

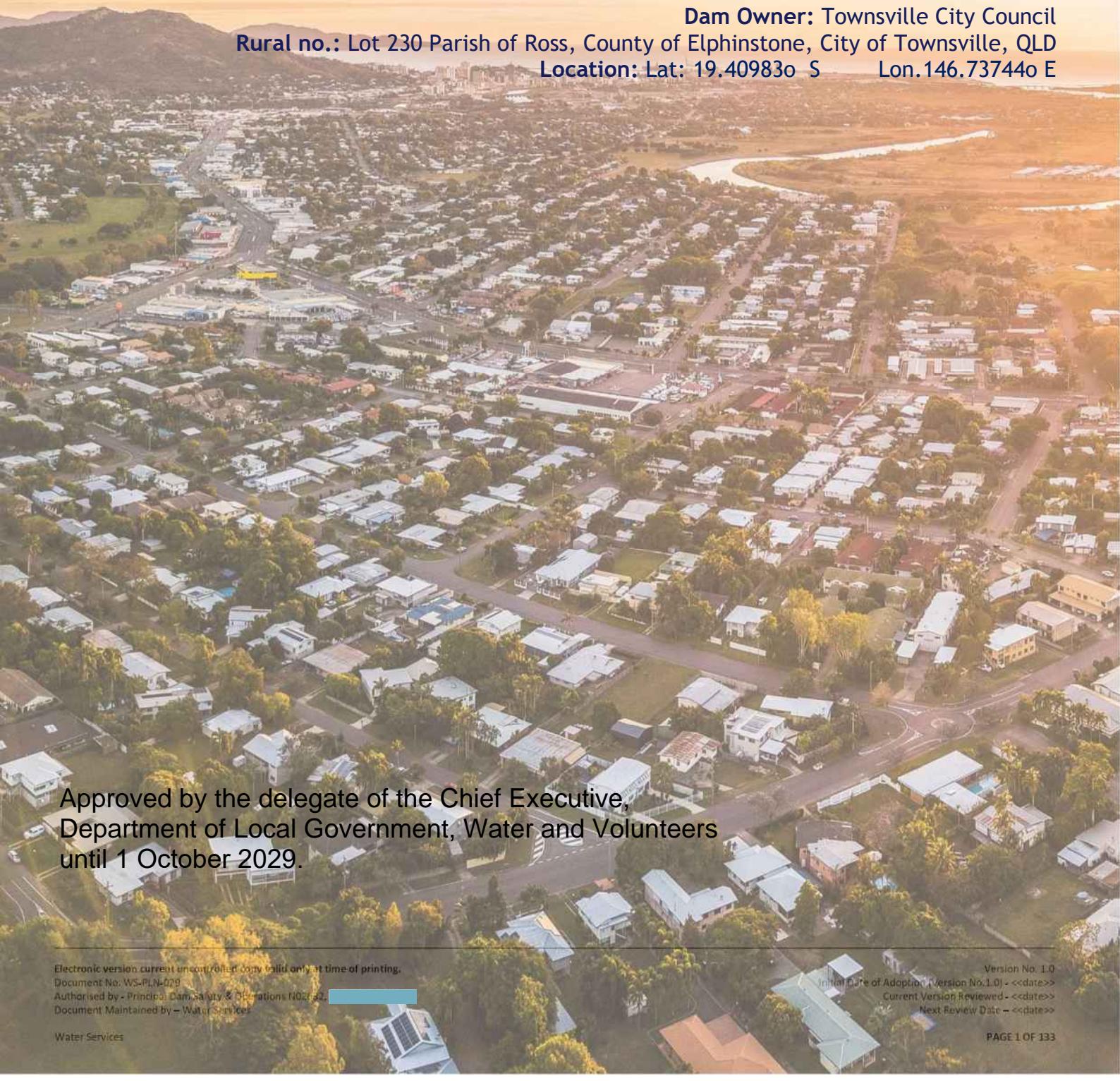
# Ross River Dam 2025 Emergency Action Plan (EAP)

Dam ID: 344

Dam Owner: Townsville City Council

Rural no.: Lot 230 Parish of Ross, County of Elphinstone, City of Townsville, QLD

Location: Lat: 19.409830 S Lon.146.737440 E



Approved by the delegate of the Chief Executive,  
Department of Local Government, Water and Volunteers  
until 1 October 2029.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Controlled Document Notice

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### Controlled Document Distribution List

Table 1 - Controlled Document Distribution List

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2	General Manager Water Services (GMWS)	Townsville City Council
3	Team Manager Water Resources & Dam Safety (TM WRDS)	Townsville City Council
4	Principal Dam Safety & Operations (PDSO)	Townsville City Council
5	Team Leader Dams and Catchments (TLDC)	Townsville City Council
6	Dam Duty Operator (DDO)	Townsville City Council
7	Senior Floodplain and Coastal Engineer (SFCE)	Townsville City Council
8	Local Disaster Coordinator - Local Disaster Management Group (LDMG)	Townsville City Council
9	Executive Officer District Disaster Management Group (DDMG)	Qld Police Service, Townsville
10	District Disaster Coordinator - Townsville	Qld Police Service, Townsville

# Ross River Dam

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### Emergency Activation Quick Reference - Dam and Other Hazards

Table 2 - Emergency Activation Quick Reference Guide

Dam Hazards			Stand Up	Stand Down
			• Locally managed (DDO and IC) with Advice from DSTDM	• Locally managed (DDO and IC) with advice from DSTDM
Dam Hazard Activation Triggers				
Flood Operations	• EL 38.45m and rising (0.1m)	• Storage EL 38.65m (gate opening)	• Storage above EL	• Storage FSL 38.55m and falling
Piping:	• Increasing leakage through an	• Increasing leakage through an water	• Piping condition has been	• Risk assessment has
Abutments <u>Refer section 6</u>				
Earthquake <u>Refer section 7</u>	• Earthquake reported or felt at the dam or in the Townsville area, AND • Intensity less than 5 Modified Mercalli (MM)	• Earthquake reported or felt at the dam or in the Townsville area, AND • Intensity greater than or equal to 5MM, OR • Intensity less than 5MM and change detected during surveillance inspection	• Earthquake reported or felt in the area, AND • A possible failure path has been identified	• Risk assessment has determined that failure risk has reduced
Terrorist Threat/ Activity or High Energy Impact <u>Refer section 8</u>	• Not applicable	• Not applicable	• Possible terrorist activity noticed at dam or threat received • Large explosion <u>heard</u> /observed at dam (e.g., bomb explosion, aircraft hit) • Failure in progress or likely due to impact or explosion • Sufficient water in storage to create a dam failure	• Risk assessment has determined that failure risk has reduced
Gate Function Issues <u>See section 9</u>	• Move immediately to Stand-Up Activation	• Move immediately to Stand-Up Activation	• Gate function issue	• Risk assessment that risk has reduced • Confirmation that all gates are functioning correctly

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



	Alert	Lean Forward	Stand Up	Stand Down
	<ul style="list-style-type: none"><li>Locally managed (DDO)</li></ul>	<ul style="list-style-type: none"><li>Locally managed (DDO and IC)</li></ul>	<ul style="list-style-type: none"><li>Locally managed (DDO and IC) with Advice from DSTDM</li></ul>	<ul style="list-style-type: none"><li>Locally managed (DDO and IC) with advice from DSTDM</li></ul>
<b>Overturning or Sliding of Spillway</b> <a href="#">Refer section 10</a>	<ul style="list-style-type: none"><li>Indications of movement of spillway noted such as cracking, increased seepage, spilling</li></ul>	<ul style="list-style-type: none"><li>Storage at flood of record, EL 40.73m, OR</li><li>Increase in movement or seepage</li></ul>	<ul style="list-style-type: none"><li>Obvious displacement of one or more spillway, OR</li><li>Evidence of scouring at or near toe of stilling basin area</li></ul>	<ul style="list-style-type: none"><li>Risk Assessment has determined that sliding or overturning risk has reduced</li></ul>
<b>Communication Failure</b> <a href="#">Refer section 11</a>	<ul style="list-style-type: none"><li>Move immediately to Stand-Up Activation</li></ul>	<ul style="list-style-type: none"><li>Move immediately to Stand-Up Activation</li></ul>	<ul style="list-style-type: none"><li>Communication service faults</li></ul>	<ul style="list-style-type: none"><li>Confirmation that all communication services are functioning correctly</li></ul>

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### Revision History

Complete version history information is stored within the Water Services electronic document management system Paradigm 3.

Table 3 - Revision History

Rev. No.	Doc No.	Revision Description	Approved for Issue BY	Date
1.0	RD0030	Interim 2019-2020 Version		
1.0	RD0031	Initial issue		
1.1	RD0031	Updates following DNRME review		August, 2020
1.2	RD0031	Updates following DDMG review		September, 2020
1.3	RD0031	Annual Review and IC / LEC role combined		September, 2021
1.4	RD0032	Update contacts details. Update section 5 for new SCADA system. Correct errors section 11. New catchment map in appendix B4. Remove supplier list appendix C1.		September 2022
1.5	RD0032	Changed flood STAND UP levels to coincide with required downstream warning levels, EA polygons and new AWS messaging. Included AWS compliant messaging. Updated flood classification levels. Update contacts details and position titles. Update PAR numbers.		October 2023
1.6	RD0032	Removed Chemical spill/toxic hazard. Added missing flood maps appendix B. Updated Aplins weir gauge levels. Included fatigue management. Included automatic instrument readers. Change position titles, correct spelling and grammatical errors. Update contact details.		September 2024
1.0	WS-PLN-029	New document with changed format. Updated flood maps. Added section 5.4 Updated figure 1 emergency response organisation. Updated Aplins weir gauge levels. Updated contact details Appendix C tables updated		July 2025

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 1. References, Abbreviations and Definitions

#### 1.1 References/Associated Documents

Table 4 - Referenced Documents

Ref	Document Description	
A	Townsville City Council Emergency Action Plan	TCC EAP (Current Year)
B	Ross River Dam Detailed Operation and Maintenance Manual for Control Systems	DOMMS-004 Supervisory Control and Data Acquisition Systems
C	Ross River Dam Standard Operating Procedures	Electronic Document Management System
D	Ross River Dam Operating and Maintenance Manuals	Electronic Document Management System
E	Community Information and Warnings Sub Plan	TCC Website
F	Qld Dam Safety Management Guidelines 2024	<a href="https://business.qld.gov.au">Business.qld.gov.au</a>
G	Queensland Rainfall and River Conditions (Flood Warning)	<a href="http://www.bom.gov.au/qld/flood/index.shtml">www.bom.gov.au/qld/flood/index.shtml</a>
H	Modified Mercalli Scale	<a href="http://www.usgs.gov/natural-hazards/earthquake-hazards/science/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects">www.usgs.gov/natural-hazards/earthquake-hazards/science/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects</a>
I	BOM - Townsville Area Actual Rainfall	<a href="http://www.bom.gov.au/qld/flood/townsville.shtml">http://www.bom.gov.au/qld/flood/townsville.shtml</a>
J	Queensland Rainfall and River Conditions (Flood Warning)	<a href="http://www.bom.gov.au/qld/flood/index.shtml">www.bom.gov.au/qld/flood/index.shtml</a>
K	Geoscience Australia - Earthquake Monitoring	<a href="http://www.ga.gov.au/earthquakes/index.jsp">http://www.ga.gov.au/earthquakes/index.jsp</a>
L	Water Supply (Safety and Reliability) Act 2008 (Qld)	<a href="http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WaterSupSRA08.pdf">www.legislation.qld.gov.au/LEGISLTN/CURRENT/W/WaterSupSRA08.pdf</a>
M	Emergency Action Plan for Referable Dam Guidelines 2023	<a href="http://eap-guideline.pdf (resources.qld.gov.au)">eap-guideline.pdf (resources.qld.gov.au)</a>

### 1.2 Abbreviations and Acronyms

AHD	Australian Height Datum	IC	Incident Coordinator
ANCOLD	Australian National Committee on Large Dams	LB	Left Bank
BGA	Blue Green Algae	LDMG	Local Disaster Management Group
BOM	Bureau of Meteorology	Max. OL	Maximum Operating Level
CEO	Chief Executive Officer	MM	Modified Mercalli
CRA	Comprehensive Risk Assessment	O&M	Operation & Maintenance
D/S	Downstream	OB	Observation Bore
DCF	Dam Crest Flood	PAR	Population at Risk
DCL	Dam Crest Level	PDSO	Principal Dam Safety & Operations
DMG	Disaster Management Group	PMF	Probable Maximum Flood
DDC	District Disaster Coordinator	PLL	Possible Loss of Life
DDMG	District Disaster Management Group	PMP	Probable Maximum Precipitation
DDO	Dam Duty Officer	QDSMG	Queensland Dam Safety Management Guideline
DDS	Director Dam Safety	QFES	Queensland Fire & Emergency Services
DOMM	Detailed Operation and Maintenance Manual	QPS	Queensland Police Service
DSR	Dam Safety Regulator	RB	Right Bank
DSTDM	Dam Safety Technical Decision Maker	SDE	Senior Dam Engineer
DIO	Director Infrastructure & Operations	SFCE	Senior Floodplain and Coastal Engineer
EA	Emergency Alert	SDCC	State Disaster Coordination Centre
EAP	Emergency Action Plan	SDMG	State Disaster Management Group
EER	Emergency Event Report	SDF	Sunny Day Failure
EL	Elevation Level	SES	State Emergency Service
FIR	Flood Impact Rating	SHD	State Height Datum
FSL	Full Supply Level	SMS	Short Message Service
GIS	Geographic Information System	SOP	Standard Operating Procedure
GMWS	General Manager Water Services	SWL	Storage Water Level
GS	Gauging Station	TCC	Townsville City Council
		TM WRDS	Team Manager Water Resource & Dam Safety
		TLDC	Team Leader Dams & Catchments
		U/S	Upstream
		WQ	Water Quality

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 1.3 Business Terms and Definitions

Table 5 - Terms and Definitions

Term	Definition
Terms set out in section 352A of the Water Supply (Safety and Reliability) Act 2008 (Qld) - Amended	
Dam Hazard	Means a reasonably foreseeable situation or condition that may: <ul style="list-style-type: none"><li>cause or contribute to the failure of the dam, if the failure may cause harm to persons or property, OR</li><li>require an automatic or controlled release of water from the dam, if the release of the water may cause harm to persons or property.</li></ul>
Dam Hazard Event	Means an event arising from a dam hazard if: <ul style="list-style-type: none"><li>persons or property may be harmed because of the event, AND</li><li>a coordinated response, involving 2 or more of the following relevant entities, is unlikely to be required; each local group and district group for the EAP, each local government whose area may be affected, the chief executive, another entity the owner of the dam considers appropriate, AND</li><li>the event is not an emergency event.</li></ul>
Disaster Management Plan	Of a district group or local government, means the groups or local government's disaster management plan under the Disaster Management Act.
District Group (District Disaster Management Plan)	For an emergency action plan (EAP), means a district group established under the Disaster Management Act, section 22 whose disaster district under that Act could, under the plan, be affected by a dam hazard.
Emergency Event	Means an event arising from a dam hazard if: <ul style="list-style-type: none"><li>persons or property may be harmed because of the event, AND</li><li>any of the following apply:<ul style="list-style-type: none"><li>a coordinated response, involving 2 or more of the following relevant entities, is likely to be required; each local group and district group for the EAP, each local government whose area may be affected, the chief executive, another entity the owner of the dam considers appropriate, OR</li><li>the event may arise because of a disaster situation declared under the Disaster Management Act, OR</li><li>an entity performing functions under the State disaster management plan may, under that plan, require the owner of the dam to give the entity information about the event.</li></ul></li></ul>
Local group (Local Disaster Management Group)	For an EAP, means a local group established under the Disaster Management Act, section 29 whose local government area could, under the plan, be affected by a dam hazard.
Notice Response	A dam owner's written response to a notice following an assessment of an EAP by a local government or district group.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Term	Definition
Referable Dam	<p>A dam, or a proposed dam after its construction, will be a referable dam if:</p> <ul style="list-style-type: none"><li>• a failure impact assessment of the dam, or the proposed dam, is carried out under the Act, AND</li><li>• the assessment states the dam has, or the proposed dam after its construction will have, a category 1 or category 2 failure impact rating, AND</li><li>• the chief executive has, under section 349 of the Act, accepted the assessment.</li></ul> <p>Also, a dam is a referable dam if:</p> <ul style="list-style-type: none"><li>• under section 342B of the Act, the owner of a dam is given a referable dam notice and, before the effective day for the notice, does not give the chief executive a failure impact assessment for the dam, AND</li><li>• the chief executive has not, under section 349 of the Act, accepted a failure impact assessment of the dam.</li></ul>
Relevant Entity	<p>Means each of the following under the EAP for the dam:</p> <ul style="list-style-type: none"><li>• the persons who may be affected, or whose property may be affected, if a dam hazard event or emergency event were to happen for the dam, e.g. the owners of parcels of farmland adjacent to the dam or residents of a township</li><li>• each local group and district group for the EAP</li><li>• each local government whose local government area may be affected if a dam hazard event or emergency event were to happen.</li><li>• the chief executive</li><li>• another entity the owner of the dam considers appropriate, e.g. the QPS.</li></ul>

### Terms consistent with Queensland Disaster Management Arrangements

Activation Levels	<p>The four levels of EAP activation are:</p> <ul style="list-style-type: none"><li>• <b>Alert:</b> A heightened level of vigilance due to the possibility of an event occurring. No further action may be required; however, the situation should be monitored by someone capable of assessing the potential of the threat. Moving to an Alert level indicates the dam owner is getting ready to activate the Lean Forward level of the EAP if the situation deteriorates.</li><li>• <b>Lean Forward:</b> An operational state characterised by a heightened level of situational awareness of an impending disaster event and a state of operational readiness. Disaster coordination centres are on standby and prepared but not activated.</li><li>• <b>Stand Up:</b> The operational state where resources are mobilised, personnel are activated, and operational activities commenced. Disaster coordination centres are activated. The dam owner needs to provide an Emergency Event Report (EER) in accordance with the provision of the Act.</li><li>• <b>Stand Down:</b> Transition from responding to an event back to normal core business and/or continuance of recovery operations. There is no longer a requirement to respond to the event and the threat is no longer present.</li></ul> <p>The movement through these levels of activation is not necessarily sequential. It should be applied with flexibility and adaptability and be tailored to the location and event.</p> <p>Triggering one of these levels of activation may not necessarily mean a similar activation of LDMGs or DDMGs.</p>
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# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Term	Definition
Bureau of Meteorology Flood Level Classifications	<p>The three levels of flooding are:</p> <ul style="list-style-type: none"><li>• <b>Minor flooding:</b> This causes inconvenience such as closing of minor roads and the submergence of low-level bridges and makes the removal of pumps located adjacent to the river necessary.</li><li>• <b>Moderate flooding:</b> This causes the inundation of low-lying areas requiring the removal of stock and/or the evacuation of some houses. Main traffic bridges may be closed by flood waters.</li><li>• <b>Major flooding:</b> This causes inundation of large areas, isolating towns and cities. Major disruptions occur to road and rail links. Evacuation of many houses and business premises may be required. In rural areas widespread flooding of farmland is likely.</li></ul>
Concurrent Flooding	Flood flows downstream of a dam that are not a result of dam outflows, for instance those from adjacent catchments or from the sea, and which occur in the same period as downstream releases or flooding from the dam.
Dam Crest Failure	Dam crest flood is when failure occurs during a flood event with the water level at the crest of the non-overflow section of the dam embankment: <ul style="list-style-type: none"><li>• for an embankment dam, is the lowest point of the embankment crest.</li><li>• for a concrete dam, is the level of the non-overflow section of the dam, excluding handrails and parapets if they do not store water against them.</li><li>• for a concrete faced rockfill dam, is the lowest point of the crest structure.</li></ul>
Dam Failure	Dam failure is the physical collapse of all or part of a dam or the uncontrolled release of any of its contents.
Downstream Releases	Downstream releases are outflows from the dam made through appurtenant structures such as spillways or outlet works that are in accordance with the design of the dam.
Earthquake	A sudden release of energy in the Earth's crust or upper mantle, usually caused by movement along a fault plane or by volcanic activity, resulting in the generation of seismic waves that can be destructive. The potential consequences of an earthquake include: <ul style="list-style-type: none"><li>• settlement, sliding, or overturning of spillway in the dam wall.</li><li>• initiation of seepage lines in the foundations or abutments that could lead to piping damage and potential inoperability of appurtenant works.</li></ul>
Flood Release	A flood release from a dam occurs when catchment inflows raise the storage level above the Full Supply Level (FSL) resulting in a discharge from the spillway of the dam.
Piping	Internal scour caused by the water flow and seepage that occurs through earth dams, dam foundations, or dam abutments. The internal scour can lead to the formation of a pipe, which can lead to a failure of the dam.
Plane Strike or Other Impact	The impact of a plane, meteorite, or other high-energy item on or in close vicinity of a dam that could damage the dam structure or create a wave that could overtop the dam.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Term	Definition
Probable maximum flood	Probable maximum flood is the flood resulting from probable maximum precipitation coupled with the worst catchment conditions that can be realistically expected.
Probable Maximum Precipitation	Probable maximum precipitation is the theoretical greatest depth of precipitation physically possible based on generalised methods.
Probable Maximum Precipitation Design Flood	Probable maximum precipitation design flood is the flood resulting from probable maximum precipitation coupled with standard catchment conditions that can be expected.
'Sunny Day' Failure	'Sunny day' dam failure is where the failure occurs at the full supply level and there is no concurrent rain associated flooding.
Terrorist Activity	A deliberate attempt to damage or fail a dam.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



## 2. Introduction

### 2.1 Context

Under the Water Supply (Safety and Reliability) Act 2008 (the Act), the owner of a referable dam must have an approved EAP for the dam. Referable dams, by definition, would put lives at risk if they were to fail.

This EAP has been prepared in accordance with Chapter 4 of the Act. The content requirements for EAPs are contained in section 352H of the Act.

#### Summary of legal requirements - Section 352H

Section 352H(1) of the Act requires that the EAP must identify each dam hazard for the dam; and for each of these dam hazard types (e.g., flood operations, or chemical spill/toxic conditions):

1. identify the area likely to be affected by a dam hazard event or emergency event arising from the dam hazard; and
2. identify each circumstance that indicates a material increase in the likelihood of the dam hazard event or emergency event happening; and
3. state when and how the owner of the dam plans to warn persons who may be harmed, or whose property may be harmed by an event caused by the dam hazard, if one happens, and/or there is a material increase in the likelihood of an occurrence, including the order of priority in which the persons or categories of persons are to be warned; and
4. state when and how the owner plans to notify the relevant entities for the dam, if a dam hazard event or emergency event happens or, there is a material increase in the likelihood of such an occurrence, including the order of priority in which the relevant entities are to be notified; and
5. state the actions the owner of the dam plans to take in response to a dam hazard event or emergency event.

In accordance with section 352H(2) of the Act, the EAP may provide for the dam owner to make arrangements with a relevant entity for warnings to be given by the relevant entity on behalf of the dam owner in appropriate circumstances.

Section 352HA of the Act states that before giving the chief executive an EAP, the owner of the dam must give a copy of the plan to each local government whose area may be affected by a dam hazard identified in the plan, and each district group for the plan.

Section 352HB of the Act states that the local government must assess the EAP for consistency with its disaster management plan. In its assessment, the local government must consult with the local district group for the plan.

Within 30 business days of receiving the EAP, the local government must give the owner of the dam a notice, which states whether it considers the plan is consistent with its disaster management plan; and if not, give reason why it considers the EAP is not consistent. The EAP must include any such notices, provided to the owner of the dam by a local government (or district group); and any responses which the owner gives to these notices. Section 352H(1) further stipulates that an EAP must include any other relevant matter prescribed by regulation.

The local government whose area may be affected by a dam hazard for Ross River Dam has been assessed as **Townsville City Council (TCC)**.

Section 352HC of the Act states that a district group may review the EAP for consistency with its disaster management plan. The district group for Ross River Dam is **Townsville Police District Disaster Management Group (DDMG)**. TCC has provided the DDMG with a copy of the interim EAP for review

## 2.2 Purpose

The purpose of this EAP is to:

- Manage the risk of harm to persons or property if a dam hazard event or emergency event for the dam happens.
- Identify dam hazards that could occur at Ross River Dam and the area likely to be affected for each hazard.
- Prescribe emergency actions taken and responding to dam hazards and notifying relevant entities.

It is possible for more than one dam hazard to exist at Ross River Dam at the one time. In such a circumstance, it may be necessary to act on the procedures within separate sections simultaneously.

## 2.3 Scope

The Ross River Dam EAP covers:

- Dam hazards evaluated within TCC Dam Safety Management Program.
- Details about the dam that are relevant to a dam hazard.
- Identification of circumstances that indicates a material increase in the likelihood of a dam hazard.
- Triggers for activation of a tiered response to dam hazards
- Roles and responsibilities in responding to a dam hazard.
- Notification, warning, and communication protocols
- Inspection, monitoring, and reporting protocols during emergencies
- Other relevant information that may assist with identifying the area affected by a dam hazard, and the management of such hazards.

## 2.4 Training

TCC is committed to ensuring all staff have the necessary knowledge and training to perform their duties safely and competently. Specific pre wet season training is undertaken annually in November and staff with responsibilities under this EAP shall undergo training at various times throughout the year.

Annual EAP training that is carried out on site shall include DDO, DSTDM, and other appropriate TCC staff as required. This training includes walkthroughs of new changes, scenario (role play) and Q & A to check the knowledge and competency of all those who attended.

Annual disaster exercises are conducted in the LDCC with the IC, FODM Additional competency requirements and managed in accordance with TWW GP0088 - Training and Competency Procedure.

## 2.5 Fatigue

TCC is committed to ensure employees remain safe during EAP activation. All operators will work on a roster basis as specified by the TLDC in accordance with the Water Services Fatigue Management

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Procedure (WS-PRO-002). Maximum length of shift is 12 hours per day with a maximum of 6 shifts per week followed by a mandatory 48-hour rest break.

### 2.6 Dam Emergency Organisation

The Ross River Dam emergency management framework utilises the Townsville City Council (TCC) management hierarchy in liaison and other specialized dam safety expert input as illustrated in Figure 1 below.

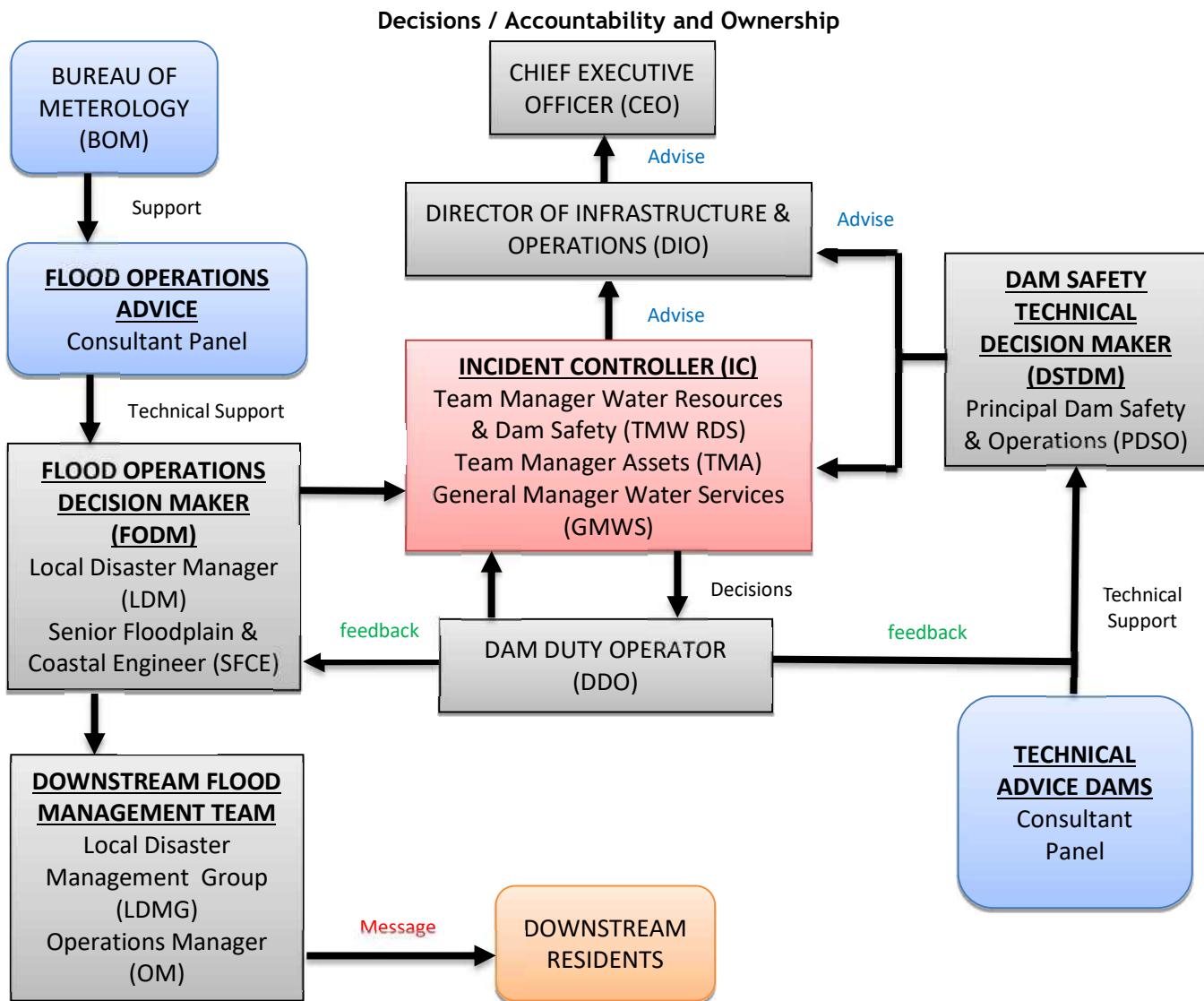


Figure 1 - Ross River Dam, TCC Emergency Response Organisation

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Key aspects of the emergency management framework include:

- Central to the above framework is the role of Incident Coordinator (IC), for any dam hazard at a dam. The IC will maintain overall responsibility for managing the dam hazard.
- The IC is responsible for the decision to activate the EAP. Should the IC be unavailable, the Dam Duty Officer (DDO) is responsible for the decision. If the IC loses all communications during a dam hazard, then as a fail-safe position, the DDO will assume the duties and responsibility of the IC. However, loss of communications could result in some communication processes defined in this EAP not being carried out.
- In-house and external engineering and technical specialists will provide advice to the IC on an as needs basis.
- The Flood Operations Decision Maker (FODM) and Dam Safety Technical Decision Maker (DSTDM) will provide flood and dam engineering advice respectively during a dam hazard. Such advice will be provided within an established framework of Standing Operating Procedures (SOPs), models, standards, and manuals. This is an advisory role only and does not diminish the decision responsibility of the IC, or DDO.
- If circumstances develop during a dam hazard that exceeds the established framework, it will be necessary to escalate to either the FODM or DSTDM.
- In some circumstances these decision-making roles may need to direct those in the direct chain of command. These decision-making roles are providing direct engineering supervision to the advisors through the established framework of SOPs, models, standards, and manuals or through direct supervision.

## 2.7 Community Information

- A copy of the Paluma Dam approved EAP is emailed to the downstream PAR listed in Section 5 before October 1st each year.
- TCC hosts “Get Ready Townsville” an annual disaster community event in November every year. As part of this event a specific Dam and Flooding stall is run with staff to discuss the role of the EAP and how water releases will impact the downstream residents. An emergency event information sheet is made available to the public showing flood maps for Ross River and location of evacuation centres.
- A copy of the Ross River Dam approved EAP is available to the public on the Townsville City Council website along with answered FAQ and historical dam information.

### 2.8 Stages of Escalation

This EAP is activated using an escalation model based on the following levels:

Table 6 - Stages of Escalation

Alert	<ul style="list-style-type: none"><li>A heightened level of vigilance due to the possibility of an event occurring. It will tend to require increased monitoring with the frequency of monitoring being dependent upon the rate of development of the potential failure condition.</li><li>During the ALERT level of EAP activation, the need for, and the frequency of situational reports should be discussed with the relevant Disaster Management Group.</li><li>No further action may be required; however, the situation may need to be monitored by someone capable of assessing the potential of the threat.</li></ul>
Lean Forward	<ul style="list-style-type: none"><li>An operational state characterised by a heightened level of situational awareness and a state of operational readiness. The dam operational staff are placed in a state of operational readiness to move to the "Stand-Up" level of activation in the event of an emergency event occurring or to mitigate the consequences of such an event.</li><li>It will require increased monitoring with the frequency of monitoring being dependent upon the rate of development of the emergency condition. Situational reports to the relevant DMG should continue as previously arranged or otherwise requested. Personnel at the Dam should be on standby, ready to move to the Stand-Up level of activation in the event of an emergency event occurring or to mitigate the consequences of such an event.</li></ul>
Stand Up	<ul style="list-style-type: none"><li>An operational state where resources are mobilised, personnel are activated, and operational activities are commenced as part of the EAP activation in response to an emergency event occurring or the need to mitigate the consequences of such an event occurring.</li><li>Any works that may become necessary at the dam site to minimise the risk of dam failure or minimise the consequences of failure should be undertaken.</li><li>Situational reports should be provided to the relevant DMG and Dam Safety Regulator (DSR) according to agreed timelines. Activation of this level of response will trigger the requirement to develop an Emergency Event Report (EER) in accordance with the provisions of the Act.</li></ul>
Stand Down	<ul style="list-style-type: none"><li>Transition from responding to event back to normal core business and/or continuance of emergency recovery operations.</li><li>The movement through these levels of activation is not necessarily sequential and should be applied with flexibility and adaptability and be tailored to the location and event.</li><li>Triggering of one of these levels of activation may not necessarily mean a similar activation of relevant DMG's however the provision of information to relevant group members regarding the risks associated with a pending hazard impact should still occur.</li><li>There is no longer a requirement to respond to the event and the threat is decreasing.</li></ul>

Movement through these levels of activation is not necessarily sequential and should be applied with flexibility and adaptability and be tailored to the location and event.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 3. Dam Details

#### 3.1 General Dam Information

**Location:** Ross River Dam is located approximately 19km south-southwest of the city of Townsville.

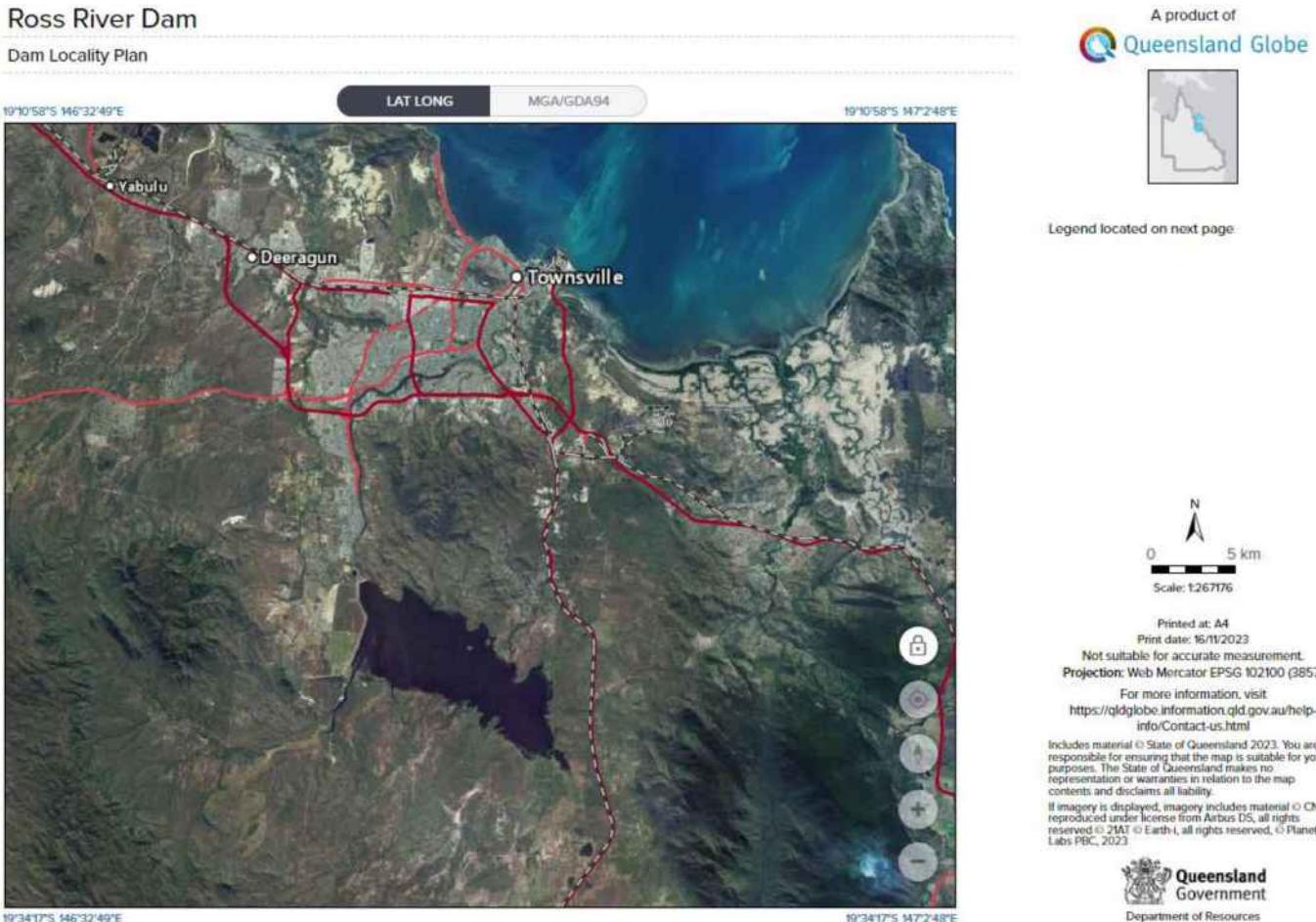


Figure 2 - General Locality Map

**Purpose:** Ross River Dam provides water supply and flood attenuation to the City of Townsville.

**Catchment:** 761km<sup>2</sup> (approx.)

**Storage Capacity:** The storage capacity at FSL is 233,187ML.

**Dam Description:** Ross River Dam comprises an 8400 m rock and earthfill embankment wall, concrete ogee spillway with three hydraulically controlled steel radial gates used to control outflow. The dam has an intake tower with seven offtake levels leading with a 1524 mm diameter mild steel cement lined (MSCL) pipe leading to the Ross Pump Station.

**Construction:** Ross River Dam was constructed by Leighton Holdings by between 1971 and 1974. The Dam was upgraded in 1987 and 2007 when the 3 spillway gates were installed.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



**Specification:** The table below lists general specifications of Ross River dam.

Table 7 - Ross River Dam Specifications

Description	Specification
	Earth Core rock-fill
Full Supply Level (FSL)	EL 38.55m AHD
Dam Crest Level (DCL)	EL 48.00m AHD
Dam height (m)	34.4m AHD (from stripped foundation)
Total embankment length (m)	8400m (Crest length)
Historical recorded max storage	43.03m AHD
Crest Width	7.9m Type 1 embankment (Drawing ref. 236551)
Storage	
Catchment area	761km <sup>2</sup>
Full Supply Level (FSL)	EL 38.55m AHD
Storage capacity at FSL	233,187ML
Surface area (at FSL)	5690Ha
Normal Operating range	EL 23.7m - 38.55m AHD
Minimum Draw Down Level	EL 23.7m AHD
Spillway	Mass Concrete post tensioned Gravity Structure with 3 hydraulically operated steel radial gates, concrete piers and concrete service bridge
Spillway crest level	EL 34.656m AHD (fixed crest level)
Gate Operating Trigger Level	EL 38.65m AHD
Spillway gates	Width - Gates 1 & 3 x 11.79m, Gate 2 x 13.00m Height (face length) - 5.35m Height (vertical in closed position) - 4.80m <i>Operated by hydraulic rams</i>
Spillway crest length	36.6m (2x11.8 m, 1x13m, with 2x1.5m piers)
Spillway design capacity (at EL 47.50m - overtopping imminent PMF Inflow Peak)	3,655m <sup>3</sup> /s
PMF Inflow Peak	15,800m <sup>3</sup> /s
Outlet works	
Outlet capacity (max)	2 x cone valves - 13.6m <sup>3</sup> /s
Type of Intake	Dry well in Left Bank Monolith LH5
Control	Electrical hydraulic operation with manual override
Provision for Selective Withdrawal	7x1.5m Dia Butterfly Valves at Selective Levels
Outlet Conduit	1524 mm Dia Cement Lined MS Pipe
Length of Outlet Conduit	47.5m

Outlet Guard Valves	2x1067 mm Dia Butterfly Valves
Regulator Valves	2x840 mm Dia Fixed Cone Dispersion Valves
Valve House	R.C. Structure on Left bank Monolith LH9

All levels are to Australian Height Datum (AHD).

Conversion for Dam is AHD = ((State Datum in feet x 0.3048) + 0.303m

### 3.2 Population at Risk

Ross River Dam is classified as 'Extreme' for both the 'Sunny Day' and the Incremental Flood Hazard categories (Population at Risk, PAR > 1000) in accordance with Guidelines on the Consequence Categories for Dams (ANCOLD, 2012). It is classified as a Category 2 dam under the QLD Dam Safety Management Guidelines February 2002, with a PAR exceeding 100. (1)

The estimated PAR for Flood Failure and Sunny Day Failure scenarios are listed below:

Table 8 - Failure Scenarios and Anticipated Population at Risk (PAR)

Scenario	Weighted PAR
48.1 m AHD Flood Overtopping Failure Chainage 500m	134,070
43 m AHD Flood Induced Piping Failure Chainage 500m	117,104
Sunny Day Breach Reservoir Level RL 38.55 Chainage 500m	79,481

### 3.3 Spillway Adequacy

The spillway is capable of passing routed floods in such a manner that any damage that occurs to the crest, chute or stilling basin will not threaten the safety of the spillway structure. Under extreme floods some damage is acceptable provided it does not threaten the safety of the dam.

Hydraulic studies for the spillway considered flows controlled by the spillway gates and free overflow discharges up to a dam crest flood (DCF) level of 47.5 m. Flow conditions up to a dam crest level of 48.5m were also considered to allow for a potential raising of the dam crest to accommodate inflows up to the PMF. (2)

**Notes:** 1. Ross River Dam Risk Assessment Review, GHD 122553842-REP-0, 8 February 2023

2. NQ Water, Ross River Dam Upgrade, Stages 2 to 5, Spillway and Stilling Basin Design Report, September 2005.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 3.4 General Arrangement

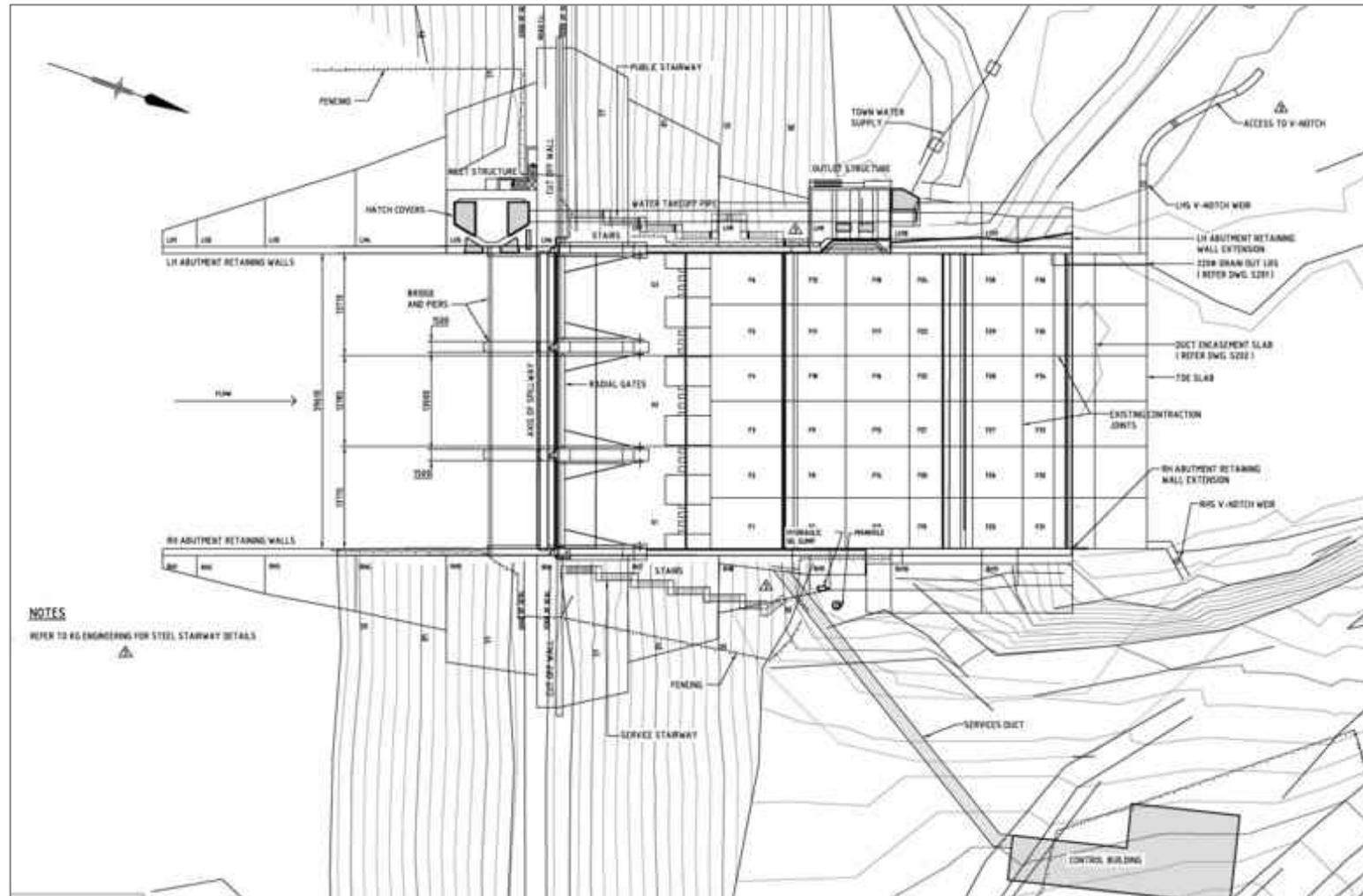


Figure 3 - Ross River Dam - Spillway General Arrangement

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

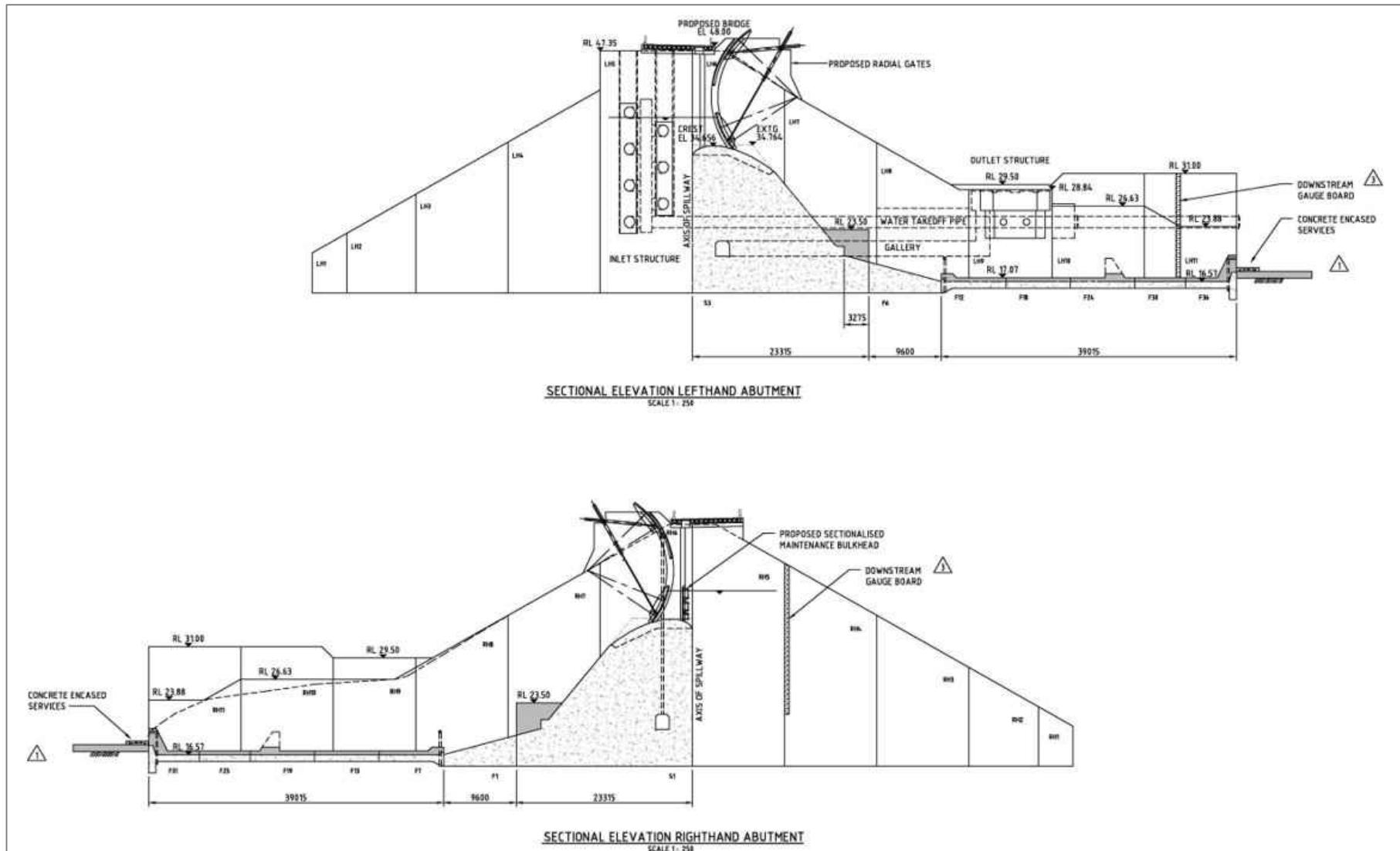


Figure 4 - Ross River Dam - Sectional Elevations, LH & RH Abutments

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 3.5 Emergency Inspections and Monitoring

The Ross River Dam has been designed to conform to modern design standards, so that its failure is highly unlikely. In order to maintain the dam in a safe condition and promptly detect any dam hazards, the following is applicable to Ross River Dam.

#### 3.5.1 Inspections

- **Routine Visual Inspection:** Conducted daily as per the ANCOLD Guidelines or as directed by the DSTDM
- **Detailed Inspection:** Conducted Annually
- **Comprehensive Inspection:** Conducted 5-yearly

#### 3.5.2 Instrumentation and monitoring

To confirm the structural behaviour and safety of the embankment, the following instrumentation was installed, and is monitored, at Ross River Dam in accordance with SOP-009.

Table 9 - Instrumentation Installed at Ross River Dam

Main Dam	
Settlement/movement Measurement	26 Surface Movement Stations - Manual Measurements
Survey Points	4 x Survey Control Stations
Piezometers	40 Hydraulic Piezometers - Manual measurements
Seepage Measurement	3 x V-Notch Weirs Left D/S Wall - manual measurement Right D/S Wall - manual measurement Gallery - manual measurement 3 x Rectangular-Notch Weirs Main Embankment Seepage, chainage 650m to 8300m - automated bubbler Carpark and Ramp, chainage 610m to 635m - automated bubbler Seepage pipe outlet - manual measurement
Level Indicators	3 automated continuously online
Observation Bores x 10	The location of instrumentation and monitoring equipment is illustrated in Figure 4 and Figure 5 on the following pages.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 3.5.3 Automatic Monitoring

To improve our ability to monitor the performance of the dam, the following automatic monitoring equipment has been installed and maintained by Sixense. All trained operators will have their own log in passwords to the Beyond Monitoring website where data, graphs and trends from the following equipment can be viewed.

