CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP) FOR GRAVELLY BEACH RECLAMATION AND BEACH NOURISHMENT

Report to

BMT

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www.marinesolutions.net.au

Version	Author	Date reviewed	Reviewed by	Notes
1 of 3	J. Smart	19/04/2022	T. Alexander	
2 of 3	J. Smart	17/06/2022		Updated to reflect change in construction methods and design, and change in recommendations surrounding terrestrial fauna.
3 of 3	J. Smart	30/06/2022	C. Manicom	Updated to include stormwater quality and site rehabilitation.

[1] Cover photo, Gravelly Beach (photo by Marine Solutions 2021).

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1 EXECUTIVE SUMMARY

Marine Solutions has been contracted by BMT to provide a Construction Environmental Management Plan (CEMP) for proposed foreshore nourishment works at Gravelly Beach at kanamaluka/Tamar River Estuary, Tasmania. The proposed works include restoration of Gravelly Beach via beach nourishment, construction of a sea wall and land reclamation.

Environmental investigations, as detailed in Marine Solutions (2021) and BMT (2021), found no major contraventions to the proposed foreshore works. With appropriate risk management strategies in place, the works associated with this development may be undertaken with minimal impact on the surrounding area. Potential environmental risks will be managed through implementing adequate control measures that will eliminate or reduce the impact to a level where it is not considered a significant threat to the environment. Table 1 provides a summary of potential impacts, proposed mitigations, and CEMP commitments during construction.

Table 1. Table of commitments

Environmental Aspect	Type of Monitoring	Method	Frequency
Water Quality	Integrity of soil and water (including stormwater) management measures including the installation of a silt curtain surrounding the construction site	Visual observations of installed measures	Weekly
Water Quality	Erosion and sediment control measures	Visual inspection of entire work site to ensure that measures currently installed are still required and that there are no additional controls required	Monthly (during works)
Air Quality and Dust Management	Dust generation	Visual inspections for airborne dust and layered dust on nearby areas	Daily
Biosecurity	Integrity of hygiene measures (e.g., wash-down stations)	Visual observation and review of wash-down records	Weekly
Waste	Litter/waste escape	Visual observation of waste storage area and immediate surrounds to	Weekly

		confirm integrity of storage and identify any escaped wastes	
Fuels and Chemicals	Maintenance of fuel spill kits and control measures	Visual inspection of spill kits and assessment of proximity to potential spill sources	Daily
Noise	Monitoring for marine mammals	Visual monitoring for marine mammals during noise generating construction activities	During noise generating construction
Flora and Fauna	Exclusion fencing and signage	Visual observation	Weekly
Flora and Fauna	Visual observation for threatened and protected terrestrial fauna during the September – March shore bird breeding season	Visual inspection by a qualified terrestrial ecologist	Prior to construction, if construction is to occur in September - March

2 INTRODUCTION

2.1 PROPOSAL BRIEF

Marine Solutions were invited by BMT to create a construction environment management plan (CEMP) for shoreline works to be conducted at Gravelly Beach, Tasmania. The intention of the works is to restore the gravel/shingle beach that existed on the coastline prior to the introduction of rice grass (*Spartina anglica*) in kanamaluka/Tamar River Estuary. Gravelly Beach is recognized as an important recreational area of the Tamar River. The proposed works aim to restore the gravel/shingle beach that existed on the foreshore prior to the introduction of rice grass (*Spartina anglica*) in in accordance with the Gravelly Beach Foreshore Master Plan Report 2018 – 2028. The shoreline works are to include restoration of Gravelly Beach, creation of new rock walls and land reclamation as shown in Figure 1. The proposed works will include:

- Construction of a concrete block retaining wall in front of the existing wall
- Construction of concrete beach access ramp and sitting terrace
- Beach nourishment including removal of a small area of exotic rice grass and the placement of sand and gravel to restore the gravel beach
- Reclamation including construction of a rock bund around the reclamation area, filling of the reclamation area over existing rice grass and sediment, and construction of a new rock revetment to protect the reclamation from wave attack.

There will be minimal excavation of sediments with an estimated 70 m^3 for toe of retaining wall, ramp and terrace, and all excavated material will be disposed of on site within the reclamation.

