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SECTION 1

WORK DETAILS			
Project / Activity Name	CMP RA012- Shoal Bay	**Section undertaking Project / Activity** (Proponent)	Public Domain and Services
Project Manager / Works Supervisor	Roadside and Drainage Coordinator	**Timing and Duration**	Maintenance activities ongoing.
Environmental Risk Level	*Determined during the Initiation Phase through an Enterprise Risk Assessment. See Project Management Framework. (Low, Medium, High or Extreme)*	**Project / Job Number**	
		EDRMS	PSC2024-04709

ACTIVITY DESCRIPTION	
Description	This project will undertake endorsed CMP action RA012. Management action RA012: Undertake works to manage access and rehabilitate the Shoal Bay foreshore dunes. This action involves renewal of dune fencing and dune re-vegetation (including sediment controls), with a provision for ongoing annual maintenance (e.g. weeding and replanting as required). Action details: Undertake works to control public access and revegetate the dune. A combination of high intensity public visitation and periodic erosion events has resulted in a need to repair or replace dune fencing, restrict access through eroded locations, and re-vegetate sections of the dune. While Council has a regular program of maintenance of dunes, this location requires more intensive efforts to manage the existing level of impact through a stand-alone action.
Justification and Objectives	This project is an action in the certified CMP 2024. The works are required to control public access and revegetate the dune. A combination of high intensity public visitation and periodic erosion events has resulted in a need to repair or replace dune fencing, restrict access through eroded locations, and re-vegetate sections of the dune. While Council has a regular program of maintenance of dunes, this location requires more intensive efforts to manage the existing level of impact through a stand-alone CMP action. Project objectives: • Dune stabilisation and rehabilitation • Control public access • Maintenance sand management activity

Scope of Works	The proposed activities may include:
	• Temporary installation of site controls for erosion and sediment, traffic control and pedestrian signage.
	• Rehabilitation of dunes including fencing, weed control, sediment control and revegetation.
	• Tree maintenance – pruning, hazard reduction.
	• Beach clean-up of debris including dead animals and beach wrack.
	• Mowing of turfed areas.
	• Sand management- Minor scale sand carting or beach scraping to address accretion of sand and/or erosion. All activities to occur above the mean high watermark. Activity initiation is based on observation. This is an ongoing maintenance scale activity that is only undertaken to:
	  ○ make safe public accessways;
	  ○ address minor erosion to protect the integrity of the dunes, protect for landward assets;
	  ○ address the inundation of recreation areas.
	
	Machinery that may be used includes:
	• Pozi-track
	• Small excavators
	• Long reach excavators
	• Backhoe
	• Tipper truck
	• Ride on lawn mower
	• Edger
	• Auger
	• Chainsaws
	• Battery operated hand tools

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	Key processes: • Revegetation works – digging small scale planting holes, native planting and erosion control • Delivery of materials – small tipper truck and/or work ute deliveries of materials. Heavy haulage vehicles may be required on occasion. • Demolition – limited to removal of old and/ or damaged fencing as part of maintenance activities and any failed plantings. • New/ replacement fencing - Post hole digging to a typical depth of approx. 800mm. May also include staked fencing driven into existing ground; primarily wind blown sands. Timer, shade cloth, wire. • Stockpiling – Mostly existing materials on site, or sand from within the system. imported material such as gravel for access • Machinery, Vehicles and tools – typically small trucks/utes and earth moving equipment, auger, ditch witch. • Weeding – low impact, hand removal expected. Use of herbicides may be required. • Irrigation – utilisation of existing irrigation systems where feasible. Establishment irrigation by hand or vehicle mounted equipment may be required
Consideration of Alternatives	Works are actions within certified CMP. No alternate actions were identified within the document. A "do nothing" approach will lead to greater degradation of the Shoal Bay coastal environment.

LOCATION

Address (including Lot and DP)	Shoal Bay Foreshore Lot/DPs: 7020/1126832 7021/1126832 7022/126832 7023/126832 7305/1130568 180/753204 Potential works on the boundary of Lot/DPs and sites used for vehicle access and parking: 432/41582 424/3978 Harwood Ave Road Reserve Shoal Bay Road Reserve See APPENDIX 3 for detailed site mapping.	**Land Zoning- RE1**
Landowner	☑ Port Stephens Council ☑ Other- Crown Land Managed by Council	**Date of Site Inspection** 13 June 2025
Existing Environment	Shoal Bay is a dynamic 2.5 km long sandy shoreline extending from Nelson Head to Tomaree Head. The western end of the beach has a wider beach and dune system. There is a littoral rainforest at Nelson Head and EEC communities in the vegetation behind the western dune system. The eastern side of the beach has a narrower beach and a very limited dune system (narrower and lower dunes) and adjoins the Tomaree National Park. The central to eastern part of Shoal Bay Beach is gradually eroding. The lack of beach width in this location adversely affects recreational usage and enjoyment of the beach by the community and visitors. Threatened species of both flora and fauna have been sited at Shoal Bay beach front. Invasive species have been identified within the site. Aboriginal Heritage to known within the area. The beach adjoins the Great Lakes Marine Park zoned *General Use* and Shoal Bay is home to estuarine macrophytes.	

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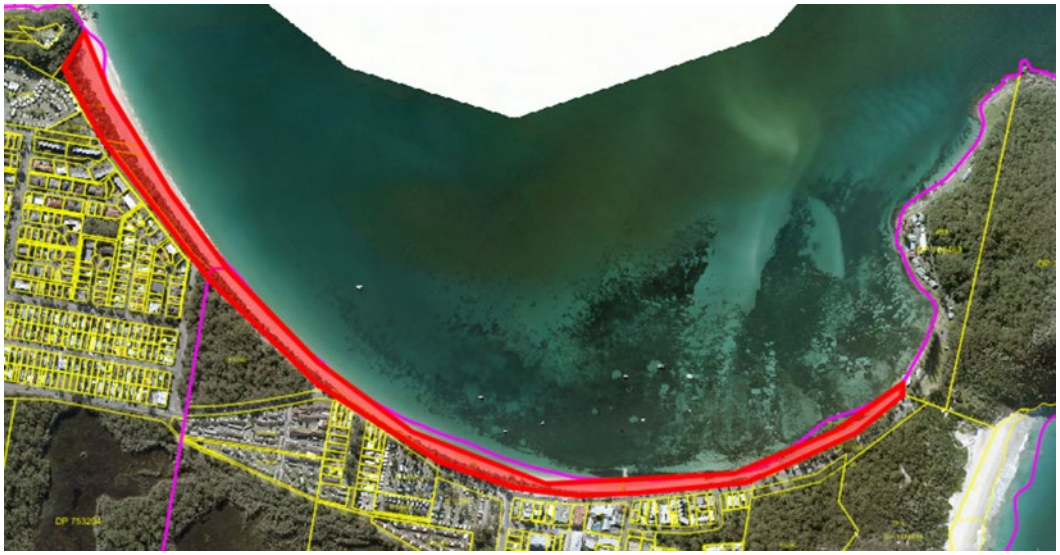
Image- Potential location of works. See APPENDIX 3 for detailed site mapping.



Images- Examples of beach access points 13/5/2025

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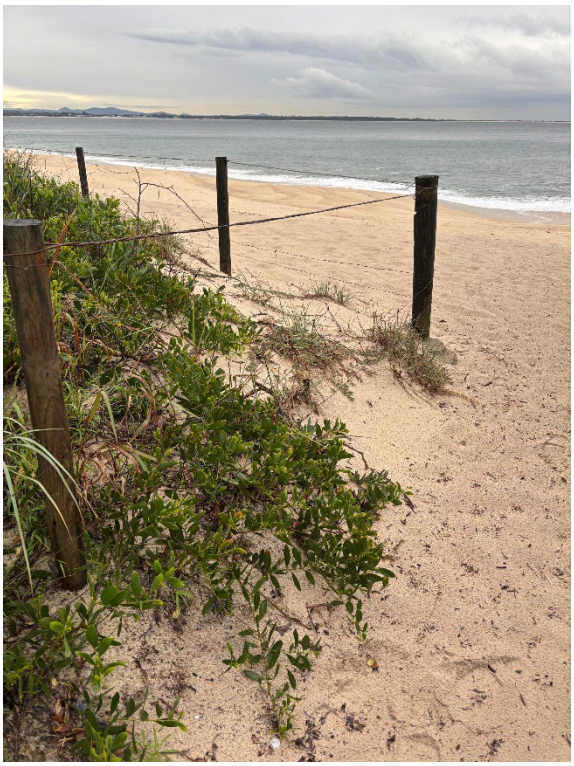
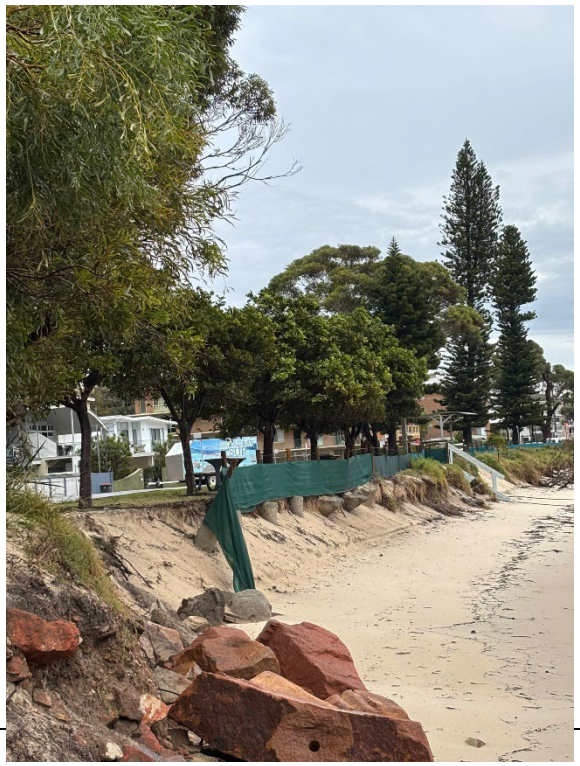


Images- Examples of areas of erosion 13/05/2025



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SECTION 2

APPROVAL PATHWAY

These Environmental Assessment forms are for Pathway 3: Part 5 Environmental Assessment under SEPP (Transport and Infrastructure) only.
See Environmental Assessment Guide - Planning Pathway Overview Chapter (and Flowcharts) for support in this Section.

Pathway 1: Local Development (Part 4) ⟶ if YES, commence a Development Application		
Are the works Permitted with Consent under SEPP (Transport and Infrastructure)? *See Environmental Assessment Guide : Planning Pathway Overview Chapter : Flowcharts Planning Pathway*	***Yes*** ☐	***No*** ☒
Do the works trigger the SEPP (Resilience and Hazards)? *See Environmental Assessment Guide : Planning Pathway Overview Chapter : Flowcharts SEPP (Resilience and Hazards)*	***Yes*** ☐	***No*** ☒
Pathway 2: Tree / Vegetation Removal ⟶ if YES commence an Environmental Assessment : Trees & Vegetation		
Is this activity solely involving vegetation and/or tree removal? *See Environmental Assessment Guide : Planning Pathway Overview Chapter : Flowcharts tree removals*	***Yes*** ☐	***No*** ☒
Pathway 3: Transport and Infrastructure SEPP (Part 5)		
a) Is the activity permissible under the LEP? (i.e. not listed as Prohibited in the Land Use Table?) If NO, rethink the proposed activity and its location. If YES move to (b).	***Yes*** ☒	***No*** ☐
b) Are the works permitted as Exempt under SEPP (Transport and Infrastructure) but assessed as greater than negligible in Section 3 Environmental Impact Triggers in the Environmental Assessment Level 1 Form? **Or**	***Yes*** ☐ ***Clause:***	***No*** ☒
c) Are the works *Permitted without Consent* under SEPP (Transport and Infrastructure)? Clause: Division 25, 2.165, 1 **If YES to either of these questions, move to Section 3: Environmental Impact Triggers of this Form.**	***Yes*** ☒ ***Clause:*** Division 25, 2.165, 1	***No*** ☐

SECTION 3

ENVIRONMENTAL IMPACT TRIGGERS

See Environmental Assessment Guide – Technical Specialists & Impact Assessments Chapters for support in this Section.

BIODIVERSITY • Known impact to Threatened Species or Ecological Communities (including clearing of habitat) • Known impact on SEPP (Koala Habitat Protection) • Known impact to areas mapped on the Biodiversity Values map • Working within a declared area of outstanding biodiversity value (AOBV)	Site may contain threatened species however these works are maintenance activities and controls in EA will ensure there will be no known impacts.	***No***
COASTAL • Known impact to SEPP (Resilience and Hazards) mapped areas (including proximity) of Coastal Wetland and/or Littoral Rainforest while undertaking exempt works? *See Environmental Assessment Guide : Planning Pathway Overview Chapter : Flowcharts SEPP (Resilience and Hazards)*	Littoral Rainforest located at Inner Light. Activities in this project will not take place within this area.	***No***
HERITAGE Known impact to Aboriginal and / or non-indigenous heritage?	Known aboriginal heritage at the site. Controls in this EA intend to mitigate any potential for impact. See appendices for AHIMs search results.	***No***
NATIONALLY SIGNIFICANT Potential impact to Matters of National Environmental Significance? *Environment Protection and Biodiversity Conservation Act 1999*	Potential migratory birds of National Significance on site. Activities should not impact.	***No***

If all of the above are NO, continue with this Level 2 Environmental Assessment.

STOP: If you've said YES to any of the above criteria, move to a Level 3 Environmental Assessment and / or talk to the relevant technical specialist. See Environmental Assessment Guide – Technical Specialists & Impact Assessments Chapters.

