

REPORT

Good Practice in Environmental Impact Assessment for Coastal Engineering in the Pacific

Environmental Management and Monitoring Plan Toolkit

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1 Introduction

1.1 An EMMP Toolkit

This document has been prepared for government agencies and other project stakeholders to use as a ‘toolkit’ for the development of Environmental Management and Monitoring Plans (EMMPs)¹ for coastal engineering projects in the Pacific. Project specific EMMPs are generally required as a step to attaining approval to start work. EMMPs typically follow from environmental impact assessment (EIA), with the objective of implementing and ensuring their mitigation, monitoring and management actions (but may be developed as a standalone plan where an EIA has not been undertaken). EMMPs should provide a consistent approach to managing and minimising environmental impacts throughout a project’s life.

A common criticism of EIAs relates to sub-par implementation of environmental controls once approvals have been obtained. The production of an EMMP is an effective way of ensuring that EIA and consent requirements are met, and good environmental practice is ensured and constant.

The EMMP Toolkit’s primary function is to set out the requirements for and a coherent and consistent approach to EMMP development and review. This should assist in achieving full and proper implementation of EIA commitments (enhancing the effectiveness of EIA) and best practice in environmental management during a project’s or a development programme’s lifetime.

1.2 Related Documents – Living Documents

An EMMP generally constitutes a single component of a project’s environmental management documentation. As such, EMMPs should be integrated into, and consistent with, existing environmental documentation. This includes any project specific EIAs or wider strategic environmental assessments (SEAs) and associated technical reports, as well as the environmental management system (EMS) a proponent’s organisation may have in place.

An EMS is a means for an organisation or entity to find, monitor, and manage environmental risks arising from their activities. A focus is to maintain ongoing environmental compliance with relevant local, regional, and national legislation and conventions, particularly regarding resource management and pollution avoidance.

EMMPs should also be consistent with project design and associated activities. Ideally, aspects from each process should influence the other. Importantly, an EMMP should be a “living” document, that is developed as project changes are observed. This may be in the design phase but may also be during implementation if, for example, environmental parameters change, unexpected outcomes arise (which requires a different management approach) or monitoring capacity improves. This is particularly important for coastal and marine projects, where the environment is typically dynamic.

2 Core Requirements

2.1 Project Specific, Ensuring Compliance

EMMPs should be developed for a specific project and site (should not be generic) and, as a minimum, ensure the following:

- Compliance with –
 - the islands or territories environmental legislation
 - any project consent (license or permits) or consent conditions
 - the mitigation and monitoring requirements included in the project EIA.

¹ Often also referred to as *Environmental Management Plans (EMPs)*.

- Proper risk management.
- Use of good practice management techniques.
- Documentation of environmental management actions throughout a project's life.

EMMPs should consider the pre-construction, construction, operation, and decommissioning phases of a project. In some cases, separate EMMPs may be prepared for the construction phase (CEMP) and the operation phase (OEMP). A CEMP is often required of the contractor that is going to construct a project; and an OEMP (or EMS) of the body that this going to operate the facility once built (e.g., a harbour operator). Such documents typically follow from the overarching project EMMP that (as above) also needs to consider the actions that should be taken before any works begin (the preconstruction phase) and either (or both) at the end of construction or the end of operation (if the facility has a foreseeable end of life). CEMPs and OMEPs should be specifically designed to ensure that contractors and operators met their environmental responsibilities.

2.2 Core Content

An EMMP should clearly define a project's or programme's environmental management and mitigation measures, based on the activity and/or impact they are associated with, and their means of implementation. That is, set out the required action, name the individual or organisation with responsibility for taking the action, record the approach to monitoring delivery, including frequency/when and responsibility.

Project activity	Predicted impact	Management / Mitigation measure		Monitoring	
		Action	Responsibility	Approach & Timing	Responsibility

2.3 Preparation, Certification and Approval

Primary responsibility for EMMP development lies with the project's or programme's proponent. This includes obtaining the required certification and/or approval. Typically, during construction the EMMP becomes the contractual responsibility of a contractor for preparation and/or implementation. However, this does not remove the proponent's responsibility for execution of approvals or conditions or ensuring sound environmental management and controls.

