

8.14 PLANNING SCHEME POLICY 14 - ENVIRONMENT MANAGEMENT PLAN

8.14.1 INTRODUCTION

This policy indicates the matters that should be considered in preparing construction and Operational Environmental Management Plans (EMPs). The policy is intended to provide guidance to the basic requirements for EMPs. Applicants are encouraged to discuss EMPs with Council's Environmental staff early in project design.

Note: It is important to note that all development undertaken will require both a Construction and Operational EMP. An EMP is a document that outlines site specific activities to the development or operation and addresses the associated environmental issues. Generic and non-site-specific EMPs are unlikely to be accepted. Documents developed by consultants preparing Development Approval Applications will be accepted, however the Development Approval will be conditioned to submit a site-specific document prior to any site works commencing.

It is strongly suggested that the contractor engaged to perform the works plays a significant role in the development of the documents, particularly the construction EMPs rather than submit non-site-specific documents with the Development Approval.

Depending on the nature of construction and operation of the proposed development, technical information may need to be provided. Specialised consultants may need to be engaged to prepare this information.

The size, complexity and issues associated with the project will guide the requirements of the Construction Environmental Management Plan (CEMP). Straightforward small projects will require a simple document while larger projects, or those with specific environmental risks, will require a more comprehensive approach. For example, the construction of a small storage shed within a marina would require a short document (1 page). This may include a short discussion of major risk and implemented control measures, such as sediment runoff to the marina.

Large projects, such as development of a warehouse and office facility adjacent to a mangrove-lined drain would be expected to submit a larger document (15+ pages) and address a number of issues, such as Sediment control, Acid Sulphate Soils and Red Imported Fire Ants.

The preferred style of document is a basic information source that can readily be accessed by staff, i.e. it should be as straightforward as possible and contain only information of direct relevance to the project.

It is recommended that anyone requiring or preparing an EMP consider consulting with the Council's Environment staff. This will allow timely assessment of the EMP and prevent submission of unnecessary information.

8.14.2 ENVIRONMENTALLY RELEVANT ACTIVITIES (ERAs)

Some activities undertaken may be ERAs, as identified by Schedule 1 of the *Environmental Protection Regulation 1998*. Assessment of an ERA is focused on the operational aspects of a development. As such, an Operational EMP will be a fundamental part of the application requirements to undertake any activity that is an ERA.

8.14.3 CONSTRUCTION EMPs

A CEMP is a practical and achievable plan of management to ensure that any environmental impact during the construction phase is minimised. In preparing a CEMP, consideration should be given to the issues discussed below. The CEMP **must be site specific** and detail measures that will be employed on the site to minimise any adverse environmental impact. Importantly, the CEMP must include a “schedule of works” indicating the timing of the construction activity.

The objective of the CEMP is to provide a guideline for environmental management to ensure all works undertaken by the contractor (and all sub-contractors) have minimal impact on the environment, and are in accordance with the relevant Federal, State and Local Government regulations.

A CEMP should contain a description of the works, a list of site contacts, relevant site plans and address all potential environmental impacts, control measures, performance criteria and mitigation strategies, together with relevant monitoring and reporting procedures. Some guidance on the issues to be addressed, and the desired environmental outcomes, is presented in Attachment 1. In addition, contingency plans for unforeseen environmental impacts that may arise as a result of the works should also be included.

The CEMP is a dynamic document, which maybe subject to change or modification as a result of site development or changes on the site.

No construction activities can commence until the Council has approved a CEMP. Furthermore, no work can commence on the site until the ‘pre-start inspection’ has been undertaken or appropriate agreement has been reached with Council’s Environment staff.

Ideally, a site-specific CEMP will be submitted with the development application, however, where contractors have not been appointed at the time of making the development application, the requirement for a CEMP will be a condition of the development approval, which will require the document to be lodged at least two weeks prior to the planned construction commencement date. Rather than submit a non-site-specific document (which may require significant revision and addition), please consider submitting a document once contractors have been appointed.

Attachment 1 to this policy presents an example of a CEMP (only in part). It is not mandatory to use this format; however, it may be used as a guide and demonstrates the type of issues that may need to be addressed on the specific project. The following sections detail the various components of the CEMP (based on the sample in Attachment 2). The level of detail required is, however, dependent on the size and nature of the development, and the sensitivity of the surrounding environment.

