>	Little Tern	Bird	May	Species or species habitat may occur within area		Migratory	Migratory Marine Birds	Listed (as <i>Sterna albifrons</i>)		Species Profile and Threat Database (SPRAT)	In feature area
64460	<i>Thalassarche bulleri</i>	Buller's Albatross,	Bird	May	Species or species habitat	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
		Pacific Albatross			may occur within area						Database (SPRAT)	
678	<i>Apus pacificus</i>	Fork-tailed Swift	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Birds	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
1091	<i>Pelamis platurus</i>	Yellow-bellied Seasnake	Reptile	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
82273	<i>Thalassarche bulleri platei</i>	Northern Buller's Albatross, Pacific Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable			Listed (as <i>Thalassarche</i> sp. nov.)		Species Profile and Threat Database (SPRAT)	In feature area
670	<i>Merops ornatus</i>	Rainbow Bee-eater	Bird	May	Species or species habitat may occur within area				Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
612	<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
895	<i>Charadrius bicinctus</i>	Double-banded Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
870	<i>Himantopus himantopus</i>	Pied Stilt, Black-winged Stilt	Bird	Known	Foraging, feeding or related behaviour known to occur within area				Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
841	<i>Gallinago stenura</i>	Pin-tailed Snipe	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
66279	<i>Syngnathoides biaculeatus</i>	Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
952	<i>Pandion haliaetus</i>	Osprey	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
85039	<i>Stercorarius antarcticus</i>	Brown Skua	Bird	May	Species or species habitat may occur within area				Listed (as Catharacta skua)		Species Profile and Threat Database (SPRAT)	In buffer area only
83946	<i>Symposiachrus trivirgatus</i>	Spectacled Monarch	Bird	Known	Species or species habitat known to occur within area		Migratory (as Monarcha trivirgatus)	Migratory Terrestrial Species	Listed - overfly marine area (as Monarcha trivirgatus)		Species Profile and Threat Database (SPRAT)	In feature area
59642	<i>Pterodroma cervicalis</i>	White-necked Petrel	Bird	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
28	<i>Dugong dugon</i>	Dugong	Mammal	May	Species or species habitat may occur within area		Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only
66268	<i>Phyllopteryx taeniolatus</i>	Common Seadragon, Weedy Seadragon	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
1077	<i>Calonectris leucomelas</i>	Streaked Shearwater	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
66265	<i>Notiocampus ruber</i>	Red Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66277	<i>Stigmatopora nigra</i>	Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
64463	<i>Thalassarche salvini</i>	Salvin's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64462	<i>Thalassarche steadi</i>	White-capped Albatross	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
82270	<i>Diomedea antipodensis gibsoni</i>	Gibson's Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable			Listed (as <i>Diomedea gibsoni</i>)		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
1766	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
682	<i>Hirundapus caudacutus</i>	White-throated Needletail	Bird	Known	Species or species habitat known to occur within area	Vulnerable	Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
66252	<i>Maroubra perserrata</i>	Sawtooth Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66183	<i>Solenostomus cyanopterus</i>	Robust Ghostpipefish, Blue-finned Ghost Pipefish,	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
20	<i>Arctocephalus forsteri</i>	Long-nosed Fur-seal, New Zealand Fur-seal	Mammal	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
943	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Bird	Known	Species or species habitat known to				Listed		Species Profile and Threat	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
					occur within area						Database (SPRAT)	
66187	<i>Acentronura tentaculata</i>	Shortpouch Pygmy Pipehorse	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
1763	<i>Caretta caretta</i>	Loggerhead Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
66231	<i>Hippichthys penicillus</i>	Beady Pipefish, Steep-nosed Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
847	<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
21	<i>Arctocephalus pusillus</i>	Australian Fur-seal, Australo-African Fur-seal	Mammal	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
66233	<i>Hippocampus abdominalis</i>	Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
82404	<i>Ardena carneipes</i>	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area		Migratory	Migratory Marine Birds	Listed (as Puffinus carneipes)		Species Profile and Threat Database (SPRAT)	In feature area
858	<i>Calidris melanotos</i>	Pectoral Sandpiper	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
66275	<i>Solegnathus spinosissimus</i>	Spiny Pipehorse, Australian Spiny Pipehorse	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
849	<i>Numenius phaeopus</i>	Whimbrel	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
1014	<i>Phaethon lepturus</i>	White-tailed Tropicbird	Bird	May	Species or species habitat may occur within area		Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
1012	<i>Fregata ariel</i>	Lesser Frigatebird, Least Frigatebird	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
66521	<i>Bubulcus ibis</i>	Cattle Egret	Bird	May	Species or species habitat may occur within area				Listed - overfly marine area (as <i>Ardea ibis</i>)		Species Profile and Threat Database (SPRAT)	In feature area
844	<i>Limosa lapponica</i>	Bar-tailed Godwit	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
89224	<i>Thalassarche cauta</i>	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
1013	<i>Fregata minor</i>	Great Frigatebird,	Bird	Likely	Species or species habitat		Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
		Greater Frigatebird			likely to occur within area						Database (SPRAT)	
1075	<i>Phoebastria fusca</i>	Sooty Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
845	<i>Limosa limosa</i>	Black-tailed Godwit	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
64464	<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
77037	<i>Rostratula australis</i>	Australian Painted Snipe	Bird	Likely	Species or species habitat likely to occur within area	Endangered			Listed - overfly marine area (as <i>Rostratula benghalensis</i> (sensu lato))		Species Profile and Threat Database (SPRAT)	In feature area
66276	<i>Stigmatopora argus</i>	Spotted Pipefish, Gulf Pipefish, Peacock Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
863	<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
862	<i>Calidris tenuirostris</i>	Great Knot	Bird	Known	Foraging, feeding or related behaviour known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
89221	<i>Diomedea epomophora</i>	Southern Royal Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
66251	<i>Lissocampus runa</i>	Javelin Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
860	<i>Calidris ruficollis</i>	Red-necked Stint	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
726	<i>Neophema chrysostoma</i>	Blue-winged Parrot	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable			Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
59309	<i>Actitis hypoleucos</i>	Common Sandpiper	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
833	<i>Tringa stagnatilis</i>	Marsh Sandpiper, Little Greenshank	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
864	<i>Gallinago megala</i>	Swinhoe's Snipe	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
799	<i>Sterna striata</i>	White-fronted Tern	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
89223	<i>Diomedea exulans</i>	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
59300	<i>Xenus cinereus</i>	Terek Sandpiper	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
82651	<i>Ardenna grisea</i>	Sooty Shearwater	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Marine Birds	Listed (as Puffinus griseus)		Species Profile and Threat Database (SPRAT)	In feature area
592	<i>Rhipidura rufifrons</i>	Rufous Fantail	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
881	<i>Charadrius ruficapillus</i>	Red-capped Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area				Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
744	<i>Lathamus discolor</i>	Swift Parrot	Bird	Known	Species or species habitat known to occur within area	Critically Endangered			Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
66184	<i>Solenostomus paradoxus</i>	Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66472	<i>Thalassarche melanophris</i>	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
609	<i>Monarcha melanopsis</i>	Black-faced Monarch	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
1768	<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
59257	<i>Natator depressus</i>	Flatback Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area
66240	<i>Hippocampus whitei</i>	White's Seahorse, Crowned Seahorse, Sydney Seahorse	Fish	Likely	Species or species habitat likely to occur within area	Endangered			Listed		Species Profile and Threat Database (SPRAT)	In feature area
832	<i>Tringa nebularia</i>	Common Greenshank, Greenshank	Bird	Known	Species or species habitat known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
865	<i>Pluvialis squatarola</i>	Grey Plover	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In buffer area only
851	<i>Tringa brevipes</i>	Grey-tailed Tattler	Bird	Known	Foraging, feeding or related behaviour known to occur within area		Migratory	Migratory Wetlands Species	Listed (as <i>Heteroscelus brevipes</i>)		Species Profile and Threat Database (SPRAT)	In buffer area only

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
856	<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
855	<i>Calidris canutus</i>	Red Knot, Knot	Bird	Known	Species or species habitat known to occur within area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area
66280	<i>Trachyrhamphus bicoarctatus</i>	Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66282	<i>Urocampus carinirostris</i>	Hairy Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66283	<i>Vanacampus margaritifer</i>	Mother-of-pearl Pipefish	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area
66227	<i>Heraldia nocturna</i>	Upside-down Pipefish, Eastern Upside-down Pipefish,	Fish	May	Species or species habitat may occur within area				Listed		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
		Eastern Upside-down Pipefish										
64459	<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64458	<i>Diomedea antipodensis</i>	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64457	<i>Thalassarche eremita</i>	Chatham Albatross	Bird	May	Foraging, feeding or related behaviour may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
64456	<i>Diomedea sanfordi</i>	Northern Royal Albatross	Bird	May	Species or species habitat may occur within area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)	In feature area
644	<i>Motacilla flava</i>	Yellow Wagtail	Bird	Likely	Species or species habitat likely to occur within area		Migratory	Migratory Terrestrial Species	Listed - overfly marine area		Species Profile and Threat Database (SPRAT)	In feature area

Species ID	Scientific Name	Common Name	Class	Rank	Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
1765	<i>Chelonia mydas</i>	Green Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)	In feature area

Appendix 3: Bulk Fisheries Permit Checklist

Bulk Fisheries Permit Checklist

This checklist is a summary of the key control measures required to ensure compliance with the conditions of CCC's Bulk Fisheries Permits:



1. Which Fisheries Permit are you using?	PN22.255
2. Which activity number are you using?	C27
3. Does your activity comply with the relevant conditions of the Code of Practice and Permit? (e.g. heights, clearing limits, special restrictions etc.)	Yes
4. Notification of works to DPI Fisheries has been undertaken/will be undertaken? (commence works, active works and post works notifications)	Yes
5. Suitable erosion and sediment mitigation measures implemented?	Yes
6. Any excavation work that may disturb acid sulfate soils will be accompanied by an Acid Sulfate Soils Management Plan?	N/A
7. No dewatering will be undertaken. (Note: temporary small scale diversion of drainage lines whilst undertaking works is not considered 'dewatering').	N/A
8. Works are <u>not</u> within a mapped Coastal Wetland (Check Council's GIS Mapping)? (<i>Bores not in Coastal Wetland</i>).	Yes
9. Works with the potential to harm threatened species or Endangered Ecological Communities have been assessed in accordance with the biodiversity legislation?	Yes
10. Harm to encrusting aquatic organisms (e.g. snails and barnacles) and Syngnathids (Seahorses, Pipefish and Sea Dragons) will be avoided or minimised?	Yes
11. 'No Go' areas will be clearly delineated on plans and on site during works?	N/Ar

Additional comments and control measures

PN22.255 - Bulk Fisheries Permit to be included in PDF Version, commencing next page.

