

**Guidelines for the development of an Environmental
Management Plan**

Clarence Strait Tidal Energy Project, NT

(EPBC 2008/4660)

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1 General Comments

This framework has been developed to assist Tenax Energy Pty Ltd to prepare an environmental management plan/s (EMP) to form part of the environmental impact statement for the Clarence Strait Tidal Energy Project, Northern Territory (EPBC 2008/4660). It should be used as a guide only.

1.1 *Presentation and cross-referencing*

Ensure that the format of the EMP is consistent and easy to follow. Where it refers to material in previously submitted documents, such as the referral information, include clear cross-references (e.g. 'See environmental impact statement, Section 2.9, pages 25–27.'). Use tables, diagrams and maps where inclusion would provide a better understanding and implementation of the EMP. Link all tables, diagrams and maps into the text through cross-referencing.

1.2 *Definitive Commitments*

To ensure readability, write clearly and avoid long sentences with complex clauses. Use the term 'will' rather than 'should' for commitments to carry out management actions. Avoid ambiguities such as 'where possible', 'as required', 'to the greatest extent possible' and the use of jargon. Clearly explain any technical terms or acronyms that need to be used, or define them in a glossary. All commitments must be written in a manner that is clearly auditable.

It is also important that there are no conflicting strategies or statements within the EMP. Carefully read the management commitments that are being made in the plan before submitting it.

2 Overall Management Framework

The approach to preparation of the management plan detailed in the following sections is presented in a prescriptive format that provides for the setting of clear actions, specific performance targets and monitoring procedures. It is recognised, however, that management of certain matters of national environmental significance (NES) is not fully predictable. Accordingly, management actions to be taken may need to be flexible and sufficiently adaptable in recognition of issues such as weather perturbations, limited or absence of suitable baseline data, a lack of existing scientific knowledge of the issue at hand, uncertainties over the influence of other external impacts not associated with the project, or particular characteristics or peculiarities of the matter requiring management. The proponent may need, in many circumstances, to implement an innovative and adaptive approach to the preparation of a management plan that, particularly in the early period of a management and monitoring program, may not be able to be clearly defined within a prescriptive plan. For example, it may be appropriate to establish an expert management committee

approach with an aim to enable a flexible on-going review process to management and ensure rapid response to external factors. However, should such an approach be proposed, it will need to be fully transparent and auditable with performance indicators and corrective actions. An example of management measures from an adaptive management plan can be viewed in Section 3 of these guidelines.

3 Content of the Management Plan:

3.1 Introduction

The management plan should include the following:

- brief project description
- brief description of existing environment and relevant matter(s) of NES
- brief description of potential impacts on protected matters
- management strategies
- management actions
 - management measures
 - monitoring requirements
 - performance indicators
 - corrective actions
 - responsibilities
 - timing
- auditing/verification requirements and reporting
- EMP review

3.2 Description of Proposal

This section should only be a paragraph describing the whole project, specifically mentioning the part of the project that impacts on the relevant matter/s of NES. Maps should be used to show the location of the proposal in relation to the surrounding areas. Reference can be given to the EIS if it provides a more thorough description of the proposal.

3.3 Existing Environment

This section should just be a summary of relevant information concerning the NES matters. If there are uncertainties in describing the existing environment, these must be stated. Reference can be given to the EIS if it provides a more thorough description of the proposal.

3.4 Potential Impacts

This section of the plan should focus on identifying the potential impacts of the project on the applicable matters of NES. It should be brief, succinct and should cover:

- the relevant impacts of the proposal,
- the nature and extent of the potential short-term and long-term effect, and
- any uncertainties regarding the predictions.

Impacts from relevant stages of the action (possibly including predictions related to future development of the site) should be incorporated into this section. It may be necessary to divide the potential impacts into subsections, such as a subsection for the Commonwealth marine environment and listed threatened and migratory species.

