

Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans

Purpose of these instructions

To assist proponents to prepare Environmental Management Plans that may be provided at referral, required during an assessment by the EPA, or required as an implementation condition under Part IV of the *Environmental Protection Act 1986*.

For some of the EPA's environmental factors there is additional guidance on the development of Environmental Management Plans. Refer to the relevant technical guidance in the EPA's *Framework for environmental considerations in EIA*.

This guidance does not cover the preparation of Mine Closure Plans. Refer to the *Guidelines for Preparing Mine Closure Guidelines* (DMP and EPA, 2015) when preparing mine closure plans.

Purpose of an Environmental Management Plan

To describe how the impacts of activities related to the implementation of a proposal will be managed so that the impacts on the environment are acceptable.

The term 'Environmental Management Plan' is used generically to refer to documents that set out the above information. Documents may be referred to in various ways, e.g. 'Fauna Management Plan' or 'Groundwater Monitoring and Management and Plan'.

How to prepare an Environmental Management Plan (EMP)

Template

The template provides the structure of the Environmental Management Plan (EMP) and the minimum requirements that the EPA/Department of Water and Environmental Regulation (DWER) needs to assess and/or approve the plan. The EPA expects that proponents follow the EMP template (unless otherwise agreed with the DWER), so that the EMP is concise.

The template provides flexibility for proponents to prepare EMPs that:

- cover one or more key environmental factors for a particular proposal, and/or
- cover one or more operations or Ministerial Statements.

EMPs prepared for multiple operations or a region must include proposal-specific information for each proposal, where required by the implementation conditions for Ministerial Statements. A schedule may be provided for each operation or Ministerial Statement.

Advice

Proponents may contact the DWER if they need assistance to prepare an EMP.

The DWER encourages proponents proposing to develop EMPs that cover more than one Ministerial Statement to consult with the DWER to ensure that regulatory requirements are met.

Content of an Environmental Management Plan

Document control

Include a table at the front of the EMP with version, date and authorisation (name and signature).

Summary

Provide a summary of the following in tabular format:

- Title of proposal
- Proponent name
- Ministerial Statement number/s (if applicable)
- Purpose of the EMP (e.g. Environmental Scoping Document requirement or implementation condition/s requirement)
- Key environmental factor/s and objective/s
- Condition clauses (if applicable)
- Key provisions in the plan

Note: this may not be required for EMPs that provide a provisions table (see Section 2) that adequately covers all the requirements in the provisions table template (Attachment 1).

1. Context, scope and rationale

1.1. Proposal

Briefly describe the scope of the proposal that the EMP addresses.

1.2. Key environmental factors

For each key environmental factor describe:

1. the proposal activities which would affect the key environmental factor
2. the site-specific environmental value, existing and/or potential uses, ecosystem health condition or sensitive component of the key environmental factor which will be affected.

1.3. Condition requirements

Provide a table of the Ministerial Statement condition requirements (including any environmental objectives/outcomes), if applicable, and in which section of the EMP they are addressed. This may be provided in the provisions table (see Section 2) or in an Appendix if there are multiple conditions and/or condition clauses.

1.4. Rationale and approach

Provide a concise description of the rationale and approach for the EMP against the environmental objective/s or outcome/s, including:

- Survey and study findings.
- Key assumptions and uncertainties:
 - e.g. parameters used in numerical modelling.
- Management approach:
 - risk-based approach to identify and prioritise provisions
 - internal use of early response indicators and criteria, if used
 - the body of scientific information/site/regional information available
 - regional approach, if used.
- Rationale for choice of provisions
 - expected changes in the intensity, duration, magnitude or geographic footprint of the impact
 - expected changes and rate of changes in the environment
 - possible effects of issues external to the proposal e.g. rainfall, landuse, other users, etc
 - expected timeframe for mitigation to take effect.

2. EMP provisions

The EMP 'provisions' are the key component of an EMP and are the legal requirements to be met by the proponent in implementing the EMP.

The provisions in the EMP are either outcome-based or management-based. The EMP may contain one type of provision, or a combination, depending on the environmental issue/s that the EMP addresses.

Provide detail on the provisions in the EMP:

- in a table/s (see examples at Attachment 1 of the EMP template) (preferred) and/or
- as succinct text.

The table/s may be provided as separate schedules for EMPs that cover more than one operation or Ministerial Statement.