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SECTION 4 : Approvals, Concurrence, Licences, Permits and Notification				
See Environmental Assessment Guide: External Agency Consultation for support in this Section. *Specifically refer to **Flowchart: Publishing EAs on Council's Website** to determine if this assessment requires publication on Councils website.* *The permits/licences highlighted below will trigger publication onto Councils Website*				
Trigger		**Type**	**Authority**	**Applicability**
Land Owner	Working on land not owned or controlled by PSC	Land owner consent Land access licence	Marine Parks, Hunter Water, Forestry, National Parks, Australian Government	***No***
	Working on Crown Land and disturbing the ground	Native Title Referral	Port Stephens Council- refer to Strategic Property NTS Corp	***Yes***
	All works on Crown Land	Land Claim Search and Assessment	Port Stephens Council- refer to Strategic Property	***Yes***
National Parks	Working adjacent to a national park, nature reserve or other area reserved under NPW Act 1974	Written notice of intention to carry our works and scope of works to NPWS	National Parks and Wildlife Service (NPWS)	***Yes***
Roads	Working on a classified road not under PSC control or agreement	Concurrence	Transport for New South Wales	***No***
Water	Natural water usage (dewatering or ground water use)	Water Access Licenses and work/use approvals	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Discharging to sewer	Trade Waste Agreement	Hunter Water	***No***
Utilities	Earthworks near services (gas, telecommunications, electricity, water)	Before you Dig check	Before you dig Australia	***Yes***
	Working in a mine subsidence area	Approval	Subsidence Advisory NSW Government	***No***
Heritage	Working near items on the State Heritage Register	Heritage Act: • S57(2) exempt notification • S60 approval • S140 excavation approval	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Harm or potential harm to Aboriginal objects and places	Aboriginal Heritage Impact Permit (AHIP) S90 NPW Act	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Local heritage item	Concurrence	Port Stephens Council	***No***
Waterways/ Marine	Working near or in a Marine Park	Marine Park Permit	Department of Primary Industries (Marine Parks)	***Yes***
	Constructing a fixed or floating structure in or over navigable waters (e.g. new boat ramp)	Written notice of intention to carry our works and scope of works to Transport for NSW	Transport for NSW	***No***
	Dredging or reclaiming of waterways	Land owner consent 1. Fisheries Permit S201 2. Marine Park Permit 3. Crown Land License	Land owner: 1. DPI (Fisheries) 2. DPI (Marine Parks) 3. DPE (Crown Lands)	***No***
		Environmental Protection Licence (EPL)	NSW Environmental Protection Authority (EPA)	***No***
	Controlled activity in, on or under waterfront land	Controlled Activity Approval	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Use explosives or electrical devices in a waterway	Fisheries Permit	DPI (Fisheries)	***No***
Flora and Fauna	Working near aquatic reserves, habitat or marine vegetation	Fisheries Permit S205	DPI (Fisheries)	***Yes - Assessment requires***

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				publication on PSC Website
	Obstructing fish passage	Fisheries Permit S219	DPI (Fisheries)	***No***
	Taking or possessing fish or marine vegetation Undertaking Aquaculture	Fisheries Permit S37 /S144	DPI (Fisheries)	***No***
	Working near or with threatened species or part of an ecological community.	Threatened Species Licence	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Research, education or conservation activities involving protected, threatened and/or endangered species.	Scientific Licence	NSW Department of Climate Change, Energy, the Environment and Water	***No***
	Harm of native fauna	Licence	National Parks and Wildlife Service (NPWS)	***No***
Pollution and hazards	Noise	Showing inconsistency with *Construction Noise Guidelines*	NSW EPA	***No***
	Pollution / Scheduled Activity	Environmental Protection Licence (EPL)	NSW EPA	***No***
	Asbestos removal	Licenced removalist	SafeWork NSW	***No***
	Storage of hazardous chemicals	Hazardous chemical notification	SafeWork NSW	***No***
Flooding	Carry out development that may be permitted without consent under a relevant provision (see s2.13 SEPP T&I) on flood liable land	Written notice of intention to carry our works and scope of works to State Emergency Service	State Emergency Service (SES)	***No***
Mine Subsidence	Development on land in a mine subsidence district	Written notice of intention to carry our works and scope of works to Mine Subsidence Board	Mine Subsidence Board	***No***
National	Matters of National Environmental Significance	Concurrence and permit EPBC Act	Australian Government (Department of Climate Change, Energy, the Environment and Water)	***No***

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SECTION 5 : Environmental Impact Assessment

Aspect: ***If the aspect is applicable to your activity undertake the impact assessment. If the aspect is not applicable to your activity, the impact assessment is not required but you may provide evidence as to why it is not applicable eg. dates and outcomes of GIS searches and communication with technical specialists.***

Impact Description: ***If the aspect is applicable, you must identify and describe the specific impacts from the activity. Descriptions can include the cause, extent, severity and duration; identification of any source and receivers; if the impact is current, occurs only during works or continues post works.***

Impact Without Control: ***Consider the level of impact from what you've described without any environmental controls identified.***

Environmental Controls: ***If impact without control is greater than negligible, identify appropriate environmental controls to reduce impact. Hierarchy of environmental controls include Elimination, Substitution, Engineering, Administration, Safeguards. Refer to the standard bank of controls document for further guidance.***

Impact With Control: ***Considering the initial impact of the activity and your identified environmental controls, determine the final impact on the environment from the activity.***

Aspect		Impact Description	Impact Without Control	Environmental Controls	Impact With Control
AIR	**Dust** ***Applicable***	Potential for dust generation during the activities outlined in the scope of works due to vehicle movements and plant operations Dust emissions are expected to be negligible due to the large particle size of the sand and unlikely disturbance to other soils. Air quality is unlikely to be significantly affected and dust generation is expected to be minimal.	*Minor: Dust generated during works but confined to the site.*	• Dust complaints will be dealt with in accordance with Council's complaints handling procedures and the source eliminated or reduced where practical. • Access to work sites and around work areas will be via boat ramps and existing vehicle access ways to reduce disturbance. • Workers to monitor weather conditions and ensure no disturbance to sand is be made during high wind events. • Dust generation to be visually monitored and controlled if required.	**Minor: Dust generated during works but confined to the site.**
	Odours ***Applicable***	Minimal odours from: - Fumes generated from plant- vehicles, machinery, excavators and equipment exhaust. Odours will be only short term. The air quality is unlikely to be significantly affected. More sensitive receivers for activities are located at the western end of the foreshore with residences located as close as 20ms from anticipated activities.	*Minor: Minor odour detectable during works with complaints unlikely.*	• Plant and materials used in construction will be maintained, serviced and stored in accordance with all relevant standards and procedures. • Complaints will be dealt with in accordance with Council's complaints handling procedure and the source eliminated or reduced where practical.	**Minor: Minor odour detectable during works with complaints unlikely.**

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	Emissions ***Applicable***	Potential for emissions generated from heavy machinery and plant exhaust. This will be limited and short term. The air quality is unlikely to be significantly affected.	*Minor: Minor emissions release short-term.*	• All vehicles and plant will be maintained to industry standards to maintain exhaust emissions within manufacturer's specifications. • Plant and vehicles will not be left running or idling for long periods when not in use.	**Minor: Minor emissions release short-term.**
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
NOISE	**Noise** ***Applicable***	Existing noise along the Shoal Bay foreshore varies with traffic noise along Shoal Bay Road, noise from business and visitors at Shoal Bay CBD. Residential and holiday accommodation noise occurs along the western side of the foreshore. Minor noise impact from sources: - Personnel - Vehicle movement and - Plant use. More sensitive noise receivers for activities are located at the western end of the foreshore with residences located as close as 20ms from anticipated activities. Due to the existing noise levels across the majority of the foreshore, the impact from noise is anticipated to be minimal and short-term.	*Minor: Minor noise detectable during works with complaints unlikely.*	• Plant will only be utilised during ordinary maintenance working hours. • Plant and materials will be maintained in accordance with all relevant standards and procedures to reduce noise created. • All plant used will comply with the Australian Standards. • Plant which is used intermittently will be either shut down in intervening periods or throttled down to a minimum. • Plant and vehicles will not be left running or idling for long periods when not in use. • Noisy plant where possible will be positioned and orientated so as to minimise impact to nearby public and residents. • Any noise complaints would be addressed immediately in accordance with Council's complaints handling procedure and resolved where possible.	**Minor: Minor noise detectable during works with complaints unlikely.**
	Vibration ***Applicable***	Minimal localised vibration may occur from heavy machinery. Sensitive receivers: - Residential properties on the western end of the foreshore.	*Minor: Minor vibration detectable during works with complaints and asset damage unlikely.*	• Plant and machinery will only be utilised during ordinary maintenance working hours. • Complaints will be dealt with in accordance with Council's complaints handling procedure	**Minor: Minor vibration detectable during works with complaints and asset damage unlikely.**
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
WATER	**Stormwater** ***Applicable***	There are three stormwater outlets along the Shoal Bay foreshore- at the wharf, boat ramp, Shoal Bay West amenities. No anticipated impacts to stormwater patterns and flows. Unlikely potential for impacts to stormwater quality through pollution event- contamination or sediment.	*Negligible: Minimal to no change to stormwater quality or flows.*	• See Controls for *Erosion and Sediment; Stockpiles* and *Contamination.*	**Negligible: Minimal to no change to stormwater quality or flows.**

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	Groundwater ***Applicable***	Groundwater not anticipated at the site due to depths of excavation limited to approximately 800mm. Unlikely that groundwater will be detected. Project activities are within the drinking water catchment. Pollution of the drinking water catchment is unlikely due to the scale of works. See the impacts under the section *Chemicals* for potential risks.	*Negligible: No disturbance of groundwater.*	• If groundwater is detected follow the Council's *Unexpected Finds Field Guide* process- see APPENDIX 4. • See controls under the section *Contamination*.	**Negligible: No disturbance of groundwater.**
	Water Bodies ***Applicable***	Works are adjacent to the Great Lakes Marine Park *General Use Zone*. Marine Park Permit application to be undertaken. There is minor potential for pollution to the marine park through inadequate sediment control or pollution from an event such as plant oil spill or inappropriate handling of chemicals. There is a natural watercourse located at the east of the Shoal Bay boat ramp. This watercourse will not be impacted by works as it is directed into stormwater pits located within boat trailer carpark.	*Minor: Works will be carried out within a water body and may cause minor temporary change.*	• Marine Park Permit required. • No works to be undertaken below the mean high watermark. • Works to be planned to ensure no unnecessary plant activity/movement occurs on the beach. • In the unlikely event a pollution incident occurs, works must cease. The Environmental Incident Procedure must be followed. The incident immediately reported through to the Environmental Risk Manager. • See Controls: *Erosion and Sediment; Stockpiles; Waste; Flora and Fauna; Contamination; and Chemicals.*	**Negligible: Works may be carried out adjacent to a water body but will cause minimal to no change.**
	Aspect	**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
SOIL	**Erosion and Sediment** ***Applicable***	The ongoing maintenance activities are anticipated to have positive impact by protecting dune stability and will prevent erosion caused by undesirable pedestrian activity. Potential negative impacts: - The works are proposing the movement of already exposed sand soils. Erosion and sediment impacts are expected to be low as the sites have been previously disturbed for the construction of existing structures such as beach access point fencing. - Clearing/die off of weeds may cause unconsolidated ground to be exposed - Vehicle/machinery movements could damage vegetation and led to erosion.	*Minor: Erosion disturbance and release of sediment but contained within the site.*	• Refer to Council's *Erosion and Sediment Control Field Guide* and EMS 3.0 Environmental Factsheet *EFS 03 Stockpiling* provided under the Council's environmental management system. These documents align with the *NSW Managing Urban Stormwater: Soils and Construction V1 "Blue Book"*. • All erosion and sediment controls will be put in place prior to excavation activities and remain in place until maintenance is completed and the site rehabilitated. • Erosion and sediment control measures will be routinely inspected and maintained. This includes before and after expected heavy rainfall, with any issues corrected promptly. • Disturbed areas will be stabilised as soon as practically possible. • Works exposing soils would be only undertaken when heavy rain is not predicted within the following 24 hours, unless emergency works are required.	**Minor: Erosion disturbance and release of sediment but contained within the site.**

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				• Access to work sites and around work areas (where appropriate) would be planned and managed to reduce disturbance. Vehicle and machinery movements must be minimised during and immediately following wet weather. • Run-off shall be diverted around the work site and erosion sediment control devices shall be installed immediately downslope of disturbed areas. • Spot pesticide spraying is preferred over blanket sprays. Blanket spraying will not occur on slopes. Systematic project management of spraying to limit exposed trop soil. Selective herbicide use	
	Acid Sulphate Soils ***Not Applicable***	Site is a Class 4 and 5 Acid Sulphate Soils (ASS). See APPENDIX 5 for site ASS identified mapping. It is not anticipated that ASS will be disturbed due to the depths of works.	*Negligible: No Acid Sulphate Soils present or disturbed.*	• If ASS is exposed, works must cease works and the Project Manager and Enterprise Risk Manager notified. The *Unexpected Finds Field Guide* process is to be followed. See APPENDIX 4.	**Negligible: No Acid Sulphate Soils present or disturbed.**
	Contamination ***Applicable***	No contamination is expected to be uncovered onsite. While unlikely, there is potential for contamination of the site through: - Spill/release of oils, fuels, pesticides; - Incorrect handling or storage of chemicals; - Pollution for incorrect disposal of waste.	*Moderate: Contamination is known within the site which has the potential to be disturbed: or contaminants are used and have the potential to be released.*	• Plant to be in good working order, refuelling in controlled/ appropriately bunded areas (not on beach areas) and spill kits onsite with appropriate emergency spill response procedures in place. • Personnel vehicles to be parked in formalised car parking areas. • All Plant to be serviced and stored in accordance with manufacturer specifications and standards. • All staff will be trained in spill response procedures and all spills will be cleaned up immediately. • Equipment will not be used if there are any signs of fuel, oil or hydraulic leaks. Leaks will be repaired immediately or the equipment will be removed from site and replaced. • Chemicals including pesticides are to be handled and stored as per manufacturers Safety Data Sheets (SDS). No chemicals to be stored on the beach. • Pesticide application will be undertaken by suitably qualified and experienced personnel and in accordance with the *NSW Weed Control Handbook*. • All imported materials are to be tested and classified prior to placement.	Minor: Contamination is known within the site but won't be disturbed: or contaminants are used but will not be released.