3.5 Management Strategies

Environmental management strategies should be developed to target each of the potential impacts identified. Strategies are required to provide overall guidance on the intent of the management plan and to define the desired outcomes of the management plan and establish an overall benchmark and performance goals. Strategies must be developed for each of the impacts.

3.6 Management Actions

Each management strategy forms the basis for a specific management action. These actions are best presented in table format, as shown in the example below. The terms in the table are explained in the sections that follow. Management actions should incorporate the following elements: management measures, monitoring requirements, performance indicators and corrective actions.

Example 1: Management actions table

Strategy: Where direct impact is unavoidable, reduce impact on threatened species (Gouldian Finch) during construction of the pipeline.			
		Timing	Responsibility
Management measures	In priority habitat:		Company Environment Officer
	<ul style="list-style-type: none"> • Align the corridor to avoid physical disturbance to confirmed breeding trees/sites especially hollow bearing trees. 	Prior to construction	
	<ul style="list-style-type: none"> • Establish a 100m 'no-go' zone around breeding sites to discourage inadvertent or deliberate disturbance to nesting sites. 	Prior to construction	
	<ul style="list-style-type: none"> • Conduct supplementary seeding in Area A in accordance with advice from relevant experts. 	Post construction	
	In priority and marginal habitat:		
	<ul style="list-style-type: none"> • No drawing water from dams/impoundments will be permitted. 	During construction	

Strategy: Where direct impact is unavoidable, reduce impact on threatened species (Gouldian Finch) during construction of the pipeline.			
		Timing	Responsibility
	<ul style="list-style-type: none"> Rehabilitate the easement with native seeding grasses that are preferred by the Gouldian Finch, as advised by relevant experts. 	Post construction	
Monitoring requirements	<ul style="list-style-type: none"> Mapping of suitable habitat for the Gouldian Finch in the northern end of the pipeline and provide to DEWHA 	6 months prior to construction. Annually after construction.	Company Environment Officer
	<ul style="list-style-type: none"> Observations to ensure current tree hollows are retained, and supply of hollows is sufficient for population. 	Weekly during construction. Monthly during first six months of operation. Annually after first 6 months of operation.	
Performance indicators	<ul style="list-style-type: none"> No impact to areas of preferred habitat. No loss of tree hollows. 		Company Environment Officer
Corrective actions	<ul style="list-style-type: none"> Refine alignment where outside proposed corridor. 	Within 6 months of identifying that performance indicators have not been met and before construction	Company Environment Officer
	<ul style="list-style-type: none"> Artificial tree hollows to be affixed to trees in areas of limited supply. 	Within one month of identifying loss of tree hollow.	

NB: The measures and actions described above are indicative only and have not been endorsed as necessarily suitable for minimising or mitigating impacts on the Gouldian Finch or other listed threatened species.

3.6.1 Management measures

Management measures should be designed for each of the strategies. These are the actions that need to be undertaken to prevent or mitigate impacts. A number of management measures may be required to achieve one strategy.

3.6.2 Monitoring requirements

A monitoring program should be developed for management actions. This will establish whether there have been any impacts from the proposed activities, or for determining the effectiveness of mitigation measures. It will also determine whether the environmental strategies are being complied with, and whether any environmental incidents occur. Conditions of approval often include monitoring, and specify its timing and frequency.

Monitoring should be designed to provide ongoing feedback for the management of the proposal's environmental impacts, and the results should feed back into the management plan review process.

3.6.3 Performance indicators

Performance indicators should be used to verify the efficacy of a management plan and will indicate the success or otherwise of particular management measures. The indicators need to be clear and concise, and must specify the outcome to be achieved.

3.6.4 Corrective actions

Corrective actions need to be outlined to demonstrate that appropriate methods will be implemented if there is a deviation from a management measure, or if a management strategy or performance indicator is not achieved. The corrective action must be designed to prevent or mitigate any further impacts and should ensure that management strategies are achieved.

