



## **Swansea Channel Dredging**

Construction and Environmental Management Plan (CEMP)

NSW Government Department of Industry  
(Department of Primary Industries- Lands)

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## 1 Project Description

### 1.1 Purpose and Scope

This Construction Environmental Management Plan (CEMP) has been prepared on behalf of NSW Government Trade and Investment (Department of Primary Industries - Lands). The CEMP outlines the environmental management procedures and environmental design requirements specifically for the Swansea Channel Dredging Project. This CEMP provides information on environmental issues, mitigation measures, monitoring, compliance standards, corrective actions, reporting and auditing proceedings relating to the dredging of Swansea Channel. This document is a 'framework' plan which shall be implemented into the Contractor's Environmental Management System (EMS). The Contractor's EMS may require the Contractor to prepare a Site Environmental Management Plan (SEMP) in which case the Contractor shall use this CEMP as a critical reference. This CEMP is also intended to be adaptive and used for future maintenance works.

### 1.2 Objectives of the CEMP

Objectives of this CEMP are to:

- allocate responsibility for implementation of this CEMP;
- ensure that works are carried out in accordance with environmental statutory requirements;
- ensure environmental impacts are avoided where possible, and where unavoidable, reduced to as low a level as practical;
- ensure that sufficient monitoring is conducted to quickly identify environmental impacts of the works;
- ensure that any necessary corrective actions are performed in a timely and appropriate manner; and
- respond to changes in environmental conditions through review and auditing of the monitoring and control programs.

### 1.3 Description of Works

#### Summary of Works

Dredging of Swansea Channel involves:

- a once-off major maintenance dredging campaign utilising a cutter suction dredger (CSD) to pump sand to Blacksmith Beach (completed February 2015); and
- subsequent smaller maintenance dredging campaigns including: replication of the major maintenance campaign; utilising a CSD or a Backhoe Dredger (BHD)/barges to place stockpile material onshore; and/or a BHD/barges to place material on designated foreshore areas.

The major maintenance dredging campaign includes the following items of work:

- Dredge mobilisation and establishment of contractor's compound, including environmental control measures and temporary works;
- Dredging approximately 100,000 m<sup>3</sup> of sand using a cutter suction dredger (CSD).
- Installation of a temporary pipeline from Old Belmont Sands site to the placement area at Blacksmiths Beach.
- Installation of two booster pumps
- Construction of a dewatering area at Blacksmiths Beach.
- Dune construction.
- Minor works and ancillary activities including surveys, preparation and implementation of construction EMP, and clearing of the stormwater culvert between Naru Crescent and the Pacific Highway.
- Site disestablishment.

Depending on the dredged sand placement locations the smaller maintenance dredging campaigns may include the following items of work:

- Same as major maintenance dredging campaign if pumping to Blacksmiths Beach;
- Dredging and placement of sand with a CSD and/or BHD/barges.
- 

#### Objectives of the Works

Dredging of Swansea Channel is intended to address the following objectives:

- Improve and maintain vessel navigation within Swansea Channel
- Improve foreshore amenity and habitat.

#### Extent of Works

Dredging for the major dredging campaign along the identified channel alignment and placement of dredged sand on Blacksmith Beach (completed) in accordance with Review of Environmental Factors (REF) and Drawings 8A0370-MA-001 to 8A0370-MA-012.

Recently, shoaling has reformed in the marked navigation channel in the vicinity between the southern entrance to Swan Bay and Elizabeth Island. The extent of the proposed works is to relocate up to 5,000 cubic metres of clean marine sand from the problem shoal to Spoil Island and/or Nauru Point prior to and during the busy Christmas holiday period between December and February.

### 1.4 Legislative Requirements

#### Compliance Obligations

Under Division 13 "port, wharf and boating facilities" of *State Environmental Planning Policy (SEPP) Infrastructure 2007* dredging, stockpile, pipeline and dewatering works would be classified as:

- "routine maintenance works" which is defined as including dredging, or bed profile levelling, of existing navigation channels if it is for safety reasons or in connection with existing facilities.

Under Division 25 "waterway or foreshore management activities" of *SEPP Infrastructure*, reuse of dredged sand within Swansea Channel or at Blacksmiths Beach would be classified as:

- "bank management" which is defined as including erosion control, bank stabilisation and creation of foreshore access ways
- "coastal management and beach nourishment" which is defined as including erosion control, dune or foreshore stabilisation works and revegetation activities.

The works described above are permitted without consent when carried out by, or on behalf of a public authority. Accordingly, the proposed maintenance dredging works are Part 5 Activities under the *Environmental Planning and Assessment Act 1979 (EP&A Act)*. Section 111 of the *EP&A Act* confers a duty on determining authority to consider the environmental impacts of an activity and Clause 228 of the *EP&A Regulation 2000* lists factors to be taken into account.

This CEMP is to include all mitigation measures/recommendations specified in the REF prepared by Royal HaskoningDHV (2014) for the dredging of Swansea Channel.