Condition requirements

Where the EMP is a requirement of a condition, this section must include the relevant condition clause numbers and the provisions that are specified in the condition/s (see example templates at Attachment 1).

Outcome-based provisions

Outcome-based provisions are performance-based and may be used where the part of the environment is capable of objective measurement and reporting.

1. Outcome

An outcome is the proposal-specific desired state for an environmental factor/s to be achieved from the implementation of outcome-based provisions. An outcome must be measurable and relate to a particular environmental factor/s and its objective/s as:

- an impact that must be avoided
- a level of impact that must not be exceeded
- a level of protection that must be achieved.

Outcomes generally relate to the 'avoid' step of the mitigation hierarchy. Outcomes are usually defined in terms such as 'avoid', 'maintain' or 'no net-loss'.

2. Performance indicators (environmental criteria)

Performance indicators are used to measure performance against the environmental outcome.

Environmental performance indicators are specific physical, chemical or biological parameters that can be measured to represent the health and/or condition of part of the environment and:

- are measurable
- are part of the causal relationship between a relevant proposal aspect and the impact on the environmental factor/s
- are effective for tracking changes relating to the environmental factor/s
- are scientifically credible
- are straightforward and readily interpretable
- include a reference or baseline
- are consistent and compatible with other recognised monitoring programs with monitoring programs elsewhere in Australia
- can be monitored regularly.

The EPA has identified two levels of environmental performance indicators for an EMP:

1. criteria relating to trigger levels; and
2. criteria relating to threshold levels.

Environmental criteria are the numerical values for an environmental performance indicator.

Environmental criteria include a quantitative level for a performance indicator and proposal-specific parameters such as location, time period, scale and a baseline or reference.

Trigger criteria are set at levels to forewarn of the approach of the threshold criteria and 'trigger' response actions. Trigger criteria must be set at a conservative level to ensure trigger level actions are implemented well in advance of the threshold criteria to avoid non-compliance and to avoid compromising the environmental outcome.

Threshold criteria represent the limit of acceptable impact beyond which there is likely to be a significant effect on the environment. This indicates that the environmental outcome is not being met. Where the EMP is a requirement of a condition, any failure to meet threshold criteria constitutes a non-compliance with the implementation conditions.

3. Response actions

Trigger level actions are the actions that will be implemented if trigger criteria are exceeded, to avoid reaching the threshold criteria and bring the impact back below the trigger criteria.

Threshold contingency actions are implemented in the event that the threshold criteria are exceeded. Threshold contingency actions must be decisive actions that will bring the impact back below the threshold criteria and trigger criteria quickly.

4. Monitoring

Monitoring is undertaken to measure performance against the environmental outcome and whether trigger level actions or threshold contingency actions need to be implemented.

Monitoring includes the location of monitoring sites, reference or control sites, parameters, frequency, timing and methodologies for data collection and analysis. Where the EMP is a requirement of a condition, this will include any other information required by the condition.

5. Reporting

The EMP sets out the reporting requirements relating to the implementation of the plan. Where the EMP is a requirement of a condition, this will include information required by the condition. Reporting may include:

- annual reporting of monitoring results and trends compared to trigger and threshold criteria
- reporting any exceedance of threshold criteria within a set timeframe
- reporting on threshold contingency actions which have been implemented due to the exceedance of threshold criteria.

Management-based provisions

Management-based provisions relate to management actions and may be used where the part of the environment is not capable of objective measurement and reporting.

1. Objective

An objective is the proposal-specific desired state for an environmental factor/s, to be achieved from the implementation of management-based Condition EMP provisions. An objective must relate to the EPA's environmental objective for a particular factor/s. Objectives are defined in terms such as 'minimise impacts as far as practicable'.

2. Management actions

Management actions are the identified actions implemented to meet the environmental objective. Management actions generally relate to the 'minimise' and 'rehabilitate' steps of the mitigation hierarchy.

Management actions are prioritised using a risk-based approach, so that the greatest management effort is placed on the proposal activities that have the highest likelihood of causing environmental impacts where the consequence of an impact is severe and likely to be irreversible.

Where the EMP is a requirement of a condition, any failure to implement required management actions constitutes a non-compliance with the implementation conditions.