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				• If contamination is found onsite, refer to the Unexpected Finds Field Guide Handbook. See APPENDIX 4. • See Controls: *Waste* and *Chemicals*.	

Aspect		Impact Description	Impact Without Control	Environmental Controls	Impact With Control
FLORA & FAUNA	**Native Fauna (Animals)** ***Applicable***	Site has documented sightings of a number of threatened native fauna and migratory bird species. The works should have a positive impact on native fauna through the improvement of habitat and control of pedestrian access. There is potential the following negative impacts could occur without controls: - There is potential that maintenance activities could temporarily disturb or injure native species from noise and additional movements of people and vehicles/machinery during works. - There is potential for temporary disturbance to beach dwelling fauna where beach areas are used for site access and movement of people and machinery. - There is potential for fauna to traverse the site during maintenance operations. - There is potential for fauna habitat disturbance or damage to occur onsite due to: movement of people, machinery/equipment.; chemical spill such as fuel/oil; inappropriate use of pesticide. - There is a potential that weeds may provide habitat for fauna and weed removal/spraying will cause destruction. - Overhanging branches or vegetation pruning may be undertaken for hazard reduction or to ensure public access.	*Moderate:Native fauna and/or its habitat on-site which may be impacted.*	• The works area must be inspected visually at the commencement of work each day for any fauna, nests or dreys. • If fauna is passing through the site, cease works within 100 m of the fauna and allow fauna to move through the site without undue duress or harassment. • If the fauna is not passing through the site, the Project Manager must contact the relevant internal environmental officer. Follow the *Unexpected Finds Field Guide*. See APPENDIX 4. • If any injured fauna are present, the *Unexpected Finds Field Guide* process must be followed. • To minimise impact of habitat loss from weed removal- if nests/dreys are found within weed areas, segmented systematic control of prolific vegetation must occur to allow for migration and mitigation of habitat destruction. The Project Manager must contact Council' environmental officer for advice. • Where practicable, work vehicle access and parking is to be restricted to designated work areas and existing formed access tracks and pathways to prevent any damage to habitat. • If harm occurs to fauna or their habitat, works must cease and the Environmental Incident Procedure must be followed. The incident must be immediately reported through to the Environmental Risk Manager. • Materials, plant and equipment will not be placed in a manner that could result in damage to surrounding vegetation. • Pesticide application will be undertaken by suitably qualified personnel and in accordance with the *NSW Weed Control Handbook*. Use of appropriate herbicides, monitor weather conditions, DELTA T, spill kits, proper hygiene controls. • Chemical/Pesticide to be managed as per Section *"Hazardous Materials"*.	**Negligible: Native fauna and its habitat may be present on-site but not impacted.**

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				• Vegetation to be inspected prior to pruning to ensure there are no tree hollows, nests that will be impacted. If fauna or hollows/nests are discovered, the Project Manager is to contact internal environmental specialist for further advice.	
	Native Flora (Vegetation including trees) ***Applicable***	Native vegetation varies along the foreshore and is identified as - South Coast Sands Dry Sclerophyll Forests - Coastal Headland Heaths - Coastal Dune Dry Sclerophyll Forests - Coastal Floodplain Wetlands // Coastal Swamp Forests Nelson Head and Anzac Park are identified as Supplementary Koala Habitat. The works should have a positive impact on native flora through the removal of weeds, control of pedestrian access/erosion and additional native planting. There is potential the following negative impacts could occur without controls: - There is potential that workers may inaccurately identify native flora species and remove or damage them. - There is a potential that the movement of machinery, vehicles or people may trample/damage native vegetation. - There is a potential vegetation will be covered by sand where sand replenishment/movement is undertaken. - There is a potential that incorrect pesticide application and other chemicals from vehicles/machinery/human pollution may impact native vegetation. - There is potential that vegetation pruning or removal of non-native or dead trees cause habitat loss or requires a permit.	*Negligible: Native flora is present on-site but not impacted.*	• All workers to be experienced in Plant ID skills to ensure correct identification of native flora, invasive species and threatened species. • If threatened flora is unexpectedly identified onsite, the area is not to be disturbed and the Project Manager must notify the relevant internal staff with environmental technical expertise. See the *Unexpected Finds Field Guide* APPENDIX 4. • Materials, plant and equipment will not be placed in a manner that could result in damage to surrounding vegetation. • Where practicable work vehicle access and parking is to be restricted to designated work areas and existing formed access tracks, pathways and hard stand areas like car parks to prevent any damage to habitat. • If harm occurs to native flora, works must cease and the Environmental Incident Procedure must be followed. The incident must be immediately reported through to the Environmental Risk Manager. • Vegetation to be inspected prior to pruning to ensure there are no tree hollows, nests that will be impacted. If fauna or hollows/nests are discovered, the Project Manager is to contact Council's internal environmental specialist for further advice. • Pesticide application will be undertaken by suitably qualified and experienced personnel and in accordance with the *NSW Weed Control Handbook*. Use of appropriate herbicides, monitor weather conditions, DELTA T, spill kits, proper hygiene controls. • Follow Council's *Mulch Risk Management Protocol*. • Chemical/pesticide to be managed as per Section "*Hazardous Materials*".	**Negligible: Native flora is present on-site but not impacted.**

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	Aquatic Flora & Fauna ***Applicable***	The waters adjacent to Shoal Bay foreshore are part of the of the Great Lakes Marine Park. The area is zoned 'General Use Zone'. Shoal Bay is home to an important number of Estuarine macrophytes- Zostera, Posidonia and Halophila. See APPENDIX 6 for the mapping of estuarine macrophytes. *Posidonia australis* is listed as an Endangered Species. While dune stabilisation works should have a positive impact on estuarine macrophytes through the reduction of erosion, the following unlikely impacts could occur: - Pollution/contamination from a chemical/pesticide spill into the waterway damaging aquatic flora. There are recorded sightings of Loggerhead turtles (Threatened species) and the Marine Park is habitat to green and hawksbill turtles, dolphins, over 200 fish species. It is unlikely the following impacts could occur: - Aquatic fauna or their nests on the beach could be disturbed or injured by noise and additional movements of people and vehicles/machinery during works. - Pollution/contamination from a chemical/pesticide spill into the waterway damaging aquatic fauna or their habitat. - Localised direct impact to benthic infauna in sand placement and beach scraping areas.	*Moderate: Aquatic flora and fauna are known within the locality and could be impacted.*	• See Environmental Controls for *Native Flora; Native Fauna; Contamination; Erosion and Sediment; Chemicals;* and *Stockpiles.* • Marine Park Permit required. • All staff are to be inducted on the location of aquatic flora (see APPENDIX 6) and the potential for encountering aquatic fauna onsite. • No works to occur below the Mean High-Water Line. • Access to beach is to be limited to the required works only. No parking of vehicles is to occur on the beach. • Plan any sand management works in advance and minimise disturbance footprint.	**Minor: Aquatic flora and fauna are known within the locality but won't be impacted.**
	Threatened Species & Endangered Ecological Communities ***Applicable***	See *Native Fauna* and *Native Flora* for potential impacts. The site has a number of threatened native fauna sightings including: - Koala - White Bellied Sea Eagle - Little Lorikeet - Varied Sittella - Loggerhead turtle - Eastern Ospray Nationally significant Migratory Birds including: - Crested Tern - Short tail shearwaters - Wedge tail Shearwaters.	*Moderate: Species, populations or communities are known within the locality and could be impacted.*	• See Environmental Controls for *Native Fauna and Native Fauna.* • Activities must not harm Threatened Flora or Fauna. All staff are to be inducted on the locations of threatened flora species and modify activities accordingly (see APPENDIX 7 for known areas and identification images). Personnel must be suitably qualified and experienced to undertake activities and notified of the potential for encountering threatened fauna onsite. • If harm to Threatened Species and EECs occurs, works must cease and the Environmental Incident Procedure must be followed. The incident immediately reported through to the Environmental Risk Manager.	*Minor: Species, populations or communities are known within the locality but won't be impacted.*

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		Threatened flora species: - Endangered- Sand Spurge is located at Western end of Shoal Bay Foreshore and is within the works area. This species could be affected by impacts raised in *Native Flora* if controls are not in place. - SEPP Littoral Rainforest is located at the base of Nelson Head and is not anticipated to be impacted as it is outside the area of activity. - Vulnerable species- Netted Bottle Brush is mapped within Anzac Park. This species could be affected by impacts raised in Native Flora if controls are not in place. See APPENDIX 7 for Sea Spurge, Netted Bottle Brush and SEPP Littoral Rainforest flora mapped locations and identification imagery. See *Aquatic Flora and Fauna* for the sites aquatic Threatened Flora. No EECs mapped within the location.			
	Sensitive Areas ***Applicable***	There are Landcare committees working along the Shoal Bay foreshore undertaking dune stabilisation, revegetation and weeding. Co-ordination between PDS and volunteers is required to ensure the best environmental and relationship outcomes. Site is zoned RE1. Foreshore is adjacent to Nelson Head and Anzac Park which are identified as Supplementary Koala Habitat.	*Minor: Sensitive areas are known within the locality but won't be impacted.*	• Project staff to liaise with Council Officer Vegetation Management Supervisor to co-ordinate revegetation/weeding works alongside volunteer activities. • See Environmental Controls for *Native Fauna and Native Fauna*.	**Minor: Sensitive areas are known within the locality but won't be impacted.**
	Priority Weeds, Feral Animals and Pathogens (Biosecurity) ***Applicable***	A number of invasive species (see APPENDIX 8) have been mapped within or adjacent to the site including: • Chinese Violet • Mother of Millions • Opuntia and Cylindropuntia • Pampus Grass (inner light) Invasive species referral complete. Invasive Species team undertook a site inspection on 1st August 2025 and identified Mother of Millions and Chinese Violet within the works area.	*Moderate: Noxious weeds, feral animals and pathogens are known within the locality and could be aggravated by the activity.*	• PDS to do a toolbox with Invasive Species annually. The following controls are from the Invasive Species Referral. See APPENDIX 9: **Prior to Works Commencing** • Weed control requirements included in induction. • Removal, treatment and/ or suppression must be undertaken of Chinese Violet and Mother of Millions. o Using approved bush regeneration techniques. o Under the supervision of a suitably qualified and experienced bush regenerator.	**Minor: Noxious weeds, feral animals and pathogens are known within the locality and controlled in accordance with a permit or order.**

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Aspect	Impact Description	Impact Without Control	Environmental Controls	Impact With Control
			○ In accordance with the requirements of the *NSW Biosecurity Act 2015*, associated Regulations and *NSW Weed Control Handbook*. • Biosecurity Permit issued by Council in accordance with Section 333 of the *NSW Biosecurity Act 2015*. **During Works** • The site has been identified as being affected by a biosecurity matter - Chinese Violet and Mother of Millions. • All soil or vegetation being transported offsite must be disposed of at an appropriately licenced waste facility. Failure to do so may constitute an offence under Section 23 of the *NSW Biosecurity Act 2015*. • Works must be undertaken in accordance with the Biosecurity Permit for the activity. • Clean all machinery, plant, equipment and vehicles that have operated onsite thoroughly. Establish a wash down area and monitor the presence of Biosecurity Matter, biosecurity matter. Cleaning would include the removal of all mud and plant matter, followed by washing with high pressure water. • Practice Machine Hygiene. • If priority weeds not previously identified are observed, cease works in the vicinity and follow the *Unexpected Finds Procedure*. • Minimise work during excessively wet or muddy conditions where possible. • Restrict vehicles and personnel to designated tracks, trails and parking areas. Where possible park and turn-around on hard, well drained surfaces. • Only hard well-drained surfaces will be used for parking and as turn-around points. • All machinery, plant, equipment, vehicles and boots should be clean prior to entry to the site. • Any fill, soil, mulch or plants bought onto site for landscaping purposes must be free of priority weeds and/ or weed seeds, cane toads, pathogens or any of the imported pest ant species.	

