

## Preparing environmental management plans

*This guideline provides information on the purpose and content of an environmental management plan (EM plan) and how to prepare one as part of an environmental impact assessment (EIA). This guideline provides guidance on how to undertake effective EIA.*

### 1. Introduction

The purpose of this guideline is to provide clear and comprehensive advice on the scope, role and content of environmental management plans (EM plans) for managing environmental impacts of proposals in Queensland. The intended audience consists of developers, planners, environmental management professionals, community stakeholders and decision makers.

This document describes the role of the EM plan in environmental impact assessment (EIA) and planning for ecologically sustainable development (ESD) within the framework of existing legislation and environmental management policies. Appendix A provides a summary diagram for developing an EM plan.

It should be noted that this guideline does not apply to mining, exploration, petroleum or gas projects, as the *Environmental Protection Act 1994* (EP Act) specifies particular requirements for EM plans for the mining industry.

### 2. Why EM plans are useful

EM plans are a useful vehicle for integrating and implementing the environmental management commitments, conditions, and statutory requirements that development proposals may or must observe. EM plans are developed by proponents during a proposal's planning and design.

EM plans facilitate ESD and integrated decision-making. They are:

- able to form the basis for consultation and negotiation of outcomes;
- flexible;
- comprehensive in that they may address all relevant environmental management issues;
- able to be updated; and
- a tool for promoting accountability.

They promote self-regulation and integration of environmental management issues into planning and operations. They may address all relevant environmental management issues, can be drafted in a consultative manner, and may incorporate regulatory requirements. They can also be the focus of stakeholder input.

### 3. Triggers for EM plans

The need for a proposal to incorporate the development of an EM plan may arise from or be required by:

- guidelines or terms of reference (ToR) for drafting EIAs that include a requirement for an EM plan as well as specifications on content and form. Appendix B provides a typical example of ToR for EM plans;
- local government planning schemes, which under the Integrated Planning Act 1997 (IPA) may include assessment criteria or be supported by planning scheme policies that refer to the submission of an EM plan for applications for development assessment under the Integrated Development Assessment System (IDAS);
- information requests under IDAS in the referral coordination process and/or as assessment manager requirements. Requirements may be similar to those outlined in Appendix B;
- legislative requirements such as:

- section 187 of the EP Act relating to the mining industry - see EPA mining industry Guideline 10 “Preparation of an Environmental Management Plan”); and
  - the State Planning Policy “Planning and Managing Development Involving Acid Sulfate Soils” which has a recommendation for an EM plan and its content.
- EM plans may also be required by development permit or licence conditions or referred to as supporting information; and
  - voluntary development of an EM plan by a proponent as part of a proposal’s application information or as part of a proponent’s Environmental Management System (EMS) for the proposal or the business as a whole.

Submission of an EM plan is encouraged to support applications required for approval of proposals that may affect the environment or environmental values.

#### 4. Purpose of EM plans

An EM plan provides life-of-proposal control strategies in accordance with agreed performance criteria for specified acceptable levels of environmental harm. EM plans may specify all affected environmental values, all potential impacts on environmental values, mitigation strategies, relevant monitoring together with appropriate indicators and performance criteria, reporting requirements and, if an undesirable impact or unforeseen level of impact occurs, the appropriate corrective actions available.

The aims of an EM plan are to provide:

- (1) auditable proponent commitments to practical and achievable strategies and design standards (performance specifications) for the management of a proposal to ensure that environmental requirements are specified and complied with;
- (2) an integrated plan for comprehensive monitoring and control of impacts;
- (3) local, State and Commonwealth authorities, stakeholders and the proponent with a common focus for approvals conditions and compliance with policies and conditions;
- (4) the community with evidence that the environmental management of a project is acceptable.

#### 5. Attributes of EM plans

EM plans may have the following attributes:

- integration of the various regulations pursuant to a development approval in an ordered, flexible and integrated format that is auditable by the proponent and administering agency;
- integration of the terms of operational approvals, such as licences, with the provisions of planning and land use development approvals;
- translation of the studies and scientific reports from the EIS into achievable management strategies;
- facilitation of developer planning for protection of the environment; and
- consistency with, and forming part of, a company’s EMS (term used by International and British Standards: ISO 14001 and BS 7750) or Integrated Environmental Management System (term used in the EP Act) or Quality Assurance system (business term).