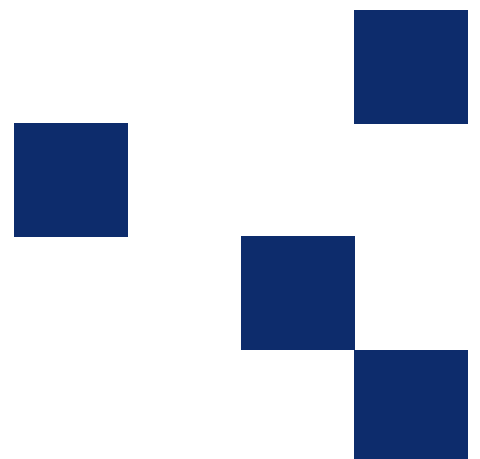




CODE OF PRACTICE

Minor works undertaken on beaches and
in waterways by Central Coast Council

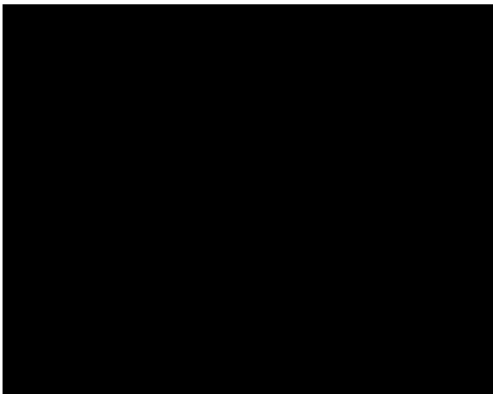
JULY 2022 – 2025



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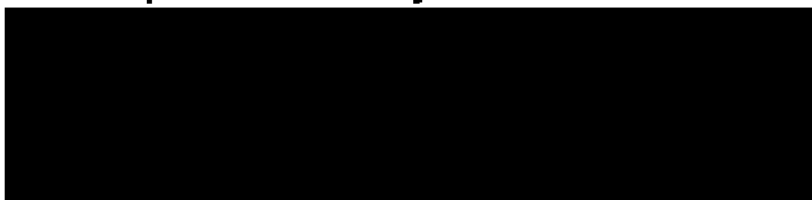
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Document Control

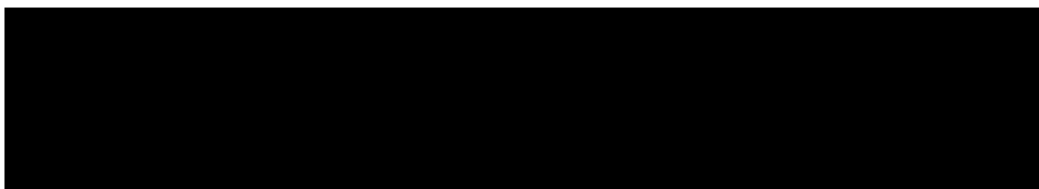
Date	Author	Changes Made
14/06/2018		Preparation of document based on Midcoast Council Code provided by Scott Carter From DPI Fisheries
15/03/2019		Finalisation of document prior to lodgement of Fisheries Permit Application
4/03/2020		Minor changes to activities, clarification on some definitions
10/06/2022		Minor changes to activities, clarification on some definitions, merged PN17/229 – Beach Cleaning
30/06/2025		3 year review due

Contact Officers

NSW Department of Primary Industries



Central Coast Council



Code of Practice for Minor Works Undertaken on Beaches and in Waterways by Central Coast Council

Background

Under Parts 7 and 7A of the *Fisheries Management Act 1994* (FM Act), Councils are required to obtain permits from the NSW Department of Primary Industries (DPI) Fisheries before carrying out certain works or activities in waterways. The permit process ensures that the works or activities will not result in a significant adverse impact upon fish habitats, fish communities and fishing industries. A permit is required for works involving dredging (excavation), reclamation (filling or draining), harming marine vegetation (seagrasses, mangroves, saltmarsh and algae), obstructing fish passage, using explosives and harming threatened species, populations or ecological communities of fish, aquatic invertebrates or marine vegetation.

Councils routinely need to undertake minor maintenance and repair works that trigger the provisions of the FM Act, but present a minor risk to native fish communities and their habitats. Applying for a permit each time these works are proposed creates a regulatory burden for the Council and diverts DPI resources away from more strategic initiatives and higher risk activities.

This Code of Practice (the Code) has been developed to enable Central Coast Council (CCC) to undertake specified minor works in waterways under a single permit. This will enable both CCC and DPI to focus attention on works proposals that pose a significant risk to aquatic environments.

Scope of the Code

The Code accompanies a single permit allowing CCC to conduct regular maintenance activities under the provisions of the FM Act. The Code and accompanying permit will be reviewed every 3 years, or as required by either Council or DPI Fisheries.

The Code defines the scope and nature of minor works that can be undertaken by CCC within waterways within the Central Coast Local Government Area (LGA). The Code also outlines the environmental safeguards CCC will implement when undertaking minor works to protect native fish communities, key fish habitats and threatened species both at the work site and downstream.

The Code does not switch off the provisions of other legislative and environmental requirements. As such, minor work activities in waterways will generally require a Part 5 Environmental Assessment and need to comply with the provisions of the *Environmental Planning and Assessment Act 1979*, *Biodiversity Conservation Act 2016*, *Environment Protection and Biodiversity Conservation Act 1999*, *Coastal Management Act 2016* the *State Environmental Planning Policy (Resilience and Hazards) 2021*.

A. Agreement

Central Coast Council (CCC) and DPI Fisheries agree that:

- A1.** This Code only applies to minor works (as specified in this Code) carried out on beaches and in waterways within the Central Coast Local Government Area (LGA) under the relevant permit, and:
- a. works are carried out by staff employed by, and on behalf of CCC, or
 - b. where the works are carried out by a contractor, the contractor is inducted to the site and this code by CCC.

Minor works include drainage maintenance, cleaning of gross pollutant traps, maintenance of beaches and foreshores, repairs to existing infrastructure and removal or pruning of marine vegetation around roads, footpaths, wharves and public areas etc (in accordance with the scope and limitations outlined in Part C of this Code).

- A2.** CCC will implement appropriate environmental protection safeguards as described in Section E below to ensure that the risk of harm to the natural environment is negligible.
- A3.** CCC will ensure that all staff whose work responsibilities include minor works on beaches and in waterways within the LGA, are provided with a copy of the Code and are made aware of its provisions.
- A4.** CCC will provide adequate training to all staff expected to conduct works in line with the Code ensuring they are trained and capable to carry out the activity and install all environmental protection safeguards.
- A5.** If uncertainty exists in relation to whether the Code applies to a particular waterway or type of works, CCC will seek clarification from the nominated Contact Officers.
- A6.** DPI Fisheries may conduct random audits of minor works on beaches and in waterways, to which this Code applies, to ensure compliance with this Code. The results of these audits may be used to review the Code.
- A7.** The operation and effectiveness of the Code should be reviewed not less than 3 months prior to the expiry date with the intent that it be renewed for another 3 year or longer period.
- A8.** The Code can be modified during the three year period if agreed to by both parties.
- A9.** DPI Fisheries has the right to terminate the agreement at any time if they are of the opinion that CCC has failed to act in good faith in relation to any matter within the Code.

B. Waterways covered by this Code

- B1.** This Code applies to all waterways within the Central Coast LGA including bays, beaches, foreshores, rivers and estuaries.
- a.** Minor works within a waterway that is mapped/defined as Key Fish Habitat can be carried out in accordance with this Code under the accompanying permit in accordance with Part 7 of the FM Act.
 - b.** Minor works within a waterway that is not mapped/defined as Key Fish Habitat can be carried out without the requirement to hold a valid permit in accordance with Part 7 of the FM Act and do not need to comply with this Code. Other legislative and environmental provisions may still apply (e.g. Part 5 Environmental Assessments)

Key Fish Habitat

The objects of the FM Act include “to conserve fish stocks and Key Fish Habitats” and “to conserve threatened species, populations and ecological communities of fish and marine vegetation”. Consequently, the habitat protection provisions of the FM Act are only applied to Key Fish Habitats including waterways that are known or can be reasonably expected to support threatened species.

Maps and the Policy Definition of Key Fish Habitat are available on the [DPI Fisheries website](#). Key Fish Habitat maps are also available to view on CCC’s corporate GIS system. Figures 1 and 2 below provide an example of the Key Fish Habitat mapping.

In the event of an inconsistency between the Policy Definition and the Map, the Policy Definition prevails to the extent of the inconsistency. In the event of uncertainty, CCC will seek clarification from the DPI Fisheries Contact Officers.

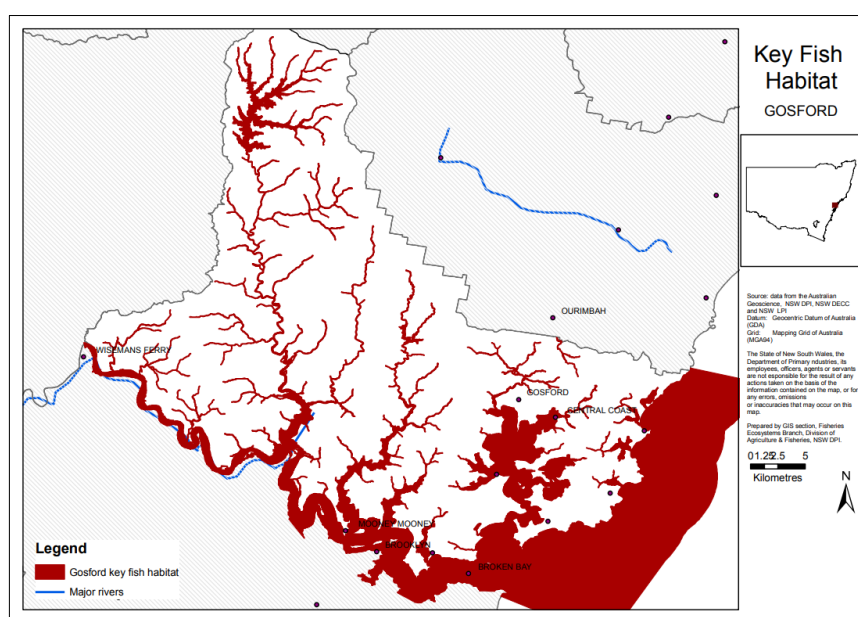


Figure 1: Example of Key Fish Habitat Mapping – Former Gosford LGA

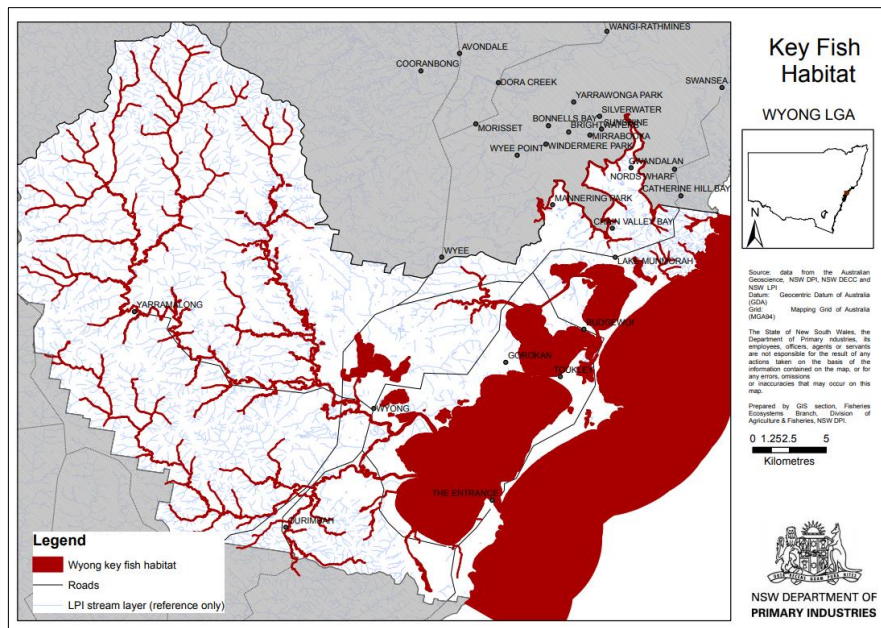


Figure 2: Example of Key Fish Habitat Mapping – Former Wyong LGA

Excluded Waterways

Works in waterways that are not considered to be Key Fish Habitat do not require a permit or licence under the provisions of Part 7 and 7A of the FM Act.