Generally, those government departments with responsibility for overseeing a project (e.g., and environment departments in particular) should be consulted on the content of the EMMP during the preparation phase (especially if certain environmental impacts or control measures have not been adequately detailed in the EIA phase). However, this should focus on defined effects, clarifications and obtaining permits or approvals. Project approvals may stipulate that an EMMP needs certification before construction/operation commences and early consultation should ease this process.

Pre-construction EMMP actions

Pre-construction EMMP actions may include:

- Update to reflect any design changes and ensure climate change adaptation.
- Confirmation of land ownership arrangements and permission to access the site.
- Pre-works species surveys and translocation.
- Provision of a dredging method statement.
- Provision of phytosanitary certificates for any materials and plant to be imported.
- Community engagement and agreement to a code of conduct.
- Sign off a health & safety plan, inclusive of emergency response procedures, and pre-works training.
- Establishment of a grievance redress mechanism.
- Establishment of a chance finds procedure.

Where an EIA has not been undertaken, any stakeholders with vested interests should be consulted over predicted effects and management measures at an early stage. This allows for adequate input into EMMP development and may provide solutions to or support for management measures (e.g., community monitoring). Project community liaison officers (CLOs) or steering groups can facilitate this process.

2.4 EMMP Review

As a “living” document, an important part of the EMMP development process is amendment and alteration throughout a project’s life to improve environmental management. This practice has the added benefit of improving future EMMPs based on lessons learnt.

The timing of reviews will vary for each project, but typically coincide with:

- a significant environmental incident
- the availability of improved environmental management processes
- alteration of the project scope
- an environmental audit (where the implementation of the EMMP should be audited on a regular basis)
- project completion.

Any review should focus on the effectiveness of environmental procedures and controls and re-evaluate/re-define them as required. A copy of each iteration of the EMMP should be kept, documenting the improvement process. Updated EMMPs may require submission to relevant entities (government departments, funding institutions, etc.) for their own consideration and records.

3 Scope and Structure

The scope and content of an EMMP should reflect both the significance of a project’s predicted environmental impacts and a project’s scale (i.e., the risk). It should also reflect the nature of the works proposed. These will have a significant bearing on the topics covered in the EMMP (e.g., if traffic impacts are not predicted to be significant, then traffic management controls and monitoring requirements should not be covered in the EMMP). As a result, this Toolkit is not intended to be a template, the required content of every EMMP will be unique to its project (or programme).

However, there are common elements that should be included in an EMMP regardless of the project details. The following sections identify and describe these common elements. These elements are:

- Introduction - a project description.
- Management structure and responsibilities.
- Environmental management measures.
- Monitoring and review.

3.1 Introduction and Objectives

An introduction should provide a brief description of the background to the project, including its nature and objectives, relevant legislation, and the objectives of the EMMP. It should also identify the key stakeholders. If the EMMP forms part of an EIA, this information may not need to be repeated.

It should set out the project’s approval conditions, any licences or permits required to be obtained, and any other requirements that apply to the project, e.g., voluntary agreements, stakeholder agreements, etc.

The EMMP objectives should be project specific and not broad policy statements that provide clarity on what the EMMP is trying to achieve (the impacts to be managed and monitored). They can include

objectives that relate to general site management, special site features and best practice environmental management.

3.2 Project description

A project description should provide enough detail to define the nature and scope of the project (and thereby the topics to be covered by the EMMP). Again, if the EMMP forms part of an EIA, this information may not need to be repeated.

It should include information on:

- Location - the site location and its environmental characteristics should be described and a plan indicating the location of key facilities and activities provided.
- Activities - a description of the project activities (construction and operation) should be provided. This may include:
 - a brief description of construction or operation processes
 - working or operating hours, including details of any activities that may be undertaken outside of these hours
 - numbers and types of workers to be employed, and
 - plant and equipment to be used.
- Timing and scheduling - anticipated commencement and completion dates should be listed. If the project is to be completed in stages, then the dates for each stage should be identified.

Project Description - an example

“Dredging and the disposal of dredged material is to be carried out to provide a larger vessel (with a draft of -6.0m) with access to a new wharf and a berth adjacent to an existing boat ramp.

The dredge footprint is 13,000 m² with a dredged volume of 22,500m³. Dredging is proposed to take approximately 8 weeks in the dry season. The preferred method of dredging is a high-rise excavator working from the reef platform, loading the dredged material onto dumper trucks which will then be unloaded onshore (in the works site).

