

A.1 ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

A.1.1 Environmental Risk Assessment

In order to manage environmental risk and comply with the duty of care as defined by the *Environmental Protection Act 1994*, it is important to identify the potential environmental hazards associated the project, assess the environmental risks involved, and develop controls to eliminate, or minimise, residual environmental risk. In accordance with *AS ISO 31000:2018 Risk Management –Guidelines*, a project hazard identification and risk assessment process has been undertaken in order to assess and adequately manage the risks posed to the environment by the activities associated with the project.

In undertaking this risk assessment, likelihood levels, consequence levels and risk criteria, as shown in Table 6 to Table 8, were used to assess the environmental risk rating for each identified hazard. The resultant risk rating of identified hazards is presented in Table 9 and are to be interpreted as follows:

- Low: Risk can be adequately managed by routine procedures and work practices;
- Medium: Control measures other than administrative controls are needed;
- High: Significant risk control measures need to be implemented before works commence and must be maintained; and
- Extreme: Operations are not to be undertaken without extensive risk control and mitigation measures in place prior to commencement and such measures must be maintained for the duration of the project.

It is the responsivity of the Site Supervisor for each of the works sites to ensure the identified residual risks, are monitored, reassessed and mitigated against through the construction stage of the project and RIC during the operational stage.

Table 6 Risk Assessment Criteria Matrix

Level	Descriptor	Qualitative Description
A	Almost certain	The event is expected to occur; event will occur on an annual (or more frequent) basis.
B	Likely	Probable that it will occur; event has occurred several times before at similar developments.
C	Possible	May or may not occur; event may occur once during the development.
D	Unlikely	The event may occur at some time but is unlikely; heard of happening from time to time at similar developments.
E	Rare	The event may occur in exceptional circumstances; not heard of at similar developments.



**PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL**

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Table 7 Consequence Levels

Level	Descriptor	Qualitative Description
1	Insignificant	Environment: No damage detected. People: Event does not result in injury (i.e. no medical treatment required). Property: No damage to property. Amenity: No detectable impact on amenity.
2	Minor	Environment: Minor impact of short duration or short-term damage. People: Reversible injury or illness. Property: Minor damage to property (<\$5,000 to repair). Amenity: Minor, localised and short-term amenity impacts, no complaints.
3	Moderate	Environment: Short term damage, localised impact. People: Irreversible disability or impairment (30%) to one or more persons. Property: Moderate damage to property (<\$50,000 to repair). Amenity: One or two complaints, impacts extending to several properties and/or lasting for several days.
4	Major	Environment: Significant impact locally and potential for offsite impacts. People: Severe injuries or impairment (60%) to one or more persons, single fatality. Property: Major damage to property (<\$500,000 to repair). Amenity: Many complaints, impacts extensive and/or lasting for many days, up to 5 properties rendered uninhabitable for more than one day.
5	Catastrophic	Environment: Significant impacts to regional ecosystems and threatened species, potential for widespread offsite impacts. People: Multiple fatalities, or irreversible injuries/impairment (>60%). Property: Significant loss to property (>\$1,000,000 to repair). Amenity: Multiple dwellings rendered uninhabitable for >1 day.

Table 8 Risk Assessment Criteria Matrix

		Consequences				
		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Likelihood	A - Almost Certain	Low	Medium	High	Extreme	Extreme
	B - Likely	Low	Medium	Medium	High	Extreme
	C - Possible	Low	Low	Medium	High	High
	D - Unlikely	Low	Low	Medium	Medium	High
	E - Rare	Low	Low	Low	Medium	Medium



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Table 9 Environmental Risk Assessment