The following areas are excluded from being classified as Key Fish Habitat unless they are known, or can reasonably be expected to support listed threatened species, populations or ecological communities:

- Farm dams constructed on unmapped gullies and 1st and 2nd order streams
- Purpose built irrigation and other water supply channels and off stream storages
- Irrigation, agricultural and urban drains
- Urban ponds including water pollution control ponds and detention basins
- Sections of streams that have been concrete lined or piped (but not including where an otherwise natural stream passes through culverts)
- Purpose built salt evaporation ponds or basins
- Purpose built aquaculture ponds
- Intermittent lagoons or wetlands filled from localised runoff and not otherwise hydrologically connected to other permanent habitats such as rivers, creeks, estuaries and the ocean
- Canal estates – Note: The interior canals of St Huberts Island are excluded drainage reserves however those properties on the edge of the Island that have frontage to Brisbane Water are considered Key Fish Habitat.

C. Works Covered by This Code

Roads, Traffic and Drainage

- C1.** Resurfacing or patching of the surface of a culverted road or track crossing (causeway) provided the invert level (base) of the culvert cells are not raised or lowered and the road surface is not raised or widened (not more than 1 metre).
- C2.** Maintenance or repair (not replacement) of existing wingwalls, headwalls, pipes, box culvert sections and aprons of a culvert structure provided the invert level (base) of the culvert cells or aprons is not raised or lowered.
 - During repair, damaged components may be replaced.
 - Provide a courtesy notification to DPI Fisheries and submit photos to confirm fish passage is not impacted.
 - Apron replacement may require a further permit.
- C3.** Clearing of silt, sediment, sand, gravel, rocks, snags, flood debris, rubbish and vegetative material (including regrowth mangroves and saltmarsh, seagrass wrack and marine algae) that has accumulated within and around pipes, open drains, box culverts and drainage channels.
 - Where an apron is present, clearing is to be limited to within **5m** upstream and downstream of the edge of the apron.
 - Where no apron is present, clearing is to be limited to within **10m** upstream and downstream of the face of the culvert structure.
 - Do not remove material from the base of a 'low flow' pipe or culvert that has been designed to enhance or facilitate fish passage.
 - Do not remove material from below the invert level such that a height differential 'waterfall' is created as this may obstruct fish passage.
- C4.** Repair of pipes, headwalls or scour protection of a stormwater outlet or outfall provided the works do not extend the length of the pipe, increase the existing footprint of the scour protection, or result in any harm to marine vegetation beyond the footprint of the structure.
- C5.** Maintenance of existing fishways/fish bypasses located on or near road infrastructure to ensure they are working to their design specifications.
- C6.** Maintenance and repairs to floodgates and weirs on flood mitigation drains including replacement of gates but not including: the replacement of an auto-tidal gate or winch gate or other type of gate designed to facilitate tidal exchange, buffering of acid drainage and/or fish passage, with a standard gate.

Bridges and Wharves

- C7.** Maintenance, repairs (e.g. cleaning, repainting, replacement of damaged components, patching of concrete etc.) or removal of a bridge, causeway, wharf or jetty provided all construction materials, waste and debris such as paint and concrete is captured for appropriate disposal and not allowed to enter the waterway. Preference would be to strip off badly broken surfaces to a solid base and resurface to existing level to prevent sequential raising resulting in blocking fish passage.
- C8.** Maintenance, repair (not replacement) or removal of existing bridge pile or abutment scour protection works (such as gabion mattresses or baskets and rock rip-rap) provided such work does not involve enlarging the existing footprint or strengthening existing armour with concrete (including shotcrete).
- Provide a courtesy notification to DPI Fisheries.
- C9.** Relocation of snags (large woody debris) and other debris that is lodged against bridge pylons, bridge abutments, culvert structures, and jetty or wharf pylons.
- May only be removed if the item is adversely affecting the structural integrity of the item, creating a navigation hazard or exacerbating the risk of flooding.
 - Snags must be relocated to an appropriate location within the same waterway where they will not create a navigation hazard.
- C10.** Maintenance (e.g. vegetation trimming and clearing, grading, resurfacing or drainage) of an existing access track to bridge abutments or pile footings provided the works do not result in unconsolidated soil remaining in the waterway channel at the completion of works.
- C11.** Repairs (e.g. concrete patch repairs or placement of supplementary gabion rock or rip rap) to abutments of public infrastructure including bridges, jetties, wharves, boat ramps and slipways.
- Do not excavate the bed or banks of the waterway.
 - Do not dewater or divert the waterway.
 - The footprint of the infrastructure may not be increased.

Waterways and Coastal Protection

- C12.** Clearing of silt, sediment, sand, gravel, rocks, snags, flood debris, rubbish and vegetative material (including regrowth mangroves and saltmarsh, seagrass wrack and marine algae) that has accumulated within a silt trap, sediment pond, constructed wetland, intertidal open drain (a.k.a Stormwater Treatment Zones) or other stormwater quality improvement device (SQID).
- Works must be limited to within the existing SQID structure.
 - Additional requirements apply to certain environmentally sensitive sites. These are outlined in Council's site specific environmental management plans.
 - Must comply with the provisions of *SEPP (Transport and Infrastructure) 2021*.
 - Certain SQID sites have specific environmental constraints and procedures which must be complied with.
- C13.** Trimming, rotating or realigning a snag (large woody debris) or fallen tree in an urban creek.
- May only be modified if the snag or fallen tree is blocking a substantial portion of the waterway, creating a navigation hazard or exacerbating the risk of flooding or bank erosion.
 - Machinery must access the site without the need to excavate the bank or the works can be carried out via boat.
 - Removal of snags may only be undertaken in navigational waters under the direction of Transport NSW for safety reasons. In this instance, notify DPI Fisheries prior to works.
 - Removal of snags in other waterways can be undertaken in accordance with the Code
- C14.** Sand re-profiling and scraping of an oceanic or embayment beach (not an estuarine beach) landward of Mean Low Water Mark.
- Only to be undertaken where erosion threatens assets or public safety, not for aesthetic or recreation purposes.
 - Must be undertaken in accordance with Chapter 2 of *SEPP (Resilience and Hazards) 2021* and a site-specific environmental assessment.
 - Use existing access tracks.
 - Sand is not to be deposited over seagrass or in an area near seagrass where the sand may naturally erode and lead to smothering of seagrass in the subtidal zone.
 - Do not smother or damage dune vegetation.
 - Do not excavate, deposit sediments or drive machinery in areas contain coastal saltmarsh vegetation.
 - Ensure shore birds and other fauna are not impacted.
- C15.** Water pressure cleaning, scraping, collection and disposal offsite of marine algae and removal/relocation of encrusting organisms (such as oysters and barnacles) from:

- Boat ramps and slipways.
- Jetties, wharves, pontoons or bridges.
- Marker buoys.
- Access stairs.
- Stormwater infrastructure.
- Water intake pipes.

Note: Maintenance of netted swimming enclosures, rockpools, swimming (ocean) pools and surrounds are included under a separate Fisheries Permit held by Council.

- C16.** Maintenance, repair (not replacement) or resurfacing of boat ramps, jetties and slipways provided the footprint of the structure is not widened or extended.
- C17.** Removal of material deposited onto boat ramps, jetties and slipways including sand, sediment, rocks, gravel, rubble, flood debris and seagrass wrack or marine algae.
- Works are to be limited to within 5m of the footprint of the ramp provided that there is no seagrass harmed (if present).
 - Do not dispose of material into the aquatic or intertidal area where sea grass is present.
 - Where sea grass is present, material is required to be disposed of at a licenced facility.
 - A project-specific permit will be required for harm to seagrass.
- C18.** Removal of items of man-made flood debris (e.g. remnants of jetties, wharves, bridges, vessels, pontoons etc.) from a waterway.
- C19.** Excavation of sand or mud to facilitate the salvage of a beached vessel, other infrastructure or marine mammal.
- Machinery not to harm marine vegetation adjacent to the beached item or along the path used to access the site.
 - Excavated material must be replaced after the beached item is removed.
 - Comply with relevant Department of Planning, Industry and Environment requirements regarding the handling and disposal of marine mammals. On-site burial above the MHWL in an un-vegetated area is generally the preferred option if space is available. If no space is available, the carcass may be disposed of at landfill. Contact the landfill prior to arrival.
- C20.** Removal of seagrass wrack, seaweed wrack and other debris from waterways and beach raking for safety, amenity, environmental and access reasons:
- Wrack to be removed from the beach face immediately adjacent to Council swimming areas and between the red/yellow flags (where present).
 - Wrack is to be relocated elsewhere on the foreshore or buried under the substrate if adequate space is available. Otherwise, wrack may be used as mulch

in accordance with Council's *EMS Guideline - Mulch*. Rubbish and debris is to be picked out and disposed of separately.

- Wrack may be spread around existing saltmarsh areas to enhance rehabilitation as part of environmental protection works. In these instances, wrack must be used within the same estuary as where it was collected.

C21. Beach cleaning which is undertaken to remove human refuse and some marine vegetation from the beach and foreshore locations. The purpose of the works is to remove hazards and enhance recreational activities.

- All works occur above the MHWL.
- Wherever possible, uncontaminated seagrass and algae wrack would be left in-situ or buried in another section of the beach.
- Only use authorised access sites.
- Implement a 5m exclusion zone from the seaward extent of dune vegetation on sandy beaches.

C22. Lagoon, estuary and creek entrance management activities in the following circumstances:

- The opening of coastal lagoons (Wamberal, Terrigal, Cockrone, Pearl Beach and Avoca) to mitigate lowland flooding. Must be undertaken in accordance with Council's Policy R0.14 (Opening of Coastal Lagoons).
- The emergency opening of the Entrance Channel when a sand berm has developed and is causing risk of flooding within the catchment. Must comply with the *Tuggerah Lakes Floodplain Risk Management Plan 2014*.

C23. Removal of wrack, debris and maintenance dredging of sediment that has accumulated at the inlet and outlet of any SQIDs and intertidal open drains (a.k.a Stormwater Treatment Zones or STZ) and is preventing the flow of water in and out from the device to the receiving waterway.

- The width of dredging is not to exceed the width of the SQID, intertidal open drain or STZ.
- Only accumulated sediments are to be dredged, not the underlying natural substrate and only to the minimum amount necessary to remove blockages and allow the flow of water out from the device.

C24. Repair of existing seawalls/revetments within the same alignment and footprint.

C25. Collection of saltmarsh and mangrove seed and plant material for the purposes of propagation.

- Propagated material to be used for environmental restoration projects only, not any commercial activities.
- Collection to be undertaken in accordance with the Florabank Guidelines.
- When accessing areas for collection, do not trample delicate saltmarsh species or mangrove pneumatophores.