Appendix A shows how an EM plan may be developed to incorporate these attributes.

#### 6. How EM plans relate to EIA

EM plans may relate to the various stages of planning for a proposal including development assessment, post approval operations and proposal decommissioning.

EIA incorporates development of an EM plan and is an established process for:

- ensuring that proponents take primary responsibility for protection of the environment that may be affected by their proposal. This responsibility may be expressed in the EM plan as commitments;
- forming a basis for statutory decisions on whether a proposal should proceed. The EM plan may be an integral part of a statutory approval;
- including community views in the assessment and decision making processes. The EM plan provides a summary of the likely environmental impacts and how they will be managed; and

- determining the basis for ongoing environmental management and monitoring, should the proposal proceed. The EM plan is the planning document that may be used and updated during the operational phase.

EIA determines the issues applicable to the proposal and results in appropriate strategies to control or avoid environmental harm. The EIA allows design modifications and mitigation measures to be developed consultatively to address identified environmental impacts.

Public and stakeholder input is essential in the EIA process at key stages such as development of ToR for the EIS (environmental impact statement) and review of the draft EIS. If undertaken properly, this process enables proponents, the community and decision makers (or regulators) to observe and manage predicted impacts.

The EM plan flows from the EIA and may continue through the life of a proposal, i.e. through pre-construction, construction, operation and decommissioning phases. Appendix A shows the EM plan development process and how this arises from the EIA process.

Mitigation and management measures for all environmental management topics are consolidated in an EM plan, which can be given statutory effect through formal approvals. The EM plan comes into effect when a decision is made to proceed with a proposal.

## 7. Content and format of EM plans

An EM plan contains clear commitments, framed in a way that enables assessment of the extent to which the commitment has been met. The commitments should be auditable.

An effective EM plan should be structured to address the key elements of the environmental management of proposals for the life of the proposal. Performance criteria for all elements are determined in the process of formulating an acceptable EM plan.

An effective EM plan may include (but is not limited to) the following components:

- establishment of agreed **performance criteria and objectives** in relation to environmental and social impacts. These should include measurable indicators and standards;
- detailed **prevention, minimisation and mitigation strategies or action programs (including design standards)** for controlling environmental impacts at specific sites;
- details of the proposed **monitoring** of the effectiveness of remedial measures against the agreed performance criteria in consultation with relevant government agencies and the community;
- details of implementation **responsibilities** for environmental management;
- **timing** (milestones) of environmental management initiatives;
- **reporting** requirements and **auditing** responsibilities for meeting environmental performance objectives; and
- **corrective actions** (as options) to rectify any deviation from performance standards.

### Notes:

- (1) The EIA process provides the background information on environmental values and likely level of impacts.
- (2) The EM plan consists of one or a number of elements to address specific management issues, each of which includes the above components.
- (3) The EM plan provides many components of an EMS as described by the ISO 14000 series.
- (4) The acceptable EM plan may be given effect by relevant licences and permits required by legislation.

**The recommended structure of each element** of the EM plan is:

**Element/issue:** Aspect of construction or operation to be managed (as it affects environmental values).

**Operational policy:** The operational policy or management objective that applies to the element.

**Performance criteria:** Measurable performance criteria (outcomes) for each element of the operation.

**Implementation strategy:** The strategies, tasks or action program (to nominated operational design standards) that will be implemented to achieve the performance criteria.

**Monitoring:** The monitoring requirements to measure actual performance (i.e. specified limits to pre-selected indicators of change).

**Auditing:** The auditing requirements to demonstrate implementation of agreed construction and operation environmental management strategies and compliance with agreed performance criteria.

**Reporting:** Format, timing and responsibility for reporting and auditing of monitoring results.

**Corrective action:** The action (options) to be implemented in case a performance requirement is not reached and the person(s) responsible for action (including staff authority and responsibility management structure).

Appendix C provides examples of the content of an EM plan.

## Review of EM plan

An EM plan is reviewed and periodically updated to reflect knowledge gained during the course of operations and to reflect new knowledge and changed community standards (values). Changes to the management plan may be developed and implemented in consultation with relevant authorities and stakeholders.