Hazard	Risk	Risk Assessment/Risk Controls		
		Unmitigated Environmental Risk Ranking	Management Measures/Controls	Mitigated Environmental Risk Ranking
Decreased water quality resulting from works	- Impacts to water quality Moreton Bay resulting from proposed works - Failure of containment of construction material, hazardous materials or sediment leading to release to water - Use of inappropriate chemicals and other materials resulting in water contamination - Adverse impacts to marine flora and fauna	High (A3)	- Undertake works associated with the replacement of the stormwater outlet in accordance with a site-specific Erosion and Sediment Control Plan - Establish erosion and sediment controls (including those in the water) prior to the commencement of construction works - During construction activities visually monitor the site for evidence of sediment plumes or increases levels of sedimentation. If these are observed, implemented measures are to be reviewed and expanded if required. - Prior to forecasted heaving rainfall inspection of erosion and sediment control devices is to be undertaken. Following the heavy rainfall, they are required to be inspected and rectification works undertaken as required. - Selection of materials suitable for the environmental conditions at the site. - Ensure all waste materials are collected and removed from site.	Medium (D3)
Disturbance of acid sulfate soils	- Acidic or potentially acidic soils/sediments are disturbed without appropriate treatment. - Displacement of sediment and acidic soil material across the sites during ground disturbing activities	High (B4)	- Minimise disturbance of ASS where possible through not exposing material and the need to remove material from the sites. - Use appropriate construction methodologies to minimise risk of exposure to ASS - ASS risk assessment and ASS management to be undertaken in accordance with the <i>Queensland Acid Sulfate Soil Technical Manual - Soil Management Guidelines</i>	Medium (C3)
Impact to marine plants beyond the disturbance footprints	Removal or impact to marine plants beyond the works areas	Medium (C3)	- Clearing of marine plants is to be monitored at all times to ensure that the clearing extent is minimised. - During the proposed works, the works area is to be clearly delineated.	Low (D2)



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Hazard	Risk	Risk Assessment/Risk Controls		
		Unmitigated Environmental Risk Ranking	Management Measures/Controls	Mitigated Environmental Risk Ranking
Impact to marine fauna	- Disturbance to marine mammals interrupting their movement, feeding, or breeding - Death of a marine mammal	High (B4)	- Use of a marine fauna observer at all times while conducting water-based construction activities - Stop work if marine mammals are spotted within the specified works area during high impact activities, such as piling. Works can resume when the animal has left the area - If marine mammals are spotted in the vicinity of the works area implement a temporary pause or slow-down in machinery until spotted animals leave the area. - Where possible, conduct works outside of peak breeding periods	Medium (C3)
Spread of pest plants or animals	- Spread of marine pests through use of equipment and vessels that have not been appropriately cleaned - Increased distribution of invasive weed species due to construction activities, clearing and movement of vehicles and machinery.	High (C4)	Implement strict hygiene protocols for the movement of soils, landscaping material, machinery and other vehicles, onto each of the sites.	Medium (D4)



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Hazard	Risk	Risk Assessment/Risk Controls		
		Unmitigated Environmental Risk Ranking	Management Measures/Controls	Mitigated Environmental Risk Ranking
Disturbance to sensitive receptors from the generation of noise, dust or odour emissions	Noise impacts to sensitive receptors.	High (A3)	- Noise generating activities shall be minimised where practicable - Works are to be undertaken in compliance with the <i>Environmental Protection (Noise) Policy 2019</i> and <i>Environmental Protection (Air) Policy 2019</i> and implementation of appropriate management measures. - Maintain trafficable areas in a clean condition to minimise dust generation. If required, use of water trucks or other suitable methods of dust suppression where required to minimise dust exposure beyond the immediate vicinity of the works. - All machinery and vehicles are to be maintained and operated in accordance with the manufacturer's specifications to minimise noise emissions. - Should complaints about noise be received, the Contractor shall investigate the cause of the noise and undertake corrective actions as required.	Medium (B3)
Contamination from storage of hazardous materials	Contamination of surrounding soil, waterways, surface water and groundwater and air through spills.	High (C4)	- Minimise the quantities of hazardous materials stored at any one time. - Store substances in accordance with the relevant Australian standards. - Make spill kits readily available in areas where hazardous materials are stored or used.	Low (D2)



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Hazard	Risk	Risk Assessment/Risk Controls		
		Unmitigated Environmental Risk Ranking	Management Measures/Controls	Mitigated Environmental Risk Ranking
Pollution caused from poor construction waste management	- Contamination of air, water and soil pollution to Site and surrounds. - Potential for hazardous exposure of contaminants to persons (i.e. contaminated land). - Unlawful disposal of waste.	Medium (C3)	- Establish an unexpected finds procedure for implementation should contaminated material be encountered during demolition/construction. - Contaminated material is to be disposed of by a suitably licenced contractor to an appropriate waste disposal facility. - Training of staff, provision of waste receptacles, bunding and appropriate management measures for hazardous materials, waste management and offsite transport. - Provision of appropriate readily accessible waste receptacles during demolition/construction. - All debris, rubbish and other material resulting from the project is to be contained within the site and removed daily, with all materials removed at the end of demolition/construction operations.	Low (D2)



A.2 ENVIRONMENTAL MANAGEMENT

A.2.1 Objectives of the Environmental Management Plan

This EMP provides performance criteria that are to be met so that the impacts of the development undertaken by the contractor on the physical and social environment are minimised. In particular, this EMP provides mechanisms whereby the environmental performance associated with the works can be measured, and provides procedures for the implementation of corrective actions, if required.