Miscellaneous

- C26.** Trimming or pruning (not removal) of mangroves that are overhanging or obstructing public infrastructure (including safety signs, jetties, wharves, boat ramps, slipways, boardwalks, tracks, footpaths and shared pathways etc.).
- The trimming or pruning works must be for a genuine safety reason only
 - The extent of trimming or pruning must be kept to the **minimum amount necessary** to remove the obstruction.
 - At least 60% of the canopy of each individual plant must be retained.
 - Trimming to be on side of encroachment only, vertically to full height of mangrove (not horizontally at the top).
 - Use non-petroleum-based bar oil.
 - Lateral roots, pneumatophores and juvenile plants may also be removed. Juvenile plants are less than 2m tall and have a trunk circumference less than 100mm when measured 200mm above ground level.
 - Minimise disturbance of soil.
- C27.** Geotechnical drilling or coring (but not excavating) into the bed or banks of a waterway.
- All process water must be captured in a tank or bunded area.
 - Machinery may not enter the water or impact marine or riparian vegetation by tracking over it or parking on it.
- C28.** Removal of unauthorised structures (such as jetties) that have been constructed without development consent.
- Machinery may not enter the water or impact marine or riparian vegetation by tracking over it or parking on it.
- C29.** Removal of silt, sand, gravel or other sediment or debris from, or immediately adjacent to, an instream or bankside raw water intake.
- C30.** Trenching across a creek to repair (not replace or install new) water or sewer pipes or communications cable, provided:
- The bed of the creek is completely dry at the time of the works, and
 - There is no rain forecast for 48 hours, and
 - The trench is constructed, pipeline or cable laid and trench backfilled within less than 24 hours, and
 - All disturbed areas of the shoreline and banks of the waterway are stabilised before leaving the site, and
 - All disturbed areas are revegetated within a month of completion of the works.

- C31.** Removal of aquatic weeds using mechanical controls that involves the incidental dredging of sediments bound to plant roots.
- A project specific Environmental Assessment is required for aquatic weed removal works.
 - Controls must be implemented to ensure that any stirred-up sediment in the water column is contained and allowed to resettle.
- C32.** Clean-up activities in and around waterways following a significant weather event or flooding. Clean-up activities may include removal of flood debris, seagrass and algae wrack, vegetative material, silt and sediment. Minor scraping or reshaping of foreshore areas may also occur.
- C33.** Bush regeneration activities in and around areas of mangrove or saltmarsh (Note: restrictions apply to certain environmental management works in Coastal Wetlands).
- C34.** Mowing of Council's reserves and parks that contain remnant or regrowth saltmarsh species under the following circumstances:
- The area has been historically mown by Council (not the community); and
 - The dominant vegetation type is planted grass and not saltmarsh; and
 - It is Council's view that the public safety and amenity benefits of mowing the area are sufficient to warrant continued mowing.
- Mowing activities are not to cause incremental expansion or creep of grassy areas into saltmarsh areas.
- C35.** Removal of degraded or redundant infrastructure from within and around waterways that is posing an environmental or safety risk (e.g. increased flooding or erosion risk caused by old retaining walls, pipes or bridge abutments etc.). The area must be remediated to ensure positive environmental outcomes.

D. Works Not Covered by This Code

- D1.** Any works that may harm marine vegetation (including saltmarsh, mangroves, seagrass or seaweeds) or in stream aquatic vegetation other than those works permitted in Section C above.
- D2.** Certain maintenance works are exempt development and may be permitted within coastal wetlands (mapped and defined under *SEPP (Resilience and Hazards) 2021*) in accordance with CCC environmental assessments/procedures. These works are limited to the footprint of existing infrastructure. All other works within coastal wetlands are not covered by this Code.
- D3.** Any works within a listed area of [critical habitat](#) (as listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* or the FM Act) or an [Area of Outstanding Biodiversity Value](#) (as listed under the *Biodiversity Conservation Act 2016*).
- D4.** Dewatering (long term). Note: other legislative requirements must still be complied with (e.g. the water pollution provisions of the *Protection of the Environment Operations Act 1997* and *Water Management Act 2000*). (See definition of dewatering below for further guidance).
- D5.** Long term or permanent creek or waterway diversions or realignments.
- D6.** Construction of long term or permanent weirs, coffer dams waterway crossings or working platforms within a waterway that block flows and/or obstruct fish passage.
- D7.** Installation of new scour protection at existing culvert or bridge structures which extends beyond the existing protection works or which alters the original invert level of the culvert.
- D8.** Extensions, replacements or realignments of pipes or box culverts.
- D9.** Alterations to existing invert levels of culvert pipes or the floor of box culverts.
- D10.** Alteration to the cross-sectional area or hydraulic capacity of a culvert.
- D11.** Temporary or permanent obstruction of a waterway such that the free movement and passage of fish could be obstructed or blocked.
- D12.** The use of explosives or electrical devices in waterways.
- D13.** Construction of new seawalls/revetments.
- D14.** Extensions of existing seawalls/revetments.
- D15.** Works within Marine Parks or Aquatic Reserves.

- D16.** Works within the Bouddi National Park Marine Extension.
- D17.** The Tuggerah Lake wrack harvesting program. This is covered by Fisheries Permit 19/220.
- D18.** The Tuggerah Lakes Estuary Management (dredging of the Entrance Channel). This is covered by Fisheries Permit PN18/67.
- D19.** Maintenance works on rockpools, ocean baths, estuary baths and swimming areas. This is covered by a Fisheries Permit PN22/253 (Formerly 19/104 and 19/103).

E. Environmental Protection Safeguards

- E1.** Comply with all environmental control measures outlined in the Fisheries permit that accompanies this Code, the relevant environmental assessments, Construction Environmental Management Plan and/or EMS Procedure.
- E2.** Check Council's GIS Mapping to confirm that the works will not be undertaken within a mapped Coastal Wetland under the *SEPP (Resilience and Hazards) 2021*. Contact Council's Environmental Reporting Section for advice if the area is a mapped wetland.
- E3.** Vehicles to only use existing roads and tracks and parking areas and do not create new tracks or park over native vegetation or below Highest Astronomical Tide Level.
- E4.** Where earthmoving machinery is used:
 - the extent of the work site is delineated with suitable fencing or flagging to identify no go zones where necessary, and the machinery only uses existing roads and tracks and does not create new tracks, and
 - machinery is reasonably clean of grease and oil and is free of leaks, and
 - machinery does not enter the water (but may enter the dry bed of the waterway), and
 - machinery is only refuelled well away from the waterway, and
 - appropriate fuel and oil spill kits are available on site.
- E5.** For freshwater waterways, works are only undertaken during low flow periods. If water levels rise due to rainfall in the catchment, the site is to be stabilised and secured and works are suspended until flows recede.
- E6.** For tidal waterways, works are only undertaken during periods of low tide for the site.
- E7.** All waste material is to be promptly collected and placed into suitable receptacles and removed from the site for appropriate disposal on completion of works.
- E8.** Install and maintain erosion and sediment controls specified in the Central Coast Council Erosion and Sediment Control Guideline. In particular, erosion and sediment controls must:
 - Aim to keep clean and dirty water separate,
 - have sufficient capacity to treat flows from average rainfall events,
 - be sufficiently robust to withstand a heavy rainfall event,
 - employ several lines of defence rather than rely on a single 'last line of defence',
 - aim to minimise the loss of sediment rather than attempting to remove sediment after it has been mobilised,
 - be constantly maintained to ensure they are in good working condition for the duration of the works,
 - be checked prior to leaving the worksite at the end of each working day, and

- be retained after works are complete and not removed until the site has stabilised and there is no risk of sediment movement into the waterway.
- E9.** Stockpiles of construction materials must be:
- Located a sufficient distance away from the edge of the waterway to ensure that there is a negligible risk of any material being washed or falling into the waterway, and
 - Contained with sediment controls around the downslope side.
- E10.** The waterway is regularly inspected for any signs of fish in distress or a fish kill. If distressed, sick fish or dead fish are observed, the Site Manager should immediately contact DPI Fisheries to initiate a fish kill investigation.
- E11.** Acid Sulfate Soils are to be managed in accordance with Council's *EMS Guideline-Acid Sulfate Soils*. In particular, storage and treatment of acid sulfate soils are to be undertaken away from the waterway and any runoff is to be contained.
- E12.** Encrusting aquatic organisms must be carefully relocated to a nearby area similar to the area being disturbed. Works are to cease if any threatened species are identified and advice to be sought from the Contact Officers.
- E13.** Piles and other underwater structures are to be inspected for Syngnathids (Seahorses, Pipefish and Sea Dragons) prior to any cleaning, repair or replacement works. Works are to cease if any Syngnathids are found. Contact Council's Environmental Reporting Section for further advice regarding Syngnathid management.
- E14.** Works with the potential to harm threatened species or ecological communities will be assessed in accordance with the *Environment Protection and Biodiversity Conservation Act 1999*, *Biodiversity Conservation Act 2016* and/or FM Act. Refer to Council's *System Procedure – Environmental Assessment* or contact Council's Environmental Reporting Section for advice.
- E15.** High pressure water hosing is to be avoided near seagrass beds where possible. If high pressure water hosing is necessary near seagrass beds, a sediment curtain must be used to protect the seagrass beds from disturbance.
- E16.** *Posidonia australis* seagrass in Brisbane Water is listed as an endangered population under the FM Act. This permit does not authorise harm to *Posidonia* seagrass. Care must be taken when working near *Posidonia australis* to protect the seagrass from high pressure water hosing and other potentially destructive activities.
- E17.** Material collected for disposal as part of this Code that contains a mixture of sediment and organics may be classified as dredge spoil material and disposed of accordingly. Consult with Council's Waste Management Facilities for disposal fees.

E18. Dewatering (short term) may be undertaken under this Code during construction works in small or minor waterways. Dewatering (short term) will generally involve isolating the work area using temporary coffer dams such as sandbags and running a pump to divert the water around the works area. When this is to be undertaken, it must be included in the project Environmental Assessment and control measures should include:

- Dewatering times to be kept to the absolute minimum duration to allow for construction works. If the waterway is tidal, use low tide times and if the waterway is fresh, schedule works around low water levels/flows.
- Water is to be diverted within the same waterway where possible. If not possible, water may be discharged over a suitable grassy or vegetated area.
- Pump intakes are to be protected with grates or filters to exclude fish or aquatic organisms.
- Pump discharge points are to be placed in areas that will not cause scouring or sediment disturbance in the receiving waterways.
- In-stream sediment controls will be implemented.

Contact Council's Environmental Reporting Section if any clarification is required for dewatering (short term) and to ensure controls are appropriate. Any long-term dewatering will require a separate project-specific Fisheries Permit.