## 8. How EM plans are assessed by the EPA

EM plans submitted for review by the EPA may be assessed against this guideline and the assessment criteria for the particular trigger (see Section 3). For example:

- EM plans submitted as part of an application for a development permit under the IPA may be assessed in respect of the EPA's IPA applicable jurisdiction (this may include the standard criteria of the EP Act);
- EM plans submitted as part of other EIA will be assessed against this guideline, the relevant ToR and the legislation under which approvals may be required (this may include the standard criteria under the EP Act); and
- EM plans that are voluntarily submitted outside the above processes advice will be assessed on the basis of this guideline and any other requested criteria within EPA's jurisdiction.

### Note:

EM plans (or specific parts) may be linked to (called up by) approval conditions.

## 9. Environmental values and potential impacts

EM plans provide statements clearly identifying each environmental value likely to be affected by the proposal. Environmental values are those qualities or physical characteristics of the environment that are conducive to ecological health, public amenity or safety, that are affected by the proposed activities and may include, but are not limited to:

- environmental values specifically identified or prescribed in Environmental Protection Policies or legislation;
- environmental values identified in relevant planning documents; or
- the qualities or physical characteristics likely to be affected by the proposal.

EM plans should state the **potential adverse and beneficial impacts** of proposals on the relevant environmental values.

Water quality and/or environmental objectives should be developed to quantify potential impacts on the environmental values that are likely to be affected by the proposal.

## 10. Environmental protection commitments

EM plans commit to manage, enhance or protect identified environmental values. There may be one or more commitments corresponding to an identified environmental value. The commitments should contain the following components within the EM plan format shown in section 7 for performance criteria and implementation strategies:

- (1) State environmental protection objectives for enhancing or protecting each relevant value.

- (2) Propose the indicators to be measured to demonstrate the extent to which the environmental protection objective is achieved.
- (3) State the environmental protection standard (a numerical target or value for the indicator), which defines the achievement of the objective.
- (4) Describe an action program to ensure the environmental protection commitments are achieved and implemented. This will include strategies in relation to:
  - (a) continuous improvement;
  - (b) environmental auditing;
  - (c) monitoring;
  - (d) reporting; and
  - (e) staff training.
- (5) Nominate a decommissioning program for land proposed to be disturbed under each relevant aspect of the proposal.

The measurable indicators and environmental protection standards can be determined from existing legislation and regulations, government and local government policy, environmental protection policies, results of EIA, research outcomes and national or EPA guidelines.

To enable environmental protection commitments in the EM plan to be incorporated into conditions of any approval (e.g. an environmental authority), they should be stated in such a way as to be auditable and enforceable.

## 11. Contacts

The EPA Advisory Service caters for environmental professionals in industry and local government who may have specific technical issues or issues to do with the implementation of the State's environmental management legislation. Freecall 1800 501 087.

Further information is available by contacting the EPA's regional planning offices or by contacting the Environmental Operations Division in Brisbane on telephone (07) 3227 6273 or email [eia.policy@epa.qld.gov.au](mailto:eia.policy@epa.qld.gov.au)

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<b>Gold Coast District Office</b> Phone: (07) 5535 3855 Fax: (07) 5576 3975	Kabool Road, West Burleigh PO Box 3454 Burleigh Town LPO Qld 4220

## 12. Glossary

EIA	Environmental impact assessment is the process in which environmental management is integrated into planning for proposals. A more detailed definition from the International Association of Impact Assessment (1999) serves equally as well “the process of identifying, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made”.
EIS	The environmental impact statement is the document(s) submitted to government for assessment in accordance with agreed ToR. EIS is the term used by the SD&PWO Act, Environment Protection and Biodiversity Conservation Act 1999, and EP Act. Other terms that may be used include impact assessment study or environmental impact study.
Element	An aspect of the environment or issue that requires management to minimise or avoid environmental harm.
Environment	Environment as defined in Section 8 of the EP Act includes: <ul style="list-style-type: none"> <li>(a) Ecosystems and their constituent parts, including people and communities; and</li> <li>(b) All natural and physical resources; and</li> <li>(c) The qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; and</li> <li>(d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).</li> </ul>
ESD	Ecologically sustainable development (ESD) aims to protect Queensland’s environment while allowing for development that improves the total quality of life, both now and in the future in a way that maintains the ecological processes on which life depends.
Proposal	Any project or development that may affect the environment or environmental values.