A CEMP should include the information outlined below.

Introduction

This should include an overview of proposed works, the scope of the development and the layout of the works site, including size and location. This should contain site-specific details such as:

- The address and real property description of the site;
- Details of the developer/contractor, and other key groups or individuals who may be associated with the project;
- Details of the type and duration of the construction phase; and

- Details of water management and conservation. The contractor should address water management on-site and acknowledge water restriction levels that may be imposed by local and state governments. The CEMP should propose a methodology to minimise water consumption and should include, but not be limited to, the following:
 - The water sources to be used such as potable water or alternative sources like marine and recycled waters. The delivery of water sources to site should also be addressed;
 - Potential uses for water onsite such as dust suppression, compaction, concrete curing or other construction activities; and
 - Methods to reduce water usage or use alternative methods for construction activities should be considered and specified. For further enquiries or information on water management please contact Council's Environmental Staff.

Summary of Key Environmental Issues

A summary of key environmental issues associated with the works at the site should be presented. Issues to be covered may include:

- | | |
|-------------------------------------------------|-------------------------------------------------|
| • Erosion and sediment control; | • Acid sulphate soil management; |
| • Water-quality management; | • Waste management; |
| • Air-quality management; | • European and/or aboriginal cultural heritage; |
| (dust and vehicle emissions) and odour sources; | • Flora and fauna; |
| • Noise management; | • Fire ant management; and |
| • Land contamination; | • Water conservation. |

The role of this section is to identify those areas/issues or values that may be impacted by the development. Risk assessment methodologies can be used to assess the potential environmental impacts, and prioritise preventative and remedial management strategies or actions.

A sediment and erosion control management plan should be submitted and pay particular attention to kerbside crossover and management of existing gully inlets downstream of the construction site. The management of sediments tracked to adjacent roadways by site vehicles is of particular concern.

Attachment 2 provides a broad guideline of Council's preferred environmental outcomes for each of the above issues. These outcomes are based on regulatory criteria, environmental best-practice principles, and current technologies that may be employed to minimise any adverse impacts.

Site/Project Management and Contacts

This section should nominate the responsible staff members involved with the implementation of the CEMP on-site. Contact details (land and/or mobile phone numbers) should be provided. This may include the roles and responsibilities of the following people:

- Project Manager;
- Site Superintendent;
- Project Engineer;
- Site Foreman;
- Employees; and
- Sub-contractors.

Monitoring and Reporting

This section should outline the key elements to be monitored and reported over the duration of the project, including the on-maintenance period. These may include Hold Points, Environmental Audits, Environmental Complaints and Corrective Action Reports and Register, and scheduled inspections by Council officers.

The CEMP is to acknowledge that a “**pre-start inspection**” meeting is to be held – to ensure the approved CEMP, including the specified environmental controls for the site, is understood by all parties (contractors/developers/Council etc). Additionally, Council may also conduct spot audits at any time throughout the construction phase.

Key Management Plans

For each issue identified, key management plans should be prepared. This can best be presented in a tabular format (refer Attachment 1), which outlines:

- The management requirement;
- The action required to address the management requirement;
- The responsible person undertaking the action; and
- The timing for completing the action.

Site Plan

A site plan should be attached to the CEMP. The plan should detail the spatial location of any proposed key developments on the site (building structure etc.), natural features (waterways, sensitive vegetation etc.) and any environmental control measures such as sediment and erosion controls. A plan showing the location of stormwater infrastructure to be installed (e.g. pipe work, GPTs) should also be included. A copy of this plan should be displayed at the site office at all times, and be updated and amended as works progress.

CEMP Checklist

The following provide a checklist to ensure all components of a CEMP are addressed:

- Brief description of project;
- Contacts – including names and phone numbers for project manager and most importantly, site manager/supervisor;
- Descriptions of site-specific activities and associated environmental issues;
- Figures showing:
 - Site layout during construction, including site boundary, access/egress locations, site office and any sediment control structures;
 - Proposed final layout of site, including building, paved areas etc; and

- Stormwater plan for final layout showing location of pipe work and connections.
- Management plans for each identified risk for the project showing clearly what, by whom and by when. Risks will be specific to a project, but will typically include plans for:
 - Sediment and erosion control;
 - Stormwater;
 - Dust;
 - Waste;
 - Fire Ants; and
 - Acid Sulphate Soils.