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HERITAGE	**Aboriginal** ***Applicable***	Worimi LALC has been notified of the maintenance program and requires further information on activities prior to works occurring. Much of the site is highly disturbed through previous foreshore works, natural processes and the highly modified nature of the foreshore. There is however low potential for Aboriginal heritage harm as excavation activities are being undertaken. There are numerous Aboriginal sites were recorded in an AHIMS Basic Search of the Shoal Bay foreshore [redacted] See APPENDIX 10. [redacted] 1. Shoal Bay East- [redacted] See APPENDIX 11 for the Shoal Bay East Extensive Search results [redacted] 2. Shoal Bay West- [redacted] There is still a risk that excavation works may harm artefacts without controls in place. Unexpected finds controls must be in place. See APPENDIX 12 for the Shoal Bay West Extensive Search results [redacted]. Despite the above risks, this project will also have a positive impact to potential Aboriginal heritage through the stabilisation of the dune and controlling public access points. This will minimise erosion and the risk of aboriginal artefacts being exposed.	*Moderate: Aboriginal artefact, object or places are known within the locality and could be impacted.*	• Engage with Worimi Cultural Officers to discuss scope of works prior to any works occurring. If additional environmental controls are raised by Worimi LALC to protect aboriginal heritage, they are to be documented an issued as part of project initiation documentation. All staff are to be inducted on: • The controls within this EA. • AHIMS locations of Aboriginal sites. See APPENDICES 10, 11 and 12. • Examples of aboriginal objects for identification purposes. See APPENDIX 13. • Their statutory obligations for heritage under the *NSW National Parks and Wildlife Act 1974*- it is an offense to harm Aboriginal objects by destroying, defacing, or damaging them, or by moving an Aboriginal object from the land. Shoal Bay East: - No activities are to be undertaken near scarred trees that have potential to cause damage. - No machinery to be used or excavation undertaken within the root zone. - 50m buffer for pesticide application- weed removal by hand only. - If machinery is to be used within the 50m buffer of tree, a safety spotter or observer must be designated to monitor the area and communicate with workers. • If suspected Aboriginal objects are located, works must immediately cease, the item protected (no-go zone with tape) and the incident immediately reported through to the Environmental Risk Manager. The *Unexpected Finds Field Guide* must be followed. See APPENDIX 4. • If human remain are found, works must immediately cease, the item protected (no-go zone with tape) and the incident immediately reported to NSW Police then the Environmental Risk Manager. The *Unexpected Finds Field Guide* must be followed. See APPENDIX 4.	**Minor: Aboriginal artefact, object or places are known within the locality but won't be impacted.**

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	Non-Indigenous ***Not Applicable***	No anticipated impact to non-indigenous heritage- No known non-indigenous heritage sites. There is an unlikely risk that non-indigenous heritage is found during excavation works.	*Negligible: Non-Indigenous heritage items are not known within the locality.*	• If suspected non-indigenous objects are located, works must immediately cease, the item protected (no-go zone with tape) and the incident immediately reported through to the Environmental Risk Manager. The *Unexpected Finds Field Guide* must be followed. See APPENDIX 4.	**Negligible: Non-Indigenous heritage items are not known within the locality.**
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
SOCIAL	**Amenity & Community Disturbance** ***Applicable***	Works should have a positive impact on the amenity of the site. The community has a vested interest in the maintenance of the foreshore and have been informed of the works through the CMP development and adoption. There may be periods of inconvenience to the public where access is impacted.	*Minor: Amenity and/or the community will be disturbed during works but is managed in accordance with standard operating procedures.*	• Access to work sites and around work areas will be planned and managed to reduce disturbance. • Any complaints would be addressed immediately in accordance with Council's relevant codes and policies. • Pesticide use- follow Council's *Pesticide Use Notification Plan.* • Activities that may impact public amenity and enjoyment of the foreshore should be limited in peak visitation periods- i.e. school holiday period, weekends.	**Minor: Amenity and/or the community will be disturbed during works but is managed in accordance with standard operating procedures.**
	Public Access & Safety ***Applicable***	Public beach access points may be impacted minimally by closures as works are undertaken. Alternate beach access points to be available if one is closed due to work. Areas of the foreshore may be closed periodically to ensure public safety from plant/machinery movements.	*Minor: Public access and safety will be disturbed during works but is managed in accordance with standard operating procedures.*	See *Amenity and Community Disturbance* Environmental Controls.	**Minor: Public access and safety will be disturbed during works but is managed in accordance with standard operating procedures.**
	Traffic ***Applicable***	Works will not require road closures. Potential for temporary impact to public vehicle parking and pedestrian pathways through the movement of work vehicles/trucks and plant use.	*Negligible: Minimal to no disruption.*	See *Amenity and Community Disturbance* Environmental Controls.	**Negligible: Minimal to no disruption.**
	Aesthetics (visual) ***Applicable***	Long-term positive aesthetic impact to the foreshore. New dune fencing, dune stabilisation and revegetation will improve the aesthetics and natural vista. Minimal negative visual impacts will be temporary and confined to the works period.	*Positive: The activity will improve current aesthetics issues at the site.*	See *Amenity and Community Disturbance* Environmental Controls.	**Positive: The activity will improve current aesthetics issues at the site.**

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	Land Use ***Applicable***	The activities will not change land use and do not contradict land use strategies. Activities are endorsed in the 2024 certified Coastal Management Program.	*Negligible: Improvements / maintenance of existing land use.*	See *Amenity and Community Disturbance* Environmental Controls.	**Negligible: Improvements / maintenance of existing land use.**
	Asset Maintenance ***Applicable***	The proposed outcome of these works will reduce the maintenance requirement of the asset for the immediate future. The long-term maintenance requirements will be similar to the existing maintenance project.	*Negligible: Asset maintenance will require existing Council resources.*	• Port Stephens Council will ensure this asset is retained on Council's asset register and maintenance schedules. • The newly maintained item will enhance the safety and useability of the existing parks and reserves.	**Negligible: Asset maintenance will require existing Council resources.**
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
WASTE	**Waste** ***Applicable***	The following waste may be generated during the project: • Excavated soil- Soil generated during works is to be spread on site. • Demolition waste- Mesh, fence posts, concrete footings, wire. • Pruned, removed or waste vegetation including beach debris- to be reused onsite where possible, where appropriate vegetated waste to be rafted onsite in discrete areas. • Rubbish- Generated from personnel and public	*Minor: Waste generated but is managed in accordance with a Licence or Waste Management Plan where required.*	• Refer to *EMS 3.0 Environmental Fact Sheet EFS04 Reuse of Resource Waste* provided under Council's environmental management system. Wastes will be classified in accordance with the NSW Environment Protection Authority (EPA) Waste Classification Guidelines and disposed of lawfully at a licensed waste facility. • Waste generated by the proposed works will be recycled as a first preference and the remainder will be disposed of appropriately. • All wastes would be securely stored to avoid/minimise the risk of pollutants escaping. • The work site will be left clean and free of debris and other rubbish at the end of works.	**Minor: Waste generated but is managed in accordance with a Licence or Waste Management Plan where required.**
	Stockpiles ***Applicable***	Sand, gravel, waste and mulch may be reserved to undertake the maintenance activities. Stockpiles will be temporary in nature. Potential impacts from stockpiling include: - Damage to vegetation and fauna habitat - Release of dust and sediment - Potential contamination - Impacts to public amenity	*Minor: Temporary stockpiling required.*	• Refer to *EMS 3.0 Environmental Fact Sheet EFS03 Stockpiling and Transporting Material* provided under Council's environmental management system. • No stockpile to be left on vegetated areas. • Vehicle access for stockpiles to stay to formalise access points to minimise trampling of vegetation, impact to wildlife and chance for fuel spills. • Locate stockpiles away from hazards such as areas of concentrated flow, gutters, drains, and steep slopes. • Seal off or cover stockpiles that are susceptible to wind or water erosion. • All imported materials are to be tested and classified prior to placement.	**Minor: Temporary stockpiling required.**

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				• For any excess spoil classified as contaminated, disposal of this material will be at an appropriately licensed landfill in accordance with the EPA (2014) *Waste Classification Guidelines*.	
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
HAZARDOUS MATERIALS	**Hazardous & Dangerous Goods** ***Applicable***	See *Chemicals* Impacts and Controls.	*Minor: Hazardous and dangerous goods are present or used but are managed in accordance with a Licence / standard operating procedures and are unlikely to pose a threat to environmental pollution and human health.*	See *Chemicals* Impacts and Controls.	**Minor: Hazardous and dangerous goods are present or used but are managed in accordance with a Licence / standard operating procedures and are unlikely to pose a threat to environmental pollution and human health.**
	Asbestos ***Not Applicable***	No known asbestos at the site. It is unlikely that asbestos will be uncovered during works.	*Positive: Not applicable.*	• If asbestos is exposed, cease works and follow the *Unexpected Finds Field Guide*. See APPENDIX 4.	**Negligible: No disturbance of asbestos or less than 10 square meters of non-friable asbestos to be removed.**
	Chemicals ***Applicable***	Chemicals will be present during works such as fuel, oil and pesticide. There is potential for the following impacts to occur: • Spill while refuelling at site; • Spill from plant or vehicle leak; • Spill from incorrect storage or handling of pesticides; • Overspray of pesticide polluting waterway, flora or fauna.	*Minor: Chemicals used but are managed in accordance with a Licence / standard operating procedures and are unlikely to pose a threat to environmental pollution and human health.*	• All staff will be trained in spill response procedures, have spill kits onsite and all spills will be cleaned up immediately. • In the unlikely event a pollution incident occurs, works must cease. The Environmental Incident Procedure must be followed. The incident must be reported through to the Environmental Risk Manager. • Equipment will not be used if there are any signs of fuel, oil or hydraulic leaks. Leaks will be repaired immediately or the equipment will be removed from site and replaced.	**Minor: Chemicals used but are managed in accordance with a Licence / standard operating procedures and are unlikely to pose a threat to environmental pollution and human health.**

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				• Refuelling is only to occur in controlled, appropriately bunded areas. Not on the beach or near sensitive environments. • Chemicals must be stored and handled as per the manufacturers Safety Data Sheet (SDS). SDS for chemicals used should be available onsite. No chemicals are to be stored on the beach. • Pesticide application will be undertaken by suitably qualified and experienced personnel and in accordance with the *NSW Weed Control Handbook*. • Staff to use appropriate PPE and control public access to onsite chemicals. See Controls: *Erosion and Sediments* and *Contamination*.	
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
NATURAL HAZARDS	**Bushfire** ***Applicable***	The proposed works create no greater risk to bushfire and works will be rescheduled in the event that a bushfire is in the area. The site is low risk for bush fire as per the Bush Fire Prone Land mapping. The majority of the site is categorised as vegetation buffer with the exception of Shoal Bay East vegetation located by the National Park. See APPENDIX 14 for Bush Fire Prone Land mapping.	*Negligible: Bushfire risk at the asset or location is Low to High.*	• Reschedule works in the event there is a bushfire in the area. • No naked flames near combustible materials/vegetation. • Chemicals to be stored and handled as per manufacturer SDS.	**Negligible: Bushfire risk at the asset or location is Low to High.**
	Flooding ***Not Applicable***	Works will not exacerbate flood risk.	*Positive: Not applicable.*		*Positive: Not applicable.*

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	Coastal Processes ***Applicable***	The works area is subject to coastal processes and is adjacent to the Great Lakes Marine Park General Zone. These works are endorsed in the 2024 certified CMP. The intention of the activities is to stabilise and prevent erosion of the dune environment and will have a positive impact on coastal processes.	*Minor: Location is mapped in Coastal Protection Zone but the activity/asset will not contribute to or be affected by coastal process.*	• All works will consider the effect of coastal processes at the site and planned accordingly. For example works are scheduled around tides and seasons with prevalent winds. • Works to accommodate the coastal foreshore dynamic environment by implementing the maintenance works endorsed within the certified CMP.	**Minor: Location is mapped in Coastal Protection Zone but the activity/asset will not contribute to or be affected by coastal process.**
	Extreme Weather Events ***Applicable***	Works will not increase the likelihood of extreme weather event impacts on the foreshore. The activities should increase resilience to events through increasing resilience to coastal erosion. Workers will not undertake works during extreme events.	*Negligible: The activity/asset could be affected by extreme weather events but is managed in accordance with plans and procedures.*	• In the event of extreme weather events the site will be shut down and staff removed from the site eliminating risk. • If an extreme weather event occurs causing damage, the site will be reinstated and any damage rectified as soon as practically possible; where required in consultation with relevant authorities.	**Negligible: The activity/asset could be affected by extreme weather events but is managed in accordance with plans and procedures.**
Aspect		**Impact Description**	**Impact Without Control**	**Environmental Controls**	**Impact With Control**
ENVIRONMENTAL SUSTAINABILITY	**Natural Resources** ***Applicable***	The use of natural resources will be temporary in nature and confined to the maintenance period. Activities require the use of the following natural resources: - Fuel, oil - Timber - Potential quarried gravel for access paths - Water use	*Minor: The activity or development will commit to natural resource consumption with sustainable alternatives investigated and implemented.*	• Potential energy use will be minimised by keeping all construction machinery in good working order. • Access to work sites and around work areas will be planned and managed to reduce disturbance. • Work machinery or vehicles would not be left idling or running when not in use. • Recycled materials will be resourced where possible and feasible to do so. Where possible materials will be recycled for reuse on site. • Where possible local construction materials, labour and equipment will be sourced to reduce transport requirements and limit the use of finite resources.	**Minor: The activity or development will commit to natural resource consumption with sustainable alternatives investigated and implemented.**
	Ecological Sustainability ***Not Applicable***	This project will have a positive impact on ecological sustainability through reducing the impact of the public on the coastal environment and improving dune resilience to erosion.	*Positive: Not applicable.*	NIL	**Positive: The activity will improve ecological processes at the site.**

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Aspect		Impact Description	Impact Without Control	Environmental Controls	Impact With Control
ONGOING EFFECT	**Cumulative, Accumulative, Degrading** ***Applicable***	The project will have minor, short-term degrading impacts such as waste and emissions. The activities intend to improve the resilience of the foreshore environment from coastal erosion, enhance the quality of dune vegetation to support local ecological populations and reduce ongoing maintenance requirements, generating positive future impacts.	*Minor: Minor cumulative / accumulative / degrading effect at the location from the activity.*	See controls within EA above.	**Negligible: No cumulative / accumulative / degrading effect at the location from the activity.**
	Transformative, Long-Term ***Applicable***	The works aim to improve the resilience of the foreshore environment from coastal erosion, enhance the quality of dune vegetation to support local ecological populations and reduce ongoing maintenance requirements. Scale of impact: Localised transformative impact.	*Positive: The activity will have a positive long-term or transformative impact on the environment.*	N/A	**Positive: The activity will have a positive long-term or transformative impact on the environment.**

OVERALL ENVIRONMENTAL IMPACT

The highest outcome in the impact with control column is the overall impact of the activity

☐ Positive ☐ Negligible ☒ Minor ☐ Moderate ☐ Potentially Significant

If all final impacts are <u>negligible or minor</u>, complete Section 6: Declaration and Section 7: Determination.