F. Glossary

Aquatic vegetation	Vegetation that inhabits freshwater but does not include priority weeds within the meaning of the Biosecurity Act 2015. This can include plants that are wholly submerged as well as plants such as reeds and sedges that are rooted in the substrate but extend above the water's surface.
Dam	Freshwater impoundment, constructed dam or dam constructed for water supply or irrigation or constructed stormwater facilities.
Dewatering (long term)	For the purposes of this Code is the long term or permanent draining, blocking, diversion or realignment of a waterway.
Disturbed zone	The area within and adjacent to a roadway or other item of infrastructure where the land and/or vegetation has been previously disturbed by construction and/or maintenance activities and remains substantially modified.
Dredging Work	Has the same meaning as defined under s198A of the FM Act and s263 of the <i>Fisheries Management (General) Regulation 2010</i> – i.e. any works involving excavating water land or works that involve the removal of woody debris, snags, gravel, cobbles, rocks, boulders, rock bars or aquatic vegetation from water land.
Flood debris	Timber, leaves, limbs, branches, twigs, grass, litter etc. and inorganic material such as sand, silt, sediment, clay or mud that has been transported downstream and deposited by a previous high flow event. This also includes non-natural materials such as rubbish and damaged structures.
Florabank Guidelines	Guidelines for best practice native seed use in restoration projects. <i>Commander LE (Ed.) (2021) 'Florabank Guidelines – best practice guidelines for native seed collection and use (2nd edn).'</i> (Florabank Consortium: Australia
Highest Astronomical Tide (HAT)	The highest tidal level which can be predicted to occur under average meteorological conditions. HAT is considerably higher than Mean High Water Mark (MHW). On the NSW coast, HAT is around 2.1m on the Fort Denison Tide Gauge or 1.175 metres Australian Height Datum.
Key Fish Habitat	Key Fish Habitat is explained in Section B above.

Macroalgae ("Seaweed")	<p>Macroalgae are algae that can be seen unaided with the eye. They can vary from a few centimetres to many metres long.</p> <p>Macroalgae provide habitats for small animals such as molluscs and nursery areas for juvenile fish, crabs and prawns. They also shelter fish and crustaceans from predators such as larger fish or birds and can help to reduce erosion along the shoreline.</p>
Mangrove	<p>Mangrove species include, but are not limited to:</p> <ul style="list-style-type: none"> • Grey Mangrove (<i>Avicennia marina</i>) & (<i>Avicennia marina</i> subsp. <i>australasica</i>) • River Mangrove (<i>Aegiceras corniculatum</i>) – usually grows with <i>Avicennia marina</i> but extends farther upstream and more inland than that species
Mangrove regrowth	<p>Regrowth of the above species, generally <2m tall AND <100mm trunk circumference at 200mm above the ground.</p>
Marine vegetation	<p>Has the same meaning as defined under s204 of the FM Act and s260 of the <i>Fisheries Management (General) Regulation 2010</i> – i.e. all saltmarsh, mangroves, seagrass and seaweeds (whether living or dead) occurring below the highest astronomical tide.</p>
Microalgae	<p>Microalgae can only be seen through a microscope unless they form a dense bloom, and are typically found in rivers, estuaries and oceans. They are single-celled species which can exist individually, in chains or groups. Depending on the species, their sizes can range from a few micrometres to a few hundred micrometres.</p>
Public Authority	<p>Has the same meaning as defined in s4 of the FM Act – i.e. a person or body established or constituted by an Act for a public purpose, and includes a Government Department, a local government authority or a state-owned corporation.</p>
Reclamation Work	<p>Has the same meaning as defined under s198A of the FM Act – i.e. using any material (e.g. sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land or depositing any such material on water land for the purposes of constructing anything over water land (such as a bridge) or draining water land for the purpose of its reclamation.</p>

Saltmarsh	<p>A community of specialised plants such as reeds, grasses, succulents and shrubs adapted to growing in brackish water and muddy soil. Saltmarsh species include, but are not limited to:</p> <ul style="list-style-type: none"> • Sea Rush (<i>Juncus kraussii</i>) • Saltwater Couch, Sand Couch, Nioaka (<i>Sporobolus virginicus</i>) • Saltwater Couch (<i>Paspalum vaginatum</i>) • Austral Seablite (<i>Suaeda australis</i>) • Samphire (<i>Sarcocornia uquinqueflora</i>) • Bare Twig Rush (<i>Baumea juncea</i>) • Creeping Brookweed (<i>Samolus repens</i> var. <i>floribundus</i> Benth.) • Knobby Club-Rush (<i>Ficinia nodosa</i>) • Prickly Couch (<i>Zoysia macrantha</i>) • Streaked Arrowgrass (<i>Triglochin striata</i>) <p>Note: Sharp Rush (<i>Juncus acutus</i>) is a weed and not included.</p>
Seagrass	<p>A group of specialised marine plants that occur in sheltered areas and shallow waters, growing in soft sediments such as sediments such as sand or mud. The species of seagrass that occur on the Central Coast include:</p> <ul style="list-style-type: none"> • Strapweed (<i>Posidonia australis</i>)- Endangered Population • Eelgrass (<i>Zostera muelleri</i> subsp. <i>capricorni</i>) • Paddleweed (<i>Halophila ovalis</i>) • Stack weed (<i>Ruppia megacarpa</i>)
Snag	<p>Any piece of large woody debris that is both greater than 3 metres in length and 300 millimetres in diameter, or any rock larger than 500 millimetres in two dimensions, located in a waterway (either fresh, estuarine or marine) and is, or would be, wholly or partly submerged at a 'bank-full' flow level or highest astronomical tide level. It does not include live exotic plant species, such as willow and camphor laurel trees or other weeds.</p>
Stormwater Treatment Zone (STZ)	<p>An area such as a drain or channel in or around a waterway that has been constructed or modified by Council in some way. STZ's are most common around the shores of Tuggerah Lake and are most commonly a partially concrete lined straight drainage channel.</p>
SQID	<p>Stormwater Quality Improvement Devices (SQID's) including, detention basins, wetlands, Gross Pollutant Traps (GPTs) and stormwater treatment zones. These devices act like filters for stormwater catching and trapping pollution and sediment s before it has a chance to enter the waterways.</p>

Syngnathids	Syngnathidae is a family of fish which includes seahorses, pipefishes, pipehorses, and seadragons.
Urban creek	A creek that flows through land zoned for urban, commercial or industrial uses and is closely flanked on both sides by residential dwellings or commercial or industrial buildings.
Water land	Has the same meaning as defined under s198A of the FM Act i.e. - land submerged by water whether permanently or intermittently, whether forming an artificial or natural waterbody and includes wetlands.
Wetlands	Has the same meaning as defined under s198A of the FM Act i.e. includes marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.
Wrack	The piles of dead seaweed or seagrass often washed up onto riverbanks and ocean or estuary shores.

Our Ref: PN22/255

24 June 2022

Central Coast Council

49 Mann St
Gosford NSW 2250

RE: Permit PN22/255 for dredging, reclamation and to harm marine associated with minor works on beaches and in waterways, including beach cleaning, as outlined in the Code of Practice attached to this permit

I refer to your applications from 29/6/2017 and 22/3/2019 for Part 7 Fisheries permits PN17/229 (beach cleaning works) and PN19/110 (minor works on beaches and within waterways) respectively. These permit applications remain valid. A new permit PN22/255 has been created in order to renew and amalgamate permits PN17/229 and PN19/110. The approved scope of work remains the same and the Environmental Assessments remain valid. The Code of Practice that accompanies this permit has also been updated. The latest version of the Code of Practice must be attached to this permit.

The permit conditions in PN22/255 are a consolidation of the permit conditions from PN17/229 and PN19/110, as well as some additional conditions to reflect industry best practice management.

DPI Fisheries, a division of NSW Department of Primary Industries, assesses applications for dredging, reclamation and to harm marine vegetation in accordance with Part 7 of the FM Act, Part 14 of the *Fisheries Management (General) Regulation 2010* and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013)*.

Please find attached a permit under Part 7 of the FM Act for dredging, reclamation and to harm marine vegetation associated with minor works on beaches and in waterways, including beach cleaning, in the Central Coast LGA.

Please note that the attached permit providing authorisation under the FM Act to undertake dredging, reclamation and harm marine vegetation does not provide authorisation under any other Act or planning instrument. It is Council's responsibility to ensure it possesses all appropriate approvals and land owner consents before works occur. This may include, but is not restricted to, development consent under the Environmental Planning & Assessment Act 1979, land owners consent and/or a licences under the Crown Land Management Act 2016, and controlled activity approvals 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 sheet (Acceptance of Conditions) and return it to the 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 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, Central Coast Council is responsible for ensuring compliance with all conditions therein and with any other relevant 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 pursuant to clause 259 of the *Fisheries Management (General) Regulation 2010*.**

The extent of work is to be restricted to that outlined in the application and plans submitted to the Department. **If for any reason, other works are required, or the works need to be extended to other areas, you must seek specific approval beforehand.** DPI Fisheries will require a justification for these variations and may charge additional assessment fees as outlined in the permit application.

Similarly **please note the expiry date** on the permit. If the works are not completed by the expiry date you will need to obtain an extension. **Requests for an extension after the expiry date will incur the two \$179 permit application fees.** Requests for an extension before the expiry date will not incur an application fee.

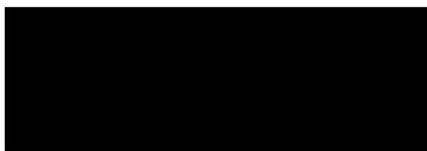
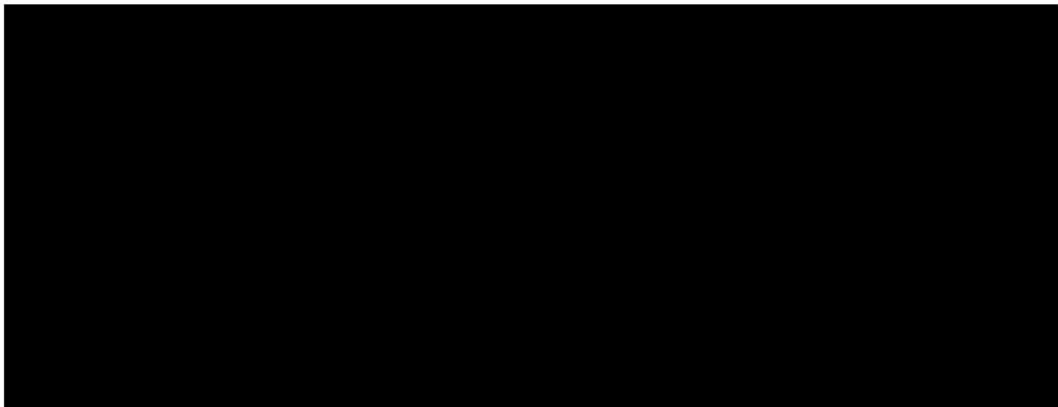
DPI Fisheries places particular importance upon the need to minimise the harm to the natural environment both at the work site and in downstream/adjacent waters. The Department expects implementation of Best Management Practice with respect to erosion and sediment control as outlined in "The Blue Book - Managing Urban Stormwater: Soils and Construction" (4th Edition, reprinted July 2006), (see: <http://www.landcom.nsw.gov.au/news/publications-and-programs/the-blue-book.aspx>).

In addition to complying with the conditions of the permit, DPI Fisheries recommends that laminated copies of the permit be included on the site security signage and/or other high visibility areas of the works compound.