The dredged material will be stockpiled, with 13,500 m³ of the material to be used as backfill for the wharf to be located adjacent to a new berth. The remainder of the dredge material is expected to be used for the wharf pavement, hardstand leveling and maintenance purposes on the project site, depending on volumes of backfill required and the suitability of the dredged material.

The wharf is to be constructed of concrete caissons to be secured to the reef platform with steel bars and backfilled. The caissons will be pre-cast and delivered to site. The deck will be poured in-situ from an onsite concrete batching plant and crushed dredged arisings. The wharf construction is expected to take 9 months, including railings, fenders, lighting, a new boat ramp, a passenger walkway and terminal building etc.”

This project description is succinct and captures all the main information required to characterise the works.



3.3 Management Structure and Responsibilities

3.3.1 Organisation

An EMMP should provide an organisation structure for the project, focusing on the names and positions of personnel responsible for environmental management. A description of the roles and responsibilities of each position should be provided, including the roles and responsibilities of any subcontractors. Example roles and responsibilities table for a dredging project is included as **Table 1**.

Table 1: Example roles and responsibilities table (dredging project)

Position	Contact Details	Responsibilities
Project Manager	Contractor	<ul style="list-style-type: none"> • Overall responsibility for compliance with all permits and EMMP/EMS requirements; preparation of the EMMP • Adaptive management decisions
Dredging Contract Manager		<ul style="list-style-type: none"> • Operational and contractual matters relating to the dredging operation

Position	Contact Details	Responsibilities
		<ul style="list-style-type: none"> Implementation of management measures as detailed in this EMMP
Vessel Master		<ul style="list-style-type: none"> All matters related to the safety of vessel and crew Compliance with maritime laws Implementation of management measures as detailed in this EMMP
Site Environment Officer	<i>Reporting to the Project Manager</i>	<ul style="list-style-type: none"> Implementation of the mitigation and monitoring programme Staff induction and 'toolbox' talks and pre-start training Review of adaptive monitoring and management data Notification of trigger level exceedances to Project Manager and Dredging Contract Manager Implementation of corrective actions Environmental reporting at agreed timeframes (daily, weekly, monthly)
Site Staff		<ul style="list-style-type: none"> Compliance with relevant legislation Implementation of management measures as detailed in this EMMP
Environmental Authority	<i>Government</i>	<ul style="list-style-type: none"> Contact for spills, non-conformances, and reporting Regular review of performance and monitoring results Ensure compliance with government requirements
Contract Engineer	<i>For the employer</i>	<ul style="list-style-type: none"> Supervise, monitor, and enforce contractor's implementation of the EMMP (and all other contractual obligations) Environmental audits through inspections and report review

3.3.2 Reporting

A description of the reporting requirements for the project should be provided and include:

- pre-construction and pre-operation compliance
- daily, weekly, monthly construction monitoring
- reporting non-compliance and corrective actions
- complaints management
- third-party auditing (e.g., Environmental Authority or Contract Engineer) and
- any reports required by government agencies.

The EMMP should include templates for or examples of typical reports and identify the position responsible for report preparation and document control procedures.

3.3.3 Training

All employees engaged on a project should undergo general environmental awareness training, specific to the works site (e.g., that identifies protected species or sites of cultural significance to be avoided), and training about their responsibilities under the EMMP. Employees in this instance means all people working on-site, including

What is Environmental Training?

Site specific environmental training should aim to:

- provide workers with the knowledge to identify environmental issues associated with their activities (relevant to the site) and good practice methods to minimise impacts
- outline environmental obligations relevant to construction activities.

Once training is complete site workers should be able to:

- understand common environmental terms
- state their legal obligations and responsibilities in relation to environmental management
- recognise common environmental impacts on site and potential impacts resulting from their work activities
- identify accepted current environmental management good practice for relevant workplace activities
- identify situations where they require further advice about appropriate work practices to minimise environmental damage.

Effective environmental training greatly reduces project risks.

contractors, subcontractors, and members of the community. The training should ensure that all employees understand their obligation to exercise due diligence for environmental matters.

3.3.4 Emergency response

The EMMP should nominate a contact person or persons for emergencies (from spills to cyclones). This person/s must be always available and have the authority to stop or otherwise direct works. It should also document the procedures to be followed in the event of an environmental emergency.