Table 10 - Instrumentation Installed at Ross River Dam

Main Dam	
Spillway Movement	4 tiltmeters and 10 crack gauges - Continuously Monitored
Seepage Measurement	Seepage pipe outlet flow meter - Continuously Monitored Seepage pipe turbidity - Continuously Monitored
Piezometers	21 Vibrating Wire Piezometers - Continuously Monitored 19 Hut Air Piezometers - Continuously Monitored

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

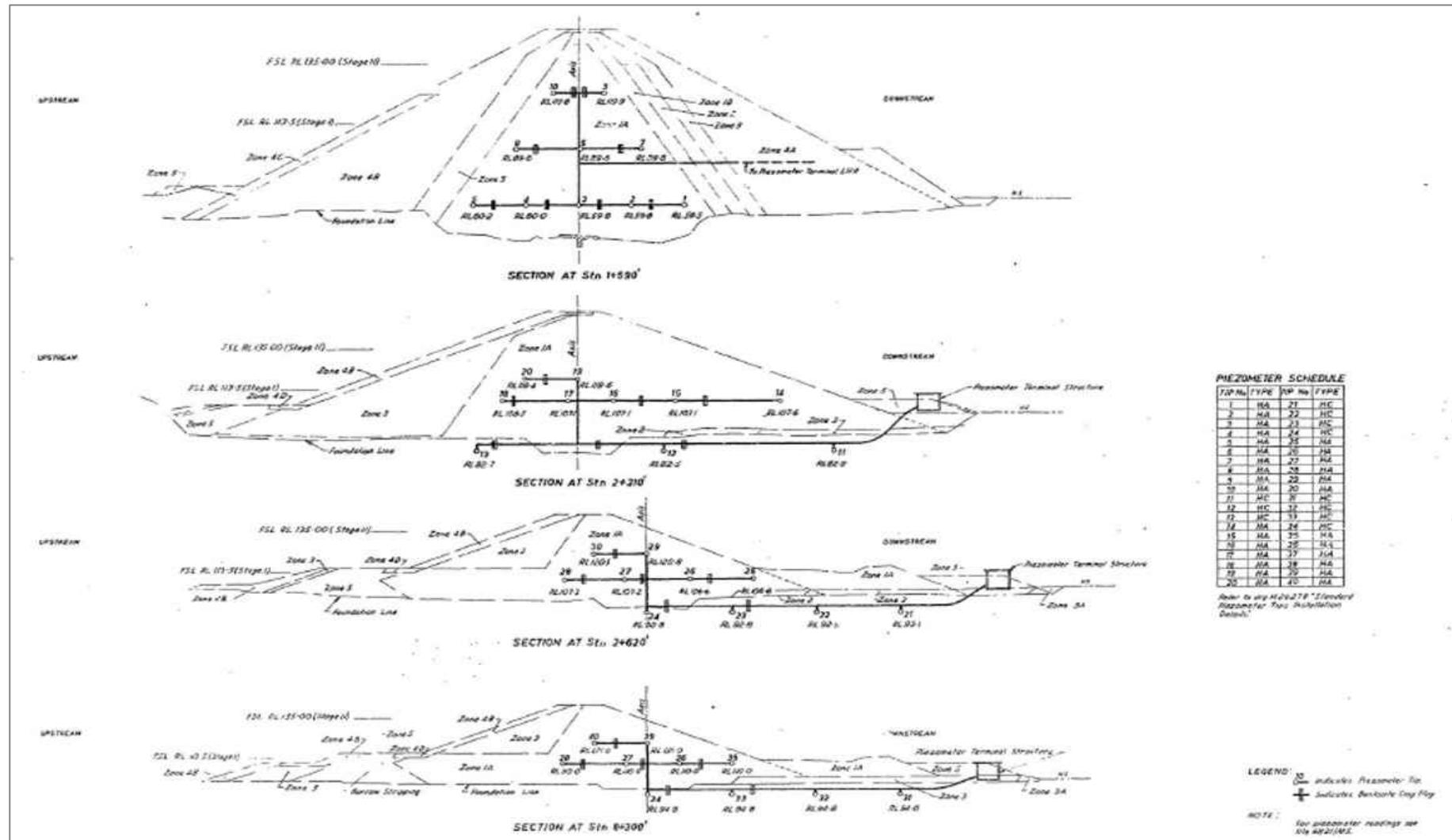
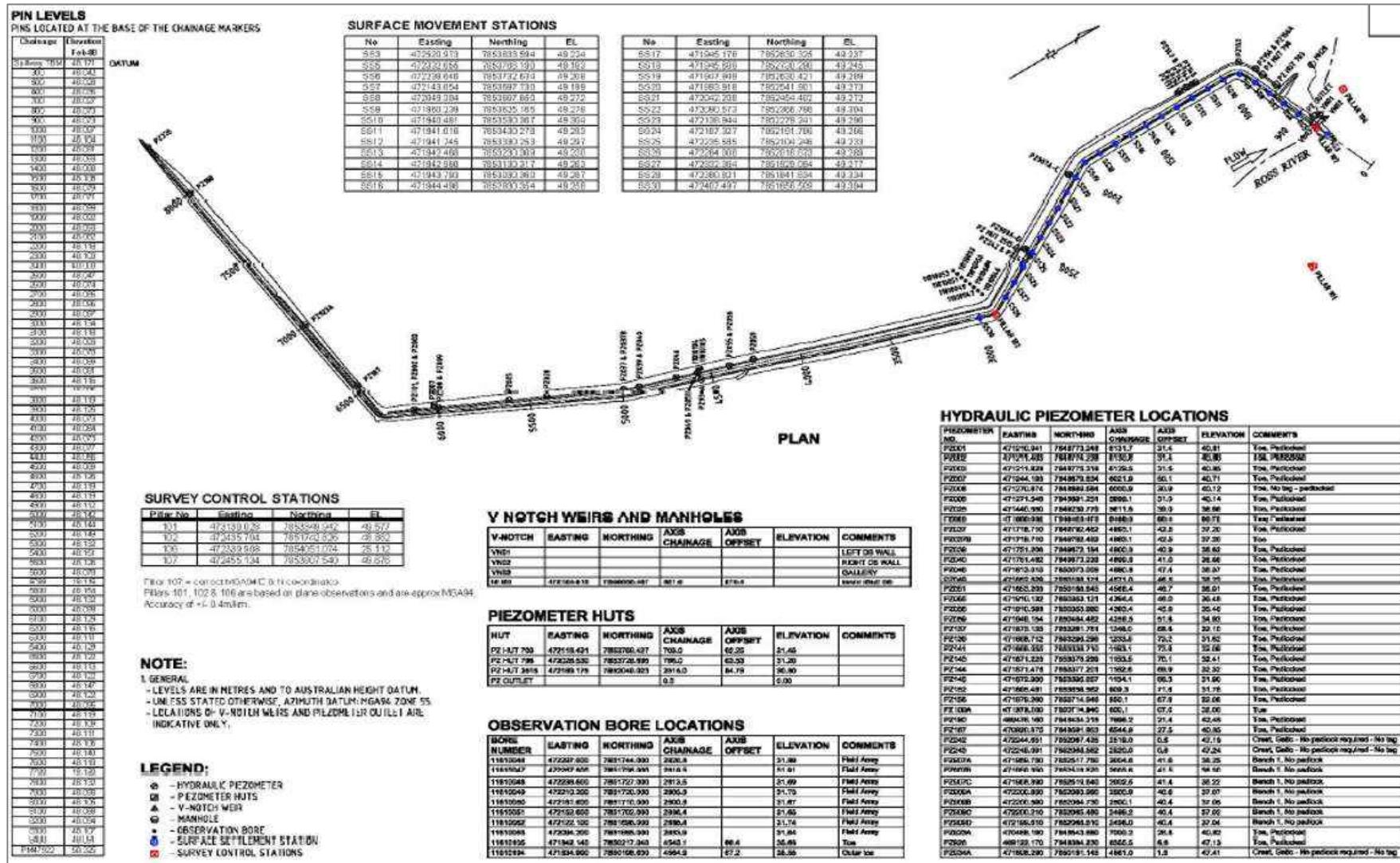


Figure 5 - Ross River Dam Piezometer Locations

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



# Ross River Dam

## 2025 Emergency Action Plan (EAP)

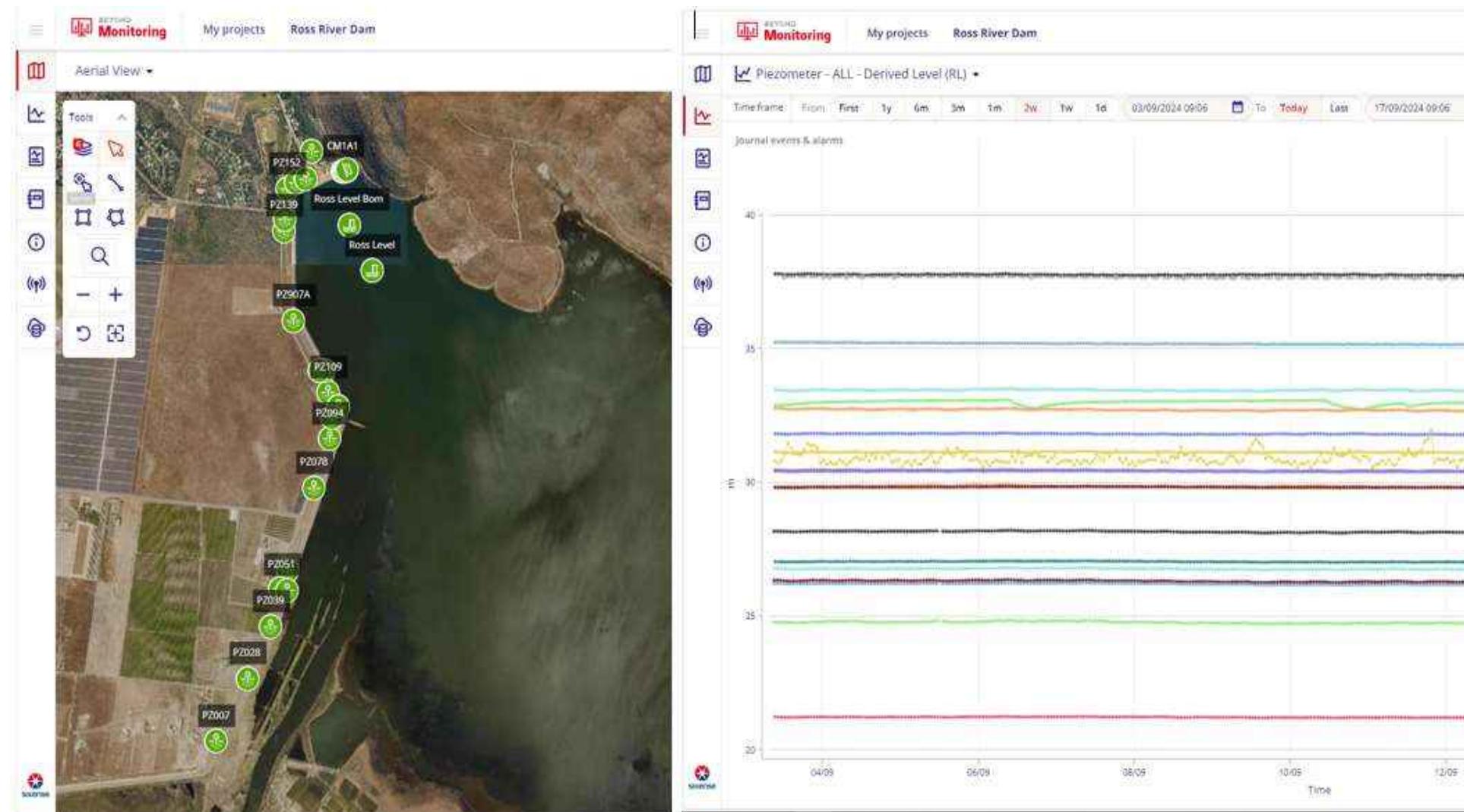


Figure 7 - Ross River Beyond Monitoring Instrumentation Layout & Trend Plots

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 4. Roles and Responsibilities

Table 11 - Roles and Responsibilities

Roles and Responsibilities	Position holder <sup>1</sup>
<p><b>Principal Dam Safety and Operations (PDSO)</b></p> <ul style="list-style-type: none"><li>Authorise the issuing of EAPs, SOPs and O&amp;M Manuals and amendments.</li><li>Ensure that risks identified in Comprehensive Inspections or other technical reports undertaken in relation to Dam Safety are included in the EAP.</li><li>Ensure visual inspections and instrumentation monitoring frequencies conform to ANCOLD Guidelines.</li><li>Ensure all Dam Safety work orders, work instructions and lesson learned outcomes are fully implemented.</li><li>Ensure requirements of the Dam Safety Condition Schedule are met.</li><li>Ensure the work instructions are correct and the Logbooks, SOPs, Data Books, and EAP is reviewed annually as per the Dam Safety Condition Schedule</li><li>Undertake and prepare the 5 yearly Comprehensive Inspection Reports with suitably qualified personnel within the time specified in the Dam Safety Condition Schedule and ensure work orders are created for recommendations and work is undertaken as required.</li><li>Review the Dam Safety Instrumentation Database and evaluate data to verify the structural integrity of the dam on a regular basis and maintain a spread sheet for verification for audit and quality control.</li><li>Maintain current RPEQ accreditation.</li><li>Liaise with the Dam Safety Regulator.</li><li>Record communications, notifications and observations as required.</li></ul>	PDSO
<p><b>Technical Advisor</b></p> <ul style="list-style-type: none"><li>Analyse the situation and provide expert technical advice.</li><li>Discuss issue with peers and other technical experts and make sound decisions to mitigate risk.</li><li>Determine response to incidents and emerging issues.</li><li>Record communications, notifications and observations as required.</li></ul>	Consultant

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Roles and Responsibilities	Position holder <sup>1</sup>
<p><b>Incident Coordinator (IC)</b></p> <ul style="list-style-type: none"> <li>Activate the EAP</li> <li>Ensure the EAP is implemented appropriately.</li> <li>Issue warning messaging to downstream residents and Charters Towers LDMG</li> <li>Liaise with TLDC and make any necessary decisions relating to dam operational matters during times when this document is triggered, including during the period in the lead up to events.</li> <li>Discuss Dam Hazard with peers and other technical experts and make sound decisions to mitigate risk.</li> <li>Analyse the situation and provide expert technical advice in relation to Dam Safety</li> <li>Determine response to incidents and emerging issues.</li> <li>Review site inspection data.</li> <li>Provide a 24/7 contact.</li> </ul> <p>Record communications, notifications and observations as required.</p>	TM WRDS or TMA
<p><b>Dam Safety Technical Decision Maker (DSTDM)</b></p> <ul style="list-style-type: none"> <li>Analyse the situation and provide expert technical advice.</li> <li>Discuss issue with peers and other technical experts and make sound decisions to mitigate risk.</li> <li>Determine response to incidents and emerging issues.</li> <li>Ensure the EAP is implemented appropriately and carry out the DSTDM role as required.</li> <li>Maintain current RPEQ accreditation.</li> <li>Liaise with the Dam Safety Regulator.</li> <li>Provide a 24/7 contact.</li> </ul>	PDSO
<p><b>Flood Operations Decision Maker (FODM)</b></p> <ul style="list-style-type: none"> <li>Provide hydrological advice in relation to predicted and actual dam outflows.</li> <li>Ensure model outputs are checked and approved</li> <li>Ensure the EAP is implemented appropriately and carry out the FODM role as required.</li> <li>Record communications, notifications and observations as required.</li> </ul>	Various personnel as per FODM roster
<p><b>Dam Duty Officer (DDO)</b></p> <ul style="list-style-type: none"> <li>Ensure the EAP is implemented appropriately and carry out the DDO role as required.</li> <li>Take direction from the TLDC &amp; IC as requested.</li> <li>Arrange immediate site inspection and make informed assessment of the situation.</li> <li>Escalate any issue not covered in the EAP or where actions are not clear.</li> <li>Record communications, notifications and observations as required.</li> </ul>	Various personnel as per DDO roster

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Roles and Responsibilities	Position holder <sup>1</sup>
<p><b>Townsville City Council</b></p> <p>Council has legislated local government functions, as per Section 80 of the Qld Disaster Management Act (2003). These include:</p> <ul style="list-style-type: none"> <li>• Ensure it has a disaster response capability.</li> <li>• Approve its local disaster management plan.</li> <li>• Ensure information about an event or a disaster in its area is promptly given to the district disaster coordinator for the disaster district in which area it is situated.</li> <li>• Perform other functions given to the local government under the Act.</li> <li>• Must assess (in consultation with its LDMG) the EAP for consistency with the Local Disaster Management Plan.</li> </ul>	TCC
<p><b>Disaster Management Groups/Personnel</b> - (In addition to requirements outlined in the Qld. Disaster Mgmt. Act 2003). The agreement of the below is sought through the review and approval of this document.</p>	LDMG DDMG QFES
<p><b>LDMG</b></p> <ul style="list-style-type: none"> <li>• Identify and coordinate the use of manpower and resources that may be required for an EAP event.</li> <li>• Identify and provide advice to DDMG about support services required by the CTLDMG to manage an EAP event.</li> <li>• Provide reports and make recommendations to the relevant DDMG about matters relating to EAP events and any support required.</li> </ul> <p><b>QFES</b></p> <ul style="list-style-type: none"> <li>• Work with LDMG and TCC to ensure Emergency Alerts polygons are prepared, stored and tested.</li> </ul> <p><b>DDMG</b></p> <ul style="list-style-type: none"> <li>• DDMG may review plan with consistency with the District Disaster Management Plan</li> <li>• Ensure the communication provided under this EAP is consistent with the District Disaster Management Plan.</li> </ul>	
<p><b>Dam Safety Regulator (DSR)</b></p> <ul style="list-style-type: none"> <li>• Liaise with relevant Minister on necessary actions.</li> <li>• Approve this document as required under legislation.</li> <li>• Liaise with Chief Executive as required in administering (regulating) the Water Supply (Safety and Reliability) Act 2008.</li> </ul>	DSR

## 5. Dam Hazard - Flood Operations

### 5.1 Overview

The emergency action described in this section (dam hazard–flood operations) relates to a dam hazard where natural catchment inflows fill Ross River Dam to FSL 38.55m and the rate of inflow exceeds the capacity of the outlet works. The spillway will then discharge water downstream into the Ross River. These flood flows can create a dam hazard event. Inflows will also cause the storage to temporarily rise to above the full supply level of the storage.

Note:

- The greater the rate of inflow, the higher the storage will rise and the greater dam hazard to residents.
- The higher the storage level rises, the greater the loads on the dam structure.
- Although unlikely, the greater the loading, the higher the likelihood of a dam failure.
- Typically, the level of surveillance is increased during flood operations (refer tables in this section).
- Spillway discharge from the dam where there have been no indications that a dam failure may be initiating or in progress.

When the DDO is required to mobilise to site, they shall perform the following:

- Log in to SCADA system and confirm HMI communications by switching all gates to AUTO in accordance with SOP001.
- The gates and equipment shall remain in AUTO as per SOP016 and the operator will remain on site until relieved at the end of their 12-hour shift or the Stand Down emergency action is triggered by the IC.

The following steps shall be taken to ensure continuous monitoring of the Ross River Dam during mobilisation and relocation:

- The IC or DSTDM may log into the SCADA system and remotely monitor the dam until the DDO arrives on site.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 12 - Flood Classification Triggers

	Flood Classification Level	Height at Aplins Weir (m AHD)	Height at Aplins Weir (BOM Gauge Zero)
MAJOR	Major	8.5	1.8
MODERATE	Moderate	7.96	1.6
MINOR			
Below Minor	Minor	6.96	1.1

**Ross R at Aplin Weir # Flood Level Classification**

4 ← 3.36m RECORD FLOOD Feb 2019

3 ← 1.77m Jan 1998

2 ← 1.25m Feb 2007

1 ← 0.92m Apr 2000  
← 0.81m Mar 2018

0 ← 0.50m Jan 2006

The following table shows top 10 historical floods experienced at Ross River Dam (Post Upgrade).

Table 13 - Historical floods experienced at Ross River Dam (Post upgrade)

Flood rank	Date	Peak Height EL	Peak Discharge (m <sup>3</sup> /s)
1	03 February 2019	43.03	1877
2	03 February 2025	41.29	637
3	21 March 2012	40.73	439
4	24 February 2009	40.54	433
5	12 February 2008	39.84	297
6	03 February 2011	39.60	235
7	31 January 2010	39.45	177
8	4 January 2023	38.96	58
9	23 March 2010	38.94	58
10	14 April 2014	38.69	20

## 5.2 Emergency Actions

In the tables below, each level of activation includes both its own actions and the actions of any lower level, unless those lower-level actions are superseded.

### 5.2.1 Activation Triggers

Table 14 - Flood Emergency Activation Trigger Summary

<b>Alert</b>	EL 38.45m and rising	0.1m below FSL
<b>Lean Forward</b>	Storage EL 38.65m	Gate Opening trigger level Routine water releases minimal impact downstream
<b>Stand Up 1</b>	Storage above EL 40.75m	Minor flooding for <b>BLACK</b> zones
<b>Stand Up 2</b>	Storage EL 41.50m	Minor flooding for <b>PINK</b> zones Moderate flooding for <b>BLACK</b> zones
<b>Stand Up 3</b>	Storage EL 42.25m	All gates fully open at EL 43 Major flooding <b>BLACK</b> & <b>PINK</b> zones
<b>Stand Up 4</b>	Storage EL 45.50m	Dam begins to back flow through Toonpan at EL 46.0m Prepare <b>GREEN</b> zones for Evacuation
<b>Stand Up 5</b>	Dam failure extremely likely OR Storage EL 46.50m	Evacuation of <b>GREEN</b> zone required
<b>Stand Down</b>	Storage level FSL 38.55m and falling	

### 5.2.2 Assessment of circumstances (indication of increase in the likelihood of flood operations)

The DDO will assess the weather and flood warnings daily in accordance with the relevant SOP. The DDO will escalate to the Incident Coordinator (IC) any warnings that have the potential to generate an inflow event in the catchment in the following 24 hours.

The IC will escalate to the FDOM any local intelligence on catchment conditions that could increase the probability of inflows to the dam. The DDO will determine whether it is reasonably likely that the dam could reach EL 38.45m within the subsequent 24 hours. If so assessed, the IC will trigger the Alert status for flood operations.

### 5.2.3 Assessment Emergency Action Roles

Table 15 to Table 19 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)
- Flood Operations Decision Maker (FODM)

### 5.2.4 Manual Operations and Early Releases

Once the EAP has been activated to the lean forward level it is possible to operate in manual mode, open the gates and conduct an early release of up to 350m<sup>3</sup>/s of water without exceeding the capacity of the river and inundating properties. However, this early release of water was found to have minimal to no impact on the peak flood levels for a major flood.

The decision to operate in manual mode shall only be made by the IC after considering engineering and flooding advice from the DSTDM and FODM on the potential impacts to the dam and community. If operated in manual mode, only early releases will be permitted and all gate opening levels as required in table C3 shall be followed as the water rises to these set levels. The gates shall not be operated in manual mode with the intention of holding back water to minimise downstream flooding as this compromises Dam safety.

The operation of the gates in manual mode, and the release of water before the Dam has reached FSL level of 38.65 is outside the scope of this EAP and is considered an operational release by TCC for gate testing, environmental releases or other reasons.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 5.2.5 Extended Periods at Alert Level

In most flood events the EAP progresses from Alert (RL 38.45) to Lean Forward (RL 38.65) activation level quickly triggering a gate opening.

However, in some circumstances the EAP has moved to Alert for extended periods of time and not yet reached the gate opening level at Lean Forward. This has required Dam Operators to staff the control room on 24 hour roster resulting in unnecessary fatigue in staff.

Therefore, once the EAP has moved to Alert for Flood Operations for more than 24 hours, the IC shall consult with the FODM on forecast rainfall and downstream impacts and may elect to start gate operations manually.

The gates shall be opening gradually with the centre gate opening 250mm followed by the outer gates to 250mm 6 hours later. All three gates are to remain open until the water level is dropped to RL38.4 and the EAP is moved to Stand Down.

Should additional rain occur during this time and the water level rises to above RL38.75 then the gates shall be placed in automatic mode and the EAP set gate releases shall be followed.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 15 - Flood Operations - DDO Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Up 4	Stand Up 5	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>EL 38.45m and rising (0.1m below FSL)</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 38.65m (gate opening trigger level)</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 40.75m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 41.50m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 42.25m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 45.50m</li> </ul>	<ul style="list-style-type: none"> <li>Dam failure extremely likely. OR Storage EL 46.50m</li> </ul>	<ul style="list-style-type: none"> <li>Storage FSL 38.55m and falling</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Initiate commencement of 24h roster.</li> <li>Ensure emergency power and other backup systems are checked</li> <li>Check gallery sump pumps to prevent build-up of water in gallery</li> <li>Monitor and record water levels and advise FODM as requested</li> <li>Arrange supplies - min 5 days for 2 people</li> <li>Confirm Sat phone charged and functional</li> <li>Mobilise to site</li> <li>Confirm HMI links operational as per SOP-001</li> <li>Switch gates to auto control as per SOP016</li> <li>Confirm FODM arrangements</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, AND</li> <li>Maintain situational awareness</li> <li>Seek advice from FODM</li> <li>Visually observe gates and spillway flow at hourly intervals or at any gate movements using form QAF0567</li> <li>Visually check structure for leaks, movement at 4 hourly intervals using form QAF0544</li> <li>Check and record seepage in gallery at 4 hourly intervals using form QAF0547; includes photos at marked locations</li> <li>When causeway inaccessible, route over top of dam should be used</li> <li>Undertake instrumentation readings as per SOP-008, or as directed by DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, AND</li> <li>Visually monitor reservoir level gauge boards and document hourly</li> <li>If storage level continues to rise at a rate 300mm/d or more, dam should be inspected with full visual surveillance at 4 hourly intervals using form QAF0544</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, AND</li> <li>Visually monitor reservoir level and gates and notify FODM</li> <li>Inspect embankments &amp; mass concrete in accordance with -009</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, AND</li> <li>Advise IC/FODM on reaching EL 45.5m &amp; water backflowing to majors creek</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, AND</li> <li>Advise IC/FODM on reaching EL 46.5m &amp; evacuate the vicinity of Dam</li> </ul>	<ul style="list-style-type: none"> <li>Return to routine surveillance activities and frequencies inspect dam for any damage identified</li> <li>Forward EER data to IC</li> </ul>

Note: Gates Fully Open at EL 43.00m

If loss of Communication with IC and LDMG, DDO to issue warnings in IC communications plan in accordance with Appendix A3, A4 and A5

Note: Actions Continued on Next Page

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 15 (continued) - Flood Operations - DDO Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Up 4	Stand Up 5	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>EL 38.45m and rising (0.1m below FSL)</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 38.65m (gate opening trigger level)</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 40.75m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 41.50m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 42.25m</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 45.50m</li> </ul>	<ul style="list-style-type: none"> <li>Dam failure extremely likely. OR Storage EL 46.50m</li> </ul>	<ul style="list-style-type: none"> <li>Storage FSL 38.55m and falling</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Log into Beyond Monitoring to track instrument readings and spillway movements as per SOP-008</li> <li>Inspect dam daily (or as instructed by DSTDM) &amp; photograph/video and record using approved forms in appendix D and send to IC and DSTDM</li> <li>Log book entries as per SOP-005</li> <li>Undertake site preparations if not already completed</li> <li>Record all communication</li> </ul> <p><b>Note: DDO must mobilise to site if any doubt, Dam must be manned.</b></p>	<ul style="list-style-type: none"> <li>Report unusual readings or observations to DSTDM and IC</li> </ul>	<ul style="list-style-type: none"> <li>Provide data to FODM as requested</li> <li>Consider adding resource requirements for surveillance</li> </ul> <p><b>DDO to work with IC to close access ramp, viewing stairs and platform to public. Coordinate with CMO, Traffic Controllers and QPS</b></p>	<p><b>Note: Gates Fully Open at EL 43.00m</b></p>				
Internal Notifications	<ul style="list-style-type: none"> <li>IC</li> <li>DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>DSTDM</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 16 - Flood Operations - IC Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Up 4	Stand Up 5	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• EL 38.45m and rising (0.1m below FSL)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 38.65m (gate opening trigger level)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 40.75m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 41.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 42.25m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 45.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Dam failure extremely likely. OR Storage EL 46.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage FSL 38.55m and falling</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Liaise with DSTDM</li> <li>• Liaise with LDMG re: situation</li> <li>• Obtain catchment conditions from DDO/FODM</li> <li>• Advise DDO of anticipated rainfall/inflows</li> <li>• Issue incident alert (once only on activation of EAP)</li> <li>• Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level, AND</li> <li>• As per previous activation level, AND</li> <li>• Ensure all abnormal observations or damage have been reported to IC and DSTDM</li> <li>• Monitor for storm surge forecast</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul> <p style="color: red; text-align: center;"><b>IC to work with DDO to close access ramp, viewing stairs and platform to public. Coordinate with CMO, Traffic Controllers and QPS</b></p>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Deactivate EAP</li> <li>• If required, compile EER and deliver to DSR</li> <li>• Complete Situation Report (final)</li> <li>• Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• DDO</li> <li>• LDMG</li> <li>• DSTDM</li> <li>• FODM</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous of notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Downstream Residents via LDMG</li> <li>• DDMG</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 17 - Flood Operations - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Alert	EL 38.45m and rising (preparedness)	• LDMG	• Phone	Describe current situation with dam—What is the event? What is the status? Advise of current storage level		
Lean Forward	• Storage EL 38.65m (gate opening trigger level)	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? Advise of current storage level		
	• Storage EL 38.65m	• D/S Residents	• TV, Radio, Social Media, Disaster Dashboard, Roadside Signs	Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		
	• Storage EL 40.25m		• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Advice EA 8.1	<b>BLACK</b>
	• Storage EL 40.5m		• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Watch and Act EA 8.2	<b>BLACK</b>
Stand Up 1	• Storage EL 40.75m	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Emergency Warning EA 8.3	<b>BLACK</b>

Table 17 (continued) - Flood Operations - IC Communication Plan

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 2	• Storage EL 41.5m	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
	• Storage EL 41.5m	• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Emergency Warning EA 8.3	<b>BLACK</b>
	• Storage EL 41.75m				Advice EA 9.1	<b>PINK</b>
	• Storage EL 42.00m				Watch and Act EA 9.2	<b>PINK</b>
Stand Up 3	• Storage EL 42.25m	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Emergency Warning EA 9.3	<b>BLACK</b> <b>PINK</b>
Stand Up 4	• Storage EL 45.50m	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Emergency Warning EA 9.3	<b>BLACK</b> <b>PINK</b>

Table 17 (continued) - Flood Operations - IC Communication Plan

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 5	• Dam failure extremely likely, OR Storage EL 46.50m	• LDMG DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
	• Storage EL 46.50m	• D/S Residents •	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLD MG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Watch and Act EA 10	BLACK PINK GREEN
	• Dam failure extremely likely					Emergency Warning EA 10.1
Stand Down	• Storage FSL 38.55m and falling	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise of current storage level and any known forecasts		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLD MG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 18 - Flood Operations - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Up 4	Stand Up 5	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• EL 38.45m and rising (0.1m below FSL)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 38.65m (gate opening trigger level)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 40.75m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 41.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 42.25m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 45.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Dam failure extremely likely. OR Storage EL 46.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage FSL 38.55m and falling</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Provide technical advice to DDO and IC on as need's basis</li> <li>• Review surveillance reports and determine if any additional responses are required</li> <li>• Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level, AND</li> <li>• Liaise with DDO and IC to provide updates.</li> <li>• Confirm level activation based on storm surge forecast</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Forward information for EER to IC</li> <li>• Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• DDO</li> <li>• IC</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• DSR</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous notifications of deactivation as required</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 19 - Flood Operations - FODM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Up 4	Stand Up 5	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• EL 38.45m and rising (0.1m below FSL)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 38.65m (gate opening trigger level)</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 40.75m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 41.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 42.25m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage EL 45.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Dam failure extremely likely. OR Storage EL 46.50m</li> </ul>	<ul style="list-style-type: none"> <li>• Storage FSL 38.55m and falling</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Monitor situation</li> <li>• Extract data from available sources</li> <li>• Update flood models</li> <li>• Update and issue flood operations report</li> <li>• Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Forward information for EER to IC</li> <li>• Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• IC</li> <li>• DDO</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level, AND</li> <li>• DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>

All communications to IC should be confirmed by email whenever

### 6. Dam Hazard - Piping: Embankment, Foundation or Abutments

#### 6.1 Overview

The emergency action described in this section relates to a potential dam hazard due to a piping condition through the embankment, foundations, or dam abutment. An early indicator of a piping condition can be an increase in seepage or a new area of seepage. If the seepage water is cloudy or has become cloudy, this may indicate that material is being transported and a pipe is being established.

If a pipe is established and progresses, then a dam failure may result. If a potential pipe is detected early, remedial repairs may be possible in the form of constructing a filter and weighting zone over the pipe exit if safe to do so.

The flood outlines in the appendices are there to provide indicative outlines of the maximum potentially affected area of a dam hazard caused by piping. The use of these flood outlines is prescribed below:

- Use the Sunny Day Failure (SDF) outline when a dam failure is in progress or likely due to piping and no concurrent flooding or downstream releases are occurring or expected to occur, or
- Use the Probable Maximum Flood (PMF) outline when a dam failure is in progress or likely due to piping and concurrent flooding or downstream releases are occurring or expected to occur.

##### 6.1.1 Assessment of circumstances that indicates an increase in the likelihood of piping

An increase in seepage or a new area of seepage is a circumstance that could indicate an increase likelihood of piping. This circumstance is the trigger for the alert status for piping.

Cloudy seepage water is a circumstance that could indicate an increase likelihood of piping. This circumstance is the trigger for the lean forward status for piping.

#### 6.2 Emergency Action Roles

Tables 21 to Table 24 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

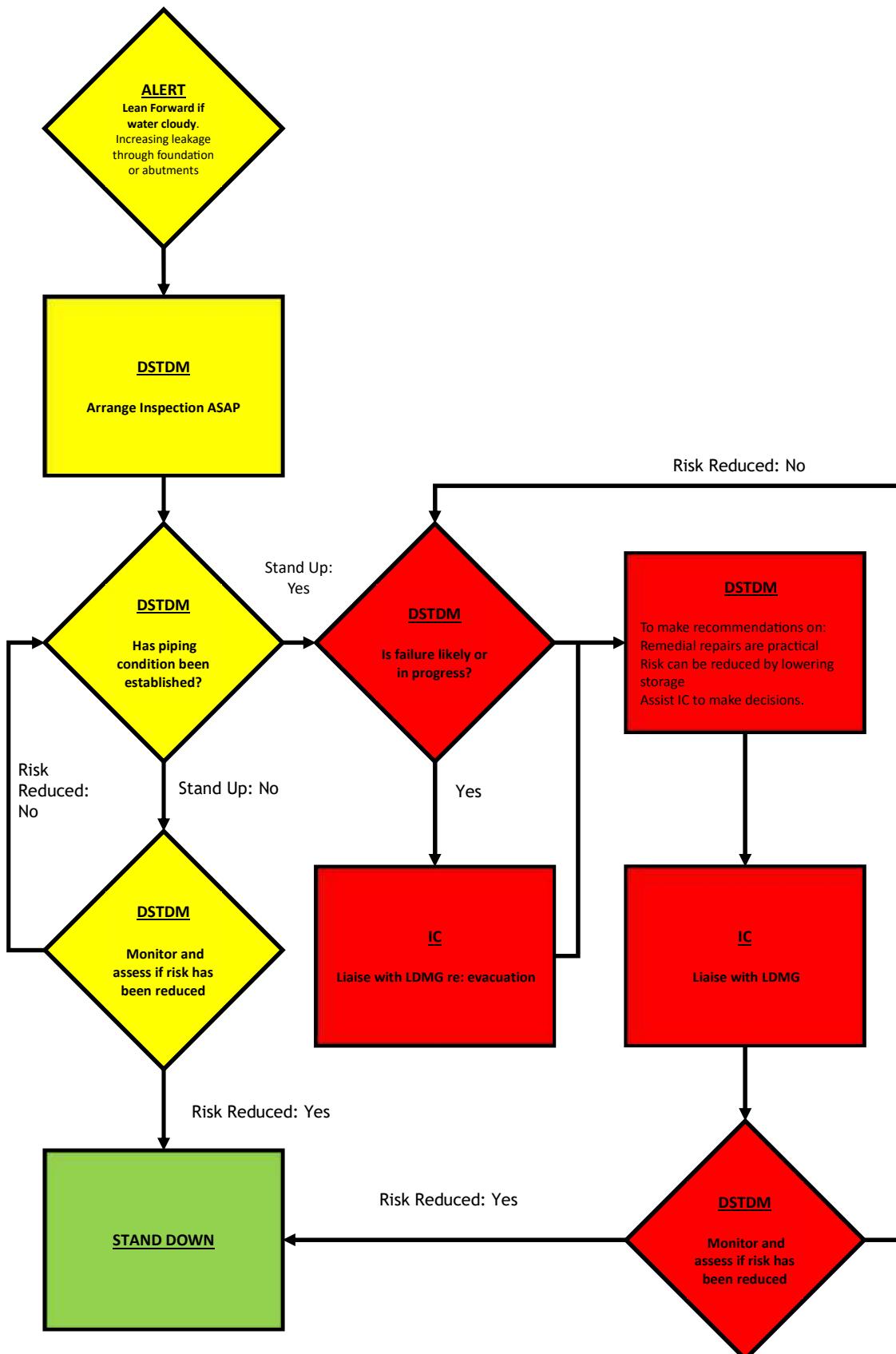


Figure 8 - Piping: Embankment, Foundation or Abutments Flowchart

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 20 - Piping: Embankment, Foundation, or Abutments - DDO Emergency Action

Activation Level		Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger		<ul style="list-style-type: none"> <li>Increasing leakage through embankment, foundations, or abutments with cloudy water</li> </ul>	<ul style="list-style-type: none"> <li>Piping condition has been established</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to piping, and</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	
Actions	<ul style="list-style-type: none"> <li>Monitor flows every 6 hours (or as otherwise instructed by DSTDM) until a decreasing trend is observable, or as directed by the DSTDM</li> <li>Photograph/video piping from a safe point, (if safe to do so) and record using approved forms in Appendix D and send to IC &amp; DSTDM</li> <li>Log Book entry as per SOP-005</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>If a piping condition is established or Dam distress is evident, immediately move to Stand Up</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Support/supervise remedial works as required</li> <li>Close any affected roads if not already closed by others</li> <li>Maintain surveillance of area immediately downstream of dam (if safe to do so) and move on any members of the public</li> <li>Liaise with IC on road closures</li> <li>Lower the storage level if directed</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Vacate the immediate vicinity of the piping condition</li> <li>Film the failure if safe to do so to assist future investigation</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Return to routine activities</li> <li>Logbook entry as per SOP-005</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>IC</li> <li>DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

**Note: If insufficient time to complete all activities, DELEGATE any necessary actions.**

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 21 - Piping: Embankment, Foundation, or Abutments - IC Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>New leakage through embankment, foundations, or abutments</li> </ul>	<ul style="list-style-type: none"> <li>Increasing leakage through embankment, foundations, or abutments with cloudy water</li> </ul>	<ul style="list-style-type: none"> <li>Piping condition has been established</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to piping, and</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that piping risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Liaise with DDO, and DSTDM re: situation</li> <li>Complete Situation Report, unless otherwise directed</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Investigate availability of machinery and materials (if insufficient stockpiles available)</li> <li>Place machinery operators on standby if directed by DSTDM</li> <li>Confirm with LDMG appropriate community information has been disseminated</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Mobilise resources to undertake remedial works if directed by DSTDM</li> <li>Liaise with relevant authorities re: road/bridge closures</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> <li>Cease remedial works and personnel to be moved to a safe location</li> </ul>	<ul style="list-style-type: none"> <li>Deactivate EAP</li> <li>If required, compile EER and deliver to the DSR</li> <li>Complete Situation Report (final)</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>DDO</li> <li>DSTDM</li> <li>LDMG</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Downstream Residents through the LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>

**Note: If insufficient time to complete all activities, DELEGATE any necessary actions.**

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 22 - Piping: Embankment, Foundation, or Abutments - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Alert	• New leakage through an embankment, foundations or abutments	• LDMG	• Phone	Ross River Dam possible piping issue is not confirmed		
Lean Forward	• Increase in leakage through an embankment, foundations or abutments with cloudy water	• LDMG	• Phone	Describe current situation with dam—What is the event? <i>(Unconfirmed piping risk)</i> What is the status? (Unconfirmed leakage—Investigation continues) Advise LDMG of current storage level Advise any issues you are aware of LDMG to standby for further advices		
		• D/S Residents	• TV, Radio, Social Media, Disaster Dashboard, Roadside Signs	Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		
Stand Up 1	• Piping condition has been established	• LDMG	• Phone	Describe current situation with dam—What is the event? <i>(Unconfirmed piping risk)</i> What is the status? (Unconfirmed leakage—Investigation continues) Advise LDMG of current storage level Advise any issues you are aware of LDMG to standby for further advices	Watch and Act EA 10	<b>BLACK</b> <b>PINK</b> <b>GREEN</b>
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 22 (continued) - Piping: Embankment, Foundation, or Abutments - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 2	• Piping condition has been established	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? (Confirmed piping risk) What is the status? (Possible Dam Failure) Advise LDMG of current storage level LDMG to prepare coordinated evacuations		
		• D/S Residents •	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Emergency Warning EA 10.1	BLACK PINK GREEN
Stand Down	• Risk assessment has determined that piping risk has reduced	• LDMG • DDMG (if from Stand Up)	• Phone	Describe current situation with Dam—What is the event? (Dam Safety Risk—piping) What is the status? (Dam hazard Stood Down) Advise risk assessment has determined that piping risk has reduced and EAP has been deactivated		
		• D/S Residents	• TV, Radio, Social Media, Disaster Dashboard, Roadside Signs	Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 23 - Piping: Embankment, Foundation, or Abutments - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>New leakage through embankment, foundations, or abutments</li> </ul>	<ul style="list-style-type: none"> <li>Increasing leakage through embankment, foundations, or abutments with cloudy water</li> </ul>	<ul style="list-style-type: none"> <li>Piping condition has been established</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to piping, and</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that piping risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Arrange an inspection of dam to assess its condition as soon as possible, when safe to do so</li> <li>Determine if piping condition has been established</li> <li>Monitor situation and assess risks</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> <li>Liaise with IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Assess risk and determine if failure likely or in progress</li> <li>Liaise with the IC</li> <li>Determine if remedial repairs are practical (1)</li> <li>Determine if risks can be reduced by lowering storage (2)</li> <li>Make recommendations regarding (1) and (2) to IC.</li> <li>Supervise* remedial repairs (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Liaise with IC and advise on need to recommend evacuations</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>DDO</li> <li>IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>DSR</li> </ul>	<ul style="list-style-type: none"> <li>Downstream Residents through the LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>

### 7. Dam Hazard—Earthquake

#### 7.1 Overview

The emergency action described in this section relates to a potential dam hazard due to an earthquake causing damage to the dam embankment (Main Dam), foundations, or dam abutment. Damage could take the form of cracking or slumping of the embankment, deformation or land slip, or increased seepage.

If damage does occur, then a dam failure may result. If damage is detected early, remedial repairs may be possible depending on the nature of the damage.

Flood outlines are available in the appendices and can be used to provide indicative outlines of the maximum potentially affected area of a dam hazard caused by earthquake. The use of these flood outlines is prescribed below:

- Use the Sunny Day Failure (SDF) when a dam failure is in progress or likely due to earthquake and no concurrent flooding or downstream releases are occurring or expected to occur, or
- Use the Probable Maximum Flood (PMF) when a dam failure is in progress or likely due to earthquake and concurrent flooding or downstream releases are occurring or expected to occur.

**Note:** Definitions for Concurrent Flooding and Downstream Releases are provided in Section 1.3.

#### 7.2 Emergency Actions Roles

The following tables describe the emergency actions and communication for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

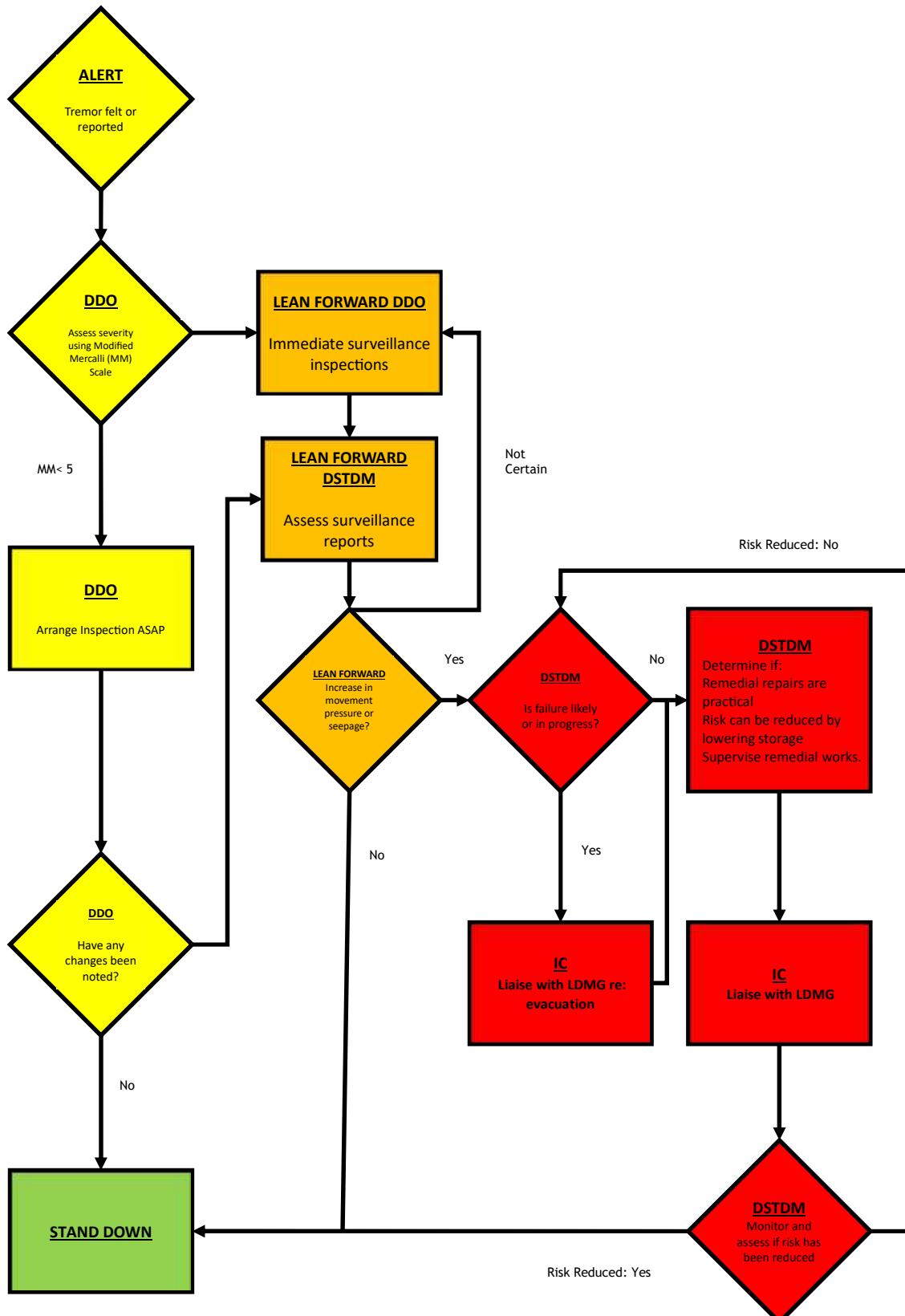


Figure 9 - Earthquake Flowchart

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 24 - Earthquake - DDO Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area and</li> <li>• Intensity less than 5MM</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area and</li> <li>• Intensity greater than or equal to 5MM, OR</li> <li>• Intensity less than 5MM and change detected during surveillance inspection</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area and</li> <li>• A possible failure path has been identified</li> </ul>	<ul style="list-style-type: none"> <li>• Failure in progress or likely due to earthquake and</li> <li>• Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment has determined that failure risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Immediately inspect embankment, spillway structure, abutments in daylight hours (if safe to do so) and report to DSTDM and IC—photograph/video and record using forms in Appendix D and send to IC and DSTDM</li> <li>• Check for leaks, deformation, scour, and concrete damage</li> <li>• Record on inspection sheet</li> <li>• Repeat inspection as directed</li> <li>• Record all communication</li> <li>• Read piezometers and other instruments as per SOPs</li> <li>• Update Log Book as per SOP-005</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• immediately inspect embankment, spillway structure, abutments (if safe to do so) and report to DSTDM and IC—photograph/video and record using forms in Appendix D and send to IC and DSTDM</li> <li>• Repeat the inspection as directed</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Support/supervise remedial work as required</li> <li>• Close any affected roads, if not already closed by others</li> <li>• Maintain surveillance of area immediately downstream of dam (if safe to do so) and move on any members of the public</li> <li>• Record/photograph the damage from a safe point</li> <li>• Vacate the immediate vicinity of the embankment</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Forward information for EER to IC</li> <li>• Update Logbook as per SOP-005</li> <li>• Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• TLDC</li> <li>• DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	Inform previous notifications of deactivation as required
External Notifications	<ul style="list-style-type: none"> <li>• Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 25 - Earthquake - IC Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in area and</li> <li>• Intensity less than 5MM</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in area and</li> <li>• Intensity greater than or equal to 5MM, OR</li> <li>• Intensity less than 5MM and change detected during surveillance inspection</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area and</li> <li>• A possible failure path has been identified</li> </ul>	<ul style="list-style-type: none"> <li>• Failure in progress or likely due to earthquake and</li> <li>• Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment has determined that failure risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Liaise with DDO and DSTDM re: situation</li> <li>• Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Investigate availability of machinery and materials (if insufficient stockpiles available)</li> <li>• Place machinery operators on standby if directed by DSTDM</li> <li>• Complete Situation Report, unless otherwise directed</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Mobilise resources to undertake remedial works if directed by DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Cease remedial works if directed by DSTDM and plant and personnel to be moved to a safe location</li> </ul>	<ul style="list-style-type: none"> <li>• Deactivate EAP</li> <li>• If required, compile EER and deliver to DSR</li> <li>• Complete Situation Report (final)</li> <li>• Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• DDO</li> <li>• LDMG</li> <li>• DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Downstream Residents through LDMG</li> <li>• DDMG</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>• Inform previous notifications of deactivation as required</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 26 - Earthquake - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Alert	• Earthquake reported or felt in the area, AND Intensity less than 5MM	• Not Applicable				
Lean Forward	• Earthquake reported or felt in area and • Intensity greater than or equal to 5MM, OR	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? (Dam Safety Risk—Earthquake damage) What is the status? (Under investigation) Advise of current storage level Stand by for further information		
	• Intensity less than 5MM and change detected during surveillance inspection	• D/S Residents	• TV, Radio, Social Media, Disaster Dashboard, Roadside Signs	Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		
Stand Up 1	• Earthquake reported or felt in the area, AND • A possible failure path has been identified	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? (Dam Safety Risk—Earthquake felt or reported in area) What is the status? (Possible earthquake damage to dam) Advise LDMG of current storage level. Discuss any potential road/bridge closures LDMG to activate emergency response		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Advice EA11 Watch and Act EA11.1	BLACK PINK GREEN

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 26 (continued) - Earthquake - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 2	<ul style="list-style-type: none"> <li>Failure in progress or likely due to earthquake, AND</li> <li>Sufficient water in storage to create a dam failure</li> <li>Dam failure in progress</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	Describe current situation with dam—What is the event? ( <i>Dam Safety Risk—Earthquake damage</i> ) What is the status? (Dam Failure Likely) Advise LDMG of current storage level. Discuss any potential road/bridge closures (if not discussed at Stand Up-1) LDMG to prepare coordinated evacuation	Emergency EA	<span style="color: black;">BLACK</span> <span style="color: pink;">PINK</span> <span style="color: green;">GREEN</span>
				Emergency Alerts (EA) will be sent to residents through the LDMG Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		
Stand Down	<ul style="list-style-type: none"> <li>Risk assessment has determined that piping risk has reduced</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG (if from Stand Up)</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	Describe current situation with dam—What is the event? ( <i>Dam Safety Risk—Earthquake damage</i> ) What is the status? (Dam hazard Stood Down) Advise risk assessment has been determined that failure risk has reduced and that EAP has been deactivated	EA11.2	
				Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 27 - Earthquake - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area, AND</li> <li>• Intensity less than 5MM</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in area and</li> <li>• Intensity greater than or equal to 5MM, OR</li> <li>• Intensity less than 5MM and</li> <li>• change detected during surveillance inspection</li> </ul>	<ul style="list-style-type: none"> <li>• Earthquake reported or felt in the area, AND</li> <li>• A possible failure path has been identified</li> </ul>	<ul style="list-style-type: none"> <li>• Failure in progress or likely due to earthquake, AND</li> <li>• Sufficient water in storage to create a dam failure</li> <li>• Dam failure in progress</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment has determined that piping risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Monitor situation and assess risks</li> <li>• Liaise with DDO and IC</li> <li>• Record all communication</li> </ul> <p><b>NOTE:</b> 'Reported' is defined as an alert received from Geoscience Australia or other source that advises an Earthquake &gt;4.8ML (Richter Scale) has occurred within a 200km radius of the Dam.</p>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Review surveillance inspection of dam and assess its condition as soon as possible</li> <li>• Determine any possible failure paths from reported damage</li> <li>• Liaise with IC on any matters requiring advice</li> </ul>	<ul style="list-style-type: none"> <li>• As per previous activation level and</li> <li>• Arrange an inspection of dam and assess its condition as soon as possible, when safe to do so</li> <li>• Assess risk and determine if failure likely or in progress</li> <li>• Liaise with the IC AND</li> <li>• Determine if remedial repairs are practical (1)</li> <li>• Determine if risks can be reduced by lowering storage (2)</li> <li>• Make recommendations regarding (1) and (2) to IC.</li> <li>• Supervise* remedial repairs (if applicable)</li> <li>• Monitor situation and assess risks</li> </ul>	<ul style="list-style-type: none"> <li>• NOTE: If coming to Stand Up-2 from Alert Lean Forward stage, the following actions apply. If coming from Stand Up-1, no additional actions required.</li> <li>• Arrange an inspection of the and assess its condition as soon as possible, when safe to do so</li> <li>• Assess risk and determine if failure likely or in progress</li> <li>• Liaise with the IC, AND</li> <li>• Determine if remedial repairs are practical (1)</li> <li>• Determine if risks can be reduced by lowering storage (2)</li> <li>• Make recommendations regarding (1) and (2) to IC.</li> <li>• Supervise* remedial repairs (if applicable)</li> <li>• Monitor situation and assess risks</li> </ul>	<ul style="list-style-type: none"> <li>• Forward information for EER to IC</li> <li>• Return to routine activities</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 27 (continued) - Earthquake - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Internal Notifications	<ul style="list-style-type: none"><li>• DDO</li><li>• IC</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• Inform previous notifications of deactivation as required</li></ul>
External Notifications	<ul style="list-style-type: none"><li>• DSR</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• As per previous activation level</li></ul>	<ul style="list-style-type: none"><li>• Inform previous notifications of deactivation as required</li></ul>

**All communications to IC should be confirmed by email whenever practical**

## 8. Dam Hazard—Terrorist Threat/Activity or High Energy Impact

### 8.1 Overview

The emergency action described in this section relates to a potential dam hazard due to a terrorist threat or activity or a high energy impact on the dam such as a plane crash or meteorite.