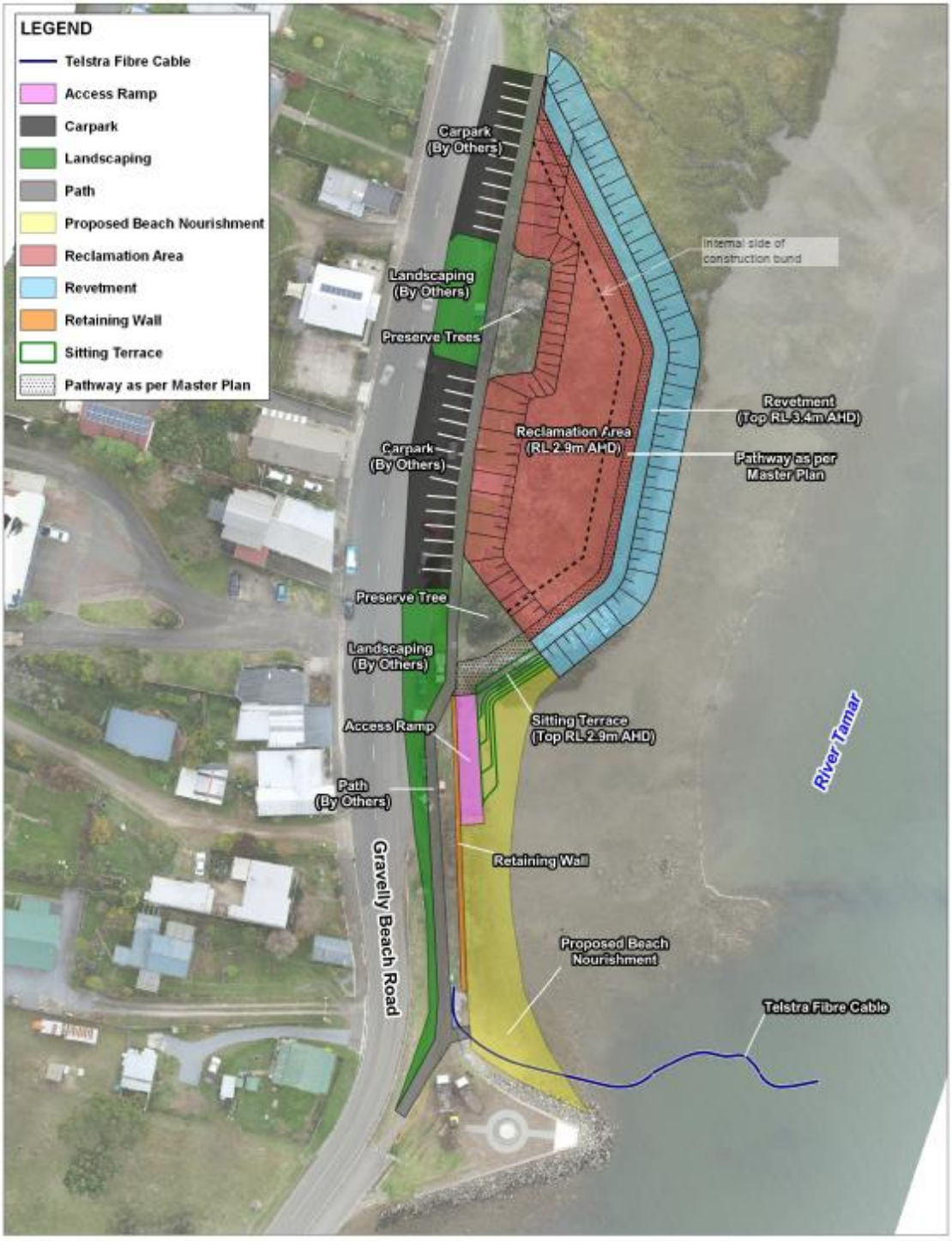

Figure 1. Proposed location of the shoreline works at Gravelly Beach.

2.2 PURPOSE AND SCOPE

The purpose of this report is to describe the environmental management system for the construction of the shoreline nourishment at Gravelly Beach. Key marine environmental mitigation and management methods relevant to the location and construction methods are described herein.

2.3 ENVIRONMENTAL OBJECTIVES

The environmental objectives of this CEMP are to avoid or minimise any environmental impacts associated with the proposed construction activities of the Gravelly Beach shoreline nourishment.