3. Management targets

Management targets are proposal-specific and are used to assess whether the management actions are effective. Management targets may be quantitative (e.g. no decrease in the numbers of a fauna species below baseline levels).

4. Monitoring

Monitoring is undertaken to assess whether the management actions are effective against the environmental objective.

As for the outcome-based provisions, monitoring includes the location of monitoring sites, reference or control sites, parameters, frequency, timing and methodologies for data collection and analysis. Where the EMP is a requirement of a condition, this will include any other information required by the condition.

Where management targets are not met, management actions need to be reviewed and possibly revised, to avoid significant effects on the environment. Where the EMP is a requirement of a condition, proponents must seek formal approval from the DWER to amend a management action/s.

5. Reporting

As for the outcome-based provisions, the EMP sets out the reporting requirements relating to implementation of the plan. Where the EMP is a requirement of a condition, this will include information required by the condition. Reporting may include:

- annual reporting of monitoring results and trends against management targets
- reporting of any exceedance of management targets, within a set timeframe
- reporting on the review and revision of management actions.

3. Adaptive management and review of the EMP

Adaptive management in relation to an EMP includes the following:

- Define the issue and develop the EMP to address the issue.
- Implement the management and mitigation measures.
- Monitor and evaluate against the environmental provisions.
- Adjust management and mitigation measures and monitoring (if required) to meet the outcome or objective, based on what is learned, e.g. from
 - evaluation of monitoring data
 - review of assumptions and uncertainties
 - re-evaluation of risk assessment
 - increased understanding of the ecological regime
 - external changes during the life of the proposal.

Discuss the adaptive management approach for the EMP and the process for the review of the EMP.

Where the EMP is a requirement of a condition, proponents must seek formal approval from the DWER to amend a provision of a Condition EMP based on information gained through adaptive management.

Early response indicators, criteria and actions

Proponents may choose to adopt **early response indicators** as part of their adaptive management approach. Early response indicators provide information on changes, which are precursors to an environmental impact. They also support improved understanding and identification of trends in environmental systems.

Situations where early response indicators may be appropriate include:

- where loss or mortality is irreversible in human time scales (e.g. loss of seagrass communities)
- where impacts may not be detected for a prolonged period (e.g. impacts on marine turtles)
- complex environmental systems where trends need to be established or where consequences of potential impacts are not well understood (e.g. long term impacts of dewatering on groundwater systems).

Early response criteria initiate **early response actions** before or at the onset of an environmental impact. Early response actions may include investigations to determine the potential causes of exceedances, the analysis of additional data sets, more frequent monitoring and/or review of trigger criteria.

Early response provisions (criteria and actions) may be required in an EMP through a condition, where critical environmental values may be impacted and there is a high degree of uncertainty about likely impacts.

Example: Early response indicator, criterion and actions

Environmental outcome

No loss of seagrass communities outside the low ecological protection area that surrounds the outfall.

Early response indicator 'Chlorophyll a' concentration

Rationale for the choice of the early response indicator

Elevated nutrients in waste streams may increase phytoplankton levels, which reduces water clarity and/or increases epiphytic algal growth on seagrass leaves resulting in a shading effect. This may lead to reduced photosynthesis and thinning of seagrass meadows, which could result in the loss of the seagrass community.

Early response criterion

The median concentration of 'chlorophyll a' at any monitoring site during the non-river flow period exceeds the 80th percentile concentration at the reference site.

Early response actions

1. Determine the extent of exceedance.
2. Investigate other potential causes.
3. If exceedance cannot be reasonably attributed to another cause, assess seagrass shoot density.

Note: Trigger criteria and threshold criteria related to seagrass shoot density are used to measure the performance relative to the environmental outcome for this example.

4. Stakeholder consultation

The EPA and DWER expect proponents to consult with stakeholders (including decision-making authorities and other government agencies) when preparing EMPs.

Summarise the stakeholders consulted with, comments and advice received on the key environmental issues, and the response to comments/issues, in tabular form.

Figures, tables, schedules and appendices

Include the following where relevant to support the information in the EMP:

- Figures – maps, figures and diagrams for context and to explain provisions (e.g location of monitoring sites, buffers etc).
- Tables – Summary, EMP provisions and Ministerial Statement conditions.
- Schedules (optional) – for EMPs that cover more than one operation or Ministerial Statement.
- Appendices – supporting technical information may include baseline survey reports supplementary modelling reports or scientific studies, risk assessments or other relevant information.