If any final impact is moderate or potentially significant, reconsider Environmental Controls (refer to the Environmental Assessment Guide – Standard Environmental Control Chapter), reconsider design, or move to a Level 3 Environmental Assessment.

This Form is a report for the consideration and control of potential negative impacts on the environment to determine if the activity should be undertaken. It does not constitute permission to undertake works. Refer to EMS 3.0 Environmental Assessment Procedure for appropriate delegations and training requirements for the Assessing and Authorising Officer.

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SECTION 6: DECLARATION

See Appendix 1 for a checklist to ensure the document is fully complete before signing

As the Assessing Officer preparing the assessment, I certify to the best of my knowledge that:

- This assessment provides a true and accurate review of the activity in relation to its likely impacts on the environment. It contains neither false nor misleading information.
- The activity has been assessed to have a minor, negligible or positive overall environmental impact
- The environmental impacts of the activity are NOT likely to be significant and therefore an EIS is NOT required
- The activity will not be undertaken in a declared area of outstanding biodiversity value and is NOT likely to significantly impact threatened species, threatened ecological communities or their habitat. Therefore a SIS and/or BDAR is NOT required.
- I am delegated to undertake this assessment.
- I have assessed the activity in accordance with Council's EMS 3.0 Environmental Assessment Procedure and the Environmental Assessment: Level 2 Form

Name	Position/Title	Service Unit	Signature	Date
Laura Renehan	**Community Asset Planner**	**Assets**	[redacted]	**6/8/2025**

SECTION 7: DETERMINATION

See Appendix 2 for a Determination checklist to ensure the document is compliant before signing

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As the Authorised Officer on behalf of Council as the determining authority, I certify that:

- I have reviewed and endorse the contents of this EA document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.
- The environmental impacts of the activity are NOT likely to be significant, therefore no EIS or SIS and/or BDAR is required, and the activity may proceed subject to the implementation of all mitigation measures set out in Section 5 of the EA document.
- I am delegated to authorise this assessment on behalf of Council as the determining authority
- The activity has been adequately assessed in accordance with Council's EMS 3.0 Environmental Assessment Procedure and the Environmental Assessment: Level 2 Form.

Name	Position/Title	Service Unit	Signature	Date
John Maretich	**Assets Section Manager**	**Assets**	[redacted]	**19/08/2025**

SECTION 8: APPENDICIES

Item	CEMP Inclusion
APPENDIX 3- SHOAL BAY SITE MAPPING 26/06/2025	
APPENDIX 4- PORT STEPHENS COUNCIL UNEXPECTED FINDS FIELD GUIDE 2025	
APPENDIX 5- ACID SULFATE SOILS IFM MAPPING 29/05/2025	

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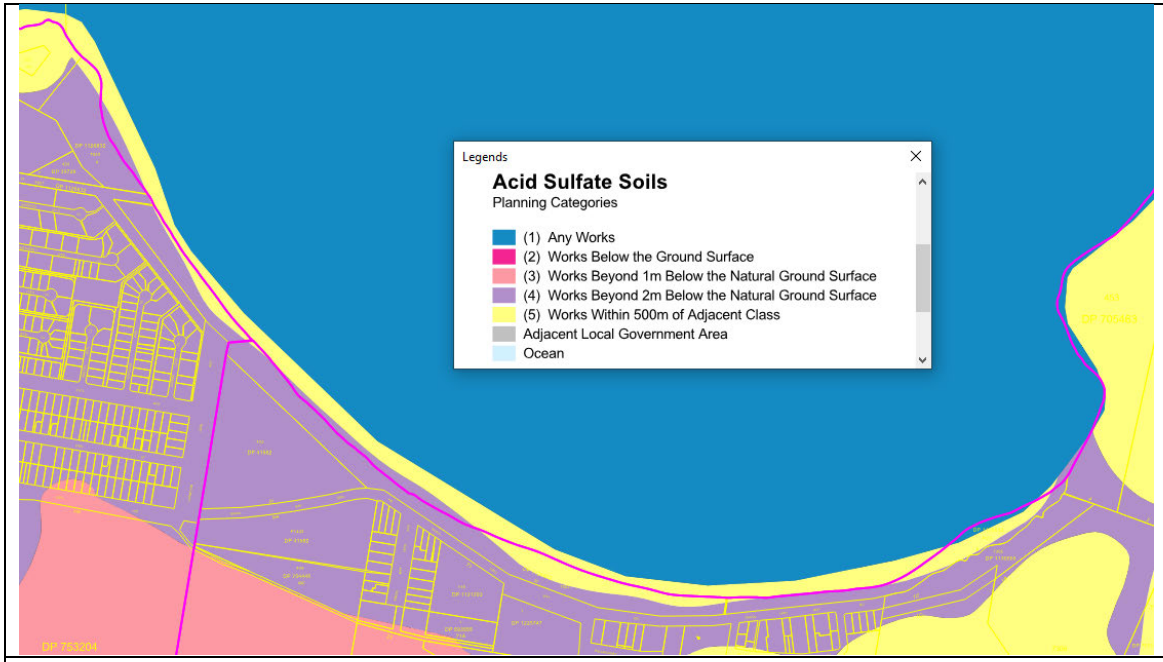

APPENDIX 6- ESTUARINE MACROPHYTES IFM MAPPING 19/06/2025

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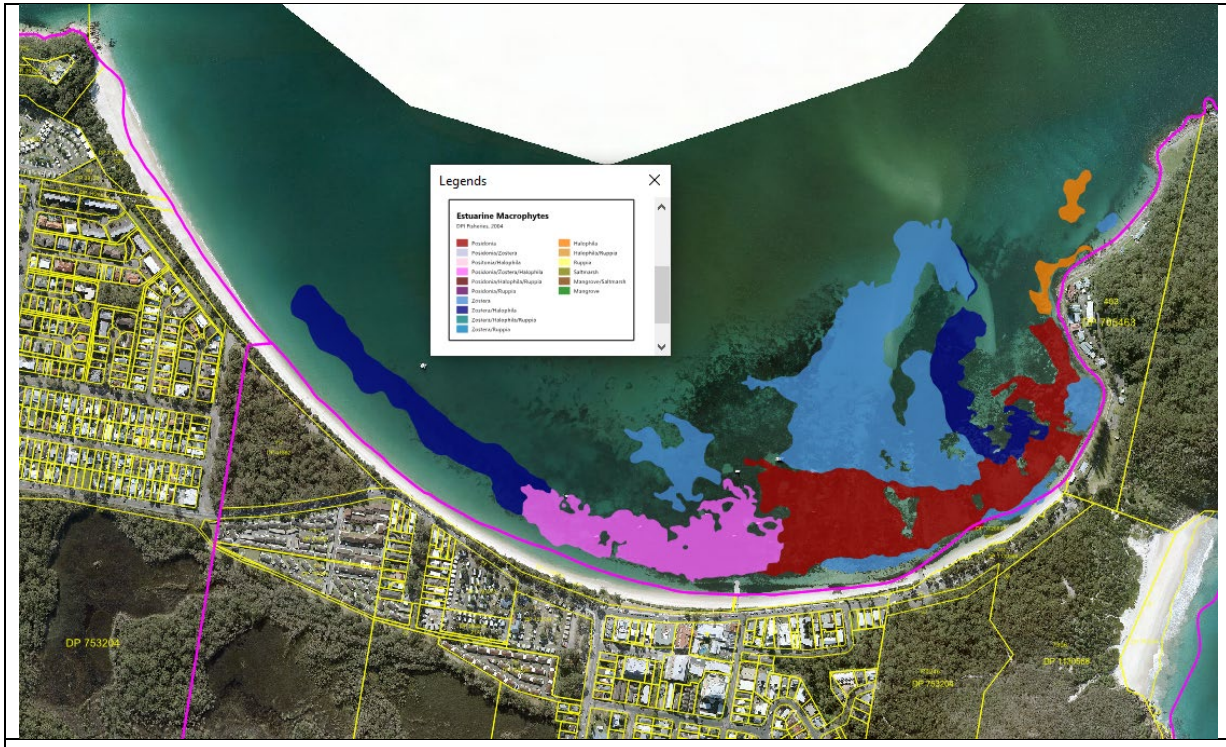

APPENDIX 7- THREATENED SPECIES IFM MAPPING 19/06/2025

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IMAGE: Red icons indicate Sea Spurge. Orange indicated Netted Bottle Brush.

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IMAGE: Location of SEPP Littoral Rainforest indicated in orange.

IMAGES: Sea Spurge *Chamaesyce psammogeton.* Source- NSW Bionet 19/06/2025.

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IMAGE: Netted Bottle Brush *Callistemon linearifolius*. Source- PlantNET 26/06/2025.

APPENDIX 8- INVASIVE SPECIES MAPPING- IFM 16/05/2025

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IMAGE: Chinese violet *(Asystasia gangetica)*. *Source*: NSW DPI 6/8/2025


IMAGE: Mother of Millions *(Bryophyllum species)*. *Source:* NSW DPI 6/8/2025

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APPENDIX 9- INVASIVE SPECIES REFERRAL	
APPENDIX 10- SHOAL BAY AHIMS BASIC SEARCH REPORT- Date: 08/05/2025	
APPENDIX 11- SHOAL BAY EAST EXTENSIVE AHIMS SEARCH REPORT- Date: 28/09/2023	
APPENDIX 12- SHOAL BAY WEST EXTENSIVE AHIMS SEARCH REPORT- Date: 05/06/2025	
APPENDIX 13- NSW GOVERNMENT- EXAMPLES OF ABORIGINAL OBJECTS HANDOUT	

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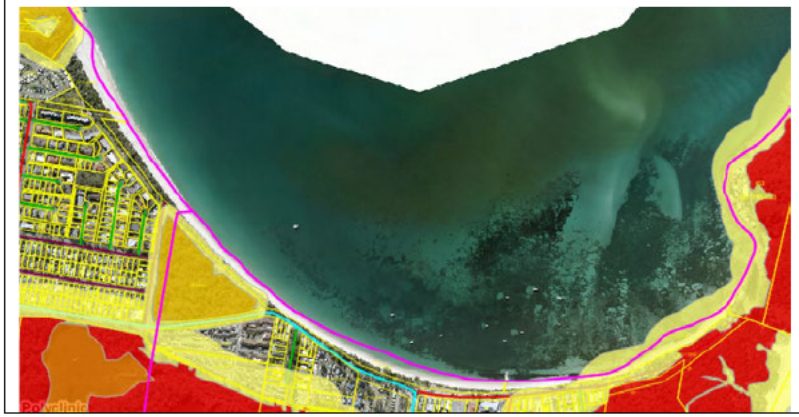
APPENDIX 14 – BUSH FIRE PRONE LAND- IFM MAPPING 16/05/2025



Appendix 1: Declaration Checklist - Assessing Officer

Before signing the declaration in section 6 as the person undertaking the assessment, please check the following-

Section	Items to check	Completed?
Section 1	Does the description of the works contain sufficient detail? (photos, details of scope, depth of excavation etc)	☑
	Consideration of alternatives completed?	☑
	Are all location details completed? (land zoning, land owner, site map)	☑

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Section 2	Are all boxes in section 2 ticked Yes or No?	☑
	Are the two boxes in ***Pathway 1: Local Development (Part 4)*** ticked No? *(If Yes, you have selected that a DA is needed. This form cannot be used if a DA is required).*	☑
	Is the correct clause/s listed for the approval pathway in ***Pathway 3***?	☑
Section 3	Are all responses 'No'? *(If not, a higher level of assessment is likely required).*	☑
	Does each response have a justification in the form of a sentence or paragraph? Are searches and checks referenced (e.g. AHIMS search ID number)?	☑
Section 4	Is there a Yes or No response for each of the approvals/permits in the applicability column (right hand column)?	☑
Section 5	Is applicable or non-applicable selected in the applicability drop down for each aspect?	☑
	Are all selected 'impacts after controls' assessed as minor, negligible or positive? *(If not, a higher level of assessment is required)*	☑
All items in this list must be completed before the declaration in Section 6 is signed by the assessing officer		

Appendix 2: Determination Checklist- Authorising Officer

Before signing the Determination in section 7 as the delegated person on behalf of Council, please check the following -

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Section	Items to check	True?
Section 3	Are none of the environmental impact triggers in Section 3 triggered by the activity?	☐
Section 5	Is every impact after controls in the far right column of section 5 minor or below? (If moderate, potentially significant or significant, *a higher level of assessment is needed or more effective controls are required).*	☐
	Is the overall environmental impact at the end of Section 5 minor or below? *(If above Minor, a higher level of assessment is needed or more effective controls are required).*	☐
	That the activity has been assessed in accordance with the EMS3.0 Procedure	☐
If all these items are true, the assessment has found that the activity will not significantly impact the environment. An Environmental Impact Statement (EIS), a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report (BDAR) is therefore not required.		

PORT STEPHENS COUNCIL

UNEXPECTED FINDS

FIELD GUIDE

Unexpected Finds Guide Revision Table

Version	Date	Author	Details
1.0	September 2024	Environmental Risk Officer	First Release - New document

References

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Disclaimer: This guide is relevant to standards and pathways at the time of review. Always confirm with Councils Environmental Risk Team on correct procedure if unsure. Photo references are attached to the images.

BEST MANAGEMENT PRACTICES FOR UNEXPECTED FINDS

Planning work:

- Whilst all efforts are made when assessing the impacts of a project in the Environmental Assessment, unexpected finds during works may occur.
- Ensure all staff on site are aware of potential risks identified in the Environmental Assessment or CEMP during daily toolbox talks. This may involve consideration of historical site use and recent weather patterns.
- Familiarise yourself with identifiable characteristics of unexpected finds.

Controls: Install and complete all controls identified in planning documentation.