The vulnerability of Paluma Dam to a terrorist attack and high energy impact is very low.

The flood outlines in the appendices are there to provide indicative outlines of the maximum potentially affected area of a dam hazard caused by terrorist activity or a high energy impact. The use of these flood outlines is prescribed below:

- Use the Sunny Day Failure (SDF) outline when a dam failure is in progress or likely due to earthquake and no concurrent flooding or downstream releases are occurring or expected to occur, or
- Use the Probable Maximum Flood (PMF) outline when a dam failure is in progress or likely due to earthquake and concurrent flooding or downstream releases are occurring or expected to occur.

**Note:** Definitions for Concurrent Flooding and Downstream Releases are provided in Section 1.3.

#### 8.1.1 Assessment of circumstances that indicate an increase in risk due to a terrorist threat/activity or high energy impact

Advice from authorities of a specific risk to water infrastructure is a circumstance that could indicate increased likelihood a terrorist threat. If this were specific enough to name a dam, this circumstance would trigger Stand Up 1 activation level.

### 8.2 Emergency Action Roles

The following tables specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

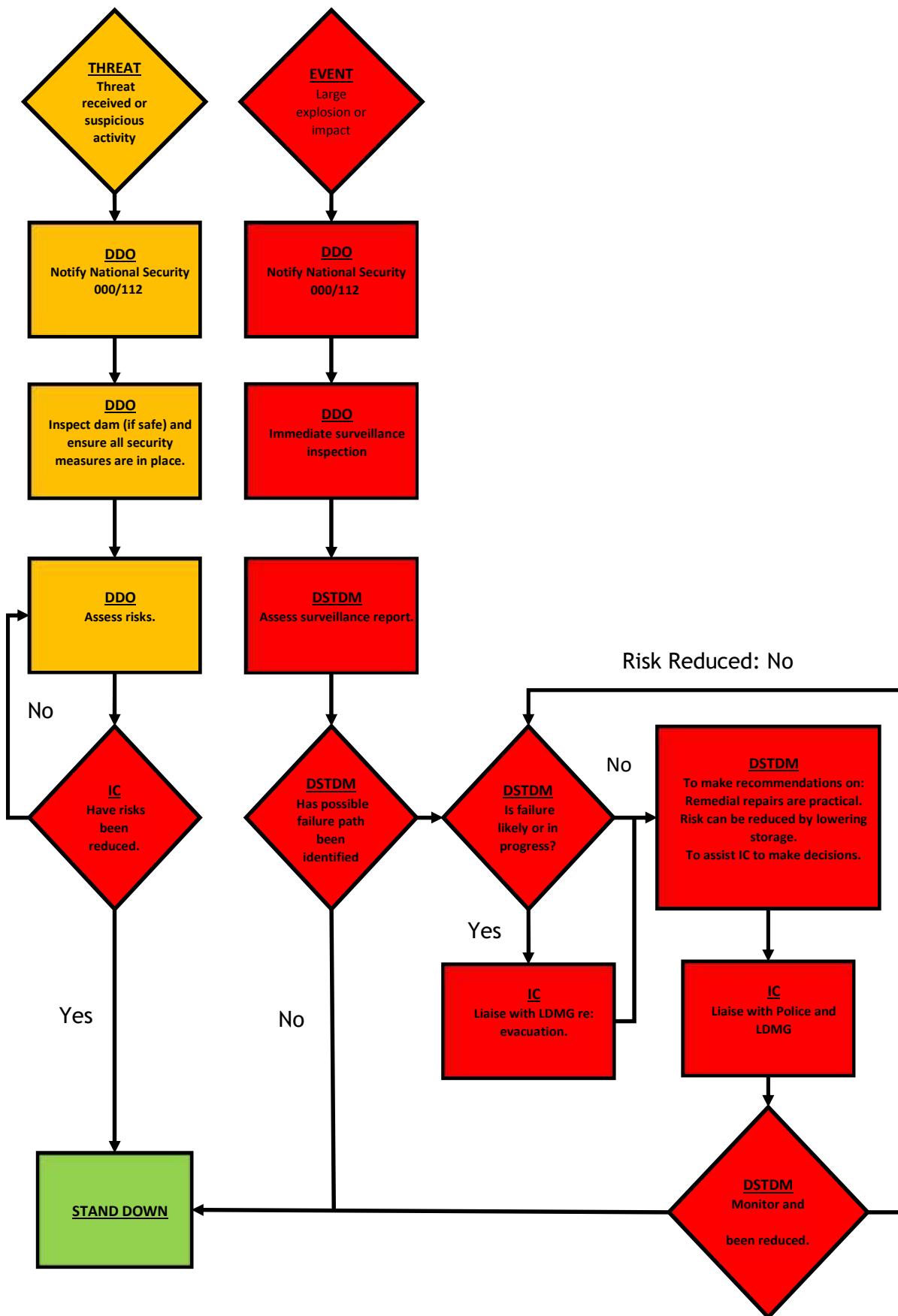


Figure 10 - Terrorist Threat/Activity or High Energy Impact Flowchart

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 28 - Terrorist Threat/Activity or High Energy Impact - DDO Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<b>THREAT</b> <ul style="list-style-type: none"> <li>Possible terrorist activity/suspicious behaviour noticed at the dam</li> <li>Threat received</li> </ul>	<b>EVENT</b> <ul style="list-style-type: none"> <li>Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit)</li> </ul>	<b>RESPONSE</b> <ul style="list-style-type: none"> <li>Failure in progress or likely due to impact or explosion and</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>Risk Assessment has determined that failure risk has reduced.</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li><b>NOTE:</b> If any suspicious behaviour noticed, contact DSTDM for advice. If instructed by DSTDM, or if threat received, complete the following:</li> <li>Notify National Security or 000/112</li> <li>Inspect dam (if safe) and ensure all security measures are in place (locked gates, etc.)</li> <li>Close any affected roads, if not already closed by others</li> <li>Update Logbook as per SOP- 005</li> <li>If Police appoint incident manager, support and follow instructions</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> <li>Photograph/video the damage from a safe point, if safe to do so, and send to TLDC and IC</li> <li>Vacate immediate vicinity of affected area</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Update Logbook as per SOP-005</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>DSTDM</li> <li>IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Notify immediately the National Security Line or 000/112</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>

# Ross River Dam

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Table 29 - Terrorist Threat/Activity or High Energy Impact - IC Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<b>THREAT</b> <ul style="list-style-type: none"> <li>Possible terrorist activity/suspicious behaviour noticed at dam</li> <li>Threat received</li> </ul>	<b>EVENT</b> <ul style="list-style-type: none"> <li>Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit)</li> </ul>	<b>RESPONSE</b> <ul style="list-style-type: none"> <li>Failure in progress or likely due to impact or explosion, AND</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that failure risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Liaise with DDO, DSTDM and LDMG re: situation</li> <li>If Police appoint incident manager support and follow instructions</li> <li>Monitor situation and assess risks</li> <li>Liaise with DDO regarding possible road/bridge closures</li> <li>Confirm with LDMG appropriate community information has been disseminated</li> <li>Monitor situation and assess risks</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Liaise with DDO, DSTDM re: potential for evacuations</li> <li>Mobilise resources to undertake remedial works if directed by DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>Deactivate EAP event</li> <li>If required, compile EER and deliver to DSR</li> <li>Complete Situation Report (final)</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>DDO</li> <li>DSTDM</li> <li>LDMG</li> <li>Media Team</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>DDMG</li> <li>National Security Hotline</li> </ul>	<ul style="list-style-type: none"> <li>Downstream Residents through LDMG</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>

# Ross River Dam

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Table 30 - Terrorist Threat/Activity or High Energy Impact - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Alert	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>					
Lean Forward	<b>THREAT</b> <ul style="list-style-type: none"> <li>Possible terrorist activity/suspicious behaviour noticed at dam</li> <li>Threat received</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> <li>National Security Hotline</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—What is the event? (Dam Safety Risk—Security threat/ impact/explosion, etc.)</p> <p>What is the status? (Received/noted terrorist threat) Discuss any potential road/bridge closures</p> <p>Activate emergency response</p>		
Stand Up 1	<b>EVENT</b> Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit)	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> <li>National Security Hotline</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—What is the event? (Dam Safety Risk—Security threat/ impact/explosion, etc.)</p> <p>What is the status? (Under Investigation)</p> <p>Discuss any potential road/bridge closures (if not discussed at Stand Up-1) LDMG to prepare coordinated evacuation</p>		
		<ul style="list-style-type: none"> <li>D/S Residents</li> </ul>	<ul style="list-style-type: none"> <li>SMS</li> </ul>	<p>Emergency Alerts (EA) will be sent to residents through the LDMG, order of priority based on suburbs at risk.</p> <p>Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP</p> <p><a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.</p>	Watch and Act EA11.1	<b>BLACK</b> <b>PINK</b> <b>GREEN</b>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Activation Level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 2	<b>RESPONSE</b> <ul style="list-style-type: none"> <li>Failure in progress or likely due to impact or explosion and</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> <li>National Security Hotline</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—What is the event? (Dam Safety Risk—Security threat/impact/explosion, etc.)</p> <p>What is the status? (Dam Failure Likely/In Progress) LDMG to initiate evacuations</p>		
		<ul style="list-style-type: none"> <li>D/S Residents</li> </ul>	<ul style="list-style-type: none"> <li>SMS</li> </ul>	<p>Emergency Alerts (EA) will be sent to residents through the LDMG, order of priority based on suburbs at risk.</p> <p>Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP</p> <p><a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.</p>	Emergency Warning EA11.2	<b>BLACK</b> <b>PINK</b> <b>GREEN</b>
Stand Down	<ul style="list-style-type: none"> <li>Risk assessment has determined that piping risk has reduced</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG (if from Stand Up)</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—What is the event? (Dam Safety Risk—Security threat/ impact/ explosion, etc.)</p> <p>What is the status? (Dam hazard Stood Down)</p> <p>Advise that failure risk has been reduced and EAP has been deactivated</p>		
		<ul style="list-style-type: none"> <li>D/S Residents</li> </ul>	<ul style="list-style-type: none"> <li>TV, Radio, Social Media, Disaster Dashboard, Roadside Signs</li> </ul>	<p>Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan</p> <p><a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.</p>		

# Ross River Dam

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Table 31 - Terrorist Threat/Activity or High Energy Impact - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<b>THREAT</b> <ul style="list-style-type: none"> <li>Possible terrorist activity/suspicious behaviour noticed at dam</li> <li>Threat received</li> </ul>	<b>EVENT</b> <ul style="list-style-type: none"> <li>Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit)</li> </ul>	<b>RESPONSE</b> <ul style="list-style-type: none"> <li>Failure in progress or likely due to impact or explosion, AND</li> <li>Sufficient water in storage to create a dam failure</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that failure risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Liaise with IC, DDO</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, and</li> <li>Arrange an inspection of dam and assess its condition as soon as possible, when safe to do so</li> <li>Assess risk and determine if failure is likely or in progress</li> <li>Determine if remedial repairs are practical (1)</li> <li>Determine if risks can be reduced by lowering storage (2)</li> <li>Make recommendations regarding (1) and (2) to IC. IC to make decision</li> <li>Supervise * remedial repairs if applicable</li> <li>Monitor situation and assess risks</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Liaise with the IC and advise on need to recommend evacuations</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>DDO</li> <li>IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>DSR</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

\* Supervision means provide technical oversight to the work. It does not necessarily mean on-site supervision

**All communications to IC should be confirmed by email whenever practical**

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 9. Dam Hazard— Gate Function Issues

#### 9.1 Overview

The emergency action described in this section relates to gate function issues and provides advice on actions for any of the six gate function issues identified. It is not an escalation-based section. Any triggers under this section will activate a Stand-Up condition.

It should be noted that gate function issues are unlikely to result in an emergency event unless they occur simultaneously with another hazard.

**Note:** Definitions for Concurrent Flooding and Downstream Releases are provided in Section 1.3.

#### 9.1.1 Assessment of circumstances indicating increase in likelihood of gates malfunctioning

A flood event or terrorist threat advice could indicate increased likelihood of gate function issues.

#### 9.2 Emergency Action Roles

The following tables specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

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## 2025 Emergency Action Plan (EAP)



Table 32 - Gate Function Issues - DDO Emergency Actions

If above or approaching Fixed Crest Level the following scenarios will activate a STAND UP condition					
Abnormal Gate Operation	Premature Opening or Closing of One or More Gates	Loss of Control of One or All Gates in a Dry Weather Event	Loss of Control of One or All Gates in a Flood Event	Loss of HMI Data Links	Control System Security Breach
<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to confirm HMI control of gates</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to control gates remotely</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to control gates remotely</li></ul>
<b>Actions</b> <ul style="list-style-type: none"><li>• Each day, as described in SOP- 001 Communications and SOP- 016 Setting of Normal Operation Criteria, the DDO shall test data links into the RRD Control System HMI and confirm controls are correctly set.</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• DDO shall immediately attempt to log-on to the RRD Control System (SOP-001) and determine if controls are correctly set (SOP-016). If controls are correctly set, DDO shall attempt to operate gate (or gates) as described in DOMM-001</li><li>• If controls are not correctly set, DDO shall immediately mobilise to RRD site, and shall operate gate (or gates) as described in DOMM-001</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• DDO shall immediately attempt to log-on to RRD Control System (SOP-001) and determine if controls are correctly set (SOP-016). If controls are correctly set, DDO shall attempt to operate gate (or gates) as described in DOMM-001</li><li>• If controls are not correctly set DDO shall immediately mobilise to RRD site, and shall operate gate (or gates) as described in DOMM-001</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• DDO shall immediately attempt to log-on to the RRD Control System (SOP-001) and determine if controls are correctly set (SOP-016). If controls are correctly set, DDO shall attempt to operate gate (or gates) as described in DOMM-001</li><li>• If HMI cannot control gates in automatic mode, DDO shall operate gate (or gates)</li><li>• <b>Note:</b> DDO should already be mobilised and on site at RRD before a Spillway Flow Event occurs.</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• DDO shall mobilise to RRD site and shall operate gates as described in DOMM-001. Although a loss of data links can occur when lake is below FSL, EAP shall still be triggered. In this situation, if gate operation is subsequently required due to increase in level, DDO shall mobilise to the RRD site and shall operate gates as described in DOMM-001</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• DDO shall mobilise to RRD site, shall immediately switch the spillway gate controls to Manual at the Gate HPU Room</li><li>- Local Control Panel and shall operate gates if required at this location as described in DOMM-001</li></ul>
<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• IC</li><li>• DSTDM</li></ul>
<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>	<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>	<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>	<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>	<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>	<b>External Notifications</b> <ul style="list-style-type: none"><li>• None</li></ul>

# Ross River Dam

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Table 33 - Gate Function Issues - IC Emergency Actions

<ul style="list-style-type: none"> <li>If above or approaching Fixed Crest Level the following scenarios will activate a STAND UP condition</li> </ul>					
Abnormal Gate operation	Premature Opening or Closing of One or More Gates	Loss of Control of One or All Gates in a Dry Weather Event	Loss of Control of One or All Gates in a Flood Event	Loss of HMI Data Links	Control System Security Breach
<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Unable to control gates remotely</li> </ul>	<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Controls are not correctly set or unable to rectify</li> </ul>	<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Controls are not correctly set or unable to rectify</li> </ul>	<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Activation trigger</li> <li>• Controls are not correctly set or unable to rectify</li> </ul>	<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Unable to control gates remotely</li> </ul>	<b>Activation trigger</b> <ul style="list-style-type: none"> <li>• Unable to control gates remotely</li> </ul>
<b>Actions</b> <ul style="list-style-type: none"> <li>• Situation Report is required.</li> </ul>	<b>Actions</b> <ul style="list-style-type: none"> <li>• Situation Report is required.</li> </ul>	<b>Actions</b> <ul style="list-style-type: none"> <li>• Situation Report is required.</li> </ul>	<b>Actions</b> <ul style="list-style-type: none"> <li>• Actions</li> <li>• Situation Report is required.</li> </ul>	<b>Actions</b> <ul style="list-style-type: none"> <li>• Situation Report is required.</li> </ul>	<b>Actions</b> <ul style="list-style-type: none"> <li>• Situation Report is required.</li> </ul>
<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• DDO</li> <li>• DSTDM</li> </ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• DDO</li> <li>• DSTDM</li> </ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• DDO</li> <li>• DSTDM</li> </ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• Internal Notifications</li> <li>• DDO</li> <li>• DSTDM</li> </ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• DDO</li> <li>• DSTDM</li> </ul>	<b>Internal Notifications</b> <ul style="list-style-type: none"> <li>• DDO</li> <li>• DSTDM</li> </ul>
<b>External Notifications</b> <ul style="list-style-type: none"> <li>• As Required</li> </ul>	<b>External Notifications</b> <ul style="list-style-type: none"> <li>• As Required</li> </ul>	<b>External Notifications</b> <ul style="list-style-type: none"> <li>• As Required</li> </ul>	<b>External Notifications</b> <ul style="list-style-type: none"> <li>• External Notifications</li> <li>• As Required</li> </ul>	<b>External Notifications</b> <ul style="list-style-type: none"> <li>• As Required</li> </ul>	<b>External Notifications</b> <ul style="list-style-type: none"> <li>• As Required</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 34 - Gate Function Issues - IC Communication Plan

Activation Level	Trigger for Communications	Group to contact	Method	Message Text
Alert	ALERT NOT APPLICABLE			
Lean Forward	LEAN FORWARD NOT APPLICABLE			
Stand Up 1	• Gate function issue	• LDMG	• Phone	Describe current situation with dam—What is the event? ( <i>Dam Safety Risk—?</i> ) What is the status? (Under Investigation)
Stand Down	<ul style="list-style-type: none"> <li>• Risk assessment has determined that failure risk has reduced</li> <li>• Confirmation that all gates are functioning correctly</li> </ul>	• LDMG	• Phone	Describe current situation with dam—What is the event? What is the status? (Dam hazard Stood Down) Advise that failure risk has been reduced and EAP has been deactivated

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 35 - Gate Function Issues - DSTDM Emergency Action

If above or approaching Fixed Crest Level the following scenarios will activate a STAND UP condition					
Abnormal Gate Operation	Premature Opening or Closing of One or More Gates	Loss of Control of One or All Gates in a Dry Weather Event	Loss of Control of One or All Gates in a Flood Event	Loss of HMI Data Links	Control System Security Breach
<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to control gates remotely</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Controls are not correctly set or unable to rectify</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to control gates remotely</li></ul>	<b>Activation trigger</b> <ul style="list-style-type: none"><li>• Unable to control gates remotely</li></ul>
<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>	<b>Actions</b> <ul style="list-style-type: none"><li>• Liaise with IC to confirm if engineering support is required to mobilise to site</li><li>• Liaise with DSTDM on any matters requiring advice</li></ul>
<b>Internal Notifications</b> <ul style="list-style-type: none"><li>• DDO</li><li>• IC</li></ul>					
<b>External Notifications</b> <ul style="list-style-type: none"><li>• DSR</li></ul>					

All communications to IC should be confirmed by email whenever practical

### 10. Dam Hazard— Scouring, Overturning and Sliding of Spillway

#### 10.1 Overview

The emergency action described in this section relates to a potential emergency event due to significant scour under and around the concrete spillway abutment walls, which may cause sliding and overturning of the spillway. If scour and movement is detected early, remedial action may be possible depending on the nature of the damage.

The stability of the dam in its current configuration has been evaluated and the findings summarised as follows<sup>1</sup>:

- Under usual load conditions there is no tension on the dam faces, and sliding stability is satisfactory.
- Under the Usual Load plus Maximum Design Earthquake (MDE) load case the dam stresses remain in compression and sliding stability is satisfactory. The post-earthquake condition is equivalent to the usual load condition.
- Under the Dam Crest Flood (DCF) load condition the stresses in the dam remain compressive and the sliding FOS is satisfactory.
- Under the Probably Maximum Flood (PMF) load condition satisfactory stability is obtained with the cable's working load being in the range of 60% to 65% of their Maximum Breaking Load (MBL). If spillway block 2 is acting as a single monolith then base cracking can occur but does not extend to the line of the foundation drains.

Overturning or sliding of the spillway should not occur under normal conditions. During a large flood event however, it is possible that significant scour may occur at the toe of the stilling basin and in the natural rock behind spillway outer abutment walls. This scour can cause instabilities in the concrete blade walls supporting the dam gates or spillway ogee and must be assessed by the DSTDM.

If the DSTDM forms the view that significant scouring is occurring which will compromise the integrity of the concrete spillway or abutment walls, then the need for evacuations should be considered by disaster management authorities.

The flood outlines in Appendix B are there to provide indicative outlines of the maximum potentially affected area of a dam hazard caused by overturning or sliding of the concrete spillway. The use of these flood outlines is prescribed below:

- Use the Sunny Day Failure (SDF) outline when a dam failure is in progress or likely due to overturning or sliding and no concurrent flooding or downstream releases are occurring or expected to occur, or
- Use the Probable Maximum Flood (PMF) outline when a dam failure is in progress or likely due to overturning or sliding and concurrent flooding or downstream releases are occurring or expected to occur.

**Note:** Definitions for Concurrent Flooding and Downstream Releases are provided in Section 1.3.

**Note:** NQ Water, Ross River Dam Upgrade, Stages 2 to 5, Spillway and Stilling Basin Design Report, September 2005

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### 10.2 Emergency Action Roles

The following tables specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

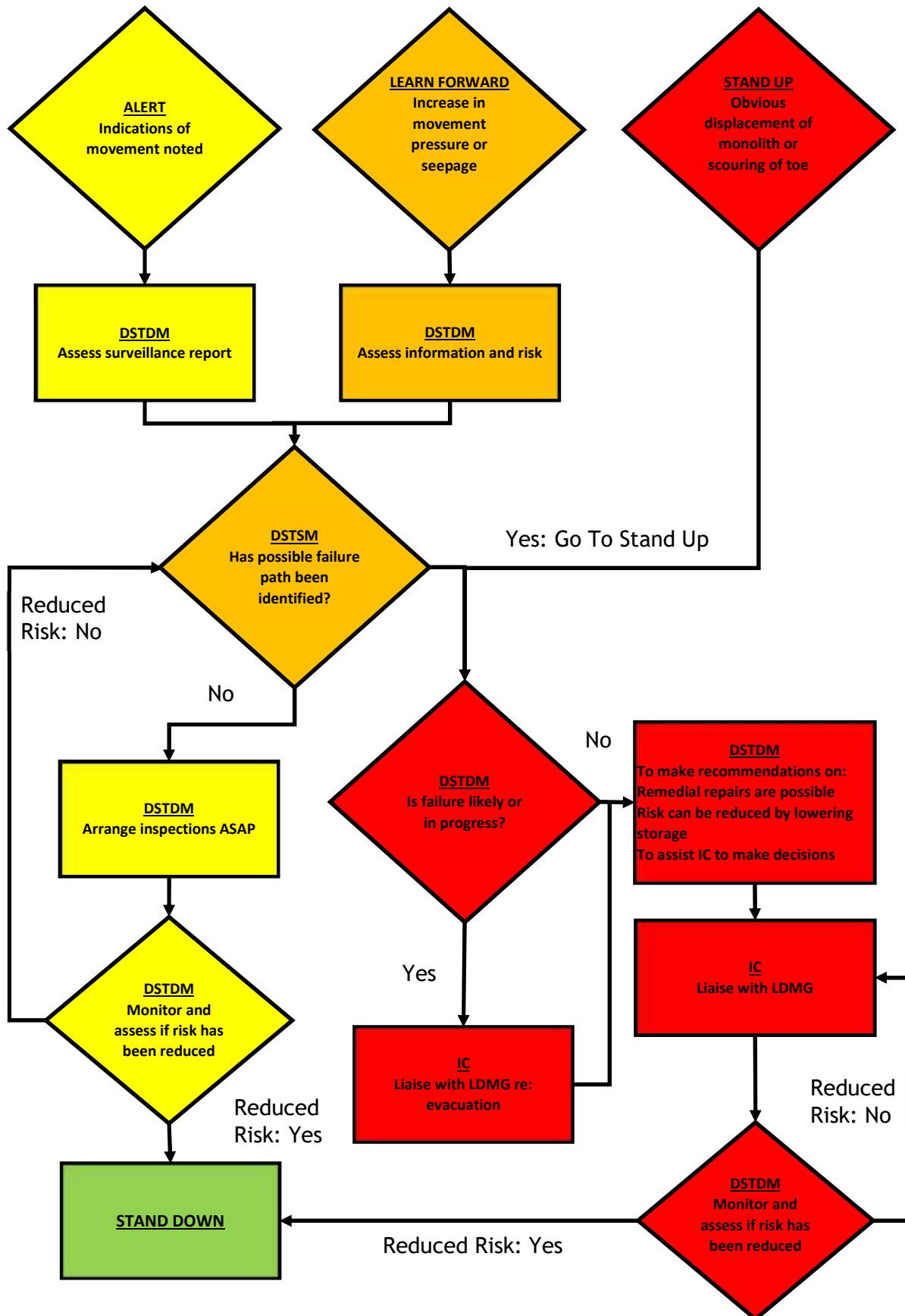


Figure 11 - Overturning or Sliding of Spillway Flowchart

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 36 - Overturning or Sliding of Spillway - DDO Emergency Actions

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Indications of excessive movement of spillway recorded in beyond monitoring. Observed cracking, increased seepage, spilling</li> </ul>	<ul style="list-style-type: none"> <li>Storage at, EL 40.75m, or</li> <li>Increase in movement, pressures or seepage</li> </ul>	<ul style="list-style-type: none"> <li>Obvious displacement of spillway or abutment walls, or</li> <li>Evidence of scouring at or near toe of stilling basin area</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to sliding or over turning</li> </ul>	<ul style="list-style-type: none"> <li>Risk Assessment has determined that sliding or over turning risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Monitor dam every 6 hours (or as otherwise instructed by DSTDM) until a decreasing trend is observable or as directed by the IC</li> <li>Photograph/video the dam from a safe point and record using the approved forms in Appendix D and send to IC &amp; DSTDM</li> <li>Record details in Log Book entry as per SOP-005</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, plus</li> <li>Close road access to dam if not already closed by others</li> <li>Maintain surveillance of area immediately downstream of dam spillway and 'move on' any members of the public</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level, plus</li> <li>Vacate the immediate vicinity of the dam spillway</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Log Book entry as per SOP-005</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>IC</li> <li>DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 37 - Overturning or Sliding of Spillway - IC Emergency Actions

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Indications of excessive movement of spillway recorded in beyond monitoring. Observed cracking, increased seepage, spilling</li> </ul>	<ul style="list-style-type: none"> <li>Storage Level at, EL 40.75m, or</li> <li>Increase in movement, pressures, or seepage</li> </ul>	<ul style="list-style-type: none"> <li>Obvious displacement of spillway or abutment walls or</li> <li>Evidence of scouring at or near toe of stilling basin area</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to sliding or over turning</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that sliding or overturning risk has reduced</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Liaise with DDO, LDMG and DSTDM re: situation</li> <li>Complete Situation Report, unless otherwise directed</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>Liaise with LDMG re: situation</li> <li>Confirm with LDMG appropriate community information has been disseminated</li> <li>Place machinery operators on standby if directed by DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Mobilise resources to undertake remedial works if directed by DSTDM</li> <li>Liaise with DDO and relevant authorities regarding potential road/bridge closures</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Liaise with DDO and DSTDM, re: potential for evacuations</li> </ul>	<ul style="list-style-type: none"> <li>Deactivate EAP</li> <li>If required, compile EER and deliver to the DSR</li> <li>Complete Situation Report (final)</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>DO</li> <li>LDMG</li> <li>DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>Inform previous notifications of deactivation as required</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>D/S Residents through LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 38 - Overturning or Sliding of Spillway - IC Communication Plan

Activation level	Trigger for communications	Group to contact	Method	Message	AWS and EA	Evacuation Zone
Alert	• Indications of excessive movement of spillway recorded in beyond monitoring. Observed cracking, increased seepage, spilling			N/A—Internal Communications only		
Lean Forward	• Increase in movement, pressures, or seepage	• LDMG • DDMG	• Phone	Describe current situation with dam—What is the event? (unconfirmed instability of dam) What is the status? (under investigation) Advise of current storage level Advise of any forecasts you are aware of Confirm EAP has been activated		
		• D/S Residents	TV, Radio, Social Media, Disaster Dashboard, Roadside Signs	Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details		
Stand Up 1	• Obvious displacement of spillway or abutment walls, OR • Evidence of scouring at or near toe of stilling basin area	• LDMG • DDMG	• Phone	Describe current situation with Dam—What is the event? (confirmed instability of dam) What is the status? (prepare for possible evacuations) Advise of current storage level Advise of any forecasts you are aware of Discuss any potential road/bridge closures Prepare for possible evacuations		
		• D/S Residents	• SMS	Emergency Alerts (EA) will be sent to residents through the LDMG, order of priority based on suburbs at risk. Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP <a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.	Watch and Act EA10	BLACK PINK GREEN

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		Group to contact	Method	Message	AWS and EA	Evacuation Zone
Stand Up 2	<ul style="list-style-type: none"> <li>Failure in progress or likely due to sliding or over turning</li> <li>Dam failure in progress</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—What is the event? (<i>possible dam failure</i>)</p> <p>What is the status? (prepare coordinated evacuation) Advise of current storage level</p> <p>Advise of any forecasts you are aware of</p>		
				<p>Emergency Alerts (EA) will be sent to residents through the LDMG, order of priority based on suburbs at risk.</p> <p>Messages will be in accordance with TLDMG Community Information and Warnings Sub Plan or appendix A3, A4, A5 of this EAP</p> <p><a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details.</p>		
Stand Down	<ul style="list-style-type: none"> <li>Risk assessment has determined that sliding or overturning risk has reduced</li> </ul>	<ul style="list-style-type: none"> <li>LDMG</li> <li>DDMG</li> </ul>	<ul style="list-style-type: none"> <li>Phone</li> </ul>	<p>Describe current situation with dam—</p> <p>What is the event? What is the status?</p> <p>Advise of current storage level Advise EAP has been deactivated</p>		
				<p>Community messaging will be in accordance with TLDMG Community Information and Warnings Sub Plan and the TLDMG Community Education and Marketing Sub Plan</p> <p><a href="https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management">https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management</a> for more details</p>		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 39 - Overturning or Sliding of Spillway - DSTDM Emergency Action

Activation Level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation Trigger	<ul style="list-style-type: none"> <li>Indications of excessive movement of spillway recorded in beyond monitoring. Observed cracking, increased seepage, spilling</li> </ul>	<ul style="list-style-type: none"> <li>Storage EL 40.73m, OR</li> <li>Increase in movement, pressures, or seepage</li> </ul>	<ul style="list-style-type: none"> <li>Obvious displacement of one or more spillway, OR</li> <li>Evidence of scouring at or near toe of stilling basin area</li> </ul>	<ul style="list-style-type: none"> <li>Failure in progress or likely due to sliding or over turning</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment has determined that sliding or overturning</li> </ul>
Actions	<ul style="list-style-type: none"> <li>Review surveillance inspection of the dam and assess its condition as soon as possible</li> <li>Determine if there are possible failure paths from reported damage</li> <li>Arrange an inspection of the dam and assess its condition as soon as possible, when safe to do so</li> <li>Monitor situation and assess risks</li> <li>Record all communication</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Liaise with IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Assess risk and determine if failure likely or in progress</li> <li>Liaise with the IC</li> <li>Determine if remedial repairs are practical (1)</li> <li>Determine if risks can be reduced by lowering storage (2)</li> <li>Make recommendations regarding (1) and (2) to IC.</li> <li>Supervise* remedial repairs (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level and</li> <li>Liaise with the IC and advise on need to recommend evacuations</li> </ul>	<ul style="list-style-type: none"> <li>Forward information for EER to IC</li> <li>Return to routine activities</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>DDO</li> <li>IC</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>DSR</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>	<ul style="list-style-type: none"> <li>As per previous activation level</li> </ul>

\* Supervision means provide technical oversight to the work. It does not necessarily mean on-site supervision.

**All communications to IC should be confirmed by email whenever practical**

### 11. Other Emergency Situation— Communications Failure

#### 11.1 Overview

The emergency action described in this section relates to either:

- An emergency situation where all means of communication at the Dam site have been lost.
- An emergency situation where all means of communication with the Local area have been lost.

This section specifies actions and provides guidance for the two situations.

#### 11.2 Emergency Actions

Due to the large number of different possible scenarios, the table below only covers the most common or likely conditions.

##### 11.2.1 Activation Triggers

Table 40 - Communications Failure Emergency Activation Trigger Summary

Comms Failure - Site	<ul style="list-style-type: none"><li>• Unable to communicate to or from Dam site (usually affects DDO)</li></ul>
Comms Failure - Local area	<ul style="list-style-type: none"><li>• Unable to communicate to or from Local Area (likely to affect IC, DSTDM and FODM)</li></ul>

##### 11.2.2 Assessment of circumstances indicating likelihood of communications failure escalating activation level of a current Dam Hazard

The IC will escalate to the FODM any local intelligence on conditions that could increase the probability of a significant communications failure.

The FODM will determine whether it is reasonably likely that there will be a significant communications failure within the subsequent 24 hours and assess the likely effect on current Dam Hazards based on the weather forecast and data. If required, the IC will escalate the activation level of any current Dam Hazards based on the FODM advice.

#### 11.3 Emergency Action Roles

The following tables specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM)

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 41 - Communications Failure - DDO Emergency Action

Activation Level	Comms Failure Dam Site	Comms Failure Local
Activation Trigger	<ul style="list-style-type: none"> <li>• Unable to communicate to Local Area including IC</li> </ul>	<ul style="list-style-type: none"> <li>• Unable to communicate with IC, DSTDM or FODM</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Continue tasks in accordance with any other current Emergency Action</li> </ul>	<ul style="list-style-type: none"> <li>• Continue tasks in accordance with any other current Emergency Action</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• IC</li> </ul>	<ul style="list-style-type: none"> <li>• IC</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• As required</li> </ul>	<ul style="list-style-type: none"> <li>• As required</li> </ul>

# Ross River Dam

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Table 42 - Communications Failure - IC Emergency Action

Activation Level	Comms Failure Dam Site	Comms Failure Local Area
Activation Trigger	<ul style="list-style-type: none"> <li>• Unable to communicate to Dam site</li> </ul>	<ul style="list-style-type: none"> <li>• Unable to communicate to Local Area i</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Issue incident Alert</li> <li>• Every hour attempt communications by any and all means noting the following: <ul style="list-style-type: none"> <li>– Mobile phone-try texting instead of voice, much higher probability of success</li> <li>– Satellite Phone-needs to access open sky unless external antenna fitted</li> <li>– Social Media-e.g. Facebook (Internet may be available via landline)</li> </ul> </li> <li>• Record all communication and attempts</li> <li>• Liaise with DSTDM</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>	<ul style="list-style-type: none"> <li>• Issue incident Alert</li> <li>• Every hour attempt communications by any and all means noting the following: <ul style="list-style-type: none"> <li>– Mobile phone-try texting instead of voice, much higher probability of success</li> <li>– Satellite Phone-needs to access open sky unless external antenna fitted</li> <li>– Social Media-e.g. Facebook (Internet may be available via landline)</li> </ul> </li> <li>• Record all communication and attempts</li> <li>•</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• DSTDM</li> <li>• LDMG</li> </ul>	<ul style="list-style-type: none"> <li>• DDO (if available)</li> <li>• DSTDM</li> <li>• LDMG (if available)</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• DDMG</li> </ul>	<ul style="list-style-type: none"> <li>• DDMG (if available)</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 43 - Communications Failure - IC Communication Plan

Activation Level	Trigger for communications	Group to contact	Method	Message text
Comms Failure Site	<ul style="list-style-type: none"> <li>• Unable to communicate to or from Dam site, AND</li> <li>• DDO is at Dam site</li> </ul>	<ul style="list-style-type: none"> <li>• DSTDM</li> <li>• LDMG</li> <li>• DDMG</li> </ul>	• Phone	Describe current situation with dam communications. What is the status - estimated time to restore communications?
Comms Failure Local Area	<ul style="list-style-type: none"> <li>• Unable to communicate to or from Local Area</li> </ul>	<ul style="list-style-type: none"> <li>• DDO (if available)</li> <li>• DSTDM</li> <li>• LDMG (if available)</li> <li>• DDMG (if available)</li> </ul>	• Phone	Describe current situation with dam communications. What is the status - estimated time to restore communications?

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 44 - Communications Failure - DSTDM Emergency Action

Activation Level	Comms Failure Site	Comms Failure Local Area
Activation Trigger	<ul style="list-style-type: none"> <li>• Unable to communicate to Dam site</li> </ul>	<ul style="list-style-type: none"> <li>• Unable to communicate to Local Area including IC</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Provide technical advice to IC on as needs basis</li> <li>• Record all communication</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>	<ul style="list-style-type: none"> <li>• Provide technical advice to IC on as needs basis</li> <li>• Record all communication</li> <li>• Assume that the DDO is assisting IC</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• IC</li> <li>• GM WS</li> </ul>	<ul style="list-style-type: none"> <li>• IC</li> <li>• DDO (if available)</li> <li>• GM WS</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• DSR (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>• DSR Regulator (if applicable)</li> </ul>

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table 45 - Communications Failure - FODM Emergency Action

Activation Level	Comms Failure Site	Comms Failure Local Area
Activation Trigger	<ul style="list-style-type: none"> <li>• Unable to communicate to Dam site,</li> </ul>	<ul style="list-style-type: none"> <li>• Unable to communicate to Local Area including</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Liaise with IC</li> <li>• Record all communication</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>	<ul style="list-style-type: none"> <li>• Liaise with IC</li> <li>• Record all communication</li> <li>• Assume that the DDO is assisting IC</li> <li>• As much as is practicable continue other tasks associated with the role in accordance with any other current Emergency Action</li> </ul>
Internal Notifications	<ul style="list-style-type: none"> <li>• IC</li> <li>• DSTDM</li> </ul>	<ul style="list-style-type: none"> <li>• IC</li> <li>• DDO (if available)</li> <li>• DSTDM</li> </ul>
External Notifications	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

Appendix A1 and Appendix A2 have been redacted

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix A3 Downstream Residents Notification

#### Notification

The LDMG on behalf of TCC will warn Downstream (D/S) residents who may be harmed or whose property may be harmed by a dam hazard as per the communication instructions in Sections 5 to 11 in accordance with the Emergency Alert Polygon in Appendix A5.

Refer to Townsville City Council Community Information and Warnings Sub Plan

<https://www.townsville.qld.gov.au/community-support/community-safety/disaster-management/>

#### Zones

TCC/LDMG will warn D/S residents in accordance with the zones identified in the inundation zoning maps in Appendix B.

#### Priority

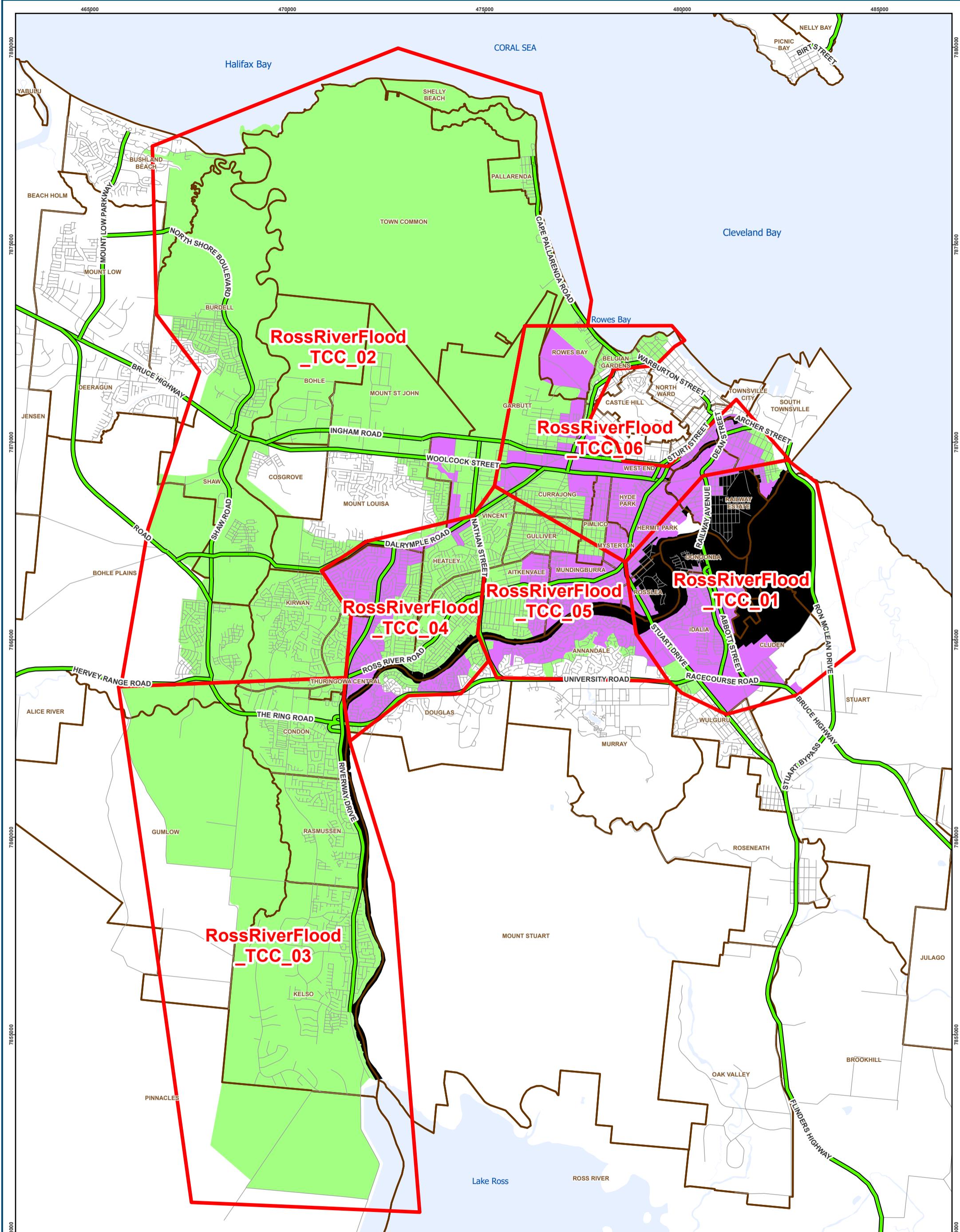
TCC will prioritise warnings to D/S residents in accordance with emergency alert protocols.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix A4     Emergency Alert Polygons



#### LEGEND

Evacuation Zones	Evacuation Alert Polygon
Black (570 - 960 m3/s)	Suburbs
Pink (960 - 2100 m3/s)	Major Evacuation Routes
Green Zone (Breach)	Roads

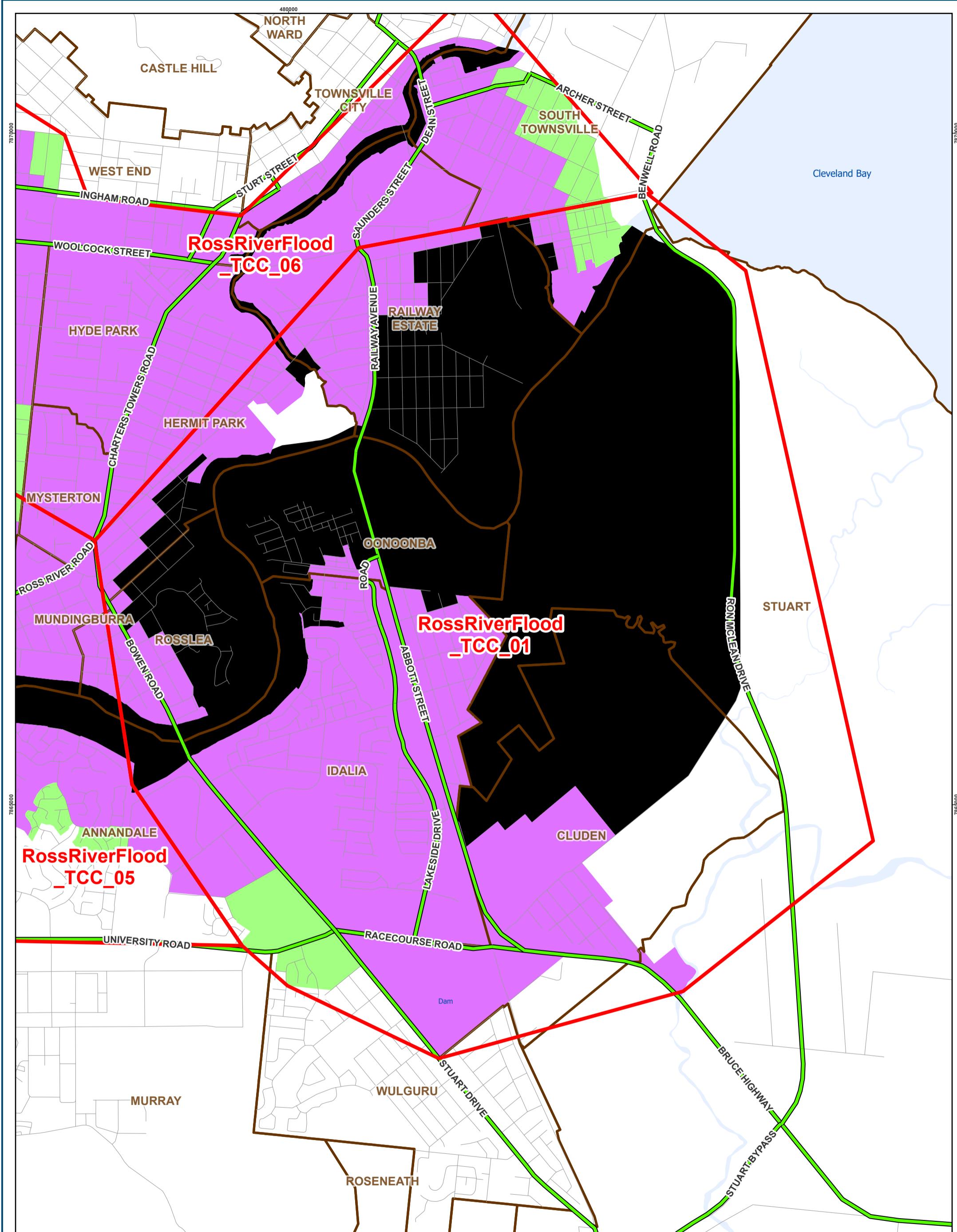
#### TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES

GDA2020 MGA Zone 55  
Scale: 1:85,000 @A4  
Spatial Services Unit  
Date: 17/07/2025

0 0.5 1 2 3 4 5 Kilometres

**DISCLAIMER**  
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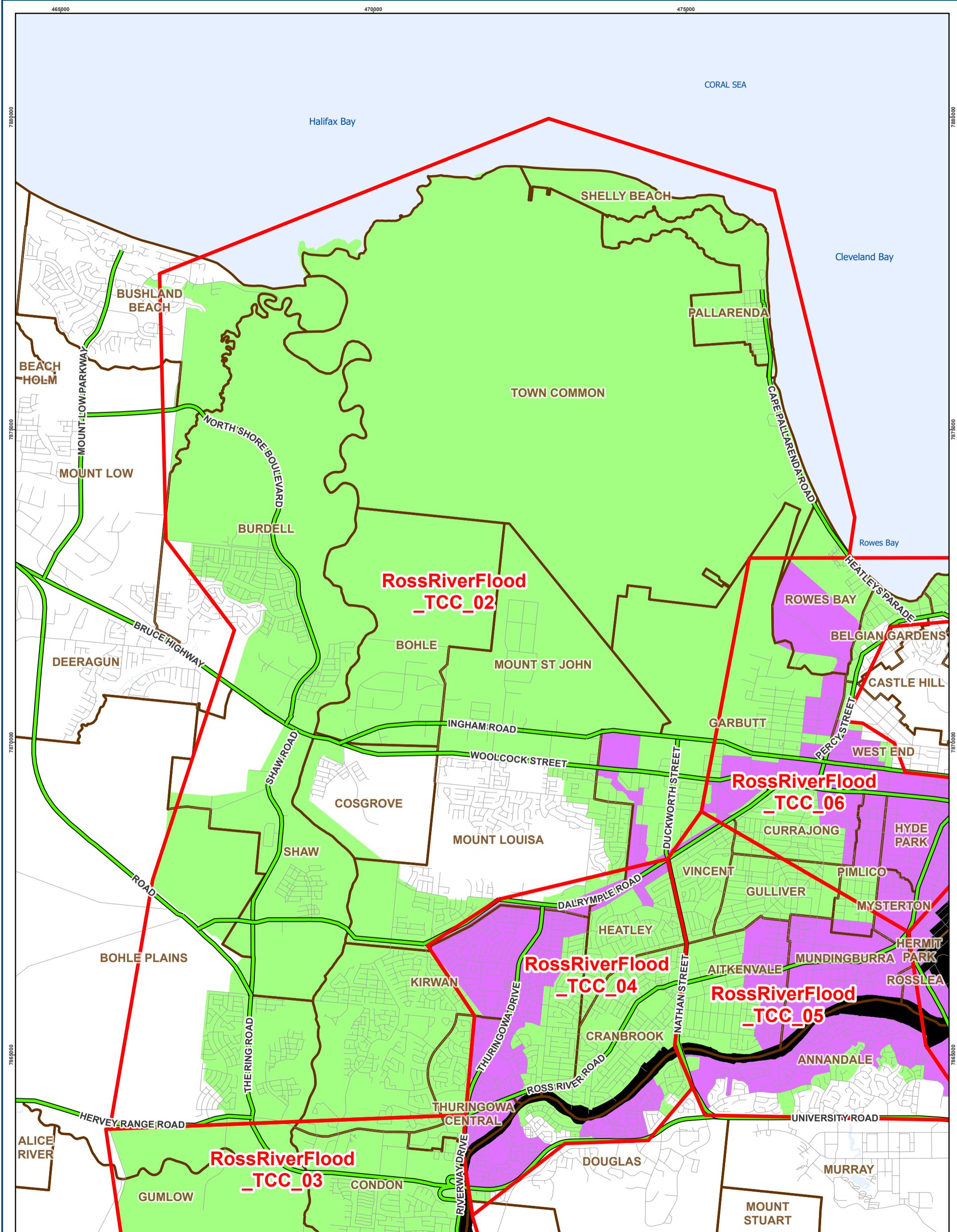
# TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES

## RossRiverFlood\_TCC\_01

GDA2020 MGA Zone 55  
Scale: 1:25,000 @A4

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This is not a legal document and is published for information





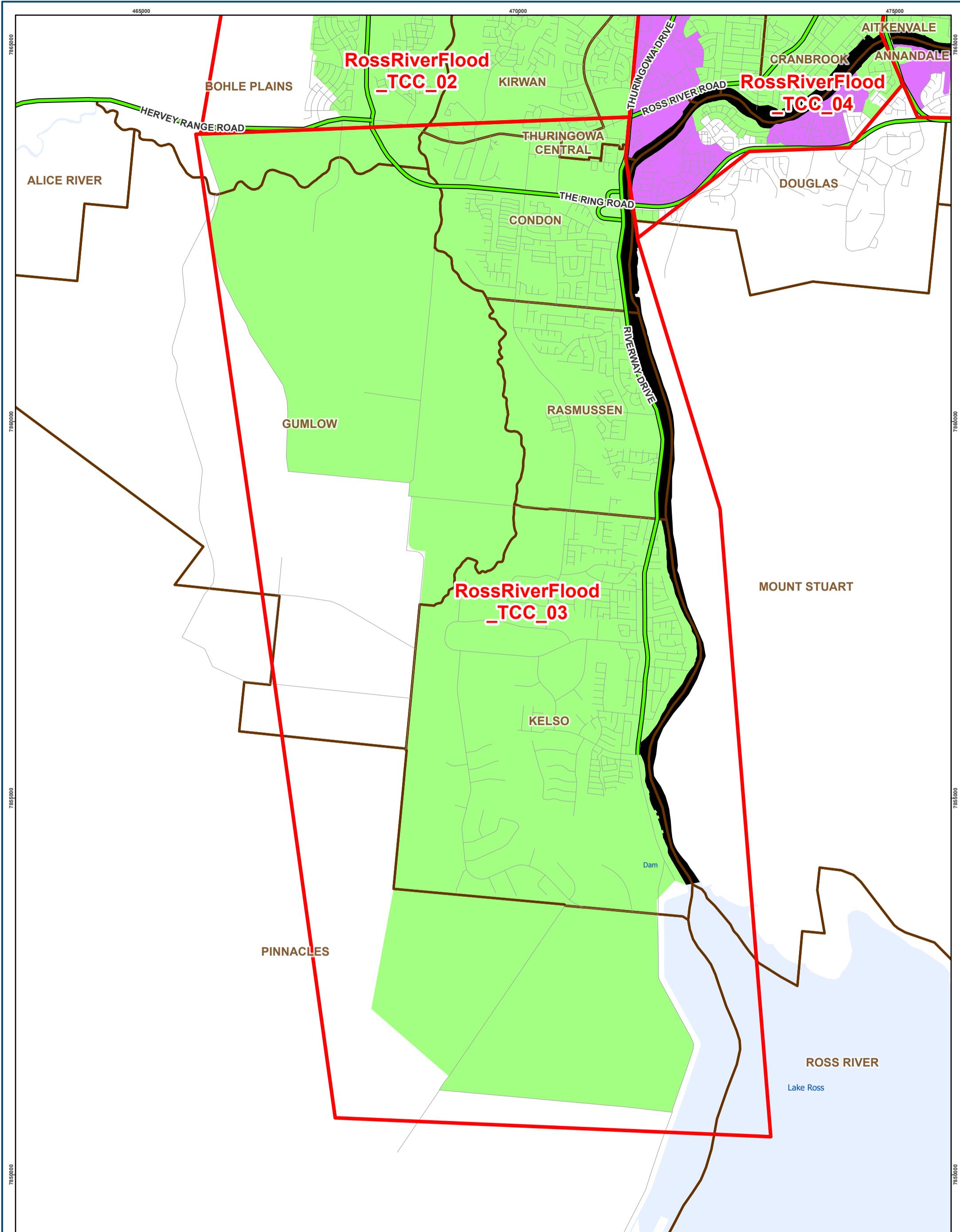
# TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES

## RossRiverFlood\_TCC\_02

GDA2020 MGA Zone 55  
Scale: 1:53,500 @A4

**DISCLAIMER**  
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#### LEGEND

- Black (570 - 960 m<sup>3</sup>/s)
- Pink (960 - 2100 m<sup>3</sup>/s)
- Green Zone (Breach)
- Evacuation Alert Polygon
- Suburbs
- Major Evacuation Routes
- Roads

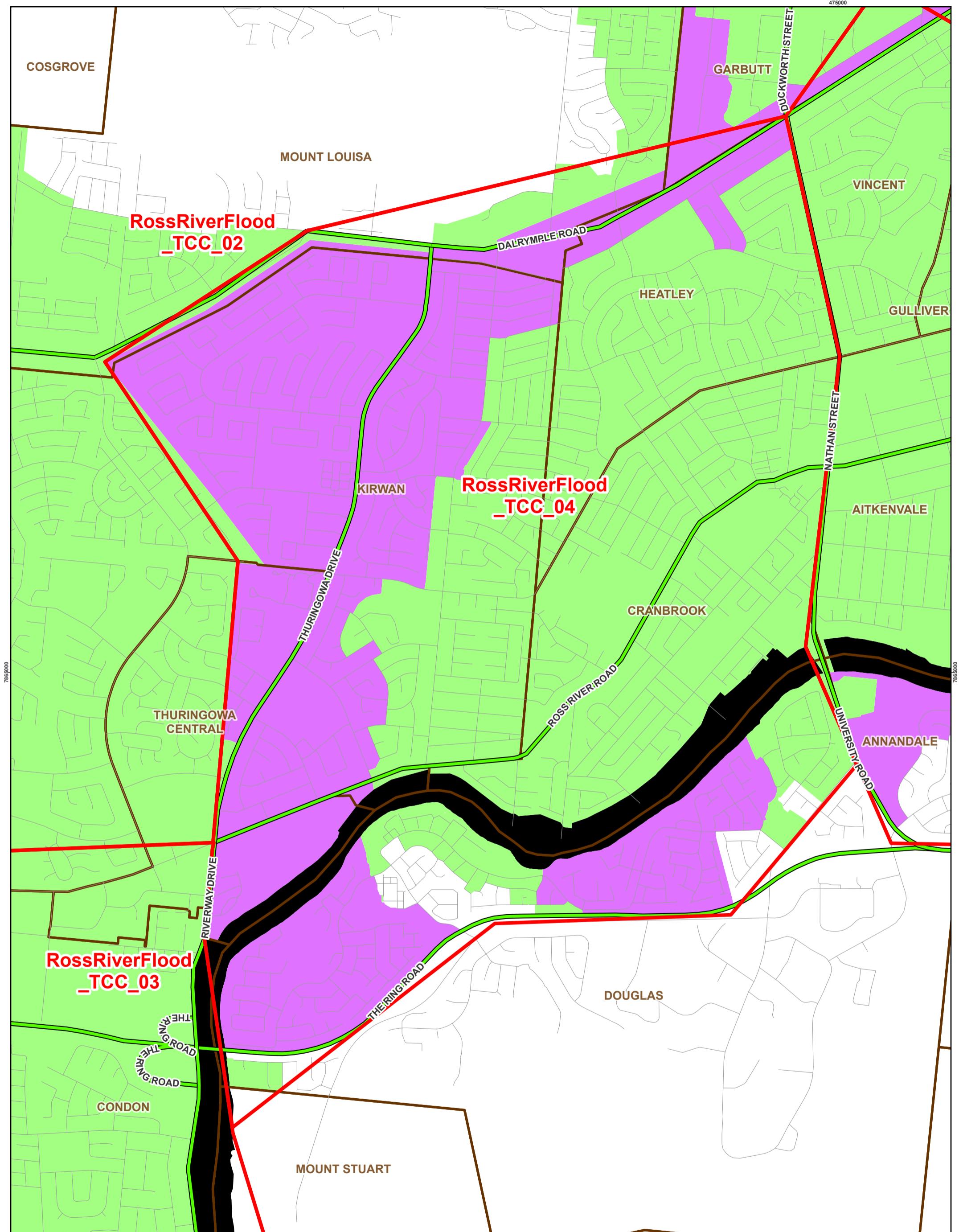
#### TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES RossRiverFlood\_TCC\_03

GDA2020 MGA Zone 55  
Scale: 1:44,500 @A4  
Spatial Services Unit  
Date: 17/07/2025

0 250 500 1,000 1,500  
Metres

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#### LEGEND

- Black (570 - 960 m<sup>3</sup>/s)
- Pink (960 - 2100 m<sup>3</sup>/s)
- Green Zone (Breach)
- Evacuation Alert Polygon
- Suburbs
- Major Evacuation Routes
- Roads

#### TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES RossRiverFlood\_TCC\_04

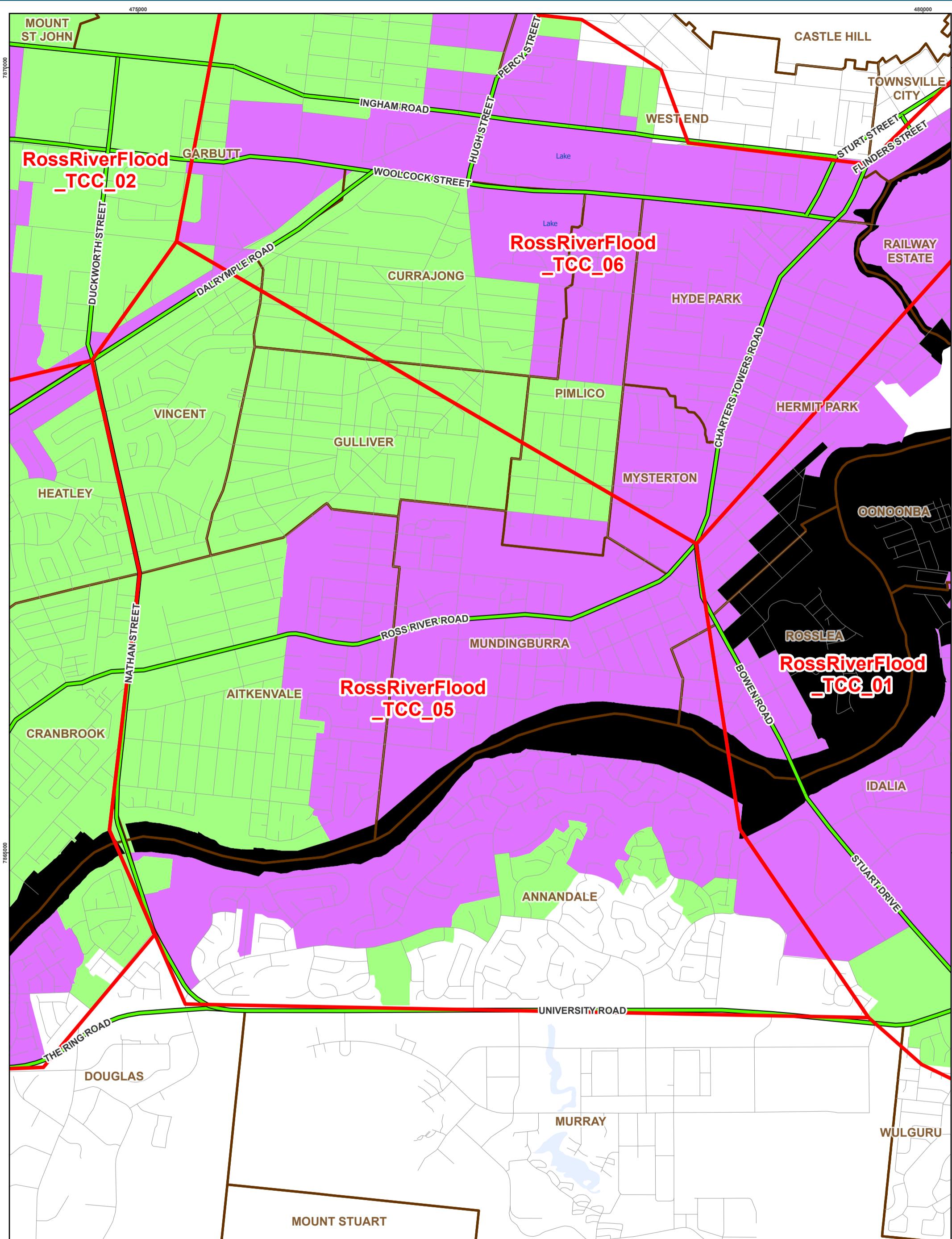
GDA2020 MGA Zone 55  
Scale: 1:19,000 @A4  
Spatial Services Unit  
Date: 17/07/2025

0 250 500  
Metres

**DISCLAIMER**  
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#### LEGEND

Black (570 - 960 m3/s)	Evacuation Alert Polygon
Pink (960 - 2100 m3/s)	Suburbs
Green Zone (Breach)	Major Evacuation Routes
Roads	

#### TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES RossRiverFlood\_TCC\_05

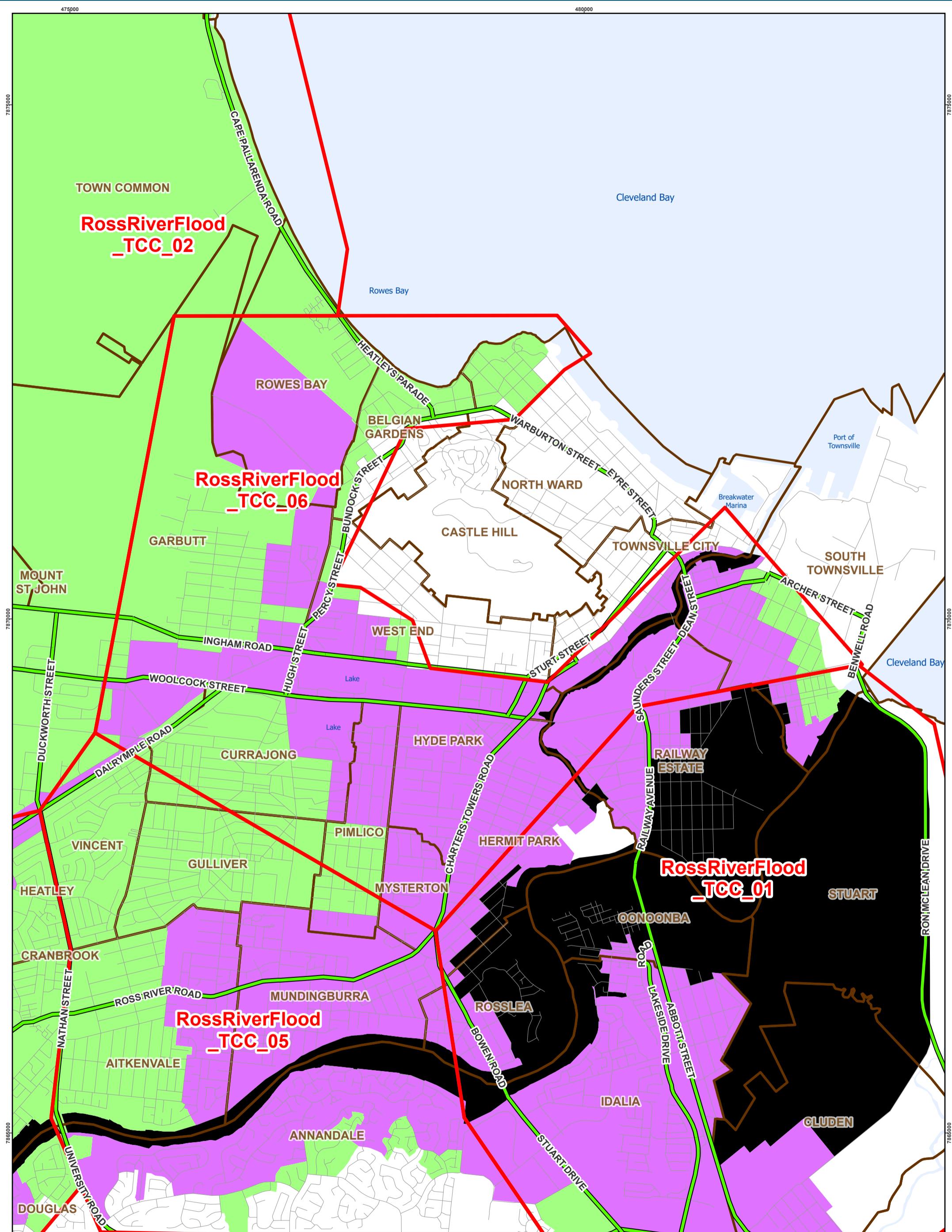
GDA2020 MGA Zone 55  
Scale: 1:21,500 @A4  
N  
Spatial Services Unit  
Date: 17/07/2025

0 250 500  
Metres

**DISCLAIMER**  
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#### LEGEND

- Black (570 - 960 m3/s)
- Pink (960 - 2100 m3/s)
- Green Zone (Breach)
- Evacuation Alert Polygon
- Suburbs
- Major Evacuation Routes
- Roads

#### TOWNSVILLE ROSS RIVER FLOOD EVACUATION ZONES RossRiverFlood\_TCC\_06

GDA2020 MGA Zone 55  
Scale: 1:32,500 @A4  
Spatial Services Unit  
Date: 17/07/2025

0 250 500 1,000  
Metres

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### Appendix A5 Dam Failure Emergency Alert Requests & Messages

#### Queensland Emergency Alert Request Guidelines

The LDMG is responsible to send out Dam Failure Emergency Alert Requests.

If communications are lost with the LDMG, IC and DSTDM, the DDO would be required to carry out the following:

An Emergency Alert Request form should be completed, if required (see Sections 5 to 11 for actions), and sent to the SDCC Watch Desk in order to activate the Ross River Dam Emergency Polygon/s.

#### Instructions:

- This form is not to be used UNLESS an incident has triggered an emergency event, and all external communication has been lost between the DDO, IC & LDMG.
- Print off the following Queensland Emergency Alert Request form.
- Telephone the [REDACTED] and tell them your intention to use the Emergency Alert for a dam failure for Ross River Dam.
- Polygons for this dam is stored in the Disaster Management Portal in the Emergency Alert Area. Request the SDCC operative to locate the polygon: [REDACTED]
- Give them your phone number, confirm their name, and end the call after advising the form will be sent shortly.
- Fill in the form and send to [REDACTED]
- Phone back to check the message has been sent and ask for an email to confirm.
- Send an internal Incident Alert to advise of completion.
- Use the following messaging text to complete the emergency alert request (next page):

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		EMERGENCY ALERT REQUEST			
		Location: Ross River Dam (Lot 230 Parish of Ross, County Elphinstone, City of Townsville)		Date: / /	Time: : hrs
Requesting Officer:		Telephone:			
Agency/Position:		Email:			
Event Type	<input type="checkbox"/> Cyclone	<input type="checkbox"/> Storm Surge	<input type="checkbox"/> Flash Flood	<input checked="" type="checkbox"/> Flood	
	<input type="checkbox"/> Bushfire	<input type="checkbox"/> Fire Incident	<input type="checkbox"/> Smoke or Toxic Plume	<input type="checkbox"/> Chemical Spill	
<input type="checkbox"/> Tsunami (NOTE Tsunami EA campaigns will be sent as Location Based Text Message ONLY)					
<input type="checkbox"/> Other (please specify):					
Message Severity	<input checked="" type="checkbox"/> Emergency Warning (NOTE activates the SEWS)		<input type="checkbox"/> Watch & Act	<input type="checkbox"/> Advice	
Campaign Mode	<input type="checkbox"/> Voice		<input type="checkbox"/> SMS – Location Based	<input type="checkbox"/> SMS – Service Address Based	
LDMG Advised	<input type="checkbox"/> YES <input type="checkbox"/> NO		DDMG Advised	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Threat Direction Required?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Note: Can only be used for Emergency Warnings. Indicate direction on map		
<b>STEP 1.</b> EA Polygon Area: <input checked="" type="checkbox"/> Map attached			<b>STEP 2.</b> File		
<b>STEP 3.</b> Spatial format: (Indicate the format used)			<b>STEP 4.</b> Messaging/patial data, is it supplied via		
<input type="checkbox"/> KML *.kml (preferred format as per Spatial guidelines) <input type="checkbox"/> ESRI *.dbf, *.prj, *.shp, *.shx <input type="checkbox"/> GML *.gml, *.xsd <input checked="" type="checkbox"/> MapInfo TAB *.dat, *.id, *.map, *.tab <input type="checkbox"/> MapInfo Mid/Mif *.MIDI Sequence, *.mif <input type="checkbox"/> OTHER(insert)			<input type="checkbox"/> DMPOLY - specify filenames below <input type="checkbox"/> FTP - specify filenames below <input type="checkbox"/> Email <input type="checkbox"/> Other (please specify)		
Type (please use capitals for clarity) / Handwrite Voice message (Ideally message should be less than 450 characters).					
<p>ROSS RIVER DAM IS FAILING - PROTECT YOURSELF</p> <p>Residents downstream of the dam are to leave to protect life and leave immediately. Failure of the dam will result in extremely dangerous flooding downstream, including XXX and YYY areas downstream. Do not delay.</p> <p>Leave now, XXX and YYY are at safe locations.</p>					
Type or handwrite SMS below (maximum of 160 characters including spaces)					
<p>IMMINENT FAILURE ROSS RIVER DAM TAKE ACTION – PROTECT LIFE – LEAVE NOW. XXX and YYY of TOWNSVILLE ARE AT RISK. INFO ON ABC RADIO, XXX and YYY ARE SAFE.</p>					
SEND TO	TO CONFIRM				
FOR USE BY SDCC					
Requesting Officer:	Signature		/ /20	<input type="checkbox"/> Manual Transmission <input type="checkbox"/> EMS Transmission EA Campaign No. _____ EMS Report ID: _____	
EA User Name:	Signature		/ /20		
Authorising Officer Name:	Signature		/ /20		
<i>EA Manual and the Emergency Alert Request Form Template are available at: <a href="http://www.disaster.qld.gov.au">www.disaster.qld.gov.au</a></i>					

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### DO NOT SEND THIS PAGE

#### GUIDE TO COMPLETE STEPS 1 – 4

<b>STEP 1.</b>	EA Polygon Area (e.g. detailed description and location reference to allow positive identification of message area, including street names with cross street, areas of interest such as parks, rivers, dams, coastal areas) it is preferable to attach a map identifying the message area. If a Threat Direction has been requested, please clearly indicate it on the map.
<b>STEP 2.</b>	Tick applicable box and note the file name.
<b>STEP 3.</b>	<p>Voice Message: type or handwritten the required message. As the message will be translated by a text-to-speech process it is important that words are not unintelligible when translated e.g. "qld" used in a web site address must be entered as "q l d", similarly the word "dot" must be entered into a web address instead of a full stop.</p> <p>Voice Message ideally should have no more than 450 characters including spaces. Do not use special characters – refer to EA Manual for details. Warning message must start with "Emergency Emergency"</p>
<b>STEP 4.</b>	SMS is restricted to a maximum of 160 characters including spaces and punctuation. Either type the message or handwrite the characters into the boxes.

**Example:** *SMS Flash Flood Warning from SES for Opal Valley-immediate threat to life/property-Warn others-Leave area/prepare NOW or seek higher ground-Listen to local radio*

If using template EA messages, please provide the appropriate variables that are in the template message guides. Refer to the Queensland Emergency Alert Manual for copies of the template message guides.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Event	EA Reference	Associated Map Polygon	Australian Warning System	Text Message
Ross River Flood	EA 8.1 (Black Zone)	RossRiverFlood_TCC_01	Advice 	TSV DISASTER GROUP Advice warning. A dangerous flood could come to your area by [TIMEFRAME]. PREPARE NOW FOR POSSIBLE FLOOD. Conditions could change quickly. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a>
	EA 8.2 (Black Zone)		Watch and Act 	TSV DISASTER GROUP Watch and Act warning. A dangerous flood is [coming soon to / coming overnight to / coming tomorrow to / happening now at] Ross and Bohle Rivers [PREPARE TO LEAVE / MOVE TO HIGHER GROUND NOW]. Conditions [could change quickly / are very dangerous]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> . If your life is in danger call 000. Call SES on 132 500 for evacuation assistance.
	EA 8.3 (Black Zone)		Emergency Warning 	TSV DISASTER GROUP Emergency Warning. A dangerous flood is happening now at Ross and Bohle Rivers [LEAVE BY / LEAVE IMMEDIATELY / IT IS TOO DANGEROUS TO LEAVE. GET UP AS HIGH AS YOU SAFELY CAN]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> If your life is in danger call 000

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Event	EA Reference	Associated Map Polygon	Australian Warning System	Text Message
Ross River Flood	EA 9.1 (Pink Zones)	a) RossRiverFlood_TCC_06 b) RossRiverFlood_TCC_05 c) RossRiverFlood_TCC_04	Advice 	TSV DISASTER GROUP Advice warning. A dangerous flood could come to your area by [TIMEFRAME]. PREPARE NOW FOR POSSIBLE FLOOD. Conditions could change quickly. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a>
	EA 9.2 (Pink Zones)		Watch and Act 	TSV DISASTER GROUP Watch and Act warning. A dangerous flood is [coming soon to / coming overnight to / coming tomorrow to / happening now at] Ross and Bohle Rivers [PREPARE TO LEAVE / MOVE TO HIGHER GROUND NOW]. Conditions [could change quickly / are very dangerous]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> If your life is in danger call 000. Call SES on 132 500 for evacuation assistance.
	EA 9.3 (Black/Pink Zones)	a) RossRiverFlood_TCC_01 b) RossRiverFlood_TCC_06 c) RossRiverFlood_TCC_05 d) RossRiverFlood_TCC_04	Emergency Warning 	TSV DISASTER GROUP Emergency Warning. A dangerous flood is happening now at Ross and Bohle Rivers [LEAVE BY / LEAVE IMMEDIATELY / IT IS TOO DANGEROUS TO LEAVE. GET UP AS HIGH AS YOU SAFELY CAN]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> If your life is in danger call 000

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Event	EA Reference	Associated Map Polygon	Australian Warning System	Text Message
Ross River Flood Dam Failure	EA 10 (Dam Failure - Black/Pink/Green Zones)	a) RossRiverFlood_TCC_03 b) RossRiverFlood_TCC_01 c) RossRiverFlood_TCC_05 d) RossRiverFlood_TCC_04 e) RossRiverFlood_TCC_06	Watch and Act 	TSV DISASTER GROUP Watch and Act warning. Ross River Dam wall is at risk of breach, piping, or spillway failure [LEAVE / MOVE TO HIGHER GROUND NOW]. Conditions [could change quickly / are very dangerous]. Listen to local radio or go to disaster.townsville.qld.gov.au If your life is in danger call 000. Call SES on 132 500 for evacuation assistance.
	EA 10.1 (Dam Failure - Black/Pink/Green Zones)	f) RossRiverFlood_TCC_02	Emergency Warning 	TSV DISASTER GROUP Emergency Warning. Ross River Dam wall has failed. A catastrophic flood is happening now at Ross and Bohle Rivers [IT IS TOO DANGEROUS TO LEAVE. GET UP AS HIGH AS YOU SAFELY CAN.]. Listen to local radio or go to disaster.townsville.qld.gov.au If your life is in danger call 000

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



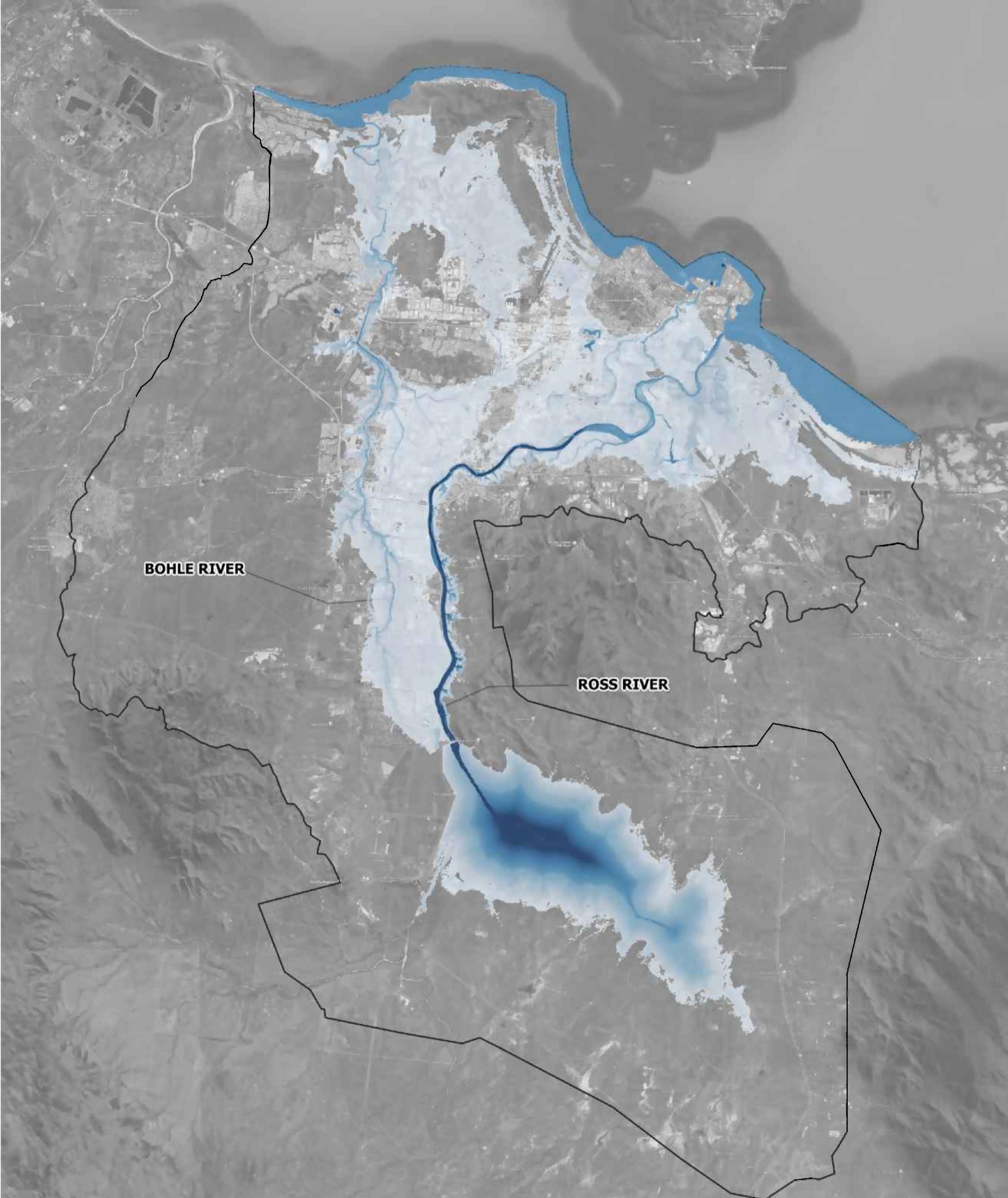
Event	EA Reference	Associated Map Polygon	Australian Warning System	Text Message
Ross River Earthquake, Impact or Terrorist Act Dam Failure	EA 11 (Dam Failure - Black/Pink/Green Zones)	a) RossRiverFlood_TCC_03 b) RossRiverFlood_TCC_01 c) RossRiverFlood_TCC_05 d) RossRiverFlood_TCC_04 e) RossRiverFlood_TCC_06	Advice 	TSV DISASTER GROUP Advice warning. Earthquake/Impact collision/Terrorist Event has occurred at Ross River Dam. PREPARE NOW FOR POSSIBLE UNEXPECTED FLOOD. Conditions could change quickly. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a>
	EA 11.1 (Dam Failure - Black/Pink/Green Zones)	f) RossRiverFlood_TCC_02	Watch and Act 	TSV DISASTER GROUP Watch and Act warning. Ross River Dam has suffered significant structural damage from an Earthquake/Impact collision/Terrorist Event. [LEAVE / MOVE TO HIGHER GROUND NOW]. Conditions [could change quickly / are very dangerous]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> If your life is in danger call 000. Call SES on 132 500 for evacuation assistance.
	EA 11.2 (Dam Failure - Black/Pink/Green Zones)		Emergency Warning 	TSV DISASTER GROUP Emergency Warning. Ross River Dam wall has failed. A catastrophic flood is happening now at Ross and Bohle Rivers [IT IS TOO DANGEROUS TO LEAVE. GET UP AS HIGH AS YOU SAFELY CAN]. Listen to local radio or go to <a href="http://disaster.townsville.qld.gov.au">disaster.townsville.qld.gov.au</a> If your life is in danger call 000

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix B1 Flood Impact Maps



**Ross River Dam Consequence  
Assessment**

**SDF at Chainage 500 m**



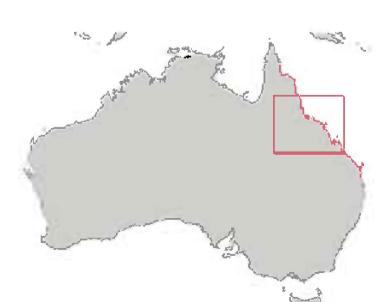
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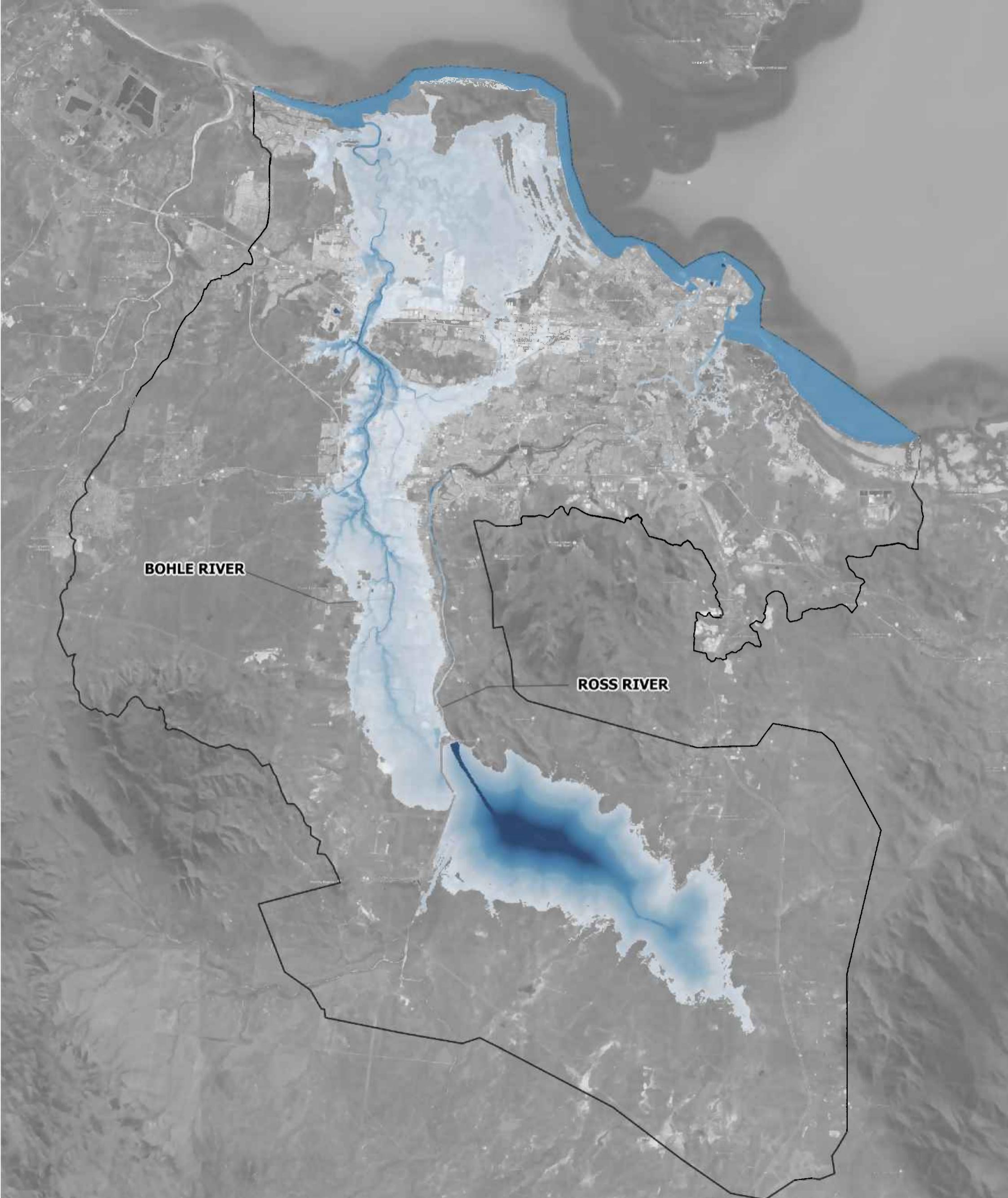
10 km

**Legend**

Peak Flood Depth

<0.1 m
0.1 - 2.5 m
2.5 - 5 m
5 - 7.5 m
7.5 - 10 m
>10 m





**Ross River Dam Consequence Assessment**

**SDF at Chainage 2000 m**



0

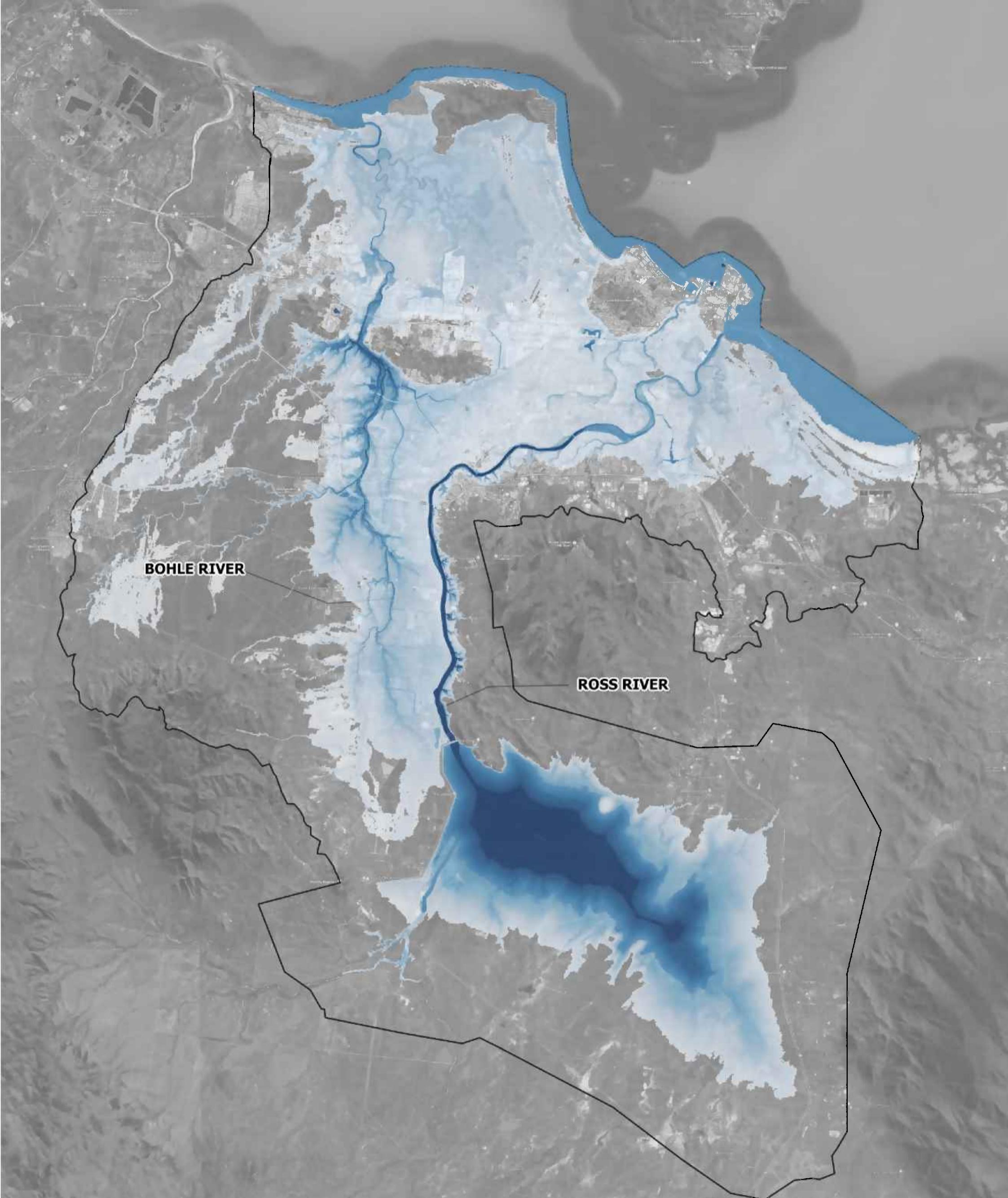
10 km

**Legend**

Peak Flood Depth

- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m





Ross River Dam Consequence Assessment

43 mAHD Flood Induced Piping at Chainage 500 m



0

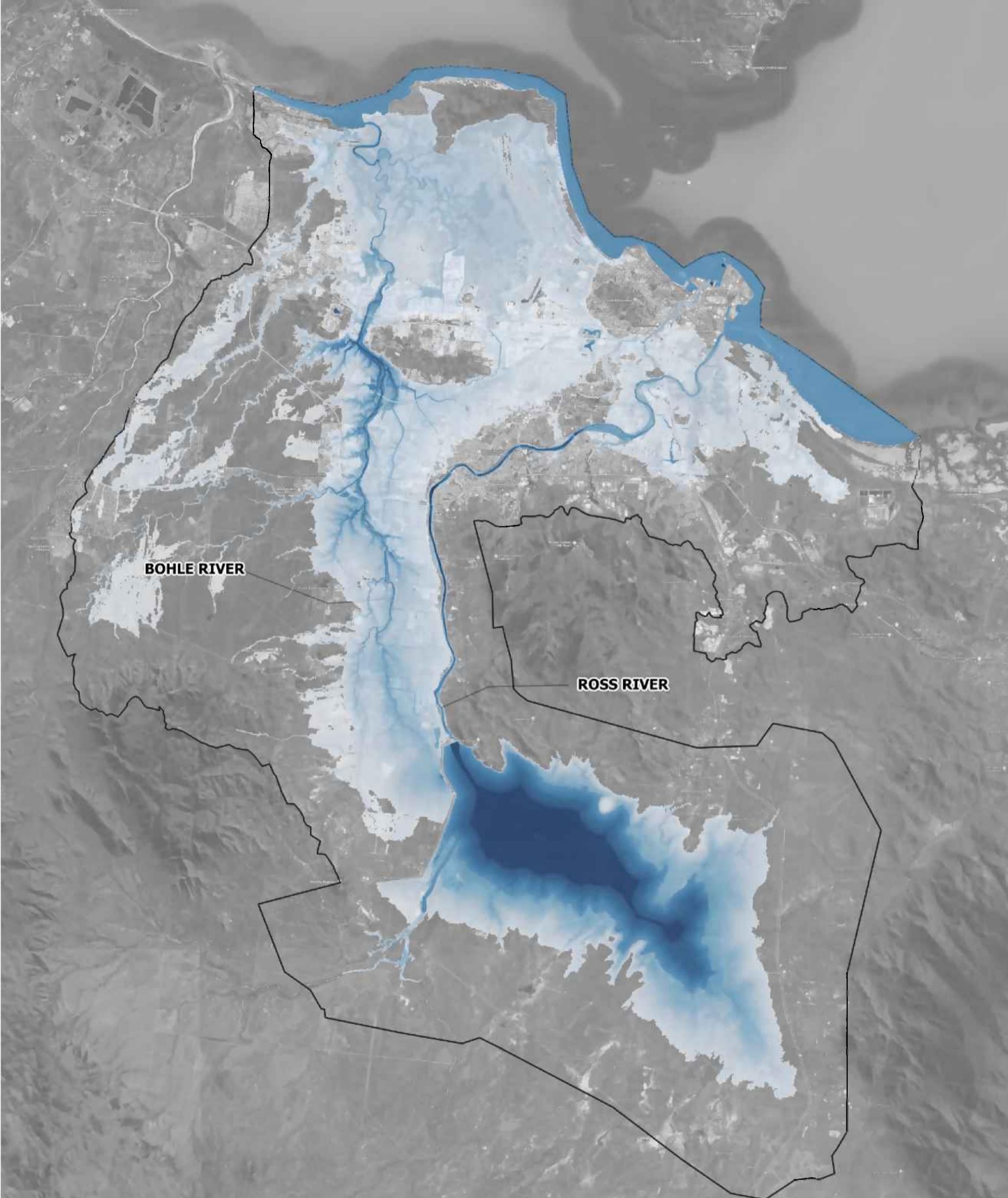
10 km

Legend

Peak Flood Depth

- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m





Ross River Dam Consequence  
Assessment



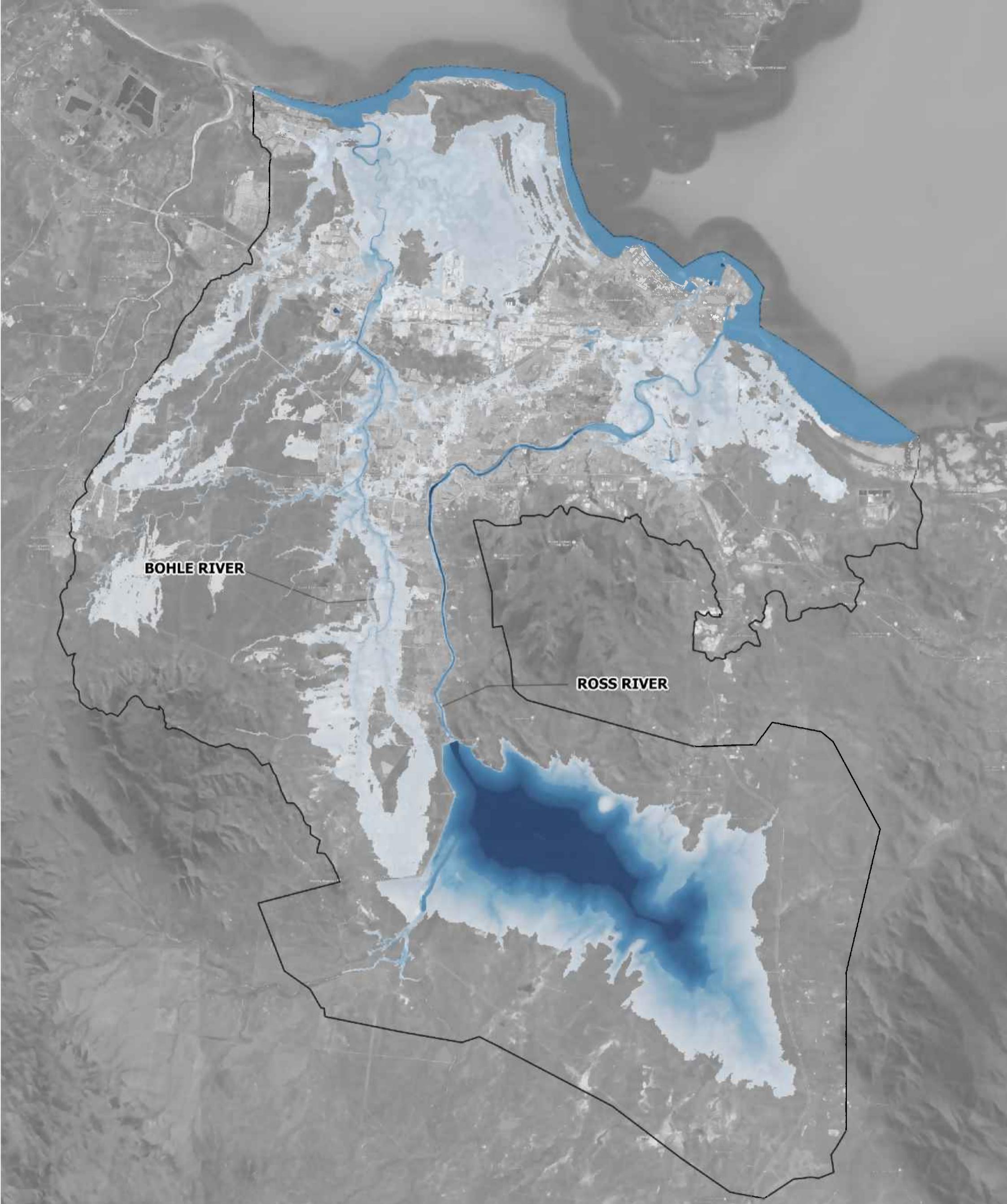
43 mAHD Flood Induced  
Piping at Chainage 2,000 m