The objectives of the EMP are to ensure that:

- work site environmental management measures for the purpose of protecting environmental values are implemented during the works;
- a high level of environmental care and responsibility is demonstrated and best practice environmental management is achieved during the works;
- compliance with relevant legislation is demonstrated; and
- environmental responsibilities and reporting are established to demonstrate due diligence.

The contractor shall assume responsibility for the implementation of this EMP.

A.2.2 Legislation and Standards

Legislation

- The *Aboriginal Cultural Heritage Act 2003* defines the duty of care to ensure that all reasonable and practical measures are taken to prevent damage to places and objects of Aboriginal cultural, historical or archaeological significance.
- The *Biosecurity Act 2014* regulates the biosecurity approach within Queensland. It controls pests, diseases and contaminants, and combined the various pieces of legislation which previously governed biosecurity within the State.
- The *Environment Protection and Biodiversity Conservation Act 1999* is the Australian Government's central piece of environmental legislation, and provides a legal framework to protect and manage Matters of National Environmental Significance.
- The *Environmental Protection Act 1994* protects environmental values through development and implementation of environmental protection policies and regulates environmentally relevant activities prescribed in the *Environmental Protection Regulation 2019*.
- The *Environmental Protection Regulation 2019* specifies details cited in the *Environmental Protection Act 1994*, including the process of Environmental Impact Statement, Environmentally Relevant Activities, and Environmental Nuisance.
- The *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* ensures protection of environmental values from activities that may result in the release of contaminants to watercourses or stormwater drains.
- The *Environmental Protection (Air) Policy 2019* ensures protection of ambient air quality and specifies indicators and air quality goals for control of the release of airborne contaminants.



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- The *Environmental Protection (Noise) Policy 2019* specifies an acoustic quality objective for protection of the well-being and amenity of individuals and the community in residential areas. Planning noise levels are also specified for development of beneficial assets.
- The *Fisheries Act 1994* and subordinate *Fisheries Regulation 2008* aim to provide for the use, conservation and enhancement of Queensland's fisheries resources and fish habitats in a way that applies and balances the principles of ecologically sustainable development.
- The *Nature Conservation Act 1992* and subordinate regulations protect Queensland's threatened flora and fauna, and regulates activities which may impact on such species.
- The *Waste Reduction and Recycling Act 2011* and subordinate *Waste Reduction and Recycling Regulation 2011* provides the waste and resource management hierarchy and sets specific requirements for the management of regulated waste, waste disposal facilities, waste management by local government, and litter control.
- The *Workplace Health and Safety Act 2011* and subordinate legislation (including the *Workplace Health and Safety Regulations 2011*) provides a framework to protect the health, safety and welfare of all workers at work and of all other people who might be affected by the work.

A.3 TERMINOLOGY

The term **Contractor** refers to construction contractor engaged by RIC to undertake the demolition and construction works.

The term **works** are the works detailed and described in Section 3.0.

The term **Act** refers to the *Environmental Protection Act 1994*.

The terms **Principal** refers to Redland Investment Corporation.

The term **EMP** refers to this Environmental Management Plan.

The term **DES** refers to the Department of Environment and Science.

The term **Site** refers to the applicable work area.

The term **Site Supervisor** refers to the person nominated by the Contractor to oversee environmental matters mentioned within the EMP.

A.4 NON-COMPLIANCE AND CORRECTIVE ACTIONS

The Contractor shall assume responsibility for implementation of this EMP. Where the Contractor becomes aware of a site or operational condition that does not comply with stated performance indicators of this EMP, there is a requirement for a corrective action. The Contractor shall also maintain a register of



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corrective actions, which shall demonstrate that appropriate actions have been completed within a suitable timeframe.

Any corrective action registered in accordance with this EMP shall be provided to the Principal and any Local, State or Commonwealth Government Department, any statutory authority or other person, consensually or as lawfully required.

The Contractor shall also maintain a register of complaints received in accordance with the activity and manage the response to such complaints in accordance with a complaints management system which will track the expeditious resolution of complaints.

Complaints which cannot be resolved in an efficient manner and in accordance with the requirements of the EMP shall trigger environmental monitoring where relevant and (where necessary) a review of the relevant measures of the management plan to identify required improvements in order address the complaints. Complaints shall be made available to the relevant authorities for inspection as required.