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ACID SULFATE SOILS

When disturbed, acid sulfate soils (ASS) reacts with oxygen to form an acid which releases metals into the environment. These toxins can kill plants and aquatic life, corrode concrete, iron and steel, and irritate skin and eyes.

https://lnu.se/en/research/research-projects/project--geochemical-mineralogical-and-microbiological-characterization-of-acid-sulfate-soils/

Identification

- Undisturbed ASS are always wet / entirely saturated.
- Steely blue-grey colour ranging from pale to dark shades, sometimes greenish.
- Strong smell of sulfur (rotten eggs) coming from the soil.
- Exposed soils can be quite dry and blocky, colours becoming dark to pale browns with yellow and orange mottling

PROCEDURE

1. Cease works and notify Site Team Leader.
2. Team Leader notifies Project Manager and Environmental Risk Manager. For less than 1 tonne of ASS, it may be kept on site and mixed with lime to neutralise before reusing. See EMS Factsheet on Acid Sulfate Soils for details.
3. For over 1 tonne of ASS, Project Manager to engage a Geotechnical Engineer with experience in dealing with acid sulphate soils.
4. Consultant undertakes assessment in accordance with the NSW Acid Sulfate Soils Manual (1998) and National Acid Sulfate Soil Guidelines (June, 2018) which includes:

- National acid sulfate soils sampling and identification methods manual (June, 2018).
- Guidance for dewatering of acid sulfate soils in shallow groundwater environments (June, 2018).
- Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil management (June, 2018).
- Overview and management of monosulfidic black ooze accumulations in waterways and wetlands (June, 2018).

5. **Excavations within vicinity of the find do not recommence until the extent of the acid sulphate soil has been assessed as advised by the consultant.**
6. Any necessary controls implemented as advised by the consultant.
7. Where material is removed, classify and dispose of the material in accordance with the NSW Waste Classification Guidelines (2014) under advice of the environmental consultant (likely general solid waste once treated).

ASBESTOS

Identification

- Naturally occurring asbestos can be blue, brown, green or white, however when mixed with building materials or painted can appear any colour.
- It may be friable (can be reduced to powder by hand) or non-friable (mixed with cement or other bonding material and cannot be crumbled).

PROCEDURE

1. Cease works immediately and cordon off the area. Do not attempt to move the asbestos.
2. Notify Site Team Leader.
3. Team Leader notifies Project Manager, Environmental Risk Manager and WHS Manager.
4. Further activities to be undertaken in accordance with the Safe Work Method Statement for Asbestos Identification (SWMS Asbestos) and Removal in Public Amenities and Public Space and Code of Practice for the Safe Removal of Asbestos (SafeWork NSW 2022). Generally:

    - Site supervisor to log incident. If asbestos is broken and not wrapped, engage a hygienist to assess the find and assist in deciding the next course of action.
    - Up to 10m^2 of non-friable asbestos can be removed from site without a licence by staff that have completed the Asbestos Awareness Training, however, **it is up to supervisor to determine if it is reasonable for staff to remove** (SafeWork NSW 2022). Remove and wash down any contaminated materials wearing correct PPE and in line with SWMS Asbestos.
    - If over 10m^2 or friable, a licensed asbestos removalist will need to be engaged.
    - No works shall be conducted in the area until it has been confirmed clear of asbestos *or* a suitably competent person has been engaged to remediate the area.

https://www.asbestos.nsw.gov.au/asbestos-in-australia

BURIED STRUCTURES OR DRUMS

Unidentified buried structures or drums can pose a significant potential hazard to works. They could be storage tanks for hazardous substances, septic tanks, wells, pipelines, basements, ex-military structures and unmapped infrastructural assets.

PROCEDURE

1. Cease works immediately and do not further disturb any structures or drums. **Evacuate staff from site if there is risk of instability or collapse**.
2. Notify Site Team Leader.
3. Team Leader notifies Project Manager and Enterprise Risk Team.
4. a) If unidentified storage tank or drum, a qualified HAZMAT contractor must be engaged to assess potential risks.

   b) If unexpected structure, a structural engineer or geotechnical engineer should be engaged. Should the structure be suspected heritage, see procedure for non-Indigenous heritage finds.

5. Once the buried aspect has been determined, take necessary steps to stabilise or safely remove. For example, storage tanks that have filled with water but previously contained hazardous material must ensure water is properly treated as per groundwater unexpected find procedure.

https://www.safework.nsw.gov.au/safety-alerts/safety-alerts/potential-risk-when-removing-underground-storage-tanks

COAL TAR

Coal tar was commonly used as a binder for bitumen up until about 1989, and occasionally may be accidentally used in recycled asphalt mixes. It can be found as a subsurface layer of modern bitumen asphalt. Coal tar is a classified hazardous substance with risk to human and environmental health. The substance exudes a distinct odour when heated and can be verified through laboratory testing.

PROCEDURE

1. Cease works immediately and prevent further disturbance of the site.
2. Notify Site Team Leader. Any areas of exposed skin should be washed with soap and water. Sunscreen or protective barriers should be applied to any exposed skin. Full PPE should be worn by any staff continuing works in the area (overalls, gloves, respirator, and eye protection).
3. Team Leader notifies Project Manager and Enterprise Risk Team.
4. Follow SWMS for Excavation Works with Coal Tar Affected Material such as keeping area damp, and excavating into bunded area.
5. Material must be disposed of at licensed waste facility. **Coal tar cannot be reused or stockpiled at any Council stockpile sites**

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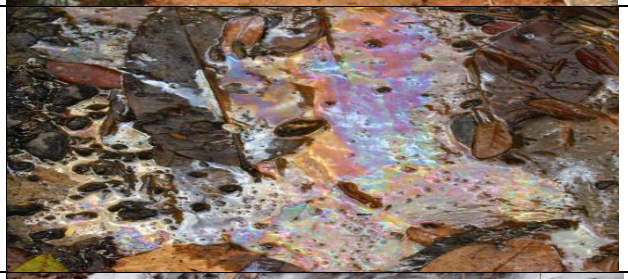
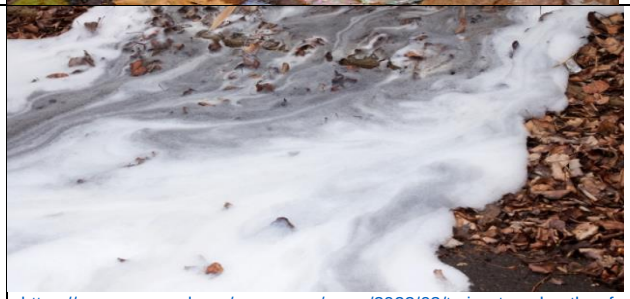
CONTAMINATED LAND

Land may be contaminated with a variety of pollutants that pose various risks to planned activities. Land is at higher risk of contamination if it has been historically used for industry, agriculture or chemical storage (service station, dry cleaner). The below procedure generally applies to all forms of contaminated land, and the following page outlines potential finds of contamination.

PROCEDURE

1. Notify Site Team Leader.
2. Team Leader notifies the Project Manager and Environmental Risk Manager.
3. Project Manager to engage a Certified Environmental Practitioner (Site Contamination) by the Environment Institute of Australia and New Zealand or a certified Professional Soil Scientist Contaminated Site Assessment and Management by Soil Science Australia.
4. Consultant undertakes assessment in accordance with the Consultants reporting on contaminated land: Contaminated Land Guidelines (April, 2020).
5. **Excavations within vicinity of the find do not recommence until the extent of the contamination has been assessed as advised by the consultant**.
6. Any necessary controls implemented as advised by the environmental consultant.
7. Where material is removed, classify and dispose of the material in accordance with the NSW Waste Classification Guidelines (2014) under advice of the environmental consultant.

The below table outline some common potential finds of contaminated land.

Potential find	Characteristics	Risk/ danger	Visual
Ash or slag deposits	Light weight, grey/pale sand and gravel sized particles.	Can contain heavy metals and create alkaline leachate. Buried concrete or structures could be present.	 https://www.atlcombustion.com/ash-deposition/
Buried dry waste materials	Wood, plastic, metal fragments, building waste.	Asbestos or heavy metals.	 https://www.greencap.com.au/news/2022-01-managing-risks-asbestos-soils
Petroleum hydrocarbons	Oily odour, dark staining, iridescent sheen on water.	Petro-chemicals, lead, and/or vapours.	 https://www.hunterjo.com.au/wp-content/uploads/2022/05/Communicating-Information-through-Property-Notations.pdf
PFAS	Foaming in water where there is low flow/agitation.	Forever chemicals that are hazardous to human health.	 https://www.unsw.edu.au/newsroom/news/2023/03/trying-to-solve-the--forever-problem--of-pfas-pollution

GROUNDWATER

Unexpected groundwater can impact the stability of works and in some cases lead to landslips or water pollution. Groundwater should be addressed as soon as it is detected to ensure impacts to works and groundwater quality are minimal.

PROCEDURE

1. Notify Site Team Leader. **Take all necessary measures to prevent water leaving the site including reinforcing erosion and sediment controls. Spill kits may be used, sediment socks on pipes and gravel bags or coir logs to filter water until dewatering plan is provided.** Refer to Erosion and Sediment Control Field Guide (PSC) or Blue Book for further control measures.
2. Team Leader notifies Project Manager and seek advice from Environmental Risk Manager.
3. For large volumes of groundwater, Project Manager to engage a suitably qualified and experienced person with experience in the preparation of such plans to develop a dewatering plan in accordance with the Water Management Act (2000) and other relevant legislation.
4. Subject to the conditions of the dewatering plan, the appropriate approvals and licences should be in place prior to dewatering activities being undertaken on site, such as;

- Water supply work approval
- Water access licence (WAL)
- Water use approval

In an emergency event, limited dewatering may occur without licensing if there are significant risks to health, safety, environment or infrastructure (under the Water Management Amendment (Emergency Works Exemption) Regulation 2018). Only necessary measures to address significant risk may be undertaken. Any further activities will not be covered under the exemption, and information must be provided to the department before or as soon as reasonable after commencing emergency works. Contact the Environmental Risk Officer.

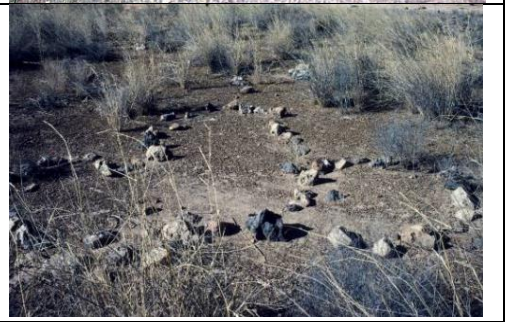
5. A dewatering plan which must be reviewed and approved by Council's relevant project officers and environmental risk prior to commencing dewatering.
6. Excavations within the vicinity of the find that could contribute to dirty water leaving the site will not recommence until the dewatering has been implemented in accordance with approved dewatering plan.

HERITAGE (ABORIGINAL)

PROCEDURE

1. Cease works, protect the item (no-go zone with tape) and Notify Site Team Leader.
2. Team Leader notifies Project Manager and Environmental Risk Manager. The **potential find should be logged as an environmental incident** including photographs in situ, location and brief description made by staff onsite.
3. Project Manager to engage a suitably qualified and experienced archaeologist to ensure the site is adequately assessed and managed. If the item is positively identified, the archaeologist will formally record in the Aboriginal Heritage Information Management System (AHIMS). Notification to Heritage NSW/DEECCW by the Environmental Risk Team may be required if harm has occurred. The Project Manager will notify the applicable Local Aboriginal Land Council (Worimi or Karuah).
4. An archaeological/ heritage management plan will need to be prepared with consideration of heritage approvals and mitigation measures. This should be provided to the Project Manager outlining all relevant issues and constraints. If continuation of the activity will directly or indirectly harm an Aboriginal object or declared Aboriginal Place, an Aboriginal Heritage Impact Permit (AHIP) will be required before works recommence.
5. Any necessary controls must be implemented as advised by the consulting archaeologist and/ or in accordance with the AHIP where required. CEMP will need to be updated to reflect changes.

Potential find	**Characteristics**	**Visual**	**Potential find**	**Characteristics**	**Visual** (images from DECCW 2010 unless specified)
Art (rock or engraving)	Stencils of hands, paintings of animals or shapes made from charcoal, clay or ochre. Carvings of images into rock.	 https://www.aboriginalheritage.org/sites/identification/	Scarred trees	Living or dead trees with modified outer-bark. High cultural significance.	

Potential find	**Characteristics**	**Visual** (images from DECCW 2010 unless specified)	**Potential find**	**Characteristics**	**Visual** (images from DECCW 2010 unless specified)
Axe grinding grooves	Marks in stone used to sharpen tools, often found near waterways to avoid tools overheating during the grinding process.		Shell middens	Accumulations of shells or bones indicating place of meeting or burial.	
Occupation sites	Scatter sites containing materials such as charcoal, bone, shell and ochre. Fire pits or hearth sites of circular, burnt clay or rock.		Stone arrangements	Shapes and patterns of rocks that have been purposefully moved into place. May indicate ceremonial site.	
Relics / stone tools	Spear points, surface scatters, grinding stones, ground-edge axes and other purposed materials.		Quarry sites	Collections of stone around outcrops or natural accumulations, and are often associated with nearby important sites and trade routes.	

HERITAGE (NON-ABORIGINAL)

Archaeological relics or items may be of local or state significance relating to past domestic, industrial or agricultural activities in NSW.