## 13. References

- Co-ordinator General Premier’s Department (1987) *Impact Assessment in Queensland – Policies and Administrative Arrangements*, Premier’s Department: Brisbane.
- To provide guidance on the Environmental Impact Assessment process, DSD released the Impact Assessment in Queensland - Policies and Administrative Arrangements document in 1987 (commonly referred to as the ‘Green Book’ this has now been superseded by changes to the act).
- Council of Australian Governments, Commonwealth of Australia (1992) *National Strategy for Ecologically Sustainable Development*; AGPS, Canberra, December 1992.
- Council of Australian Governments, Commonwealth of Australia (1992) *InterGovernmental Agreement on the Environment*, Signed 28 February 1992. AGPS, Canberra.
- Department of Communication and Information, Local Government Planning and Sport (DCILGPS) (2000) *IDAS Ready Reference – Integrated Planning Act 1997*, Queensland Government: Brisbane.
- Department of Communication and Information, Local Government Planning and Sport (2002) *State Planning Policy 2/02 Planning and Managing Development Involving Acid Sulfate Soils*, Queensland Government: Brisbane.
- <http://www.ipa.qld.gov.au>

Department of State Development (2000) *Draft for Discussion Purposes – Guidelines for Environmental Impact Statements Prepared under the State Development and Public Works Organisation Act 1971*, Brisbane.

Queensland Environmental Protection Agency (1994) *legislation Environmental Protection Act 1994*  
<http://www.epa.qld.gov.au>  
<http://www.legislation.qld.gov.au>

Queensland Department of State Development (1971) *legislation State Development and Public Works Organisation Act and subsequent amendments*.  
<http://www.sd.qld.gov.au>  
<http://www.legislation.qld.gov.au>

#### 14. Related policies and guidelines

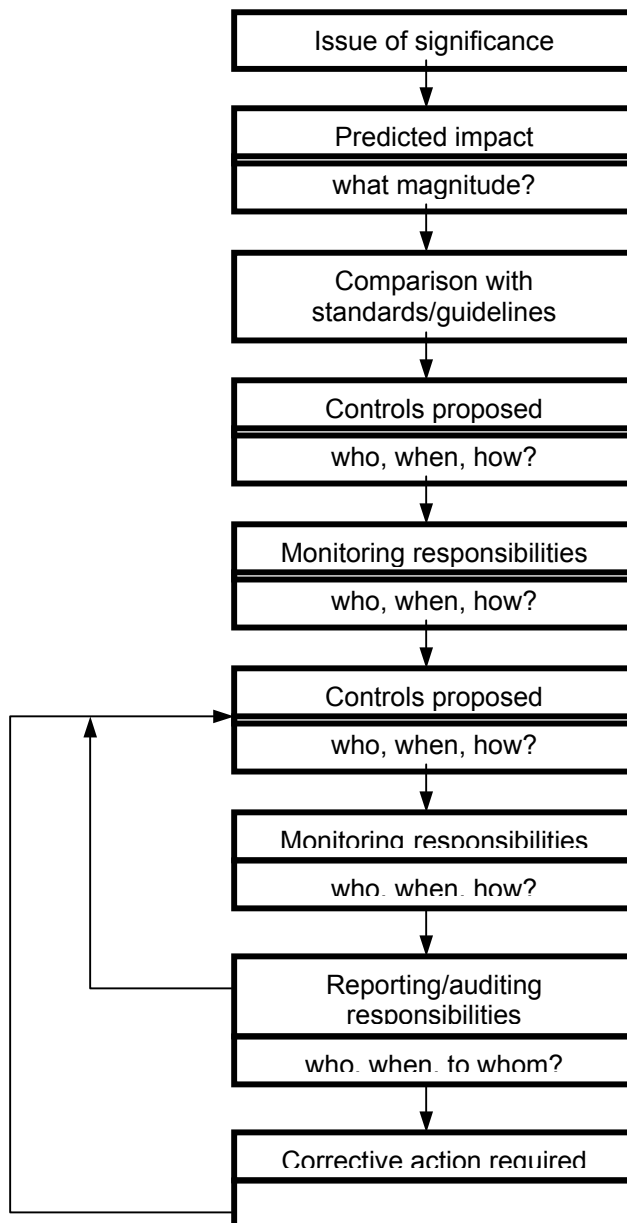
Example ToR (i.e. general information requirements) are in the guideline “**Preparing Terms of Reference and Environmental Impact Statements**” which provides guidance on how to prepare materials in respect of EM plans, the EIS, and for identifying and dealing with environmental management issues for activities.