3 PROPOSED CONSTRUCTION METHODS AND MATERIALS

3.1 CONSTRUCTION METHODS AND MATERIALS

Construction is to be undertaken with machinery including excavators, trucks, and other vehicular machinery accessing the beach via a temporary sand/gravel ramp.

- Beach nourishment will involve the placement of clean fill (sand and gravel) onto the existing footprint of Gravelly Beach.
- Land reclamation will occur to the north of the beach. The construction sequence will include:
    - Creation of a bund by placement of two layers of 700 kg of rock individually, pushed through rice grass and into silt to form a working platform.
    - Bund core will be built up and revetment armour placed.
    - Once completed, the inner surface of the bund will be lined with geotextile and the reclamation areas filled with clean fill. Estuarine sediments and rice grass will be left in place and filled over.
- A concrete seawall, ramp and stepped wall will be built at the northern end of the beach.
- Other construction activities include development of a new footpath and parking spaces along the shoreline, and redirection of stormwater lines.

Construction activities will be undertaken at low tide and above the water level as much as possible to minimise the mobilisation of sediments, but minor disturbance is expected. Specifically, sediment disturbance in the intertidal zone will include:

- Placing of rock fill in the intertidal zone to create a bund for reclamation area. Rock will be placed onto soft muds and will sink in and displace some material.
- Digging of a trench for the toe of stepped concrete wall, ramp and seawall footings. A volume of about 70 m^3 will be excavated at low tide, with material placed inside the bund at a similar level, then filled over.

4 POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATIONS

4.1 AMBIENT WATER AND STORMWATER QUALITY

4.1.1 Resuspension of Sediments

The primary process that may impact on water quality during the construction phase is sediment excavation. When construction commences, there is a risk that excavation may cause resuspension and disturbance of contaminated sediments. This has the potential to impact water quality by releasing contaminants associated with sediment particles and increasing turbidity around the construction area. Dissolved oxygen concentration in the water close to the construction site may also be reduced if sediments have high biological or chemical oxygen demands.

An environmental impact assessment (EIA) conducted by Marine Solutions indicated that contaminants are present in the sediments in the area including Acid Sulfate Soils, polycyclic aromatic hydrocarbons (PAHs), Tributyltin (TBT) and total petroleum hydrocarbons (TPHs). Run off from land-based excavations may also impact water quality.

4.1.2 Introduction of Contaminants

As construction methodologies involve the introduction of new clean fill to the area, there is the potential for the introduction of contaminants. When the new beach and rock wall are created, rising tides may wash any contamination present into the surrounding waterway, impacting the water quality in the area. As such, it is important that any materials used in construction are free of contamination.

4.1.3 Proposed mitigations

Control Measure	Responsible Personnel	Timing
Silt screens should be installed for the full duration of construction works, and the integrity of the silt screens should be maintained. Silt screens should be left in place for the duration of construction to allow any resuspended sediment to resettle.	Site supervisor	Pre-construction
Excavations below the waterline should be undertaken during calm or offshore weather to minimize the spread of disturbed sediments.	Site supervisor	Construction
Where possible, works should be conducted above the water level.	Site supervisor	Construction

All land-based developments should facilitate the capture and appropriate removal of debris to minimize runoff into the marine environment.	Site supervisor	Construction
The silt screen will be installed to include stormwater runoff in the construction vicinity, to ensure capture of suspended sediments. A site-specific stormwater management plan will be developed by the contractor and approved by the Superintendent.	Site supervisor	Construction
Any imported fill required must be certified as contamination and weed free. If a risk of contamination is perceived, screening level testing will be undertaken on the material to determine existing contaminant levels prior to the fill material being transported and used on-site.	Site supervisor	Construction
Visual observation for significant sediment plumes beyond the silt curtain. Should significant sediment plumes be observed in the Tamar Estuary outside of the silt curtain, construction methods should be reviewed and altered to minimise disturbance.	Site supervisor	Construction

4.2 Air Quality and Dust Management

4.2.1 Objective

The objective of managing air quality throughout the construction phase is to minimize potential risks and nuisances to site workers, the public, any neighbouring agricultural activities, and the environment.

4.2.2 Dust

Potential air impact risks associated with construction are expected to principally result from dust releases. The appropriate erosion and sediment control measures will be in place, stockpiles will be covered, exposed soils should be vegetated as soon practical and disturbance works should be reduced or ceased during periods of high winds to limit the potential for dust releases. All haulage vehicles will have their loads covered while transporting material to or from work areas. In addition, site vehicles and machinery should not exceed 15 km per hour on unsealed surfaces.