Identification

- Military equipment
- Building materials
- Structures
- Pottery / bottles
- Historic pavements/roads
- Cisterns
- Remnants of clothing
- Tramlines

PROCEDURE

1. Cease works and notify Site Team Leader. Create a ‘no-go zone’ around the find.
2. Team Leader notifies Project Manager and Environmental Risk Manager. The **potential find should be logged as an environmental incident** including photographs in situ, location and brief description made by staff onsite.
3. Project Manager to engage a suitably qualified and experienced archaeologist to ensure the site is adequately assessed and managed. If the item is positively identified, the consultant will provide an assessment of site, constraints and control measures to accompany formal notification to Heritage NSW in accordance with Section 146 of the NSW Heritage Act 1977 (as amended) in the ‘Heritage Management System (https://www.hms.heritage.nsw.gov.au/).
4. If the activity will directly or indirectly impact an identified heritage item a section 60 works approval or excavation permit may be required. An application must be lodged in the Heritage Management System and can take forty days for determination.
5. Any necessary controls must be implemented as advised by the consulting archaeologist and/ or in accordance with the section 60 works approval or excavation permit where required. This should also be updated in the CEMP.

https://www.sydneymetro.info/sites/default/files/2023-07/Procedure%20-%20Unexpected%20Heritage%20Finds%20v5.0.pdf

https://www.abc.net.au/news/2024-06-19/suspected-human-remains-found-coffs-harbour-beach/103995086

HUMAN REMAINS / BONES

Human remains can be a confronting and surprising find. It is important correct procedure is followed to reduce strain on staff, community and culture.

Remains must be assessed by qualified professionals to determine if they are human and time since death. If it is less than 100 years old, the find belongs to the State Coroner and if greater than 100 years old will either be protected by National Park and Wildlife Service or Heritage NSW.

PROCEDURE

1. Cease works immediately and notify Site Team Leader. Create a 'no-go zone' around the find. **All bones must be treated as potential human remains, protected and investigated urgently.** Project Manager to engage a suitably qualified forensic or physical anthropologist to assess the finds in consultation with NSW Police. Unless determined to be non-human remains, police should be contacted via phone immediately and may take over site management until age of remains determined.
2. Team Leader notifies Project Manager and Environmental Risk Manager. The find should be logged as an environmental incident.
3. If finds are determined to be non-human but of archaeological significance, the item should be formally recorded before works resume.
4. If finds are determined to be greater than 100 years old and of non-Aboriginal heritage, contact Heritage NSW currently locally situated at Hunter National Parks and Wildlife Service (Anna Bay or Newcastle) for advice.
5. If finds are determined to be greater than 100 years old and of Aboriginal heritage, contact relevant Local Aboriginal Land Council (Worimi or Karuah) and Hunter National Parks and Wildlife Service (Anna Bay or Newcastle)
6. The heritage consultant can provide an assessment of site, constraints and control measures to accompany formal notification to the relevant authority in accordance with Section 146 of the NSW Heritage Act 1977 (as amended) or Section 90 National Parks and Wildlife Act 1974. Refer to Heritage Unexpected Finds for procedure (previous page).
7. Any necessary controls must be implemented as advised by the consulting archaeologist and/ or in accordance with the section 60 works approval or excavation permit where required. This should also be updated in the CEMP.

INVASIVE SPECIES (WEEDS)

The LGA has a number of unwanted invasive weed species that threaten the integrity of community, bushland, sport fields, recreational areas, roadsides and agriculture. It is essential Council is not spreading weeds across sites. Workers should familiarise themselves with common priority weeds in the area to assist with identification, and send photos to Invasive Species staff if uncertain.

Common Priority Weeds

- African Olive
- Alligator Weed
- Asparagus weeds
- Chinese Violet*
- Crofton Weed
- Coral Creeper*
- Giant Parramatta Grass
- Glory Lily*
- Green Cestrum
- Groundsel Bush*
- Hygrophila* (aquatic)
- Long Leaf Willow Primrose (semi-aquatic)
- Ludwigia Peruviana (semi- aquatic)
- Madeira Vine
- Mother of Millions
- Prickly Pear (Optunia species)
- Pampas Grass
- Patersons Curse
- Rattle Pod*
- Salvinia (aquatic)
- Sea Spurge*
- Spiny Burr Grass
- St Johns Wort
- Sticky Nightshade*
- Water Hyacinth (aquatic)
- Water lettuce* (aquatic)

PROCEDURE

1. Notify Site Team Leader and take all reasonable steps to avoid disturbing area. Machinery and PPE should be thoroughly checked for any organic materials before leaving site.
2. Team Leader notifies Project Manager.
3. Project Manager notifies Environmental Operations Team Leader.
4. Further activities to be undertaken in accordance with the advice provided by the Environmental Operational Team Leader and/ or Invasive Species staff (4988 0464) to ensure compliance with the NSW Biosecurity Act 2015.

* *Eradication order*

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THREATENED FLORA

There are currently 26 threatened plant species in the LGA from orchids to shrubs to trees. While staff are not expected to easily identify these species, it is important to be open to the direction of environmental professionals and take all precautions to avoid disturbing vulnerable plant species.

Diuris praecox

PROCEDURE

1. If there are any concerns or potential for a threatened species to be unexpectedly identified on site, avoid disturbing the area and notify Site Team Leader.
2. Team Leader notifies Project Manager and the Project Manager notifies the relevant internal staff with environmental technical expertise.
3. The area where the threatened flora species may occur must be roped off with stake and string or fluro ties or other suitable exclusion fencing alternative.
4. Project Manager to engage a suitably qualified and experienced ecological consultant to undertake targeted survey if required or Council's ecologist to positively identify the find.
5. PM to provide Environmental Risk Officer and relevant internal environmental officer targeted survey findings.
6. Relevant environmental staff to provide technical advice based on avoid, mitigate and offset approach and develop an Environmental Assessment Amendment and include or revise any Tests of Significance or Assessments of Significance as required under NSW Biodiversity Conservation Act 2016 and Commonwealth Environment Protection Biodiversity Conservation Act 1999. Advice to be provided to avoid significant impact.

Significant impact unlikely	*Significant impact likely.*
1. PM to arrange sign off of Environmental Assessment Amendment.	1. Project Manager to engage ecological consultant to prepare a species impact statement (or BDAR if electing to participate in the biodiversity offsets scheme) to accompany the Environmental Assessment. Liaise with NSW Biodiversity Conservation Division for further advice.
2. Works to proceed based on advice provided by Project Support Environment Officer in Environmental Assessment Amendment.	2. Mitigation measures from species impact statement to be implemented.

WILDLIFE

Port Stephens hosts a variety of threatened frogs, reptiles, birds, mammals and insects that require species protection to ensure continuation of the species. Animals that may be encountered are;

https://australian.museum/learn/animals/birds/beach-stone-curlew/

- Wallum froglet
- Mahoney's toadlet
- Sea turtles
- Wompoo Fruit Dove
- Seabirds/ migratory birds
- Owls
- Regent Honeyeater
- Koala
- Gliders
- Micro bats
- Flying foxes
- Seals
- Parrots
- Giant dragonfly

PROCEDURE

1. If fauna are passing through the site, cease works within 100 m of the fauna and allow fauna to move through the site without undue duress or harassment.
2. If the fauna is not passing through the site, Team Leader notifies Project Manager and the Project Manager notifies the relevant internal environmental officer.
3. If any injured fauna are present, they must be cared for. If safe to do so, contain in a dark, quiet place until it can be taken to an appropriate veterinary clinic. Contact native wildlife rescuer to capture and transport the fauna to medical care (WINC 1300 946 295).

Native non-threatened species	*Threatened species*
5. Agitate tree or nearby vegetation to encourage fauna to vacate (if fauna poses no threat to human safety).	5. Issue an immediate cease of works to allow fauna to vacate. Contact Natural Systems or an ecological consultant for positive identification of species.
6. If not vacating, Project Manager to engage suitably qualified and licenced fauna spotter/ catcher or contact a native wildlife carer to relocate fauna (consider if juvenile wildlife have parents nearby i.e. magpies juveniles may sometimes be left alone but not abandoned).	6. If not vacated, contact Environmental Risk Team for further advice. A license or approval is required to interfere with threatened species.
7. Relocate fauna captured and not requiring treatment into the same habitat near the point of rescue at dusk or leave inside any removed hollows outside the works area.	7. Implement actions in accordance with advice.

8. Record all findings and email to Environmental Risk Officer and other relevant environmental project officers involved in the project before resuming works.

Activity Procedure	**Invasive Species Referral**			
Procedure No.	Invasive Species Referral	**Revision**	0	01/07/2024
Prepared by	Natalie Nowlan – Project Support Environmental Officer			
Valid to	01/07/2026 or applicable statutory/ guideline updates			
Approved by	Barry Gentle – Project Support Team Leader			
Next Review Date	1 July 2026 (subject to relevant legislative changes)			

1. Notification

Trigger	An Environmental Assessment has been prepared to support the works. As part of the environmental impact assessment the potential for the works to cause further environmental harm due to invasive species is assessed. Port Stephens Council has a team of invasive species technical experts able to provide advice on invasive species impacts and potential environmental controls and mitigation measures to help avoid or minimise potential impacts. Advice is sought for all Capital Works projects with an emphasis on those projects within 200m of a known mapped weed infestation.	
Purpose	The purpose of this procedure is to provide a formal template for seeking advice on the potential for works to cause environmental harm in relation to invasive species management and provisions of the NSW Biosecurity Act 2015 with The Port Stephens Council Natural Systems – Environmental Operations Team.	
Scope	This procedure only applies where works involve ground disturbance or have the potential to exacerbate the potential impacts of invasive species.	
Action	Initiate request for advice	Project Support Environment Officer
Action	Conduct site visit (if required)	Invasive Species Officer
Action	Provision of advice	Invasive Species Officer
Action	Include impacts identified in the Environmental Assessment and any environmental mitigation measures in the list contained within QF-ENV-DRAFT – EA Mitigation Measures (CAP WORKS)	Project Support Environment Officer
Guidance	N/A	
Check	N/A	

2. Project

RA012- Shoal Bay foreshore CMP PDS activities

3. Description of works

Description of works	This project will undertake endorsed Coastal Management Program (CMP) action RA012. The activities will be undertaken as ongoing maintenance activities by Public Domain and Services. The project will undertake works to manage access and rehabilitate the Shoal Bay foreshore dunes. This action involves renewal of dune fencing and dune re-vegetation (including sediment controls), with a provision for ongoing annual maintenance (e.g. weeding and replanting as required).

	The proposed activities may include: • Temporary installation of site controls for erosion and sediment, traffic control and pedestrian signage • Removal of sand build up on beach areas above mean high watermark • Sand replenishment of beach access points and dune system above mean high watermark • Rehabilitation of dunes including fencing, weed control, sediment control and revegetation. • Tree maintenance – pruning, hazard reduction • Beach clean-up of debris. • Mowing of turfed areas. Machinery that may be used includes: • Pozi-track • Small excavators • Long reach excavators • Backhoe • Heavy haulage trucks • Ride on lawn mower • Edger • Auger Key processes: • Revegetation works – digging small scale planting holes, native planting and erosion control • Delivery of materials – small tipper truck and/or work ute deliveries of materials. Heavy haulage vehicles may be required on occasion. • Demolition – limited to removal of old and/ or damaged fencing as part of maintenance activities and any failed plantings. • New/ replacement fencing - Post hole digging to a typical depth of approx. 600mm. May also include staked fencing driven into existing ground; primarily wind blown sands. Timer, shade cloth, wire. • Stockpiling – Mostly existing materials on site, or sand from within the system. Imported material such as gravel for access • Machinery, Vehicles and tools – typically small trucks/utes and earth moving equipment, auger, ditch witch. • Weeding – low impact, hand removal expected. Use of herbicides may be required. • Irrigation – utilisation of existing irrigation systems where feasible. Establishment irrigation by hand or vehicle mounted equipment may be required
Locality / Works map	The CMP does not specify exact locations on Shoal Bay foreshore where the activities need to be undertaken. Works may be undertaken in the following lot/dps. Shoal Bay Foreshore Lot/DPs: 7020/1126832 7021/1126832 7022/126832 7023/126832 7305/1130568 180/753204

	Potential works on the boundary of Lot/DPs: 432/41582 424/3978 Harwood Ave Road Reserve Shoal Bay Road Reserve Area for anticipated works highlighted red below. 
Material being removed from site	Yes ☒ Old dune fencing materials that are being replaced will be removed from site. No ☐

4. Weeds Infestations (map)

Number of invasive species identified onsite and within 200ms of the site. Including:

- Chinese Violet
- Mother of Millions
- Opuntia and Cylindropuntia
- Rattlepod
- Gloria Lilly

5. Site Visit

Date	01/08/2025
Findings	Mother of Millions and Chinese Violet found.
Date referral advice is valid to	

6. Environmental controls and mitigation measures – standard controls

Prior to works commencing	
Weed control requirements included in induction	☒
During works	

For invasive weed species: • If priority weeds not previously identified are observed, cease works in the vicinity and follow the Unexpected Finds Procedure. • Minimise work during excessively wet or muddy conditions where possible. • Restrict vehicles and personnel to designated tracks, trails and parking areas. Where possible park and turn-around on hard, well drained surfaces. • Only hard well-drained surfaces will be used for parking and as turn-around points. • All machinery, plant, equipment, vehicles and boots should be clean prior to entry to the site. • Any fill, soil, mulch or plants bought onto site for landscaping purposes must be free of priority weeds and/ or weed seeds, cane toads, pathogens or any of the imported pest ant species.	☒
Upon completion of works & operation and maintenance	
A hydro mulch mix of local provenance seed or sterile cover crop that is free from weeds certified by the supplier would be used.	☐