3.6.5 Responsibilities

There should be a clear statement nominating the person(s)/agency(s) responsible for funding the particular management actions, ensuring that particular management actions are undertaken and that the strategies are achieved. This includes identification of the person's position within the relevant company or authority, or their status as separate contract personnel. Ultimate responsibility, if there is a failure in management, should be defined within the management measures.

Official agreement must be obtained where the proponent proposes that a third party (e.g. state government) will take responsibility for management actions.

3.6.6 Timing

Timing needs to be specified for each of the management measures, and monitoring and reporting requirements

3.6.7 Training

Staff and contractors should undergo environmental awareness training to familiarise themselves with their responsibilities for implementing the management plan. Details of this training should be mentioned in the plan.

3.6.8 Adaptive Management Example

As an alternative to the prescriptive form of management plan demonstrated above, adaptive management plans may use a system of triggers and actions. An example of adaptive management is demonstrated in the following table.

Example 2: Adaptive management triggers and actions table

Strategy: Establish criteria that will trigger a requirement for further mitigation measures to maintain suitable habitat for the Green and Gold Bell Frog				
Values	Triggers	Actions	Responsibility	Timing
Green and Gold Bell Frog	Alert Triggers 1. No record of breeding activity during an annual monitoring program Or 2. Any clearly unusual results observed during the course of a summer monitoring program, such as markedly low numbers of frogs at a site where they previously had not been found.	a. Consult with recognised Green and Gold Bell Frog experts to ascertain likely reasons for this. b. Incorporate relevant management recommendations into the Green and Gold Bell Frog Management Plan.	Environmental Manager	Yearly
	Action Triggers 1. A decline of $\geq 10\%$ in the number of individuals recorded during summer surveys at the project site over three successive years. Or 2. An overall decline of $>25\%$ in annual average number of individuals recorded during summer surveys at the project site over a three year period. Or 3. No record of breeding activity over three successive years.	a. Review and revise the Green and Gold Bell Frog Management Plan and submit for DEWHA approval. b. Select a minimum of two suitable non-operational ponds, plus drains, and manage these specifically for the Green and Gold Bell Frog.	Environmental Manager	Every three years

NB: The measures and actions described above are indicative only and have not been endorsed as necessarily suitable for minimising or mitigating impacts on the Green and Gold Bell Frog or other listed threatened species.

3.7 Auditing/verification requirements and reporting

Auditing or some other form of verification, and reporting of results, will ensure that the objectives of the management plan are being achieved. Plans should include a reporting and reviewing mechanism as well as documentation standards to demonstrate compliance. Approval conditions may include the provision of reports or mandatory audits of conditions, including the plans required by conditions.

When reporting or auditing is mandatory, the management plan must specify this and outline how and when this will be undertaken. When auditing is required on a regular basis, timing and responsibility for audits must be clearly set out in the management plan. While audits may take place internally, in some cases, appropriately accredited external auditors may be required.

The management plan should provide a clear summary of all reporting and review requirements and the timing for submission. Note, the conditions of approval may also require the submission of an annual certificate stating compliance with the approval conditions.

3.8 Contingency arrangements

Although the management measures may cover most potential impacts, contingency arrangements are required in the event that management measures fail to mitigate or minimise impacts on matters of NES. This may result from human-induced (e.g. fire, oil spill) or natural extreme events (e.g. cyclone).

Contingency arrangements should not be confused with corrective actions, which are implemented when monitoring finds that current management measures are not effective in mitigating impacts during daily operations, or when there has been non-conformance with the strategies of the management plan.

3.9 Management plan review

The management plan must be reviewed periodically to determine its effectiveness in protecting the matter(s) of NES. This will also allow revision of the plan to reflect knowledge gained during the life of the project. A timeline for reviewing the management plan must be established. Reviewed or revised management plans must be approved by the decision maker prior to being implemented.

4 Bibliography

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