The EMMP should include:

- names and contact details for nominated emergency response personnel
- details of the responsibilities of emergency response personnel
- contact details for local emergency services (police, ambulance, fire)
- procedures to follow in the event of an emergency to minimise environmental harm
- contact details for notifying relevant government agencies.

3.4 Environmental Management Measures

3.4.1 Comprehensive – risk based

An EMMP should specify all environmental management activities, mitigation, and control measures to be used to prevent or minimise environmental impacts at the site, for those impacts identified in the EIA process (or for the purposes of the EMMP) as being of sufficient significance to require mitigation.

This is the risk assessment aspect of the EMMP, where the management measures identified should be proportionate to the risk. It will affect the EMMP in two ways, first, by deselecting those topics that do not need to be considered (for example, the scope of the project described above could be limited to the coastal and marine environment² and, therefore, effects on terrestrial flora and fauna may not need to be managed). Second, by helping to define the extent of the management measures required. That is, where potential impacts are predicted to be limited, then the scale of management required similarly can be limited (e.g., for the above project noise effects on nearby communities are not expected to be significant and, therefore, simple working hour/day constraints are likely to be sufficient; and the slow rate of production associated with the use of an excavator working at low tide to dredge the channel, means that a sediment plume is not predicted to occur and observations could be visual rather monitored via turbidity sampling). However, where potential impacts are predicted to be more significant, then the management measures required are likely to need to be more extensive (e.g., in-situ concrete pours will require strong controls, including a spill response plan, and the use of crushing plant could generate significant dust that requires appropriate siting of the plant, screens, and cleaning protocols).

As set out in Section 2.2, for each control measure responsibility should be assigned to specific personnel and timeframes established for its implementation and monitoring. Where monitoring measures are identified, the EMMP should state the minimum performance level to be achieved (where appropriate³) and remedial action to be taken if it is not achieved.

Appendix 1 includes an example of a management, mitigation and monitoring measures table that can form the basis of an EMMP and examples of such measures for the construction phase.

3.4.2 Works plans

Works plans (or method statements) can be important reference tools for an EMMP and should cover environmental controls. In this context, works plans should include the following, as appropriate:

² Although the location of the construction site needs to be considered in this context.

³ Monitoring in some cases may simply involve the confirmation of an action (e.g., self-contained latrines on site).

- details of the works
- details of key locations (e.g., excavation), including parking, spoil dumps, fuel and chemical stores
- environmentally sensitive areas on and/or adjacent to the works site
- waterways, including drains
- proposed control measures (e.g., erosion and sediment controls)
- restrictions (e.g., on access, traffic movements), and
- monitoring protocols and locations.

3.4.3 Record keeping

As part of an EMMP a register should be kept of relevant records, including:

- site inspection checklist
- non-compliance and Corrective Action Report
- complaints record
- environmental incident report
- environmental training register
- waste register, and
- monitoring checklist.

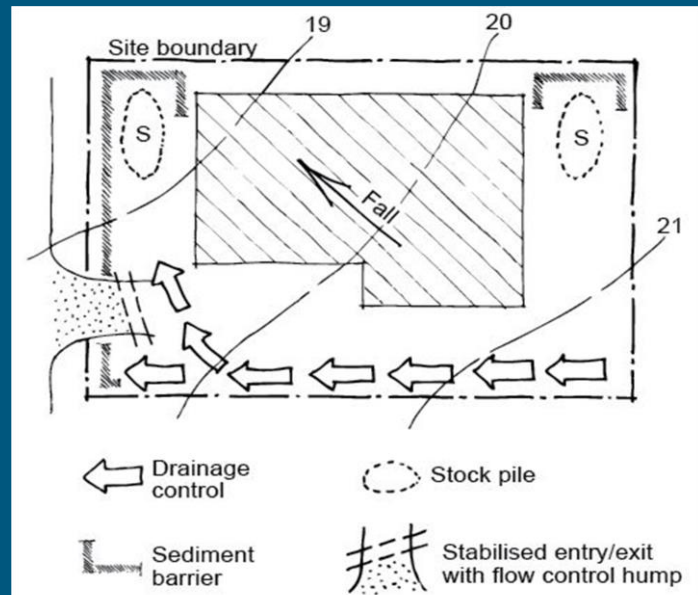
3.5 Monitoring and Review

3.5.1 Monitoring

This section of an EMMP should explain how environmental management activities and controls will be monitored. A monitoring checklist should be developed specifying when monitoring activities need to be carried out, who is responsible and what monitoring methods will be employed. It should include space for sign-off to verify that the monitoring was undertaken and the results compliant with pre-established criteria. Further, the checklist must specify if, and when, follow-up action is required and who is responsible. Details of how monitoring records will be distributed and stored should also be provided.