Submitting an Environmental Management Plan

The EPA prefers that documents are emailed but will also accept documents submitted by post.

Email: registrar@dwer.wa.gov.au

or

EPA Services

Department of Water and Environmental Regulation

Locked Bag 33, Cloisters Square, Perth WA 6850

Enquiries:

Telephone: 6364 7000

Fax: 6364 0896

Email: info.epa@dwer.wa.gov.au

Website: www.epa.wa.gov.au

End of instructions. Environmental Management Plan template starts on next page.

Template for *Environmental Protection Act 1986* Part IV Environmental Management Plans

Summary

1. Context, scope and rationale

- 1.1. Proposal
- 1.2. Key environmental factor/s
- 1.3. Condition requirements
- 1.4. Rationale and approach
 - *Survey and study findings*
 - *Key assumptions and uncertainties*
 - *Management approach*
 - *Rationale for choice of provisions*

2. EMP Provisions (see example tables at Attachment 1)

Outcome-based provisions

- Outcome
- Environmental criteria (trigger criteria and threshold criteria)
- Response actions (trigger level actions and threshold contingency actions), and/or

Management-based provisions

- Objective
- Management actions
- Management targets

Monitoring

Reporting

3. Adaptive management and review of the EMP

4. Stakeholder consultation

Figures

Tables

Schedules *[optional]*

Appendices *[if required]*

Example: EMP Provisions (outcome-based) table**Purpose of EMP OR Schedule: eg To meet legal requirements of Condition X of Ministerial statement XXXX**

EPA factor/s and objective/s:				
Outcome/s: State outcome (and Condition clause number, if applicable)				
Key environmental values:				
Key impacts and risks:				
Outcome-based provisions				
Environmental criteria:	Response actions:	Monitoring	Reporting	
<ul style="list-style-type: none"> • Trigger criteria • Threshold criteria 	<ul style="list-style-type: none"> • Trigger level actions • Threshold contingency actions 			
Condition clause number and text	Condition clause number and text	Condition clause number and text	Condition clause number and text	
Trigger criterion 1	Trigger level actions (and timing to implement)	Indicator/parameter	Annual reporting	
Threshold criterion 1	Threshold contingency actions (and timing to implement)	Method for data collection and analysis Location monitoring sites (including reference or control sites) (see Figure xx)	Reporting on exceedance of trigger criteria and threshold criteria (and timing of report)	Reporting on trigger level and threshold contingency actions
		Frequency and timing	Reporting on trigger level and threshold contingency actions	
Trigger criterion 2	Trigger level actions	Indicator/parameter	Annual reporting	
Threshold criterion 2 etc	Threshold contingency actions	Method for data collection and analysis Location monitoring sites (including reference or control sites) (see Figure xx)	Reporting on exceedance of trigger criteria and threshold criteria (and timing of report)	Reporting on trigger level and threshold contingency actions
		Frequency and timing	Reporting on trigger level and threshold contingency actions	

Example: EMP Provisions (management-based) table

Purpose of EMP OR Schedule: eg To meet legal requirements of Condition X of Ministerial statement XXXX

EPA factor/s and objective/s:

Objective/s: State objective (and Condition clause, if applicable)

Key environmental values:

Key impacts and risks:

Management-based provisions

Management actions	Management targets	Monitoring	Reporting
Condition clause number and text	Condition clause number and text	Condition clause number and text	Condition clause number and text
Management action 1 (and risk-based priority and timing)	Management target 1	<p>Indicator/parameter</p> <p>Method for data collection and analysis</p> <p>Location monitoring sites (including reference or control sites) (see Figure xx)</p> <p>Frequency and timing</p> <p>Review management action (and revise if required)</p>	<p>Annual reporting</p> <p>Reporting on exceedance of management target</p> <p>Reporting on the review and revision of management actions</p>
Management action 2 (and risk-based priority and timing) etc	Management target 2	<p>Indicator/parameter</p> <p>Method for data collection and analysis</p> <p>Location monitoring sites (including reference or control sites) (see Figure xx)</p> <p>Frequency and timing</p> <p>Review management action (and revise if required)</p>	<p>Annual reporting</p> <p>Reporting on exceedance of management target</p> <p>Reporting on the review and revision of management actions</p>