7. Environmental controls and mitigation measures – non-standard controls

Prior to works commencing	☐
Removal, treatment and/ or suppression must be undertaken of [Chinese Violet and Mother of Millions]: • Using approved bush regeneration techniques. • Under the supervision of a suitably qualified and experienced bush regenerator. • In accordance with the requirements of the *NSW Biosecurity Act 2015*, associated Regulations and NSW Weed Control Handbook.	☒
Biosecurity Permit issued by Council in accordance with Section 333 of the *NSW Biosecurity Act 2015*.	☒
Inspection by a representative of Council's Invasive Species team one week prior to works commencing.	☐
Installation of exclusion fencing that includes to temporary fencing, bunting tape or similar and signage that is clearly visible from a distance of at least 20m that is general in nature e.g. 'Exclusion Zone' to protect or avoid priority weed infestations.	☐
Comments/ other, specify:	☐
During works	
The site has been identified as being affected by a biosecurity matter [Chinese Violet and Mother of Millions]. All soil or vegetation being transported offsite must be disposed of at an appropriately licenced waste facility. Failure to do so may constitute an offence under Section 23 of the *NSW Biosecurity Act 2015*. Works must be undertaken in accordance with the Biosecurity Permit for the activity.	☒
The site has been identified as being affected by Biosecurity Matter, [Biosecurity matter]. Soil under the road pavement and not within 0.5m of the edge of road may be transported offsite for use at another site or to a temporary stockpile site in accordance with the Excavated Public Road Material Order 2014. Soil or vegetation within 0.5m of the edge of the road and within the road shoulders must be disposed of at an appropriately licenced waste facility. Failure to do so may constitute an offence under Section 23 of the *NSW Biosecurity Act 2015*. Works must be undertaken in accordance with the Biosecurity Permit for the activity.	☐
Works should move from uninfected areas to infected areas with priority weeds.	☐
Clean all machinery, plant, equipment and vehicles that have operated onsite thoroughly. Establish a wash down area and monitor the presence of Biosecurity Matter, biosecurity matter. Cleaning would include the removal of all mud and plant matter, followed by washing with high pressure water.	☒

Provide a boot wash down facility. Remove all mud and plant matter, followed by washing with high pressure water.		☐
A designated area for storage of contaminated spoil will be separate to the area for storage of clean fill material.		☐
Shower and wash clothes prior to moving to another site due to the site being infected by Myrtle rust. Clean footwear and equipment of soil and mud and then sprayed with 70 per cent methylated spirits in 30 per cent water.		☐
Comments/ other, specify:	Practice Machine Hygiene	☒
Upon completion of works & operation and maintenance		
Removal, treatment and/ or suppression of priority weed must be undertaken: • In accordance with any advice of Council's Invasive Species Planner. • Using approved bush regeneration techniques. • Under the supervision of a suitably qualified and experienced bush regenerator. • In accordance with the requirements of the NSW Biosecurity Act 2015, associated Regulations and NSW Weed Control Handbook.		☐
Comments/ other, specify:		☐

8. Completion Date	
Date	05/08/2025
9. Completed By	
Name	Chloe Smithers
Position	Invasive Species Officer

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : shoal bay

Client Service ID : 1002396

Port Stephens Council

Date: 08 May 2025

116 Adelaide Street
Raymond Terrace New South Wales 2324

Attention: Laura Renehan

Email: laura.renehan@portstephens.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -32.7251, 152.1594 - Lat, Long To : -32.7071, 152.1903, conducted by Laura Renehan on 08 May 2025.

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

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

[redacted]

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Shoal Bay Area

Client Service ID : 824151

Port Stephens Council

Date: 28 September 2023

116 Adelaide Street
Raymond Terrace New South Wales 2324

Attention: Jacob Pani

Email: jacob.pani@portstephens.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -32.7202, 152.175 - Lat, Long To : -32.7157, 152.1827, conducted by Jacob Pani on 28 September 2023.

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

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

[redacted]

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Shoal Bay Area

Client Service ID : 824151

[redacted]

** **Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 28/09/2023 for Jacob Pani for the following area at Lat, Long From : -32.7202, 152.175 - Lat, Long To : -32.7157, 152.1827. Number of Aboriginal sites and Aboriginal objects found is 6

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Shoal Bay West

Client Service ID : 1011343

[redacted]

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 05/06/2025 for Laura Renehan for the following area at Lot : 7020, DP:DP1126832, Section : - [redacted]

Appendix 1: Examples of Aboriginal objects

Stone artefacts are a common type of Aboriginal object, and include stone tools, spear points, surface scatters, grinding stones, ground-edge axes and other implements that were used for a variety of purposes, such as in the preparation of food or to make nets, baskets and other tools. Stone artefacts often have sharp edges, or are of a stone type that is different from the natural rock in the area.

Another type of stone artefact is a ground-edge axe, which can come in different shapes, but are usually round or oval. They are sometimes rounded and narrow at one end, and slightly broader and straighter at the cutting edge.

Because stone artefacts do not rot or rust they are often the primary physical evidence of Aboriginal occupation in a particular area. They can also provide important information about past Aboriginal people's settlement patterns, lifestyle and other connections, such as trade.

The presence of stone artefacts in an area may indicate that either a place was previously used by Aboriginal people, or that the area continues to be a place of significance, which may include sensitive sites, such as men's or women's areas which may require a buffer zone to maintain. In some cases it will be appropriate to consider removing stone artefacts from where they are found (salvage), following advice from DECCW and Aboriginal groups.

Stone artefacts are often small, so they can be difficult to protect. Erosion and weathering caused by activities such as ditch digging and ploughing can disturb stone artefacts. They can also be broken when trampled by animals, or when run over by vehicles.

Stone artefacts. Mark Flanders/DECCW

Surface artefact scatters are the material remains of Aboriginal people's activities. Scatter sites usually contains stone artefacts, but other material such as charcoal, animal bone, shell and ochre may also be present. The size of scatters may vary from one square metre to larger areas, and may contain from a few to thousands of artefacts.

Stone artefacts can be found almost anywhere Aboriginal people camped or lived, particularly around occupation sites, in sand dunes, rock shelters, caves, on ridges and near watercourses. Ground-axe edges may also be found near axe-grinding grooves or quarries.

Oven or hearth sites are the remains of a domestic open fireplace. Domestic open fireplaces have been used in populated places throughout Australia to provide warmth and lighting. They are also used for cooking food and sometimes to signal from one group to another.

These hearths are roughly circular piles of burnt clay or heat fractured rock with associated charcoal fragments, burnt bone, shell and stone artefacts.

Hearth site. Stephen Meredith

Rock art includes paintings and drawings that generally occur in rock overhangs, caves and shelters. Stencils of hands, paintings or drawings of animal or people and animal tracks are common and have often been created using ochre, white pipeclay or charcoal.

Engravings commonly occur on open, flat surfaces of rock such as on sandstone outcrops, although some are found on vertical rock faces and in rock shelters. Examples of engravings include outlines of people or animals, but may also include patterns, tracks and lines.

Rock art is of high cultural significance to Aboriginal people, and many sites are still regarded as sacred or of ceremonial significance. Rock art sites are important links to the past for Aboriginal people today. They can also provide important information about the daily life and culture of Aboriginal people before European contact, and many sites are hundreds or thousands of years old.

Rock art sites can be easily damaged as they can be prone to erosion and vandalism. Touching rock art or disturbing a shelter floor in the immediate vicinity of the rock art can cause damage, as can movement on or over surfaces with rock art. Sites may also suffer from vegetation growth or removal. Effective management of rock art sites can include drainage, fencing, graffiti removal, and visitor control.

Mutawintji hand stencils. Pat Laughton/DECCW

Shell middens are commonly made up of the remains of edible shellfish, and could be the result of a single meal or many meals at the same location over many years. A midden may also contain fish and animal bones, stone tools, or charcoal. They can vary in size and depth. Middens are sometimes associated with burials.

Middens can be found on headlands, sandy beaches and dunes, around estuaries, swamps and tidal stretches of creeks and rivers, and along the banks of inland rivers, creeks and lands. Middens may also be found in the open or in rock shelters.

Middens can indicate that a place was, and may continue to be, a key meeting place of significance. Middens can also provide information about the environment that existed when Aboriginal people collected the shellfish, such as changes in species, and tools or raw materials that were used. Middens which contain burials are particularly significant.

Middens are amongst the most fragile cultural sites. They can be exposed by wind or degraded by human and animal activity. Effective management of midden sites may include stabilising the surface, such as by encouraging vegetation cover, or by restricting access to the site by erecting fencing.

Shell midden. Warren Mayers/DECCW

Axe grinding grooves are oval shaped indentations generally on flat and soft rock surfaces, such as sandstone outcrops. Aboriginal people made the grooves when shaping and sharpening stone axes by grinding them against the rock. Grooves can vary in size, shape and number. Sites with 20 to 60 grooves are not uncommon and some sites have more than 200.

Axe grinding grooves are important because they provide information about Aboriginal stone tool technology. They are often found along the edges of creeks, lakes or swamps as water was needed to keep the stone clean and cool. In areas where suitable outcrops of rock were not available, transportable pieces of stone were used for sharpening or grinding tools. Axe-grinding grooves provide important information about how stone tools were made.

As sandstone is relatively soft, it is prone to weathering, erosion and trampling by animals. Human activities such as mining, road infrastructure, damming, clearing, ploughing and construction can also destroy these sites. Management options can include stock and erosion control.

Axe grinding stones. Hilton Naden/DECCW

Aboriginal culturally modified (scarred and carved) trees are trees that show the scars caused by the removal of bark or wood for the making of, for example, canoes, vessels, boomerangs, shelters and medicines. The shape and size of the scar may indicate the purpose for which the bark or wood was removed from the tree. In some regions of NSW, trees were carved with intricate patterns and designs for ceremonial purposes, or to mark country boundaries or burials.

Carved trees associated with burial sites are usually in groups of two or more trees. Carved trees associated with ceremonial grounds may have also been used for educational purposes. Scarred and carved trees occur in various locations across NSW.

Scarred and carved trees are significant to the descendants of the Aboriginal people living today. They are becoming rarer in NSW as the trees decay, are burnt or are destroyed.

It is important to note that the defence to a prosecution contained in Clause 80B of the NPW Regulation relating to certain low impact activities does not apply in relation to any harm to an Aboriginal culturally modified tree. Ensuring that Aboriginal culturally modified trees are not harmed will likely include ensuring that effective buffer zones are used, as their significance is often part of the broader landscape.

Carrington scarred tree. Warren Mayers/DECCW

Quarry sites are sites where Aboriginal people manufactured stone tools or collected ochre for painting and decoration. Quarry sites may be found in areas of rock outcrops and can be identified by the presence of artefacts such as flaked stone. Quarry sites vary in size. They may be one or two flaked boulders or a single pit, but can also incorporate many large outcrops over large areas.

As stone was an important resource for Aboriginal people, quarries are often associated with other nearby Aboriginal sites and cultural material. In NSW a variety of stone types was quarried for particular purposes. Quarries also provide information about trade routes and other activities.

Human activities such as mining, road building, damming, clearing and construction can disturb or destroy Aboriginal quarries. Natural processes such as weathering and erosion can also cause the gradual breakdown of stone outcrops.

Aboriginal quarries can be protected by management actions such as by controlling stock and managing erosion.

Daruka axe quarry, Tamworth. Bruce Cohen/DECCW

Stone arrangements are found at places where Aboriginal people have positioned stones deliberately to form shapes or patterns, and can include large circular or linear arrangements, piles of stones, rock markers or more elaborate groupings that can depict animals or other designs. Aboriginal people also use stone arrangements for other purposes, such as for fish traps.

Stone arrangements have significant cultural heritage value because they are usually related to ceremonies, such as meetings or marriages. **Bora rings**, which are one or more raised earth rings, were used for male initiations. They are generally rare due to their vulnerability to disturbance. The stones are long lasting, but their arrangements can be damaged or destroyed. If stones are disturbed, the pattern and its significance may be lost. Ploughing, brush cutting, logging and large grazing animals can also cause disturbance.

Management options around Aboriginal stone arrangements can include stock, weed and erosion control.

Stone arrangement. M Sharp/DECCW

Burials include one of a variety of customs that Aboriginal people had for honouring the dead and laying them to rest; they were among the first people in the world to use cremation. However, Aboriginal burials may be found in a variety of landscapes throughout NSW, although most frequently they are found in middens, sand dunes, lunettes, bordering dunes and other sandy or soft sedimentary soils. Activities such as sand mining, stock grazing, ripping rabbit warrens, ploughing, trail bike riding and four-wheel car driving can devastate burial sites. Aboriginal ancestral remains are very sensitive and significant to Aboriginal people.

Landscape features and natural sacred sites are regarded as highly sacred sites to Aboriginal people. Such features include mountains, waterholes, caves, and rock formations. In addition, the flora and fauna that inhabit these landscapes also carry Aboriginal cultural significance. In some cases, an inspection of the immediate area will show no physical evidence of prior occupation or usage by Aboriginal people.

Further information about Aboriginal sites in NSW

Aboriginal scarred trees in New South Wales, a field manual (DEC and Andrew Long 2005), www.environment.nsw.gov.au/conservation/AboriginalScarredTrees.htm.

Lost but not forgotten: a guide to methods of identifying Aboriginal unmarked graves (NPWS 2003, www.environment.nsw.gov.au/nswcultureheritage/LostButNotForgotten.htm

Cultural landscapes and park management: a literature snapshot. A report for the cultural landscapes: connecting history, heritage and reserve management research project (Department of Environment and Climate Change 2008), www.environment.nsw.gov.au/resources/cultureheritage/07137cultlandresearch.pdf

Aboriginal culturally significant landscapes in the Hunter-Central Rivers Region, Hunter-Central Rivers CMA guide 2009, www.hcr.cma.nsw.gov.au/uploads/res/Publications/acsl.pdf

Site Identification, Victorian Mini Poster Series, Department of Planning and Community Development 2008, www.aboriginalaffairs.vic.gov.au/web7/aavmain.nsf/headingpagesdisplay/publications+forms+and+resourcesaav+mini-poster+series