

APPENDIX O

Risk Management Procedure





Environmental Risk Profiling

Power and Water Corporate Procedure

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1 Purpose

To provide guidance on creating environmental risk profiles.

2 Scope

This procedure outlines the process to be followed by the Power and Water Corporation when creating an environmental risk profile for existing facilities, or proposed projects that have potentially significant environmental impacts.

3 References

- 3.1 Power and Water Corporation, 2005, Environmental Assessment Process for Projects
- 3.2 Power and Water Corporation, 2005, Risk Management Procedure
- 3.3 Wild River, S. 2001. Comparative environmental risk assessment: a practical and applied method. *Australian Journal of Environmental Management*. 8: 211- 218.
- 3.4 Wild River, S. 2004. 2003 environmental risk assessment for the Australian National University. Canberra. Australian National University. Online at http://www.anu.edu.au/facilities/anugreen/EMPC/Reports/2003_environmental_risk.pdf (accessed 13 October 2006).

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4 Roles and Responsibilities

Role / Title	Responsibility
Managing Director	<ul style="list-style-type: none"> Ensure Power and Water is aware of the environmental risk profiles of high risk existing facilities or proposed projects.
Business Unit General Manager	<ul style="list-style-type: none"> Ensure that an environmental risk profile is created for proposed projects with the potential for significant environmental impacts
Manager Environmental Services	<ul style="list-style-type: none"> Ensure General Managers are aware of the business unit high risk facilities Assist project managers to create an environmental risk profile for proposed projects
Project Manager	<ul style="list-style-type: none"> Discuss proposed project with Manager Environmental Services Provide project information to facilitate a comprehensive understanding of the potential impacts of the project

5 Definitions

Where terms or words are not included in the definitions section, refer to Power and Water's Glossary for clarification. The glossary is available on Power and Water's intranet.

Word	Definition
Environmental risk profile	A semi-quantitative analysis of the inherent and residual risks associated with a facility or project

6 Records

Relevant documentation relating to the creation of environmental risk profiles shall be maintained using Power and Water's Registry System.

7 Attachments

- 7.1 Attachment 1: Process Map for Operational Environmental Risk Register
- 7.2 Attachment 2: Environmental Risk Profile of Facility template
- 7.3 Attachment 3: Environmental Risk Profile of Proposed Project template.

8 Risk Assessment

- 8.1 The comparative environmental risk assessment methodology developed by Wild River (2001) is the basis for developing risk values.
- 8.2 Power and Water's Risk Management Procedure contains a matrix to determine consequence and likelihood of impacts (risks) associated with a particular aspect (activity).

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- 8.3 That matrix is reproduced below, and modified to include risk values. Each cell of the matrix corresponds to a particular risk value derived from logarithms to base 2, and corresponds to a doubling of risk with each step up in likelihood, or across as consequences increase. Note that these values differ from the numbers in the Risk Management Procedure - those numbers are labels and are not values.

		Consequence					
		Contained within controls. No measurable impact.	Localised low level damage controlled & remedied with minimal resources.	Widespread temporary damage with extended resources to remedy.	Long-term effect on env & once controlled results in minor permanent damage.	Substantial permanent damage to widespread & sensitive areas.	
		1	2	3	4	5	
Likelihood	Almost certain Expected to occur in most cases	A	8 Moderate	16 Moderate	32 High	64 Extreme	128 Extreme
	Likely Will probably occur in most cases	B	4 Low	8 Moderate	16 High	32 High	64 Extreme
	Possible Might occur at some time	C	2 Low	4 Low	8 Moderate	16 High	32 High
	Unlikely Could occur at some time	D	1 Low	2 Low	4 Low	8 Moderate	16 High
	Rare Occur in exceptional cases only	E	0 Low	1 Low	2 Low	4 Moderate	8 Moderate

9 Facility Risk Profile

To derive an environmental risk profile for an existing facility:

- 9.1 Compile a process map and a risk register using Attachment 1 for guidance. The risk scores in the register are derived as per the Power and Water Risk Management Procedure.
- 9.2 Convert the inherent and residual risk scores to values using the matrix above.
- 9.3 Sum the values for inherent risk to derive a total inherent risk score (Σ Inherent Risk Scores).
- 9.4 Repeat for residual risks to get a total (Σ Residual Risk Scores).
- 9.5 Calculate % residual risk where:

$$\%RR = (\Sigma \text{ Residual Risk Scores} / \Sigma \text{ Inherent Risk Scores}) \times 100$$
- 9.6 Calculate facility residual risk score where:

$$RR = \ln (\Sigma \text{ Residual Risk Scores})$$
- 9.7 Enter details in the Environmental Risk Profile of Facility template at Attachment 2

10 Proposed Project Risk Profile

To derive an environmental risk profile for a proposed project:

- 10.1 Use the Environmental Risk Profile of Proposed Projects template to identify risks and risk treatments relevant to the environmental context and specific activities associated with the project.

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- 10.2 Sum the values for inherent risk to derive a total inherent risk score (Σ Inherent Risk Scores).
- 10.3 Repeat for residual risks to get a total (Σ Residual Risk Scores).
- 10.4 Calculate % residual risk where:
$$\%RR = (\Sigma \text{ Residual Risk Scores} / \Sigma \text{ Inherent Risk Scores}) \times 100$$
- 10.5 Calculate facility residual risk score where:
$$RR = \text{Ln} (\Sigma \text{ Residual Risk Scores})$$
- 10.6 Enter results in the relevant section of the template

11 Interpreting the Results

- 11.1 The results should be set out like this:
Total inherent risk:
Total residual risk:
% RR:
Ln RR:
- 11.2 Percent residual risk (% RR) is an indicator of uncontrolled risks, but the number of activities also needs to be considered. A large number of uncontrolled minor risks can have the same effect as one major uncontrolled risk.

It identifies those areas where risk management may need to be improved.

Generally speaking, cost effective risk reductions can be achieved where % RR exceeds 50%, and a best practice target is of the order of 20% (Wild River 2004).
- 11.3 The residual risk (Ln RR) is a standardised score that allows intercomparisons with other facilities or projects.

For proposed projects, it provides a standardised benchmark to determine if referral to NRETAS is required for assessment. This applies whether the proposal be for a new or expanded powerline, pipeline, zone substation, power station, borefield, dam or waste water treatment facility.

12 Examples

- 12.1 An example of a facility (Channel Island Power Station, 2005/2006 FY):
Total inherent risk: 232
Total residual risk: 82
% RR: 35%
Ln RR: 4.44
- 12.2 An example of a proposed project - a minor powerline project at Stockwell Road, Litchfield Shire (ref F2007/742, D2007/12784):
Total inherent risk: 50
Total residual risk: 16
% RR: 32%
Ln RR: 2.77