4.2.3 Emissions

Vehicle and machinery emissions relating to construction activities are considered to be minor and are not foreseen to pose any risks to the public or environment. All vehicles and machinery used during construction will be appropriately maintained such that emissions are kept to a minimum; however, it is

recommended that appropriate protective measures are adopted by on site workers that may be at risk from potentially harmful emissions, such as the use of appropriate PPE.

4.2.4 Odours

Unpleasant odours can originate from anoxic sediments which may underlie the mobile, oxygenated sediment in the area. This will need consideration during the excavation process but can be avoided by excavating surface sediments first and excavating slowly if anoxic or discoloured sediments are encountered.

4.2.5 Airborne Contaminants

The proposed construction methodology may pose a risk of airborne contaminants to site workers, such as dust or particulate matter, and it is recommended the appropriate protection measures are employed by workers to address these risks. There are no foreseen wider risks of airborne contaminants to the public or environment.

4.2.6 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
Appropriate erosion and sedimentation controls will be implemented to minimise potential for airborne dust.	Site Supervisor	Construction
Appropriate dust suppression controls will be implemented, as required. This will include suspending excavation activities during high wind events and/or the use of water sprays.	Site Supervisor	Construction
All haulage vehicles with loads containing fine-grained materials likely to cause dust will have their loads covered while transporting material to or from work areas.	Site Supervisor	Construction
Disturbed areas will be revegetated soil as soon as practicable.	Site Supervisor	Construction
Vehicular speeds will be limited to 15 km/hr along unsealed access areas.	Site Supervisor	Construction
Vehicles and machinery will be maintained in good working condition, with appropriate exhaust pollution controls that meet all relevant Australian Standards.	Project Engineer	Construction

Emissions of visible smoke from construction plant and equipment shall be for periods no greater than ten consecutive seconds.	All	Construction
Plant and machinery will be turned off when not in use and not be left idling for long periods.	All	Construction
Materials of any type shall not be disposed of through burning.	Site Supervisor	Construction

4.3 BIOSECURITY

Introduced marine pests including rice grass (*Spartina anglica*) and the pacific oyster (*Crassostrea gigas*) are known to occur in the proposed development area (Marine Solutions 2021). Species can be translocated via construction equipment and vessel ballast, resulting in establishment of new pest species or an increase in numbers of already established species.

Translocation of introduced marine pests presents a threat to the existing natural values of the works area. Translocation and establishment of pest species can alter habitats and displace native, threatened and/or protected species. Translocation of pests may occur through numerous vectors, including ballast waters, biofouling, on people/equipment (e.g., footwear), etc. Machinery, including vessels which have been used in waters other than kanamaluka/the Tamar River Estuary should be washed thoroughly with fresh water to remove any sediment. Machinery and vessels which have the potential to transport waterborne viruses should be disinfected with Virkon spray or similar and allowed to dry prior to being used on site. Existing regulations, particularly *Living Marine Resources Act 1995,* provide appropriate controls by which to prevent translocation of pest species or removal of protected species.

4.3.1 Objective

Translocation of organisms will be avoided to ensure that introduced pests, weeds or pathogens are not transferred across the site, into the site or away from the site.

4.3.2 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
All machinery should be washed with fresh water to remove any sediment.	Site Supervisor	Pre-construction

Machinery which has the potential to transport waterborne viruses should be disinfected with Virkon spray or similar and allowed to dry prior to being used on site.	Site Supervisor	Pre-construction and Construction
Ensure compliance with the *Weed Management Act 1999*, the *Keeping It Clean – A Tasmanian field hygiene manual*, *Tasmanian Washdown Guidelines for Weed and Disease Control, Ed.1* and *Weed and Disease Planning and Hygiene Guidelines 2015*.	Site Supervisor	Pre-construction and Construction

4.4 Waste and Resource Reuse

4.4.1 Objective

The generation of waste materials shall be managed in accordance with the hierarchy, of avoid, reuse, recycle or dispose of waste material. The Contractor shall be responsible for the management of any waste produced in performing the work.