A.5 ENVIRONMENTAL INCIDENTS AND EMERGENCIES

In the event of environmental incident or emergency, the Contractor is to implement an environmental incident and emergency response procedure including completion of an Environmental Incident Report form. The procedure will clearly define response and notification requirements including all relevant details of those to be contacted in the event of an environmental incident or emergency, and details of escalating notification requirements related to the severity of the incident. The Environmental Incident Report form will include the details of the incident, and as a minimum include:

- date of incident;
- details of the persons who detected or notified the incident (internal and external);
- nature of the incident; and
- details of the corrective actions undertaken.

The Principal will be notified of any recorded environmental incidents or emergencies as soon as practicably possible. Relevant authorities will be notified by the Contractor if necessary. Table 10 indicates the relevant parties to be notified in case of environmental incidents and emergencies.

Table 10 Emergency Contact Details

Contact/ Organisation	Contact Details
Department of Environment and Science	General: 13 74 68 (8:30-4:00 Mon to Fri – Public Holidays excepted) Pollution Reporting (Pollution Hotline): 1300 130 372
Department of Agriculture and Fisheries	07 3404 6999
Maritime Safety Queensland	Marine Incidents and pollution 07 3632 7500 (office hours) 07 3305 1700 (after hours)



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Contact/ Organisation	Contact Details
24 Hour Emergency – Maritime	1800 641 792
Redland City Council	07 3829 8999
Principal (Project Manager Representative)	To be Advised
Project Manager (Construction)	To be Advised
Project Manager (HSEQ)	To be Advised
Site Supervisor (Construction)	To be Advised

A.6 ENVIRONMENTAL MANAGEMENT PLAN

A.6.1 Water Quality

Rationale

The proposed works involve undertaking excavation works within both the marine and terrestrial environmental that have the potential to cause erosion and sediment release to the surrounding environment. As such, there is potential for the works to impact on water quality through increased turbidity and the potential exposure of ASS.

Objectives

- To minimise negative impacts to water quality. This includes minimising the risk of uncontrolled releases of sediments and ASS from the demolition/construction sites.
- Appropriate management measures are undertaken should ASS be exposed or required to be removed from any of the sites.
- Erosion occurring as a result of demolition/construction practices is minimised as far as practicable and controlled in accordance with the nominated control measures.

Performance Indicators

- No impacts on marine water quality.
- Sediment control devices on land and in the water, are installed and operational prior to commencement of works and maintained at all times throughout demolition/construction.
- No release of sediment to waters from land-based construction activities.
- All ASS material exposed by the works is appropriately treated or removed from site.
- No visible oils or grease films, or odour, and no anthropogenic (man-made) materials originating from the works within Moreton Bay.



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Monitoring

- Daily visual inspections of worksite for evidence or risks of contamination to waters.
- Daily visual inspections of all stormwater runoff discharged from the land-based construction activities to ensure no sediment, dust, rocks, litter, hydrocarbons and excessive suspended solid loads are discharged into the marine environment.

Record Keeping and Reporting

- The Contractor shall maintain a record of daily visual inspections.
- The Contractor shall maintain a record of all complaints received and must be made available to the relevant authorities upon request.
- Review of implementation strategy to ensure sufficiency and prevention of recurrence.

Management Measures

Tasks	Action	Timing	Responsibility
Preparation of Erosion and Sediment Control Plans	▪ Preparation, by a suitably qualified person, of erosion and sediment control plans (ESCP) for each demolition/construction site. ▪ The ESCP is to include specific measures to address the works being undertaken within Moreton Bay Marine Park. ▪ Where practical, priority shall be given to the prevention, or at least the minimisation, rather than the trapping of displaced sediment.	Prior to construction works commencing	Contractor
Management of erosion and sedimentation from construction activities	▪ Appropriate measures are to be installed and maintained during all marine demolition/construction activities in accordance with the site specific ESCP. ▪ Conduct daily visual inspections of controls and any stormwater runoff from the Site to ensure they are in place and working effectively. ▪ Ensure compliance at all time with the ESCP.	Ongoing	Contractor
Management of ASS or PASS where exposed	▪ Machinery is to be cleaned below the surface, removing all mud and sediments prior to exposure to air to prevent potential contamination from ASS. ▪ ASS risk assessment and ASS management to be undertaken in accordance with the <i>Queensland Acid Sulfate Soil Technical Manual - Soil Management Guidelines</i>	Ongoing during construction	Contractor
Stockpile management to minimise runoff or particle dispersion	▪ If stockpiles of erodible material are required they are to be managed in accordance with the applicable ESCP. ▪ If material is not to be re-used for a purpose on site, the material should be removed from site rather than stockpiled.	Ongoing	Contractor