Erosion and Sediment Control Plan

Erosion and Sediment Control Plans (ESCP) are a common requirement of coastal engineering projects and can be complex, however, they can also be relatively simple. Below is an example of a ESCP that shows site contours, overland flow direction, stockpiles and proposed erosion and sediment control installations. While simple, this figure gives a good indication of how water flows on the site and how erosion and sediment transport will be controlled.



Triggers and Corrective Actions

Environmental monitoring on coastal engineering projects can range from a complex suite of water quality parameters, with trigger limits defined in legislation, to more simple monitoring, such as visual inspections. When monitoring indicates an exceedance of a trigger limit, corrective action, such as stopping work or altering work methods, should take place.

A simple example of the link between monitoring, a trigger and a corrective action is monitoring of dust from site activities. Often such monitoring takes the form of visual inspection, and the trigger is dust settling outside the site. When this is observed a range of corrective actions could be triggered, such as:

- Using water to suppress the dust
- Delaying the activity until the wind drops or changes direction
- Changing the equipment used to limit dust (e.g., sweeping instead of using blowers)
- Limiting the speed of vehicles on site.

3.5.2 Corrective actions

The EMMP should define procedures for dealing with non-compliance with environmental management controls, environmental incidents, and emergencies. The details provided should define who is responsible for taking action in the event of a non-compliance or emergency. Procedures should be put in place to record environmental incidents, non-compliance, and corrective and preventative actions.

3.5.3 EMMP review

This section should describe how and when the EMMP will be reviewed. This should include reviewing the environmental controls and procedures in place to make sure they are still applicable to the activities being carried out and are effective. It should cover:

- when reviews will be done and how often
- who will be responsible for reviewing the EMMP and making subsequent changes
- how the site or project team will be informed of any changes, and
- when the reviewed EMMP should be submitted to the environmental authority.

4 EMMP Template

This section provides a template that could be used to develop an EMMP for coastal engineering projects.

Table 2: EMMP Template							
Project Name	<Name Here>						
Project Proponent	<Name Here>						
Introduction & Objectives	<Insert project details as per Section 3.1 of this document, to cover approval and consent conditions as appropriate>						
Project Description	<Insert project details as per Section 3.2 of this document>						
Environmental Management Structure and Responsibilities	<Insert project details as per Section 3.3.1 of this document>						
	<table border="1"> <thead> <tr> <th>Position</th> <th>Contact Details</th> <th>Responsibilities</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Position	Contact Details	Responsibilities			
Position	Contact Details	Responsibilities					
Environmental Reporting and Training	<Outline details of the site environmental reporting and training requirements as per Sections 3.3.2 and 3.3.3 of this document>						
Emergency Response	<List applicable emergency contacts as per Section 3.3.4 of this document>						
	<table border="1"> <thead> <tr> <th>Agency or Role</th> <th>Contact Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Agency or Role	Contact Number				
Agency or Role	Contact Number						
Environmental Management Activities and Controls	<Insert information as per Section 3.4.1> An example of how to display this information is provided below for the management of water quality. If such an approach is to be used, a similar table will be required for all topics relevant to the works and the site. Appendix 1 provides another example						

Water Quality Management

Environmental objectives

- To avoid a detrimental impact on the water quality of the receiving environment
- To comply with the following legislation: <insert relevant legislation>
- To comply with the conditions of approvals associated with the site: <insert relevant conditions>
- <insert any other relevant objectives>

Potential environmental impacts

1. Detrimental impact on the water quality and marine environment of the site
2. Non-compliance with legislative requirements
3. <insert any other impacts identified in EIA documentation>

Control measures

<insert control measures – these may be covered in EIA documentation>
<include environmental control plans where applicable>