8.14.4 OPERATIONAL EMPs

An Operational EMP (“OEMP”) is focussed on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through normal operation of the facility. In addition, an OEMP identifies what measures will be in place or are actioned to manage any incidents and emergencies that may occur during operation of a facility.

All activities undertaken require an Operational EMP as part of a development approval application. Where the development involves an ERA, assessment and approval of the EMP will be undertaken by either DERM or Council (for devolved ERAs) as part of the development approval process.

An OEMP can also form part of an Integrated Management System (IMS), where required for large, complex or high-risk developments.

Mandatory Information

All information listed below is mandatory for an OEMP. If the OEMP forms part of a development approval application, most of the information below will be included. Note that the ‘Applicant’ will typically be the entity undertaking construction or the entity undertaking the activity on the site once it has been constructed.

Information that must be provided about the proposal and associated OEMP includes:

- A real property description of the subject land;
- The postal address of the subject site (where possible);
- Full name and postal address of the applicant;
- The applicant’s company name (where applicable);
- Details of what activities are to be undertaken and how they are to be managed;
- A scaled (dimensional) site plan including buildings, structures, drains, and other site features relevant to the OEMP;
- Plans showing the location of all existing and proposed discharge and emission points to the environment, including where air, noise, liquids, wastewater, dust, smoke, vapours, and any other contaminants are emitted; and
- Specific details and design of individual components/devices (such as fume-venting systems).

Note that as much information as possible should be included in a plan. Using a plan clearly indicates the site-specific features as they are to be located on the site. A report should accompany the plans to complete the information required for review of the OEMP.

Description of Activity

It is essential that the applicant include detailed description of the proposed activity in the OEMP, as it may form the basis for any licensing/permit conditions that may be requested by an Administering Authority. The description is to include information on:

- Processes being undertaken and any emissions associated with the activity;
- Plans of the site and surrounding area, and location of any discharge points (including stormwater);
- Any nearby activities or environmental attributes that may be of relevance to the activity;
- An outline of the proposed operations and activities, including transport movements;
- An assessment of risks, hazard and measures to minimise; and
- Details of the management of stormwater onsite, including WSUD features and treatment systems.

Details of any (Actual and Potential) Emissions, Wastes or Contaminants

This section is to provide details of the scale, intensity and regularity of actual and potential emissions expected as part of normal operations. Information that should be provided may include:

- Quantity, regularity, concentration and description of actual and potential emissions and contaminants;
- The name and exact location of equipment giving rise to such discharges and emissions;
- Maintenance programs for equipment used in the discharges and emissions;
- The name and exact location of equipment used in the processing, reprocessing, treatment and/or discharge of wastes;
- Treatment, recycling and/or reprocessing either on or off site; and
- Disposal and/or storage on or off site.

The DERM's *'Guidelines for Completing an Application for an Environmental Authority'* are particularly useful in understanding how to describe in detail the nature of emissions and contaminants.

Site Environmental Induction

All personnel entering/working on the site must receive an induction covering all relevant environmental issues. The extent of the induction shall be based on the length of time for which the person will be on site, the activities that they will be undertaking, and the risks to which they

will be exposed. In particular, this induction must provide information on known environmental risks relating to site activities and site emergency plans.

Inductions and emergency plans are also considered under the IMS. The CEMP should provide an outline of this requirement and how it will be managed.

Environmental Complaints

An OEMP must address how any complaints relating to the operation are to be managed. An OEMP can include details of:

- The system for recording complaint details, including time, details of complainant, complaint specifics and follow-up action;
- Investigation of environmental complaints; or
- Notification to the relevant person or entities that complaints have been received.

Environmental Incidents

An OEMP must detail how any environmental incidents are to be recorded and managed. Such detail may include:

- The requirement to immediately take appropriate action, such as use of spill response kits;
- The process for informing the relevant person or entity;
- The recording and investigation of all incidents as part of the OEMP;
- The reports prepared and circulated on the investigation; and
- Recommendations on steps to avoid similar events.

Monitoring

An OEMP must provide details of any program to be undertaken to monitor the environmental aspects and effects resulting from the operation of the site. As part of the approval process, specific conditions may be placed on the applicant/operator to measure and monitor environmental performance. Monitoring may be the requirement of an ERA approval, such as stormwater discharge, or based on site-specific complaint, such as noise or dust monitoring. Monitoring should include programmed maintenance for environment-related activities, such as keeping records of servicing of stormwater devices (e.g. GPTs). Records should also be kept on monitoring results, such as water quality of stormwater.