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Tasks	Action	Timing	Responsibility
Maintain worksite in a clean and tidy state	▪ Conduct visual inspections of the work site to ensure it is kept in a clean and tidy condition. ▪ Place all litter and waste, including cigarette butts, lidded bins. ▪ All waste materials, including debris, located within and adjacent to the project that are the result of the project, are to be removed as soon as reasonably practicable and no later than practical completion. ▪ Maintenance and cleaning of vehicles and any other equipment or plant machinery must not be carried out on. ▪ Fuels and oils and other hazardous substances shall not be stored on site but only brought to site if required. ▪ Any spillages of liquid wastes, contaminants or other materials must be as far as practicable cleaned up immediately using the appropriate spill kits. ▪ Spill kits are to be provided for each site vehicle and at all locations where hazardous materials are to be used.	Ongoing during construction	Contractor
Completion of works – removal of erosion and sediment controls	▪ The ESC measures are not to be removed until post demolition/construction protection works have been established. ▪ All materials used for temporary erosion and sediment control works are to be removed from the Site upon completion, or otherwise disposed of by the contractor.	Project completion	Contractor

A.6.2 Flora and Fauna

Rationale

The works will be undertaken within the Habitat Protection Zone of the Moreton Bay Marine Park. Moreton Bay is the home to a variety of flora and fauna both in the marina and terrestrial environment. The proposed works may result in disturbance to marine and terrestrial flora or fauna.

Objective

To reduce the direct and indirect impact to flora and fauna.



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Performance Indicators

- No disturbance to marine plants outside of immediate works areas as delineated prior to commencement of works.
- No death or injury to marine mammals.
- No introduction of pest species.

Monitoring

- Complete daily checks of the work sites prior to commencement of works to identify the presence of any fauna.
- Clearing of marine plants is to be monitored at all times to ensure that the clearing extent is minimised.
- Use of a marine fauna observer at all times while conducting water-based construction/demolition activities

Record Keeping and Reporting

- The Contractor shall maintain a record of daily visual inspections and observations.
- The Contractor shall maintain a record of all complaints received and must be made available to the relevant authorities upon request.
- Review of implementation strategy to ensure sufficiency and prevention of recurrence.

Management Measures

Tasks	Action	Timing	Responsibility
Marine fauna management	▪ Use of a marine fauna observer at all times while conducting water-based construction activities ▪ Stop work if marine mammals are spotted within the specified works area during high impact activities, such as excavation. Works can resume when the animal has left the area ▪ If marine mammals are spotted in the vicinity of the works area during other activities implement a temporary pause or slow-down in drilling or machinery speed until spotted animals leave the area. ▪ All machinery and vehicles are to be maintained and operated in accordance with the manufacturer's specifications to minimise underwater noise emissions.	During construction	Contractor
Terrestrial fauna management	▪ Should terrestrial fauna be identified within the works site, a fauna spotter catcher should be called to undertake any required actions.	During construction	Contractor
Management of required removal of marine plants	▪ Clearing of marine plants is to be monitored at all times to ensure that the clearing extent is minimised.	During construction	Contractor



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Tasks	Action	Timing	Responsibility
	During the stormwater outlet construction, the works area is to be clearly delineated.		
Terrestrial flora management	Establish no go zones to prevent clearing and damage to vegetation situated outside of the nominated works areas.	Prior to and during construction	Contractor
Management of marine pest species	Implement hygiene protocols for the movement of marine equipment within and outside of the works areas.	During construction	Contractor
Weed management activities	- Implement strict hygiene protocols for the movement of soils, landscaping material, machinery and other vehicles, onto the site. - If weed management is required, due to the proximity to Moreton Bay, only aquatic registered herbicides are to be used.	Ongoing	Contractor

A.6.3 Noise, Vibration, and Air Quality

Rationale

The construction works are located within close proximity to sensitive receptors, including local communities, recreational users of Moreton Bay. The construction works will include a range of noise generating activities that may adversely affect sensitive receptors

Objective

- Manage noise, air quality impacts and vibration generated by construction activities to minimise the impact to sensitive receptors.