If the proposed activities are amended or modified from the approved plans, each relevant approval authority must be notified in order to obtain any necessary modifications to Consent/permits/ approvals. Failure to do so may result in invalidation of existing Consent/permits/approvals.

#### Licenses and Permits

The Contractor shall comply with all approvals obtained. The Contractor shall maintain a register of all permits and licences required, including information on:

- regulatory authority;
- licence/permit reference;
- purpose;
- licence holder; and
- expiry/renewal date.

Activity	License/Permit Required	Legislation	Determining Authority
Harm to vegetation	Permit for harm to vegetation - Not Required	Part 7 of the <i>Fisheries Management Act 1994</i>	Department of Industry & Investment NSW (Fisheries)
Dredging more than 30,000 m <sup>3</sup>	Environment Protection Licence (EPL) - Not Required (<30,000m <sup>3</sup> )	<i>Protection of the Environment Operations Act 1997</i>	NSW Environment Protection Authority
Placement of sand on Belmont Golf Course land	Land Owners Consent - Not Required		Belmont Golf Course
Dredging	Dredging Licence - Not Required	Section 34A Crown Lands Act 1989	Department of Primary Industries- Lands
Dredging	Aboriginal Heritage Impact Permit - Not Required	Section 90A of the National Parks and Wildlife Act 1984 (in the event that artefacts were uncovered)	Office of Environment and Heritage

Other Relevant Legislation
<ul style="list-style-type: none"> <li>• Australian Standards and Codes of Practice;</li> <li>• Coastal Protection Act 1979;</li> <li>• Commonwealth Environmental Protection and Biodiversity Conservation Act 1999;</li> <li>• Environmental Planning and Assessment Act 1979 (EP&amp;A Act) and Regulation 2000;</li> <li>• Local Government Act 1993;</li> <li>• Native Vegetation Act 2003;</li> <li>• Fisheries Management Act 1994;</li> <li>• Work Health and Safety Act 2011;</li> <li>• Protection of the Environment Operations Act 1997 (POEO Act) and Regulation</li> <li>• Roads Act 1993;</li> <li>• Threatened Species Conservation Act 1995;</li> <li>• Waste Avoidance and Resources Recovery Act 2001; and.</li> <li>• NSW Heritage Act 1977 (State Heritage Register)</li> </ul>

<b>1.5 Implementation</b>		
<b>Responsibilities for environmental management</b>		
Party	Project Role	Responsibilities
NSW EPA	Appropriate Regulatory Authority (ARA)	<ul style="list-style-type: none"> <li>• Issuing of Environmental Protection notices under the POEO Act</li> </ul>
DPI - Lands	Project Manager	<ul style="list-style-type: none"> <li>• Supervising daily activities of the Contractor</li> <li>• Review and approval of Contractors SEMP</li> <li>• Monitors the Contractors implementation of the CEMP and SEMP by undertaking regular inspections and compliance audits</li> <li>• Acting on incidents/emergencies and issuing environmental incident reports to the relevant authorities</li> <li>• Review and sign-off on corrective actions</li> <li>• Undertakes communications with key stakeholders</li> </ul>
Hunter Wharf & Barge P/L	Contractor(s) and Subcontractor(s)	<ul style="list-style-type: none"> <li>• Environmental management of works through compliance with this CEMP</li> <li>• Preparation and implementation of any site specific Environmental Management Plans (SEMP's)</li> <li>• Monitoring and reporting of monitoring records</li> <li>• Incidents investigation and initiation of corrective and preventative actions</li> </ul>

		<ul style="list-style-type: none"> <li>• Reporting of non-compliances and corrective actions to the Site Superintendent</li> <li>• Undertaking internal environmental audits</li> </ul>
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Training and awareness
<p>The Contractor shall induct all personnel involved on the project before they commence work on site. As a minimum, the induction shall involve:</p> <ul style="list-style-type: none"> <li>• environmental aspects and impacts of the construction work;</li> <li>• environmental management responsibilities;</li> <li>• environmental controls and mitigation measures, sediment control, waste minimisation, heritage management, traffic management, and emergency/incident response);</li> <li>• occupational health and safety management and procedures; and</li> <li>• Emergency management and procedures including duty to notify.</li> </ul>

Communications
<p>Key Stakeholders: Department of Primary Industries - Lands, Lake Macquarie Council; NSW Environment Protection Authority, Department of Primary Industries (Fisheries), NSW Office of Environment and Heritage, NSW Roads and Maritime Service, Bahtabah Local Aboriginal Land Council, The Boat Owners Association of NSW, and local residents. .</p> <p>Potential impacts to key stakeholders include:</p> <ul style="list-style-type: none"> <li>• heritage;</li> <li>• water quality;</li> <li>• ecology;</li> <li>• noise;</li> <li>• access and recreational use;</li> <li>• traffic;</li> <li>• waste management; and</li> <li>• air quality visual amenity.</li> </ul>