Auditing

The implementation of an EMP must be monitored continually. Periodic auditing by an external entity would be beneficial, and such aspects should also be detailed in an OEMP. A process for continued improvement of the OEMP should be included. This may include review periods (e.g. annual) for the document, establish who conducts the reviews and keeping track of changes to process.

Responsibilities

Any OEMP must specify the individuals, positions and/or entities (and their contact details) responsible for all aspects of implementing the OEMP. In particular, the OEMP must clearly identify the individuals or otherwise (and their contact details) responsible for:

- Receiving the reporting of monitoring, remedial action, environmental complaints and emergencies;
- Ensuring the measures/action plans are undertaken; and
- Verification, reporting and auditing of such measures/actions.

This should also include after-hours contact details for emergencies.

Supporting Information

There may be a requirement to undertake other studies or prepare other plans in support of any OEMP. These will typically be prepared for sites as part of a development proposal, but may be specifically prepared for a facility. These may include:

- A risk and hazard analysis with an action program;
- An emergency response plan;
- Lighting plan;
- Acoustic report;
- Geotechnical report;
- Flora/fauna report; or
- Details of consultation with relevant public authorities.

ATTACHMENT 1

Example of Construction and operational Environmental Management plan Element Tables (examples only).

These tables represent examples of how to address certain environmental aspects. These tables should form part of the EMPs. Other information (outlined in this policy) is also necessary for both CEMPs and OEMPs.

ELEMENT 1: Erosion and Sediment Management (CONSTRUCTION PHASE) EXAMPLE ONLY

It is acknowledged that during the construction phase of the development, there is a potential for ground disturbance, traffic movements and on-site drainage that may increase the rate of erosion and sediment export from the site, which may have impacts on the surrounding environment. Accordingly the table below outlines the proposed management strategy to address issues relating to erosion & sediment management, which will be fully implemented prior to AND during the construction phase of the development.

ELEMENT		EROSION & SEDIMENT CONTROL	
Objective		To manage activities that exacerbate erosion and provide on site controls that reduce erosion and contain any transported material within, the subject site.	
Management Strategy		Implementation of engineering measures and a comprehensive management strategy.	
		RESPONSIBILITY	TIMING
Actions	<p>Prior to the commencement of site works, an Erosion and Sediment Control Plan (ATTACHED) will be implemented. The controls following shall be included in the plan:</p> <ul style="list-style-type: none"> • Perimeter control measures (eg: sediment control fencing) prior to the commencement of works; • Run-off water diversion measures around site works where practicable; • Measures to control the tracking of site material onto surrounding sites and roads (i.e. crushed rock pads, vibration grids etc); • Clearly marked stockpile areas with associated control measures; • Geofabric to be placed over field gullies during construction phase; • Filter socks to be placed to divert runoff from adjoining blocks around the site; • Clearly delineated 'no-go' movement areas; and • Access and egress points to the site. 	Site Manager	Prior to commencement of works and throughout duration of construction phase.
	<p>The following measures shall also be implemented during the construction phase:</p> <ul style="list-style-type: none"> • Landscaping work will commence as soon as practicable to reduce exposure time of exposed soil; • Exposed areas shall be covered with mulch material to reduce impacts of rainfall on the site; • Existing outfalls from the site will be modified to limit concentration and velocity of site flows; and • Dust control measures used where required. 	Site Manager	Throughout duration of construction phase.

		RESPONSIBILITY	TIMING
Performance Indicators	<ul style="list-style-type: none"> Erosion and sediment movement should not exceed natural rates; and Lack of complaints / requests for attention by Council staff. 	Site Manager	Throughout duration of construction phase.
Monitoring	<ul style="list-style-type: none"> Daily visual inspections of the work site and engineering structures shall occur and be logged in the CEMP logbook. Inspection immediately following a significant rainfall event. 	Site Manager	Throughout duration of construction phase.
Reporting	<ul style="list-style-type: none"> Any erosion and or sedimentation issues shall be reported to the site manager IMMEDIATELY. The site manager is to record such incidents in a logbook and report on corrective actions taken BEFORE THE RECOMMENCEMENT OF SITE WORKS. 	Site Manager	Throughout duration of construction phase.
Corrective Action	<ul style="list-style-type: none"> Investigative cause of incident; and Restore control measures prior to the recommencement of site works. 	Site Manager	Throughout duration of construction phase.
Interfaces	<ul style="list-style-type: none"> Individual contractors / sub-contractors EMPs must address and accord with any other EMP contained in this report. 	Site Manager	Throughout duration of construction phase.