4.4.2 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
Solid inert wastes may be reused when approved.	Site Supervisor	Construction
All vehicles transporting waste shall be covered and appropriately licensed.	Site Supervisor	Construction
Wind-blown litter or litter spread by birds and animals shall be controlled.	Site Supervisor	Construction

4.5 FUELS AND CHEMICALS

4.5.1 Objective

Fuels and chemicals shall be managed onsite to minimise or avoid potential spills or leaks into soils or the waterway.

4.5.2 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
All workers will be appropriately trained and able to locate equipment used to contain spills and leaks.	All	Pre-construction
Petroleum products and other hazardous substances will be kept out of the waterway and in a designated storage facility.	Site Supervisor	Construction
Refuelling, top-ups, and oil checks will be performed at least 20 m from any drainage point or watercourses.	Site Supervisor	Construction
Appropriate numbers of spill kits will be maintained on-site. Spill kits should be located in proximity to the site sheds, the plant laydown area and active plant areas, as a minimum.	Site Supervisor	Construction
If a spill occurs, immediate steps will be taken to prevent it polluting a waterway.	Site Supervisor	Construction
All spills will be reported in monthly reports. All spills over 10 L will be reported to the Superintendent and appropriate authorities immediately following the event.	Site Supervisor	Construction
Dedicated plant and equipment wash down areas will be located away from drainage lines.	Site Supervisor	Construction
Construction equipment will be checked prior to use. Machines will not be used if there are any signs of fuel,	Site Supervisor	Construction

oil, or hydraulic leaks. Leaks will be repaired immediately, or the equipment removed from site and replaced with a leak-free item.		
If equipment is to be immersed in the waterway, it will be cleaned beforehand to remove any external grease, oil, and other fluids.	Site Supervisor	Construction
All chemicals stored on-site will be recorded on a hazardous substance register and the relevant Safety Data Sheets (SDS) will be kept on-site.	Site Supervisor	Construction

4.6 NOISE

Acoustic disturbance in the marine environment can be detrimental to marine life, particularly whales and dolphins that are sensitive to certain sound levels, potentially resulting in physical and/or behavioural impacts. Acoustic disturbance during excavations may also affect some migratory fish, seabirds and other marine fauna that rely on acoustic cues for social and reproductive behaviours. Noise impacts are particularly relevant if any construction is to occur below the water line, such as the placing of rocks for a seawall.

4.6.1 Objective

The core objective for effective noise and vibration management for the construction period is to minimise noise and vibration impacts to sensitive receptors in the area.

4.6.2 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
A pre-start-up visual observation for marine mammals should be undertaken in a 300 m radius prior to commencement of soft-start procedures.	All	Pre-construction
A soft-start may commence if no marine mammal has been sighted within the	Site Supervisor	Construction

300 m radius. Soft start procedures should be used each time construction is initiated, gradually increasing power over a 10-minute period.		
If a marine mammal is sighted within 300 m radius, marine construction will shut down completely. Construction works should be halted until such time that no marine mammal has been sighted for 30 minutes.	All	Construction
Occurrences of marine mammals must be reported to NRE Tas (formerly DPIPWE) within 90 days of collection. Reference data should include species name, location-GPS (grid reference GDA94), observer name, date, number of individuals and area occupied.	Site Supervisor	Construction

4.7 FLORA AND FAUNA

Under the *TSP Act*, no listed species can be collected, disturbed, damaged, or destroyed without a permit. Under the *EPBC Act*, any action with significant impact on a listed threatened species and/or community is prohibited without approval (*EPBC Act* Section 18 and 18A). Threatened species that could potentially occur within the vicinity of the study area are discussed in greater detail in this section.

4.7.1 Flora

There are several terrestrial species listed as threatened that may occur near the site and one threatened marine species (largefruit seatassel, *Ruppia megacarpa*), which has a single record in the Tamar Estuary at Cimitiere Point in 1843. This sighting remains the only record the species in the kanamaluka/Tamar Estuary and no individuals were observed in the environmental impact assessment (Marine Solutions 2021). Threatened species are protected under the *Threatened Species Protection Act 1995* (*TSP Act*, Tasmanian state legislation) and/or the EPBC Act (Australian Government legislation). A summary of potential threatened flora located at the development site is provided in Marine Solutions 2021, Appendix 6. Given no protected flora species were listed as occurring within 500 m of the project area, as well as the adoption of appropriate mitigation methods, the proposed construction is not

considered to pose a significant risk to protected flora species. In general, disturbance of the bank should be avoided where possible to minimise impact to streambank soil and trees, including melaleuca and eucalyptus trees.