<ul style="list-style-type: none"> <li>• Key stakeholders shall be notified of the intended works timetable and of the progress of works and any particular events throughout the works period. This information shall also be posted on signage at the site.</li> <li>• Local resident users shall be informed that if they wish to make a complaint regarding the construction works, they may phone Department of Primary Industries - Lands.</li> <li>• A notice of entry (NOE) shall be affixed to all entry points to the construction site (if required)</li> </ul>
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Complaints handling
<ul style="list-style-type: none"> <li>• Any complaints shall be reported on the Environmental Incident Report Form.</li> <li>• Complaints shall be responded to in a timely and sensitive fashion and any subsequent actions reported to the concerned party.</li> </ul>

Amendments
<p>The CEMP may be updated or amended prior to or during the course of construction subject to the approval of Department of Primary Industries - Lands.</p>

1.6 Attached Sub-plans
<p>Environmental Incident Report Form <span style="float: right;">(Attachment A)</span></p>

## 2 Environmental Management

### 2.1 General Management

#### Management/Mitigation Measures

The Contractor shall ensure that all activities carried out on site are done so in accordance with all permits and licenses required, this CEMP and any SEMP prepared by the Contractor, from the beginning of the works throughout the duration of the works.

A pre-construction dilapidation survey shall be undertaken (including photographic records) to determine the existing conditions of the selected site compound.

The Contractor shall ensure adequate care is taken during the works to ensure no damage is caused to any adjoining areas.

Security fencing shall be retained around the perimeter of the site where appropriate.

The Contractor shall hold weekly toolbox talks which shall be attended by the Environmental Manager and all on-site construction workers.

### 2.2 Heritage Management

The Belmont/ Swansea area is located within the traditional country of the Awabakal people and within the Bahtabah Local Aboriginal Land Council boundary. A search of the AHIMS database identified two sites within 1km of the study area but located outside the Old Belmont Sands site, pipeline route and Blacksmiths Beach stockpile/ disposal site.

#### Management/Mitigation Measures

Any excavation proposed below natural ground (i.e. excluding former dredge sand areas) shall be monitored for the presence of archaeological materials.

If, during the course of work a potential Aboriginal object is located, work in the specific area shall stop (excluding sand delivery and dewatering activities), and the Aboriginal artefact shall be removed.

### 2.3 Water Quality, Erosion and Sediment Control

Water quality, erosion and sediment impacts may occur as a result of dredging and material placement activities.

Potential impacts to the water quality include:

- increased turbidity due in the dredging area;
- accidental fuel and oil spills;
- erosion and sediment impacts due to placing dredged material;
- impacts on water quality (i.e. increased turbidity) at material placement areas.

The Contractor shall be responsible for:

- maintaining acceptable water quality at the immediate dredging areas and in the waters discharged due to material placement activities; and
- minimising the impact of construction works on surrounding areas and waterways.

#### Sediment Management/Mitigation Measures

All management and mitigation measures and relevant documents relating to General Management (**Section 2.1**), and Aquatic Ecology (**Section 2.4**) shall be adhered to and referenced.

According to the sediment sampling undertaken an ASS management plan and associated implementation works is not likely to be required, however, as part of the CEMP, the contractor shall confirm that the observed materials are visually consistent with the material described in REF (i.e. clean marine sand with <10% fine sediments).

Depending on the Contractors methodology, and as determined by the Site Superintendent, a site specific erosion and sediment control plan be required to be developed and adhered. All management and mitigation measures detailed, including but not limited to silt fencing and silt curtains, shall be implemented in order to control both onsite and offsite impacts throughout the works.

The design and construction of all sediment control measures shall be consistent with currently accepted best

practice, following recommendations of Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004 (commonly known as the Blue Book) to prevent the entry of sediment into the waterway.

Silt curtains around the immediate dredging area are not considered practical due to high water flow in the channel. Should sediment plumes be visible work is to cease till cause is rectified to the satisfaction of the Site Superintendent. Seagrass beds in the vicinity of Spoil Island to be protected from suspended sediment.

The material placement area shall be prepared and maintained throughout dredging operations to prevent the discharge of turbid water into nearby estuarine and/or coastal waters. Establishment of bunds, settlement ponds and silt fencing at the material placement areas shall be implemented to manage the discharge water in a controlled manner.

All equipment used during the works process shall be well maintained and serviced to ensure they are in proper working order and reduce the likelihood of leaks and spills. Prior to use at the site and / or entry into the waterway, machinery shall be appropriately cleaned, degreased and serviced.

Contractor Oil spill response kits shall be onsite at all times during the works.

A bund shall be formed around the booster pumps and any areas used to hold fuel and oil within the contractor's compound to prevent spills affecting adjacent foreshore/ marine habitats.

All general waste generated during the construction process shall be contained and disposed of appropriately offsite to prevent it from entering the marine environment.

Construction methodology and land and water based sediment controls shall be designed to take consideration of the coastal/estuarine conditions of the site. This includes designs that take account of water levels and waves including wave run up, so that the mitigation measures are not compromised and water quality is maintained.