Responsibility

<Insert site-specific detail here>

Monitoring

<insert monitoring details as per Section 3.5.1 of this document – these may be covered in EIA documentation>

Responsibility

<Insert site-specific detail here>

Reporting

<insert reporting details specific to this topic>

Responsibility

<Insert site-specific detail here>

Performance indicators

- No spills resulting in detrimental impact on the water quality and marine environment of the local area
- <insert any relevant indicators>

Corrective actions

Non-conformance with this EMMP shall be documented alongside the corrective actions taken

Corrective actions may include:

- Updating operating procedures and associated documentation (such as this EMMP)
- Feedback from emergency response or exercise incorporated into operating procedures (should an unacceptable risk be identified)
- Re-training staff to address the area of skills lacking
- Review of effectiveness of induction training program
- Corrective works in the event of a design flaw/malfunction
- <insert other site-specific corrective actions>

Works Plans

<Insert or cross-reference work plans as per Section 3.4.2 of this document.>

Record Keeping

<Insert record keeping details as per section 3.4.3 of this document>

Monitoring and Review

<Insert monitoring and review information as per Section 3.5 of this document>

5 EMMP Review Checklist

A checklist is provided in **Appendix 2** that can be used to review submitted EMMPs.

APPENDIX 1 Example EMMP Measures

Project activity	Predicted impact	Management or Mitigation Measure		Monitoring	
		Action	Responsibility	Approach & Timing	Responsibility
CONSTRUCTION PHASE					
Construction in dry season	Dust nuisance – in and around construction areas (e.g., crusher) and from exposed spoil storage site	Limit or suspend activity near village during periods of strong winds Use sea water for dust suppression (inc. to the access road within 50m of an occupied dwelling) Cover spoil storage site	Contractor	Visual inspections, daily	Site Environment Officer & Contract Engineer's site representative
Operation of construction plant and vehicles	Exhaust emissions affecting air quality	Use of vehicles certified as compliant Maintenance of equipment Avoid idling when not in use	Contractor	Certification, at outset and every six-months Visual inspections, daily	Site Environment Officer & Contract Engineer's site representative
Construction of a temporary working platform on reef platform	Damage to the works platform and sediment accumulation	Provision of and adherence to a site-specific work plan, to include (i) definition of boundaries/work plan, (ii) avoidance of locations of high environmental value, (iii) details of construction methodology, (iv) risk assessment, (v) details of management measures, (vi) monitoring plan.	Contractor (preparation) Contract Engineer (approval)	Measurement of sediment accumulation (photos), monthly ⁴ Pre- and post-working platform construction survey ⁵	Site Environment Officer reporting to the Contract Engineer Contractor's marine ecologist reporting to the Contract Engineer

⁴ In this case, a trigger level should be set that – if reached – requires a response from the contractor. This trigger should be included in the work plan management measures.

⁵ If an unacceptable level of damage arises, this would need to be rectified by the contractor and the criteria for this (again) should be set out in the work plan.

APPENDIX 2 EMMP Review Checklist

Requirements	Addressed Yes/No	Further information required	Observations/comments
General Administrative Requirements			
All required approvals have been provided to the contractor and details are available, including conditions on the works			
Works on site have not commenced without an approved EMMP			
The site environmental officer holds relevant qualifications and has sufficient experience			
A periodic review procedure has been included, incorporating a system to continuously improve the EMMP			
Detailed Administrative Requirements			
Information on site inspections: <ul style="list-style-type: none"> Identifies if controls are adequate, functional, and applied Identifies appropriate management and corrective measures Covers frequency 			
Information on monitoring includes: <ul style="list-style-type: none"> Specific monitoring locations Specific methods Monitoring parameters Criteria/objectives to be measured against Details on timing, frequency, and duration Details on the management of non-conformances Reporting requirements 			
Complaint management (environmental) A procedure exists for registering and following through on complaints pertaining to relevant environmental ⁶ matters			

⁶ 'environmental' in this context includes the natural, human (social) and cultural (heritage) environment.