4.7.2 Fauna

Two species of threatened marine fauna were identified as potentially occurring in the area which included the Australian Grayling (*Prototroctes maraena*) and the Green Turtle (*Chelonia mydas*) (Marine Solutions 2021). The proposed development is unlikely to impact these species, as it does not impose on critical habitat or introduce barriers to migration.

Twenty-two threatened terrestrial fauna species were identified as potentially occurring within the study site as part of a broader home range (Marine Solutions 2021, Appendix 6). This includes wading birds, which may occasionally use the intertidal zone for foraging, and terrestrial species, which may opportunistically use the disturbed riparian zone. Given its highly disturbed condition, the study site is considered unlikely to support critical habitat features for any threatened fauna species and the proposed works are not anticipated to result in any significant impact on threatened fauna, however a pre-construction survey should be conducted if works are scheduled during the migratory wader season (September to March). The survey will provide clearance to commence works or advise any additional controls to be put in place before works commence.

If construction commences outside of the September – March migratory wader season, a pre-construction fauna survey is not required. Once works commence further fauna surveys are not required even if the works continue into the season.

4.7.3 Objectives

The objectives for effective management of ecological impacts that will be adopted during project construction and post construction periods include:

- Minimise the impact on native vegetation, aquatic environments, and fauna; particularly any listed threatened species under the TSP Act and EPBC Act.
- Limit clearing of native vegetation and grassland to the minimum feasible extent.
- Avoid the spread of weeds and disease.

- Avoid injury to fauna.

4.7.4 Proposed Mitigations

Control Measure	Responsible Personnel	Timing
The area should be monitored for marine mammals prior to and during construction activities. Should any marine mammals be sighted within 300 m of the construction site, construction will cease until such time that no marine mammal has been sighted for 30 minutes. A slow startup methodology will be used for all excavation activities.	Project manager	Pre-construction
Commencement of works in the September – March migratory bird breeding season will require a pre-site inspection by an experienced avian ecologist to determine if any protected species are present.	Project manager	Pre-construction if construction occurs in September - March
An environmental induction will be given to all workers prior to works commencing. This will include information on the ecological values of the site and required protection measures to be implemented.	Project Manager	Pre-construction
Existing established trees (including Habitat Trees, see 'Preserve Trees' in Figure 1), native vegetation and threatened flora that are not to be directly impacted by the works will be fenced off or clearly marked to avoid additional impacts on vegetation. Fencing should protect the entire root zone of the tree. **Where construction cannot avoid impact on Habitat Trees, the Contractor will follow the Tree Felling Protocol prior to impacting those Habitat Trees.**	Site Supervisor	Pre-construction
Stockpiles of construction materials, fill or vegetation will be placed in	Site Supervisor	Construction

existing cleared areas and not within areas of adjoining native vegetation.		
In the event of a prolonged encounter with a native mammal or bird on the construction site; works will cease and, if the animal does not move offsite of its own accord, a suitably qualified ecologist will be contacted for further direction. In the event that a suitably qualified ecologist associated with the project is not available contact is to be made with Bonorong Wildlife Sanctuary (6268 1184) or if afterhours pre-recorded advice is to be obtained by dialling 6165 4305. **Prior to the qualified person arriving to deal with the animal, all non-essential personnel will be excluded from the vicinity and the exact location of the animal will to be noted and provided to the appropriate rescue personnel.**	Site Supervisor	Construction
All areas disturbed during construction will be rehabilitated as soon as possible following construction (WTC responsible for rehabilitation and landscaping).	West Tamar Council	Post-construction

5 CEMP IMPLEMENTATION

5.1 ROLES AND RESPONSIBILITIES

The contractor is responsible for ensuring that the CEMP is implemented. Processes to implement the CEMP include:

- ensuring adequate resources are available and maintained throughout the project to effectively manage environmental aspects.
- managing the investigation/reporting for any environmental incident arising during the project.

- verifying that monitoring of the effectiveness of environmental controls is performed.

The Project Manager is responsible for implementing the environmental control measures required by this plan. Processes to implement the CEMP measures include:

- training/induction of site personnel for the environmental aspects of the project.
- in the event of an environmental incident performing the role of Emergency Response Coordinator.
- ensuring that environmental incident response equipment is available and maintained at the worksite.