0

10 km





**Ross River Dam Consequence  
Assessment**



**43 mAHD Flood Induced  
Piping at Chainage 7,000 m**



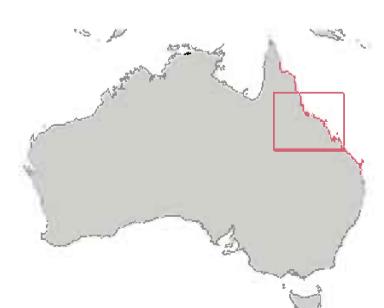
0

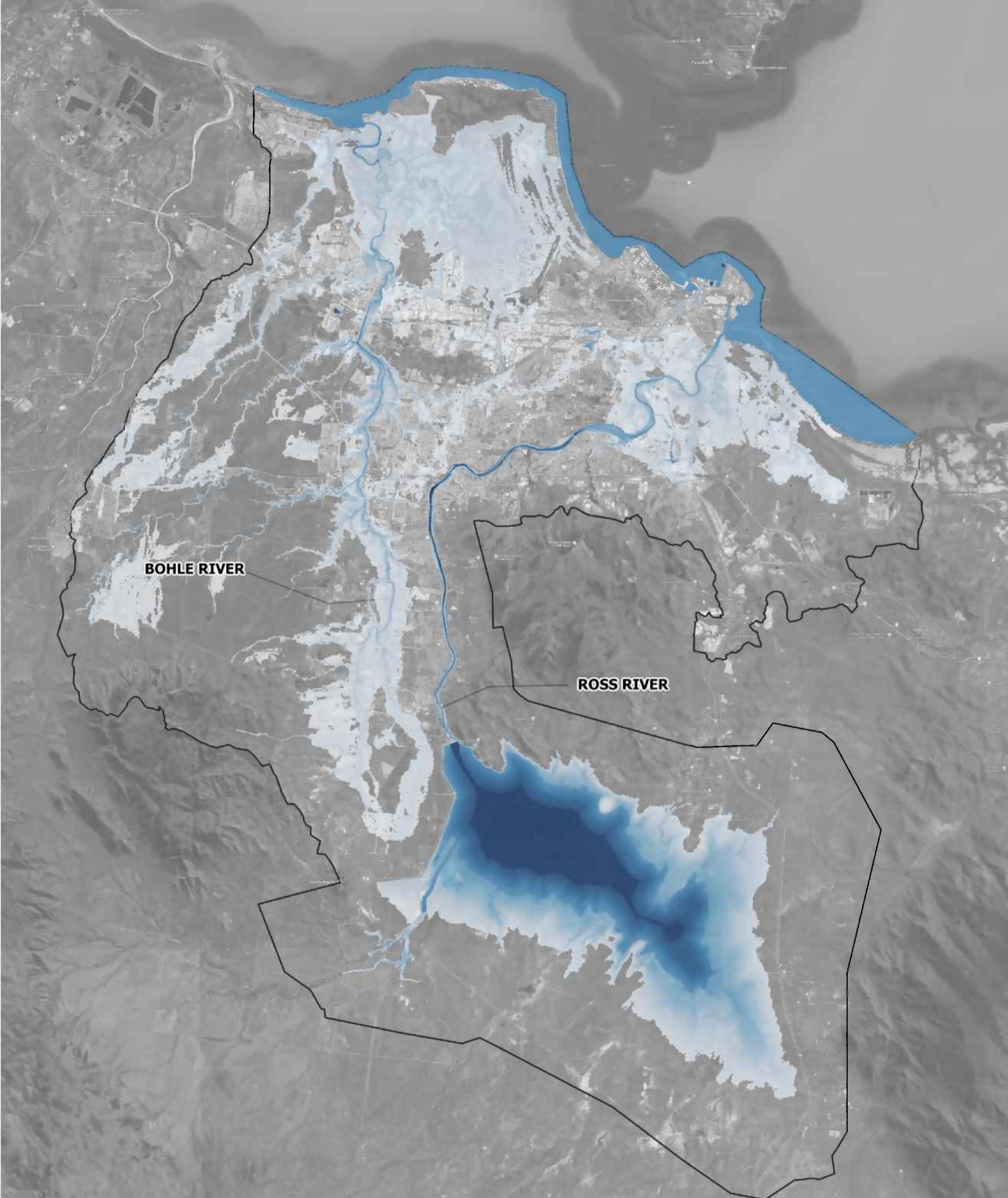
10 km

**Legend**

Peak Flood Depth

	<0.1 m
	0.1 - 2.5 m
	2.5 - 5 m
	5 - 7.5 m
	7.5 - 10 m
	>10 m





**Ross River Dam Consequence Assessment**



**43 mAHD Flood No Failure**



0

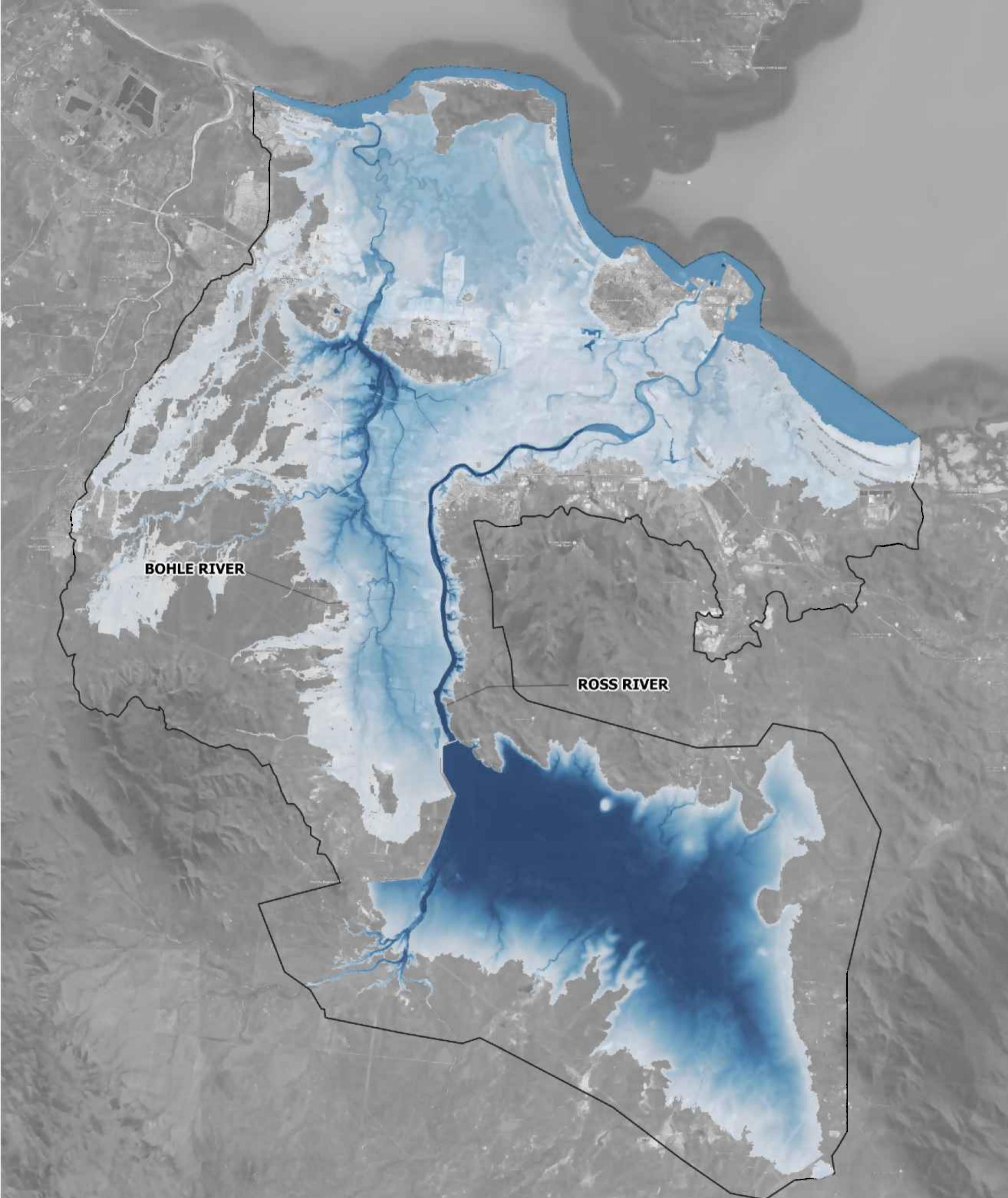
10 km

**Legend**

Peak Flood Depth

- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m





**Ross River Dam Consequence Assessment**



**48 mAHD Flood Induced Piping at Chainage 500 m**



0

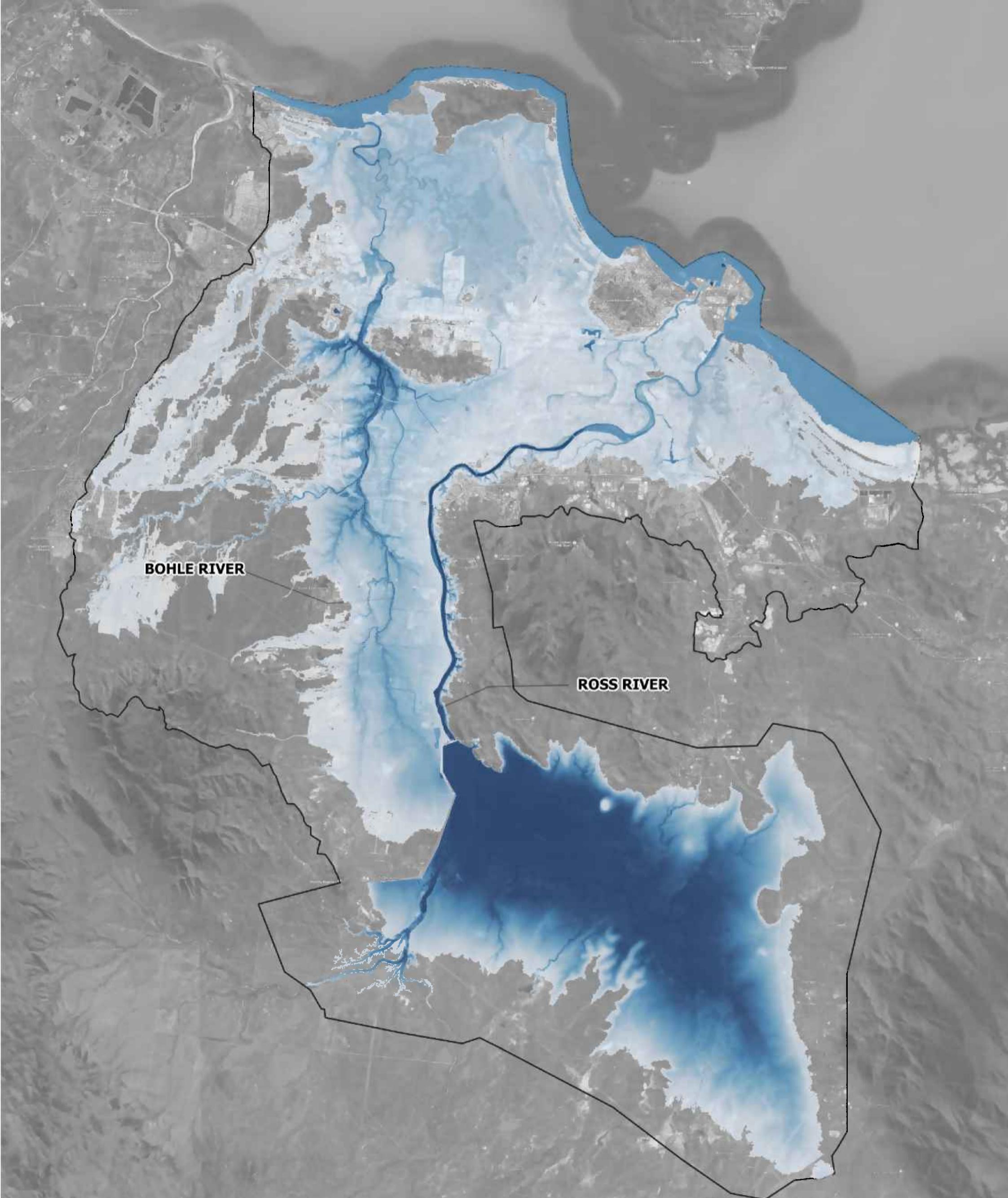
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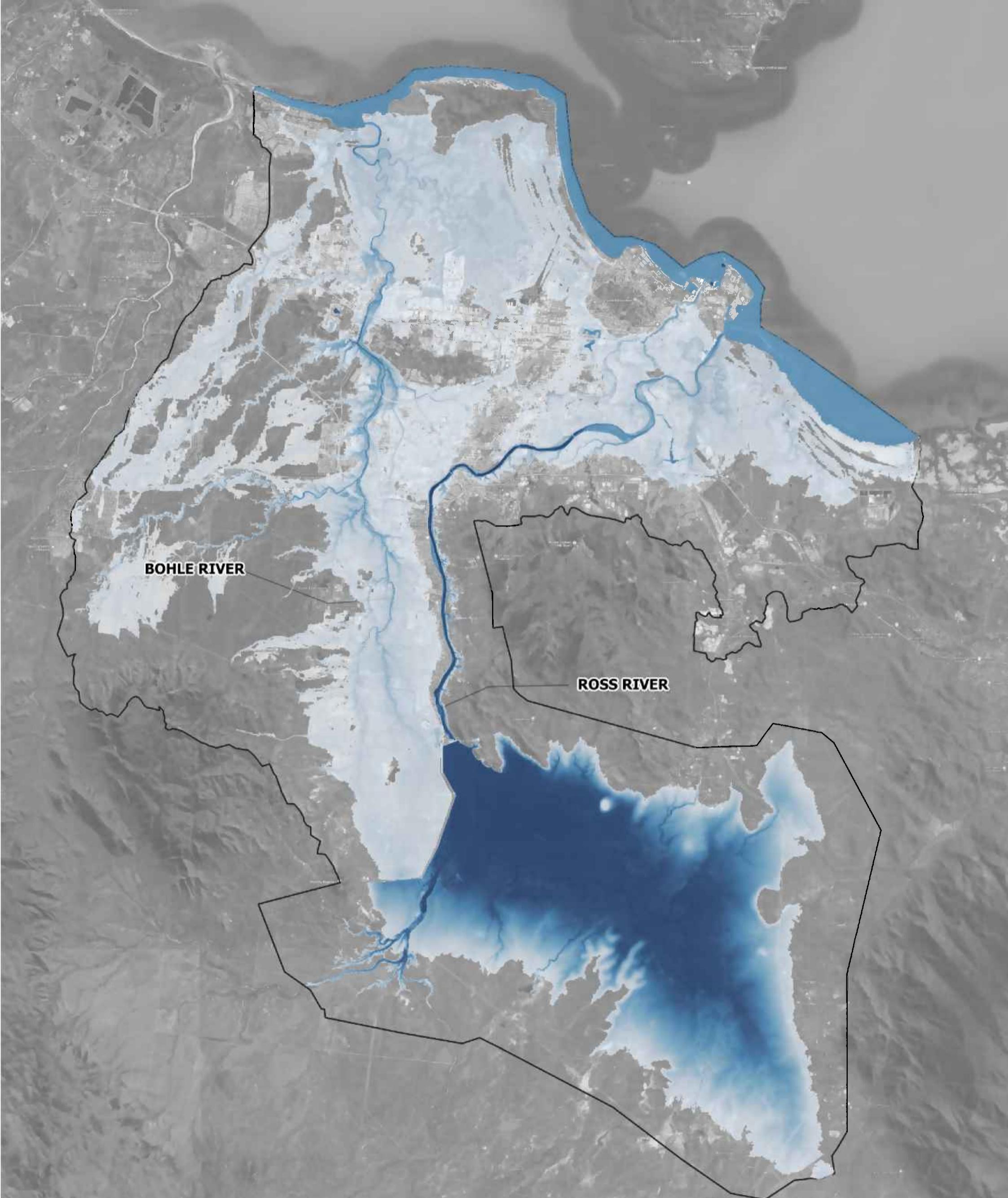
**Legend**

Peak Flood Depth

<0.1 m
0.1 - 2.5 m
2.5 - 5 m
5 - 7.5 m
7.5 - 10 m
>10 m







**Ross River Dam Consequence Assessment**



**48 mAHD Flood Induced Piping at Chainage 7,000 m**



0

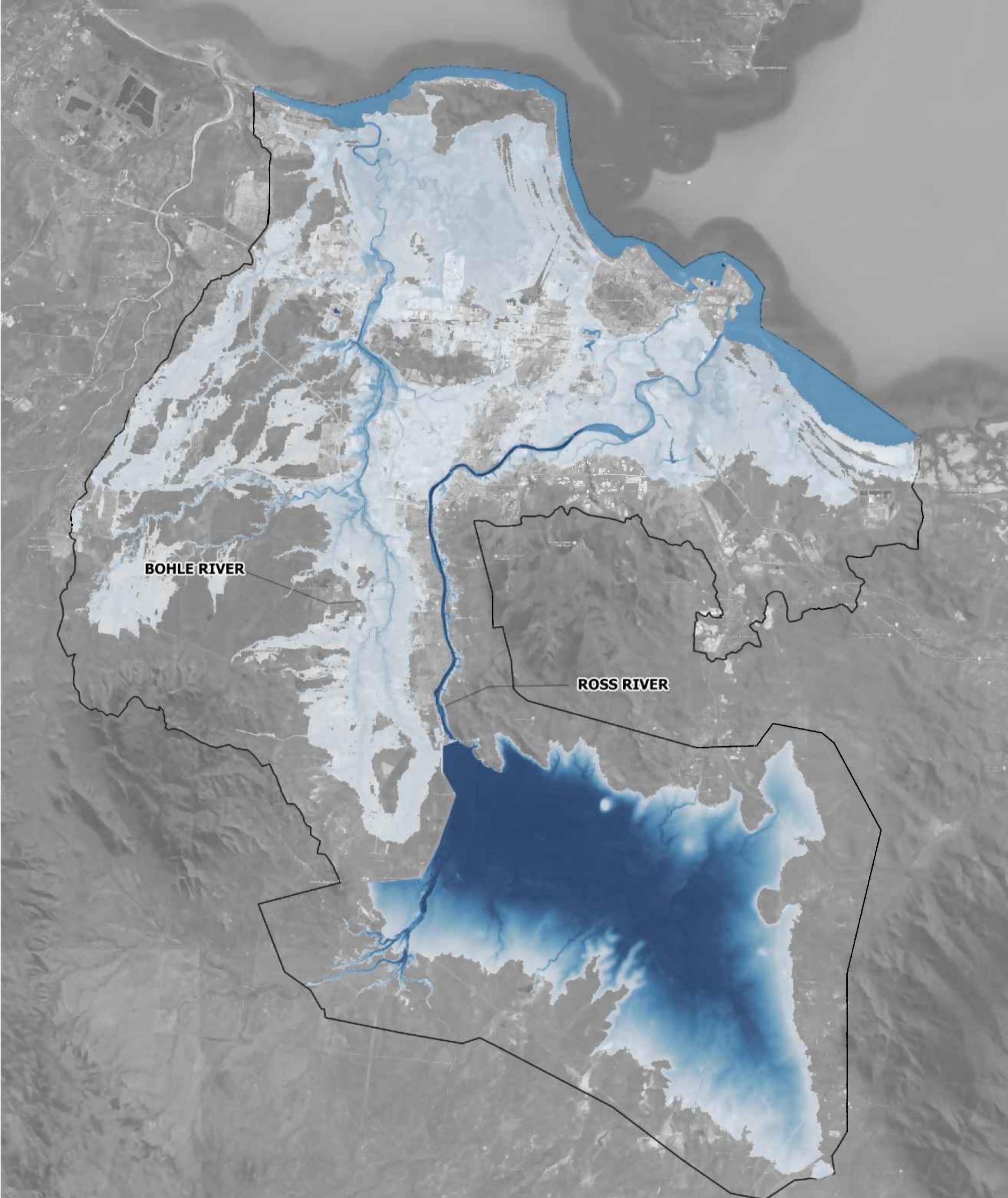
10 km

**Legend**

Peak Flood Depth

	<0.1 m
	0.1 - 2.5 m
	2.5 - 5 m
	5 - 7.5 m
	7.5 - 10 m
	>10 m





**Ross River Dam Consequence  
Assessment**



**48 mAHD Flood No Failure**



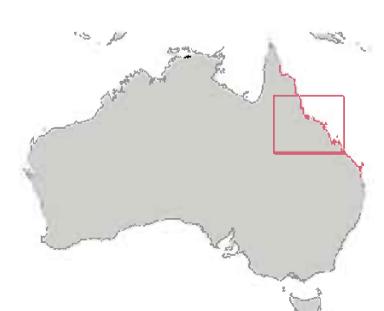
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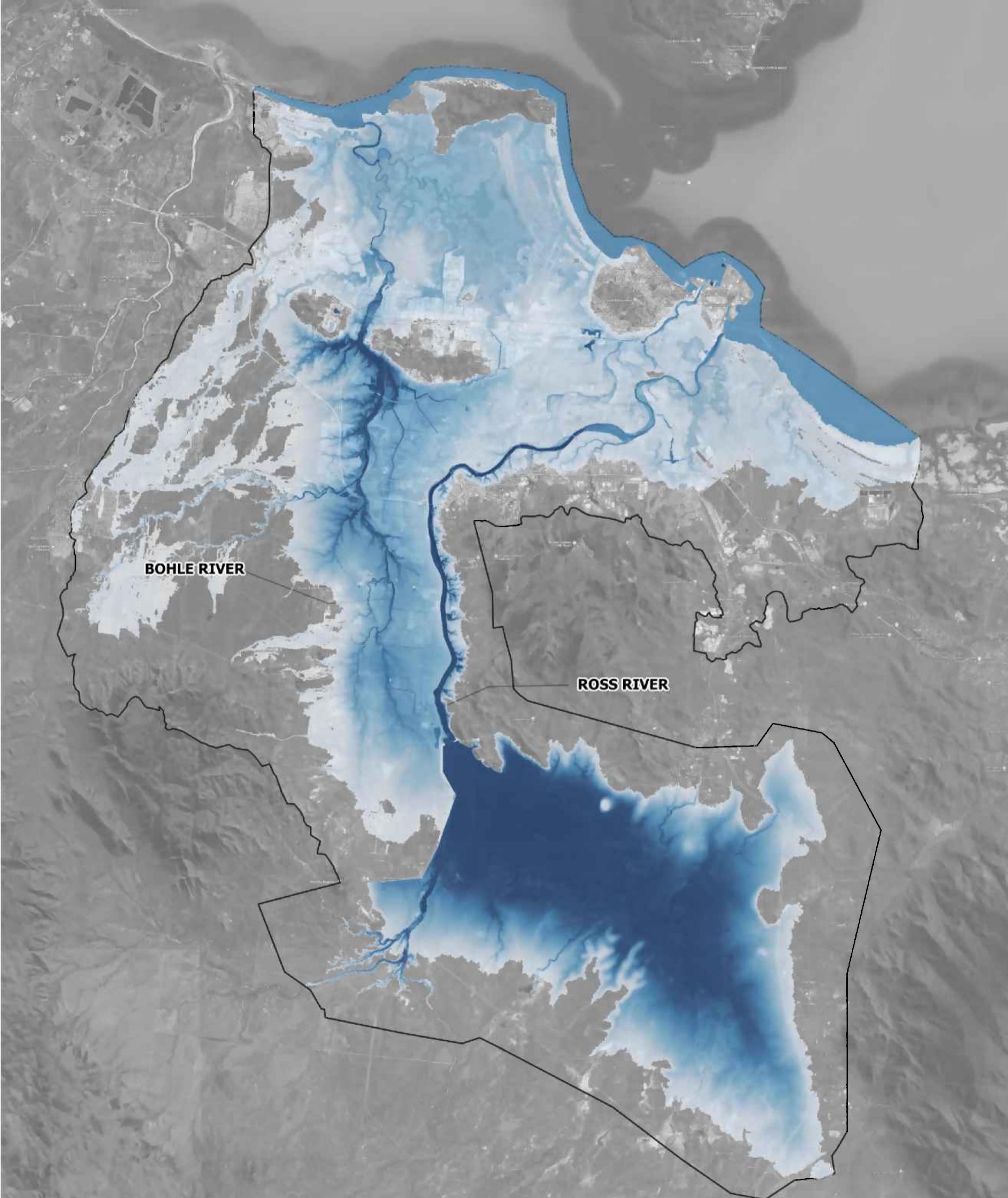
10 km

**Legend**

Peak Flood Depth

- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m





**Ross River Dam Consequence Assessment**



**48.1 mAHD Flood  
Overtopping Failure at  
Chainage 500 m**



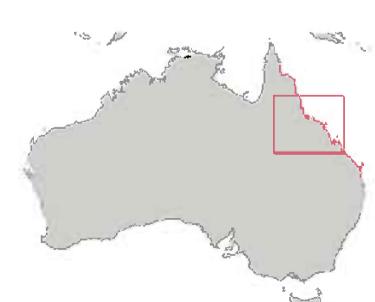
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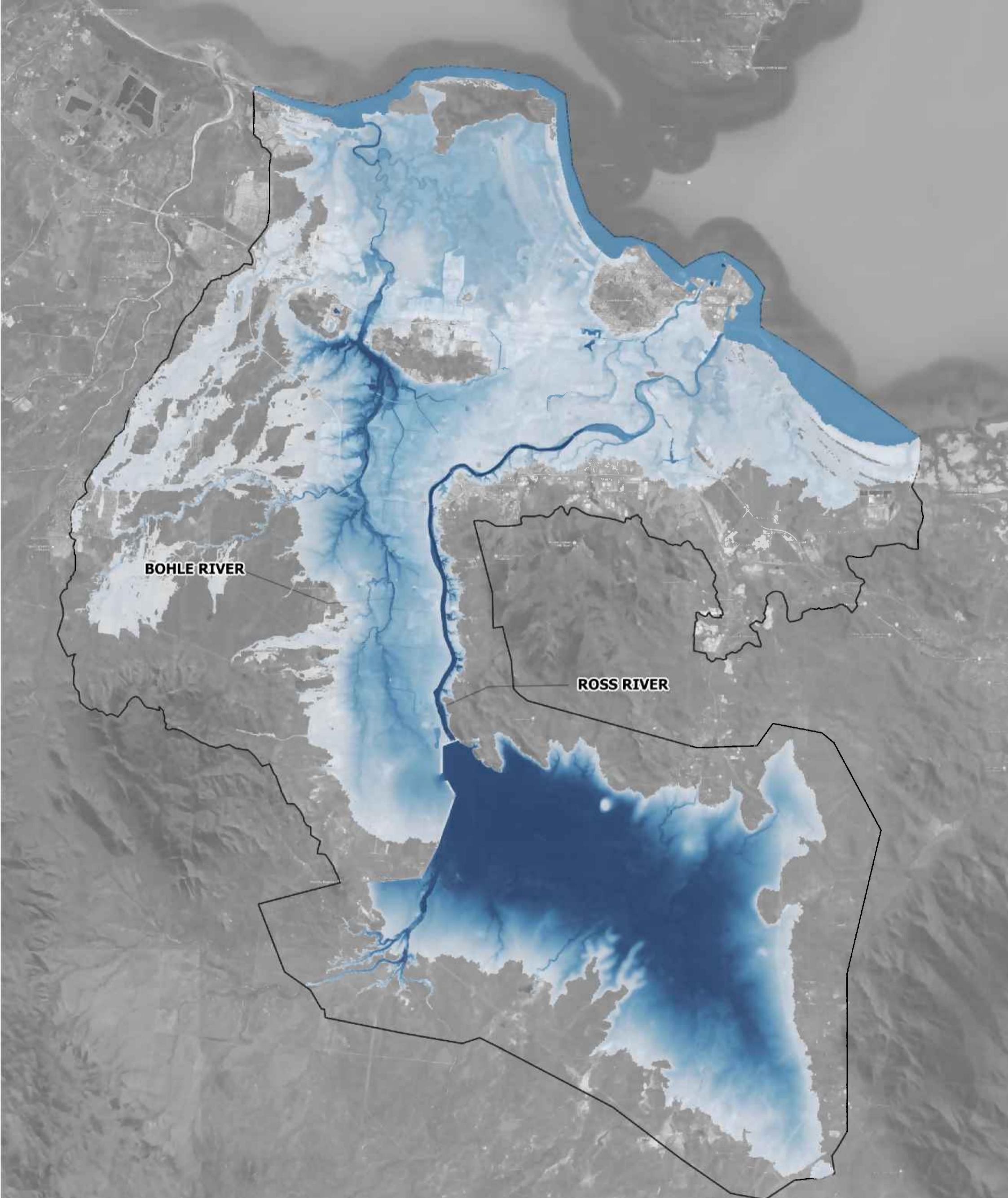
10 km

**Legend**

Peak Flood Depth

<0.1 m
0.1 - 2.5 m
2.5 - 5 m
5 - 7.5 m
7.5 - 10 m
>10 m





**Ross River Dam Consequence Assessment**



**48.1 mAHD Flood  
Overtopping Failure at  
Chainage 2,000 m**



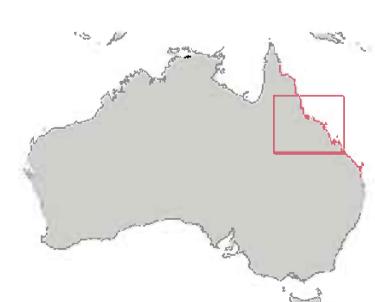
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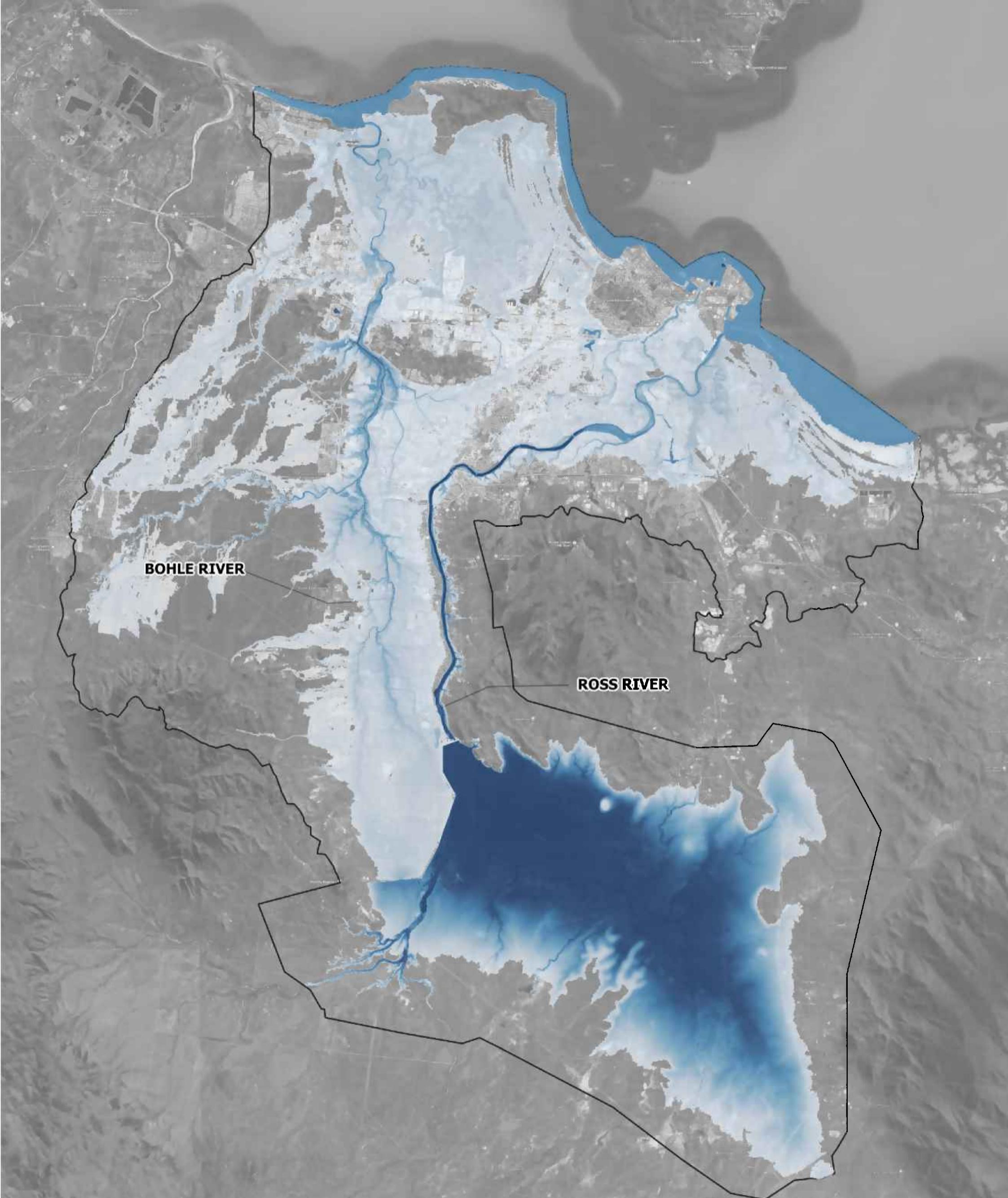
10 km

**Legend**

Peak Flood Depth

	<0.1 m
	0.1 - 2.5 m
	2.5 - 5 m
	5 - 7.5 m
	7.5 - 10 m
	>10 m





**Ross River Dam Consequence Assessment**



**48.1 mAHD Flood  
Overtopping Failure at  
Chainage 7,000 m**



0

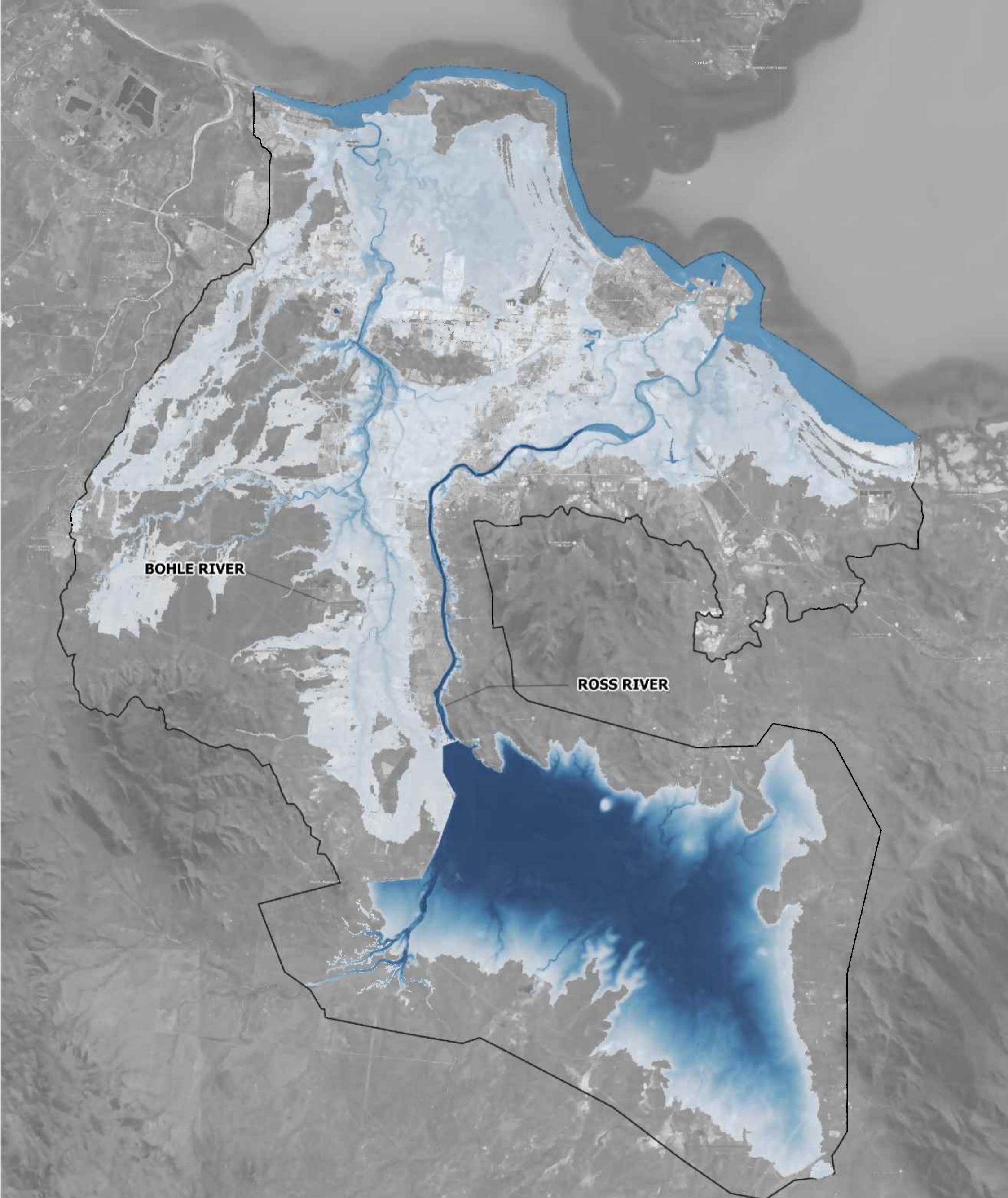
10 km

**Legend**

Peak Flood Depth

- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m





**Ross River Dam Consequence  
Assessment**



**48.1 mAHD Flood No  
Failure**



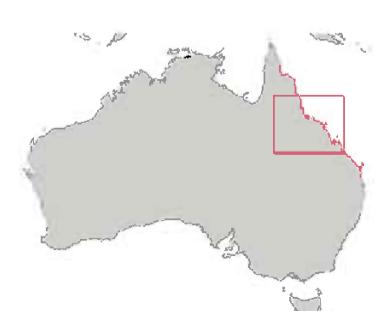
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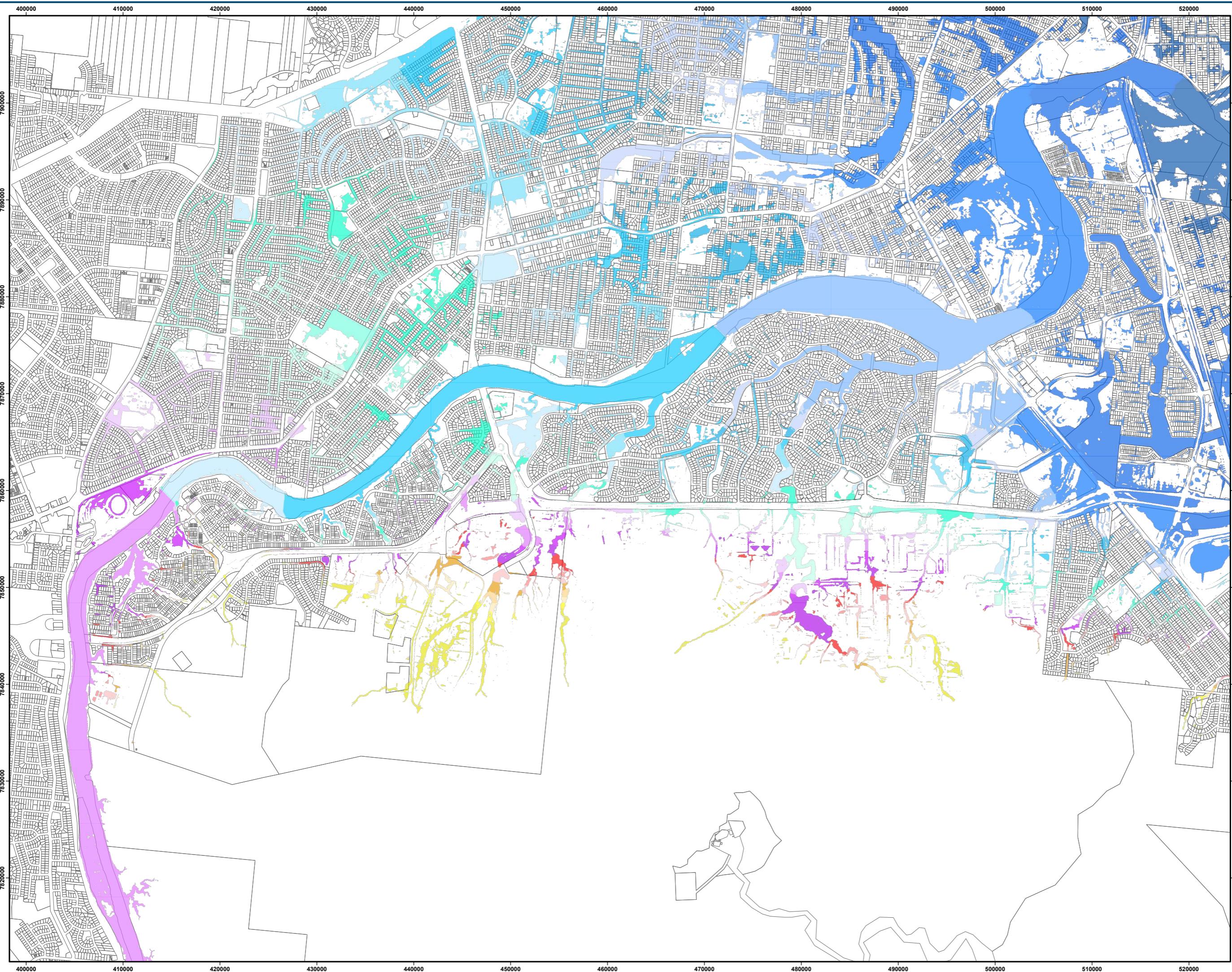
10 km

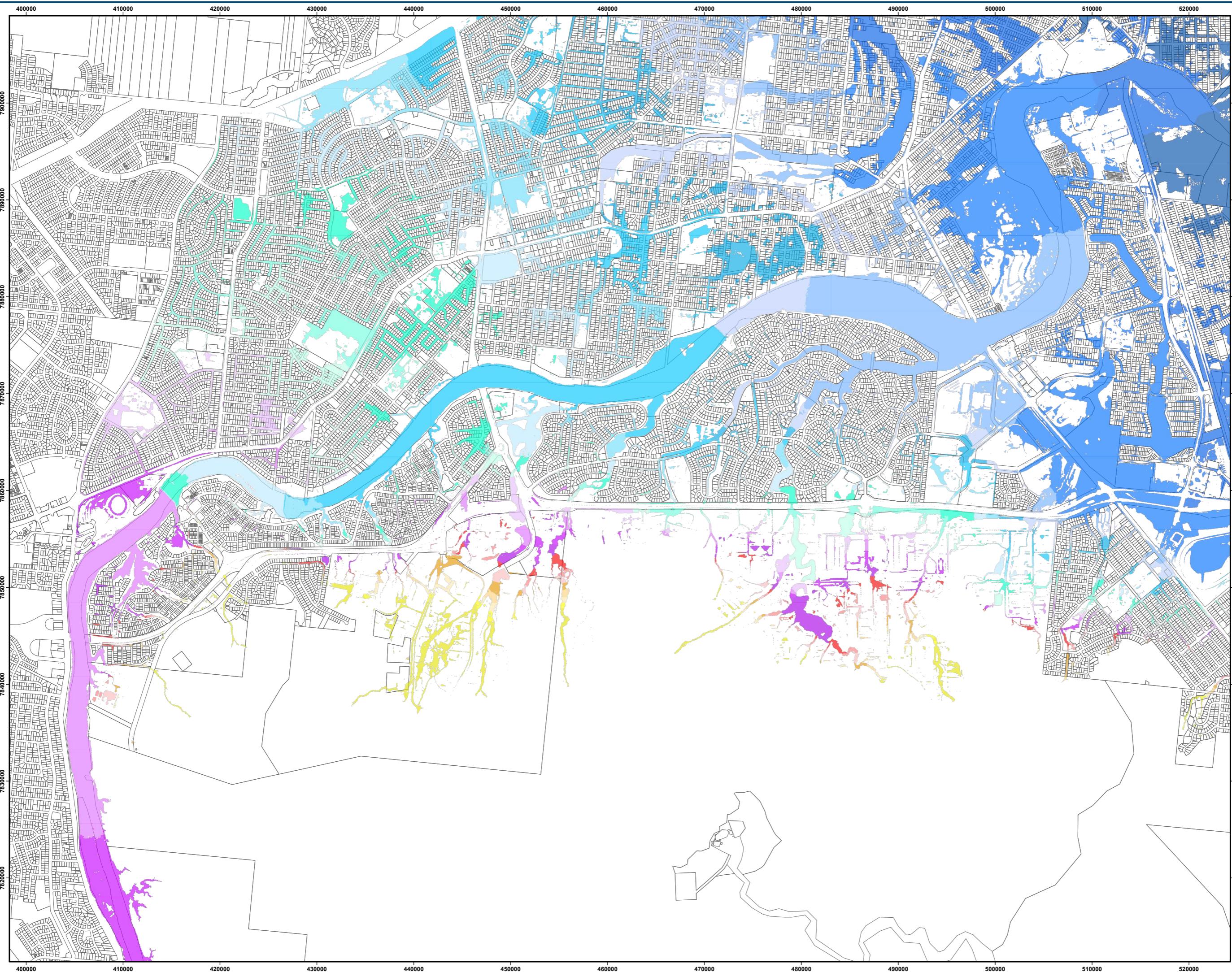
**Legend**

Peak Flood Depth

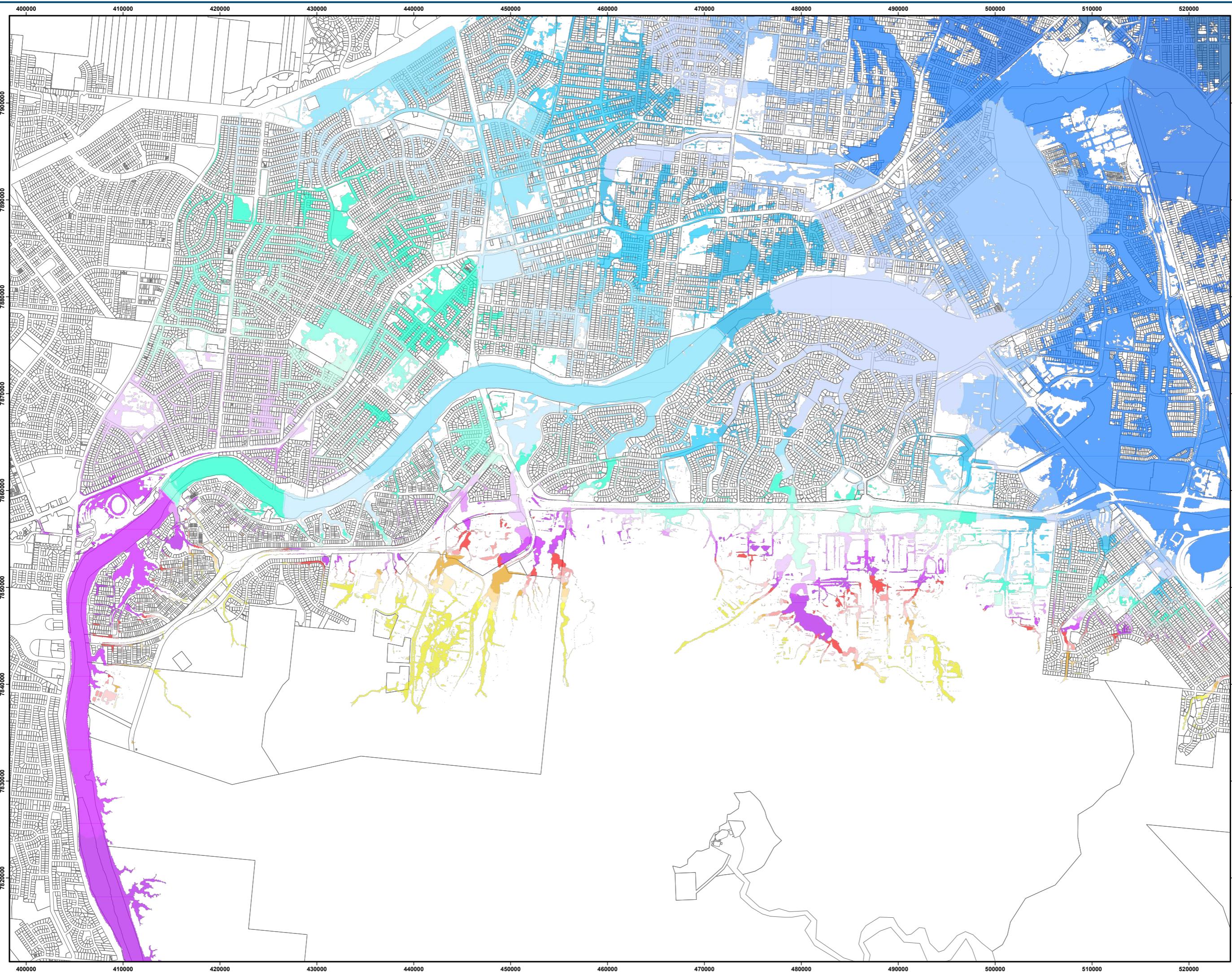
- <0.1 m
- 0.1 - 2.5 m
- 2.5 - 5 m
- 5 - 7.5 m
- 7.5 - 10 m
- >10 m







City of  
Townsville

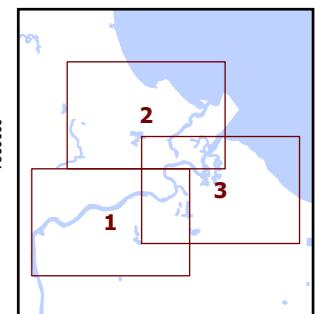


## LEGEND

Flood Level, m AHD	13 - 14
25 - 26	
24 - 25	
23 - 24	
22 - 23	
21 - 22	
20 - 21	
19 - 20	
18- 19	
17 - 18	
16 - 17	
15 - 16	
14 - 15	
< 2	

Flood Event	Water Level, m AHD	Gate Opening, m		
		L	C	R
2% AEP	41.30	2.5-2.75		
1% AEP	42.11	3-3.25		
0.2% AEP	42.76	11.5		
0.1% AEP	43.11	11.5		
PMF	>48	11.5		

## GRID 2 of 3



GDA1994 MGA Zone 55

Scale: 1:350,000 @A3

Date: 10/07/2025

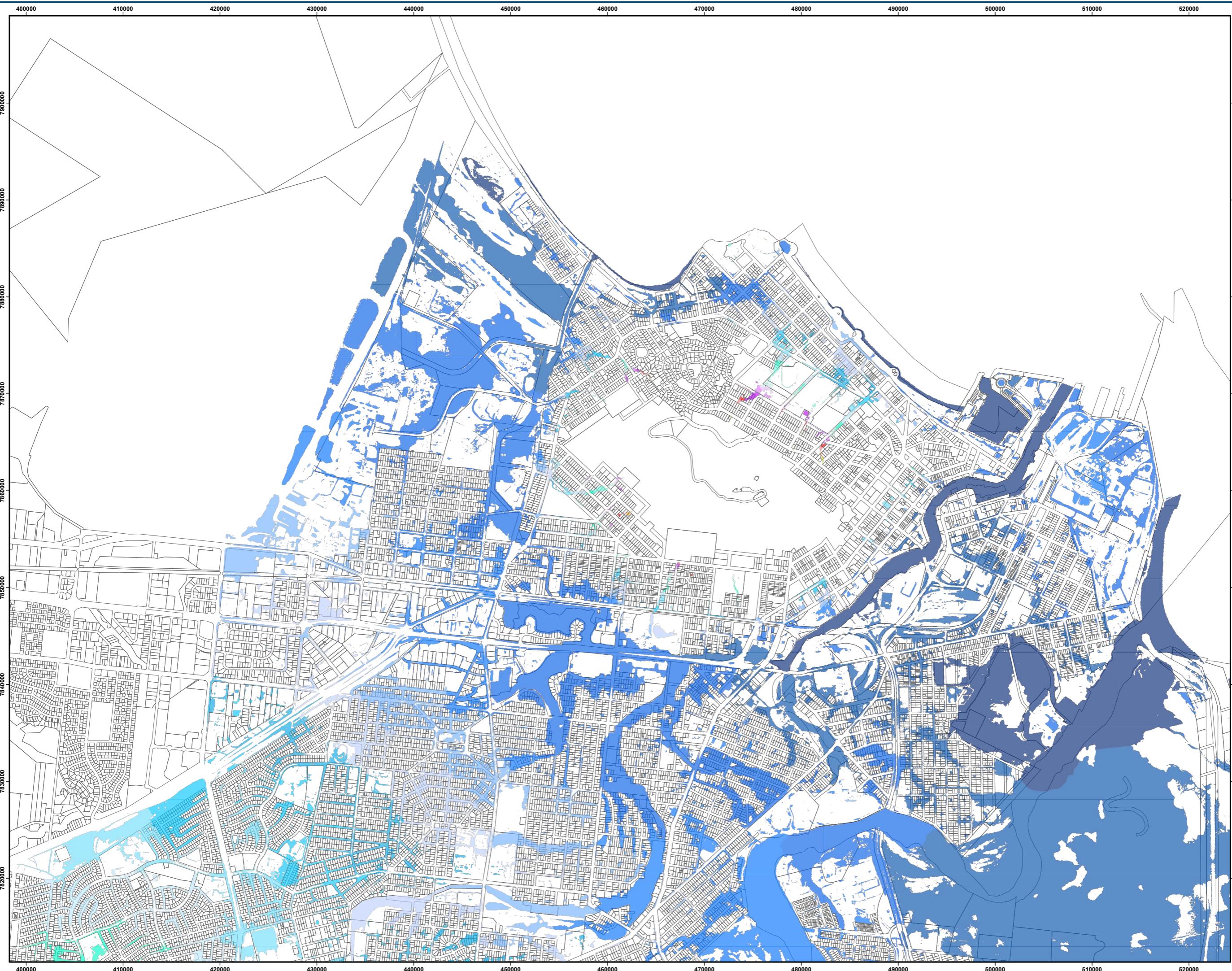
Author: zza

0 2.5 5 10 Kilometres

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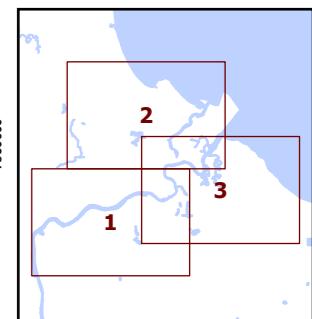