If you have any queries please call



Yours sincerely,



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

Permit Number:	PN22/255
Permit Holder:	Central Coast Council [REDACTED]
Council Contact:	[REDACTED]
Responsible Staff Positions:	[REDACTED]
Fisheries Contact Officer:	[REDACTED]
Fisheries Compliance Office:	[REDACTED]

Permit Activity:	<p>This permit covers dredging, reclamation and harm to marine vegetation as outlined in the Code of Practice (in Appendix A of this permit). The Code of Practice includes:</p> <ul style="list-style-type: none"> • drainage maintenance, • cleaning of gross pollutant traps, • maintenance of beaches and foreshores, • removal of human refuse from the beach and foreshore, • removal of marine vegetation wrack above the mean high water mark on St Huberts Island, • repairs to existing infrastructure, and • removal or pruning of marine vegetation around roads, footpaths, wharves and public areas (with restrictions).
Permit Area:	<p>This permit covers maintenance work in or adjacent to waterways, including beach cleaning works, within the Central Coast LGA, as outlined in the Code of Practice in Appendix A.</p>

Unless cancelled or suspended sooner, this permit shall remain in force until:

30th June 2027

This permit is subject to the following Conditions:

ADMINISTRATIVE CONDITIONS

- 1) The **Acceptance of Conditions** form (attached) must be completed and returned to [REDACTED] 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 the Central Coast Fisheries Office ([REDACTED]) and [REDACTED] at least three (3) days BEFORE the commencement of works authorised by this permit.
Reason - To ensure that local DPI Fisheries staff are aware that works authorised by this permit are about to commence.
- 3) The **Active Works Notification** form (attached) must be completed and sent to the Central Coast Fisheries Office (contact details listed above) at least 1 day BEFORE works are complete or machinery is removed from the site.
Reason - To provide an opportunity for local DPI Fisheries staff to inspect the site whilst machinery is still on site and available to do any remedial work that may be necessary.
- 4) The **Post Works Notification** form (attached) must be completed and sent to the Central Coast Fisheries Office (contact details listed above) within 21 days of completion of works at the site.

Reason - To provide an opportunity for local DPI Fisheries staff to inspect the site to ensure compliance with the Conditions of this permit.

- 5) This permit (or a true copy) and a copy of the relevant Code of Practice (in Appendix A of this permit) must be carried by the permit holder or sub-contractor operating on-site at all times during work activity in the permit area.
Reason – DPI Fisheries staff may wish to check compliance of works with imposed conditions.

EXTENT OF WORKS

- 6) The permit holder must ensure that the scope of works is consistent with that outlined in the relevant Code of Practice (in Appendix A of this permit). Works must be undertaken in a manner consistent with that described in the Code of Practice and permit conditions. Other works, which have not been described, 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.

EROSION AND SEDIMENT CONTROL PLAN

- 7) Suitable 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 turbid plumes from migrating within the waterway.
- 8) Sediment and erosion controls are to be maintained in good working order for the duration of the works and subsequently until the site has stabilised and the risk of erosion and sediment movement from the site is minimal.
- 9) Where sediment curtains are used near seagrass beds, the curtain must be positioned and secured properly so it does not drag over seagrass and scour seagrass beds.
- 10) No sediment curtains are to be deployed within seagrass beds.
- 11) During beach scraping activities, deposited sediments should be retained using sediment fencing until they have stabilised.
- 12) No sand importation is allowed under this permit.

Reason – To ensure that sediment does not migrate to the waterway as a result of the work activities, and that marine vegetation is not harmed.

ACID SULFATE SOILS

- 13) Any excavation work that may disturb potential acid sulfate soils must be accompanied by an Acid Sulfate Soils Management Plan. This ASSM Plan must be prepared by a suitably qualified person in accordance with the *Acid Sulfate Soil Assessment and Management Guidelines* (Acid Sulfate Soil Management Advisory Committee 1998) and developed consistent with best management practice outlined in *Restoring The Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains* available at: http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0007/167875/restoring-balance-guidelines.pdf

DEWATERING PLAN

- 14) No dewatering is included under this permit.

WORK IN WATERS

- 15) Machinery is not to enter or work from the waterway, unless in accordance with the relevant Environmental Assessment 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.
- 16) 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 available on site at all times.
Reason – To reduce the threat of an unintended pollution incident impacting upon the aquatic environment.

AVOIDING HARM TO SNAGS, MARINE AND RIPARIAN VEGETATION

- 17) 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 habitats and the riparian zone are minimised.
- 18) The deployment of ropes, anchors, blocks, chains or similar devices is strictly prohibited within seagrass beds, although berthing or mooring above seagrass is permitted for periods of less than 48 hours. A piling barge may extend two feet to the seabed in order to stabilise during piling works.
Reason – To minimise impacts to seagrass.
- 19) During beach scraping/re-profiling activities, scraping and sand deposition must not occur below the mean low water mark or within seagrass beds. Machinery must not drive over seagrass beds.
Reason – To minimise impacts to seagrass.
- 20) During wrack collection activities, as much wrack as possible should be retained on the beach as a food source for aquatic invertebrates.
Reason: To minimise disturbances to the food chain for fish and aquatic invertebrates.
- 21) Material storage and stockpiling is not to be undertaken on water land, marine vegetation (saltmarsh, mangrove, seagrass) or riparian vegetation. Stockpiling must be undertaken in a manner to avoid harm to these types of vegetation or water land and should be located away from drainage lines, overland flow paths and above the 1:100 year flood level. Stockpiles should be appropriately controlled by sediment fencing or other materials prescribed in the "Blue Book" to ensure sediments do not enter the waterway.
Reason – To ensure that impacts on aquatic habitats, the riparian zone and threatened saltmarsh communities are minimised. "Degradation of native riparian vegetation along NSW water courses" (excluding estuarine and marine waters) is listed as a Key Threatening Process under the provisions of the FM Act.
- 22) No snags¹ are not to be removed from the waterway. A snag may be rotated or realigned only if it is blocking a substantial portion of the waterway (creating an obstruction to fish passage) or creating a navigation hazard.
Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a Key Threatening Process under the provisions of the FM Act. This approval has been granted on the basis that snags are not to be removed.

¹ "Snags" is a term used to describe large woody debris from trees and shrubs, including whole fallen trees, broken branches and exposed roots that have fallen or washed into a waterway and are now wholly or partially submerged by water. For the purposes of this permit, snags are only those pieces of large woody debris that are greater than 3m in length and 300mm in diameter and also includes submerged large rocks (of greater than 500 mm in two dimensions).

- 23) On completion of the works the site is to be rehabilitated and stabilised including, but not limited to:
- a) Surplus construction materials and temporary structures (other than silt fences and other erosion and sediment control devices) installed during the course of the works are to be removed.
 - b) Appropriate maintenance of erosion and sediment control devices is to be undertaken until the site has stabilised and any re-vegetation has successfully established.

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

FISH KILL CONTINGENCY

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

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

IMPORTANT NOTE:

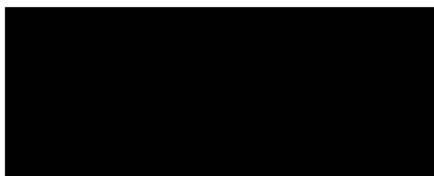
In the event of any inconsistency between the conditions of this approval and:

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

STOP WORK ORDERS

A Fisheries Officer or other appropriate delegate who has reasonable cause to suspect that the conditions of this permit have not been complied with, **may order the work to stop immediately.** The order may be given to the permit holder or any person who informs the officer that they are acting in any capacity on behalf of the permit holder. Any damage caused to the habitat outside the specified permit area, or the carrying out of works not in accordance with the conditions specified in this permit and/or the application and that were accepted by the permit holder, could result in a breach of the *Fisheries Management Act 1994* or *Regulations*, and penalties of up to \$220,000 may apply. Orders may also be made requiring work to rectify any damage caused by unauthorised works. **Breaching a condition of a permit can incur an on-the-spot penalty notice of \$500 or up to \$11,000 through the courts pursuant to clause 259 of the *Fisheries Management (General) Regulation 2010*.**

Yours sincerely,



**Permit No. PN22/255 issued under Part 7 of the
*Fisheries Management Act 1994***

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit PN22/255 for dredging, reclamation and to harm marine associated with minor works on beaches and in waterways, including beach cleaning, as outlined in the Code of Practice attached to this permit:

Acceptance of Conditions Form

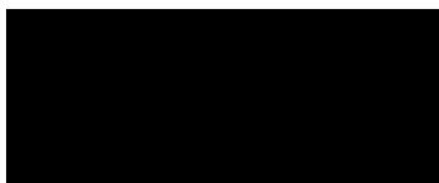
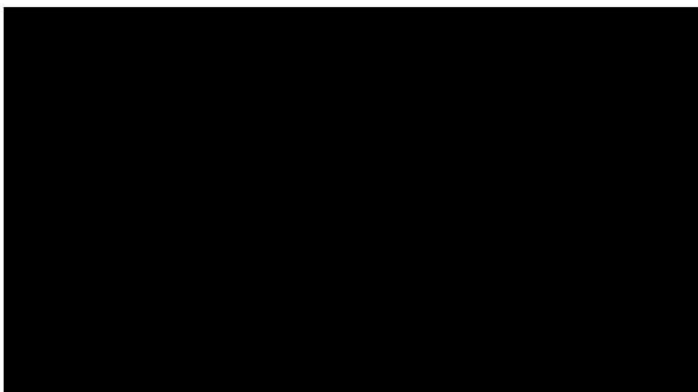
I the undersigned, acknowledge that I have read and understood and agree to comply with the conditions specified. I understand that penalties can be imposed for non compliance with conditions.

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 or text it to:



**Permit No. PN22/255 issued under Part 7 of the
Fisheries Management Act 1994**

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

**In reference to Permit PN22/255 for dredging, reclamation and to harm marine
associated with minor works on beaches and in waterways, including beach
cleaning, as outlined in the Code of Practice attached to this permit:**

Commence Works Notification Form

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

Permit Holder's Name _____

Permit Number _____

Site Location _____

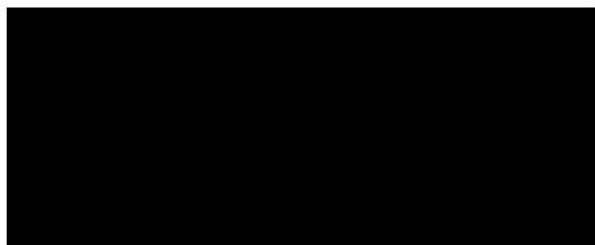
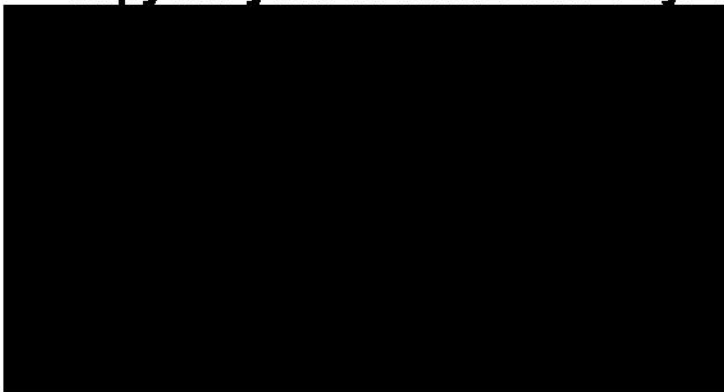
Works _____

Commencement Date: _____

Comments:

Project Manager: _____ Date: _____

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



**Permit No. PN22/255 issued under Part 7 of the
Fisheries Management Act 1994**

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

**In reference to Permit PN22/255 for dredging, reclamation and to harm marine
associated with minor works on beaches and in waterways, including beach
cleaning, as outlined in the Code of Practice attached to this permit:**

Active Works Notification Form

*(Note: to be completed and returned 3 days before completion of works or before
machinery is removed from the site)*