Site personnel and contractors are responsible for implementing the environmental control measures as directed by the Project Manager. In addition, site personnel and subcontractors must report any environmental incidents to Foremen or the Project Supervisor as soon as practical following discovery.

A review of this CEMP will also be triggered by a change in construction methodology or submission of an incident report.

5.2 COMPETENCE, TRAINING AND AWARENESS

Prior to commencement of works, the Contractor shall ensure that all personnel are informed of the environmental issues and specific risks associated with the project and the required management and mitigation measures to address these risks.

Inductions of all site personnel and subcontractors will be facilitated or provided by the Project Manager. Environmental aspects of the project will be communicated to personnel during the induction by discussing:

- Environmental risks associated with the works.
- The importance of conforming to the CEMP and associated sub plans.
- The potential consequences of non-conformance.
- The significance of their specific roles in relation to environmental impacts.
- Responsibilities and statutory requirements for environmental management.
- Emergency procedures and actions to be taken.

Prior to commencement of works onsite, the Contractor shall ensure that personnel directly involved in the implementation of the CEMP and the installation and maintenance of control measures for this contract:

- have demonstrated competence and suitable experience in environmental management in a construction environment; or
- have successfully completed a nationally accredited training course which addresses management practices for erosion and sediment control (Green Card or equivalent).

In addition, communication of relevant environmental information to all parties involved in the project will be achieved by Daily Prestart Meetings and Toolbox Meetings. Daily Prestart and Toolbox meetings ensure the project supervisory team and site personnel maintain a high level of environmental awareness; discuss, communicate, and provide feedback on issues relating to the environment; and provide a revision of procedures and environmental control measures.

The Contractor must maintain a register of training (register to include the topic of training, personnel in attendance, date, trainer, etc.).

5.3 INCIDENTS/EMERGENCIES

The primary process that may impact the environment during the construction phase is a major environmental incident (e.g., hydrocarbon spill).

5.3.1 Emergency Response Plan

A safe emergency meeting point will be specified prior to commencement of work and will be provided to site personnel as part of the site induction. Emergency contacts will also be provided to all staff prior to commencement of works.

In the event of a hydrocarbon or chemical spill, a spill kit will be available onsite at all times. It is not envisaged that any chemicals will be stored on sites. However, if a chemical spill occurs, then clean up shall be as per the manufacturer's recommendations.

5.3.2 Incidents

Following the occurrence of an environmental incident, the following notification process shall be adhered to:

- take immediate action to avoid continuance of the incident (which may include cessation of work), and to minimise the effect of the incident on the environment.
- immediately notify the Superintendent and EPA Pollution Watch (tel. 1800 005 171) or other responsible authorities of the incident (or by 9 am the next working day if the incident occurs outside of working hours).
- submit to the Superintendent for review an incident report within 7 days of the incident. The incident report shall include photographs where available and cover details of the incident, and the proposed corrective action to avoid a re-occurrence.

The *Environmental Management and Pollution Control Act 1994* requires notification to the relevant statutory authority within 24 hrs for any incidents that cause or may cause serious or material environmental harm.

That notification must include:

- the nature of the incident
- the circumstances in which the incident occurred
- actions taken to deal with the incident

Serious environmental harm is defined as:

- an actual adverse effect on the health or safety of human beings or on the environment that is of high impact or on a wide scale, or
- loss or damage in excess of $50 000.

Material environmental harm is defined as:

- a nuisance of high impact or on a wide scale,
- an actual adverse effect on human beings or the environment that is not negligible, or
- a loss or damage in excess of $5000.

Loss includes costs and expenses to mitigate against the harm and to make good the harm.

5.4 OTHER CONSIDERATIONS

Contractors on site should be aware of their environmental obligations and provide facilities for adequate disposal of waste, which should be removed from site.

Given there is likely to be machinery involved in the construction phase, spill kits, appropriate to hydrocarbons found in the machinery should be available on site. This may include but is not limited to, petrol, diesel, hydraulic fluid, and engine oil.

6 REFERENCES

Marine Solutions (2021) *Gravelly Beach Foreshore Nourishment: Environmental Impact Assessment*, report to BMT, January 2022.

BMT (2021) Gravelly Beach Impact Assessment, report to West Tamar Council, November 2021.