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Requirements	Addressed Yes/No	Further information required	Observations/comments
<p>Environmental incident notification and management A procedure is set out that adequately addresses notification and management requirements for environmental incidents, in accordance with local legislation</p>			
<p>Site induction includes:</p> <ul style="list-style-type: none"> • Basic responsibilities and roles for environment management • Specific locations of significant environmental or heritage value • Measures and strategies for environmental management • Ancillary activity locations (including turnaround points, construction water, stockpile sites, and material sources) • Systems for notification of potential environmental non-conformances or incidents • Management and contingency plans for unexpected events (spills, UXO, chance finds etc) 			
<p>EMMP covers the environment management of all works, including temporary works and ancillary (side-tracks, stockpiles, water sources and contractor's site facilities and camps)</p>			
<p>NOTE: The following topics (in alphabetical order) are not applicable to all projects. Where the EIA and EMMP have not identified the below as requiring management, the sections included below may be ignored or deleted. Equally, other topics not covered here may need to be included.</p>			
<p>Air Quality</p>			
<p>EMMP includes diagrams and descriptions of:</p> <ul style="list-style-type: none"> • Air quality receivers in relation to the site and baseline criteria • Air quality monitoring methodology, including: <ul style="list-style-type: none"> ○ Equipment and its location ○ Duration ○ Frequency ○ Details of person responsible • Strategies and measures for management that are both practicable and reasonable to minimise adverse effects on air quality and dust • Contingency plan for criteria exceeding emissions 			
<p>Chemicals and Fuels</p>			
<p>EMMP includes diagrams and descriptions of:</p>			



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Requirements	Addressed Yes/No	Further information required	Observations/comments
<ul style="list-style-type: none"> Chemicals or fuels of volume exceeding 250L stored on site, including storage location, management and containment practices, and maximum quantity to be stored at one time Practicable and reasonable measures for contamination avoidance and avoidance of discharge of any chemicals or fuels Spill response measures Contingency plan for discharge or contamination event Details of approvals held, where necessary, regarding chemical and fuel use and storage 			
Consultation and Communication			
EMMP includes details of the project's communication and consultation plan vis-à-vis engagement with the local community and affected stakeholders and grievance redress mechanism			
Contaminated Land			
<p>EMMP includes diagrams and descriptions of:</p> <ul style="list-style-type: none"> Locations of known contamination and associated in situ contaminant types Practicable and reasonable measures for management and monitoring of each applicable site A contingency plan for discovery of contaminants on site, or release of contaminants from site <p>A separate Contaminated Site Management Plan may be required to be produced and approved, including methods of:</p> <ul style="list-style-type: none"> assessment remediation compliance testing 			
Cultural Heritage			
<p>EMMP includes:</p> <ul style="list-style-type: none"> Proponent's Cultural Heritage Officer's contact details Locations of sites/places of cultural heritage on or in proximity to site List of works in proximity to site/place of cultural heritage Practicable and reasonable management measures to avoid disturbance <p>A separate Cultural Heritage Monitoring Plan may need to be produced and approved where heritage values are high/at risk</p>			



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Requirements	Addressed Yes/No	Further information required	Observations/comments
Geomorphology and Soils			
EMMP includes: <ul style="list-style-type: none"> • A description of any works that could adversely affect geomorphic form and function, e.g., the beach, and soils/soil structure • A description of any spoil storage or disposal sites, and their proposed management • Practicable and reasonable management measures to avoid disturbance • Practical and reasonable measure to monitor change and strategies to rectify any problems that arise or to rehabilitate the site Separate Dredging and Erosion & Sediment Control Plans may need to be produced.			
Health & Safety (H&S)			
EMMP includes details of: <ul style="list-style-type: none"> • Measures to be taken to ensure the H&S of workers • Detailed measures to be taken to ensure the H&S of the local community, including site safety measures, as well as training relating to culturally appropriate/inappropriate behaviours etc • Information provision related to gender awareness, child protection, STIs, etc • Proposed regular toolbox talks • Emergency assistance procedures • A grievance redress mechanism A separate Health & Safety Plan and Code of Conduct should be produced, and an Emergency Response Plan.			
Light			
EMMP includes details of: <ul style="list-style-type: none"> • Proposed lighting • Light generating activities, locations of such, and expected duration of works, including hours of operation • Practical and reasonable light minimisation strategies, including an impact contingency plan 			
Marine Habitats (corals, macroalgae, etc.)			
EMMP includes diagrams and descriptions of:			