## LEGEND

Flood Level, m AHD	13 - 14
25 - 26	
24 - 25	
23 - 24	
22 - 23	
21 - 22	
20 - 21	
19 - 20	
18 - 19	
17 - 18	
16 - 17	
15 - 16	
14 - 15	
< 2	

Flood Event	Water Level, m AHD	Gate Opening, m		
		L	C	R
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1% AEP	42.11	3-3.25		
0.2% AEP	42.76	11.5		
0.1% AEP	43.11	11.5		
PMF	>48	11.5		

## GRID 2 of 3



N

GDA1994 MGA Zone 55

Scale: 1:350,000 @A3

Date: 10/07/2025

Author: zza

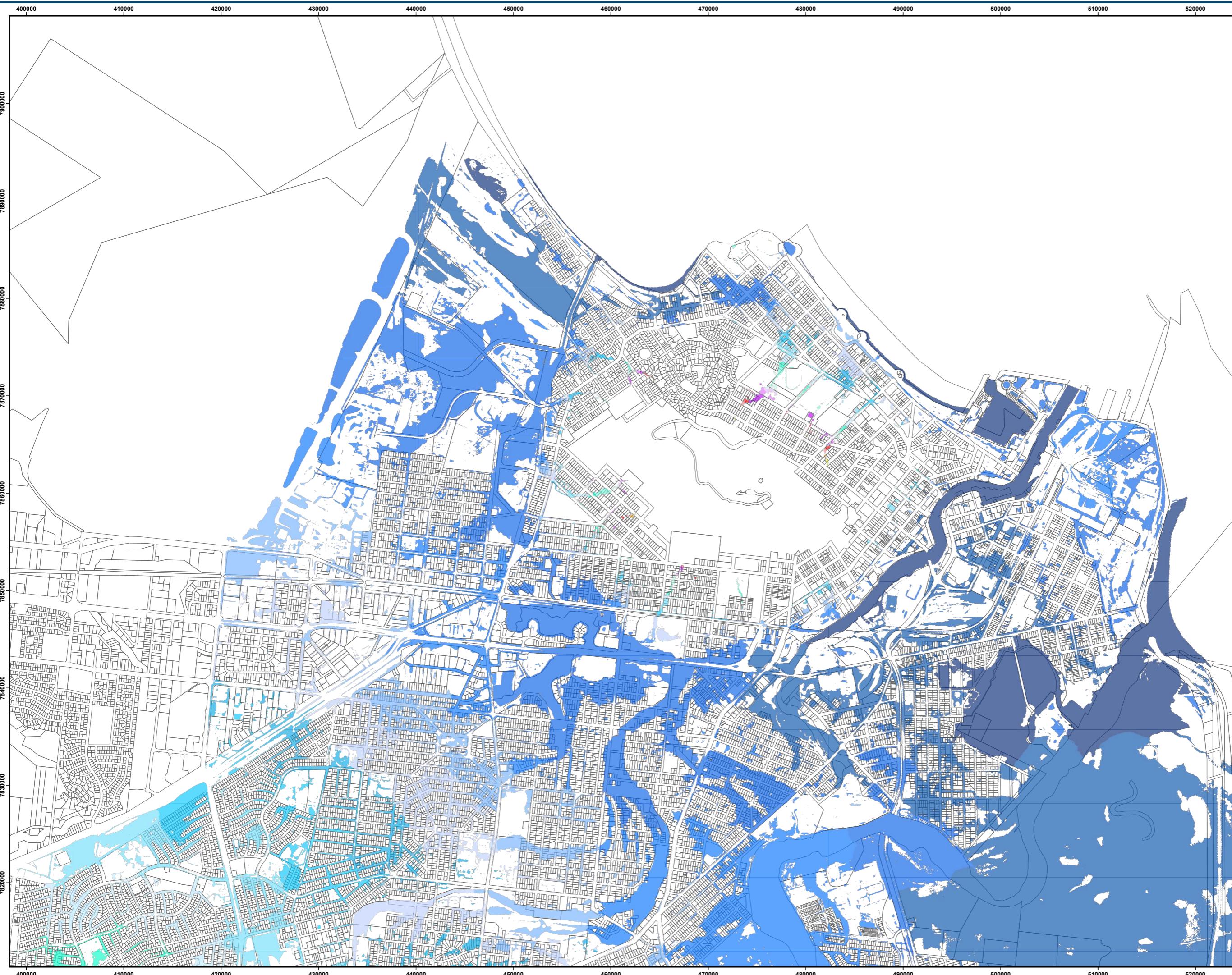
0 2.5 5 10

Kilometres

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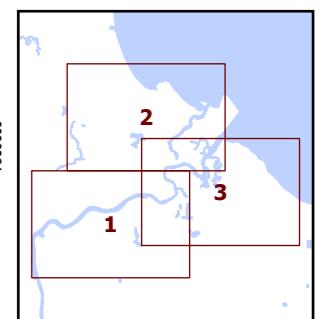


## LEGEND

	13 - 14
25 - 26	
24 - 25	
23 - 24	
22 - 23	
21 - 22	
20 - 21	
19 - 20	
18 - 19	
17 - 18	
16 - 17	
15 - 16	
14 - 15	
< 2	

Flood Event	Water Level, m AHD	Gate Opening, m		
		L	C	R
2% AEP	41.30	2.5-2.75		
1% AEP	42.11	3-3.25		
0.2% AEP	42.76	11.5		
0.1% AEP	43.11	11.5		
PMF	>48	11.5		

## GRID 2 of 3



GDA1994 MGA Zone 55

Scale: 1:350,000 @A3

Date: 10/07/2025

Author: zza

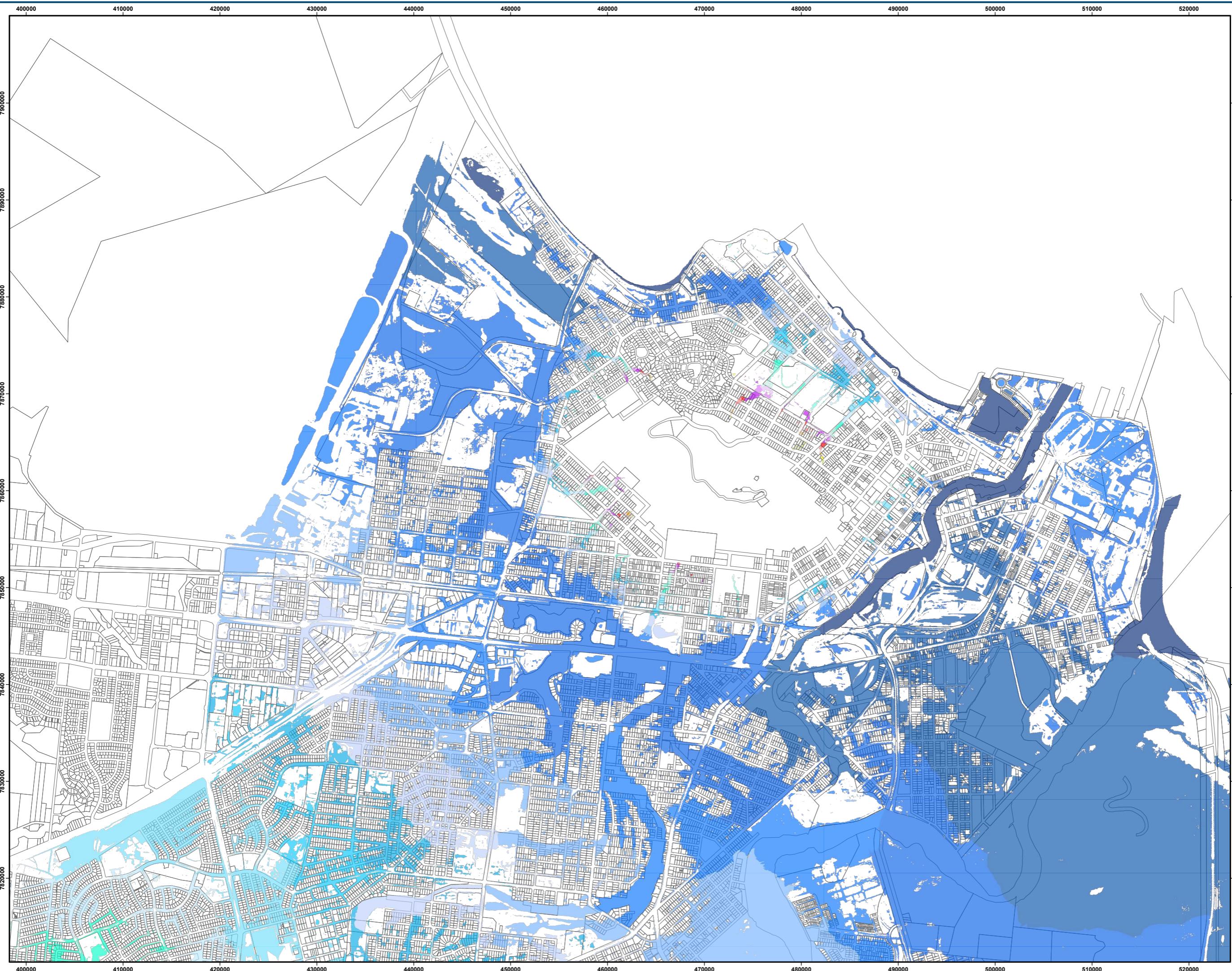
0 2.5 5 10

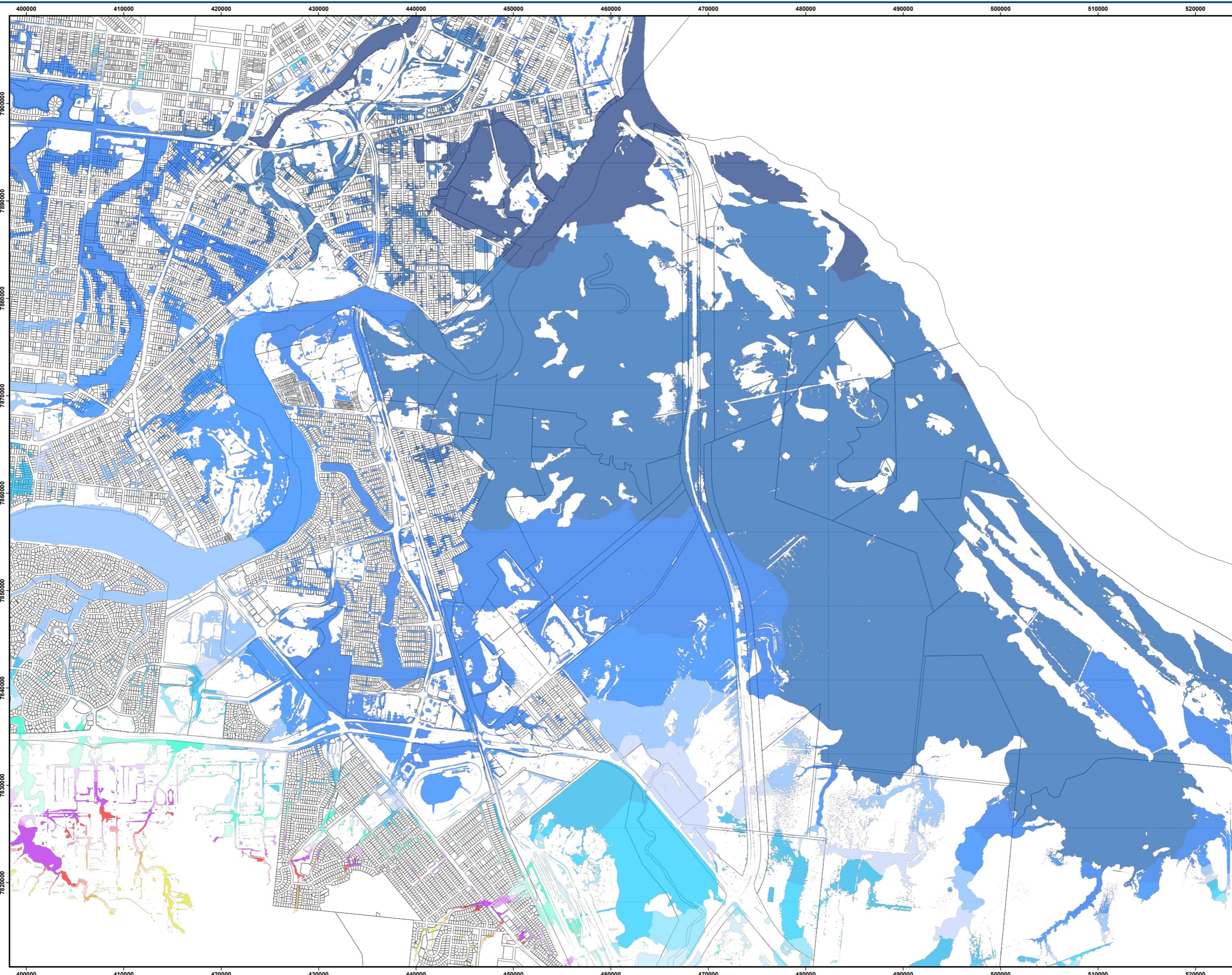
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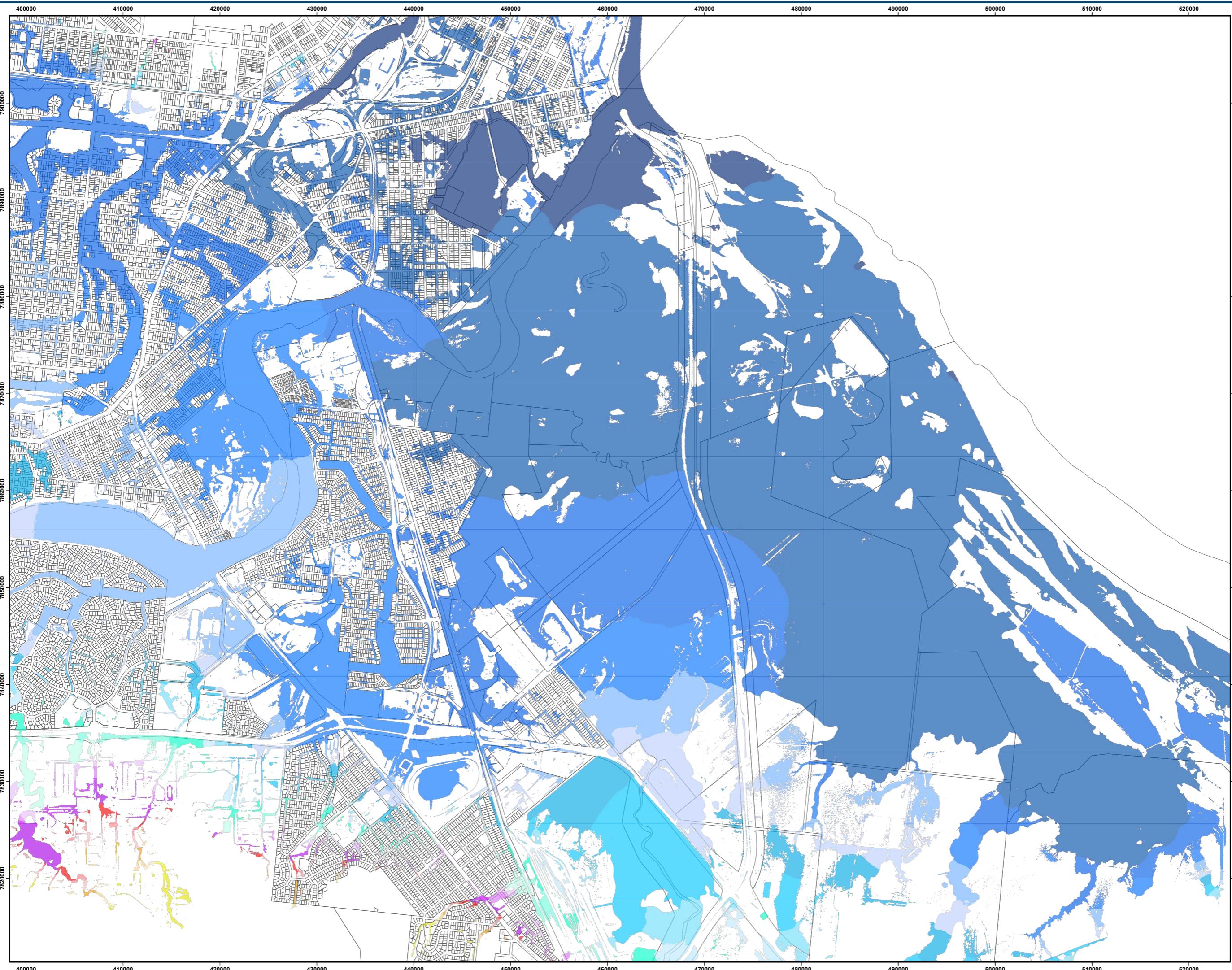
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TOWNSVILLE CITY COUNCIL

ROSS RIVER FLOOD STUDY 2021

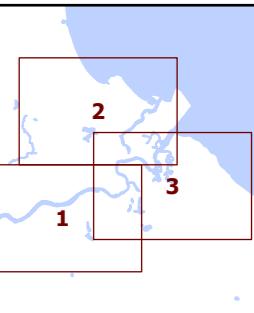
1: 100 AEP Flood Event

**LEGEND**

Flood Level, m AHD	13 - 14
	12 - 13
	11 - 12
	10 - 11
	9 - 10
	8 - 9
	7 - 8
	6 - 7
	5 - 6
	4 - 5
	3 - 4
	2 - 3
	< 2

Flood Event	Water Level, m AHD	Gate Opening, m		
		L	C	R
2% AEP	41.30	2.5-2.75		
1% AEP	42.11	3-3.25		
0.2% AEP	42.76	11.5		
0.1% AEP	43.11	11.5		
PMF	>48	11.5		

**GRID 3 of 3**



GDA1994 MGA Zone 55

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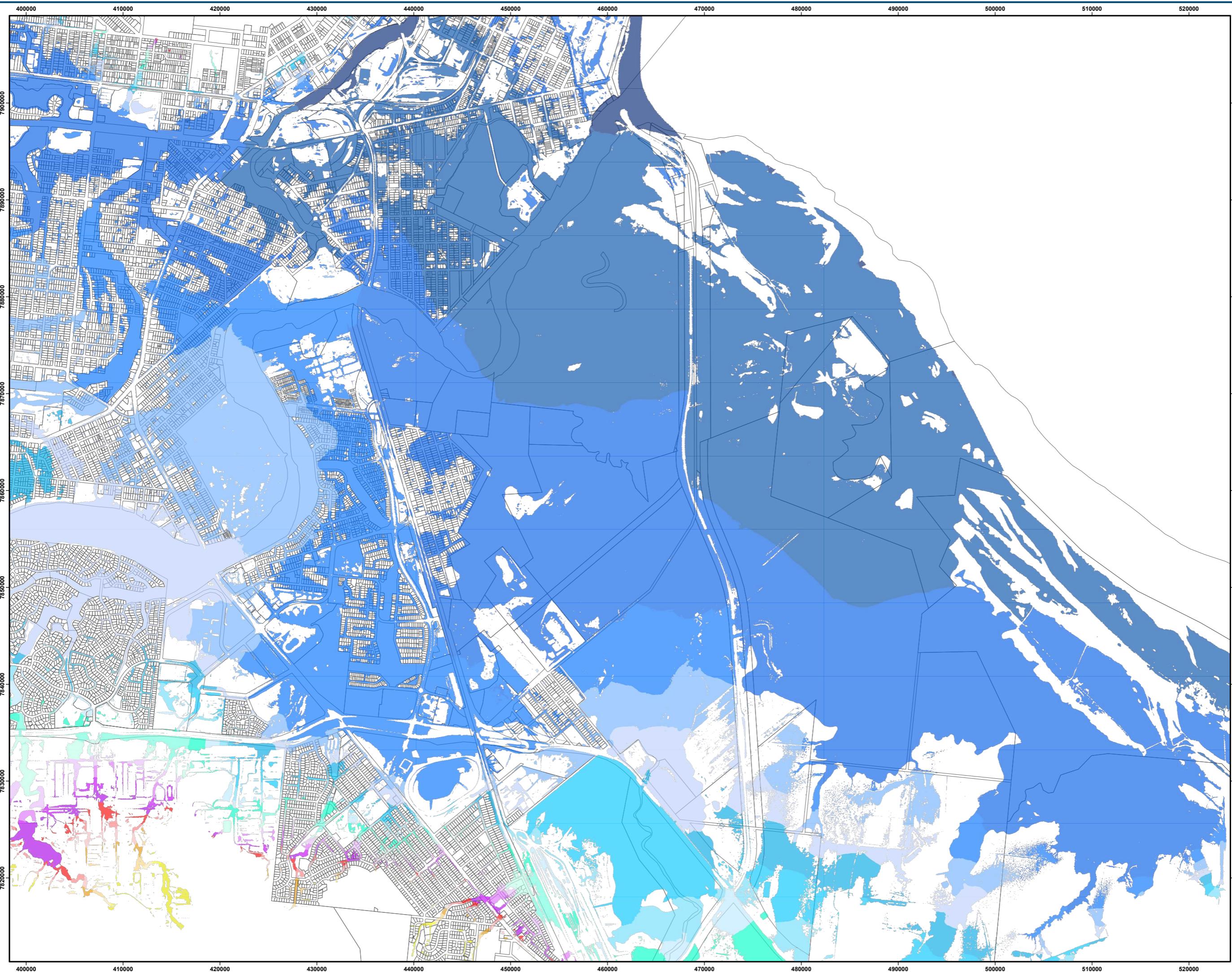
Date: 10/07/2025

Author: zza

0 2.5 5 10  
Kilometres

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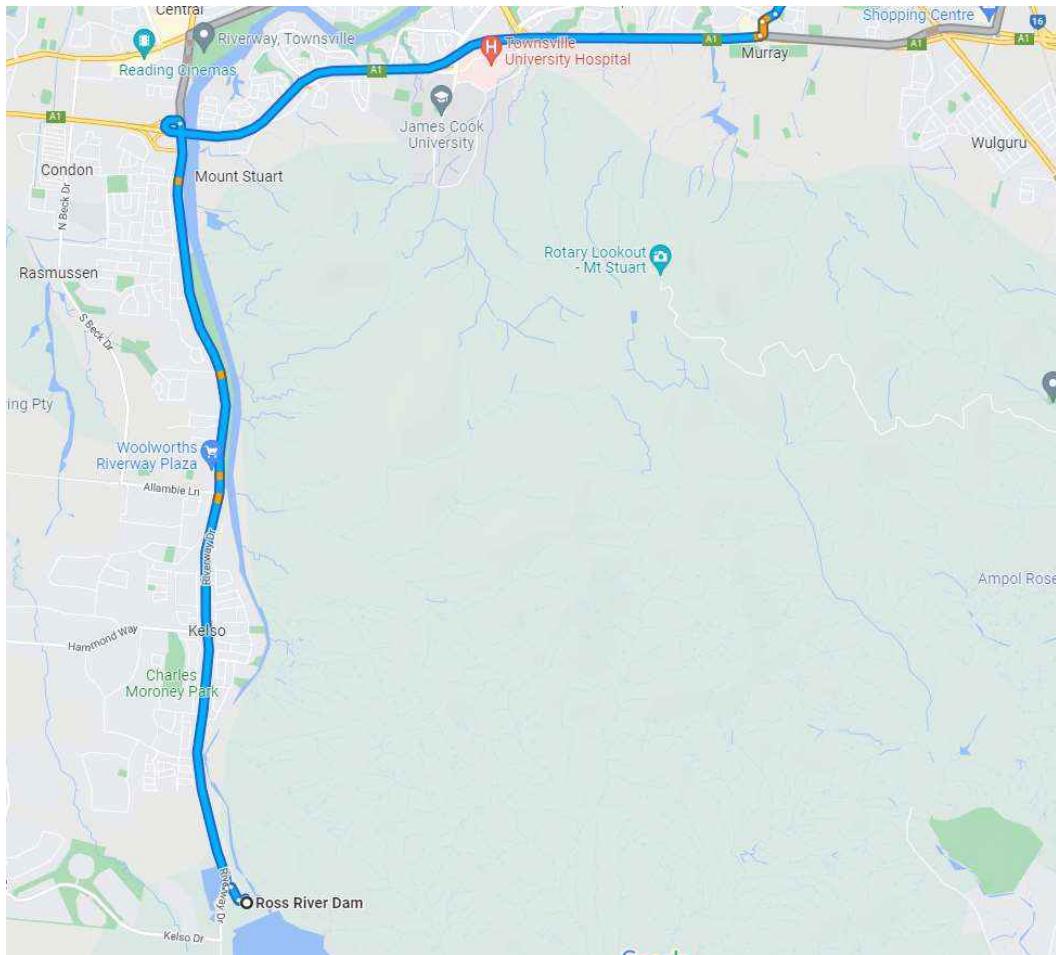


# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix B2 Emergency Access Route Information



#### Road Access to Ross River Dam

The Dam is usually accessible via Riverway Drive. From here, access to the control building can be obtained along the dam crest. This route may be cut should the Bohle River or the Ross River overtop their banks downstream of the dam. The following alternative access routes to the dam may be possible:

- Via helicopter (sufficient room exists in the vicinity of the dam for helicopter access)
- Via boat from the southern end of Lake Ross.

Access	Road Status	Speed limit	Travel time	Notes
Riverway Drive	Dual lane bitumen.	70 km/hr	15 minutes from Thuringowa Central (Willows intersection) or Ring Road	Provides the most reliable direct access to RRD from the city under most conditions. May be inundated in extreme floods. Alternative back street access available along most length in cases of road closures.
Angus Smith Drive via MT Stuart Training Area	90% dual Lane bitumen 10% single lane fire road closest to	60 km/h or less. Not a public	30 minutes from Ring Road.	Defence Department approval required. Provides access to RH abutment. Viable alternative if Riverway drive impassable.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



	RRD.	road		
Riverway Drive (south).	Dual lane gravel.	N/A	2 minutes from Townsville Graded Sands.	Provides access to the LH abutment of embankment and chainage 6300 from the TGS site.

### Road Conditions

Road conditions between home base of the operating staff and RRD is a very significant factor to consider during the period leading up to mobilisation. If required, the DDO shall mobilise before road conditions prevent road access. Road conditions in the Townsville area can be found at the RACQ website above.

Contingency plans shall be established for attendance at the dam during adverse weather and flooding and shall

ensure that the emergency organisations:

- Are aware of the requirements to attend the dam during emergency situations
- Will assist if communication systems have failed.

Where alternative access to RRD is required during times that Riverway Drive is flooded, the Nominated Operator shall identify and co-ordinate with the Agencies or landowners to ensure that alternative access is available.

### Control Building Access

Vehicle access to the RRD Control Building is generally across the causeway downstream of the spillway. The causeway is equipped with water level gauges at each end. The DDO shall NOT attempt to cross the causeway if there is any water flowing over the causeway.

When the causeway is not accessible, the route across the top of the dam should be used, provided wind conditions are suitable. The dam should only be crossed if the maximum wind gusts are below 125 kph (Category 1 Cyclone).

The wind speed at the left-hand abutment of the Ross River Dam is shown on the "Catchment Data" screen of the HMI. If necessary, this can be confirmed at the Ross River Ranger's/TCC staff member's Office HMI. It is noted that during strong winds that the wind speed is higher at the top of the embankment than on the spillway bridge. The wind passing through the gap between the top of the gate and the bridge greatly reduces the amplification caused by the embankment.

### Ross River Dam Inaccessible

In the event that the DDO cannot travel to the RRD Control Room, the monitoring and control of the dam shall be established at one of the following alternate locations in order of preference:

Control Location	Responsibility
RRD Ranger's/TCC staff member's Office	DDO
DDO Base or Home via SCADA connection	DDO

As soon as conditions permit, the DDO shall travel from the alternate location to the RRD Control Room

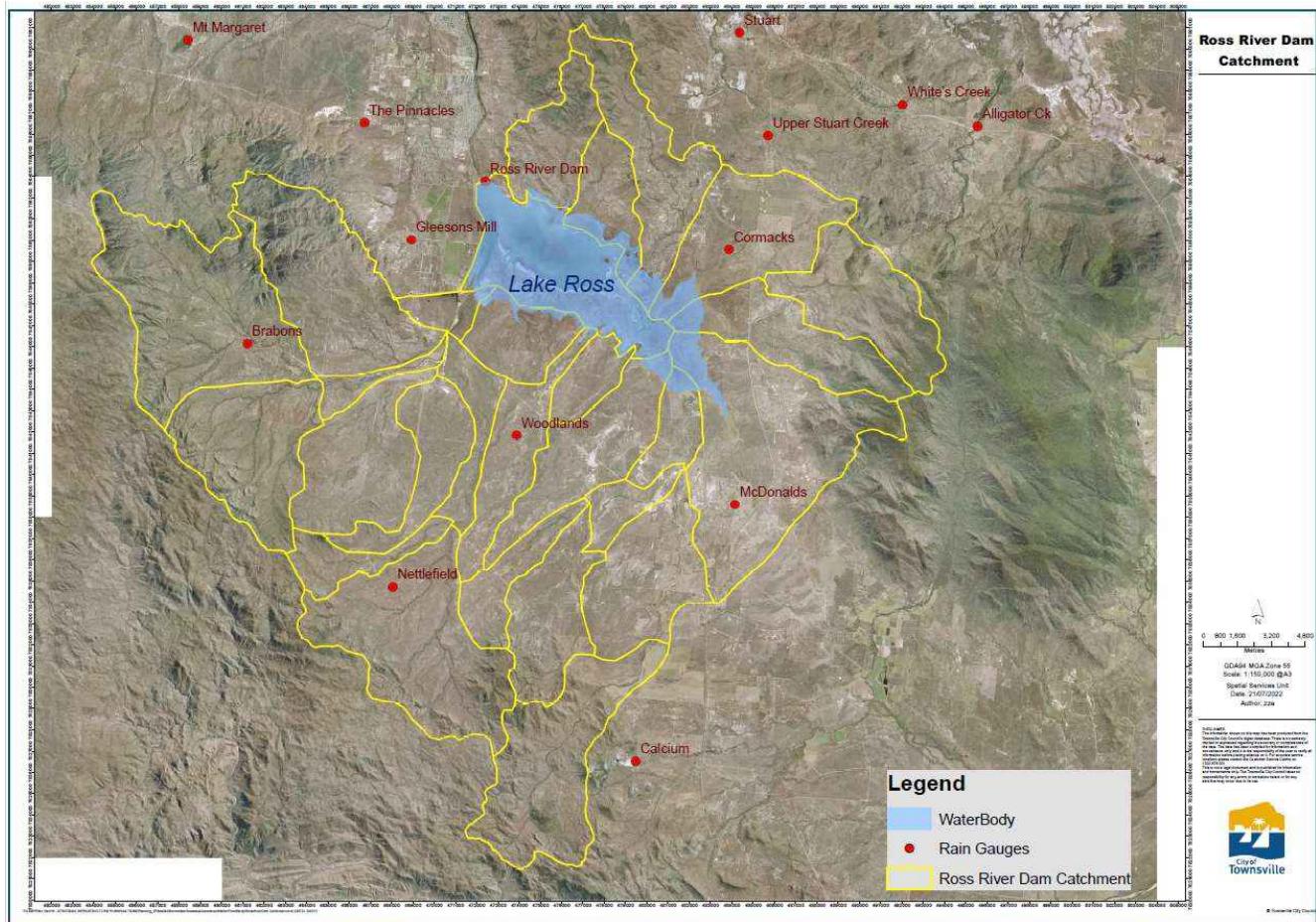
**Note:** Refer to Section 5.1 for transfer of responsibility during travel (mobilisation).

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix B3 Catchment Map



# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C - Equipment and Technical Information

- C1 Equipment available during an emergency
- C2 Ross River Dam Flood Rules
- C3 Ross River Dam Gate Openings
- C4 Ross River Dam Gate Discharges Water Level Rising
- C5 Ross River Dam Gate Discharges Water Level Falling
- C6 Ross River Dam Free Overflow Discharges
- C7 Ross River Dam Discharge - One or More Gates
- C8 Ross River Dam Storage Curve

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C1 - Equipment Available During an Emergency

All emergency equipment hire is to be arranged through TCC RPA service preapproved supplier services.

**Note:** In addition to the further resources can be accessed through Local, District, and State Disaster Management framework, if and when each Local Disaster Management Group is activated. See relevant pages in communication lists for contact details.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C2 Ross River Dam Flood Rules

The operation of the gates on Ross River Dam is directly related to the water level in the reservoir.

Item	EL (m AHD)
Spillway Crest Level	34.65
Full Supply Level	38.55
Gate Trigger Level	38.65
Top of Spillway Gate (Closed)	39.05
Limit of Hydrostatic Load	40.05 <sup>5</sup>
Limit of D/S Channel Capacity (Under normal operating conditions)	42.50
Dam Crest Level	48.00

**Note:** The data presented in the following Appendices is taken from DOMM-004, Detailed Operating and Maintenance Procedure for Supervisory Control and Data Acquisition System. The Limit of Hydrostatic Load EL 40.05m at Ross River Dam is related to the design hydrostatic load limit that the gates can withstand if they fail to open as designed.

This level is only relevant if one or more of the spillway gates fails to open when required. It is equivalent to 1.0m of water overtopping the gates when closed.

<sup>5</sup> Stage 2 to 5, Spillway and Stilling Basin Design Report (September 2005, GHD

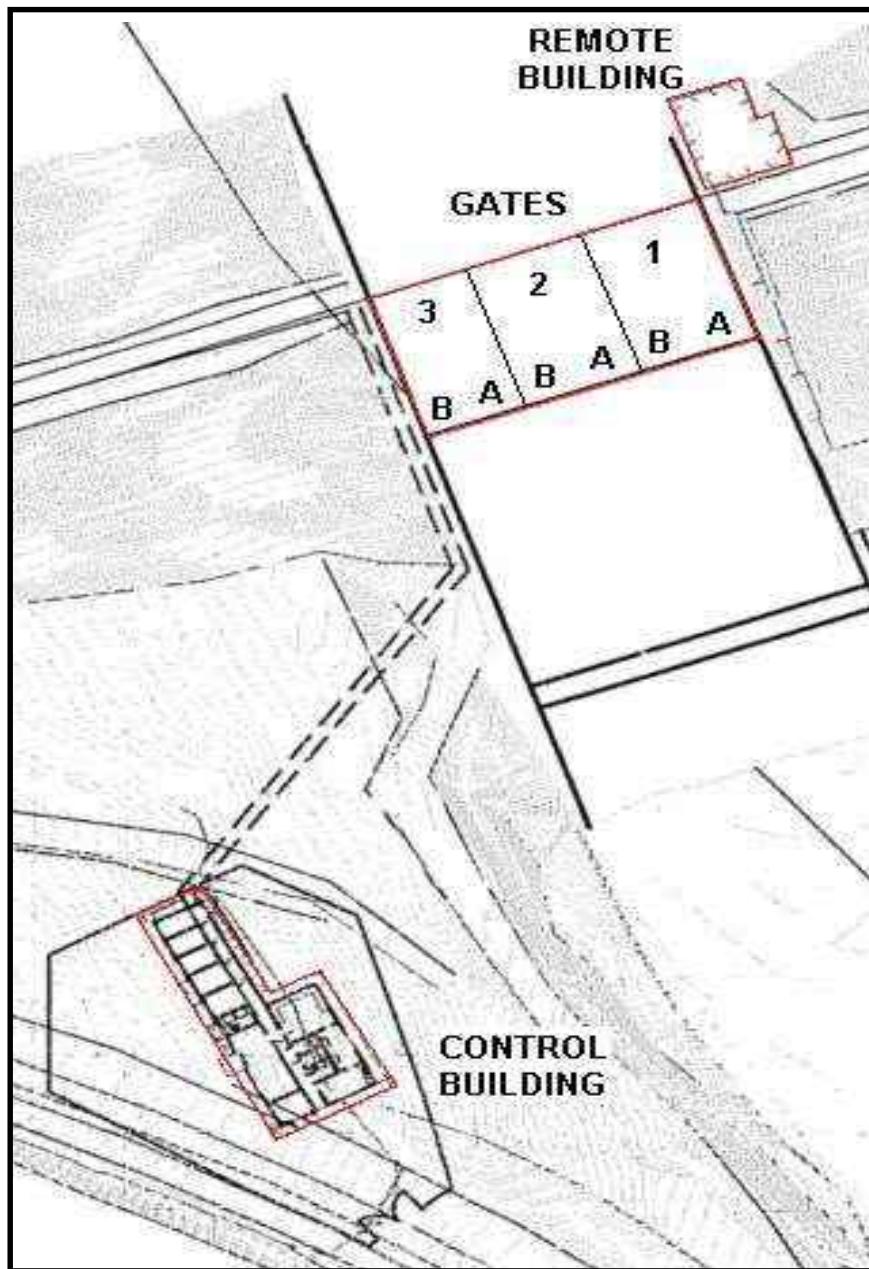
# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Flood discharges are controlled by the 3 spillway gates, shown in Figure C1, for lake levels less than EL 43.00 m. Gates 1, 2 & 3 may also be referred to as Left, Centre and Right respectively.

For lake levels equal to and above EL 43.00 m, the spillway gates are to be fully open with free discharge over the crest of the spillway.



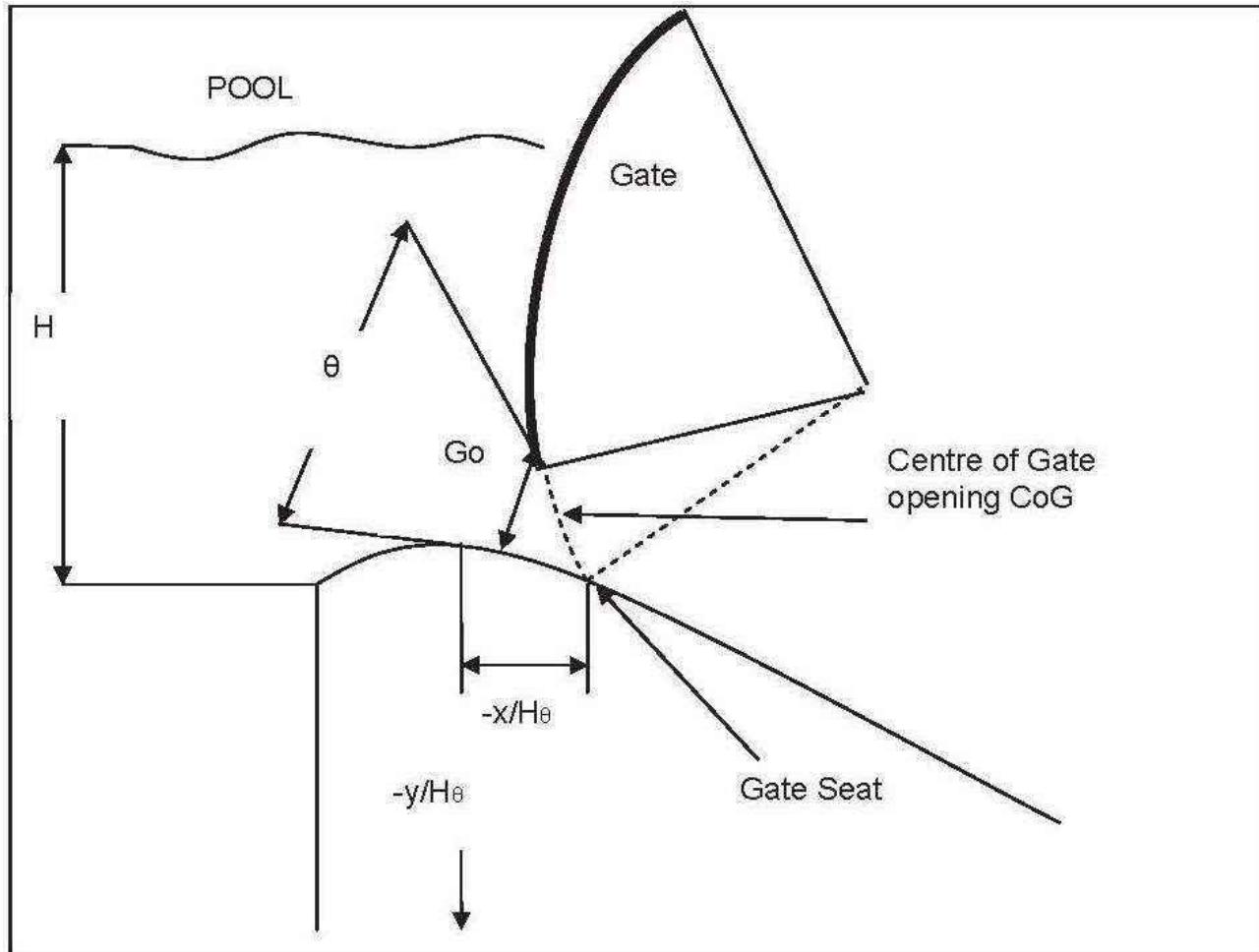
# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C3 Ross River Dam Gate Openings

Gate opening ( $G_o$ ) is defined as the distance between the bottom of the gate skin plate and the dam crest tangent line at the elevation of the gate seating position as shown below.



# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Table below presents the relationships between gate opening and the change of gate arm angle.

Gate Opening $G_o$ (m)	Gate Arm Angle Change (Degrees)
0.00	0.000
0.25	2.170
0.50	4.170
0.75	6.050
1.00	7.830
1.25	9.530
1.50	11.170
1.75	12.760
2.00	14.310
2.25	15.810
2.50	17.290
2.75	18.740
3.00	20.170
3.25	21.580
3.50	22.970
3.75	24.330
4.00	25.656
4.25	26.981
4.50	28.305
4.75	29.630
5.00	30.954
5.25	32.278
5.50	33.603
5.75	34.927
6.00	36.252
6.25	37.576
6.50	38.900
6.75	40.225
7.00	41.549
7.25	42.874
7.50	44.198
11.50	65.388

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

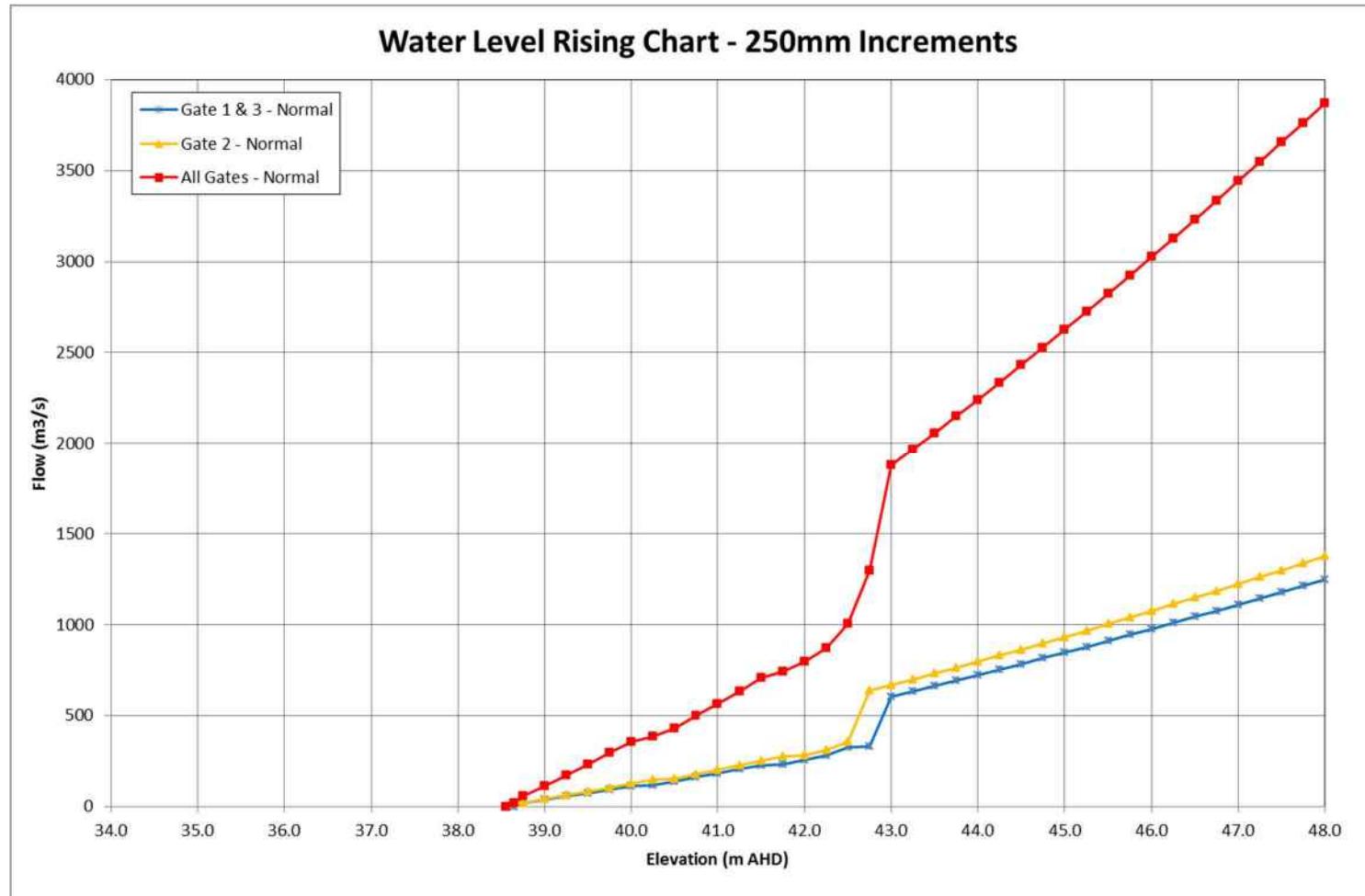


### Appendix C4 Ross River Dam Gate Discharges Water Level Rising

Headwater Level (m AHD)	Headwater Level (m above FSL)	Headwater Level (m above Spillway)	Gate Opening $G_o$ (m)			Discharge (m <sup>3</sup> /s)			Total
			Left	Centre	Right	Left	Centre	Right	
38.55	0.00	3.89	0.00	0.00	0.00	0	0	0	0
38.65	0.10	3.99	0.00	0.25	0.00	0	20	0	20
38.75	0.20	4.09	0.25	0.25	0.25	18	20	18	57
39.00	0.45	4.34	0.50	0.50	0.50	37	41	37	114
39.25	0.70	4.59	0.75	0.75	0.75	56	61	56	173
39.50	0.95	4.84	1.00	1.00	1.00	75	83	75	232
39.75	1.20	5.09	1.25	1.25	1.25	95	104	95	293
40.00	1.45	5.34	1.50	1.50	1.50	115	126	115	356
40.25	1.70	5.59	1.50	1.75	1.50	118	149	118	385
40.50	1.95	5.84	1.75	1.75	1.75	139	153	139	431
40.75	2.20	6.09	2.00	2.00	2.00	160	177	160	497
41.00	2.45	6.34	2.25	2.25	2.25	182	201	182	565
41.25	2.70	6.59	2.50	2.50	2.50	205	225	205	635
41.50	2.95	6.84	2.75	2.75	2.75	228	251	228	706
41.75	3.20	7.09	2.75	3.00	2.75	233	276	233	742
42.00	3.45	7.34	3.00	3.00	3.00	256	282	256	795
42.25	3.70	7.59	3.25	3.25	3.25	281	309	281	870
42.50	3.95	7.84	3.75	3.75	3.75	324	356	324	1,003
42.75	4.20	8.09	3.75	11.50	3.75	330	636	330	1,296
43.00	4.45	8.34	11.50	11.50	11.50	605	667	605	1,877
43.25	4.70	8.59	11.50	11.50	11.50	634	698	634	1,966
43.50	4.95	8.84	11.50	11.50	11.50	663	730	663	2,056
43.75	5.20	9.09	11.50	11.50	11.50	692	763	692	2,148
44.00	5.45	9.34	11.50	11.50	11.50	722	796	722	2,241
44.25	5.70	9.59	11.50	11.50	11.50	753	829	753	2,335
44.50	5.95	9.84	11.50	11.50	11.50	784	863	784	2,430
44.75	6.20	10.09	11.50	11.50	11.50	815	898	815	2,527
45.00	6.45	10.34	11.50	11.50	11.50	846	932	846	2,625
45.25	6.70	10.59	11.50	11.50	11.50	878	967	878	2,724
45.50	6.95	10.84	11.50	11.50	11.50	910	1,003	910	2,823
45.75	7.20	11.09	11.50	11.50	11.50	943	1,039	943	2,924
46.00	7.45	11.34	11.50	11.50	11.50	976	1,075	976	3,026
46.25	7.70	11.59	11.50	11.50	11.50	1,009	1,111	1,009	3,129
46.50	7.95	11.84	11.50	11.50	11.50	1,042	1,148	104	3,233
46.75	8.20	12.09	11.50	11.50	11.50	1,076	1,185	107	3,337
47.00	8.45	12.34	11.50	11.50	11.50	1,110	1,223	111	3,442
47.25	8.70	12.59	11.50	11.50	11.50	1,144	1,260	114	3,548
47.50	8.95	12.84	11.50	11.50	11.50	1,178	1,298	117	3,655
47.75	9.20	13.09	11.50	11.50	11.50	1,213	1,336	121	3,763
48.00	9.45	13.34	11.50	11.50	11.50	1,248	1,375	124	3,871

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



As the lake level falls the total discharge shall be progressively reduced so that at any given level the discharge does not exceed the value for the next higher lake level range. There is less risk of the gates “hunting” if gate openings on the falling limb of a flood remain at the highest lake level setting for the first fall in lake level. The gate openings are set for the next higher lake level reached given in the Table as the lake continues to fall