ELEMENT 2: Noise Management (CONSTRUCTION PHASE) EXAMPLE ONLY

The table below outlines the proposed management strategy to address issues relating to noise management that will be fully implemented prior to AND during the construction phase of the development.

ELEMENT		NOISE MANAGEMENT	
Objective		To manage activities on site to reduce the impact of noise on surrounding properties. To comply with Environmental Protection Policy (Noise).	
Management Strategy		Noise to be managed primarily through administrative controls during the construction phase.	
		RESPONSIBILITY	TIMING
Actions	<ul style="list-style-type: none"> All construction activities to be restricted to between 7.00am and 6.00pm Mon-Fri, 8.00am and 12pm Sat; All equipment used during the construction phase to be regularly maintained to ensure efficient operation; and Noise-dampening equipment to be used on equipment with excessive noise-generating characteristics. 	Site Manager	Throughout duration of construction phase.
Performance Indicators	<ul style="list-style-type: none"> Lack of complaints / request(s) for attention by Council staff. 	Site Manager	Throughout duration of construction phase.
Monitoring	<ul style="list-style-type: none"> Daily inspection of the work site to occur; and Service logs for equipment/machinery used on site to be monitored. 	Site Manager	Throughout duration of construction phase.
Reporting	<ul style="list-style-type: none"> Any complaints or incidents to be reported to the site manager IMMEDIATELY, who shall record such incidents in the CEMP log book. 	Site Manager	Throughout duration of construction phase.
Corrective Action	<ul style="list-style-type: none"> Investigate cause of excessive noise; Implement corrective measures prior to the recommencement of site works; and Possible rescheduling of noise-generating activities to reduce noise annoyance. 	Site Manager	Throughout duration of construction phase.
Interfaces	<ul style="list-style-type: none"> Individual contractor's/sub-contractors EMPs must address and comply with any other EMP contained in this report. 	Site Manager	Throughout duration of construction phase.

TABLE – Construction EMP – Noise Management Plan

It is suggested that, as part of the Construction EMP, similar tables be prepared for:

- Water management;
- Waste management;
- Land contamination;
- Flora and fauna management;
- Acid sulphate soil management;
- Air quality management; and
- European and/or Aboriginal heritage management.

ELEMENT 1: Stormwater Quality (OPERATIONAL PHASE) EXAMPLE ONLY

The table below outlines the proposed stormwater quality measures to be implemented during the Operational phase of the development.

ELEMENT		STORMWATER QUALITY CONTROL	
Objective		To minimise the impact of stormwater quality due to the facility's operation. To comply with <i>Environmental Protection Policy (water) 1997</i> . To comply with all approvals and/or licences issued for the proposed development.	
Management Strategy		Discharged stormwater will comply with all relevant approvals and / or authorities/licences etc.	
		RESPONSIBILITY	TIMING
Actions	<ul style="list-style-type: none"> • Proper design and placement of SQIDS etc; • Regular inspection SQIDS; • Maintain drains that collect surface waters; • Ensure machinery is regularly maintained to reduce chance of leakage and spills; • All chemicals to be stored in bunded area in accordance with any approval and/or licence conditions; • Ensure all staff are training in spill response; • Implementation of erosion and sedimentation controls at all times in accordance with industry standards; • Appropriate training for fire warden for stormwater capture in the event of a fire at the subject site; and • All liquid wastes to be stored in appropriately sealed containers prior to removal from site to an approved waste receptor. 	Site Manager	Throughout duration of construction phase.
Performance Indicators	<ul style="list-style-type: none"> • Discharge to meet water quality conditions of approvals and/or licences; and • Review of staff training schedule to ensure appropriate training has occurred in relation to spill response. 	Site Manager	Throughout duration of construction phase.
Monitoring	<ul style="list-style-type: none"> • Operations manager to regularly (weekly) inspect stormwater devices. 	Site Manager	Throughout duration of construction phase.
Reporting	<ul style="list-style-type: none"> • Logs to be kept of regular inspections, SQID/GPT services and of any corrective actions required. 	Site Manager	Throughout duration of construction phase.