Requirements	Addressed Yes/No	Further information required	Observations/comments
<ul style="list-style-type: none"> Natural and critical (threatened and protected) marine habitats in and close to the site Identification of the activities likely affect such habitats Practical and reasonable strategies and measures for protection of such habitats Details of suitably qualified staff (a marine ecologist) to ensure that appropriate protection is in place Monitoring strategy, including the definition of exceedance criteria (triggers) and correction actions 			
Material Sourcing			
<p>EMMP includes diagrams and descriptions of:</p> <p><i>Water sourcing</i></p> <ul style="list-style-type: none"> Primary water consumption activities Construction water source(s) and expected volumes Applicable conditions and requirements for water take Strategies to maximise efficiency of water use Monitoring procedures <p><i>Construction materials</i></p> <ul style="list-style-type: none"> Sources of sand, gravel, or fill etc. including volumes Proximity to site Requirements for storage and access Required approvals Biosecurity measures Extraction site management plan (where applicable) Rehabilitation process (where applicable) <p><i>Other</i></p> <ul style="list-style-type: none"> Other material sources and management measures 			
Native or Protected Fauna			
<p>EMMP includes diagrams and descriptions of:</p> <ul style="list-style-type: none"> Native fauna breeding locations and habitats in proximity to the site and limits of clearing Identification of the type of activities likely to impact breeding, habitat, or fauna activities 			



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Requirements	Addressed Yes/No	Further information required	Observations/comments
<ul style="list-style-type: none"> • Practical and reasonable strategies and measures for management of native fauna, their breeding places and habitats, and passages (e.g., fish and marine fauna) • Details of suitably qualified staff for utilisation in fauna management, including emergency wildlife care details • Procedures and plan for fauna rescue and release, including the treatment of fauna injured by works • Information on fishing, hunting, local resource use etc 			
Noise			
<p>EMMP includes diagrams and descriptions of:</p> <ul style="list-style-type: none"> • Location of facilities, utilities, infrastructure, and sensitive receptors potentially impacted by the works (including churches, schools etc. and marine fauna) • Noise generating activities, locations of these, and expected duration of works, including hours of operation • Practical and reasonable noise management strategies, including a noise impact contingency plan 			
Vegetation (Flora)			
<p>EMMP includes:</p> <ul style="list-style-type: none"> • A drawing demonstrating the contractor's intended limits of vegetation clearance and the location of significant, valued, or protected vegetation • Practical and reasonable strategies and management measures to minimise vegetation clearing and impacts on other vegetation (including through the introduction of alien or invasive species) • Measures can include: <ul style="list-style-type: none"> ○ Progressive rehabilitation / native planting ○ Protection of vegetation or preservation of individual trees 			
Vibration			
<p>EMMP includes:</p> <ul style="list-style-type: none"> • Location of critical facilities, utilities, infrastructure, and vibration sensitive receptors potentially impacted • A list of works that will cause significant vibration • Applicable criteria for measuring construction vibration 			



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Requirements	Addressed Yes/No	Further information required	Observations/comments
<ul style="list-style-type: none"> • Practical and reasonable strategies for vibration management, both for human comfort and structural/building impacts • A contingency plan for observable damage to structures 			
Waste and Sanitation			
EMMP includes: <ul style="list-style-type: none"> • Type and quantity estimates of waste, including their source • Waste management strategies: avoidance, reuse, recycling, energy, recovery, and disposal • Measuring and recording procedures for waste generated, reused, recycled, or disposed of • Details of adequate and appropriate site sanitation provision 			
Water Quality			
EMMP includes details of: <ul style="list-style-type: none"> • Water bodies potentially affected by the works • Works (including temporary works and ancillary activities) which have the potential to impact water quality • Locations that may be affected or where discharges may occur, including the location of potential contaminants • Flow paths to water bodies within and in proximity to the site • Practical and reasonable water quality management strategies and measures (e.g., a dredging plan) • Monitoring plan for water quality in accordance with risk • Procedures and plan in event of that water quality is affected by the works or upon receiving complaints. 		<i>Low risk</i> <ul style="list-style-type: none"> - Visual monitoring may be sufficient - Monitoring plan should set out approach, locations, and frequency <i>Medium or high risk</i> <ul style="list-style-type: none"> - Field and laboratory testing as monitoring requirements - Monitoring plan must meet local water quality objectives and legislation 	