# Ross River Dam

## 2025 Emergency Action Plan (EAP)

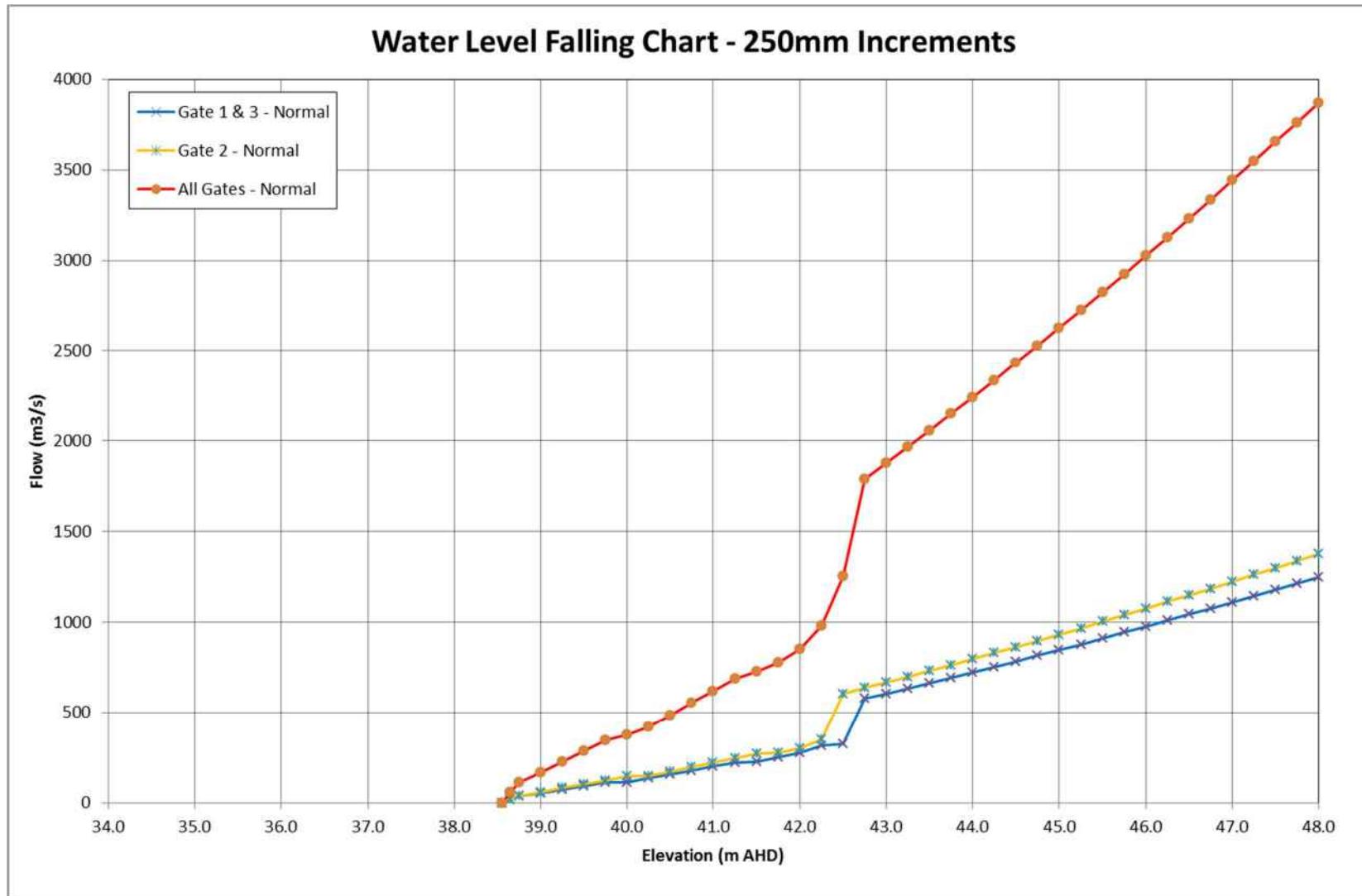


### Appendix C5 Ross River Dam Gate Discharges Water Level Falling

Headwater Level (m AHD)	Headwater Level (m above FSL)	Headwater Level (m above Spillway)	Gate Opening $G_o$ (m)			Discharge (m³/s)			
			Left	Centre	Right	Left	Centre	Right	Total
			1	2	3	1	2	3	
38.55	0.00	3.89	0.00	0.00	0.00	0	0	0	0
38.65	0.10	3.99	0.25	0.25	0.25	18	20	18	56
38.75	0.20	4.09	0.50	0.50	0.50	36	39	36	111
39.00	0.45	4.34	0.75	0.75	0.75	54	60	54	168
39.25	0.70	4.59	1.00	1.00	1.00	73	80	73	226
39.50	0.95	4.84	1.25	1.25	1.25	92	101	92	285
39.75	1.20	5.09	1.50	1.50	1.50	112	123	112	346
40.00	1.45	5.34	1.50	1.75	1.50	115	145	115	375
40.25	1.70	5.59	1.75	1.75	1.75	135	149	135	420
40.50	1.95	5.84	2.00	2.00	2.00	156	172	156	485
40.75	2.20	6.09	2.25	2.25	2.25	178	196	178	552
41.00	2.45	6.34	2.50	2.50	2.50	200	220	200	620
41.25	2.70	6.59	2.75	2.75	2.75	222	245	222	690
41.50	2.95	6.84	2.75	3.00	2.75	228	270	228	725
41.75	3.20	7.09	3.00	3.00	3.00	251	276	251	778
42.00	3.45	7.34	3.25	3.25	3.25	275	303	275	852
42.25	3.70	7.59	3.75	3.75	3.75	317	349	317	982
42.50	3.95	7.84	3.75	11.50	3.75	324	605	324	1,252
42.75	4.20	8.09	11.50	11.50	11.50	577	636	577	1,789
43.00	4.45	8.34	11.50	11.50	11.50	605	667	605	1,877
43.25	4.70	8.59	11.50	11.50	11.50	634	698	634	1,966
43.50	4.95	8.84	11.50	11.50	11.50	663	730	663	2,056
43.75	5.20	9.09	11.50	11.50	11.50	692	763	692	2,148
44.00	5.45	9.34	11.50	11.50	11.50	722	796	722	2,241
44.25	5.70	9.59	11.50	11.50	11.50	753	829	753	2,335
44.50	5.95	9.84	11.50	11.50	11.50	784	863	784	2,430
44.75	6.20	10.09	11.50	11.50	11.50	815	898	815	2,527
45.00	6.45	10.34	11.50	11.50	11.50	846	932	846	2,625
45.25	6.70	10.59	11.50	11.50	11.50	878	967	878	2,724
45.50	6.95	10.84	11.50	11.50	11.50	910	1,003	910	2,823
45.75	7.20	11.09	11.50	11.50	11.50	943	1,039	943	2,924
46.00	7.45	11.34	11.50	11.50	11.50	976	1,075	976	3,026
46.25	7.70	11.59	11.50	11.50	11.50	1,009	1,111	1,009	3,129
46.50	7.95	11.84	11.50	11.50	11.50	1,042	1,148	1,042	3,233
46.75	8.20	12.09	11.50	11.50	11.50	1,076	1,185	1,076	3,337
47.00	8.45	12.34	11.50	11.50	11.50	1,110	1,223	1,110	3,442
47.25	8.70	12.59	11.50	11.50	11.50	1,144	1,260	1,144	3,548
47.50	8.95	12.84	11.50	11.50	11.50	1,178	1,298	1,178	3,655
47.75	9.20	13.09	11.50	11.50	11.50	1,213	1,336	1,213	3,763
48.00	9.45	13.34	11.50	11.50	11.50	1,248	1,375	1,248	3,871

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C6 Ross River Dam Free Overflow Discharges

Headwater Level (m AHD)	Headwater Level (m above Spillway)	Discharge (m³/s)			
		Left	Centre	Right	Total
		1	2	3	
34,656	0.00	0	0	0	0
34,750	0.09	1	1	1	2
35,000	0.34	4	5	4	14
35,500	0.84	17	19	17	54
36,750	1.09	26	28	26	80
36,000	1.34	35	39	35	109
36,250	1.59	46	50	46	142
36,500	1.84	57	63	57	177
36,750	2.09	69	77	69	215
37,000	2.34	83	91	83	257
37,250	2.59	97	107	97	300
37,500	2.84	112	123	112	346
37,750	3.09	127	140	127	395
38,000	3.34	144	158	144	446
38,250	3.59	161	177	161	499
38,500	3.84	179	197	179	554
38,750	4.09	197	217	197	612
39,000	4.34	216	238	216	671
38,250	4.59	236	260	236	733
39,500	4.84	257	283	257	797
38,750	5.09	278	306	278	863
40,000	5.34	300	330	300	930
40,250	5.59	322	355	322	1,000
40,500	5.84	345	380	345	1,071
40,750	6.09	369	406	369	1,144
41,000	6.34	393	433	393	1,219
41,250	6.59	418	460	418	1,296
41,500	6.84	443	488	443	1,374
41,750	7.09	469	516	469	1,454
42,000	7.34	495	545	495	1,535
42,250	7.59	522	575	522	1,618
42,500	7.84	549	605	549	1,703
42,750	8.09	577	636	577	1,789
43,000	8.34	605	667	605	1,877
43,250	8.59	634	698	634	1,966
43,500	8.84	663	730	663	2,066
43,750	9.09	692	763	692	2,148
44,000	9.34	722	796	722	2,241
44,250	9.59	753	829	753	2,335
44,500	9.84	784	863	784	2,430
44,750	10.00	815	898	815	2,527
45,000	10.30	846	932	846	2,625
45,250	10.50	878	967	878	2,724
45,500	10.80	910	1,003	910	2,823

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



46,750	11:00	943	1,039	943	2,924
46,000	11:30	978	1,075	978	3,028
46,250	11:50	1,009	1,111	1,009	3,129
46,500	11:80	1,042	1,148	1,042	3,233
46,750	12:00	1,078	1,185	1,078	3,337
47,000	12:30	1,110	1,223	1,110	3,442
47,250	12:50	1,144	1,260	1,144	3,548
47,500	12:80	1,178	1,298	1,178	3,655
47,750	13:00	1,213	1,336	1,213	3,763
48,000	13:30	1,248	1,375	1,248	3,871

Table shows the flow over the spillway if the gates were fully opened at the commencement of spill.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C7 Discharge for Central Gate only (m³/s)

Lake Level	Gate Opening (m)																			Elevation on centre of gate opening (m)																																																																																										
	0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.2	Elevation on centre of gate opening (m)																																																																																															
	34.252	34.46	34.65	34.82	34.99	35.15	35.30	35.45	35.59	35.73	35.87	36.00	36.13	36.26	36.39	36.52	36.65	36.77	36.90	37.15	37.40	37.65	37.90	38.15	38.40	40.389	Elevation on centre of gate opening (m)																																																																																			
	39.03	39.44	39.82	40.18	40.52	40.85	41.16	41.47	41.76	42.05	42.33	42.61	42.88	43.15	43.41	43.67	43.93	44.17	44.42	44.90	45.37	45.82	46.27	46.71	47.13	50.11	Elevation on centre of gate opening (m)																																																																																			
48.00	594	589	588	589	592	597	603	610	618	627	637	647	658	669	681	693	705	719	733	761	790	821	853	886	921	1375	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																																			
47.75	569	565	564	565	568	573	580	587	595	604	614	624	635	646	658	671	683	697	711	739	769	800	833	866	902	1336	1223	1185	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																																
47.50	545	541	540	542	545	550	556	564	572	581	591	601	612	624	636	649	661	675	689	718	748	780	813	847	884	920	1260	1185	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																																
47.25	521	517	517	518	522	527	534	541	550	559	569	579	591	602	615	627	640	654	668	697	728	760	794	829	868	906	1223	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																																	
47.00	497	494	493	495	499	505	511	519	527	537	547	558	569	581	593	606	619	633	647	677	708	741	776	813	855	892	930	1375	1223	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																															
46.75	474	471	471	473	477	483	489	497	506	515	526	537	548	560	573	586	599	613	628	658	690	723	759	798	842	886	920	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																															
46.50	451	448	448	451	455	461	468	476	485	494	505	516	528	540	552	566	579	594	608	639	671	706	743	786	829	868	906	1260	1185	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																															
46.25	429	426	427	429	434	440	447	455	464	474	484	496	507	520	533	546	560	575	590	621	654	690	730	774	817	863	906	1223	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																																
46.00	407	404	405	408	412	419	426	434	444	454	464	476	488	501	514	528	541	556	572	604	638	675	719	762	803	848	892	930	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																														
45.75	385	383	384	387	392	398	406	414	424	434	445	457	469	482	495	509	523	539	554	587	623	664	708	750	790	830	870	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																														
45.50	364	362	363	367	372	378	386	395	404	415	426	438	451	464	477	492	506	522	538	572	609	653	696	737	777	817	863	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																														
45.25	343	341	343	346	352	359	367	376	386	396	408	420	433	446	460	475	489	506	522	558	599	636	674	711	750	790	830	870	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																													
45.00	322	321	323	327	333	340	348	357	367	378	390	402	415	429	443	458	474	490	508	545	589	632	673	712	750	790	830	870	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																													
44.75	302	302	304	308	314	321	330	339	349	361	373	385	399	413	428	443	459	476	494	536	579	621	661	700	740	780	820	860	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																													
44.50	283	282	285	289	303	312	321	332	344	356	369	383	397	412	429	445	463	480	497	537	579	621	661	700	740	780	820	860	906	1336	1206	1148	1111	1075	1039	1003	967	920	886	848	800	762	720	683	649	616	583	550	517	484	451	418	385	352	319	286	253	220	188	156	124	93	62	31	10																																													
44.25	264	264	271	277	285	294	304	315	327	340	353	368	383	398	415	433	452	474	492	530	570	610	650	690	730	770	810	850	890	930	970	1010	1050	1090	1130	1170	1210	1250	1290	1330	1370	1410	1450	1490	1530	1570	1610	1650	1690	1730	1770	1810	1850	1890	1930	1970	2010	2050	2090	2130	2170	2210	2250	2290	2330	2370	2410	2450	2490	2530	2570	2610	2650	2690	2730	2770	2810	2850	2890	2930	2970	3010	3050	3090	3130	3170	3210	3250	3290	3330	3370	3410	3450	3490	3530	3570	3610	3650	3690	3730	3770	3810	3850	3890	3930	3970	4010	4050	4090	4130

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C8 Discharge for single outer gate (1 or 3) only (m³/s)

		Gate Opening (m)																			Elevation on centre of gate opening (m)																	
		0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	Elevation on centre of gate opening (m)																						
		34.252	34.46	34.65	34.82	34.99	35.15	35.30	35.45	35.59	35.73	35.87	36.00	36.13	36.26	36.39	36.52	36.65	36.77	36.90	37.15	37.40	37.65	37.90	38.15	38.40	40.389											
		39.03	39.44	39.82	40.18	40.52	40.85	41.16	41.47	41.76	42.05	42.33	42.61	42.88	43.15	43.41	43.67	43.93	44.17	44.42	44.69	45.37	45.82	46.27	46.71	47.13	50.11											
Lake Level																																						
48.00	539	535	534	535	538	542	547	554	561	569	578	587	597	607	618	629	640	653	665	691	717	745	774	804	836	1248												
47.75	517	513	512	513	516	520	526	533	540	548	557	566	576	587	597	609	620	633	645	671	698	726	756	786	819	1213												
47.50	494	491	490	492	495	499	505	512	519	527	536	546	556	566	577	589	600	613	625	652	679	708	738	769	802	1178												
47.25	473	469	469	470	474	479	484	491	499	507	516	526	536	547	558	569	581	594	606	633	661	690	721	753	788	1144												
47.00	451	448	448	450	453	458	464	471	479	487	497	506	517	527	539	550	562	575	588	615	643	673	704	738	776	1110												
46.75	430	427	427	429	433	438	444	451	459	468	477	487	497	508	520	532	543	557	570	597	626	656	689	724	764	1076												
46.25	389	387	387	390	394	399	405	413	421	430	440	450	461	472	484	496	508	522	535	564	594	626	663	703	741	1009												
46.00	369	367	368	370	374	380	387	394	403	412	422	432	443	454	466	479	491	505	519	548	579	613	653	692	729	976												
45.75	349	348	348	351	356	361	368	376	385	394	404	415	426	437	449	462	475	489	503	533	565	602	642	681	717	943												
45.50	330	329	330	333	337	343	350	358	367	377	387	398	409	421	433	446	459	474	488	519	553	593	632	669	705	910												
45.25	311	310	311	315	319	326	333	341	350	360	370	381	393	405	418	431	444	459	474	506	544	583	622	658	692	878												
45.00	293	292	293	297	302	308	316	324	333	343	354	365	377	389	402	416	430	445	461	495	535	574	611	646	680	846												
44.75	274	274	276	279	285	291	299	308	317	327	338	350	362	375	388	402	416	432	449	486	526	564	600	634	667	815												
44.50	257	256	262	268	275	283	292	301	312	323	335	347	361	374	389	404	421	438	478	517	554	589	622	653	684	784												
44.25	239	239	242	246	252	259	267	276	286	297	309	321	334	347	362	377	393	410	430	470	508	544	578	610	640	753												
44.00	222	223	225	230	236	244	252	261	272	283	295	307	321	335	350	366	383	403	423	462	498	533	566	597	626	722												
43.75	206	206	210	214	221	229	237	247	258	269	281	294	308	323	339	356	376	396	415	453	489	523	554	584	612	692												
43.50	190	191	194	199	206	214	223	233	244	256	269	283	297	313	330	350	369	389	408	444	479	512	542	571	597	663												
43.25	174	175	179	185	192	200	210	220	232	244	257	271	287	304	323	343	362	382	400	436	469	501	530	558	582	634												
43.00	159	161	165	171	178	187	197	208	220	233	247	262	278	298	317	337	356	374	392	427	459	495	529	557	587	605												
42.75	144	146	151	157	165	174	185	196	208	222	237	253	272	292	311	330	348	367	384	417	449	478	505	529	552	577												
42.50	130	132	137	144	153	162	173	185	198	213	229	247	267	286	305	324	341	359	376	408	438	466	492	515	536	549												
42.25	116	119	125	132	141	151	162	175	189	204	223	243	262	281	299	317	334	351	367	398	427	454	478	500	519	542												
42.00	103	106	112	120	130	140	152	166	181	199	218	238	256	275	292	310	326	343	358	388	416	441	464	484	495	495												
41.75	90	94	101	109	119	131	143	158	175	195	214	233	251	269	286	303	319	334	349	378	405	428	450	468	486	496	496											
41.50	78	83	90	99	109	122	136	152	172	191	209	228	245	262	279	295	311	326	340	368	393	415	435	443	443	443												
41.25	66	72	80	89	101	114	130	149	168	187	205	222	239	256	272	288	303	317	331	357	381	401	418	418	418	418												
41.00	55	62	70	81	93	108	126	146	164	182	200	217	234	250	265	280	294	308	321	346	368	387	393	393	393													
40.75	45	52	62	73	87	104	124	142	160	178	195	211	227	243	258	272	286	299	311	335	355	369	369	369	369													
40.50	36	44	54	67	83	102	121	139	156	173	190	206	221	236	250	264	277	289	301	323	341	345	345	345	345													
40.25	27	36	47	62	81	100	118	135	152	169	185	200	215	229	242	256	268	280	290	310	322	322	322	322	322													
40.00	19	29	42	60	79	97	115	132	148	164	179	194	208	222	234	247	258	269	279	298	300	300	300	300	300													
39.75	12	24	40	59	77	95	112	128	144	159	174	188	201	214	226	238	248	259	268	278	278	278	278	278														
39.50	6	20	39	57	75	92	108	124	140	154	168	182	194	206	218	228	238	248	256	257	257	257	257	257														
39.25	2	19	38	56	73	89	105	120	135	149	162	175	187	198	209	219	227	236	236	236	236	236	236															
39.00	0	19	37	54	71	87	102	116	130	144	156	168	179	190	199	208	216	216	216	216	216	216	216															
38.75	0	18	36	52	68	84	98	112	125	138	150	161	171	181	190	197	197	197	197	197	197	197	197															
38.50	0	18	35	51	66	81	95	108	120	132	143	153	163	171	179	179																						

# Ross River Dam

## 2025 Emergency Action Plan (EA)



## Appendix C9 Discharge for all gates (m<sup>3</sup>/s)

		Gate Opening (m)																									
		0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	5.00	5.50	6.00	6.50	7.00	7.50	
		34.252	34.46	34.65	34.82	34.99	35.15	35.30	35.45	35.59	35.73	35.87	36.00	36.13	36.26	36.39	36.52	36.65	36.77	36.90	37.15	37.40	37.65	37.90	38.15	38.40	40.38
		39.03	39.44	39.82	40.18	40.52	40.85	41.16	41.47	41.76	42.05	42.33	42.61	42.88	43.15	43.41	43.67	43.93	44.17	44.42	44.90	45.37	45.82	46.27	46.71	47.13	50.11
Lake Level		Elevation at Top of Gate (m)																									
48.00	1672	1659	1656	1659	1668	1681	1698	1718	1740	1765	1792	1821	1851	1883	1917	1952	1986	2025	2062	2142	2225	2312	2402	2495	2593	3871	
47.75	1602	1590	1587	1591	1600	1614	1632	1652	1675	1700	1727	1756	1787	1820	1853	1889	1923	1962	2000	2081	2165	2253	2344	2439	2539	3763	
47.50	1534	1523	1520	1525	1534	1549	1566	1587	1610	1636	1664	1693	1724	1757	1791	1827	1861	1901	1940	2021	2106	2195	2288	2386	2489	3655	
47.25	1466	1456	1454	1459	1469	1484	1502	1523	1547	1573	1601	1631	1663	1696	1730	1766	1801	1842	1881	1963	2050	2140	2235	2335	2443	3548	
47.00	1400	1390	1389	1395	1406	1421	1439	1461	1485	1511	1540	1570	1602	1636	1671	1707	1743	1783	1823	1907	1994	2087	2184	2288	2406	3442	
46.75	1335	1326	1325	1331	1343	1359	1378	1400	1424	1451	1480	1511	1543	1577	1612	1649	1686	1727	1767	1852	1941	2036	2136	2246	2371	3337	
46.50	1270	1262	1263	1269	1281	1297	1317	1339	1364	1392	1421	1452	1485	1520	1555	1593	1630	1672	1712	1799	1890	1987	2092	2213	2335	3233	
46.25	1207	1200	1201	1208	1221	1237	1258	1281	1306	1334	1364	1395	1429	1464	1500	1538	1576	1618	1660	1748	1842	1942	2055	2180	2299	3129	
46.00	1145	1138	1140	1148	1161	1179	1199	1223	1249	1277	1308	1340	1374	1409	1446	1485	1524	1567	1609	1700	1796	1901	2024	2146	2262	3026	
45.75	1084	1078	1081	1089	1103	1121	1142	1166	1193	1222	1253	1286	1320	1357	1394	1434	1473	1517	1560	1653	1754	1868	1992	2111	2224	2924	
45.50	1024	1019	1023	1032	1046	1065	1087	1111	1138	1168	1200	1233	1268	1305	1344	1384	1424	1469	1514	1610	1716	1839	1960	2076	2186	2823	
45.25	965	961	965	976	991	1010	1032	1058	1085	1116	1148	1182	1218	1256	1295	1336	1378	1424	1470	1570	1655	1768	1810	1928	2041	2724	
45.00	908	905	910	920	936	956	979	1005	1034	1065	1098	1133	1169	1208	1248	1291	1334	1381	1429	1535	1659	1780	1895	2004	2108	2628	
44.75	851	849	855	867	883	904	928	954	984	1015	1049	1085	1123	1162	1204	1247	1292	1341	1391	1508	1631	1749	1861	1967	2068	2527	
44.50	795	795	802	814	831	853	878	905	935	968	1002	1039	1078	1118	1161	1207	1253	1305	1359	1483	1603	1718	1827	1930	2026	2430	
44.25	742	742	750	763	781	803	829	857	888	922	957	995	1035	1077	1121	1169	1218	1273	1335	1458	1575	1686	1792	1891	1984	2335	
44.00	689	690	699	713	732	755	782	811	843	877	914	953	994	1038	1084	1134	1188	1250	1312	1432	1546	1654	1756	1852	1941	2249	
43.75	638	640	650	665	685	709	736	767	799	835	873	913	956	1002	1051	1105	1166	1228	1288	1405	1516	1621	1720	1812	1908	2148	
43.50	588	591	602	618	639	664	693	724	758	795	834	876	921	970	1023	1084	1145	1206	1265	1378	1486	1588	1683	1771	1853	2056	
43.25	539	544	556	573	595	621	651	683	719	757	798	842	890	942	1003	1065	1124	1184	1241	1351	1455	1553	1645	1729	1807	1966	
43.00	492	498	511	529	553	580	611	645	681	721	765	811	863	923	984	1045	1103	1160	1216	1323	1424	1518	1606	1686	1759	1877	
42.75	446	453	468	488	512	541	573	608	647	689	735	785	845	906	966	1024	1081	1137	1191	1294	1392	1482	1566	1642	1711	1789	
42.50	402	411	426	447	473	503	537	574	615	659	709	767	828	888	946	1003	1058	1113	1165	1265	1359	1445	1525	1597	1661	1703	
42.25	360	369	387	409	436	468	503	543	586	634	691	752	812	870	927	982	1036	1139	1235	1325	1408	1483	1550	1610	1618		
42.00	318	330	349	373	402	435	473	515	561	617	678	737	795	852	907	961	1012	1063	1112	1204	1290	1369	1440	1502	1535	1536	
41.75	279	292	313	339	369	405	445	490	543	604	664	722	778	833	886	938	988	1037	1084	1173	1255	1329	1395	1453	1454	1454	
41.50	242	257	279	307	340	378	421	472	532	592	649	706	761	814	865	916	964	1011	1056	1141	1218	1288	1349	1374	1374		
41.25	206	223	247	277	313	354	402	461	521	579	635	690	743	794	844	892	938	984	1027	1107	1180	1245	1296	1296	1296		
41.00	172	191	218	250	289	335	392	451	509	565	620	673	724	774	822	869	913	956	997	1073	1141	1201	1219	1219	1219		
40.75	140	162	191	227	269	324	383	441	497	552	605	656	705	753	799	844	886	927	966	1038	1101	1144	1144	1144	1144		
40.50	111	135	167	207	257	316	374	431	485	538	589	638	686	732	776	819	858	898	934	1001	1059	1071	1071	1071			
40.25	84	111	147	192	251	309	365	420	473	524	573	620	666	710	752	792	830	867	901	963	1000	1000	1000	1000	1000		
40.00	59	90	131	187	245	301	356	409	460	509	556	602	646	687	727	765	801	835	866	923	930	930	930	930	930		
39.75	38	74	124	182	239	293	346	397	446	494	539	583	624	664	702	737	770	802	831	863	863	863	863	863	863		
39.50	20	62	121	177	232	285	336	386	433	478	522	563	602	640	675	708	738	768	793	797	797	797	797	797	797		
39.25	6	60	117	173	226	277	326	374	419	462	503	543	580	615	647	678	705	732	733	733	733	733	733	733	733		
39.00	0	58	114	168	219	268	316	361	404	445	484	521	556	588	618	646	671	711	761	771	871	871	871	871	871		
38.75	0	57	111	163	212	260	305	348	389	428	465	499	531	561	588	612	646	671	711	761	771	871	871	871	871		
38.50	0	55	107	157	205	250	294	335	373	410	444	476	505	532	554	584	612	646	671	711	761	771	871	871	871		
38.25	0	53	104	152	198	241	282	321	357	391	422	451	478	499	499	499	499	499	499	499	499	499	499	499	499		
38.00	0	51	100	146	190	231	270	306	340	371	400	426	446	446	446	446	446	446	446	446	446	446	446	446	446		
37.75	0	50	96	140	182	221	257	291	322	350	376	395	395	395	395	395	395	395	395	395	395	395	395	395	395		
37.50	0	48	92	134	173	210	244	274	303	328	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346		
37.25	0	46	88	128	164	198	229	257	282	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
37.00	0	44	84	121	155	186	214	239	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257		
36.75	0	41	79	114	145	173	198	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215		
36.50	0	39	74	106	134	159																					

**Note:** Discharge rates do not include flow over the closed gate. If a gate is closed or inoperable, assuming the gate has not partially opened, the gate will be overtopped for EL greater than 39.05m. For all situations where a gate is inoperable when closed, refer to Section 10 for Emergency Actions.

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C10 Minimum gate settings - Water level rising 50mm increments

		Minimum Gate Settings - Water Level RISING - 50mm increments																							
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational						Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)			
		(m)			(m)						Left Centre Right				Left Centre Right				Left Centre Right						
		1	2	3	1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
38.55	0.00	0.00	0.00	0.00	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0					
38.60	0.05	0.00	0.00	0.00	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0					
38.65	0.10	0.00	0.25	0.00	closed	0.25	closed	20	closed	0.25	closed	20	closed	closed	closed	0	closed	0.25	closed	20					
38.70	0.15	0.00	0.25	0.00	closed	0.25	closed	20	closed	0.25	closed	20	closed	closed	closed	0	closed	0.25	closed	20					
38.75	0.20	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	75	0.50	closed	0.50	71	0.50	0.50	closed	75					
38.80	0.25	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	76	0.50	closed	0.50	72	0.50	0.50	closed	76					
38.85	0.30	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	76	0.50	closed	0.50	72	0.50	0.50	closed	76					
38.90	0.35	0.25	0.25	0.25	0.25	0.25	0.25	58	closed	0.50	0.50	76	0.50	closed	0.50	73	0.50	0.50	closed	76					
38.95	0.40	0.25	0.25	0.25	0.25	0.25	0.25	58	closed	0.50	0.50	77	0.50	closed	0.50	73	0.50	0.50	closed	77					
39.00	0.45	0.50	0.50	0.50	0.50	0.50	0.50	114	closed	0.75	0.75	114	1.00	closed	1.00	141	0.75	0.75	closed	114					
39.05	0.50	0.50	0.50	0.50	0.50	0.50	0.50	115	closed	0.75	0.75	114	1.00	closed	1.00	142	0.75	0.75	closed	114					
39.10	0.55	0.50	0.50	0.50	0.50	0.50	0.50	115	closed	0.75	0.75	115	1.00	closed	1.00	143	0.75	0.75	closed	115					
39.15	0.60	0.50	0.50	0.50	0.50	0.50	0.50	116	closed	0.75	0.75	116	1.00	closed	1.00	144	0.75	0.75	closed	116					
39.20	0.65	0.50	0.50	0.50	0.50	0.50	0.50	117	closed	0.75	0.75	116	1.00	closed	1.00	145	0.75	0.75	closed	116					
39.25	0.70	0.75	0.75	0.75	0.75	0.75	0.75	173	closed	1.25	1.25	188	1.25	closed	1.25	179	1.25	1.25	closed	188					
39.30	0.75	0.75	0.75	0.75	0.75	0.75	0.75	174	closed	1.25	1.25	189	1.25	closed	1.25	180	1.25	1.25	closed	189					
39.35	0.80	0.75	0.75	0.75	0.75	0.75	0.75	175	closed	1.25	1.25	190	1.25	closed	1.25	181	1.25	1.25	closed	190					
39.40	0.85	0.75	0.75	0.75	0.75	0.75	0.75	176	closed	1.25	1.25	191	1.25	closed	1.25	182	1.25	1.25	closed	191					
39.45	0.90	0.75	0.75	0.75	0.75	0.75	0.75	177	closed	1.25	1.25	192	1.25	closed	1.25	183	1.25	1.25	closed	192					
39.50	0.95	1.00	1.00	1.00	1.00	1.00	1.00	232	closed	1.50	1.50	228	1.75	closed	1.75	249	1.50	1.50	closed	228					
39.55	1.00	1.00	1.00	1.00	1.00	1.00	1.00	234	closed	1.50	1.50	229	1.75	closed	1.75	250	1.50	1.50	closed	229					
39.60	1.05	1.00	1.00	1.00	1.00	1.00	1.00	235	closed	1.50	1.50	231	1.75	closed	1.75	252	1.50	1.50	closed	231					
39.65	1.10	1.00	1.00	1.00	1.00	1.00	1.00	236	closed	1.50	1.50	232	1.75	closed	1.75	253	1.50	1.50	closed	232					
39.70	1.15	1.00	1.00	1.00	1.00	1.00	1.00	237	closed	1.50	1.50	233	1.75	closed	1.75	255	1.50	1.50	closed	233					
39.75	1.20	1.25	1.25	1.25	1.25	1.25	1.25	293	closed	2.00	2.00	303	2.00	closed	2.00	288	2.00	2.00	closed	303					
39.80	1.25	1.25	1.25	1.25	1.25	1.25	1.25	295	closed	2.00	2.00	304	2.00	closed	2.00	290	2.00	2.00	closed	304					
39.85	1.30	1.25	1.25	1.25	1.25	1.25	1.25	297	closed	2.00	2.00	306	2.00	closed	2.00	291	2.00	2.00	closed	306					
39.90	1.35	1.25	1.25	1.25	1.25	1.25	1.25	298	closed	2.00	2.00	308	2.00	closed	2.00	293	2.00	2.00	closed	308					

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Minimum Gate Settings - Water Level RISING - 50mm increments

Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational			Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)			
		(m)			(m)			Left Centre Right				Left Centre Right				Left Centre Right						
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
39.95	1.40	1.25	1.25	1.25	1.25	1.25	1.25	300	closed	2.00	2.00	310	2.00	closed	2.00	295	2.00	2.00	closed	310		
40.00	1.45	1.50	1.50	1.50	1.50	1.50	1.50	356	closed	2.25	2.25	345	2.50	closed	2.50	359	2.25	2.25	closed	345		
40.05	1.50	1.50	1.50	1.50	1.50	1.50	1.50	358	closed	2.25	2.25	347	2.50	closed	2.50	361	2.25	2.25	closed	347		
40.10	1.55	1.50	1.50	1.50	1.50	1.50	1.50	360	closed	2.25	2.25	349	2.50	closed	2.50	363	2.25	2.25	closed	349		
40.15	1.60	1.50	1.50	1.50	1.50	1.50	1.50	362	closed	2.25	2.25	351	2.50	closed	2.50	365	2.25	2.25	closed	351		
40.20	1.65	1.50	1.50	1.50	1.50	1.50	1.50	363	closed	2.25	2.25	353	2.50	closed	2.50	367	2.25	2.25	closed	353		
40.25	1.70	1.50	1.75	1.50	1.50	1.75	1.50	385	closed	2.50	2.25	372	2.50	closed	2.50	369	2.25	2.50	closed	372		
40.30	1.75	1.50	1.75	1.50	1.50	1.75	1.50	387	closed	2.50	2.25	374	2.50	closed	2.50	371	2.25	2.50	closed	374		
40.35	1.80	1.50	1.75	1.50	1.50	1.75	1.50	389	closed	2.50	2.25	376	2.50	closed	2.50	374	2.25	2.50	closed	376		
40.40	1.85	1.50	1.75	1.50	1.50	1.75	1.50	390	closed	2.50	2.25	379	2.50	closed	2.50	376	2.25	2.50	closed	379		
40.45	1.90	1.50	1.75	1.50	1.50	1.75	1.50	392	closed	2.50	2.25	381	2.50	closed	2.50	378	2.25	2.50	closed	381		
40.50	1.95	1.75	1.75	1.75	1.75	1.75	1.75	431	closed	2.75	2.75	433	2.75	closed	2.75	412	2.75	2.75	closed	433		
40.55	2.00	1.75	1.75	1.75	1.75	1.75	1.75	433	closed	2.75	2.75	435	2.75	closed	2.75	414	2.75	2.75	closed	435		
40.60	2.05	1.75	1.75	1.75	1.75	1.75	1.75	435	closed	2.75	2.75	437	2.75	closed	2.75	416	2.75	2.75	closed	437		
40.65	2.10	1.75	1.75	1.75	1.75	1.75	1.75	437	closed	2.75	2.75	440	2.75	closed	2.75	418	2.75	2.75	closed	440		
40.70	2.15	1.75	1.75	1.75	1.75	1.75	1.75	439	closed	2.75	2.75	442	2.75	closed	2.75	421	2.75	2.75	closed	442		
40.75	2.20	2.00	2.00	2.00	2.00	2.00	2.00	497	closed	3.00	3.00	478	3.25	closed	3.25	486	3.25	3.00	closed	493		
40.80	2.25	2.00	2.00	2.00	2.00	2.00	2.00	500	closed	3.00	3.00	481	3.25	closed	3.25	488	3.25	3.00	closed	496		
40.85	2.30	2.00	2.00	2.00	2.00	2.00	2.00	502	closed	3.00	3.00	483	3.25	closed	3.25	491	3.25	3.00	closed	499		
40.90	2.35	2.00	2.00	2.00	2.00	2.00	2.00	504	closed	3.00	3.00	486	3.25	closed	3.25	494	3.25	3.00	closed	501		
40.95	2.40	2.00	2.00	2.00	2.00	2.00	2.00	507	closed	3.00	3.00	488	3.25	closed	3.25	496	3.25	3.00	closed	504		
41.00	2.45	2.25	2.25	2.25	2.25	2.25	2.25	565	closed	3.50	3.50	557	3.50	closed	3.50	530	3.50	3.50	closed	557		
41.05	2.50	2.25	2.25	2.25	2.25	2.25	2.25	568	closed	3.50	3.50	560	3.50	closed	3.50	533	3.50	3.50	closed	560		
41.10	2.55	2.25	2.25	2.25	2.25	2.25	2.25	571	closed	3.50	3.50	563	3.50	closed	3.50	536	3.50	3.50	closed	563		
41.15	2.60	2.25	2.25	2.25	2.25	2.25	2.25	573	closed	3.50	3.50	566	3.50	closed	3.50	539	3.50	3.50	closed	566		
41.20	2.65	2.25	2.25	2.25	2.25	2.25	2.25	576	closed	3.50	3.50	569	3.50	closed	3.50	541	3.50	3.50	closed	569		
41.25	2.70	2.50	2.50	2.50	2.50	2.50	2.50	635	closed	3.75	3.75	605	11.50	closed	11.50	835	3.75	3.75	closed	605		
41.30	2.75	2.50	2.50	2.50	2.50	2.50	2.50	638	closed	3.75	3.75	608	11.50	closed	11.50	845	3.75	3.75	closed	608		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		Minimum Gate Settings - Water Level RISING - 50mm increments																							
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational						Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)			
		(m)			(m)			(m)			Left				Centre				Right						
		1	2	3	1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
41.35	2.80	2.50	2.50	2.50	2.50	2.50	2.50	641	closed	3.75	3.75	611	11.50	closed	11.50	855	3.75	3.75	closed	611					
41.40	2.85	2.50	2.50	2.50	2.50	2.50	2.50	644	closed	3.75	3.75	614	11.50	closed	11.50	866	3.75	3.75	closed	614					
41.45	2.90	2.50	2.50	2.50	2.50	2.50	2.50	647	closed	3.75	3.75	617	11.50	closed	11.50	876	3.75	3.75	closed	617					
41.50	2.95	2.75	2.75	2.75	2.75	2.75	2.75	706	closed	11.50	11.50	931	11.50	closed	11.50	886	11.50	11.50	closed	931					
41.55	3.00	2.75	2.75	2.75	2.75	2.75	2.75	709	closed	11.50	11.50	942	11.50	closed	11.50	896	11.50	11.50	closed	942					
41.60	3.05	2.75	2.75	2.75	2.75	2.75	2.75	712	closed	11.50	11.50	952	11.50	closed	11.50	906	11.50	11.50	closed	952					
41.65	3.10	2.75	2.75	2.75	2.75	2.75	2.75	715	closed	11.50	11.50	963	11.50	closed	11.50	917	11.50	11.50	closed	963					
41.70	3.15	2.75	2.75	2.75	2.75	2.75	2.75	718	closed	11.50	11.50	974	11.50	closed	11.50	927	11.50	11.50	closed	974					
41.75	3.20	2.75	3.00	2.75	2.75	3.00	2.75	742	closed	11.50	11.50	985	11.50	closed	11.50	937	11.50	11.50	closed	985					
41.80	3.25	2.75	3.00	2.75	2.75	3.00	2.75	745	closed	11.50	11.50	996	11.50	closed	11.50	948	11.50	11.50	closed	996					
41.85	3.30	2.75	3.00	2.75	2.75	3.00	2.75	748	closed	11.50	11.50	1,007	11.50	closed	11.50	958	11.50	11.50	closed	1,007					
41.90	3.35	2.75	3.00	2.75	2.75	3.00	2.75	751	closed	11.50	11.50	1,018	11.50	closed	11.50	969	11.50	11.50	closed	1,018					
41.95	3.40	2.75	3.00	2.75	2.75	3.00	2.75	755	closed	11.50	11.50	1,029	11.50	closed	11.50	979	11.50	11.50	closed	1,029					
42.00	3.45	3.00	3.00	3.00	3.00	3.00	3.00	795	closed	11.50	11.50	1,040	11.50	closed	11.50	990	11.50	11.50	closed	1,040					
42.05	3.50	3.00	3.00	3.00	3.00	3.00	3.00	799	closed	11.50	11.50	1,052	11.50	closed	11.50	1,001	11.50	11.50	closed	1,052					
42.10	3.55	3.00	3.00	3.00	3.00	3.00	3.00	802	closed	11.50	11.50	1,063	11.50	closed	11.50	1,011	11.50	11.50	closed	1,063					
42.15	3.60	3.00	3.00	3.00	3.00	3.00	3.00	805	closed	11.50	11.50	1,074	11.50	closed	11.50	1,022	11.50	11.50	closed	1,074					
42.20	3.65	3.00	3.00	3.00	3.00	3.00	3.00	809	closed	11.50	11.50	1,085	11.50	closed	11.50	1,033	11.50	11.50	closed	1,085					
42.25	3.70	3.25	3.25	3.25	3.25	3.25	3.25	870	closed	11.50	11.50	1,097	11.50	closed	11.50	1,044	11.50	11.50	closed	1,097					
42.30	3.75	3.25	3.25	3.25	3.25	3.25	3.25	874	closed	11.50	11.50	1,108	11.50	closed	11.50	1,054	11.50	11.50	closed	1,108					
42.35	3.80	3.25	3.25	3.25	3.25	3.25	3.25	877	closed	11.50	11.50	1,120	11.50	closed	11.50	1,065	11.50	11.50	closed	1,120					
42.40	3.85	3.25	3.25	3.25	3.25	3.25	3.25	881	closed	11.50	11.50	1,131	11.50	closed	11.50	1,076	11.50	11.50	closed	1,131					
42.45	3.90	3.25	3.25	3.25	3.25	3.25	3.25	885	closed	11.50	11.50	1,142	11.50	closed	11.50	1,087	11.50	11.50	closed	1,142					
42.50	3.95	3.75	3.75	3.75	3.75	3.75	3.75	1,003	closed	11.50	11.50	1,154	11.50	closed	11.50	1,098	11.50	11.50	closed	1,154					
42.55	4.00	3.75	3.75	3.75	3.75	3.75	3.75	1,008	closed	11.50	11.50	1,166	11.50	closed	11.50	1,109	11.50	11.50	closed	1,166					
42.60	4.05	3.75	3.75	3.75	3.75	3.75	3.75	1,012	closed	11.50	11.50	1,177	11.50	closed	11.50	1,120	11.50	11.50	closed	1,177					
42.65	4.10	3.75	3.75	3.75	3.75	3.75	3.75	1,016	closed	11.50	11.50	1,189	11.50	closed	11.50	1,131	11.50	11.50	closed	1,189					
42.70	4.15	3.75	3.75	3.75	3.75	3.75	3.75	1,020	closed	11.50	11.5	1,201	11.50	closed	11.50	1,143	11.50	11.50	closed	1,201					

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		Minimum Gate Settings - Water Level RISING - 50mm increments																		
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational			Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)	
		(m)			(m)			Left Centre Right				Left	Centre	Right		Left	Centre	Right		
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3		
42.75	4.20	3.75	11.50	3.75	3.75	11.50	3.75	1,296	closed	11.50	11.50	1,212	11.50	closed	11.50	1,154	11.50	11.50	closed	1,212
42.80	4.25	3.75	11.50	3.75	3.75	11.50	3.75	1,305	closed	11.50	11.50	1,224	11.50	closed	11.50	1,165	11.50	11.50	closed	1,224
42.85	4.30	3.75	11.50	3.75	3.75	11.50	3.75	1,314	closed	11.50	11.50	1,236	11.50	closed	11.50	1,176	11.50	11.50	closed	1,236
42.90	4.35	3.75	11.50	3.75	3.75	11.50	3.75	1,322	closed	11.50	11.50	1,248	11.50	closed	11.50	1,187	11.50	11.50	closed	1,248
42.95	4.40	3.75	11.50	3.75	3.75	11.50	3.75	1,331	closed	11.50	11.50	1,260	11.50	closed	11.50	1,199	11.50	11.50	closed	1,260
43.00	4.45	11.50	11.50	11.50	11.50	11.50	11.50	1,877	closed	11.50	11.50	1,272	11.50	closed	11.50	1,210	11.50	11.50	closed	1,272
43.05	4.50	11.50	11.50	11.50	11.50	11.50	11.50	1,895	closed	11.50	11.50	1,284	11.50	closed	11.50	1,222	11.50	11.50	closed	1,284
43.10	4.55	11.50	11.50	11.50	11.50	11.50	11.50	1,912	closed	11.50	11.50	1,296	11.50	closed	11.50	1,233	11.50	11.50	closed	1,296
43.15	4.60	11.50	11.50	11.50	11.50	11.50	11.50	1,930	closed	11.50	11.50	1,308	11.50	closed	11.50	1,245	11.50	11.50	closed	1,308
43.20	4.65	11.50	11.50	11.50	11.50	11.50	11.50	1,948	closed	11.50	11.50	1,320	11.50	closed	11.50	1,256	11.50	11.50	closed	1,320
43.25	4.70	11.50	11.50	11.50	11.50	11.50	11.50	1,966	closed	11.50	11.50	1,332	11.50	closed	11.50	1,268	11.50	11.50	closed	1,332
43.30	4.75	11.50	11.50	11.50	11.50	11.50	11.50	1,984	closed	11.50	11.50	1,344	11.50	closed	11.50	1,279	11.50	11.50	closed	1,344
43.35	4.80	11.50	11.50	11.50	11.50	11.50	11.50	2,002	closed	11.50	11.50	1,356	11.50	closed	11.50	1,291	11.50	11.50	closed	1,356
43.40	4.85	11.50	11.50	11.50	11.50	11.50	11.50	2,020	closed	11.50	11.50	1,369	11.50	closed	11.50	1,302	11.50	11.50	closed	1,369
43.45	4.90	11.50	11.50	11.50	11.50	11.50	11.50	2,038	closed	11.50	11.50	1,381	11.50	closed	11.50	1,314	11.50	11.50	closed	1,381
43.50	4.95	11.50	11.50	11.50	11.50	11.50	11.50	2,056	closed	11.50	11.50	1,393	11.50	closed	11.50	1,326	11.50	11.50	closed	1,393
43.55	5.00	11.50	11.50	11.50	11.50	11.50	11.50	2,074	closed	11.50	11.50	1,406	11.50	closed	11.50	1,338	11.50	11.50	closed	1,406
43.60	5.05	11.50	11.50	11.50	11.50	11.50	11.50	2,093	closed	11.50	11.50	1,418	11.50	closed	11.50	1,349	11.50	11.50	closed	1,418
43.65	5.10	11.50	11.50	11.50	11.50	11.50	11.50	2,111	closed	11.50	11.50	1,430	11.50	closed	11.50	1,361	11.50	11.50	closed	1,430
43.70	5.15	11.50	11.50	11.50	11.50	11.50	11.50	2,129	closed	11.50	11.50	1,443	11.50	closed	11.50	1,373	11.50	11.50	closed	1,443
43.75	5.20	11.50	11.50	11.50	11.50	11.50	11.50	2,148	closed	11.50	11.50	1,455	11.50	closed	11.50	1,385	11.50	11.50	closed	1,455
43.80	5.25	11.50	11.50	11.50	11.50	11.50	11.50	2,166	closed	11.50	11.50	1,468	11.50	closed	11.50	1,397	11.50	11.50	closed	1,468
43.85	5.30	11.50	11.50	11.50	11.50	11.50	11.50	2,185	closed	11.50	11.50	1,480	11.50	closed	11.50	1,409	11.50	11.50	closed	1,480
43.90	5.35	11.50	11.50	11.50	11.50	11.50	11.50	2,203	closed	11.50	11.50	1,493	11.50	closed	11.50	1,421	11.50	11.50	closed	1,493
43.95	5.40	11.50	11.50	11.50	11.50	11.50	11.50	2,222	closed	11.50	11.50	1,506	11.50	closed	11.50	1,433	11.50	11.50	closed	1,506
44.00	5.45	11.50	11.50	11.50	11.50	11.50	11.50	2,241	closed	11.50	11.50	1,518	11.50	closed	11.50	1,445	11.50	11.50	closed	1,518
44.05	5.50	11.50	11.50	11.50	11.50	11.50	11.50	2,260	closed	11.50	11.50	1,531	11.50	closed	11.50	1,457	11.50	11.50	closed	1,531
44.10	5.55	11.50	11.50	11.50	11.50	11.50	11.50	2,278	closed	11.50	11.50	1,544	11.50	closed	11.50	1,469	11.50	11.50	closed	1,544

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level RISING - 50mm increments																						
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational						Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)
		(m)			(m)			Left	Centre	Right	Left			Left	Centre	Right		Left			Left	
		1	2	3	1	2	3				1	2	3		1	2	3	1	2	3		
44.15	5.60	11.50	11.50	11.50	11.50	11.50	11.50	2,297	closed	11.50	11.50	1,557	11.50	closed	11.50	1,481	11.50	11.50	closed	1,557		
44.20	5.65	11.50	11.50	11.50	11.50	11.50	11.50	2,316	closed	11.50	11.50	1,569	11.50	closed	11.50	1,493	11.50	11.50	closed	1,569		
44.25	5.70	11.50	11.50	11.50	11.50	11.50	11.50	2,335	closed	11.50	11.50	1,582	11.50	closed	11.50	1,506	11.50	11.50	closed	1,582		
44.30	5.75	11.50	11.50	11.50	11.50	11.50	11.50	2,354	closed	11.50	11.50	1,595	11.50	closed	11.50	1,518	11.50	11.50	closed	1,595		
44.35	5.80	11.50	11.50	11.50	11.50	11.50	11.50	2,373	closed	11.50	11.50	1,608	11.50	closed	11.50	1,530	11.50	11.50	closed	1,608		
44.40	5.85	11.50	11.50	11.50	11.50	11.50	11.50	2,392	closed	11.50	11.50	1,621	11.50	closed	11.50	1,542	11.50	11.50	closed	1,621		
44.45	5.90	11.50	11.50	11.50	11.50	11.50	11.50	2,411	closed	11.50	11.50	1,634	11.50	closed	11.50	1,555	11.50	11.50	closed	1,634		
44.50	5.95	11.50	11.50	11.50	11.50	11.50	11.50	2,430	closed	11.50	11.50	1,647	11.50	closed	11.50	1,567	11.50	11.50	closed	1,647		
44.55	6.00	11.50	11.50	11.50	11.50	11.50	11.50	2,450	closed	11.50	11.50	1,660	11.50	closed	11.50	1,580	11.50	11.50	closed	1,660		
44.60	6.05	11.50	11.50	11.50	11.50	11.50	11.50	2,469	closed	11.50	11.50	1,673	11.50	closed	11.50	1,592	11.50	11.50	closed	1,673		
44.65	6.10	11.50	11.50	11.50	11.50	11.50	11.50	2,488	closed	11.50	11.50	1,686	11.50	closed	11.50	1,604	11.50	11.50	closed	1,686		
44.70	6.15	11.50	11.50	11.50	11.50	11.50	11.50	2,508	closed	11.50	11.50	1,699	11.50	closed	11.50	1,617	11.50	11.50	closed	1,699		
44.75	6.20	11.50	11.50	11.50	11.50	11.50	11.50	2,527	closed	11.50	11.50	1,712	11.50	closed	11.50	1,629	11.50	11.50	closed	1,712		
44.80	6.25	11.50	11.50	11.50	11.50	11.50	11.50	2,546	closed	11.50	11.50	1,725	11.50	closed	11.50	1,642	11.50	11.50	closed	1,725		
44.85	6.30	11.50	11.50	11.50	11.50	11.50	11.50	2,566	closed	11.50	11.50	1,739	11.50	closed	11.50	1,655	11.50	11.50	closed	1,739		
44.90	6.35	11.50	11.50	11.50	11.50	11.50	11.50	2,586	closed	11.50	11.50	1,752	11.50	closed	11.50	1,667	11.50	11.50	closed	1,752		
44.95	6.40	11.50	11.50	11.50	11.50	11.50	11.50	2,605	closed	11.50	11.50	1,765	11.50	closed	11.50	1,680	11.50	11.50	closed	1,765		
45.00	6.45	11.50	11.50	11.50	11.50	11.50	11.50	2,625	closed	11.50	11.50	1,779	11.50	closed	11.50	1,692	11.50	11.50	closed	1,779		
45.05	6.50	11.50	11.50	11.50	11.50	11.50	11.50	2,644	closed	11.50	11.50	1,792	11.50	closed	11.50	1,705	11.50	11.50	closed	1,792		
45.10	6.55	11.50	11.50	11.50	11.50	11.50	11.50	2,664	closed	11.50	11.50	1,805	11.50	closed	11.50	1,718	11.50	11.50	closed	1,805		
45.15	6.60	11.50	11.50	11.50	11.50	11.50	11.50	2,684	closed	11.50	11.50	1,819	11.50	closed	11.50	1,731	11.50	11.50	closed	1,819		
45.20	6.65	11.50	11.50	11.50	11.50	11.50	11.50	2,704	closed	11.50	11.50	1,832	11.50	closed	11.50	1,743	11.50	11.50	closed	1,832		
45.25	6.70	11.50	11.50	11.50	11.50	11.50	11.50	2,724	closed	11.50	11.50	1,846	11.50	closed	11.50	1,756	11.50	11.50	closed	1,846		
45.30	6.75	11.50	11.50	11.50	11.50	11.50	11.50	2,743	closed	11.50	11.50	1,859	11.50	closed	11.50	1,769	11.50	11.50	closed	1,859		
45.35	6.80	11.50	11.50	11.50	11.50	11.50	11.50	2,763	closed	11.50	11.50	1,872	11.50	closed	11.50	1,782	11.50	11.50	closed	1,872		
45.40	6.85	11.50	11.50	11.50	11.50	11.50	11.50	2,783	closed	11.50	11.50	1,886	11.50	closed	11.50	1,795	11.50	11.50	closed	1,886		
45.45	6.90	11.50	11.50	11.50	11.50	11.50	11.50	2,803	closed	11.50	11.50	1,900	11.50	closed	11.50	1,808	11.50	11.50	closed	1,900		
45.50	6.95	11.50	11.50	11.50	11.50	11.50	11.50	2,823	closed	11.50	11.50	1,913	11.50	closed	11.50	1,821	11.50	11.50	closed	1,913		