If trucks are used for the transport and onshore disposal of materials, they shall be fitted with splash boards, a rubber-sealed tail gate and cover to minimise the loss of material during loading and transport.

Upslope diversion drains shall be used to divert clean stormwater around material placement areas and the contractor's compound.

All temporary and permanent drainage diversions shall be stabilised immediately.

All temporary stockpiles shall be adequately contained and stabilised to prevent any loss of material. Stockpiles shall also be located 20m away from adjacent water land, or as far landward a practically possible. Where stockpiles are less than 20m away from the waterway additional care shall be taken to prevent any loss of material from the contained area.

Onsite traffic shall be restricted to defined access roads wherever possible.

Drains, gutters, roadways and access ways shall be maintained free of sediment and to the satisfaction of the Site Superintendent. Gutters and roadways shall be regularly swept to maintain them from sediment if required.

All water quality, erosion and sedimentation controls shall be maintained in good working order, operating effectively, for the duration of the works and until the site has been stabilised.

All controls shall be inspected prior to undertaking any works each morning and following a major rainfall or coastal (wind, waves or high water levels) event. All inspections and resulting observations shall be recorded by the Contractor.

Monitoring for visual turbid plumes, in the immediate dredging and material placement areas, shall be undertaken regularly during all works which may cause turbidity.

If a visual turbid plume occurs, the offending works shall cease until the plume dissipates, and the following management and mitigation measures shall be undertaken:

- visual inspection of sediment controls;
- recording of incident immediately to the Site Superintendent;
- consideration of estuary/ocean conditions;
- inspection and repair of sediment if required (i.e. bunds, sediment fences, silt curtain etc);
- consideration of plant and equipment used and of the locations of controls;
- consideration of the timing of restoration activities; and
- cease offending restoration works if required.

The date, location and quantity of any sediment removed from sediment controls shall be recorded.

Reporting of observed turbidity, corrective actions undertaken and preventative measures implemented shall be made to the Site Superintendent/Environmental Manager.

#### Reference Documents

- Department of Housing and Landcom (2004) Managing Urban Stormwater: Soils and Construction (Blue Book).

## 2.4 Ecology

Intertidal and subtidal marine habitats occur in the site including seagrass, salt marsh and mangroves. Harm to marine vegetation at the site shall be avoided.

Generally the onshore areas to be impacted by the works are already disturbed. *However*, potential impacts on ecology may result from construction activities such as:

- bed souring from self-propelled vessel propulsion, or from towing or pushing activities when setting up the dredge, booster pump on Spoil Island and water-based pipeline
- scalping vegetated habitats via cable scour if dredging equipment relies on anchors or mooring blocks with cables to hold and move equipment about for dredging, or the use of anchors and mooring blocks for holding the floating slurry pipeline in place
- undermining of adjacent marine habitats if dredged batters were unstable
- localised mobilisation of bottom sediments and associated risk of elevated turbidity and smothering of adjacent vegetated habitats
- overflow from hopper barges (if used), splits in the floating pipeline or uncoupling of the pipeline to remove blockages resulting in localised high turbidity and risk of smothering adjacent vegetated habitats
- disturbance to breeding or feeding and roosting shore or migratory wading birds
- water quality impacts associated with dredging and material placement activities;
- placement of onshore pipeline.

### Management/Mitigation Measures

Impacts to aquatic ecology that may potentially arise as a result of increased sediment loads shall be managed in accordance with the management and mitigation measures and relevant documents relating to General Management (**Section 2.1**), and Water Quality, Erosion and Sediment Control (**Section 2.3**).

Extents of sea grass shall be confirmed prior to commencement of the works.

The Contractor will minimise the area of direct impacts on marine habitat (especially areas of aquatic vegetation) at the site. This shall be done by limiting dredging to the channel area, limiting unnecessary / temporary construction at the site (i.e. through selection of the most appropriate construction methods) and limiting any anchoring which is required by vessels.

Material storage and stockpiling shall not to be undertaken on water land, marine vegetation (saltmarsh, mangrove, and seagrass) or riparian vegetation. Stockpiling must be undertaken in a manner to avoid harm to these types of vegetation or water land. Refer to the REF for more detail.

carrying out operations in areas where there is adequate depth to prevent propeller scour or wash damage to vegetated habitats

maintaining adequate buffer zones from the dredge batter to seagrass beds

excluding anchors and moorings from seagrass beds

where the use of a cable across sea grasses is unavoidable, this shall comprise floating rope rather than wire or chain and only be placed where there is sufficient tide cover to prevent cable scouring

whilst the risk of turbidity plumes associated with the dredging is considered minimal by virtue of the nature of the sediments to be dredged (clean marine sands), silt curtains set parallel to the shoreline shall be used when dredging in close proximity to vegetated habitats, i.e. the Spoil Island inshore seagrass and saltmarsh habitat

**Ensure all activities associated with the dredging are undertaken at a sufficient distance away from the known bird nesting area on Spoil Island and the new colony of Little Terns on Elizabeth Island.**

Visual inspections of the southern ends of Spoil Island and Elizabeth Island were undertaken 3 and 9 December 2015. Inspections identified a Little Tern colony (20 to 30 non-breeders and 7 nesting pairs with eggs) on the southern end of Elizabeth Island. No LTs were observed on the southern end of Spoil Island likely due to increased ground cover (considered undesirable by LTs for nesting). One nesting Masked Lapwing was observed within the fenced seabird protection area). About 10 Common Seagulls were observed at the water's edge.

