

# Template for assessing risk of impact of water infrastructure licence holder storage operations on aquatic ecosystems

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This publication has been compiled by Science Coordination Team of Water Policy, Department of Regional Development, Manufacturing and Water.

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**<Scheme name>**  
**<Water Plan>**

**Details of applicant**

Organisation:		
Contact name:		Preferred contact number:
Water supply scheme:		Water plan area:
Postal address:		
Phone:	Email:	Date application submitted to department:
Attachments to submission: (List)	<ul style="list-style-type: none"> <li>• Appendix 1: Map of whole catchment with sites proposed for removal and <u>all</u> remaining sites in the catchment and table of all sites with lat/longs</li> <li>• Appendix 2: Map of scheme/ weir/ dam and associated monitoring sites showing locations</li> <li>• Appendix 3: Supporting water quality information</li> <li>• Appendix 4: Schedule of current monitoring program requirements in the Logan Water Supply Scheme under the ROL</li> <li>• Appendix 5: Schedule of proposed monitoring program requirements in the Logan Water Supply Scheme under the ROL</li> <li>• Appendix 6: Optional additional supporting information to support application</li> </ul>	

## **Step 1: Establish scope, context and criteria**

### **Scope**

The risk-based approach is intended to be applied to water quality monitoring, bank slumping and fish stranding / fish kills, as these are areas where the operator may reduce the risks through their storage operations.

The risk assessment should consider all risks to ecosystems from storage operations (e.g. water quality, bank slumping and fish stranding) and propose a revised monitoring program appropriate to the risks identified. Table 3 in section 2.1 should be used to demonstrate which risks are in and out of scope of the assessment. Any operations and associated monitoring in conjunction with flood operations are outside the scope of this risk assessment.

## Context

### Catchment and site context

Describe the site and context for the risk assessment in Table 1.

**Table 1: Catchment and site context**

Context questions	Response
<p>Catchment context</p> <p>How many WQ sampling sites are there in the catchment and how many sites does this proposal relate to? (show on map – Appendix 1) the sites proposed for removal and remaining sites in the catchment and provide a table of all sites with lat/longs)</p>	
<p>Spatial extent of application</p>	
<p>Site context</p> <p>Describe the site features e.g. impoundment description and show location in the catchment (provide a map and photos – Appendix 2).</p>	
<p>Provide a short overview of operating arrangements for the storage and whether there is any ability to influence downstream WQ</p>	
<p>How well characterised is the site/s? (Provide supporting WQ sampling information in Appendix 3)</p>	
<p>Have any issues been identified? E.g. exceedance of water quality objectives</p>	
<p>Knowledge gaps?</p>	

**Water planning context**

The purpose of this section is to identify the ecological outcomes to which the monitoring relates and how these outcomes are delivered through the plan by the strategies in the Resource Operations Plan (ROP) or Water Management Protocol (WMP). Note: The purpose of the WIL holder monitoring is to inform the assessment of the effectiveness of the strategies in the plan and the operating rules in delivering the outcomes of the plan.

**Table 2: Ecological outcomes that apply**

Location	General and Ecological outcomes that apply	ROP / WMP strategies that deliver outcomes	Plan measures or monitoring strategies that apply	Operational Context (how does water management relate to the outcome)

**Risk Criteria**

The criteria to be used to evaluate risks can be found in Attachment 1 of the WIL holder monitoring program evaluation guideline.

## Step 2: Risk assessment

### Identification of risks

Identify all the possible risks that exist for comprehensiveness and then identify which of those are out of scope for this assessment and why.

**Table 3: Identification of risks in scope of assessment**

Risk	Caused by (hazard)	Able to be influenced by scheme /storage management	In scope of this proposal to amend monitoring	Flow stages at which risk applies	Comment
In storage or downstream bank slumping					
In storage or downstream sedimentation					
Fish kills or fish stranding					
Operation of storage or physical presence is preventing fish migration					
In-storage water quality impacts e.g. Storage stratification in summer months					
Tailwater water quality impacted by storage operation e.g Release of thermally or chemically different waters downstream					

**Risk analysis**

- Use the definitions of likelihood, consequence, risk level and uncertainty in Attachment 1 of the risk assessment guideline provided in Appendix B to score each aspect.
- Use the template below to record the results of the risk assessment, including justification of scores.

**Table 4: Risk ranking table**

Site location	Risk	Flow stage	Comment on risk factors / current situation (Step 1: Define the context)	Likelihood score	Justification and reference to supporting evidence	Consequence score for ecosystem (A) storage ecosystem (B) downstream ecosystem (C) environmental values / WQ	Overall consequence ranking	Justification and reference to supporting evidence	Risk level	Uncertainty ranking	Comments on uncertainty ranking



**Risk Evaluation and treatment**

This section considers evaluation and treatment of the risk. In this situation, the monitoring program is likely to be the primary treatment, unless additional management and mitigation strategies have been identified through this process.

**Table 5: Proposed changes to monitoring program**

Scheme	DNRME site ID	Site location	ROL holder site Code	Risk level	Description of current monitoring (frequency, parameters etc)	Description of modifications proposed	Alternative monitoring plan to address any WH&S issues identified	Comment on frequency of workplace health and safety issues at this site and length of time alternative monitoring is proposed for	Comments on proposed program in relation to risk	Other Water Quality Monitoring undertaken by ROL holder	Other monitoring undertaken by ROL holder

### Step 3: Recording and reporting

This section should outline how the risk will be monitored over time, and how often reporting is proposed. At least annual review and reporting on risk levels is recommended to identify if risk levels have changed or new risks have emerged. This should also be completed for low risks, outlining how it will be demonstrated that a low risk remains low.