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		Minimum Gate Settings - Water Level RISING - 50mm increments																		
Head water Level (m)	Head water Level (m)	Gate Opening Go (m)			All Gates Operational (m)			Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)	
		Left	Centre	Right	Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3		
45.55	7.00	11.50	11.50	11.50	11.50	11.50	11.50	2,844	closed	11.50	11.50	1,927	11.50	closed	11.50	1,834	11.50	11.50	closed	1,927
45.60	7.05	11.50	11.50	11.50	11.50	11.50	11.50	2,864	closed	11.50	11.50	1,940	11.50	closed	11.50	1,847	11.50	11.50	closed	1,940
45.65	7.10	11.50	11.50	11.50	11.50	11.50	11.50	2,884	closed	11.50	11.50	1,954	11.50	closed	11.50	1,860	11.50	11.50	closed	1,954
45.70	7.15	11.50	11.50	11.50	11.50	11.50	11.50	2,904	closed	11.50	11.50	1,968	11.50	closed	11.50	1,873	11.50	11.50	closed	1,968
45.75	7.20	11.50	11.50	11.50	11.50	11.50	11.50	2,924	closed	11.50	11.50	1,982	11.50	closed	11.50	1,886	11.50	11.50	closed	1,982
45.80	7.25	11.50	11.50	11.50	11.50	11.50	11.50	2,945	closed	11.50	11.50	1,995	11.50	closed	11.50	1,899	11.50	11.50	closed	1,995
45.85	7.30	11.50	11.50	11.50	11.50	11.50	11.50	2,965	closed	11.50	11.50	2,009	11.50	closed	11.50	1,912	11.50	11.50	closed	2,009
45.90	7.35	11.50	11.50	11.50	11.50	11.50	11.50	2,985	closed	11.50	11.50	2,023	11.50	closed	11.50	1,925	11.50	11.50	closed	2,023
45.95	7.40	11.50	11.50	11.50	11.50	11.50	11.50	3,006	closed	11.50	11.50	2,037	11.50	closed	11.50	1,938	11.50	11.50	closed	2,037
46.00	7.45	11.50	11.50	11.50	11.50	11.50	11.50	3,026	closed	11.50	11.50	2,051	11.50	closed	11.50	1,951	11.50	11.50	closed	2,051
46.05	7.50	11.50	11.50	11.50	11.50	11.50	11.50	3,047	closed	11.50	11.50	2,064	11.50	closed	11.50	1,965	11.50	11.50	closed	2,064
46.10	7.55	11.50	11.50	11.50	11.50	11.50	11.50	3,067	closed	11.50	11.50	2,078	11.50	closed	11.50	1,978	11.50	11.50	closed	2,078
46.15	7.60	11.50	11.50	11.50	11.50	11.50	11.50	3,088	closed	11.50	11.50	2,092	11.50	closed	11.50	1,991	11.50	11.50	closed	2,092
46.20	7.65	11.50	11.50	11.50	11.50	11.50	11.50	3,108	closed	11.50	11.50	2,106	11.50	closed	11.50	2,004	11.50	11.50	closed	2,106
46.25	7.70	11.50	11.50	11.50	11.50	11.50	11.50	3,129	closed	11.50	11.50	2,120	11.50	closed	11.50	2,018	11.50	11.50	closed	2,120
46.30	7.75	11.50	11.50	11.50	11.50	11.50	11.50	3,150	closed	11.50	11.50	2,134	11.50	closed	11.50	2,031	11.50	11.50	closed	2,134
46.35	7.80	11.50	11.50	11.50	11.50	11.50	11.50	3,170	closed	11.50	11.50	2,148	11.50	closed	11.50	2,044	11.50	11.50	closed	2,148
46.40	7.85	11.50	11.50	11.50	11.50	11.50	11.50	3,191	closed	11.50	11.50	2,162	11.50	closed	11.50	2,058	11.50	11.50	closed	2,162
46.45	7.90	11.50	11.50	11.50	11.50	11.50	11.50	3,212	closed	11.50	11.50	2,176	11.50	closed	11.50	2,071	11.50	11.50	closed	2,176
46.50	7.95	11.50	11.50	11.50	11.50	11.50	11.50	3,233	closed	11.50	11.50	2,190	11.50	closed	11.50	2,084	11.50	11.50	closed	2,190
46.55	8.00	11.50	11.50	11.50	11.50	11.50	11.50	3,253	closed	11.50	11.50	2,205	11.50	closed	11.50	2,098	11.50	11.50	closed	2,205
46.60	8.05	11.50	11.50	11.50	11.50	11.50	11.50	3,274	closed	11.50	11.50	2,219	11.50	closed	11.50	2,111	11.50	11.50	closed	2,219
46.65	8.10	11.50	11.50	11.50	11.50	11.50	11.50	3,295	closed	11.50	11.50	2,233	11.50	closed	11.50	2,125	11.50	11.50	closed	2,233
46.70	8.15	11.50	11.50	11.50	11.50	11.50	11.50	3,316	closed	11.50	11.50	2,247	11.50	closed	11.50	2,138	11.50	11.50	closed	2,247
46.75	8.20	11.50	11.50	11.50	11.50	11.50	11.50	3,337	closed	11.50	11.50	2,261	11.50	closed	11.50	2,152	11.50	11.50	closed	2,261
46.80	8.25	11.50	11.50	11.50	11.50	11.50	11.50	3,358	closed	11.50	11.50	2,275	11.50	closed	11.50	2,165	11.50	11.50	closed	2,275
46.85	8.30	11.50	11.50	11.50	11.50	11.50	11.50	3,379	closed	11.50	11.50	2,290	11.50	closed	11.50	2,179	11.50	11.50	closed	2,290
46.90	8.35	11.50	11.50	11.50	11.50	11.50	11.50	3,400	closed	11.50	11.50	2,304	11.50	closed	11.50	2,192	11.50	11.50	closed	2,304

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Minimum Gate Settings - Water Level RISING - 50mm increments

Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational			Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)			
		(m)			(m)			Left Centre Right				Left Centre Right				Left Centre Right						
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
46.95	8.40	11.50	11.50	11.50	11.50	11.50	11.50	3,421	closed	11.50	11.50	2,318	11.50	closed	11.50	2,206	11.50	11.50	closed	2,318		
47.00	8.45	11.50	11.50	11.50	11.50	11.50	11.50	3,442	closed	11.50	11.50	2,333	11.50	closed	11.50	2,220	11.50	11.50	closed	2,333		
47.05	8.50	11.50	11.50	11.50	11.50	11.50	11.50	3,464	closed	11.50	11.50	2,347	11.50	closed	11.50	2,233	11.50	11.50	closed	2,347		
47.10	8.55	11.50	11.50	11.50	11.50	11.50	11.50	3,485	closed	11.50	11.50	2,361	11.50	closed	11.50	2,247	11.50	11.50	closed	2,361		
47.15	8.60	11.50	11.50	11.50	11.50	11.50	11.50	3,506	closed	11.50	11.50	2,376	11.50	closed	11.50	2,261	11.50	11.50	closed	2,376		
47.20	8.65	11.50	11.50	11.50	11.50	11.50	11.50	3,527	closed	11.50	11.50	2,390	11.50	closed	11.50	2,274	11.50	11.50	closed	2,390		
47.25	8.70	11.50	11.50	11.50	11.50	11.50	11.50	3,548	closed	11.50	11.50	2,404	11.50	closed	11.50	2,288	11.50	11.50	closed	2,404		
47.30	8.75	11.50	11.50	11.50	11.50	11.50	11.50	3,570	closed	11.50	11.50	2,419	11.50	closed	11.50	2,302	11.50	11.50	closed	2,419		
47.35	8.80	11.50	11.50	11.50	11.50	11.50	11.50	3,591	closed	11.50	11.50	2,433	11.50	closed	11.50	2,316	11.50	11.50	closed	2,433		
47.40	8.85	11.50	11.50	11.50	11.50	11.50	11.50	3,612	closed	11.50	11.50	2,448	11.50	closed	11.50	2,329	11.50	11.50	closed	2,448		
47.45	8.90	11.50	11.50	11.50	11.50	11.50	11.50	3,634	closed	11.50	11.50	2,462	11.50	closed	11.50	2,343	11.50	11.50	closed	2,462		
47.50	8.95	11.50	11.50	11.50	11.50	11.50	11.50	3,655	closed	11.50	11.50	2,477	11.50	closed	11.50	2,357	11.50	11.50	closed	2,477		
47.55	9.00	11.50	11.50	11.50	11.50	11.50	11.50	3,677	closed	11.50	11.50	2,491	11.50	closed	11.50	2,371	11.50	11.50	closed	2,491		
47.60	9.05	11.50	11.50	11.50	11.50	11.50	11.50	3,698	closed	11.50	11.50	2,506	11.50	closed	11.50	2,385	11.50	11.50	closed	2,506		
47.65	9.10	11.50	11.50	11.50	11.50	11.50	11.50	3,720	closed	11.50	11.50	2,520	11.50	closed	11.50	2,398	11.50	11.50	closed	2,520		
47.70	9.15	11.50	11.50	11.50	11.50	11.50	11.50	3,741	closed	11.50	11.50	2,535	11.50	closed	11.50	2,412	11.50	11.50	closed	2,535		
47.75	9.20	11.50	11.50	11.50	11.50	11.50	11.50	3,763	closed	11.50	11.50	2,550	11.50	closed	11.50	2,426	11.50	11.50	closed	2,550		
47.80	9.25	11.50	11.50	11.50	11.50	11.50	11.50	3,784	closed	11.50	11.50	2,564	11.50	closed	11.50	2,440	11.50	11.50	closed	2,564		
47.85	9.30	11.50	11.50	11.50	11.50	11.50	11.50	3,806	closed	11.50	11.50	2,579	11.50	closed	11.50	2,454	11.50	11.50	closed	2,579		
47.90	9.35	11.50	11.50	11.50	11.50	11.50	11.50	3,827	closed	11.50	11.50	2,593	11.50	closed	11.50	2,468	11.50	11.50	closed	2,593		
47.95	9.40	11.50	11.50	11.50	11.50	11.50	11.50	3,849	closed	11.50	11.50	2,608	11.50	closed	11.50	2,482	11.50	11.50	closed	2,608		
48.00	9.45	11.50	11.50	11.50	11.50	11.50	11.50	3,871	closed	11.50	11.50	2,623	11.50	closed	11.50	2,496	11.50	11.50	closed	2,623		

Note: Discharge rate does not include flow over the closed gate

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C11 Minimum gate settings - Water level falling 50mm increments

Minimum Gate Settings Water Level FALLING - 50mm increments																				
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational			Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)	
		(m)			(m)			(m)				Left	Centre	Right		Left	Centre	Right		
		Left	Centre	Right	Left	Centre	Right	Left	2	3		1	2	3		1	2	3		
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3		
38.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0
38.60	0.05	0.25	0.25	0.25	0.25	0.25	0.25	56	closed	0.50	0.50	74	0.5	closed	0.5	70	0.50	0.50	closed	74
38.65	0.10	0.25	0.25	0.25	0.25	0.25	0.25	56	closed	0.50	0.50	74	0.5	closed	0.5	71	0.50	0.50	closed	74
38.70	0.15	0.50	0.50	0.50	0.50	0.50	0.50	110	closed	0.75	0.75	109	1.0	closed	1.0	136	0.75	0.75	closed	109
38.75	0.20	0.50	0.50	0.50	0.50	0.50	0.50	111	closed	0.75	0.75	110	1.00	closed	1.00	137	0.75	0.75	closed	110
38.80	0.25	0.75	0.75	0.75	0.75	0.75	0.75	164	closed	1.25	1.25	177	1.25	closed	1.25	169	1.25	1.25	closed	177
38.85	0.30	0.75	0.75	0.75	0.75	0.75	0.75	165	closed	1.25	1.25	178	1.25	closed	1.25	170	1.25	1.25	closed	178
38.90	0.35	0.75	0.75	0.75	0.75	0.75	0.75	166	closed	1.25	1.25	180	1.25	closed	1.25	171	1.25	1.25	closed	180
38.95	0.40	0.75	0.75	0.75	0.75	0.75	0.75	167	closed	1.25	1.25	181	1.25	closed	1.25	172	1.25	1.25	closed	181
39.00	0.45	1.00	1.00	1.00	1.00	1.00	1.00	219	closed	1.50	1.50	214	1.75	closed	1.75	233	1.50	1.50	closed	214
39.05	0.50	1.00	1.00	1.00	1.00	1.00	1.00	220	closed	1.50	1.50	215	1.75	closed	1.75	234	1.50	1.50	closed	215
39.10	0.55	1.00	1.00	1.00	1.00	1.00	1.00	222	closed	1.50	1.50	217	1.75	closed	1.75	236	1.50	1.50	closed	217
39.15	0.60	1.00	1.00	1.00	1.00	1.00	1.00	223	closed	1.50	1.50	218	1.75	closed	1.75	238	1.50	1.50	closed	218
39.20	0.65	1.00	1.00	1.00	1.00	1.00	1.00	225	closed	1.50	1.50	220	1.75	closed	1.75	239	1.50	1.50	closed	220
39.25	0.70	1.25	1.25	1.25	1.25	1.25	1.25	277	closed	2.00	2.00	284	2.00	closed	2.00	270	2.00	2.00	closed	284
39.30	0.75	1.25	1.25	1.25	1.25	1.25	1.25	279	closed	2.00	2.00	286	2.00	closed	2.00	272	2.00	2.00	closed	286
39.35	0.80	1.25	1.25	1.25	1.25	1.25	1.25	280	closed	2.00	2.00	288	2.00	closed	2.00	274	2.00	2.00	closed	288
39.40	0.85	1.25	1.25	1.25	1.25	1.25	1.25	282	closed	2.00	2.00	290	2.00	closed	2.00	275	2.00	2.00	closed	290
39.45	0.90	1.25	1.25	1.25	1.25	1.25	1.25	284	closed	2.00	2.00	291	2.00	closed	2.00	277	2.00	2.00	closed	291
39.50	0.95	1.50	1.50	1.50	1.50	1.50	1.50	336	closed	2.25	2.25	324	2.50	closed	2.50	336	2.25	2.25	closed	324
39.55	1.00	1.50	1.50	1.50	1.50	1.50	1.50	338	closed	2.25	2.25	326	2.50	closed	2.50	339	2.25	2.25	closed	326
39.60	1.05	1.50	1.50	1.50	1.50	1.50	1.50	340	closed	2.25	2.25	328	2.50	closed	2.50	341	2.25	2.25	closed	328
39.65	1.10	1.50	1.50	1.50	1.50	1.50	1.50	342	closed	2.25	2.25	330	2.50	closed	2.50	343	2.25	2.25	closed	330
39.70	1.15	1.50	1.50	1.50	1.50	1.50	1.50	344	closed	2.25	2.25	332	2.50	closed	2.50	345	2.25	2.25	closed	332
39.75	1.20	1.50	1.50	1.50	1.50	1.50	1.50	346	closed	2.25	2.25	335	2.50	closed	2.50	348	2.25	2.25	closed	335
39.80	1.25	1.50	1.75	1.50	1.50	1.75	1.50	366	closed	2.50	2.25	353	2.50	closed	2.50	350	2.25	2.50	closed	353
39.85	1.30	1.50	1.75	1.50	1.50	1.75	1.50	369	closed	2.50	2.25	355	2.50	closed	2.50	352	2.25	2.50	closed	355
39.90	1.35	1.50	1.75	1.50	1.50	1.75	1.50	371	closed	2.50	2.25	357	2.50	closed	2.50	354	2.25	2.50	closed	357

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level FALLING - 50mm increments																				
Head water Level (m)	Head water Level (m)	Gate Opening Go (m)			All Gates Operational (m)			Q (m3/s)	Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
39.95	1.40	1.50	1.75	1.50	1.50	1.75	1.50	373	closed	2.50	2.25	359	2.50	closed	2.50	357	2.25	2.50	closed	359
40.00	1.45	1.50	1.75	1.50	1.50	1.75	1.50	375	closed	2.50	2.25	382	2.50	closed	2.50	359	2.25	2.50	closed	362
40.05	1.50	1.75	1.75	1.75	1.75	1.75	1.75	411	closed	2.75	2.75	410	2.75	closed	2.75	391	2.75	2.75	closed	410
40.10	1.55	1.75	1.75	1.75	1.75	1.75	1.75	413	closed	2.75	2.75	413	2.75	closed	2.75	393	2.75	2.75	closed	413
40.15	1.60	1.75	1.75	1.75	1.75	1.75	1.75	415	closed	2.75	2.75	415	2.75	closed	2.75	395	2.75	2.75	closed	415
40.20	1.65	1.75	1.75	1.75	1.75	1.75	1.75	418	closed	2.75	2.75	418	2.75	closed	2.75	398	2.75	2.75	closed	418
40.25	1.70	1.75	1.75	1.75	1.75	1.75	1.75	420	closed	2.75	2.75	420	2.75	closed	2.75	400	2.75	2.75	closed	420
40.30	1.75	2.00	2.00	2.00	2.00	2.00	2.00	475	closed	3.00	3.00	454	3.25	closed	3.25	461	3.00	3.00	closed	454
40.35	1.80	2.00	2.00	2.00	2.00	2.00	2.00	478	closed	3.00	3.00	457	3.25	closed	3.25	464	3.00	3.00	closed	457
40.40	1.85	2.00	2.00	2.00	2.00	2.00	2.00	480	closed	3.00	3.00	460	3.25	closed	3.25	466	3.00	3.00	closed	460
40.45	1.90	2.00	2.00	2.00	2.00	2.00	2.00	483	closed	3.00	3.00	462	3.25	closed	3.25	469	3.00	3.00	closed	462
40.50	1.95	2.00	2.00	2.00	2.00	2.00	2.00	485	closed	3.00	3.00	465	3.25	closed	3.25	472	3.00	3.00	closed	465
40.55	2.00	2.25	2.25	2.25	2.25	2.25	2.25	541	closed	3.50	3.50	529	3.50	closed	3.50	503	3.50	3.50	closed	529
40.60	2.05	2.25	2.25	2.25	2.25	2.25	2.25	543	closed	3.50	3.50	532	3.50	closed	3.50	506	3.50	3.50	closed	532
40.65	2.10	2.25	2.25	2.25	2.25	2.25	2.25	546	closed	3.50	3.50	535	3.50	closed	3.50	509	3.50	3.50	closed	535
40.70	2.15	2.25	2.25	2.25	2.25	2.25	2.25	549	closed	3.50	3.50	538	3.50	closed	3.50	512	3.50	3.50	closed	538
40.75	2.20	2.25	2.25	2.25	2.25	2.25	2.25	552	closed	3.50	3.50	542	3.50	closed	3.50	515	3.50	3.50	closed	542
40.80	2.25	2.50	2.50	2.50	2.50	2.50	2.50	608	closed	3.75	3.75	575	11.50	closed	11.50	747	3.75	3.75	closed	575
40.85	2.30	2.50	2.50	2.50	2.50	2.50	2.50	611	closed	3.75	3.75	579	11.50	closed	11.50	757	3.75	3.75	closed	579
40.90	2.35	2.50	2.50	2.50	2.50	2.50	2.50	614	closed	3.75	3.75	582	11.50	closed	11.50	767	3.75	3.75	closed	582
40.95	2.40	2.50	2.50	2.50	2.50	2.50	2.50	617	closed	3.75	3.75	585	11.50	closed	11.50	776	3.75	3.75	closed	585
41.00	2.45	2.50	2.50	2.50	2.50	2.50	2.50	620	closed	3.75	3.75	589	11.50	closed	11.50	786	3.75	3.75	closed	589
41.05	2.50	2.75	2.75	2.75	2.75	2.75	2.75	676	closed	11.50	11.50	836	11.50	closed	11.50	796	11.50	11.50	closed	836
41.10	2.55	2.75	2.75	2.75	2.75	2.75	2.75	680	closed	11.50	11.50	847	11.50	closed	11.50	806	11.50	11.50	closed	847
41.15	2.60	2.75	2.75	2.75	2.75	2.75	2.75	683	closed	11.50	11.50	857	11.50	closed	11.50	816	11.50	11.50	closed	857
41.20	2.65	2.75	2.75	2.75	2.75	2.75	2.75	686	closed	11.50	11.50	867	11.50	closed	11.50	825	11.50	11.50	closed	867
41.25	2.70	2.75	2.75	2.75	2.75	2.75	2.75	690	closed	11.50	11.50	878	11.50	closed	11.50	835	11.50	11.50	closed	878
41.30	2.75	2.75	3.00	2.75	2.75	3.00	2.75	712	closed	11.50	11.50	888	11.50	closed	11.50	845	11.50	11.50	closed	888

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level FALLING - 50mm increments																				
Head water Level (m)	Head water Level (m)	Gate Opening Go (m)			All Gates Operational (m)			Q (m3/s)	Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
41.35	2.80	2.75	3.00	2.75	2.75	3.00	2.75	715	closed	11.50	11.50	899	11.50	closed	11.50	855	11.50	11.50	closed	899
41.40	2.85	2.75	3.00	2.75	2.75	3.00	2.75	719	closed	11.50	11.50	910	11.50	closed	11.50	866	11.50	11.50	closed	910
41.45	2.90	2.75	3.00	2.75	2.75	3.00	2.75	722	closed	11.50	11.50	920	11.50	closed	11.50	876	11.50	11.50	closed	920
41.50	2.95	2.75	3.00	2.75	2.75	3.00	2.75	725	closed	11.50	11.50	931	11.50	closed	11.50	886	11.50	11.50	closed	931
41.55	3.00	3.00	3.00	3.00	3.00	3.00	3.00	764	closed	11.50	11.50	942	11.50	closed	11.50	896	11.50	11.50	closed	942
41.60	3.05	3.00	3.00	3.00	3.00	3.00	3.00	768	closed	11.50	11.50	952	11.50	closed	11.50	906	11.50	11.50	closed	952
41.65	3.10	3.00	3.00	3.00	3.00	3.00	3.00	771	closed	11.50	11.50	963	11.50	closed	11.50	917	11.50	11.50	closed	963
41.70	3.15	3.00	3.00	3.00	3.00	3.00	3.00	775	closed	11.50	11.50	974	11.50	closed	11.50	927	11.50	11.50	closed	974
41.75	3.20	3.00	3.00	3.00	3.00	3.00	3.00	778	closed	11.50	11.50	985	11.50	closed	11.50	937	11.50	11.50	closed	985
41.80	3.25	3.25	3.25	3.25	3.25	3.25	3.25	837	closed	11.50	11.50	996	11.50	closed	11.50	948	11.50	11.50	closed	996
41.85	3.30	3.25	3.25	3.25	3.25	3.25	3.25	841	closed	11.50	11.50	1007	11.50	closed	11.50	958	11.50	11.50	closed	1007
41.90	3.35	3.25	3.25	3.25	3.25	3.25	3.25	844	closed	11.50	11.50	1018	11.50	closed	11.50	969	11.50	11.50	closed	1018
41.95	3.40	3.25	3.25	3.25	3.25	3.25	3.25	848	closed	11.50	11.50	1029	11.50	closed	11.50	979	11.50	11.50	closed	1029
42.00	3.45	3.25	3.25	3.25	3.25	3.25	3.25	852	closed	11.50	11.50	1040	11.50	closed	11.50	990	11.50	11.50	closed	1040
42.05	3.50	3.75	3.75	3.75	3.75	3.75	3.75	965	closed	11.50	11.50	1052	11.50	closed	11.50	1001	11.50	11.50	closed	1052
42.10	3.55	3.75	3.75	3.75	3.75	3.75	3.75	969	closed	11.50	11.50	1063	11.50	closed	11.50	1011	11.50	11.50	closed	1063
42.15	3.60	3.75	3.75	3.75	3.75	3.75	3.75	974	closed	11.50	11.50	1074	11.50	closed	11.50	1022	11.50	11.50	closed	1074
42.20	3.65	3.75	3.75	3.75	3.75	3.75	3.75	978	closed	11.50	11.50	1085	11.50	closed	11.50	1033	11.50	11.50	closed	1085
42.25	3.70	3.75	3.75	3.75	3.75	3.75	3.75	982	closed	11.50	11.50	1097	11.50	closed	11.50	1044	11.50	11.50	closed	1097
42.30	3.75	3.75	11.50	3.75	3.75	11.50	3.75	1217	closed	11.50	11.50	1108	11.50	closed	11.50	1054	11.50	11.50	closed	1108
42.35	3.80	3.75	11.50	3.75	3.75	11.50	3.75	1226	closed	11.50	11.50	1120	11.50	closed	11.50	1065	11.50	11.50	closed	1120
42.40	3.85	3.75	11.50	3.75	3.75	11.50	3.75	1234	closed	11.50	11.50	1131	11.50	closed	11.50	1076	11.50	11.50	closed	1131
42.45	3.90	3.75	11.50	3.75	3.75	11.50	3.75	1243	closed	11.50	11.50	1142	11.50	closed	11.50	1087	11.50	11.50	closed	1142
42.50	3.95	3.75	11.50	3.75	3.75	11.50	3.75	1252	closed	11.50	11.50	1154	11.50	closed	11.50	1098	11.50	11.50	closed	1154
42.55	4.00	11.50	11.50	11.50	11.50	11.50	11.50	1720	closed	11.50	11.50	1166	11.50	closed	11.50	1109	11.50	11.50	closed	1166
42.60	4.05	11.50	11.50	11.50	11.50	11.50	11.50	1737	closed	11.50	11.50	1177	11.50	closed	11.50	1120	11.50	11.50	closed	1177
42.65	4.10	11.50	11.50	11.50	11.50	11.50	11.50	1755	closed	11.50	11.50	1189	11.50	closed	11.50	1131	11.50	11.50	closed	1189
42.70	4.15	11.50	11.50	11.50	11.50	11.50	11.50	1772	closed	11.50	11.50	1201	11.50	closed	11.50	1143	11.50	11.50	closed	1201

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level FALLING - 50mm increments																									
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational						Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)			
		(m)			(m)			Left	Centre	Right	Left				Centre				Right						
		1	2	3	1	2	3				1	2	3		1	2	3		1	2	3				
42.75	4.20	11.50	11.50	11.50	11.50	11.50	11.50	1789	closed	11.50	11.50	1212	11.50	closed	11.50	1154	11.50	11.50	closed	1212					
42.80	4.25	11.50	11.50	11.50	11.50	11.50	11.50	1807	closed	11.50	11.50	1224	11.50	closed	11.50	1165	11.50	11.50	closed	1224					
42.85	4.30	11.50	11.50	11.50	11.50	11.50	11.50	1824	closed	11.50	11.50	1236	11.50	closed	11.50	1176	11.50	11.50	closed	1236					
42.90	4.35	11.50	11.50	11.50	11.50	11.50	11.50	1842	closed	11.50	11.50	1248	11.50	closed	11.50	1187	11.50	11.50	closed	1248					
42.95	4.40	11.50	11.50	11.50	11.50	11.50	11.50	1859	closed	11.50	11.50	1260	11.50	closed	11.50	1199	11.50	11.50	closed	1260					
43.00	4.45	11.50	11.50	11.50	11.50	11.50	11.50	1877	closed	11.50	11.50	1272	11.50	closed	11.50	1210	11.50	11.50	closed	1272					
43.05	4.50	11.50	11.50	11.50	11.50	11.50	11.50	1895	closed	11.50	11.50	1284	11.50	closed	11.50	1222	11.50	11.50	closed	1284					
43.10	4.55	11.50	11.50	11.50	11.50	11.50	11.50	1912	closed	11.50	11.50	1296	11.50	closed	11.50	1233	11.50	11.50	closed	1296					
43.15	4.60	11.50	11.50	11.50	11.50	11.50	11.50	1930	closed	11.50	11.50	1308	11.50	closed	11.50	1245	11.50	11.50	closed	1308					
43.20	4.65	11.50	11.50	11.50	11.50	11.50	11.50	1948	closed	11.50	11.50	1320	11.50	closed	11.50	1256	11.50	11.50	closed	1320					
43.25	4.70	11.50	11.50	11.50	11.50	11.50	11.50	1966	closed	11.50	11.50	1332	11.50	closed	11.50	1268	11.50	11.50	closed	1332					
43.30	4.75	11.50	11.50	11.50	11.50	11.50	11.50	1984	closed	11.50	11.50	1344	11.50	closed	11.50	1279	11.50	11.50	closed	1344					
43.35	4.80	11.50	11.50	11.50	11.50	11.50	11.50	2002	closed	11.50	11.50	1356	11.50	closed	11.50	1291	11.50	11.50	closed	1356					
43.40	4.85	11.50	11.50	11.50	11.50	11.50	11.50	2020	closed	11.50	11.50	1369	11.50	closed	11.50	1302	11.50	11.50	closed	1369					
43.45	4.90	11.50	11.50	11.50	11.50	11.50	11.50	2038	closed	11.50	11.50	1381	11.50	closed	11.50	1314	11.50	11.50	closed	1381					
43.50	4.95	11.50	11.50	11.50	11.50	11.50	11.50	2056	closed	11.50	11.50	1393	11.50	closed	11.50	1326	11.50	11.50	closed	1393					
43.55	5.00	11.50	11.50	11.50	11.50	11.50	11.50	2074	closed	11.50	11.50	1406	11.50	closed	11.50	1338	11.50	11.50	closed	1406					
43.60	5.05	11.50	11.50	11.50	11.50	11.50	11.50	2093	closed	11.50	11.50	1418	11.50	closed	11.50	1349	11.50	11.50	closed	1418					
43.65	5.10	11.50	11.50	11.50	11.50	11.50	11.50	2111	closed	11.50	11.50	1430	11.50	closed	11.50	1361	11.50	11.50	closed	1430					
43.70	5.15	11.50	11.50	11.50	11.50	11.50	11.50	2129	closed	11.50	11.50	1443	11.50	closed	11.50	1373	11.50	11.50	closed	1443					
43.75	5.20	11.50	11.50	11.50	11.50	11.50	11.50	2148	closed	11.50	11.50	1455	11.50	closed	11.50	1385	11.50	11.50	closed	1455					
43.80	5.25	11.50	11.50	11.50	11.50	11.50	11.50	2166	closed	11.50	11.50	1468	11.50	closed	11.50	1397	11.50	11.50	closed	1468					
43.85	5.30	11.50	11.50	11.50	11.50	11.50	11.50	2185	closed	11.50	11.50	1480	11.50	closed	11.50	1409	11.50	11.50	closed	1480					
43.90	5.35	11.50	11.50	11.50	11.50	11.50	11.50	2203	closed	11.50	11.50	1493	11.50	closed	11.50	1421	11.50	11.50	closed	1493					
43.95	5.40	11.50	11.50	11.50	11.50	11.50	11.50	2222	closed	11.50	11.50	1506	11.50	closed	11.50	1433	11.50	11.50	closed	1506					
44.00	5.45	11.50	11.50	11.50	11.50	11.50	11.50	2241	closed	11.50	11.50	1518	11.50	closed	11.50	1445	11.50	11.50	closed	1518					
44.05	5.50	11.50	11.50	11.50	11.50	11.50	11.50	2260	closed	11.50	11.50	1531	11.50	closed	11.50	1457	11.50	11.50	closed	1531					
44.10	5.55	11.50	11.50	11.50	11.50	11.50	11.50	2278	closed	11.50	11.50	1544	11.50	closed	11.50	1469	11.50	11.50	closed	1544					

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level FALLING - 50mm increments																				
Head water Level (m)	Head water Level (m)	Gate Opening Go (m)			All Gates Operational (m)			Q (m³/s)	Gate 1 closed or Inoperable (m)			Q (m³/s)	Gate 2 closed or Inoperable (m)			Q (m³/s)	Gate 3 closed or Inoperable (m)			Q (m³/s)
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
44.15	5.60	11.50	11.50	11.50	11.50	11.50	11.50	2297	closed	11.50	11.50	1557	11.50	closed	11.50	1481	11.50	11.50	closed	1557
44.20	5.65	11.50	11.50	11.50	11.50	11.50	11.50	2316	closed	11.50	11.50	1569	11.50	closed	11.50	1493	11.50	11.50	closed	1569
44.25	5.70	11.50	11.50	11.50	11.50	11.50	11.50	2335	closed	11.50	11.50	1582	11.50	closed	11.50	1506	11.50	11.50	closed	1582
44.30	5.75	11.50	11.50	11.50	11.50	11.50	11.50	2354	closed	11.50	11.50	1595	11.50	closed	11.50	1518	11.50	11.50	closed	1595
44.35	5.80	11.50	11.50	11.50	11.50	11.50	11.50	2373	closed	11.50	11.50	1608	11.50	closed	11.50	1530	11.50	11.50	closed	1608
44.40	5.85	11.50	11.50	11.50	11.50	11.50	11.50	2392	closed	11.50	11.50	1621	11.50	closed	11.50	1542	11.50	11.50	closed	1621
44.45	5.90	11.50	11.50	11.50	11.50	11.50	11.50	2411	closed	11.50	11.50	1634	11.50	closed	11.50	1555	11.50	11.50	closed	1634
44.50	5.95	11.50	11.50	11.50	11.50	11.50	11.50	2430	closed	11.50	11.50	1647	11.50	closed	11.50	1567	11.50	11.50	closed	1647
44.55	6.00	11.50	11.50	11.50	11.50	11.50	11.50	2450	closed	11.50	11.50	1660	11.50	closed	11.50	1580	11.50	11.50	closed	1660
44.60	6.05	11.50	11.50	11.50	11.50	11.50	11.50	2469	closed	11.50	11.50	1673	11.50	closed	11.50	1592	11.50	11.50	closed	1673
44.65	6.10	11.50	11.50	11.50	11.50	11.50	11.50	2488	closed	11.50	11.50	1686	11.50	closed	11.50	1604	11.50	11.50	closed	1686
44.70	6.15	11.50	11.50	11.50	11.50	11.50	11.50	2508	closed	11.50	11.50	1699	11.50	closed	11.50	1617	11.50	11.50	closed	1699
44.75	6.20	11.50	11.50	11.50	11.50	11.50	11.50	2527	closed	11.50	11.50	1712	11.50	closed	11.50	1629	11.50	11.50	closed	1712
44.80	6.25	11.50	11.50	11.50	11.50	11.50	11.50	2546	closed	11.50	11.50	1725	11.50	closed	11.50	1642	11.50	11.50	closed	1725
44.85	6.30	11.50	11.50	11.50	11.50	11.50	11.50	2566	closed	11.50	11.50	1739	11.50	closed	11.50	1655	11.50	11.50	closed	1739
44.90	6.35	11.50	11.50	11.50	11.50	11.50	11.50	2586	closed	11.50	11.50	1752	11.50	closed	11.50	1667	11.50	11.50	closed	1752
44.95	6.40	11.50	11.50	11.50	11.50	11.50	11.50	2605	closed	11.50	11.50	1765	11.50	closed	11.50	1680	11.50	11.50	closed	1765
45.00	6.45	11.50	11.50	11.50	11.50	11.50	11.50	2625	closed	11.50	11.50	1779	11.50	closed	11.50	1692	11.50	11.50	closed	1779
45.05	6.50	11.50	11.50	11.50	11.50	11.50	11.50	2644	closed	11.50	11.50	1792	11.50	closed	11.50	1705	11.50	11.50	closed	1792
45.10	6.55	11.50	11.50	11.50	11.50	11.50	11.50	2664	closed	11.50	11.50	1805	11.50	closed	11.50	1718	11.50	11.50	closed	1805
45.15	6.60	11.50	11.50	11.50	11.50	11.50	11.50	2684	closed	11.50	11.50	1819	11.50	closed	11.50	1731	11.50	11.50	closed	1819
45.20	6.65	11.50	11.50	11.50	11.50	11.50	11.50	2704	closed	11.50	11.50	1832	11.50	closed	11.50	1743	11.50	11.50	closed	1832
45.25	6.70	11.50	11.50	11.50	11.50	11.50	11.50	2724	closed	11.50	11.50	1846	11.50	closed	11.50	1756	11.50	11.50	closed	1846
45.30	6.75	11.50	11.50	11.50	11.50	11.50	11.50	2743	closed	11.50	11.50	1859	11.50	closed	11.50	1769	11.50	11.50	closed	1859
45.35	6.80	11.50	11.50	11.50	11.50	11.50	11.50	2763	closed	11.50	11.50	1872	11.50	closed	11.50	1782	11.50	11.50	closed	1872
45.40	6.85	11.50	11.50	11.50	11.50	11.50	11.50	2783	closed	11.50	11.50	1886	11.50	closed	11.50	1795	11.50	11.50	closed	1886
45.45	6.90	11.50	11.50	11.50	11.50	11.50	11.50	2803	closed	11.50	11.50	1900	11.50	closed	11.50	1808	11.50	11.50	closed	1900
45.50	6.95	11.50	11.50	11.50	11.50	11.50	11.50	2823	closed	11.50	11.50	1913	11.50	closed	11.50	1821	11.50	11.50	closed	1913

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



Minimum Gate Settings - Water Level FALLING - 50mm increments																									
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational						Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)			
		(m)			(m)						Left Centre Right				Left Centre Right				Left Centre Right						
		1	2	3	1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
45.55	7.00	11.50	11.50	11.50	11.50	11.50	11.50	2844	closed	11.50	11.50	11.50	1927	11.50	closed	11.50	1834	11.50	11.50	closed	1927				
45.60	7.05	11.50	11.50	11.50	11.50	11.50	11.50	2864	closed	11.50	11.50	11.50	1940	11.50	closed	11.50	1847	11.50	11.50	closed	1940				
45.65	7.10	11.50	11.50	11.50	11.50	11.50	11.50	2884	closed	11.50	11.50	11.50	1954	11.50	closed	11.50	1860	11.50	11.50	closed	1954				
45.70	7.15	11.50	11.50	11.50	11.50	11.50	11.50	2904	closed	11.50	11.50	11.50	1968	11.50	closed	11.50	1873	11.50	11.50	closed	1968				
45.75	7.20	11.50	11.50	11.50	11.50	11.50	11.50	2924	closed	11.50	11.50	11.50	1982	11.50	closed	11.50	1886	11.50	11.50	closed	1982				
45.80	7.25	11.50	11.50	11.50	11.50	11.50	11.50	2945	closed	11.50	11.50	11.50	1995	11.50	closed	11.50	1899	11.50	11.50	closed	1995				
45.85	7.30	11.50	11.50	11.50	11.50	11.50	11.50	2965	closed	11.50	11.50	11.50	2009	11.50	closed	11.50	1912	11.50	11.50	closed	2009				
45.90	7.35	11.50	11.50	11.50	11.50	11.50	11.50	2985	closed	11.50	11.50	11.50	2023	11.50	closed	11.50	1925	11.50	11.50	closed	2023				
45.95	7.40	11.50	11.50	11.50	11.50	11.50	11.50	3006	closed	11.50	11.50	11.50	2037	11.50	closed	11.50	1938	11.50	11.50	closed	2037				
46.00	7.45	11.50	11.50	11.50	11.50	11.50	11.50	3026	closed	11.50	11.50	11.50	2051	11.50	closed	11.50	1951	11.50	11.50	closed	2051				
46.05	7.50	11.50	11.50	11.50	11.50	11.50	11.50	3047	closed	11.50	11.50	11.50	2064	11.50	closed	11.50	1965	11.50	11.50	closed	2064				
46.10	7.55	11.50	11.50	11.50	11.50	11.50	11.50	3067	closed	11.50	11.50	11.50	2078	11.50	closed	11.50	1978	11.50	11.50	closed	2078				
46.15	7.60	11.50	11.50	11.50	11.50	11.50	11.50	3088	closed	11.50	11.50	11.50	2092	11.50	closed	11.50	1991	11.50	11.50	closed	2092				
46.20	7.65	11.50	11.50	11.50	11.50	11.50	11.50	3108	closed	11.50	11.50	11.50	2106	11.50	closed	11.50	2004	11.50	11.50	closed	2106				
46.25	7.70	11.50	11.50	11.50	11.50	11.50	11.50	3129	closed	11.50	11.50	11.50	2120	11.50	closed	11.50	2018	11.50	11.50	closed	2120				
46.30	7.75	11.50	11.50	11.50	11.50	11.50	11.50	3150	closed	11.50	11.50	11.50	2134	11.50	closed	11.50	2031	11.50	11.50	closed	2134				
46.35	7.80	11.50	11.50	11.50	11.50	11.50	11.50	3170	closed	11.50	11.50	11.50	2148	11.50	closed	11.50	2044	11.50	11.50	closed	2148				
46.40	7.85	11.50	11.50	11.50	11.50	11.50	11.50	3191	closed	11.50	11.50	11.50	2162	11.50	closed	11.50	2058	11.50	11.50	closed	2162				
46.45	7.90	11.50	11.50	11.50	11.50	11.50	11.50	3212	closed	11.50	11.50	11.50	2176	11.50	closed	11.50	2071	11.50	11.50	closed	2176				
46.50	7.95	11.50	11.50	11.50	11.50	11.50	11.50	3233	closed	11.50	11.50	11.50	2190	11.50	closed	11.50	2084	11.50	11.50	closed	2190				
46.55	8.00	11.50	11.50	11.50	11.50	11.50	11.50	3253	closed	11.50	11.50	11.50	2205	11.50	closed	11.50	2098	11.50	11.50	closed	2205				
46.60	8.05	11.50	11.50	11.50	11.50	11.50	11.50	3274	closed	11.50	11.50	11.50	2219	11.50	closed	11.50	2111	11.50	11.50	closed	2219				
46.65	8.10	11.50	11.50	11.50	11.50	11.50	11.50	3295	closed	11.50	11.50	11.50	2233	11.50	closed	11.50	2125	11.50	11.50	closed	2233				
46.70	8.15	11.50	11.50	11.50	11.50	11.50	11.50	3316	closed	11.50	11.50	11.50	2247	11.50	closed	11.50	2138	11.50	11.50	closed	2247				
46.75	8.20	11.50	11.50	11.50	11.50	11.50	11.50	3337	closed	11.50	11.50	11.50	2261	11.50	closed	11.50	2152	11.50	11.50	closed	2261				
46.80	8.25	11.50	11.50	11.50	11.50	11.50	11.50	3358	closed	11.50	11.50	11.50	2275	11.50	closed	11.50	2165	11.50	11.50	closed	2275				
46.85	8.30	11.50	11.50	11.50	11.50	11.50	11.50	3379	closed	11.50	11.50	11.50	2290	11.50	closed	11.50	2179	11.50	11.50	closed	2290				
46.90	8.35	11.50	11.50	11.50	11.50	11.50	11.50	3400	closed	11.50	11.50	11.50	2304	11.50	closed	11.50	2192	11.50	11.50	closed	2304				

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



		Minimum Gate Settings - Water Level FALLING - 50mm increments																				
Head water Level (m)	Head water Level (m)	Gate Opening Go			All Gates Operational			Gate 1 closed or Inoperable (m)			Q (m3/s)	Gate 2 closed or Inoperable (m)			Q (m3/s)	Gate 3 closed or Inoperable (m)			Q (m3/s)			
		(m)			(m)			Left Centre Right				Left Centre Right				Left Centre Right						
		1	2	3	1	2	3	1	2	3		1	2	3		1	2	3				
46.95	8.40	11.50	11.50	11.50	11.50	11.50	11.50	3421	closed	11.50	11.50	2318	11.50	closed	11.50	2206	11.50	11.50	closed	2318		
47.00	8.45	11.50	11.50	11.50	11.50	11.50	11.50	3442	closed	11.50	11.50	2333	11.50	closed	11.50	2220	11.50	11.50	closed	2333		
47.05	8.50	11.50	11.50	11.50	11.50	11.50	11.50	3464	closed	11.50	11.50	2347	11.50	closed	11.50	2233	11.50	11.50	closed	2347		
47.10	8.55	11.50	11.50	11.50	11.50	11.50	11.50	3485	closed	11.50	11.50	2361	11.50	closed	11.50	2247	11.50	11.50	closed	2361		
47.15	8.60	11.50	11.50	11.50	11.50	11.50	11.50	3506	closed	11.50	11.50	2376	11.50	closed	11.50	2261	11.50	11.50	closed	2376		
47.20	8.65	11.50	11.50	11.50	11.50	11.50	11.50	3527	closed	11.50	11.50	2390	11.50	closed	11.50	2274	11.50	11.50	closed	2390		
47.25	8.70	11.50	11.50	11.50	11.50	11.50	11.50	3548	closed	11.50	11.50	2404	11.50	closed	11.50	2288	11.50	11.50	closed	2404		
47.30	8.75	11.50	11.50	11.50	11.50	11.50	11.50	3570	closed	11.50	11.50	2419	11.50	closed	11.50	2302	11.50	11.50	closed	2419		
47.35	8.80	11.50	11.50	11.50	11.50	11.50	11.50	3591	closed	11.50	11.50	2433	11.50	closed	11.50	2316	11.50	11.50	closed	2433		
47.40	8.85	11.50	11.50	11.50	11.50	11.50	11.50	3612	closed	11.50	11.50	2448	11.50	closed	11.50	2329	11.50	11.50	closed	2448		
47.45	8.90	11.50	11.50	11.50	11.50	11.50	11.50	3634	closed	11.50	11.50	2462	11.50	closed	11.50	2343	11.50	11.50	closed	2462		
47.50	8.95	11.50	11.50	11.50	11.50	11.50	11.50	3655	closed	11.50	11.50	2477	11.50	closed	11.50	2357	11.50	11.50	closed	2477		
47.55	9.00	11.50	11.50	11.50	11.50	11.50	11.50	3677	closed	11.50	11.50	2491	11.50	closed	11.50	2371	11.50	11.50	closed	2491		
47.60	9.05	11.50	11.50	11.50	11.50	11.50	11.50	3698	closed	11.50	11.50	2506	11.50	closed	11.50	2385	11.50	11.50	closed	2506		
47.65	9.10	11.50	11.50	11.50	11.50	11.50	11.50	3720	closed	11.50	11.50	2520	11.50	closed	11.50	2398	11.50	11.50	closed	2520		
47.70	9.15	11.50	11.50	11.50	11.50	11.50	11.50	3741	closed	11.50	11.50	2535	11.50	closed	11.50	2412	11.50	11.50	closed	2535		
47.75	9.20	11.50	11.50	11.50	11.50	11.50	11.50	3763	closed	11.50	11.50	2550	11.50	closed	11.50	2426	11.50	11.50	closed	2550		
47.80	9.25	11.50	11.50	11.50	11.50	11.50	11.50	3784	closed	11.50	11.50	2564	11.50	closed	11.50	2440	11.50	11.50	closed	2564		
47.85	9.30	11.50	11.50	11.50	11.50	11.50	11.50	3806	closed	11.50	11.50	2579	11.50	closed	11.50	2454	11.50	11.50	closed	2579		
47.90	9.35	11.50	11.50	11.50	11.50	11.50	11.50	3827	closed	11.50	11.50	2593	11.50	closed	11.50	2468	11.50	11.50	closed	2593		
47.95	9.40	11.50	11.50	11.50	11.50	11.50	11.50	3849	closed	11.50	11.50	2608	11.50	closed	11.50	2482	11.50	11.50	closed	2608		
48.00	9.45	11.50	11.50	11.50	11.50	11.50	11.50	3871	closed	11.50	11.50	2623	11.50	closed	11.50	2496	11.50	11.50	closed	2623		

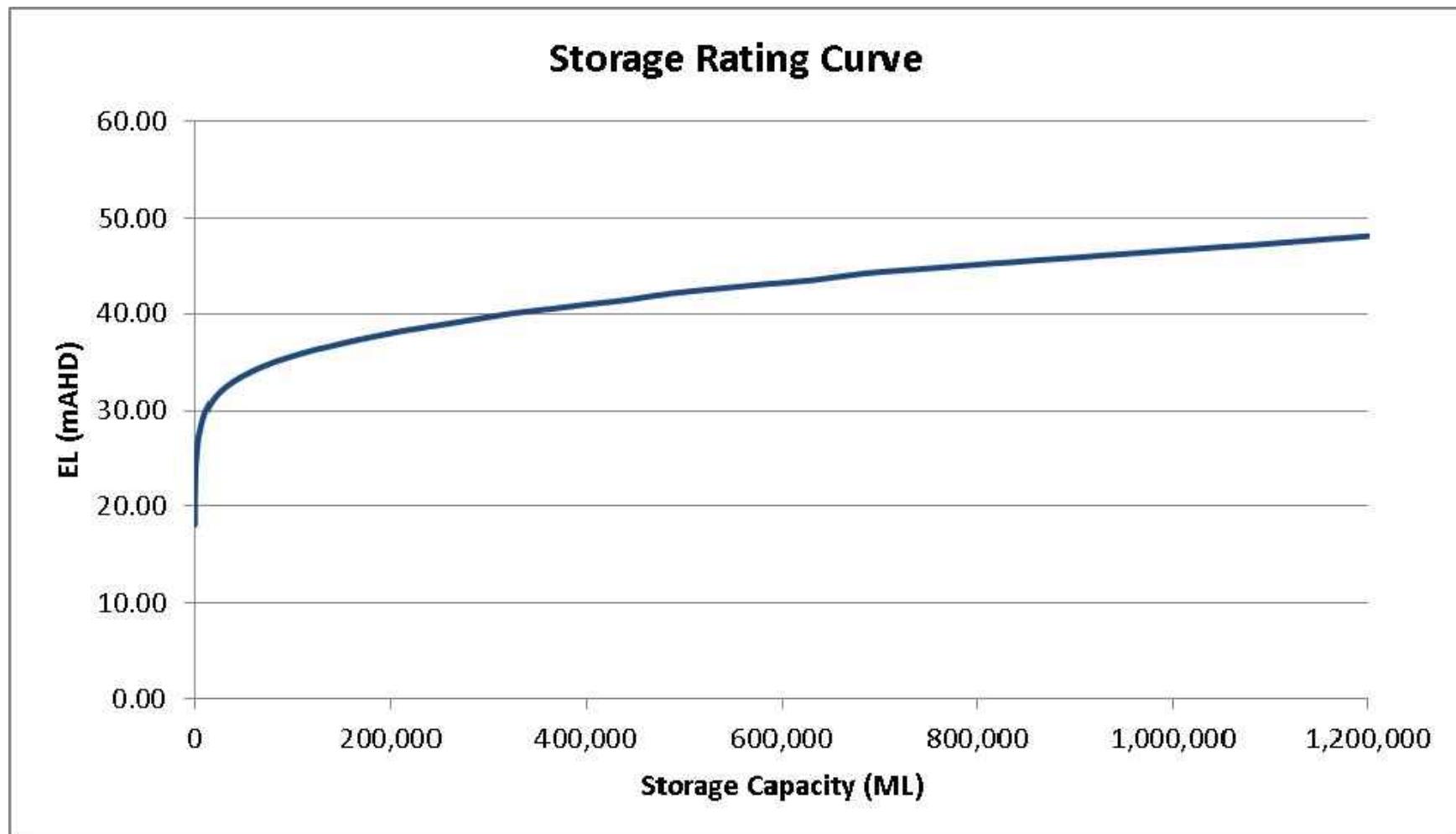
Note: Discharge rate does not include flow over the closed gate

# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix C12 Ross River Dam Storage Curve



# Ross River Dam

## 2025 Emergency Action Plan (EAP)



### Appendix D Ross River Dam Storage Curve

Refer to the following support forms:

- QAF0539 RRD Emergency Event Record
- QAF0540 RRD Emergency Event Log of Events-Actions
- QAF0541 RRD Emergency Event-Record of Communication
- QAF0544 RRD Emergency Event-Flood
- QAF0542 RRD Emergency Event-Chemical Spill or Toxic Conditions
- QAF0548 RRD Emergency Event-Piping
- QAF0543 RRD Emergency Event-Earthquake
- QAF0546 RRD Emergency Event-Terrorist Activity, Threat, Hoax or Other
- QAF0545 RRD Emergency Event-Overturning or Sliding of Spillway

These forms are located on Water Services Document Management System Paradigm.