		RESPONSIBILITY	TIMING
Corrective Action	<ul style="list-style-type: none"> Where an incident has occurred, a detailed report of the incident and the cause shall be prepared and kept in the OEMP log; and Control measures are to be rectified and / or replaced in the event of non-conformance. 	Site Manager	Throughout duration of construction phase.
Interfaces	<ul style="list-style-type: none"> Individual contractors / sub-contractors EMPs must address and accord with any other EMP contained in this report. 	Site Manager	Throughout duration of construction phase.

Table – Operational EMP – Stormwater Quality Control Plan

ELEMENT 2: Waste Management (OPERATIONAL PHASE) EXAMPLE ONLY

It is acknowledged that waste may be generated during the operational phase of the development. The table below details those actions required to properly manage waste generated during the operation of the development.

ELEMENT		WASTE MANAGEMENT	
Objective		To minimise the potential for environmental impact of wastes generated on the development site. To comply with all approvals and/or licences issued for the proposed development	
Management Strategy		To effectively manage the subject site and activities that may lead to generation of wastes.	
		RESPONSIBILITY	TIMING
Actions	<ul style="list-style-type: none"> All waste material to be removed off site shall be contained on site prior to disposal, using appropriate storage containers; All waste material from the operational phase shall be regularly cleared from the site and disposed of in the approved manner under relevant local State and Commonwealth legislative requirements; Maintain a high level of housekeeping on the subject site, ensuring that all waste materials are handled correctly and not left where they may be washed or blown around or off the subject site; and Provide appropriate storage containers relevant to the types of wastes generated on the site. 	Site Manager	Throughout duration of construction phase.
Performance Indicators	<ul style="list-style-type: none"> No wastes evident on site except for in the approved and designated storage areas; and No complaints from regular asset inspections. 	Site Manager	Throughout duration of construction phase.
Monitoring	<ul style="list-style-type: none"> Regular (weekly) inspections of site. 	Site Manager	Throughout duration of construction phase.
Reporting	<ul style="list-style-type: none"> Logs to be kept of regular inspections and of any corrective actions required. 	Site Manager	Throughout duration of construction phase.
Corrective Action	<ul style="list-style-type: none"> Where a non-conformance has occurred, a detailed report of the incident and the cause shall be prepared and kept in the OEMP log; and Control measures are to be rectified and/or replaced in the event of 	Site Manager	Throughout duration of construction phase.

		RESPONSIBILITY	TIMING
	non-conformance.		
Interfaces	<ul style="list-style-type: none"> Individual contractors/sub-contractors EMPs must address and accord with any other EMP contained in this report. 	Site Manager	Throughout duration of construction phase.

TABLE – Operational EMP – Waste Management

It is suggested that, as part of the Operational EMP, similar tables be prepared for:

- Odour/Emissions management – Land contamination – Air quality management – Noise management

ATTACHMENT 2: Construction Environmental Management Plan (CEMP)

Potential key issues and desired environmental outcomes that may be appropriate for inclusion in the CEMP as follows:

Erosion and Sedimentation

Some sites may be subject to wind/water erosion during the construction phase. To avoid or minimise erosion on specific sites, an Erosion and Sedimentation Control Plan must be included as part of the CEMP. This plan should detail the site preparation, construction and post-construction controls and management practices (refer to the Queensland Urban Drainage Manual - Chapter 9: Environmental Considerations for further information).

Appropriate sedimentation control measures should be considered and installed. These may include:

- Minimising the area that is bare of vegetation at any one time, as far as practicable;
- Diverting potential upstream run-off from disturbed areas;
- Stabilising disturbed areas, such as drains and batters;
- Staging various works to minimise exposure to erosion;
- Installing devices such as catch drains, slope drains, diversion drains, and energy dissipaters;
- Installing filter/sediment fences, filter and adjustment stormwater drains, filter strips and sedimentation basins; and
- Protecting existing and adjacent stormwater infrastructure such as gully inlets and kerbside drainage.