For a detailed outline and listing of all policies and guidelines on EIA that are available see “**A guide to Environmental Impact Assessment**”.

Together, these guidelines describe a comprehensive approach to environmental planning for activities that may affect the environment. Sector specific guidelines (e.g. mining industry, water infrastructure) are also available.

This guideline and associated guidelines are regularly updated and stakeholders are welcome to provide ongoing feedback on the content of the guidelines via email at:  
[eia.policy@epa.qld.gov.au](mailto:eia.policy@epa.qld.gov.au)

## Appendix A - EM plan development process



## Appendix B - Example Terms of Reference – EM plans

The following is an example of what may be included in the ToR for EIA with respect to EM plans. This advice reflects the approach of the EPA, and effective impact assessment. Not every EIA process would require identical elements for an EM plan. However, the general format and purpose of the EM plan is likely to be similar. Site-specific features and environmental characteristics will need to be incorporated in the EIA and the EM plan.

### Environmental Management Plans

The EIS should detail all practical methods to manage the anticipated adverse impacts on the natural and socio-economic environment.

EM plans are required for each component of the proposal, and any elements of the proposal not already included in any existing development approvals. An EM plan would also be required for any water storage or supply infrastructure. The EM plans should be written as stand-alone documents for future use. The EM plans should describe how the commitments made by the proponent, regarding the minimisation of adverse impacts, will be implemented. The EM plans should also describe all monitoring programs, which should be designed to:

- ensure safeguards are being applied effectively;
- identify any unpredicted impacts requiring remedial measures;
- measure any differences between predicted and actual impacts; and
- provide for periodic review of the management plan itself.

The EM plan should follow the format recommended in the Queensland EPA's guideline "**Preparing Environmental Management Plans**" (available by emailing [eia.policy@epa.qld.gov.au](mailto:eia.policy@epa.qld.gov.au) or downloading from web site <http://www.epa.qld.gov.au> ).

The EPA guide includes the following essential components:

- establishment of agreed performance criteria and objectives in relation to environmental and social impacts;
- detailed prevention, minimisation and mitigation strategies (including design standards) for controlling environmental impacts at specific sites;
- details of the proposed monitoring of the effectiveness of remedial measures against the agreed performance criteria in consultation with relevant government agencies and the community;
- details of implementation responsibilities for environmental management;
- timing (milestones) of environmental management initiatives;
- reporting requirements and auditing responsibilities for meeting environmental performance objectives; and
- corrective actions to rectify any deviation from performance standards.

Records should be kept to allow auditing and to encourage the use of preventative action, as well as corrective action following non-compliance.

Operational EM plans should be prepared for each component of the Project. An EM plan for the construction phase should be prepared for each construction site.

With regard to greenhouse gas emissions, the EM plan should include an identification of 'impact' or 'emission' management options to be adopted to minimise greenhouse gas emissions, including a process for continual improvement (benchmarking, review of technologies, etc.) and any voluntary initiatives (e.g. Commonwealth Greenhouse Challenge, Electricity Supply Association of Australia's Environmental Code of Practice, ISO14001, etc). Adaptation to climate change should also be addressed in the EM plan.

Where any hazardous materials are to be stored, used or processed, the EM plan must address safe storage and handling, maintenance of a substance inventory and provision of Material Safety Data Sheets.