Permit Holder's Name _____

Permit Number _____

Site Location _____

Works _____

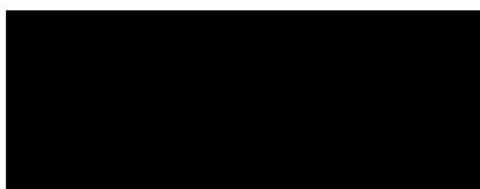
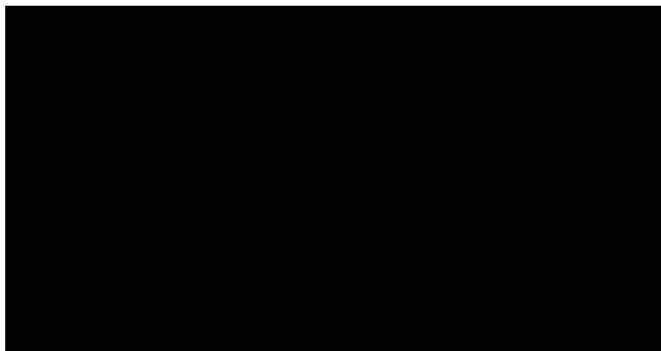
Commencement Date: _____

Anticipated Completion Date: _____

Comments:

Project Manager: _____ Date: _____

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



**Permit No. PN22/255 issued under Part 7 of the
Fisheries Management Act 1994**

PLEASE COMPLETE THIS PAGE AND RETURN TO DPI FISHERIES

**In reference to Permit PN22/255 for dredging, reclamation and to harm marine
associated with minor works on beaches and in waterways, including beach
cleaning, as outlined in the Code of Practice attached to this permit:**

Post Works Notification Form

*(Note: to be completed and returned within 21 days of completion of works associated with
this permit, including rehabilitation of riparian areas)*

Permit Holder's Name _____

Permit Number _____

Site Location _____

Works _____

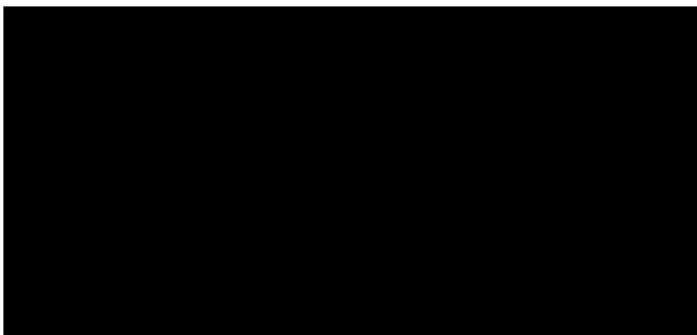
Date Completed _____

Assessment of works:

(e.g. straightforward, or complicated, i.e. were there complications that made it difficult to
comply with permit conditions e.g. weather, unforeseen geological conditions, etc.)

Project Manager: _____ Date: _____

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

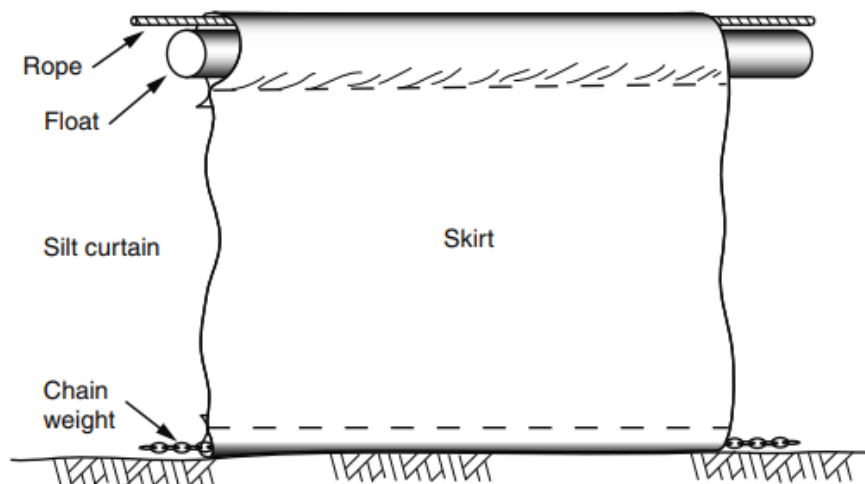


**Appendix A – Code of Practice for Minor Works on Beaches and in Waterways,
including beach cleaning, in the Central Coast Council LGA:**

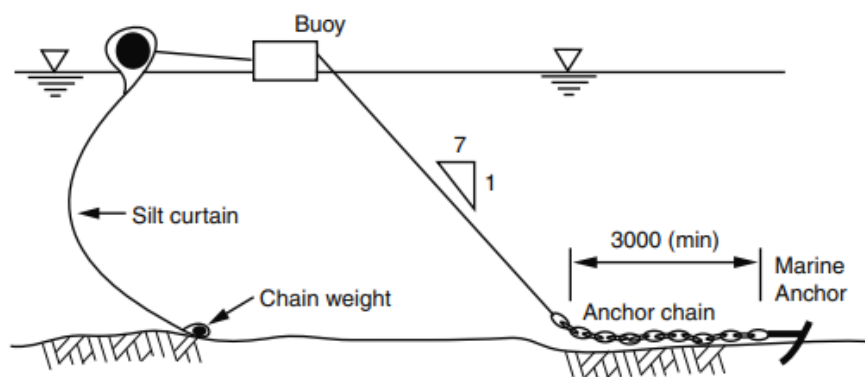
Appendix 4: Works Health, Safety and Environment Plan

To be prepared by Contractor prior to commencement of works

Appendix 5: Silt Curtain Standard Drawings (*Best Practice Erosion and Sediment Control, Book 6: Standard Drawings* – International Erosion Control Association, 2012)

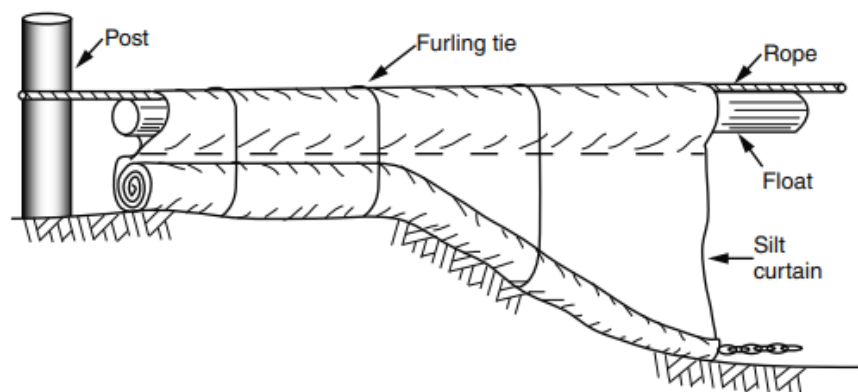


(a) Components of a floating silt curtain

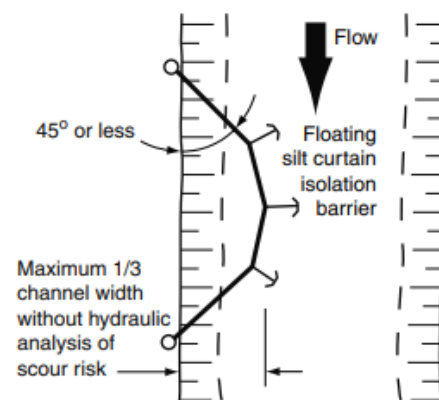


After Trow Consulting
Engineers Ltd (1997)

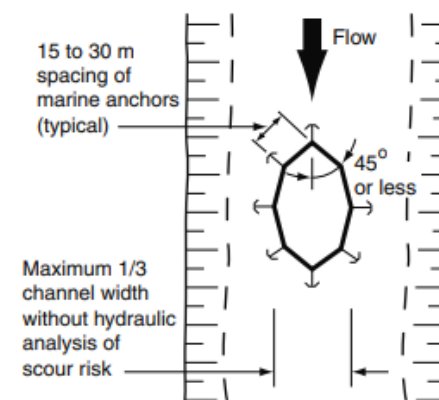
(c) Typical marine anchorage system



(b) Typical land anchorage system



(d) Typical installation of
floating silt curtain



(e) Typical installation of
floating silt curtain

Drawn:	Date:		
GMW	Feb-10	Floating Silt Curtain	FSC-01

MATERIALS

SILT CURTAIN FABRIC: MANUFACTURED FROM A WOVEN GEOTEXTILE, CANVAS/TARP MATERIAL, OR A COMMERCIALLY AVAILABLE SILT CURTAIN SUCH AS NYLON REINFORCED POLYVINYL CHLORIDE (PVC) OR EQUIVALENT.

BALLAST CHAIN: 10 TO 13mm GALVANISED CHAIN WITH MINIMUM 1.9 TO 3.3kg/m WEIGHT.

LAND ANCHOR: MINIMUM 100mm DIAMETER TIMBER POST (OR EQUIVALENT).

MARINE ANCHOR: MINIMUM 5kg LIGHTWEIGHT (DANFORTH) TYPE ANCHOR WITH 10 TO 13mm NYLON TIE ROPE AND MINIMUM 3m LENGTH OF 8mm GALVANISED CONNECTING CHAIN.

INSTALLATION

1. PRIOR TO COMMENCING ANY WORKS, OBTAIN ALL NECESSARY APPROVALS AND PERMITS REQUIRED TO CONDUCT THE NECESSARY WORKS INCLUDING PERMITS FOR THE DISTURBANCE OF RIPARIAN AND AQUATIC VEGETATION, AND THE CONSTRUCTION OF ALL PERMANENT OR TEMPORARY INSTREAM BARRIERS AND INSTREAM SEDIMENT CONTROL MEASURES.

2. PRIOR TO THE INSTALLATION, CHECK WEATHER REPORTS FOR A SUITABLE WINDLESS, CALM DAY. DO NOT PROCEED WITH THE INSTALLATION UNLESS SAFE TO DO SO.

3. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

4. CLEAR THE IMMEDIATE LAUNCHING AREA OF ROCK AND DEBRIS. AVOID DISTURBING GROUND COVER VEGETATION.

5. LAYOUT A PLASTIC LAUNCHING PAD (SPILLWAY) AT RIGHT ANGLES TO THE WATERCOURSE BANK AND PEG OR ANCHOR IT DOWN. THIS IS TO PROTECT THE CURTAIN AND REDUCE FRICTION WHEN LAUNCHING.

6. UNFOLD THE CURTAIN IN AN OPEN AREA PRIOR TO ITS INSTALLATION. ENSURE THE BARRIER IS FABRICATED WITH SUFFICIENT DIMENSIONS TO BE IN GOOD CONTACT WITH THE BOTTOM OF THE CHANNEL. THE DEPTH OF THE BARRIER SHOULD BE APPROXIMATELY 10% GREATER THAN THE WATER DEPTH TO ENSURE IT RESTS ON THE BED.

7. IDEALLY, THE LENGTH OF THE BARRIER IS 10 TO 20% LONGER THAN THE MEASURED LENGTH OF THE PROPOSED ENCLOSURE.

8. UNFOLD THE FIRST CURTAIN PANEL ON THE SLIPWAY.

9. INSERT THE FLOATS BOTH ENDS FOR EASE OF INSTALLATION.

10. PULL THROUGH THE STEEL CHAIN IN THE BOTTOM SLEEVE USING THE DRAW CORD.

11. PULL THROUGH THE ROPE USING THE DRAW CORD.

12. PRIOR TO DEPLOYING THE BARRIER, GATHER UP THE CURTAIN AND TIE THE CURTAIN WITH LIGHTWEIGHT STRAPS OR ROPE EVERY 1 TO 1.5m. THE AIM OF THIS IS TO ENABLE THE CURTAIN TO BE SET IN PLACE IN THE WATER EASILY WITHOUT THE CURTAIN BEING DRAGGED ALONG THE CHANNEL BED.