Performance Indicators

- Compliance with all relevant legislative frameworks.
- No complaints of air quality, noise, or vibration are received.
- Compliance with stated working hours.

Monitoring

- If requested by the Principal in response to a reasonable complaint, undertake monitoring of noise levels at adjacent/requested sensitive receptor locations
- Monitoring (where stipulated by the Principal) must be in accordance with applicable standards with monitoring devices correctly calibrated and maintained
- Make all records available for inspection by relevant authorities upon request.



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Record Keeping and Reporting

- The Contractor shall maintain a record of inspections and observations.
- The Contractor shall maintain a record of all complaints received and must be made available to the relevant authorities upon request.
- Review of implementation strategy to ensure sufficiency and prevention of recurrence.

Management Measures

Tasks	Action	Timing	Responsibility
Construction hours	▪ All works are to be conducted within the hours specified in the <i>Environmental Protection Act 1994</i>. ▪ In the event that works outside of these hours are required, approval from the Principal is required prior to commencing.	During construction	Contractor
Noise management during demolition/ construction activities	▪ Control all noise-generating mobile and stationary plant, equipment, and processes to minimise noise emission in accordance with AS 2436: <i>Guide to Noise Control on Construction, Maintenance and Demolition Sites</i>, including but not limited to: – Repair and maintain noisy plant and equipment to manufacturer's specifications including fitting of noise suppression mufflers. – Keep panels and covers of silenced plant shut, reduce throttle setting and switch off plant when not in use. – Schedule noisy activities as far as possible to occur times of high background noise (local road traffic or when other local noise sources are active) to provide masking or to reduce the amount that the construction noise intrudes above the background acoustic environment. – Avoid metal-to-metal contact on equipment. ▪ Ensure periods of respite are provided in the case of unavoidable maximum noise level events.	During construction	Contractor
Vibration management	▪ Vibration producing activities restricted to normal working hours (e.g., 9am to 5pm).	During vibration generating activities	Contractor
Management of construction site to minimise dust emissions and other impacts to air quality	▪ Maintain trafficable areas in a clean condition to minimise dust generation. If required, use of water trucks or other suitable methods of dust suppression where required to minimise dust exposure beyond the immediate vicinity of the works. ▪ No material is to be tracked onto external roadways. If material from the site is identified on roadways, preventative measures are to be	During construction	Contractor



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Tasks	Action	Timing	Responsibility
	considered (e.g. wash-down or shakedown facility). ▪ If material is tracked onto adjoining roadways from the worksite, it is to be cleaned as soon as is practical. ▪ Waste materials are not to be burnt onsite.		
Placement and operation of construction lighting	▪ Minimise, where possible the use of security and other lighting during construction ▪ All lighting must be positioned so as not to cause: – Glare or other nuisance to surrounding residents and motorists; and – A navigation hazard on any nearby or adjacent waterway. ▪ Provision of appropriate lighting on marine equipment used during demolition activities.	During construction	Contractor

A.6.4 Waste Management

Rationale

Construction activities typically generate significant quantities of waste which require management to reduce the risk of both onsite and offsite contamination resulting from poor waste management.

Objectives

- To effectively manage all waste material, including hazardous substances, to prevent pollution to the marine environment, prevent human exposure to hazardous wastes and dispose of all wastes appropriately.
- To have due regard for the Water Management Hierarchy of:
 - Avoid
 - Reduce
 - Reuse
 - Recycle
 - Treat
 - Dispose

Performance Indicators

- No waste of any type is inappropriately disposed of.
- All waste is disposed of at an approved waste management facility.



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Monitoring

- Daily inspections of:
 - the site to ensure it is kept in a clean and tidy condition;
 - waste receptacles to confirm correct waste removal schedules; and
 - the site and surrounds to ensure no uncontrolled waste has been released.
- Record waste collections – type, volume, off-site disposal records.
- Identify the cause of any non-compliances.

Record Keeping and Reporting

- Maintain records of all inspections, complaints received and corrective actions undertaken.
- Make all records available for inspection by relevant authorities upon request.
- The Contractor is to provide reports detailing the following information:
 - Dates of waste collection;
 - Description and quantity of the waste in each collection;
 - Cross reference to relevant waste transport documentation where the waste is trackable;
 - Origin and destination of the waste; and
 - Intended fate of the waste, for example, type of waste treatment, reprocessing or disposal.
- Maintain records of all inspections and corrective actions undertaken.
- All non-conformances shall be corrected as soon as possible and strategies implemented to reduce likelihood of incident occurring again.