It is important to note that any material (resulting from construction works) transported from the site via the stormwater drainage system outfalls will most likely have to be recovered by the responsible party at their cost. Similarly, the tracking of materials onto external road and traffic areas must be controlled.

An erosion and sediment control plan showing the site layout and various erosion and sediment control devices (initial controls) must be submitted as part of the CEMP.

The CEMP must include a Sediment and Erosion Plan including:

- Stormwater discharge points;
- Access and egress locations for vehicles (including control measures eg. shakedown pads);
- Stormwater retention and ponding areas with capacity and overflow points identified;
- Any up/down stream diversions from contaminated, storage and activity areas;
- Measures to manage run-off from cleaning, wash-down and servicing areas with potential for contaminants to enter stormwater system;
- An installation and maintenance program for stormwater control measures, such as oil separators, silt, rubbish traps, gross pollutant traps and stormwater diversion systems;
- Any wastewater recycling/re-use systems; and
- Emergency response (devices eg. spill kits etc).

Water Quality Management (Stormwater Run-off and Groundwater)

Some of the harbour land is adjacent or very close to mangroves, tidal wetlands and waterways. All are recognised as having high habitat value for birds, fish and other animals. Mangroves are Protected Plants under the *Fisheries Act 1994*, and a permit from the Department of Primary Industries and Fisheries is required for their disturbance.

Stormwater and other run off associated with development construction has the potential to pollute adjacent mangrove habitat, tidal areas, waterways and groundwater. Pollution of stormwater and other water run off must be prevented. Details of the measures to prevent adverse effects on existing water quality shall be included in the CEMP. The inclusion of the following issues will be dependant on site-specific conditions and may need to be included in the CEMP.

Table 1: Water Quality Management

ISSUE	REQUIREMENT
Plant washdown	No washdown of plant (including concrete trucks) is to be undertaken on the site. Washdown can only be undertaken at dedicated washdown areas advised by Council.
Materials and liquids dumping	All material and liquids not required for the actual works, or waste product generated are to be removed from the site and disposed of in accordance with regulatory requirements, and transferred to an agreed disposal site.
Fuel storage and other hazardous goods	Fuel storage on site must be contained within a bunded area and comply with the relevant regulations and standards. All safety procedures are to be identified and adhered to. Precautions must be in place to ensure that any spills do not escape into the groundwater, stormwater or any adjacent tidal or waterway area.
Fuelling and maintenance of vehicles/equipment	Fuelling of vehicles and equipment shall comply with the relevant regulations and standards. It must be undertaken at locations away from drainage systems, and precautions must be in place to ensure accidental spills will not escape into groundwater, stormwater and waterways.
Disposal of waste fuel oil and chemicals	All waste fuel, oil, chemicals and hazardous waste (including sewage) shall be disposed of off site in accordance with regulatory requirements.
Surface water flows	Where stormwater run-off flows from construction and/or operational areas to mangrove, tidal and waterway areas, measures must be implemented to minimise, as far as practical, the volume of water entering these areas.

Water use

The CEMP should provide an understanding of how much water will be used during the works, what will it be used for (e.g. dust suppression, compaction) and what alternative supplies to potable water can be used, such as recycled waters, marine water or harvested stormwater.

Quality (Dust and Vehicle Emissions)

The generation of dust during construction activities must be minimised. Dust must not affect neighbouring sites, roadways, environmentally sensitive areas, tidal areas, waterways, or lessees. Information on proposed measures to reduce or eliminate dust during construction should be provided in the CEMP. Measures may include:

- Watering of the site throughout construction;

- Avoiding or minimising dust-generating activities (eg. stripping, excavation etc) during dry windy conditions;
- Covering or enclosing dust-generating operations; and
- Any passive devices contributing to dust management, such as silt fences and windbreaks.

The principal control for vehicle emissions will be minimising operations and maintaining equipment to manufacturers' specifications.

Noise Management

The CEMP must detail the proposed hours of operation during the construction phase, and detail any areas that have the potential to generate significant levels of noise (eg. pile driving). While it is recognised that, in general, development is unlikely to be in close proximity to sensitive receptors, it is essential that noise levels are maintained within acceptable limits as set out in the noise regulations (*Environmental Protection (Noise) Policy 1997*).

Land Contamination

The CEMP must detail all measures proposed to prevent contamination of the site. The site may (in some instances) be subject to specific requirements under the *Environmental Protection Act 1994*, and these should be identified and addressed in the CEMP.