Potential direct impacts include disturbance of seagrass beds and the intertidal vegetation on Spoil Island and at Nauru Point for laying of pipelines and spoil placement. Potential impacts shall be minimised by:

- careful placement and fixing of pipelines to avoid/minimise damage to seagrass and saltmarsh habitats with sufficient space for routine activities.
- ensure all activities associated with the dredging and sand placement are undertaken at a sufficient distance away from the known bird nesting area on Spoil Island and the new colony of Little Terns on Elizabeth Island.

Where possible vessels shall anchor in and remain over soft sediment habitat rather than over seagrass areas.

Harm to marine vegetation or water land outside the work footprint is not permitted and any harm caused shall be documented and reported to the Department of Primary Industry (Fisheries) Conservation Officer. Any harm caused is to be restored in accordance with directions provided by the Conservation Officer.

On completion of the works the site shall be shaped and stabilised including removal of surplus construction materials and temporary structures installed during the course of the works.

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

### Reference Documents

## 2.5 Noise Management

The closest receptors to the inner channel where dredging would generally take place are:

- residences at Marks Point, Pelican and Pelican Marina

Noise impacts to residents may result from construction traffic and material placement activities.

### Management/Mitigation Measures

Noise shall be managed in accordance with the Office of Environment and Heritage (OEH) Interim Construction Noise Guideline 2009.

All combustion engine plant, such as generators, compressors and welders, shall be carefully checked to ensure they produce minimal noise, with particular attention to residential grade exhaust silencers and shielding around motors.

Trucks and other machines shall be turned off when not in use and shall not be left idling.

Machines used on the site must be maintained in good condition to minimise source noise levels. Machines found to produce excessive noise compared to industry best practice shall be removed from the site or stood down until repairs or modifications can be made.

Construction work shall not be undertaken outside of the hours between 7:00 AM to 6:00 PM, Monday to Friday, unless otherwise approved by the Site Superintendent. All works shall be undertaken in accordance with the POEO Act.

No work shall be scheduled on Sundays or on public holidays, unless otherwise approved by the Superintendent.

Noise complaints shall be handled as per the procedure outlined in **Section 1.6**.

### Reference Documents

Interim Construction Noise Guideline 2009.

Work Health and Safety Regulation 2011

## 2.6 Access and Recreational Use

Impacts to public access and recreational will be expected during the works. These may include:

- Navigation along the channel;
- Potential contractor compound, stockpile and disposal sites (Naru Point and Spoil Island)

Management/Mitigation Measures
Sink dredge pipelines where possible to limit impact on passing vessels
To ensure navigation safety, the dredge shall display lights and day shapes in accordance with regulations, and the location of the floating and submerged sections of the pipeline shall be delineated with markers
Appropriate signage shall be displayed around the boundary of the site explaining the nature, purpose and duration of the works to public users of the area.
When placing material on Nauru Point or Spoil Island provide fencing and/or bunting around material placement and dewatering areas as directed by the Site Superintendent.
Naru Point site shall be temporarily fenced off when used as contractor's compounds
As far as practical and safe, access to the foreshore areas shall be made available to the public.
The works shall be adequately planned and resourced so as to minimise the works time frame required.
Reference Documents

2.7 Traffic Management
Impacts to the surrounding community and environment may be expected from the generation of additional traffic on surrounding roads and the associated traffic noise. The impacts from these traffic movements shall be managed through route, the mitigation measures outlined below and minimising the duration of the works.
Management/Mitigation Measures
Depending on the Contractors construction methodology, and as determined by the Site Superintendent, the Contractor may be required to address the requirements for traffic management and route selection in their Traffic Control Plan (TCP), based on their work methods and this CEMP. This shall be prepared, according to specifications outlined in the <i>Traffic Control at Work Sites Manual Version 4</i> .
Appropriate signage shall be installed at all gates to caution road public users of construction traffic in accordance with AS 1742.3-2002 <i>Manual of uniform traffic control devices - Traffic control devices for works on roads</i> .
All vehicle operators on the site shall be briefed on site safety procedures including routes and traffic flow.
Trucking activity shall be regulated during busy periods to minimise traffic issues or delays.
All major plant involved in the earthworks such as excavators shall stay on site for the duration of their commitment on site.
Any traffic accidents associated with construction traffic either on or off-site must be reported to the Site Superintendent.
Accidents or complaints regarding traffic impacts shall trigger the review of the Contractor's route selection and traffic management measures.
The works shall be adequately planned and resourced so as to minimise the time frame required.
Reference Documents
AS 1742.3-2009 <i>Manual of uniform traffic control devices - Traffic control devices for works on roads</i> . RTA - Traffic Control at Work Sites Manual Version 4.