Management Measures

Tasks	Action	Timing	Responsibility
General waste management	▪ Where possible, materials and supplies shall be ordered in bulk to minimise packaging with packaging materials to be returned to the supplier where possible. ▪ General waste, construction waste and recycling receptacles shall be provided for disposal of construction and domestic wastes. These facilities shall be adequately signed and instructions provided during site induction training for appropriate separation of wastes. ▪ Ensure that general waste receptacles are sealed (e.g. lids) to prevent overflowing and uncontrolled release of wastes into Moreton Bay. ▪ Wastes shall be collected by a licensed waste disposal contractor for disposal on a regular basis, and additional services shall be arranged if required. ▪ Ensure that where any regulated waste is removed from the premises, it is transported by a	During construction	Contractor



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Tasks	Action	Timing	Responsibility
	licensed operator who can lawfully transport such wastes. ▪ All work areas to be tidied each day, including waste removal. ▪ Waste is not to be burned.		
Procedure for unexpected finds of contaminated material	▪ Establish an unexpected finds procedure for implementation should contaminated material be encountered during construction ▪ Contaminated material is to be disposed of by a suitably licenced contractor to an appropriate waste disposal facility.	During construction	Contractor
Disposal and management of hazardous materials and wastes	▪ Any spillage of wastes, contaminants or other materials shall be cleaned up as soon as possible, using dry methods (e.g. sweeping). In the event of a spill resulting in soil contamination, the potentially contaminated material shall be segregated and disposed of appropriately. ▪ Dispose of chemicals in accordance with Material Safety Data Sheets.	During construction	Contractor
Disposal and management of human waste	▪ Any wastes associated with temporary amenities is to be managed and disposed of in accordance with DES guidelines and requirements for the management and disposal of sewage.	During construction	Contractor

A.6.5 Hazardous Materials Storage and Handling

Rationale

The construction works may involve the use, handling and storage of hazardous materials. Incorrectly stored materials or their incorrect use in the marine environment can result in environmental impacts and hazards to human health.

Objectives

- To effectively manage the safe storage, handling and disposal of hazardous materials within the construction Site.
- To ensure that the existing qualities of the receiving surface, ground waters and soils in the locality of the works are not adversely affected by the use, storage or handing of dangerous and hazardous materials.



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Performance Indicators

- Compliance with the *Environmental Protection Act 1994* and *AS1940-2004: The storage and handling of flammable and combustible liquids*.
- No adverse impacts to the work site or receiving environment associated with the handling, storage and/or disposal of hazardous materials.

Monitoring

- Regular site monitoring shall include inspection of hazardous materials storage and containment areas to ensure that spillage or seepage has not occurred and the integrity of the containment area is not compromised.
- Regular inspections of spill response equipment.
- Regular inspections of hazardous materials storage to ensure compliance with this EMP.

Record Keeping and Reporting

- The Contractor shall maintain a record of any accidental release or spillage of hazardous materials including details or corrective actions undertaken. Any such incident shall be reported immediately to the Principal.
- The Contractor shall notify the Principal and DES in the event of a major accidental release of hazardous materials from the Site.
- Maintain records of all inspections and corrective actions undertaken.
- Make all records available for inspection by relevant authorities upon request.

Management Measures

Tasks	Action	Timing	Responsibility
Refuelling of equipment	▪ All equipment is to be refuelled offsite.	During construction	Contractor
Storage of dangerous or hazardous materials	▪ No chemicals will be stored within the immediate vicinity of the banks of Weinam Creek or Moreton Bay. ▪ Waste from hydro carbon spills, including oily rags shall be stored in sealed receptacles and be removed from the barge daily. ▪ Hazardous material containment areas shall be designed to ensure: – the containment and clean-up of spillages are undertaken in accordance with the Material Safety Data Sheets provided by the contractor. – entry of stormwater and rainfall is prevented; and – waste hazardous materials are stored in appropriate containers within the containment	Prior to commencement of construction and ongoing during construction	Contractor