In general, matters associated with land contamination management should include:

Table 2: Land Contamination

ISSUE	REQUIREMENT
Works within a site listed on Environmental Management Register (EMR)/Contaminated Land Register (CLR)	Areas of the harbour maybe listed on the Environmental Management Register. No soil can be moved off these sites without prior approval of DERM. Works on these sites should include a management plan in the CEMP to address this issue.
Acceptance of clean fill	All fill imported and used on a site must be free of contamination. The fill should not be sourced from sites prescribed under the <i>Environmental Protection Act, 1994</i> unless prior approval has been received from the DERM. If fill is used, proof that the fill is free of contamination must be provided. Council must be provided with a record of all fill sources (street address and Lot on Plan number) and quantity to site. For contamination levels refer to those levels detailed in the DERM's Guidelines for the Assessment of Contaminated Land or other standards considered acceptable by the Council.
Fuelling and maintenance of vehicles and equipment	All practical precautions must be taken to ensure that the contamination of land does not occur. This includes hardstanding, kerbing and channelling of such areas with run-off being collected and appropriately treated before disposal or removal. Use of appropriate cleaners and emergency equipment should also be detailed where appropriate.
Storage of fuel and chemicals	All practical measures will be in place to prevent the contamination of land. This includes hardstanding, kerbing and channelling of such areas with run-off being collected and appropriately treated before disposal or removal. Use of appropriate cleaners and emergency equipment should also be detailed where appropriate.

ISSUE	REQUIREMENT
Spills and disposal of all waste including fuel, oil and chemicals	All efforts will be made to prevent spills of fuel, oil, chemicals and other hazardous goods used on site. This includes hardstanding, kerbing and channelling of such areas with run-off being collected and appropriately treated before disposal or removal. Use of appropriate cleaners and emergency equipment should also be detailed where appropriate. It should be noted that all spills to marine waters are reportable to DERM under the MARPOL Act. Land-based spills may require reporting to the Council and/or DERM where containment is not achieved.
Clean-up of land	All contamination of land during either the construction or operational phase must be cleaned up by the responsible entity (typically the constructor or operator) in accordance with DERM and other relevant regulations.

Acid sulphate soil Management Plan

Some areas may have acid sulphate soils, and the management of such soils is most relevant to the construction phase. The potential for a development to disturb or otherwise affect acid sulphate soils, will be assessed on a case-by-case basis. Where such disturbance is likely, a CEMP must consider the following:

- Identification and description of acid sulphate and potential acid sulphate soils likely to be disturbed by the proposed activity, including changes to groundwater;
- Likely effects of such disturbance;
- Measures to prevent acid formation, by methods such as maintaining watertable levels;
- Storage and treatment of excavated materials;
- Management of stormwater run-off and leachate from disturbed areas and storage areas; and
- The provisions of the *State Planning Policy for Acid Sulphate Soils 2/02*.

Waste and Site Clean Up

The CEMP must detail provision of the following:

- Litter and waste from the construction phase to be regularly cleaned from the site and disposed of off site in accordance with regulatory requirements and to the satisfaction of the Council;
- Proof of appropriate disposal to be supplied by the contractor or operator prior to activities commencing;
- Litter and waste to be contained on-site until disposed of; and
- Litter and waste to be prevented from escaping off the site into adjacent areas, neighbouring properties and waterways.

Flora and Fauna

The harbour area includes habitats for fauna species that could be affected during construction phase (eg. many adjacent inter-tidal areas with high ecological values). It should be noted that specific State and Federal legislation has been enacted to address issues of flora and fauna, and the contractor should be aware (and note) any legislation that has specific relevance to the project.

The CEMP must provide detail of any (on/off-site) proposed vegetation removal, the method for removal and measures for erosion and sedimentation control as vegetation is removed. Ongoing operation of the site may affect nearby habitats, and the measures to avoid adversely affecting vegetation must be identified.

European and/or Aboriginal Cultural Heritage

The CEMP must identify the proposed actions if, during construction, items of European and/or Aboriginal cultural heritage, including skeletal remains, are discovered. Typically, construction activities at the particular location must immediately cease, and the items and/or remains must be left and kept in a safe condition. Please refer to Duty of Care Guidelines under the *Aboriginal Cultural Heritage Act 2003*.