### Outline of EM plan

An EM plan must be provided in respect of identified impacts that need to be controlled. The EM plan should nominate commitments for each significant environmental issue (element) in the following format:

- objective/target: nominate what is intended to be achieved;
- management strategy: nominate the overall approach to be taken to meet/maintain the stated objective/target;
- tasks/action: describe the steps to be taken to implement the nominated strategy, including any necessary approval applications, consultations and monitoring;
- performance indicators: describe the criteria against which the level of achievement of stated objective/target will be measured;
- responsible person/position: assign responsibility for carrying out each task/action to a relevant person, position and/or organisation; and
- monitoring, reporting and review: describe required monitoring, reporting and review arrangement (including any auditing) for each task: how often, by whom; and reporting to whom.

### Monitoring

The EM plan should outline an appropriate environmental monitoring program in accordance with the principles listed below. References should be made to relevant legislation and standards. Monitoring methods should meet any relevant state agency guidelines or Australian standards. National Association of Testing Authorities certified laboratories should be used for key tests.

Monitoring should occur throughout the construction, operation, and (where appropriate) decommissioning phase of all proposal components to ensure that management commitments and licensing agreements are kept, and to enable ameliorative measures to be taken if unexpected impacts are detected and to facilitate best practice environmental management.

Requirements for proposals requiring further base line monitoring prior to construction (e.g. water quality or ambient levels of pollutants in the environment) should be detailed. Attention should be given to seasonal variability in designing such monitoring programs.

Monitoring programs and management feedback systems should be part of the overall environmental management systems in place for the duration of the proposal.

### Reporting

The EM plan should outline the means for reporting the success of the environmental control strategies, with reference to the reporting requirements of the EP Act.

## Scope of EM plan

### EM plan elements

The EM plan should address the environmental impacts of the project, as determined from the EIS, likely approval conditions, and an assessment of environmental risk. These are likely to be as listed below (others may be warranted as a result of the EIS):

#### a) Construction phase

Issues may include:

- noise;
- traffic;
- dust;
- lighting;
- weed and pest management;
- vibration;
- other social disruption;
- air quality
- water quality;
- erosion and sedimentation;
- acid sulfate soils;
- flora and fauna;

- cultural heritage;
- management of natural and World Heritage values;
- land contamination;
- waste and site clean-up;
- rehabilitation;
- visual amenity;
- setting;
- recording and reporting of complaints;
- environmental induction/environmental training;
- emergency situation management;
- fire management;
- effluent disposal;
- training in EM plan requirements for construction workers;
- demand on community services and facilities; and
- impacts on community cohesion due to the increased workforce.

#### b) Operational phase

Issues may include:

- noise;
- flora and fauna;
- air quality;
- greenhouse gas and adaptation to climate change
- dust;
- vibration;
- lighting;
- weed and pest management;
- waste management;
- water quality;
- visual amenity;
- setting or location;
- ongoing training for all levels of staff regarding general environmental duty and environmental management;
- recording and reporting of complaints;
- traffic management and monitoring;
- landscape and character maintenance;
- management of natural and World Heritage values;
- erosion and sedimentation control;
- rehabilitation;
- safety;
- emergency situation management;
- fire management;
- effluent disposal;
- contingency plan for evacuation;
- tourism; and
- visitor management plans

#### c) Decommissioning phase

Issues may include:

- air quality;



- water quality;
- sediment and erosion control;
- weed and pest management;
- waste management;
- visual amenity;
- dust;
- lighting;
- noise;
- vibration;
- flora and fauna;
- management of natural and World Heritage values;
- land contamination;
- waste and site clean up;
- emergency situation management;
- fire management;
- safety;
- contingency plans for evacuation;
- landscaping, revegetation, stabilisation and rehabilitation;
- removal of structures associated with the development; and
- recording and reporting of complaints.

#### Procedural issues

Additional details are required for both the construction and operational phases as appropriate regarding: procedures for audits;

- proposals for an environmental site supervisor (ESS)(Govt) – and scope of ESS role;
- reporting of environmental incidents; and
- dealing with environmental complaints.

## Appendix C - Contents of an EM plan

### Example element

#### River water quality

##### Policy

To minimise the impact on river water quality (from a wastewater land disposal scheme).

##### Performance criteria

- No surface water discharge from the irrigation areas;
- River TDS  
for 100% of river flow time T.D.S. < ? mg/L  
for 98% of river flow time T.D.S. < ? mg/L  
for 90% of river flow time T.D.S. < ? mg/L; and
- N-NO<sub>3</sub> < ? mg/L (for all river flow circumstances).