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Tasks	Action	Timing	Responsibility
	area for collection by a waste removal contractor. Regular site inspections of any containment areas shall be conducted to ensure that spillage or seepage has not occurred and the integrity of the containment area is not compromised.		
Appropriate management and reporting of spills	- A spill response and clean up procedure shall be established with appropriate clean-up materials provided on-site. - Induction training shall include emergency procedures and instructions on correct procedures for storage, handling and/or disposal of dangerous and hazardous substances. - Spill kits shall be maintained on site for the clean-up of chemical or fuel spills. - Any accidental spills of hazardous materials should be cleaned immediately, and appropriately disposed of.	During construction	Contractor
Equipment and Plant Maintenance	- Maintenance and repair of plant and equipment will be carried out at an appropriate off-site facility. Onsite maintenance and repairs should only be carried out if they are of a minor nature and it is not practicable to transport the plant or equipment to an off-site facility. - Contractor to provide approved designated storage and cleaning areas for plant and equipment. These areas shall be contained to prevent the runoff of contaminated waters (if relevant).	During construction	Contractor
Procedure for unexpected finds of contaminated material	- Establish an unexpected finds procedure for implementation should contaminated material be encountered during construction - Contaminated material is to be disposed of by a suitably licenced contractor to an appropriate waste disposal facility.	During construction	Contractor
Disposal and management of human waste	Any wastes associated with temporary amenities is to be managed and disposed of in accordance with DES guidelines and requirements for the management and disposal of sewage.	During construction	Contractor



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A.6.6 Emergency Response Plan

Rationale

There are common environmental emergencies which may occur during the completion of the works such as work-place accidents, fuel and hazardous material spills, fires and storm surge.

Objective

- To minimise impacts to the natural built environment, and human health arising as a result of emergencies and/or incidents.

Performance Indicator

- Environmental harm from emergency and/or incident situations is minimised through implementation of emergency procedures.

Record Keeping and Reporting

- Maintain records of all inspections, complaints received and corrective actions undertaken.
- Make all records available for inspection by relevant authorities upon request.

Management Measures

Tasks	Action	Timing	Responsibility
Undertake inductions and training for all staff working onsite	▪ Staff induction and training shall be undertaken as necessary to ensure all staff is trained in appropriate emergency management procedures and notification procedures ▪ Provide firefighting (i.e. extinguishers) equipment and spill clean-up response awareness training for staff, and equipment and materials (i.e. spill kits) for the worksite where necessary.	Prior to commencement of any works	Contractor
Respond to all incidents	▪ In the event of an environmental incident or emergency, the Principal will be notified immediately (verbally within 2 hours), and within 12 hours will be provided with an initial incident report including: – date and time of incident; – details of the persons who detected or notified the incident (internal and external); – nature of the incident and potential environmental impacts; and – details of proposed corrective actions and actions undertaken to date. ▪ Further reporting will be provided to the principal within 48 hours of the initial report to close out the incident or provide further update. This reporting is to include examination of the root cause of the incident and details of any actions to prevent recurrence. A close out date is also to be	Following any incident	Contractor



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Tasks	Action	Timing	Responsibility
	nominated, if the report does not close the incident out.		
Procedures to deal with fuel spills	▪ In the case of a fuel spill to land: – immediately enclose the spill area with temporary bunding to prevent spreading; – immediately block off any stormwater drains to prevent contaminated surface water runoff; – apply bulk absorbent over the spilt material; – let the absorbent material absorb the spilt material; – collect the absorbent spilt material using appropriate tools (e.g. shovels, excavator); – place saturated absorbent material into a container for appropriate disposal and ensure the container is leak-proof and covered until collection; – repeat points 3 to 7 until area is clean; and – re-stock the spill kits as required. ▪ In the case of a fuel spill to Weinam Creek or Moreton Bay: – if a spill occurs, all personnel not directly involved in the spill are to be removed from the areas; – spill kit is to be used to clean up spill; – the material should be disposed of at an appropriate waste facility; and – Repairs should be made as required.	As necessary	Contractor
Procedures to deal with fire	▪ In the case of fire: – notify Contractor supervisor immediately to gather first response personnel; – Ring 000: notify the fire brigade and provide name, location, type of fire (fuel fire, explosion etc.) and details of any injuries, if any. If necessary, notify ambulance and/ or police service. – notify the Principal and advise the nature of the emergency; – isolate the fire if possible; – fight the fire, if the fire is small and you are not in immediate danger but DO NOT TAKE UNNECESSARY RISKS; – if available, an extra staff member should be sent to the roadway to direct the fire brigade or additional site resources; – depending on the location of the fire, all staff should assemble at a pre-established muster point;	As necessary	Contractor



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Tasks	Action	Timing	Responsibility
	– act to minimise or contain environmental damage, if possible; and – immediately after the fire is over make diary notes detailing your involvement in the emergency.		