2.8 Waste Management								
Waste materials may be generated during the proposed works, and may include waste from site establishment and cleanup, general waste from site office and worksites, dredged material, , vegetation and waste generated during the works. The waste classification of such waste according to the EPA (2009) Waste Classification Guidelines are listed in the table below:								
<table border="1"> <tr> <td><b>General solid waste (putrescible)</b></td> <td>Food waste</td> </tr> <tr> <td><b>General solid waste (non-putrescible)</b></td> <td>Concrete, gravel, asphalt, metal, plastic, glass, excess green waste, paper, cardboard and other office wastes, cables, sediment (non-sulphidic) from erosion and control structures and virgin excavated natural material (VENM), drums and containers, oily rags and other spill management material (used on non-volatile hydrocarbon material only)</td> </tr> <tr> <td><b>Liquid waste</b></td> <td>Unsewered sanitary wastes, waste oil, grease, lubricants</td> </tr> <tr> <td><b>Hazardous waste</b></td> <td>Toxic substances, oxidising agents, organic peroxides, gases and materials with a pH≤2 or pH≥12.5, material with &gt;1% (by weight) coal tar or coal tar pitch, printer cartridges</td> </tr> </table>	<b>General solid waste (putrescible)</b>	Food waste	<b>General solid waste (non-putrescible)</b>	Concrete, gravel, asphalt, metal, plastic, glass, excess green waste, paper, cardboard and other office wastes, cables, sediment (non-sulphidic) from erosion and control structures and virgin excavated natural material (VENM), drums and containers, oily rags and other spill management material (used on non-volatile hydrocarbon material only)	<b>Liquid waste</b>	Unsewered sanitary wastes, waste oil, grease, lubricants	<b>Hazardous waste</b>	Toxic substances, oxidising agents, organic peroxides, gases and materials with a pH≤2 or pH≥12.5, material with >1% (by weight) coal tar or coal tar pitch, printer cartridges
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<b>Liquid waste</b>	Unsewered sanitary wastes, waste oil, grease, lubricants							
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Management/Mitigation Measures
Waste shall be managed in accordance with the philosophy of the NSW <i>Environmental Planning and Assessment Regulation 2000</i> Waste Minimisation Hierarchy as follows: <ul style="list-style-type: none"> <li>• avoidance, where possible;</li> <li>• treated, as required and reused onsite;</li> <li>• recycled, either within the site or offsite; and</li> <li>• where other alternatives are not possible, waste shall be disposed of at appropriately licensed waste management facilities.</li> </ul>
Maximise reuse and recycling of all general construction waste (eg. timber, concrete, metal) with consideration of the Resource NSW (2003) Waste Avoidance and Resource Recovery Strategy and NSW Government (2007) Waste Reduction and Purchasing Policy guidelines. All waste requiring disposal shall be done so in accordance with the <i>Protection of the Environment Operations Act 1997</i> and the <i>Contaminated Lands Management Act 1997</i> .
Where possible, consideration shall be given to the purchase of recycled or partly-recycled materials as opposed to new materials.
Where possible, materials shall be purchased in bulk to reduce associated packaging and transportation emissions.
Waste management areas shall be conveniently located and well-marked as per the waste designation (ie. recyclable, general waste, green waste, hazardous waste).
Removed vegetation shall be composted or mulched on site for reuse where possible. Weed material shall be disposed to landfill.
Sanitary waste shall be stored onsite within portable toilet facilities and shall be handled and disposed of by an appropriately licensed contractor using appropriate personal protective equipment (PPE).
Waste oil, grease, lubricants and spill management material shall be collected in drums and stored in a bunded area prior to disposal to an appropriately licensed waste oil recycler.
Waste oil, grease and lubricant drums shall be stored in a bunded area(s) prior to disposal of to a waste oil recycler/ drum recycler for reuse.
Hazardous waste shall be managed and disposed of by an appropriately licensed contractor using appropriate PPE.
Sediment fences, site fencing, noise barriers and other raw materials shall be reused onsite where possible.
All other waste shall be segregated into recyclable and non-recyclable bins for disposal to appropriately licensed waste/ recycling facilities.
All waste/recycling/storage bins shall be covered and emptied on a regular basis by an appropriately licensed contractor in vehicles appropriately licensed to transport such materials. All loads removed from site shall be covered during transportation.
A Waste Register shall be maintained by the Contractor to track waste. Details shall include date, waste type, quantity, transport mode, receiving station and docket/ receipt number of the receiving station.
The Contractor shall keep dockets of all material being transferred off site and destined for recycling/disposal.
Reference Documents
EPA (2009) Waste Classification Guidelines NSW EPA (1998) Construction and Demolition Waste Action Plan Protection of the Environment Operations (Waste) Regulation 2005 NSW Government (2007) Waste Reduction and Purchasing Policy and Guidelines for 2007 NSW (2003) Waste Avoidance and Resource Recovery Strategy