**Table 6: Proposed evaluation and reporting of risks**

Risk	How will risk be reviewed and evaluated?	Reporting proposed	Frequency

### Step 4: Communication and consultation

Complete a stakeholder analysis relating to current uses of monitoring data that are the subject of this proposal and any impact of proposed changes on stakeholders. Contact the department to seek advice on relevant stakeholders to consider.

**Table 7: Stakeholder analysis**

Stakeholder	Short summary of stakeholder information requirements	Do stakeholder needs relate to monitoring in scope of this proposal?	What is the impact of the proposed changes to monitoring program on the stakeholder?	Is there any non-mandatory (ie. not required under WIL) information still available at these sites that will fill this information need (provide details)

## Appendix 1: Catchment map and location of sites

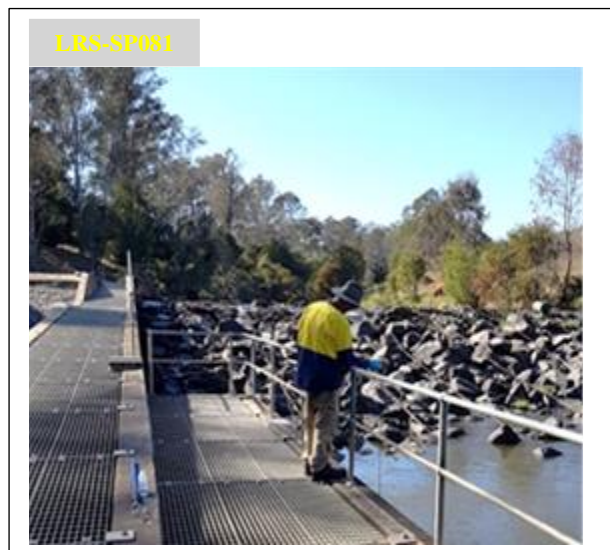
In this Appendix, include:

- Map of whole catchment with sites (including codes) proposed for removal (e.g. yellow labels) and all remaining sites in the catchment (e.g. white labels)
- A table of all sites with lat/longs and site codes

## Appendix 2: Site map and photos

In this Appendix, include:

- Localised map of the site showing location of impoundment and associated monitoring points
- Photos of the site, showing impoundment and associated monitoring points and any other relevant features (example below).



### Appendix 3: Supporting water quality information

#### Water quality information and interpretation

The objective of this Appendix is to summarise the rationale for the monitoring program design based on the available data. This should include supporting flow data and a concise interpretative summary to explain any anomalies.

#### Assessment of impact on water plan outcomes and environmental values

Relevant plan outcomes	Relevant environmental values	Comments on data in relation to achievement of plan outcomes and environmental values
Ecological / environmental outcomes	Aquatic ecosystems	
Economic outcomes	Irrigation, Farm Supply / Use, Stock Water, Aquaculture, Aquatic food consumption, Industrial use	
Social outcomes	Primary recreation, secondary recreation, visual recreation, drinking water	
Cultural outcomes	Cultural and spiritual values	

**Appendix 4: Schedule of current monitoring requirements**

The purpose of this section is to document the current monitoring program requirements under the WIL on a site by site basis for each Water Supply Scheme to provide clarity for the assessment panel on what monitoring is currently in place, and what the proposed changes are (as shown in Appendix 5). This Appendix also outlines the current contingencies if sampling at each site is deemed unsafe.

Site ID	Site location	Monitoring parameters	Frequency	Workplace health and safety*		Other comments
				Alternative site/s or frequency contingency	Alternative measurement / other contingency	

\*Note: the WIL holder may propose alternative monitoring sites, frequencies, measurement technologies etc. on a temporary basis to meet any organisational Workplace Health and Safety issues identified with sampling. The alternative monitoring program should not be in place more than 12 months. If it is required for more than 12 months the WIL holder needs to submit the alternative monitoring program as the ongoing monitoring program for re-approval.

**Appendix 5: Schedule of proposed monitoring requirements**

The purpose of this section is to document the proposed monitoring program arrangements under the WIL on a site-by-site basis for each Water Supply Scheme to provide clarity for the assessment panel on what the proposed changes are and what the new monitoring program will look like. Once approved, this schedule will be published in the updated WIL. This Appendix also outlines the current contingencies if sampling at each site is deemed unsafe.

Site ID	Site location	Monitoring parameters	Frequency	Workplace health and safety*		Other comments
				Alternative site/s or frequency contingency	Alternative measurement /other contingency	

\*Note: the WIL holder may propose alternative monitoring sites, frequencies, measurement technologies etc. on a temporary basis to overcome particular Workplace Health and Safety Issues identified. The alternative monitoring program should not be in place more than 12 months. If it is required for more than 12 months the WIL holder needs to submit the alternative monitoring program as the ongoing monitoring program for re-approval.

**Appendix 6: Optional additional supporting information to support application**

In this section the WIL holder may include additional materials such as catchment characterisations or conceptual models to support the application. It is requested this additional information is no more than 10 pages.