##### Implementation strategy

Details of how the wastewater irrigation will be operated (including design standards) so that no discharge to the river occurs, e.g.

- in dry weather: application rates, rotation of sprinklers, etc.; and
- no irrigation during and following wet weather until a specified soil moisture condition is established.

##### Monitoring

- Event based and bi-monthly sampling of river water TDS and N levels at upstream and downstream boundaries (using EPA and/or Australian Standard methods for sampling and analysis); and
- visual inspection of irrigation areas to ensure no surface water discharge.

##### Reporting

Details of how and when results of monitoring and any necessary corrective actions are reported to the responsible authorities and internally.

##### Corrective Action

As soon as monitoring results indicate a potential or real breach of performance criteria, undertake one or more of the following:

- stop wastewater irrigation until monitoring results are within performance criteria;
- install bores on down flow boundary to intercept aquifer and pump water to balance storage. Dilute and reapply;
- reduce NO<sub>3</sub> by increased sludge removal and increased denitrification; and
- purchase water allocation for river dilution at low flows as a last resort following a period of increasing river T.D.S. and decreasing river flow.

## **Example table of contents of an EM plan (for a water storage development)**

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  - 1.5 Training
  - 1.6 Comments
  
- 2. PRE-CONSTRUCTION PHASE**
  - 2.1 **ELEMENT 1:** Water quality management - pre-construction
  - 2.2 **ELEMENT 2:** Consultation with landholders with riparian rights and river bank land management practices
  
- 3. CONSTRUCTION PHASE**
  - 3.1 **ELEMENT 3:** Terrestrial flora and fauna management
  - 3.2 **ELEMENT 4:** Aquatic flora and fauna management
  - 3.3 **ELEMENT 5:** Archaeology and aboriginal heritage
  - 3.4 **ELEMENT 6:** Water quality management
  - 3.5 **ELEMENT 7:** Erosion mitigation and sediment control
  - 3.6 **ELEMENT 8:** Dust and noise
  - 3.7 **ELEMENT 9:** Control of exotic flora and fauna
  - 3.8 **ELEMENT 10:** Construction methods
  - 3.9 **ELEMENT 11:** Waste management (liquid and solid)
  - 3.10 **ELEMENT 12:** Road transport and sourcing of materials
  - 3.11 **ELEMENT 13:** On site machinery storage and maintenance
  - 3.12 **ELEMENT 14:** Storage and handling of dangerous goods on site
  - 3.13 **ELEMENT 15:** Fire control
  - 3.14 **ELEMENT 16:** Quality control
  - 3.15 **ELEMENT 17:** Restoration of disturbed areas
  - 3.16 **ELEMENT 18:** Assessment and clean up of contaminated site
  
- 4.0 OPERATIONAL PHASE**
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  - 4.2 **ELEMENT 20:** Water flow monitoring
  - 4.3 **ELEMENT 21:** Terrestrial flora and fauna management
  - 4.4 **ELEMENT 22:** Aquatic flora and fauna management
  - 4.5 **ELEMENT 23:** Fish population management
  - 4.6 **ELEMENT 24:** Erosion mitigation and sediment control
  - 4.7 **ELEMENT 25:** Catchment protection
  - 4.8 **ELEMENT 26:** Control of exotic flora and fauna
  - 4.9 **ELEMENT 27:** Land use and recreation management
  - 4.10 **ELEMENT 28:** Cattle access and control
  - 4.11 **ELEMENT 29:** Storage operation and environmental releases of water
  - 4.12 **ELEMENT 30:** Regional water management strategy
  - 4.13 **ELEMENT 31:** Fire control
  
- 5.0 ASSOCIATED WATER USES**
  - 5.1 **ELEMENT 32:** Irrigation management
  - 5.2 **ELEMENT 33:** Terrestrial vegetation management
  - 5.3 **ELEMENT 34:** Water use management
  - 5.4 **ELEMENT 35:** Technology/information transfer
  - 5.5 **ELEMENT 36:** Groundwater management

**Disclaimer:**

While this document has been prepared with care it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the Environmental Protection Agency should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

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