2.9 Air Quality Management
Minor air quality impacts may be expected associated with: <ul style="list-style-type: none"> <li>• traffic emissions/smoke/ fumes from construction traffic, plant and equipment; and</li> <li>• dust and windblown soil from cleared areas, and placed material.</li> </ul>
Management/Mitigation Measures
All management and mitigation measures and relevant documents relating to General Management ( <b>Section 2.1</b> ), Water Quality, Erosion and Sedimentation ( <b>Section 2.3</b> ) and Traffic Management ( <b>Section 2.7</b> ) shall be adhered to and referenced.
All plant and equipment used by the Contractor shall be selected and regularly maintained in order to minimise the

emission of smoke, dust, fumes and other air pollutants into the atmosphere. Where plant/ equipment is found to be emitting visible smoke/ fumes for longer than periods designated by their operations manuals, the use of such equipment shall be suspended (and maintenance undertaken) until acceptable levels can be achieved.
The Contractor shall construct all facilities in a manner to control the emission of smoke, dust, fumes and other air pollutants into the atmosphere.
No vegetation or other material shall be burnt on site.
Where dust production is unavoidable, all effected personnel shall implement standard health and safety procedures such as the use of personal protective equipment.
An on-site speed limit shall be implemented and shall be posted at the entrance to the construction site.
All cleared areas, and stockpiles shall be appropriately managed to suppress dust and windblown material.
Unsealed access roads and disturbed areas that are not being dewatered shall be sprayed by a water cart or a fine spray of water during operational hours if required, as determined by the Site Superintendent.
Where unacceptable dust, odours or fumes are generated, the Contractor shall cease the relevant activity, implement mitigation measures depending on issues (e.g. replace equipment, cover stockpiles etc), and wait until acceptable levels of air quality have been maintained prior to recommencement of the activity.

### 2.10 Visual Amenity

There will be short term visible exposure of some construction activities from some external viewing locations.
<b>Management/Mitigation Measures</b>
All management and mitigation measures and relevant documents relating to General Management ( <b>Section 2.1</b> ), Water Quality, Erosion and Sedimentation ( <b>Section 2.3</b> ), Aquatic Ecology ( <b>Section 2.4</b> ), Air Quality Management ( <b>Section 2.9</b> ) and Traffic Management ( <b>Section 2.7</b> ) shall be adhered to and referenced.
Consideration shall be given to introduction of visual screening, such as shade cloth on boundary fences in the event that complaints regarding the visual impact of works are received.

### 2.11 Emergency/ Incident Response

<b>Management/Mitigation Measures</b>
This CEMP incorporates an Emergency Response Plan in order to ensure the safety of all personnel and to minimise the impact of significant pollutant release to the environment in the event of an incident such as coastal inundation, leak, spill or escape of a substance (or circumstances in which this is likely to occur). The Emergency Response Plan constitutes the pre-, during- and post-incident actions identified below.
<b>Pre-Incident Actions:</b>
Contractor to complete a risk assessment based on their restoration methodology and identification of the potential environmental impacts associated with the work.
Prepare, co-ordinate and deliver training of emergency response plan to all onsite personnel to ensure understanding of the coastal risk (i.e. inundation, waves, high water levels and winds) and the implementation of management measures as per <b>Section 1.6</b> .
Ensure that all management and mitigation measures and relevant documents detailed in all sections of this CEMP are adhered to and referenced.
Take photographic record of all physical protection measures for post-storm comparison if required.
Ensure all materials and equipment required to implement emergency response and immediate corrective action (such as spill-kits, fire retardants, sandbags, protective covers, lime) are readily available onsite and maintained as operational throughout the construction period.
Monitor weather forecast daily to identify any impending coastal risk and assess the likelihood of occurrence of spring and neap tides occurring in conjunction with extreme waves. Coastal risk shall be identified through weather and sea state forecasts.
Ensure personnel required to implement the emergency response are available in the event of impending extreme waves, winds and water levels.
<b>During-Incident Actions:</b>
In the event of any incident causing or threatening material harm to the environment (such as a leak, spill or escape of a substance, or circumstances in which this is likely to occur) or in the event of fire or inundation, the Contractor shall immediately implement all actions necessary to prevent any further safety risks, damage or release of pollution. Actions required are listed below.