13. SET THE UPSTREAM BANK ANCHOR POINT AND TIE OFF ONE END OF THE BARRIER, ENSURING NO WATER WILL BE ABLE TO FLOW INTO THE UPSTREAM END.

14. DEPLOY THE BARRIER FROM THE END OF A BOAT. FASTEN THE FREE END OF THE BARRIER TO THE DOWNSTREAM ANCHOR POINT, THEN ANCHOR THE BARRIER AT INTERMEDIATE POINTS.

15. TAPER THE ENDS OF THE BARRIER TO THE SHAPE OF THE SHORELINE, OTHERWISE TIE THE ENDS OF THE BARRIER WITH FURLING STRAPS SO THE DEPTH OF THE BARRIER CAN BE ADJUSTED TO THE SHAPE OF THE BANK.

16. AFTER THE BARRIER HAS BEEN ANCHORED, CHECK TO SEE THAT THE SKIRT IS NOT TWISTED AROUND THE FLOTATION UNITS. WHEN THE BARRIER IS PROPERLY DEPLOYED, CUT THE TIE ROPES AND LET THE BALLAST WEIGHTS SINK TO THE BED.

17. ENSURE THE SKIRT (AT MAXIMUM WATER LEVEL) IS FREE OF LARGE PLEATS THAT MAY COLLECT SEDIMENT CAUSING THE BARRIER TO BE PULLED UNDER THE WATER SURFACE.

MAINTENANCE

1. INSPECT THE SILT CURTAIN DAILY FOR DAMAGE.

2. ENSURE THE TOP OF THE BARRIER REMAINS ABOVE THE WATER SURFACE, AND THE CURTAIN IS FREE OF TEARS OR GAPS.

3. ENSURE THE BARRIER REMAINS IN THE SPECIFIED LOCATION.

4. CHECK FOR TURBIDITY LEAKS.

5. CHECK ALL ANCHOR POINTS.

6. REPAIR OR REPLACE ANY TORN SEGMENTS.

7. CHECK FOR SEDIMENT BUILD-UP ON THE BOTTOM OF THE SKIRT THAT MAY BEGIN TO PULL THE CURTAIN UNDER THE WATER.

8. DISPOSE OF ANY EXCESSIVE SEDIMENT OR DEBRIS DEPOSITS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

9. REPAIR ANY PLACES IN THE ISOLATION BARRIER THAT HAVE WEAKENED OR THAT HAVE BEEN SUBJECTED TO DAMAGE FROM INFLOWS OR OVERTOPPING WATER.

REMOVAL

1. THE SILT CURTAIN SHOULD BE REMOVED AS SOON AS POSSIBLE AFTER IT IS NO LONGER NEEDED.

2. IF EXCESSIVE SEDIMENT OR DEBRIS HAS COLLECTED AROUND THE BARRIER, THEN REMOVE SUCH MATERIAL BEFORE THE BARRIER IS REMOVED AND DISPOSE OF SUCH MATERIAL PROPERLY.

3. ENSURE THE CHANNEL WATER CONTAINED WITHIN THE ENCLOSURE HAS ACHIEVED A SUITABLE WATER QUALITY BEFORE REMOVING THE SILT CURTAIN.

4. ENSURE THE RELEASE OF SEDIMENT AND THE DAMAGE TO THE CHANNEL'S BED AND BANKS IS MINIMISED DURING REMOVAL OF THE SILT CURTAIN.

5. IF IT IS NOT FEASIBLE TO WAIT FOR ADEQUATE SETTLEMENT OF SUSPENDED SEDIMENTS, THEN WHERE PRACTICABLE, PUMP THE SEDIMENT-LADEN WATER TO AN OFF-STREAM DE-WATERING SEDIMENT CONTROL SYSTEM FOR TREATMENT. THIS TREATMENT AREA SHOULD IDEALLY BE LOCATED AT LEAST 50m FROM THE CHANNEL.

6. REMOVE ALL CONSTRUCTION MATERIALS, EXCESSIVE SEDIMENT DEPOSITS AND DEBRIS AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

7. RESTORE THE WATERCOURSE CHANNEL TO ITS ORIGINAL CROSS-SECTION, AND SMOOTH AND APPROPRIATELY STABILISE AND/OR REVEGETATE ALL DISTURBED AREAS.

Drawn:	Date:		
GMW	Feb-10	Floating Silt Curtain	FSC-02

MATERIALS

SILT CURTAIN FABRIC: MANUFACTURED FROM A WOVEN GEOTEXTILE, CANVAS/TARP MATERIAL, OR A COMMERCIALLY AVAILABLE SILT CURTAIN SUCH AS NYLON REINFORCED POLYVINYL CHLORIDE (PVC) OR EQUIVALENT.

BALLAST CHAIN: 10 TO 13mm GALVANISED CHAIN WITH MINIMUM 1.9 TO 3.3kg/m WEIGHT.

LAND ANCHOR: MINIMUM 100mm DIAMETER TIMBER POST (OR EQUIVALENT).

MARINE ANCHOR: MINIMUM 5kg LIGHTWEIGHT (DANFORTH) TYPE ANCHOR WITH 10 TO 13mm NYLON TIE ROPE AND MINIMUM 3m LENGTH OF 8mm GALVANISED CONNECTING CHAIN.

ALTERNATIVE LAND-BASED INSTALLATION PROCEDURE

1. UNFOLD THE FIRST CURTAIN PANEL ON THE SLIPWAY.

2. INSERT THE FLOATS BOTH ENDS FOR EASE OF INSTALLATION.

3. PULL THROUGH THE STEEL CHAIN IN THE BOTTOM SLEEVE USING THE DRAW CORD.

4. PULL THROUGH THE ROPE USING THE DRAW CORD.

5. PRIOR TO DEPLOYING THE BARRIER, GATHER UP THE CURTAIN AND TIE THE CURTAIN WITH LIGHTWEIGHT STRAPS OR ROPE EVERY 1 TO 1.5m. THE AIM OF THIS IS TO ENABLE THE CURTAIN TO BE SET IN PLACE IN THE WATER EASILY WITHOUT THE WEIGHTS BEING DRAGGED ALONG THE BOTTOM.

6. SET THE UPSTREAM BANK ANCHOR POINT AND TIE OFF ONE END OF THE BARRIER, ENSURING NO WATER WILL BE ABLE TO FLOW INTO THE UPSTREAM END.

7. INSTALL AN EXTRA LENGTH OF ROPE OR CABLE IN THE FINAL CURTAIN POSITION IN THE WATER.

8. TIE THE END OF THE CURTAIN ROPE TO THE EXTRA LENGTH ALREADY IN POSITION AND PULL THE CURTAIN INTO THE WATER STOPPING WHEN THE END OF THE FIRST SECTION OF CURTAIN IS STILL ON THE BANK.

9. UNFOLD THE SECOND SECTION OF CURTAIN ON THE SLIPWAY MAKING SURE THE CURTAIN IS CORRECTLY ORIENTATED WITH THE FIRST SECTION OF CURTAIN

10. INSERT THE FLOATS, CHAIN AND ROPE AS BEFORE.

11. USING THE DRAW CORD FROM THE FIRST SECTION, TIE UP THE ENDS USING THE EYELETS ALREADY IN THE CURTAIN.

12. GATHER UP THE CURTAIN AND TIE TOGETHER WITH TWINE OR THIN ROPE.

13. LAUNCH AS BEFORE.

14. CONTINUE UNTIL THE ENTIRE CURTAIN IS INSTALLED.

15. ANCHOR WELL TO SHORE ANCHORS.

16. USING A SUITABLE BOAT, MOVE ALONG THE CURTAIN AND CUT THE TIES HOLDING THE CHAIN AND CURTAIN AND ALLOW THE WEIGHTED END TO SINK.

17. ENSURE THE SKIRT (AT MAXIMUM WATER LEVEL) IS FREE OF LARGE PLEATS THAT MAY COLLECT SEDIMENT CAUSING THE BARRIER TO BE PULLED UNDER THE WATER SURFACE.

MAINTENANCE

1. INSPECT THE SILT CURTAIN DAILY FOR DAMAGE.

2. ENSURE THE TOP OF THE BARRIER REMAINS ABOVE THE WATER SURFACE, AND THE CURTAIN IS FREE OF TEARS OR GAPS.

3. ENSURE THE BARRIER REMAINS IN THE SPECIFIED LOCATION.

4. CHECK FOR TURBIDITY LEAKS.

5. CHECK ALL ANCHOR POINTS.

6. REPAIR OR REPLACE ANY TORN SEGMENTS.

7. CHECK FOR SEDIMENT BUILD-UP ON THE BOTTOM OF THE SKIRT THAT MAY BEGIN TO PULL THE CURTAIN UNDER THE WATER.

8. DISPOSE OF ANY EXCESSIVE SEDIMENT OR DEBRIS DEPOSITS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

9. REPAIR ANY PLACES IN THE ISOLATION BARRIER THAT HAVE WEAKENED OR THAT HAVE BEEN SUBJECTED TO DAMAGE FROM INFLOWS OR OVERTOPPING WATER.

REMOVAL

1. THE SILT CURTAIN SHOULD BE REMOVED AS SOON AS POSSIBLE AFTER IT IS NO LONGER NEEDED.

2. IF EXCESSIVE SEDIMENT OR DEBRIS HAS COLLECTED AROUND THE BARRIER, THEN REMOVE SUCH MATERIAL BEFORE THE BARRIER IS REMOVED AND DISPOSE OF SUCH MATERIAL PROPERLY.

3. ENSURE THE CHANNEL WATER CONTAINED WITHIN THE ENCLOSURE HAS ACHIEVED A SUITABLE WATER QUALITY BEFORE REMOVING THE SILT CURTAIN.

4. ENSURE THE RELEASE OF SEDIMENT AND THE DAMAGE TO THE CHANNEL'S BED AND BANKS IS MINIMISED DURING REMOVAL OF THE SILT CURTAIN.

5. IF IT IS NOT FEASIBLE TO WAIT FOR ADEQUATE SETTLEMENT OF SUSPENDED SEDIMENTS, THEN WHERE PRACTICABLE, PUMP THE SEDIMENT-LADEN WATER TO AN OFF-STREAM DE-WATERING SEDIMENT CONTROL SYSTEM FOR TREATMENT. THIS TREATMENT AREA SHOULD IDEALLY BE LOCATED AT LEAST 50m FROM THE CHANNEL.

6. REMOVE ALL CONSTRUCTION MATERIALS, EXCESSIVE SEDIMENT DEPOSITS AND DEBRIS AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

7. RESTORE THE WATERCOURSE CHANNEL TO ITS ORIGINAL CROSS-SECTION, AND SMOOTH AND APPROPRIATELY STABILISE AND/OR REVEGETATE ALL DISTURBED AREAS.

Drawn:

GMW

Date:

Feb-10

Floating Silt Curtain (alt)

FSC-03