Placement of additional temporary mitigation measures at areas at risk of offsite transportation of material or damage from waves and tides (ie. stockpiles, treatment areas, temporary sumps, waste storage areas, plant and equipment, temporary work, partially complete works).															
Coordinate the removal of any records, plant and equipment to areas of higher elevation if at risk from inundation.															
The Contractor shall notify Department of Primary Industries- Lands and the Site Superintendent as soon as practical following any incident causing or threatening material harm to the environment (such as a leak, spill or escape of a substance, or circumstances in which this is likely to occur) in accordance with Part 5.7 of the POEO Act. Where relevant, the following contacts shall also be notified in regards to the incident, or where necessary if emergency assistance is required.															
<table border="1"> <thead> <tr> <th>Incident/ Scenario</th> <th>Contact</th> <th>Phone Number</th> </tr> </thead> <tbody> <tr> <td>All incidents</td> <td>Department of Primary Industries - Lands</td> <td>0428 689 105</td> </tr> <tr> <td>Urgent advice when DPI - Lands is unavailable</td> <td>EPA Environment Line</td> <td>131 555</td> </tr> <tr> <td>Emergency assistance with containment resources</td> <td>NSW Fire Brigade</td> <td>000</td> </tr> <tr> <td>Fish kills</td> <td>Department of Primary Industries- Lands EPA Environment Line</td> <td>0428 689 105 131 555</td> </tr> </tbody> </table>	Incident/ Scenario	Contact	Phone Number	All incidents	Department of Primary Industries - Lands	0428 689 105	Urgent advice when DPI - Lands is unavailable	EPA Environment Line	131 555	Emergency assistance with containment resources	NSW Fire Brigade	000	Fish kills	Department of Primary Industries- Lands EPA Environment Line	0428 689 105 131 555
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### Post-Incident Actions:

Carry out detailed inspection of areas susceptible to offsite transportation of materials for signs of damage. Where damage is visible, determine the likely quantity and location of any offsite transportation of material.
In the event of any off-site transport of sediment, construction material, pollution or waste to site the Contractor shall carry out remediation and clean-up works in order to mitigate the impacts.
Carryout general clean up and reconstruction of the site.
Maintain/repair/replace/enhance wave and tide protection measures and erosion and sediment control measures if necessary.
Replenish supplies of materials and equipment required to implement emergency response and immediate corrective action (such as spill-kits, fire retardants, sandbags, protective covers, lime).
Determine any new areas at risk following the incident and carry out preventative actions if necessary.
Report the details of any incident, corrective actions taken, preventative actions carried out to prevent further such events, and lessons learnt on the Environmental Incident Report Form ( <b>Attachment A</b> ). The report shall include photographs of flood damage and any physical emergency protection measures.
Review and update the Emergency Response Plan constituted herein (in consultation with Department of Primary Industries - Lands) if necessary.

### Reference Documents

Environmental Incident Report Form ( <b>Attachment B</b> )
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## 3 Records and Reporting Requirements

The Contractor shall establish, document and maintain a quality system as a means of ensuring that compliance is achieved with this CEMP, any subplans and Contract requirements. The Contractor shall prepare a quality manual covering the requirements of the international standard ISO 9001, or approved alternatives.
The Contractor shall report on implementation of the CEMP and any sub plans at regular progress meetings (ie. monthly) with the Site Superintendent.
The Contractor shall notify Department of Primary Industries- Lands and the Site Superintendent as soon as practical following any incident causing or threatening material harm to the environment (such as a leak, spill or escape of a substance, or circumstances in which this is likely to occur) in accordance with Part 5.7 of the POEO Act. Where relevant, the contacts listed in <b>Section 2.11</b> shall also be notified in regards to the incident, or where necessary if emergency assistance is required.
Any existing defects to Department of Primary Industries - Lands property adjoining the site as determined through a pre-construction dilapidation survey shall be reported to Department of Primary Industries- Lands at



least 7 days prior to the commencement of any works.

**4 Auditing**

The Superintendent shall conduct regular site visits and informal audits to ensure the Contractor is implementing and complying with the requirements of this CEMP (and the Contractors SEMP).
<b>Reference Documents</b>
AS/NZS ISO 14010 – 14012 1996: <i>Guidelines for Environmental Auditing</i> . Environmental Incident Report Form ( <b>Attachment B</b> )

**5 CEMP Approval**

<b>Title</b>	Project Manager – Department of Primary Industries - Lands
<b>Name</b>	
<b>Signature</b>	
<b>Date</b>	
<b>Title</b>	Contractor
<b>Name</b>	
<b>Signature</b>	
<b>Date</b>	

ATTACHMENT A

ENVIRONMENTAL INCIDENT REPORT FORM

DRAFT

**ENVIRONMENTAL INCIDENT/COMPLAINT REPORT FORM**

Area of Work: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Initiator: \_\_\_\_\_ Position: \_\_\_\_\_

**Description of Incident/Non Conformance (attach photograph where relevant)**

**Corrective Actions**

Action Completed By (name): \_\_\_\_\_ Position: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Incident Review/Expected Cause**

Details:

- Design
- Construction Methodology
- Material Failure
- Plant/Equipment Failure
- Inadequate treatment
- Other

**Preventative Measures to Prevent Future Incidents**

Undertaken by (name): \_\_\_\_\_ Position: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Sign-Off**

Name: \_\_\_\_\_ Position: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments