

EMERGENCY ACTION PLAN — E J BEARDMORE DAM (ID 268)

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Prepared by **Sunwater Limited**

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Staffed: Yes

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Approved by the delegate of the Chief Executive,
Department of Regional Development, Manufacturing
and Water until 1 August 2026.

Emergency activation quick reference – Dam Hazards

The Emergency Action Plan (EAP) for E J Beardmore Dam covers dam hazards evaluated within Sunwater’s Dam Safety Management Program.

Use the following table to select the relevant section of the EAP that deals with the dam hazard. **Note: The Incident Coordinator (IC) is responsible for the decision to activate the EAP. Should the IC be unavailable, the Local Event Coordinator (LEC) or Dam Duty Officer (DDO) is responsible for the decision.**

Table 1: Emergency activation quick reference

| Dam Hazards and section numbers | Activation levels for dam hazards | | | |
|--|--|--|--|---|
| | Alert | Lean Forward | Stand Up | Stand Down |
| Flood operations See section 5 | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in EL |
| Piping: embankment, foundation, or abutments See section 6 | <ul style="list-style-type: none"> Increasing leakage through an embankment, the foundations, or abutments | <ul style="list-style-type: none"> Increasing leakage through an embankment, the foundations, or abutments with cloudy water | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Earthquake See section 7 | <ul style="list-style-type: none"> Earthquake reported or felt in the area, AND Intensity less than 5 Modified Mercalli (MM) | <ul style="list-style-type: none"> Earthquake reported or felt in the area, AND Intensity greater than or equal to 5MM, OR Intensity less than 5MM and change detected during surveillance inspection | <ul style="list-style-type: none"> Earthquake reported or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Terrorist threat/activity or high energy impact See section 8 | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Possible terrorist activity noticed at dam, OR threat received Large explosion heard/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 hazard | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Gate function malfunction See section 9 | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly |

NEXT PAGE: Emergency activation quick reference – Other Emergency Situations



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings
ALL PHOTOS MUST BE DATE & TIME STAMPED



Emergency activation quick reference – Other Emergency Situations

The EAP for EJ Beardmore Dam covers one other emergency situation evaluated within Sunwater’s Dam Safety Management Program. Use the following table to select the relevant section of the EAP that deals with the other emergency situation. **Note: The Incident Coordinator (IC) is responsible for activating the EAP unless otherwise directed by the FODM or DSTDM. Should the IC be unavailable, the Local Event Coordinator (LEC) or Dam Duty Officer (DDO) is responsible.**

Table 1: Emergency activation quick reference (continued)

| Other Emergency Situations and section numbers | Activation levels | | |
|--|---|---|--|
| | Communications Failure – Dam Site (DDO) | Communications Failure – Local Area (LEC/ORR) | Communications Failure – Brisbane (IC/DSTDM) |
| | <ul style="list-style-type: none"> Site managed (DDO - becomes LEC) | <ul style="list-style-type: none"> Brisbane managed by Incident Coordinator (IC) | <ul style="list-style-type: none"> Locally managed by Local Event Coordinator (LEC) |
| | Activation triggers for other emergency situations | | |
| Comms Failure See section 10 | <ul style="list-style-type: none"> Unable to communicate to or from dam site | <ul style="list-style-type: none"> Unable to communicate to or from local area | <ul style="list-style-type: none"> Unable to communicate to or from Sunwater Brisbane |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings
ALL PHOTOS MUST BE DATE & TIME STAMPED



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Document control

Authorisation of document

| Name | Position/role | Signature | Date |
|------|---|-----------|------------|
| | EAP Program Lead — Prepared for submission | | 17/09/2024 |

Document revision history

| Issue | Date | Prepared by | Reason for change | Ref. no. |
|-------|----------------|-------------|--|--------------|
| 2 | January 2008 | | Significant changes of the E J Beardmore Dam Emergency Action Plan to reflect Sunwater Management structure and other minor changes. | |
| 3 | October 2011 | | Significant changes of the E J Beardmore Dam Emergency Action Plan to reflect Sunwater Management structure and other minor changes. | |
| 4 | October 2015 | | New Emergency Action Plan developed at expiry of 3E approval. Issued for consultation with Relevant Disaster Management Groups. | HB# 1829273 |
| 5 | September 2016 | | Updates to notification & communication lists and Emergency Alert sections. | HB# 2019497 |
| 6 | January 2018 | | Revised and reviewed Emergency Action Plan developed at expiry of approval. Also includes updates that reflect the Water Legislation (Dam Safety) Amendment Act 2017, implementation of changes to Sunwater management structure, new event management roles and addition of new Emergency Activation section (<i>Other Emergency Situations</i>). | HB# 2108231 |
| 7 | September 2018 | | Amended contacts and associated sections, e.g., Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes. | HB# 2367729 |
| 8 | July 2019 | | Amended contacts and associated sections, added new hazard for Gate failures and removed DSTDM participation from Chemical spill Hazard. Incorporated global changes. Reviewed by Flood operations and Dam Safety personnel. | HB# 2407276 |
| 8.1 | September 2019 | | Amended contacts and associated sections, e.g., Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes. | HB# 2457499 |
| 8.2 | September 2020 | | Additional SMS messaging for Lean Forward (Flood) from lessons learnt from March 2020 event. Contact updates, error corrections, layout improvements and other non-substantive changes. | HB# 2536379 |
| 8.3 | September 2021 | | Amended contacts and associated sections, e.g., Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes such as removing Comprehensive Risk Assessments description (1.9) and simplifying FODM role in Activation triggers (4.2.1) including removing para 4.2.2. | HB # 2652777 |

| Issue | Date | Prepared by | Reason for change | Ref. no. |
|-------|----------------|-------------|---|--------------|
| 8.4 | September 2022 | | Amended contacts and associated sections. Minor error corrections and other non-substantive changes. The Chemical Hazard section has been removed as it is not a Dam Safety Hazard and is dealt with in other more relevant documents. | HB # 2725693 |
| 9.0 | April 2023 | | Amendments to dam details in section 3 due to latest CRA, including PAR. Updates to Activation triggers at stand up for flood operations in section 5. Updates to piping and earthquake actions. Contact updates in Appendix A3. Updates to maps in Appendix A9 and Appendix B. Updated AWS message in EA Request forms. Minor error corrections and improvements to readability. | # 2743918 |
| 9.1 | September 2023 | | Non-substantive updates as part of Annual Safety Statement. Minor error corrections and readability improvements. | # 2809547 |
| 9.2 | September 2024 | | Wet Season Preparedness Contact Updates | # 2865414 |

Controlled document distribution list

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| Copy# | Position | Location |
|-------|---|-----------------------------------|
| 1 | Storage Supervisor—E J Beardmore Dam | Sunwater, St. George |
| 2 | General Manager, South | Sunwater, Goondiwindi |
| 3 | Emergency Action Plan Coordinator | Sunwater, Brisbane |
| 4 | Local Disaster Coordinator & CEO — LDMG | Balonne Shire Council, St. George |

Note: Communication information for each 'Controlled Copy Holder' is in Appendix A

Electronic document distribution list

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| Position | Location |
|--|---------------------------------|
| District Disaster Coordinator—Southwest DDMG | Police, Roma |
| Officer in Charge | Police, St. George |
| Senior Flood Forecaster | Bureau of Meteorology, Brisbane |

Note: Communication information for each 'Electronic Copy Holder' is in Appendix A.

1. References, abbreviations, and definitions

1.1 References/associated documents

| Ref. | Document title | Reference/location |
|------|--|---|
| A | Water Supply (Safety and Reliability) Act 2008 (March 2022) | https://www.legislation.qld.gov.au/view/whole/pdf/inforce/current/act-2008-034 |
| B | Queensland Disaster Management Act 2003 (April 2022) | https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-2003-091 |
| C | Queensland Disaster Management Guidelines | http://www.disaster.qld.gov.au |
| D | Guidelines on Selection of Acceptable Flood Capacity for Dams (ANCOLD, 2000) | ANCOLD |
| E | Queensland Dam Safety Management Guidelines (DNRME October 2020) | https://www.dnrme.qld.gov.au/_data/assets/pdf_file/0007/78838/dam-safety-management.pdf |
| F | Australian Rainfall and Runoff (ARR) 2019 | http://book.arr.org.au.s3-website-ap-southeast-2.amazonaws.com/ |
| G | Emergency action plan for referable dam guideline (RDMW 2021) | https://www.resources.qld.gov.au/_data/assets/pdf_file/0018/84015/eap-guideline.pdf |
| H | Queensland State Disaster Management Plan 2018 (Queensland's Disaster Management Committee) | Queensland-State-Disaster-Management-Plan |
| I | Queensland Government arrangements for coordinating public information in a crisis | L1159-DPC2739-Crisis-Communication-Document.pdf (disaster.qld.gov.au) |
| J | Professional Engineers Act 2013 (RPEQ) | https://www.legislation.qld.gov.au/view/pdf/inforce/2013-09-23/act-2002-054 |
| K | Guidelines for the Development of Communication Education, Awareness and Engagement Programs (Australian Institute for Disaster Resilience 2010) | https://knowledge.aidr.org.au/media/1970/manual-45-guidelines-for-the-development-of-communication-education-awareness-and-engagement-programs.pdf |
| L | Queensland Emergency Alert Manual – M.1.174 (February 2022) | M.1.174 Queensland Emergency Alert Manual (disaster.qld.gov.au) |
| M | Sunwater website — Emergency Action Plans, Flood Maps and Dam Emergency Sirens | https://www.sunwater.com.au/community/preparing-for-weather-events/emergency-management/ |
| N | Sunwater (internal) Strategic Event Procedure | Strategic Event Procedure |
| O | Sunwater (internal) E J Beardmore Dam Safety Condition Schedule | HB # 1740556 |
| P | Guidelines on Consequence Categories for Dams (ANCOLD, 2012) | ANCOLD ISBN: 978-0-9808192-5-0 |
| Q | Guideline for Failure Impact Assessment of Water Dams (DNRME 2018) | https://www.resources.qld.gov.au/_data/assets/pdf_file/0005/78836/guidelines-failure-impact-assessment.pdf |
| R | Sunwater (internal) Sunwater 2015 Portfolio Risk Assessment | HB # 1800487 |
| S | Queensland Rainfall and River Conditions (BOM-Flood Warning) | http://www.bom.gov.au/qld/flood/index.shtml?ref=hdr |
| T | Sunwater (internal) E J Beardmore Dam Operation and Maintenance Manual | EJ Beardmore O&M |
| U | Water Act 2000 | https://www.legislation.qld.gov.au/view/pdf/2017-07-03/act-2000-034 |
| V | Sunwater (internal) Sunwater Emergency Alert Protocol | HB # 2156253 |

| Ref. | Document title | Reference/location |
|------|--|--|
| W | Guidelines on Dam Safety Management (ANCOLD, 2003) | ANCOLD ISBN: 0-731027620 |
| X | Sunwater (internal) EJ Beardmore Dam Comprehensive Risk Assessment– March 2022 | # 2720023 |
| Y | Fatigue Management Procedure WHS42 (Sunwater internal) | Fatigue Management Procedure |
| Z | Standing Operating Procedure (SOP) 12 – Dam Log Books (Sunwater internal) | SOP12 – Dam Log Books |

1.2 Abbreviations and acronyms

| | | | |
|---------|---|------|---|
| ABC | Australian Broadcasting Corporation | O&M | Operation & Maintenance |
| AEP | Annual Exceedance Probability | OB | Observation Bore |
| AHD | Australian Height Datum | OC | Operations Centre |
| AMTD | Adopted Mean Thread Distance | OCDO | Operations Centre Duty Officer |
| ANCOLD | Australian National Committee on Large Dams | OCO | Operations Coordinator |
| AWS | Australian Warning System | OM | Operator Maintainer |
| BOM | Bureau of Meteorology | OMGR | Operations Manager |
| CED | Chief Engineer Dams | OS | Operations Supervisor |
| CEO | Chief Executive Officer | ORR | Owner's Regional Representative |
| CRA | Comprehensive Risk Assessment | PAR | Population at Risk |
| CTG | Counter Terrorism Group | PDSE | Principal Dam Safety Engineer |
| D/S | Downstream | PFRM | Predictive Flood Routing Model |
| DCF | Dam Crest Flood | PLL | Probable Loss of Life |
| DCL | Dam Crest Level | PMF | Probable Maximum Flood |
| DDC | District Disaster Coordinator | PMP | Probable Maximum Precipitation |
| DDMG | District Disaster Management Group | PMPF | Probable Maximum Precipitation Flood |
| DDMP | District Disaster Management Plan | PWRE | Principal Water Resources Engineer |
| DDO | Dam Duty Officer | QDMC | Queensland Disaster Management Committee |
| DDS | Director Dam Safety | QFD | Queensland Fire Department |
| DSR | Dam Safety Regulator | QPS | Queensland Police Service |
| DSSC | Dam Safety Surveillance Coordinator | RB | Right Bank |
| DSTDM | Dam Safety Technical Decision Maker | RC | Regional Council |
| EAP | Emergency Action Plan | RCC | Roller Compacted Concrete |
| EA | Emergency Alert | RDMW | Department of Regional Development, Manufacturing and Water |
| EER | Emergency Event Report | ROC | Regional Operations Centre |
| EGMO | Executive General Manager Operations | RPEQ | Registered Professional Engineer of Queensland |
| EGME&WR | Executive General Manager Engineering & Water Resources | RSL | Reduced Supply Level |
| EL | Elevation Level | SCED | Senior Civil Engineer Dams |
| FCL | Fixed Crest Level | SCTN | Security and Counter Terrorism Network |
| FODM | Flood Operations Decision Maker | SDCC | State Disaster Coordination Centre |
| FSL | Full Supply Level | SDF | Sunny Day Failure |
| GM | General Manager | SDTE | Senior Dam Technical Engineer |
| IC | Incident Coordinator | SES | State Emergency Service |
| IFHC | Incremental Flood Hazard Category | SMS | Short Message Service |
| IGEM | Inspector-General Emergency Management | SMT | Sunwater Media Team |
| LB | Left Bank | SO | Standby Operator |
| LDC | Local Disaster Coordinator | SOP | Standing Operating Procedure |
| LDMG | Local Disaster Management Group | SRT | Strategic Response Team |
| LDMP | Local Disaster Management Plan | SS | Storage Supervisor |
| LEC | Local Event Coordinator | SWL | Storage Water Level |
| MAP | Manager Asset Planning | SWRE | Senior Water Resources Engineer |
| Max. OL | Maximum Operating Level | U/S | Upstream |
| ME | Manager Environment | WHS | Workplace Health & Safety |
| MM | Modified Mercalli | WQ | Water Quality |

1.3 Business terms and definitions

The meaning of terms used in this section are set out in accordance with relevant legislation or as defined by operator requirements.

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

| 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"> a failure impact assessment of the dam, or the proposed dam, is carried out under the Act, AND 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 the chief executive has, under section 349 of the Act, accepted the assessment. <p>Also, a dam is a referable dam if:</p> <ul style="list-style-type: none"> 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 the chief executive has not, under section 349 of the Act, accepted a failure impact assessment of the dam. |
| Relevant entity | <p>Means each of the following under the EAP for the dam:</p> <ul style="list-style-type: none"> 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. each local group and district group for the EAP each local government whose local government area may be affected if a dam hazard event or emergency event were to happen. the chief executive another entity the owner of the dam considers appropriate e.g., the Queensland Police Service. |

Terms consistent with Queensland disaster management arrangements:

| | |
|-------------------|--|
| Activation levels | <p>The four levels of EAP activation are:</p> <ul style="list-style-type: none"> • Alert: 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. • Lean Forward: 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. • Stand Up: 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. • Stand Down: 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. <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> |
|-------------------|--|

| Term | Definition |
|---|--|
| Bureau of Meteorology flood level classifications | <p>The three levels of flooding are:</p> <ul style="list-style-type: none"> • Minor flooding: 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. • Moderate flooding: 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. • Major flooding: 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. |
| 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 | <p>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:</p> <ul style="list-style-type: none"> • for an embankment dam, is the lowest point of the embankment crest. • 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. • for a concrete faced rockfill dam, is the lowest point of the crest structure. |
| 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 | <p>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:</p> <ul style="list-style-type: none"> • settlement, sliding, or overturning of monoliths in the dam wall. • initiation of seepage lines in the foundations or abutments that could lead to piping damage and potential inoperability of appurtenant works. |
| 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. |

| Term | Definition |
|--------------------------------------|---|
| Probable maximum flood | The flood resulting from probable maximum precipitation coupled with the worst catchment conditions that can be realistically expected. |
| Probable maximum precipitation | The theoretical greatest depth of precipitation physically possible based on generalised methods. |
| Probable maximum precipitation flood | The flood resulting from probable maximum precipitation coupled with standard catchment conditions that can be expected. |
| Stability, main embankment | High foundation pore pressure peaks may reduce the Factor of Safety against slip circle failure to an unacceptable level. |
| ‘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. |

Note: Sunwater has attempted to write the EAP to cope with all reasonably foreseeable emergency situations. However, there is considerable uncertainty about how any emergency situation might develop and progress. Factors such as the weather, the location, the mechanics, and the rate and size of any actual failure can considerably affect any resulting flood discharges. Therefore, a significant number of assumptions have had to be made in compiling sections of the EAP. Some variation in outcome should be expected where the event differs from the assumed behaviour.

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):

- identify the area likely to be affected by a dam hazard event or emergency event arising from the dam hazard; and
- identify each circumstance that indicates a material increase in the likelihood of the dam hazard event or emergency event happening; and
- 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
- 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
- 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 EJ Beardmore Dam has been determined as **Balonne Shire Council (BSC)**. Sunwater has provided the council with a copy of the draft EAP for assessment.

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 EJ Beardmore Dam is **Roma DDMG**. Sunwater has provided the DDMG with a copy of the draft EAP for review.

2.2 Purpose

The purpose of this EAP is:

- to minimise the risk of harm to persons or property if a dam hazard event or emergency event for the dam happens
- to identify dam hazards that could occur at EJ Beardmore Dam and the area likely to be affected for each hazard
- to prescribe emergency actions taken by the dam owners and operating personnel in identifying and responding to dam hazards and notifying relevant entities.

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

The focus of this EAP is the management of dam hazards at EJ Beardmore Dam by the owner of the dam (Sunwater) and the communication and notification of dam hazards to the LDMG, DDMGs and broader community. However, the EAP sits within the broader emergency response framework. This EAP has been assessed and considered to be consistent with the Balonne Local Disaster Management Plan and associated sub plans.

2.3 Scope

The E J Beardmore Dam EAP covers:

- dam hazards evaluated within Sunwater's 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 event or emergency event
- triggers for activation of a tiered response to a dam hazard event or emergency event
- roles and responsibilities in responding to a dam hazard event or emergency event
- 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 event or emergency event, and the management of such.

2.4 Sunwater provides training

Training of the use and implementation of this EAP document is carried out at various times throughout the year, but specific pre-wet season training is undertaken in the months leading up to the wet season at each dam site.

During this time, Sunwater staff have work instructions for site preparations, and during July to September carry out checks on stores, supplies of fuel, and review the current EAP for contact details for individuals and dam information.

The EAP training that is carried out on site include walkthroughs of new changes, scenario (role play) and Q & A to check the knowledge and competency of all those who attended. DSTDM information sessions are carried out once a year with the same walkthrough of new changes and Q & A, but this is not specific to any one dam. New employees to these various roles also undertake a walkthrough of the EAP to ensure understanding after they start work at Sunwater.

Sunwater is also working towards carrying out a full test once annually involving each local council. Where there is more than one referable dam in a local area, the exercise could involve more than one dam, or the location will be rotated. This full test would involve the SDCC and include the (non-live) testing of emergency alerts.

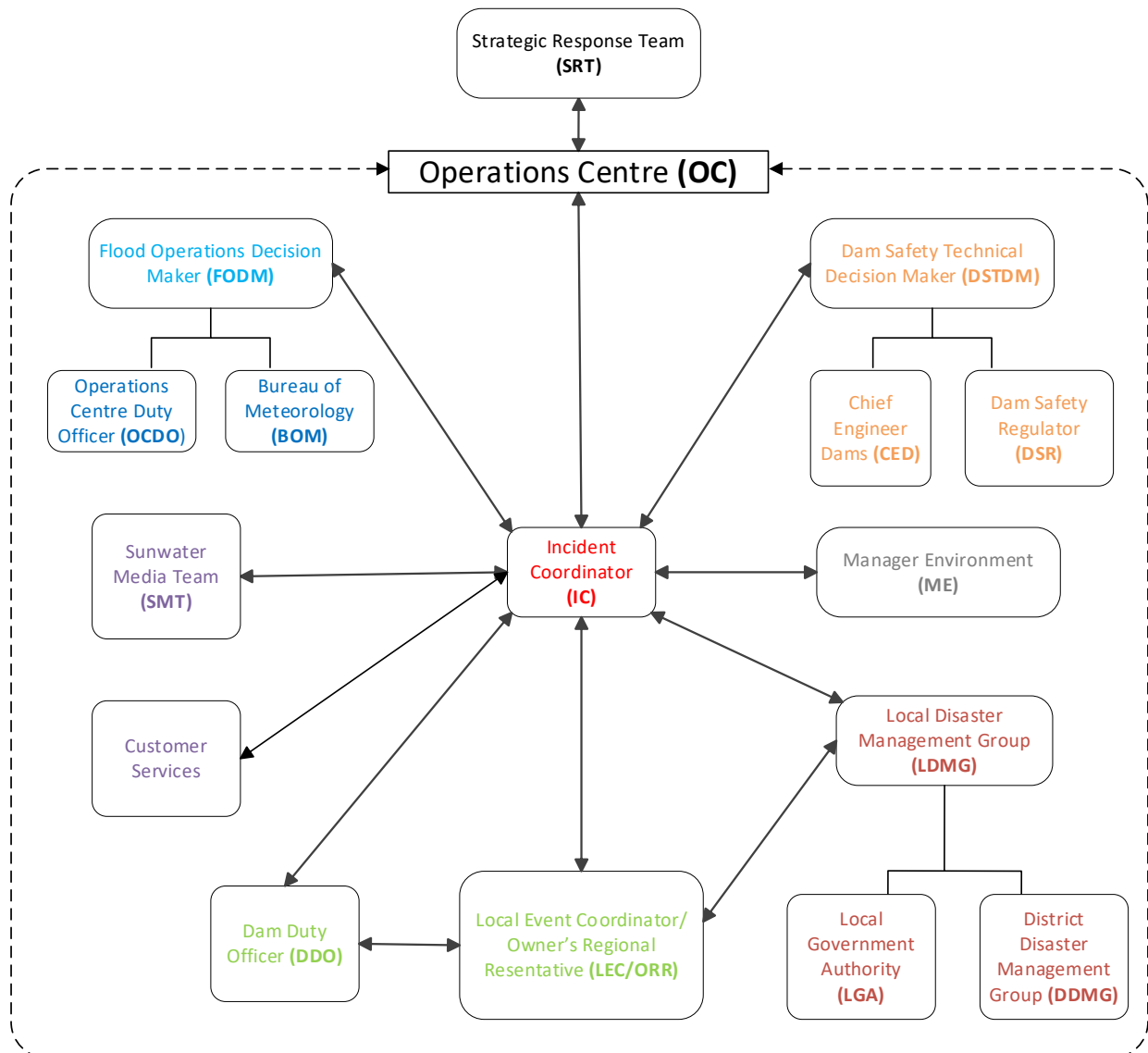
2.5 Fatigue Management Plan

Sunwater has a Fatigue Management Procedure (ref Y). This document recognises fatigue as an important workplace hazard and has identified and outlined control processes to mitigate the risk of fatigue impaired HSE incidents. A copy of Sunwater’s Fatigue Management Procedure can be provided upon request.

2.6 Dam emergency organisation within Sunwater

The Sunwater emergency management framework generally utilises the organisation’s hierarchy and in-house experts as illustrated in Figure 1 below.

Figure 1: Sunwater emergency response organisation



Key aspects of the emergency management framework are:

- Central to the framework is the role of Incident Coordinator (IC) for any dam hazard at a dam. The IC will maintain overall responsibility for coordination of the EAP when activated.
- The DSTDm is primarily responsible for analysing dam safety and providing expert technical advice in this regard. They will be expected to discuss dam hazards with peers and other technical experts and make sound decisions to mitigate risks and to determine a response to incidents and emerging issues. The DSTDm is the key communication contact with the Dam Safety Regulator.

- The FODM has responsibility for all matters involving flood modelling and forecasting and determining the associated impact to Sunwater storages/infrastructure and EAP actions. The FODM may pre-emptively advise the IC to activate the EAP in accordance with available hydrology forecast information. For example, if an EAP trigger level is predicted to be exceeded based on forecast dam inflows derived from observed rainfall and streamflow conditions upstream of the dam, the EAP may be activated to the predicted level. Regarding the operation of the OC, the FODM must liaise with the IC as necessary to inform of decisions made.
- The IC is responsible for the decision to activate the EAP. The IC is the lead coordinator in the implementation of any EAP in events for Sunwater. Should the IC be unavailable, the Local Event Coordinator (LEC) followed by the Dam Duty Officer (DDO) is responsible for the implementation of the EAP. If the IC loses all communications during a dam hazard, then as a fail-safe position, the LEC followed by 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.
- The FODM and DSTDM roles are filled by Registered Professional Engineers of Queensland (RPEQ) and are suitably qualified professionals who are able to make engineering decisions and provide engineering decisions as defined in the Professional Engineers Act of Queensland.

2.7 Community information

Sunwater with the assistance of the local councils will ensure community education around messaging and impacts of the EAP and its related events is undertaken and continually improved by incorporating actions from Lessons learnt (section 2.8).

Sunwater currently provides information externally to customers, downstream (D/S) residents and the community in a range of methods or channels in relation to dam hazards and emergencies. Individuals can access information through Facebook, Twitter, the Sunwater web page, Sunwater App and at several show/field days across regional Queensland where Sunwater may have stalls and information available.

Notifiable D/S residents are also provided information in text message/phone calls in the event of an activation of this EAP.

In the event of an emergency event or when otherwise required, Sunwater and the affected local government also have the use of the National Emergency Alert System to send a voice message and SMS. This service is provided by Telstra and managed by Queensland Police Service (QPS) at the SDCC.

A copy of all Sunwater approved EAPs are available to the public on the Sunwater website <https://www.sunwater.com.au/community/preparing-for-weather-events/stay-informed/>. These copies are redacted to protect people's personal details.

2.8 Lessons learnt

Sunwater carries out Lessons Learnt workshops as part of its post event management. These Lessons Learnt can result in changes to the EAP. These are captured and if applicable to this document are implemented at the earliest opportunity and are made available in the next EAP update to the Dam Safety Regulator (DSR) as part of Sunwater's continual improvement of its EAPs. The Lessons Learnt actions if relevant are provided to stakeholders, such as the LDMGs, DDMGs, other dam owners and Department of Regional Development, Manufacturing and Water (RDMW) as appropriate.

In addition, Sunwater requests any post event learnings be communicated regarding operational effectiveness and areas for improvement.

2.9 Downstream notifications lists

Sunwater has compiled the notification lists through an iterative process. At least every five years, Sunwater writes to all lot on plan landholders that are impacted in the downstream zones. In addition to individual letters, advertisements are placed yearly in local papers to capture any new residents in the areas. All year, applicable individuals can register to receive notifications for this EAP and are able to register either through the Sunwater website (<https://www.sunwater.com.au/>) or by calling Sunwater Customer Enquiries on 13 15 89.

3. Dam details

3.1 General dam information

Location: EJ Beardmore Dam is located on the Balonne River at AMTD 251.8 km and is approximately 21 km north of St. George.

Purpose: The purpose of E J Beardmore Dam is to supply water to the St. George irrigation area and provide continuity in water supply to the township of St. George. The dam makes regulated releases to the Balonne River to meet some of these allocation demands and makes regulated releases to the Thuraggi Channel. The channel distribution area is owned and operated by Mallowa Irrigation Limited. Construction of the dam began in April 1968 and was completed in March 1972.

Specification: The table below lists general specifications of E J Beardmore Dam.

Table 2: E J Beardmore Dam specifications

| Description | Specification |
|--|---|
| Dam type | Zone earth and rock-fill embankment |
| Full Supply Level (FSL) | EL 207.12 m |
| Dam Crest Level (DCL) | EL 210.17 m (nominal) Note: 300m section of right (west) abutment has a lower crest level approx. 208.65m. See Appendix B for actual surveyed levels |
| Dam Crest Flood (DCF) | 1 in 286 AEP (EL 210.17 m) |
| Historical recorded max storage—7 Feb 2012 | EL 208.32 m |
| Catchment area | 75,032 km ² |
| Storage capacity at FSL | 81,800 ML |
| Storage area (at FSL) | 2,850 ha |
| Storage area (at DCL) | 12,344 ha |
| Max embankment height | 15.2 m (approx.) |
| Dam crest width | 6.1 m |
| Total length embankment | 2,571 m (including spillway) |
| Spillway type | Gated ogee crest and concrete roller bucket |
| Spillway crest level | EL 201.03 m |
| Spillway crest length (incl. piers) | 180.80 m |
| Spillway crest length (excl. piers) | 157.20 m |
| Spillway capacity (at FSL) | 3,637 m ³ /s |
| Spillway capacity (at DCL) | 7,071 m ³ /s (EL 210.17 m, inc. right embankment flow above EL 208.65 m) |
| Spillway gates | 12 x 13.10 m wide by 6.67 m high, manually controlled vertical fixed-wheel gates |
| Outlet works | Irrigation and river outlets |
| Outlet control | Vertical lift gate (river), 2x valves (irrigation) |

All levels are to Australian Height Datum (AHD).

3.2 Population at risk

Based on the EJ Beardmore Dam 2022 Comprehensive Risk Assessment (CRA), Beardmore Dam has a total PAR of 17 for the Sunny Day Failure scenario, and a total PAR of 3256 for the Flood Failure (DCF) scenario. The levee overtopping flood (1 in 111 AEP) has a total PAR of 1064 without dam failure.

3.3 General Arrangement

The General Arrangement drawings are in Appendix B1.

3.4 Inspections and monitoring

The E J Beardmore Dam has been designed to conform to modern design standards, so that its failure is highly unlikely. To maintain the dam in a safe condition and detect any dam hazard, as soon as it begins to develop, or becomes apparent, the following is applicable to E J Beardmore Dam.

3.4.1 Inspections

- **Routine Visual Inspection:** Conducted as per routine surveillance Work Order or as directed by the DSTDM
- **Detailed Inspection:** Conducted annually
- **Comprehensive Inspection:** Conducted five-yearly

3.4.2 Instrumentation and monitoring

To confirm the structural behaviour and safety of the embankment, the following instrumentation was installed, and is monitored, at E J Beardmore Dam.

- **Pore pressure measurement:**
 - 4 vibrating wire piezometers installed in 2 bore-holes located at the Thuraggi channel
 - 22 hydraulic piezometers (twin tube) located in 3 cross-sections within the embankment
 - 15 foundation pressure gauges located in the spillway gallery
- **Settlement/movement measurement - 21 deformation survey points:**
 - 13 located on each concrete platform at each pier across the access walkway
 - 1 located on the right-hand side of the embankment approach road ramp
 - 1 located on the downstream side of the left embankment behind the amenities block
 - 3 located on the downstream side of the left embankment road
 - 1 located on the visitor lookout
 - 1 located on the downstream side right embankment road 20 m from compound
 - 1 located on the downstream side of the right embankment
- **Seepage Measurement:**
 - 4 observation bores located at the Thuraggi channel
 - 4 v-notch weirs located along the lower gallery
 - 1 v-notch weir D/S toe of the right abutment

Note: The location of instrumentation and monitoring equipment is detailed in the drawings in Appendix B1.

3.5 Emergency inspections and monitoring

If required, triggers for emergency inspections and monitoring of EJ Beardmore Dam are detailed in the Dam Duty Officer action tables across all the dam hazard scenarios.

4. Roles and responsibilities

| Roles and responsibilities | Position holder |
|---|---|
| Owner (Sunwater) <ul style="list-style-type: none"> • Liaise with the Board and Minister • Activate Sunwater Strategic Response and Business Continuity Plans if required • Ensure necessary resources are available to manage any event • Maintain an up-to-date list of notifiable D/S residents (Appendix A4) of EJ Beardmore Dam. The downstream limit is indicated in the drawing in Appendix B2 by the zone labelled <i>Limit of downstream notification area</i> • At all times, aim to provide timely advice and support to the LDMGs in the affected local government areas and the DDMGs in the affected disaster districts • During a dam hazard event that occurs with little or no warning, undertake the following actions to ensure the community is informed as soon as possible: <ul style="list-style-type: none"> ○ notify the residents listed in Appendix A4 via SMS ○ contact SDCC Watch Desk to request an Emergency Alert campaign throughout the EJ Beardmore Dam Emergency polygon • During a dam hazard event that occurs with adequate warning, notify the residents listed in Appendix A4 via SMS, unless otherwise agreed with the LDMGs • Record communications, notifications and observations as required | CEO EGMO EGME&WR |
| Owner's Head Office Representative <ul style="list-style-type: none"> • Authorise the issuing of EAPs, SOPs and O&M Manuals and amendments • Facilitate Dam Safety training courses for Service Managers, Operations Supervisor, Dam Operators and other staff as appropriate and ensure that all staff required to undertake dam safety work are trained and accredited • Ensure that risks identified in CRAs or other technical reports undertaken in relation to dam safety are included in the EAP • Ensure visual inspections and instrumentation monitoring frequencies conform to ANCOLD Guidelines • Ensure all Dam Safety work orders, work instructions and lesson learned outcomes are fully implemented. • Ensure requirements of the Dam Condition Schedule are met • Ensure the work instructions are correct and the Logbooks, SOPs, Data Books, and EAPs are reviewed annually • Undertake and prepare the five yearly Comprehensive Inspection Reports with suitably qualified personnel within the time specified and ensure that work orders are created for recommendations and work is undertaken as required • Undertake Annual Inspections and prepare reports within the time frames specified in the Condition Schedule and that work orders are created for recommendations and work is undertaken as required • Review the Dam Safety Instrumentation database and evaluate data to verify the structural integrity of the dams on a regular basis and maintain a spread sheet for verification for audit and quality control • Record communications, notifications and observations as required | GM Asset Integrity GM Asset Management |

| Roles and responsibilities | Position holder |
|--|---|
| Owner's Regional Representative (ORR) <ul style="list-style-type: none"> • Liaise with the Storage Supervisor/Operator Maintainer • Arrange dam specific training and accreditation for relevant staff • Ensure competent, trained and accredited personnel operate the storages • Undertake the role of LEC as required: <ul style="list-style-type: none"> ○ Liaise with the LDC or proxy ○ Activate the EAP, when necessary ○ Ensure the EAP is implemented appropriately and carry out the LEC role as required • Ensure all work orders, work instructions and lesson learned outcomes are fully implemented • Record communications, notifications and observations as required | GM South OCO OS |
| Technical Advisor <ul style="list-style-type: none"> • Analyse the situation and provide expert technical advice • Discuss issue with peers and other technical experts and make sound decisions to mitigate the risk • Determine response to incidents and emerging issues • Record communication, notifications and observations as required | GM Environment |
| Dam Safety Technical Decision Maker (DSTDM) <ul style="list-style-type: none"> • Maintain current RPEQ accreditation • Analyse the situation and provide expert technical advice in relation to dam safety • Discuss dam hazard with peers and other technical experts and make sound decisions to mitigate the risk • Determine response to incidents and emerging issues • Issue warnings on dam failure and advise on protective measures • Ensure the EAP is implemented appropriately and carry out the DSTDM role as required • Liaise with DSR as required • Record communications, notifications and observations as required | Various personnel as per DSTDM roster |
| Flood Operations Decision Maker (FODM) <ul style="list-style-type: none"> • Maintain current RPEQ accreditation • Provide hydrological advice in relation to predicted and actual dam outflows including assessment of weather and flood warnings and other related matters as identified in the OC SOP • Interpret and apply rainfall data in accordance with the OC SOP, including, as required under the OC SOP, liaising with BOM • Ensure the EAP is implemented appropriately and carry out the FODM role as required • Record communications, notifications and observations as required | Various personnel as per FODM roster |
| Sunwater Media Team (SMT) <ul style="list-style-type: none"> • Analyse sensitive issues, discuss with the Owner and issue media releases • Handle public and customer comments (including social media) and advise the Owner if necessary • Liaise with the IC and update QDMC of flood events • Record communications, notifications and observations as required | Various personnel as per SMT roster |
| Incident Coordinator (IC) <ul style="list-style-type: none"> • Notify LDMGs, or councils if LDMGs not Stood Up, of intent to use the emergency alert (EA) • Activate the EAP, when necessary • Ensure the EAP is implemented appropriately and carry out the IC role as required • Arrange Situation Reports and determine frequency, as required • Record communications, notifications and observations as required | Various personnel as per IC roster |

| Roles and responsibilities | Position holder |
|--|-----------------|
| Local Event Coordinator (LEC) <ul style="list-style-type: none"> Refer to ORR role | |
| Dam Duty Officer (DDO) <ul style="list-style-type: none"> Complete accreditation to operate and maintain relevant storage Ensure the EAP is implemented appropriately and carry out the DDO role as required Take direction from the DSTDM and IC as requested Arrange immediate site inspection and make informed assessment of the situation Escalate any issue not covered in the EAP or where actions are not clear Record communications, notifications and observations as required | SOM SS OM |
| Councils Councils have legislated local government functions, as per Section 80 of the <i>Disaster Management Act (2003)</i> . These include: <ul style="list-style-type: none"> Ensure it has a disaster response capability Approve its local disaster management plan Ensure information about an event or a disaster in its area is promptly given to the DDMG for the disaster district in which area it is situated Perform other functions given to the local government under the Act And as per Section 352HB of the Act: <ul style="list-style-type: none"> Must assess (in consultation with its LDMG) the EAP for consistency with the LDMP | |
| Queensland Police Service (QPS) Manage the initial situation based on local operational procedures; including but not limited to: <ul style="list-style-type: none"> conduct emergency operations coordinate and support Sunwater during a declared emergency at the dam liaise with relevant organisations evacuation of persons if required control of essential traffic security of specific area. | Local Police |

| Roles and responsibilities | Position holder |
|---|------------------------------|
| <p>Disaster Management Groups/Personnel - (in addition to requirements outlined in the Disaster Management Act (2003))</p> <p>LDMG</p> <ul style="list-style-type: none"> As per IGEM review recommendation, work together with Sunwater and the councils to ensure community education around messaging and impacts of EAP related events is undertaken and continually improves Work with councils and Sunwater to ensure the EAP is regularly exercised Identify and coordinate the use of resources and support services that may be required for an EAP event, noting that for safety events unique to the dam Sunwater will approach councils to initiate During a dam hazard/emergency event, providing they are Stood Up, the LDMGs in the affected local government areas will take the lead role in notifying the broader community Identify and provide advice to the relevant DDMGs about support services required by the LDMG to manage an EAP event Provide reports and make recommendations to the relevant DDMGs about matters relating to EAP events <p>QFD</p> <ul style="list-style-type: none"> Work with dam owner and LDMGs to ensure emergency alert polygons are prepared, stored and tested at the State Watch Desk <p>And as per Section 352HC of the Act:</p> <p>DDMG</p> <ul style="list-style-type: none"> May review the EAP for consistency with the District Disaster Management Plan | <p>LDMG QFD DDMG</p> |
| <p>Dam Safety Regulator (DSR)</p> <ul style="list-style-type: none"> Liaise with relevant Minister on necessary actions Approve this document as required under legislation Liaise with Chief Executive as required in administering (regulating) the Act | <p>DDS</p> |

5. Dam hazard—flood operations

5.1 Overview

The emergency action described in this section (dam hazard—flood operations) relates to:

- A dam hazard that occurs where natural catchment inflows fill E J Beardmore Dam to FSL 207.12m and the rate of inflow exceeds the capacity of the outlet works. The spillway will then discharge water downstream into the Balonne River. These flood flows can create a dam hazard event. Inflows will also cause the storage to temporarily rise to above the FSL of the storage. Note:
 - o The greater the rate of inflow, the higher the storage will rise.
 - o The higher the storage level rises, the greater the loads on the dam structure.
 - o Although unlikely, the greater the loading, the higher the likelihood of a dam failure.
 - o Typically, the level of surveillance is increased during flood operations.
- Spillway discharge from the dam where there has been no indication that a dam failure may be initiating or in progress.

The area likely to be affected by this dam hazard is described as:

- As the rate of discharge increases, there will be an impact on low-level road crossings of the Balonne River, Thuraggi Channel, and other infrastructure in the creek such as pump sites.
- Water will flow around the right bank homogenous embankment when the storage level reaches 208.65 m. This is 1.5 m below the dam crest level.
- The flood levee provides protection to St George for a flood of equivalent magnitude to the February 2012 event.

Gate operations are used to maintain the water level as close to FSL as possible for the duration of the flood event by operating the spillway gates so as the spillway discharge is closely matched to the lake inflows.

The following table depicts historical floods experienced at Beardmore Dam. Flood magnitude is based on peak height at St George (manual), since the level at Beardmore Dam is not an accurate indicator of flood magnitude.

Table 3: Historical floods experienced at St George

| Flood rank | Date | Peak height (m) |
|------------|----------|-----------------|
| 1 | Feb 2012 | 13.95 |
| 2 | Mar 2010 | 13.39 |
| 3 | Jan 2011 | 13.20 |
| 4 | Apr 1990 | 12.24 |
| 5 | Feb 2020 | 12.22 |

In February 2012, all gates were fully open (at 5.60 m) and the estimated peak discharge was 5,376 m³/s (464,500 ML/d). Corresponding water levels in the February 2012 event at E J Beardmore Dam tailwater, Jack Taylor Weir and Balonne River at St George (Station 422201E) were 207.64, 200.09 and 199.34 m AHD respectively. Detailed information on downstream flood impacts is presented in Appendix B.

5.2 Emergency actions

In the Action Tables following, 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 4: Flood emergency activation trigger summary

| | |
|---------------------|---|
| Alert | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) |
| Lean Forward | <ul style="list-style-type: none"> Storage above 207.12 m (i.e. FSL) |
| Stand Up—1 | <ul style="list-style-type: none"> Storage above EL 207.87 m (0.75 m above FSL) |
| Stand Up—2 | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record February 2012) |
| Stand Up—3 | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right embankment overtopping) (allowing for wave action) OR As advised by the DSTDM |
| Stand Down | <ul style="list-style-type: none"> Storage at 207.12 m (i.e. FSL) and falling, OR FSL and no forecast increase in EL |

While this EAP is not activated until E J Beardmore Dam reaches the Alert trigger, Sunwater, Balonne Shire Council and the Balonne LDMG will work cooperatively and will endeavour to share intelligence of any rainfall event when whichever organisation becomes aware of a situation that could result in the activation of the EAP.

In respect of forecast rainfall, as is identified in the roles and responsibilities of the FODM, regard must be had to the Operations Centre Standard Operating Procedure.


The activation of Stand Up 3 requires consideration of wave action. For example, if the gauge reading was forecast to reach 1 m below the dam crest level and the DDO reported 1 m high waves, Stand Up 3 will be triggered. Furthermore, the DSTDM may also trigger this activation if there are any dam safety concerns as the storage approaches dam crest level.

5.2.2 Emergency action roles

Table 5 to Table 10 specify emergency actions for the following roles:

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

Table 5: Flood operations—DDO emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|---|---|--|--|---|--|--|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; <ul style="list-style-type: none"> As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Actions | <ul style="list-style-type: none"> Record all communication Inspect the dam daily (or as instructed by the DSTDM) and photograph/video and record using approved forms and send to IC & DSTDM Undertake site preparations including but not limited to checking: <ul style="list-style-type: none"> fuel and operation of regular standby generator portable generators are on site or available on very short notice operation of emergency hydraulic motor operations of sump pump communication systems (including backup, radio, satellite phones, and internet) Notify the SO Record the Storage Level twice daily (or as instructed by the DSTDM) using gauge boards and confirm accuracy of gauging station Remove buoy line if flow >20,000ML/d and lock gate for boat ramp access Ensure gates at Jack Taylor Weir are sequenced | <ul style="list-style-type: none"> As per previous activation level, AND Attention will be given to: <ul style="list-style-type: none"> visual inspection of flow patterns over spillway and dissipater for evidence of scouring inspect embankment for leaks, deformation, and erosion including area around Thuraggi obvious signs of seepage Inspect tailwater and photograph any turbulent areas /damage Operate the gate openings to maintain FSL, or as directed by the DSTDM and in reference to the spillway gate settings in Table C2, Table C3 and Table C4. Sound gate operations siren Confirm date, time and gate sequence at initiation and change in operation sequence of gate openings to the DSTDM and IC by email or phone. | <ul style="list-style-type: none"> As per previous activation level, AND Inspect the dam twice daily (or as instructed by the DSTDM) and photograph/video and record using approved forms and send to IC & DSTDM <div> <p>NOTE: The spillway gates of Beardmore Dam under flood conditions cannot be opened until the Jack Taylor weir gates have been opened. At 60,000ML/d, Jack Taylor Weir gates will be fully opened and there is no further control of the D/S flow.</p> </div> | <ul style="list-style-type: none"> As per previous activation, AND Remotely inspect the Dam 6-hourly (or as instructed by the DSTDM) photograph/video and record using approved forms and send to IC & DSTDM Consider the need to evacuate site <div> <p>NOTE: At storage level EL 208.65 m, water will flow around the right embankment</p> </div> | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Return to routine surveillance activities and frequencies Inspect the dam and photograph any damage identified during the event Forward all communication and inspection sheets for EER to  Update Dam Logbook as per SOP 12 |
| <div> <p>NOTE: DDO ACTIONS CONTINUED ON NEXT PAGE</p> </div> | | | | | | |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., photographs/video, dam inspections, instrument readings



Table 5 (Continued): Flood Operations—DDO emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|-------------------------------|---|--|--|--|---|--|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Actions | <ul style="list-style-type: none"> (Continued) Operations staff to be prepared with food, water, and necessary provisions to be housed on site prior to the St. George Road being cut off by flood water causeway gates to be locked out Move vehicles to left bank Record rainfall—daily Update Dam Logbook as per SOP 12 | <ul style="list-style-type: none"> (Continued) Monitor and record gate operations hourly (including any changes) or as directed Evacuate any plant and vehicles from office/workshop/home areas to higher ground when spillway discharge above 330,000ML/d Read dam instrumentation daily (or as directed), as per section 3.4.2 | | | | |
| Internal notifications | <ol style="list-style-type: none"> IC SO FODM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., photographs/video, dam inspections, instrument readings



Table 6: Flood operations—LEC emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|---|--|--|--|--|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Actions | <ul style="list-style-type: none"> Liaise with DDO, IC and LDMG re: situation Develop/implement staff roster Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Ensure all abnormal observations or damage has been reported to DSTDM and IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications including relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., photographs/video, dam inspections, instrument readings



Table 7: Flood operations—IC emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|---|--|--|--|--|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Actions | <ul style="list-style-type: none"> Liaise with Sunwater Customer Support to send SMS to D/S residents Liaise with the DDO, LEC, DSTDM and the FODM as required Obtain catchment conditions from the DDO Create Incident Report Record Update Sunwater intranet with dam status Record all communication <div> <p>NOTE: IC to carry out LEC actions unless LDMG is stood up</p> </div> | <ul style="list-style-type: none"> As per previous activation level, AND Ensure all abnormal observations or damage has been reported to DSTDM. Liaise with FODM and obtain PFRM results Monitor the gauging station at Cashmere and Weribone <p>Notes:</p> <ul style="list-style-type: none"> Refer to comms plan for relevant messages as discharge rates increase. At 60,000 ML/d, gates at Jack Taylor Weir will be fully opened. Notify Disaster Management Personnel including St. George Police that the approaches to Andrew Nixon Bridge are about to be inundated (at 160,000ML/d) | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Consider the need to evacuate staff from site | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Deactivate EAP Compile EER and deliver to DSR if required Close Incident Report Record Update Sunwater intranet with dam status Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO FODM DSTDM LEC/ORR SMT SRT | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Email all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> D/S Residents St George River customers DDMG Mallawa board | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND SDCC Watch Desk | <ul style="list-style-type: none"> Phone all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. photographs/video, dam inspections, instrument readings



Table 8: Flood operations—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|------------------|--|---|---|--|
| Alert | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? What is the status? Advise of current storage level and whether any flood releases are due to commence |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Lean Forward | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? What is the status? Advise of current storage level and describe gates opening if appropriate Discuss any potential road/bridge closures |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 5 – Discharge. 5,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 10 – Discharge 10,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 23 – Discharge 25,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 29 – Discharge 40,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 34 – Discharge 65,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 37 – Discharge 80,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Gate Sequence 41 – Discharge 100,000 ML/d | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 8 (continued): Flood operations—LEC and IC external communication plan


| Activation level | Trigger for communications | Group to contact | Method | Message text |
|------------------|--|--|---|--|
| Stand Up—1 | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? What is the status? Advise of current storage level and describe gates opening if appropriate Advise of any forecasts you are aware of |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Up—2 | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record—Feb 2012) | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> 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 describe gates opening if appropriate Advise of any forecasts you are aware of |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Up—3 | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; As advised by the DSTDM | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? What is the status? Advise of current storage level and describe gates opening if appropriate Advise of any forecasts you are aware of |
| | | <ul style="list-style-type: none"> SDCC Watch Desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions (copies in Appendix A10) and email to SDCC Watch Desk to send SMS text |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Down | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in EL | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? What is the status? Advise of current storage level Advise EAP has been deactivated |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
 e.g. taking photographs/video, dam inspections, instrument readings



Table 9: Flood operations—DSTDM emergency action


| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|-------------------------------|---|--|--|--|--|---|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02 m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Action | <ul style="list-style-type: none"> Provide technical advice to DDO and IC on a needs basis Review surveillance reports and determine if any additional responses are required Record all communication Notify DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications and relevant emails for EER to  Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., photographs/video, dam inspections, instrument readings
ALL PHOTOS MUST BE DATE & TIME STAMPED



Table 10: Flood operations—FODM emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|-------------------------------|--|---|--|--|--|---|
| Activation trigger | <ul style="list-style-type: none"> Storage at EL 207.02m and rising (0.1 m below FSL) | <ul style="list-style-type: none"> Storage above FSL 207.12 m | <ul style="list-style-type: none"> Storage above EL 207.87 m | <ul style="list-style-type: none"> Storage above EL 208.32 m (Flood of record Feb 2012) | <ul style="list-style-type: none"> Storage above EL 208.65 m (Right bank overtopping) (allowing for wave action) OR; As advised by the DSTDM | <ul style="list-style-type: none"> Storage at FSL 207.12 m and falling, OR FSL and no forecast increase in storage level |
| Actions | <ul style="list-style-type: none"> Extract data from available sources Update Flood Models as per SOP of OC Update and issue flood operations report Liaise with BOM if flood warnings are current for Balonne River Update IC and DSTDM re: current flood situation and PFRM results Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Issue a Flood Situation Report—daily | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications and relevant emails for EER to  Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> IC DSTDM DDO | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND DSTDM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. photographs/video, dam inspections, instrument readings



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 (Main Dam or Saddle Dams), 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 Appendix B 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 Precipitation Design Flood (PMPDF) 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.

Notes: Definitions for *Concurrent Flooding* and *Downstream Releases* are provided in Section 1.

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 increased 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

Table 11 to Table 15 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Local Event Coordinator (LEC)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM).

Figure 2: Piping: embankment, foundation, or abutments flowchart

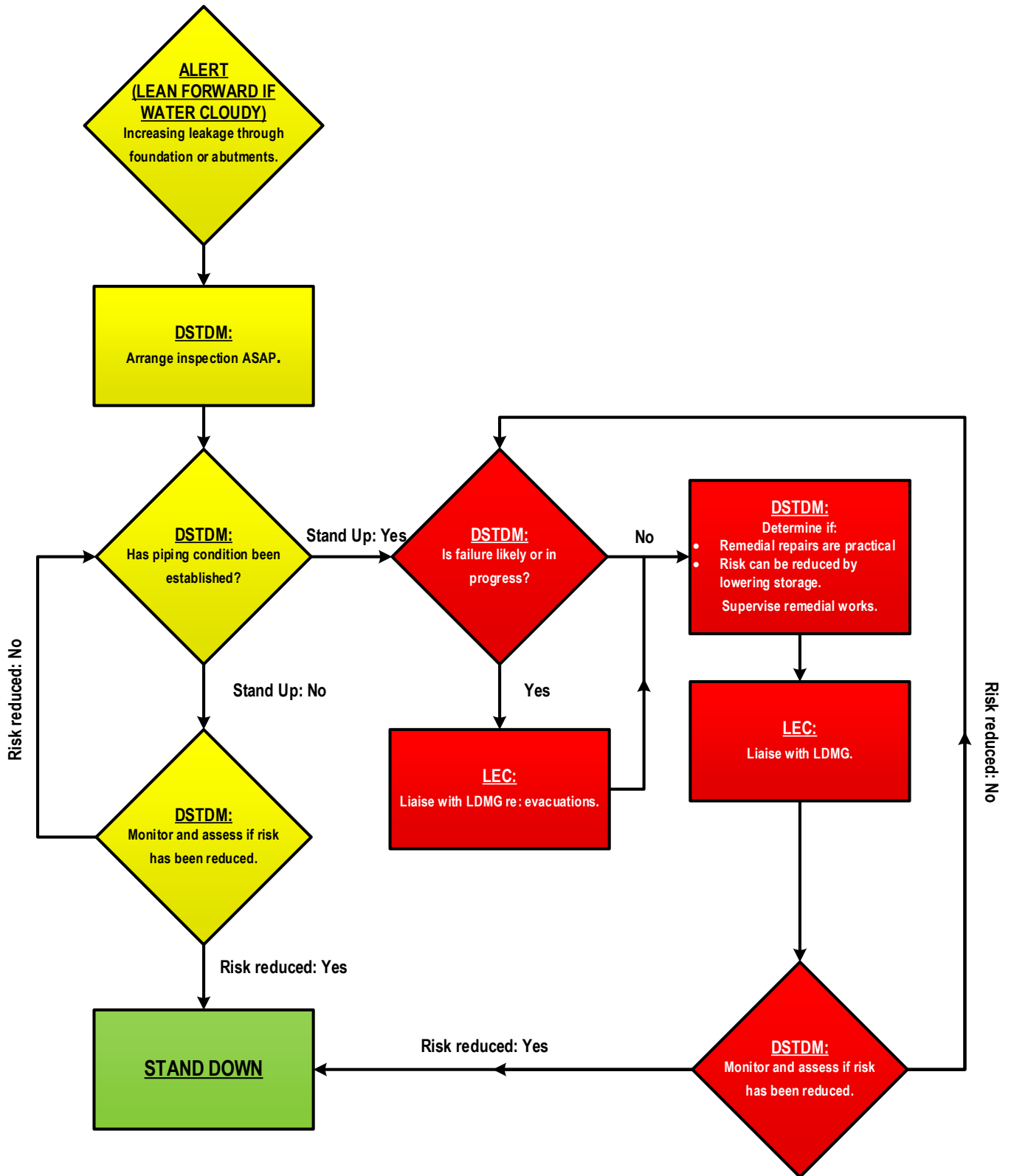


Table 11: Piping: embankment, foundation, or abutments—DDO emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Down |
|-------------------------------|---|--|---|--|---|
| Activation trigger | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations, or abutments | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations, or abutments with cloudy water | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> Failure in progress or likely due to piping, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that piping risk has reduced |
| Actions | <ul style="list-style-type: none"> Monitor flows every 6 hours (or as otherwise instructed by the DSTDM) until a decreasing trend is observable, or as directed by the IC Photograph/video the piping from a safe point and record using the approved forms and send to IC & DSTDM Notify SO Update Dam Logbook as per SOP 12 Record all communication | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Support/supervise remedial works as required Lower the storage if directed Sound gate operations siren Close any affected roads if not already closed by others Maintain surveillance of area immediately downstream of dam (if safe to do so) and move on any members of the public | <ul style="list-style-type: none"> As per previous activation level, AND Vacate the immediate vicinity of the piping condition Ensure remedial works cease and plant and personnel have been moved to a safe location Record/photograph the piping damage and/or dam failure from a safe point | <ul style="list-style-type: none"> Forward all communication and inspection sheets for EER to [REDACTED] Update Dam Logbook as per SOP 12 Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DSTDM IC SO FODM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 12: Piping: embankment, foundation, or abutments—LEC emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Down |
|------------------------|--|--|---|--|--|
| Activation trigger | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations, or abutments | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations, or abutments with cloudy water | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> Failure in progress or likely due to piping, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that piping risk has reduced |
| Actions | <ul style="list-style-type: none"> Liaise with DDO and IC re: situation Record all communication | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with relevant council(s) regarding potential road/bridge closures | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications including relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 13: 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"> Increasing leakage through the embankment, the foundations, or abutments | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations, or abutments with cloudy water | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> Failure in progress or likely due to piping, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that piping risk has reduced |
| Actions | <ul style="list-style-type: none"> Liaise with DDO, LEC & DSTDM re: situation Create Incident Report Record Complete Situation Report, unless otherwise directed Update Sunwater intranet with dam status <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> NOTE: IC to carry out LEC actions unless LDMG1 is <i>Stood Up</i> </div> | <ul style="list-style-type: none"> As per previous activation level, AND Investigate availability of machinery and materials (if insufficient stockpiles available) Place machinery operators on standby if directed by DSTDM Consider the need to appoint a Recovery Coordinator. The Recovery Coordinator is then responsible for the follow through on actions to close out all matters and works outstanding after the initial emergency is over. | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with Sunwater Customer Support to send SMS to D/S residents and phone those without mobiles Mobilise resources to undertake remedial works if directed by DSTDM | <ul style="list-style-type: none"> As per previous activation level Liaise with the DSTDM to confirm that dam failure is in progress Confirm that remedial works have ceased if directed by the DSTDM and plant and personnel have been moved to a safe location Liaise with DDO and DSTDM re: potential for evacuations | <ul style="list-style-type: none"> Deactivate EAP Compile EER and deliver to DSR if required Close Incident Report Record Update Sunwater intranet with dam status Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DSTDM DDO LEC/ORR SMT SRT | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Email all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level, AND DDMG | <ol style="list-style-type: none"> D/S Residents St George River customers SDCC Watch Desk DDMG Mallawa Board | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Phone all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



Table 14: Piping: embankment, foundation, or abutments—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|---------------------|---|---|---|--|
| Alert | <ul style="list-style-type: none"> Increasing leakage through an embankment, the foundations, or abutments | <ul style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Unconfirmed piping risk) What is the status? (Unconfirmed Leakage—investigation continues) Advise of current storage level Advise any issues you are aware of Standby for further advice |
| Lean Forward | <ul style="list-style-type: none"> Increasing leakage through an embankment, the foundations, or abutments with cloudy water | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Unconfirmed piping risk) What is the status? (Unconfirmed Leakage—investigation continues) Advise of current storage level Advise any issues you are aware of Standby for further advice |
| Stand Up—1 | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Confirmed piping risk). What is the status? (Confirmed Piping/Leakage) Advise of current storage level Advise any issues you are aware of Discuss any potential road/bridge closures Prepare for possible evacuations |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions and email to SDCC Watch Desk to send. Develop messages in consultation with DSTDM |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
 e.g., taking photographs/video, dam inspections, instrument readings



Table 14 (Continued): Piping: embankment, foundation, or abutments—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|-------------------|---|---|---|--|
| Stand Up—2 | <ul style="list-style-type: none"> Failure likely due to piping, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Confirmed piping risk) What is the status? (Possible Dam Failure) Advise of current storage level Prepare coordinated evacuations |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions and email to SDCC Watch Desk to send. Develop messages in consultation with DSTDM |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Dam failure in progress | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Confirmed piping risk) What is the status? (Dam Failure in Progress) Advise of current storage level Coordinate evacuations of affected Downstream Residents and move people to higher ground |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions (copies in Appendix A10) and email to SDCC Watch Desk to send. SMS |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Down | <ul style="list-style-type: none"> Risk assessment has determined that piping risk has reduced | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> 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 |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



Table 15: 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"> Increasing leakage through the embankment, the foundations, or abutments | <ul style="list-style-type: none"> Increasing leakage through the embankment, the foundations or abutments with cloudy water | <ul style="list-style-type: none"> Piping condition has been established | <ul style="list-style-type: none"> Failure in progress or likely due to piping, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that piping risk has reduced |
| Action | <ul style="list-style-type: none"> Arrange an inspection of the dam to assess its condition as soon as possible, when safe to do so Determine if piping condition has been established Monitor situation and assess risks Record all communication Advise DSR on EAP activation | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Assess risk and determine if failure likely or in progress Liaise with the LEC and IC Determine if remedial repairs are practical Determine if risks can be reduced by lowering storage (if the storage is required to be drawn down, then the DSTDM needs to assess the maximum rate of drawn down based on latest available data and advise in writing to IC and DDO) Supervise* remedial repairs (if applicable) | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with the IC and advise on need to recommend evacuations | <ul style="list-style-type: none"> Forward all communications and relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND LEC/ORR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

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



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



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 or Saddle Dams), 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.

The area likely to be affected by this dam hazard is described as:

- If dam failure does not occur, then there will not be any area affected
- If dam failure does occur, then the maximum area affected zone is the level shown by the SDF line on the maps in Appendix B.

7.2 Emergency action roles

Table 16 to Table 20 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Local Event Coordinator (LEC)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM).

Figure 3: Earthquake flowchart

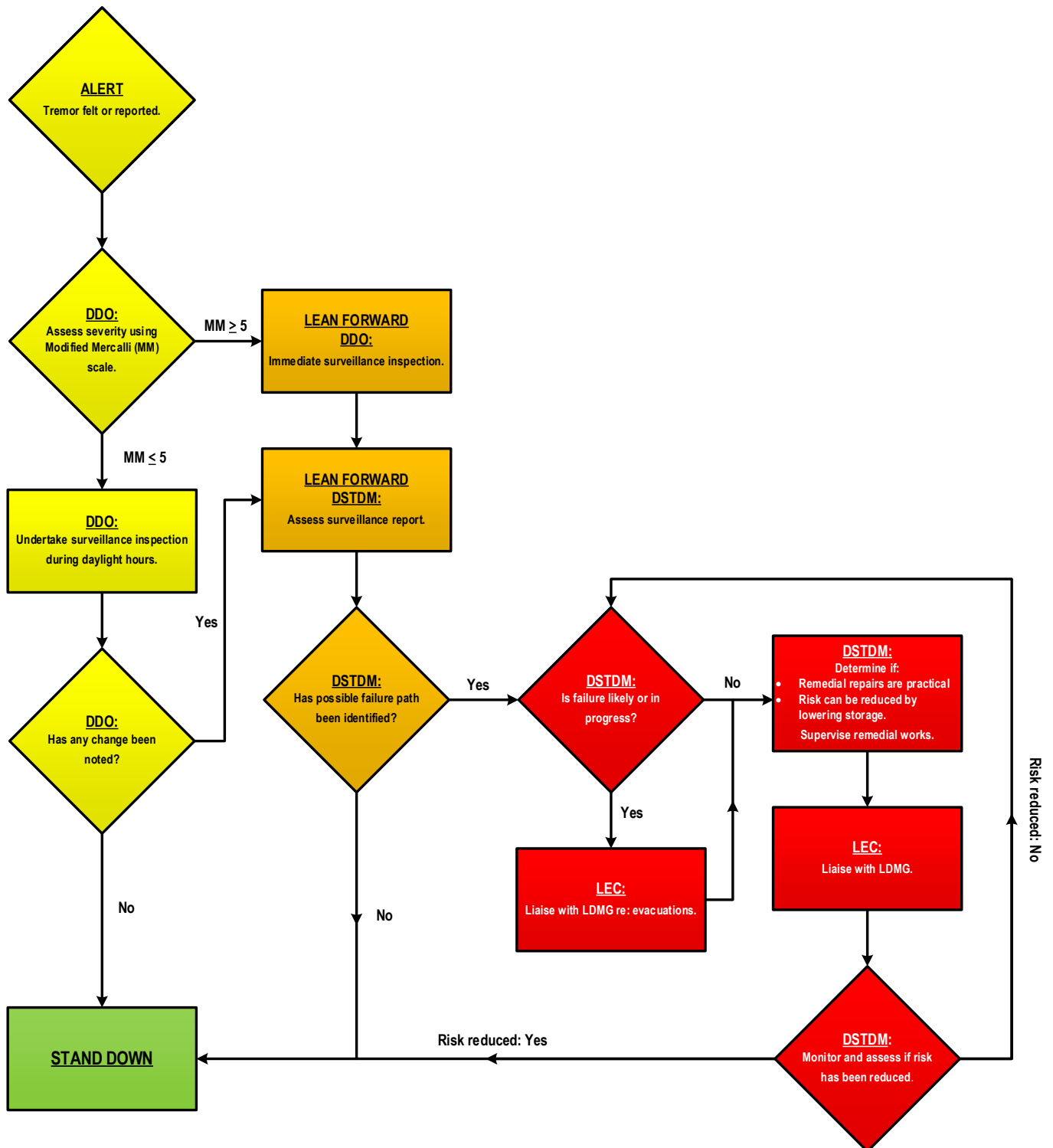


Table 16: Earthquake—DDO emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Down |
|------------------------|---|--|---|---|---|
| Activation trigger | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND Intensity less than 5MM~ | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND Intensity greater than or equal to 5MM~, OR Intensity less than 5MM~ and change detected during surveillance inspection | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> Failure in progress or likely due to earthquake, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has been determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Inspect the dam wall, embankment, spillway structure, and abutments in daylight hours (if safe to do so) and report to the DSTDM and IC— photograph/video and record using the approved forms and send to IC & DSTDM Check for leaks, deformation, erosion, and concrete damage Maintain photographic record Notify SO Update Dam Logbook as per SOP 12 Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Inspect for leakage and evidence of initiation of piping of embankment slips on both upstream and downstream slopes and in the abutments Repeat the inspection as directed | <ul style="list-style-type: none"> As per previous activation level, AND Support/supervise remedial work as required Lower the storage if directed and sound gate operations siren Close any affected roads, if not already closed by others Maintain surveillance of area immediately downstream of dam (if safe to do so) and move on any members of the public Vacate the immediate vicinity of the embankment | <ul style="list-style-type: none"> As per previous activation level, AND Ensure remedial works cease and plant and personnel have been moved to a safe location Record/photograph the earthquake damage and/or dam failure from a safe point | <ul style="list-style-type: none"> Forward all communication and inspection sheets for EER to [REDACTED] Update Dam Logbook as per SOP 12 Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DSTDM IC SO FODM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

~ DDO to assess magnitude (MM scale) at dam location.



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 17: Earthquake—LEC emergency action

| Activation level | Alert | Lean Forward | Stand Up—1 | Stand Up—2 | Stand Down |
|------------------------|--|--|---|--|--|
| Activation trigger | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND Intensity less than 5MM~ | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND Intensity greater than or equal to 5MM~, OR Intensity less than 5MM~ and change detected during surveillance inspection | <ul style="list-style-type: none"> Earthquake confirmed (by DSTDM) or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> Failure in progress or likely due to earthquake, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has been determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Liaise with IC and DDO re: situation Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with LDMG re situation | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with DDO and relevant Council(s) regarding potential road/bridge closures | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications including relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

~ DDO to assess magnitude (MM scale) at dam location



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



Table 18: 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"> Earthquake confirmed* or felt in the area, AND Intensity less than 5MM~ | <ul style="list-style-type: none"> Earthquake confirmed* or felt in the area, AND Intensity greater than or equal to 5MM~, OR Intensity less than 5MM~ and change detected during surveillance inspection | <ul style="list-style-type: none"> Earthquake confirmed* or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> Failure in progress or likely due to earthquake, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has been determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Liaise with DDO, LEC & DSTDM re: situation Create Incident Report Record Update Sunwater intranet with dam status <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> NOTE: IC to carry out LEC actions unless LDMG1 is <i>Stood Up</i> </div> | <ul style="list-style-type: none"> As per previous activation level, AND Investigate availability of machinery and materials (if insufficient stockpiles available) Place machinery operators on standby if directed by DSTDM | <ul style="list-style-type: none"> As per previous activation level, AND Mobilise resources to undertake remedial works if directed by DSTDM | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with the DSTDM to confirm that dam failure is in progress Confirm that remedial works have ceased if directed by the DSTDM and plant and personnel have been moved to a safe location Liaise with DDO and DSTDM re: potential for evacuations | <ul style="list-style-type: none"> Deactivate EAP Compile EER and deliver to DSR if required Close Incident Report Record Update Sunwater intranet with dam status Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO DSTDM LEC/ORR SMT SRT | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Email all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND <ol style="list-style-type: none"> D/S Residents St George River customers DDMG SDCC Watch Desk Mallawa Board | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Phone all previously notified contacts of stand down |

~ DDO to assess magnitude (MM scale) at dam location

* 'Confirmed' is defined as an alert received from Geoscience Australia or other source that advises an Earthquake >4.9 ML (Richter Scale) has occurred within a 200 km radius of the Dam

Table 19: Earthquake—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|---------------------|--|---|---|--|
| Alert | <ul style="list-style-type: none"> Earthquake reported or felt in the area, AND Intensity less than 5MM | <ul style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> 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 |
| Lean Forward | <ul style="list-style-type: none"> Earthquake reported or felt in the area, AND Intensity greater than or equal to 5MM, OR Intensity less than 5MM and change detected during surveillance inspection | <ul style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> 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 |
| Stand Up—1 | <ul style="list-style-type: none"> Earthquake confirmed or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> 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 of current storage level Discuss any potential road/ bridge closures Activate emergency response |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions and email to SDCC Watch Desk to send Develop messages in consultation with DSTDM |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
 e.g. taking photographs/video, dam inspections, instrument readings



Table 19 (Continued): Earthquake—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|-------------------|---|---|---|--|
| Stand Up—2 | <ul style="list-style-type: none"> Failure likely due to earthquake, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—earthquake damage) What is the status? (Dam Failure Likely) Advise of current storage level Discuss any potential road/bridge closures Prepare coordinated evacuation |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions and email to SDCC Watch Desk to send. Develop messages in consultation with DSTDM |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| | <ul style="list-style-type: none"> Dam failure in progress | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—earthquake damage) What is the status? (Dam Failure in Progress) Advise of current storage level Coordinate evacuation of downstream residents and move people to higher ground |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions (copies in Appendix A10) and email to SDCC Watch Desk to send SMS text |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS. |
| Stand Down | <ul style="list-style-type: none"> Risk assessment has been determined that failure risk has reduced | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—earthquake damage) 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 |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers Mallawa Board | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



Table 20: 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"> Earthquake confirmed* or felt in the area, AND Intensity less than 5MM⁻ | <ul style="list-style-type: none"> Earthquake confirmed* or felt in the area, AND Intensity greater than or equal to 5MM⁻, OR Intensity less than 5MM⁻ and change detected during surveillance inspection | <ul style="list-style-type: none"> Earthquake confirmed* or felt in the area, AND A possible failure path has been identified | <ul style="list-style-type: none"> Failure in progress or likely due to earthquake, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has been determined that failure risk has reduced |
| Action | <ul style="list-style-type: none"> Monitor situation and assess risks Liaise with DDO and IC as required Record all communication Notify DSR <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: 'Reported' is defined as an alert received from Geoscience Australia or other source that advises an Earthquake >4.8ML (Richter Scale) has occurred within a 200km radius of the dam.</p> </div> | <ul style="list-style-type: none"> Review surveillance inspection of the dam and assess its condition as soon as possible Determine if there are any possible failure paths from reported damage | <ul style="list-style-type: none"> As per previous activation level, AND Arrange an inspection of the dam and assess its condition as soon as possible, when safe to do so Assess risk and determine if failure likely or in progress Liaise with the IC Determine if remedial repairs are practical Determine if risks can be reduced by lowering storage (if the storage is required to be drawn down, then the DSTDM needs to assess the maximum rate of drawn down based on latest available data and advise in writing to IC and DDO) Supervise* remedial repairs (if applicable) Monitor situation and assess risks | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications and relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

*DDO to assess magnitude (MM scale) at dam location

**'Confirmed' is defined as an alert received from Geoscience Australia or other source that advises an Earthquake >4.9 ML (Richter Scale) has occurred within a 200km radius of the Dam

^Supervise means provide technical oversight to the work. It does not necessarily mean on-site supervision.



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



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 EJ Beardmore Dam to a terrorist attack is low.

The area likely to be affected by this dam hazard is described as:

- if dam failure does not occur then there will not be any area affected
- if dam failure does occur then the maximum area affected is the level shown by the SDF line on the maps in Appendix B.

8.2 Assessment of circumstances that indicates an increase in the likelihood of terrorist activity or high energy impact

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

8.3 Emergency action roles

Table 21 to Table 25 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Local Event Coordinator (LEC)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM).

Figure 4: Terrorist threat/activity or high energy impact flowchart

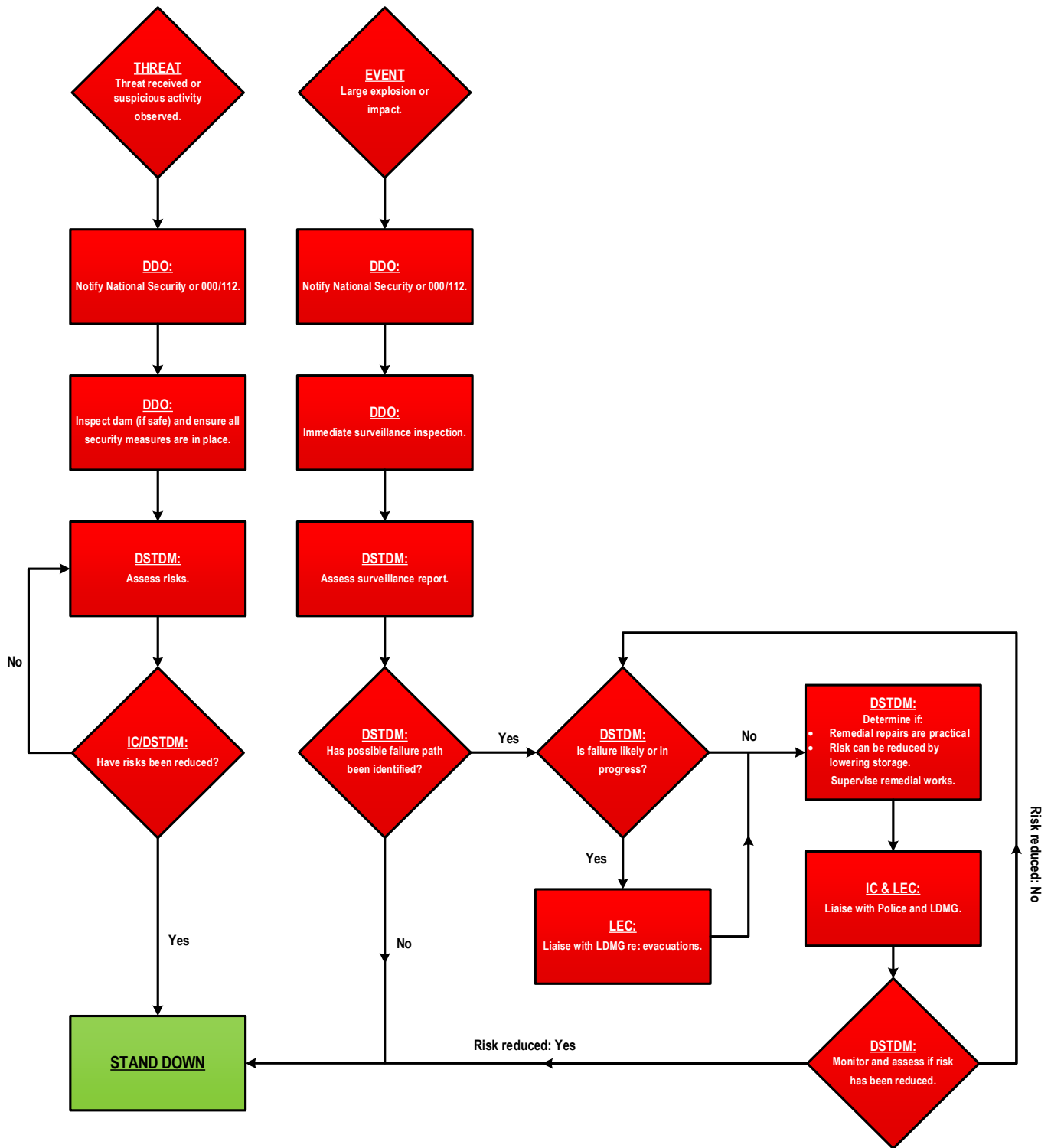


Table 21: Terrorist threat/activity or high energy impact—DDO emergency action

| Activation level | Alert/Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|---|--|---|---|
| Activation trigger | <ul style="list-style-type: none"> Not applicable | THREAT <ul style="list-style-type: none"> Possible terrorist activity/suspicious behaviour noticed at the dam, OR Threat received | EVENT <ul style="list-style-type: none"> Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit) | RESPONSE <ul style="list-style-type: none"> Failure in progress or likely due to impact or explosion, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> In an emergency call 000. Record all communication If any suspicious behaviour noticed, contact DSTDM for advice. If instructed by DSTDM, of if threat received, complete the following: <ul style="list-style-type: none"> Inspect dam (if safe) and ensure all security measures in place (locked gates, etc.) Photograph/video suspicious items from a safe point and record using the approved forms in and send to IC & DSTDM If Police appoint Incident Manager, support and follow instructions Close any affected roads as directed Notify SO Update Dam Logbook as per SOP 12 | <ul style="list-style-type: none"> As per previous activation level, AND Lower the storage if directed and sound gate operations siren Vacate the immediate vicinity of the affected area | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward information for EER to IC email Update Dam Logbook as per SOP 12 Return to routine activities |
| Internal notifications | <ul style="list-style-type: none"> Not applicable | 2. DSTDM 3. IC 4. SO 5. FODM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> Not applicable | 1. #000 Emergency | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 22: Terrorist threat/activity or high energy impact—LEC emergency action

| Activation level | Alert/Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|--|---|---|--|
| Activation trigger | <ul style="list-style-type: none"> Not applicable | THREAT <ul style="list-style-type: none"> Possible terrorist activity/suspicious behaviour noticed at the dam, OR Threat received | EVENT <ul style="list-style-type: none"> Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit) | RESPONSE <ul style="list-style-type: none"> Failure in progress or likely due to impact or explosion, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Liaise with DDO, IC and LDMG re: situation If Police appoint Incident Manager, support and follow instructions Monitor situation and assess risks Liaise with relevant council(s) regarding possible road/bridge closures Record all communication | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with DDO and LDMG re: potential for evacuations | <ul style="list-style-type: none"> Forward all communications including relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 23: Terrorist threat/activity or high energy impact—IC emergency action

| Activation level | Alert/Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|--|---|---|--|
| Activation trigger | <ul style="list-style-type: none"> Not applicable | THREAT <ul style="list-style-type: none"> Possible terrorist activity/suspicious behaviour noticed at the dam, OR Threat received | EVENT <ul style="list-style-type: none"> Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit) | RESPONSE <ul style="list-style-type: none"> Failure in progress or likely due to impact or explosion, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Actions | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Record all communication Liaise with DDO, DSTDM and LEC Contact National Security If Police appoint Incident Manager, support and follow instructions Create Incident Report Record Update Sunwater intranet with dam status <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> NOTE: IC to carry out LEC actions unless LDMG1 is <i>Stood Up</i> </div> | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with DDO, DSTDM, and LEC re: potential for evacuations Mobilise resources to undertake remedial works if directed by DSTDM | <ul style="list-style-type: none"> Deactivate EAP Event Compile EER and organise delivery to the DSR if required Close Incident Report Record Update Sunwater intranet with dam status Return to routine activities |
| Internal notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> DDO DSTDM LEC/ORR SMT SRT | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Email all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> CTG (if not completed by DDO) DDMG | <ol style="list-style-type: none"> D/S Residents St George River customers DDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Phone all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 24: Terrorist threat/activity or high energy impact—LEC and IC external 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 | THREAT <ul style="list-style-type: none"> Possible terrorist activity/suspicious behaviour noticed at the dam, OR Threat received | <ul style="list-style-type: none"> LDMG DDMG CTG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—security threat/ impact/explosion, etc.) What is the status? (Received/noted terrorist threat) Discuss any potential road/bridge closures Activate emergency response |
| Stand Up—2 | EVENT <ul style="list-style-type: none"> Large explosion heard/observed at dam (e.g., bomb explosion, aircraft hit) | <ul style="list-style-type: none"> LDMG DDMG CTG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—security threat/ impact/explosion, etc.) What is the status? (Under Investigation) Discuss any potential road/bridge closures (if not discussed at Stand Up—1) Prepare coordinated evacuation |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions and email to SDCC Watch Desk to send. Develop messages in consultation with DSTDM |
| | | <ul style="list-style-type: none"> D/S residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Up—3 | RESPONSE <ul style="list-style-type: none"> Failure in progress or likely due to impact or explosion, AND Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam: What is the event? (Dam Safety Risk—Security threat/ impact/ explosion, etc.) What is the status? (Dam Failure Likely/In Progress) Initiate evacuations |
| | | <ul style="list-style-type: none"> SDCC Watch desk | <ul style="list-style-type: none"> Phone & Email | Complete Emergency Alert Request form as per instructions (copies in Appendix A10) and email to SDCC Watch Desk to send SMS text |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |
| Stand Down | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam—What is the event? (Dam Safety Risk—security threat/ impact/explosion, etc.) What is the status? (Dam Hazard Stood Down) Advise that failure risk has been reduced and EAP has been deactivated |
| | | <ul style="list-style-type: none"> D/S Residents St George River customers | <ul style="list-style-type: none"> SMS (Phone for those without mobiles) | Liaise with Sunwater customer support and communications to send appropriate messaging via SMS |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
 e.g., taking photographs/video, dam inspections, instrument readings



Table 25: Terrorist threat/activity or high energy impact—DSTDM emergency action

| Activation level | Alert/Lean Forward | Stand Up—1 | Stand Up—2 | Stand Up—3 | Stand Down |
|------------------------|--|---|--|---|---|
| Activation trigger | <ul style="list-style-type: none"> Not applicable | THREAT <ul style="list-style-type: none"> Possible terrorist activity/suspicious behaviour noticed at the dam Threat received | EVENT <ul style="list-style-type: none"> Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit) | RESPONSE <ul style="list-style-type: none"> Failure in progress or likely due to impact or explosion, and Sufficient water in storage to create a dam hazard | <ul style="list-style-type: none"> Risk assessment has determined that failure risk has reduced |
| Action | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Record all communication Liaise with IC and DDO Assess risks Liaise with SRT Notify DSR | <ul style="list-style-type: none"> As per previous activation level, AND Arrange an inspection of the dam and assess its condition as soon as possible, when safe to do so Assess risk and determine if failure likely or in progress Liaise with the LEC Determine if remedial repairs are practical Determine if risks can be reduced by lowering storage (if the storage is required to be drawn down, then the DSTDM needs to assess the maximum rate of drawn down based on latest available data and advise in writing to IC and DDO) Supervise* remedial repairs (if applicable) Monitor situation and assess risks | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with the IC and LEC and advise on need to recommend evacuations | <ul style="list-style-type: none"> Forward information for EER to IC email Return to routine activities |
| Internal notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> IC DDO SRT | <ul style="list-style-type: none"> As per previous activation level, AND LEC/ORR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> Not applicable | <ol style="list-style-type: none"> DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

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



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



9. Dam hazard—gate malfunction

9.1 Overview

The emergency action described in this section relates to the malfunction of one more gates.

9.1.1 Assessment of circumstances that indicates an increase in the likelihood of gate malfunction occurring

The following EAP dam hazards could indicate an increased likelihood of gate malfunction:

- flood operations/blockage
- earthquake
- terrorist threat.

Mechanical or electrical failure during an operational test could also result in gate malfunction.

9.2 Emergency action roles

Table 26 to Table 30 specify emergency actions for the following roles:

- Dam Duty Officer (DDO)
- Local Event Coordinator (LEC)
- Incident Coordinator (IC)
- Dam Safety Technical Decision Maker (DSTDM).

Table 26: Gate malfunction—DDO emergency action

| Activation level | Alert | Lean Forward | Stand Up | Stand Down |
|-------------------------------|--|--|---|---|
| Activation trigger | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly |
| Actions | <ul style="list-style-type: none"> Liaise with DSTDM and IC re: situation Refer to Table C3 for single gate operations flow rating. Support/supervise remedial works as required Notify SO Update Dam Logbook as per SOP 12Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Lower the storage if directed and sound gate operations siren Maintain surveillance of area immediately downstream of dam (if safe to do so) and move on any members of the public | <ul style="list-style-type: none"> As per previous activation level, AND Close any affected roads if not already closed by others | <ul style="list-style-type: none"> Forward all communication and inspection sheets for EER to [REDACTED] Update Dam Logbook as per SOP 12 Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DSTDM IC SO FODM | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



Table 27: Gate malfunction—LEC emergency action

| Activation level | Alert | Lean Forward | Stand Up | Stand Down |
|------------------------|--|---|---|--|
| Activation trigger | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly |
| Actions | <ul style="list-style-type: none"> Liaise with DDO and IC re: situation Record all communication | <ul style="list-style-type: none"> As per previous activation level, AND Liaise with relevant Council(s) regarding potential road/bridge closures | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Forward all communications including relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 28: Gate malfunction—IC emergency action

| Activation level | Alert | Lean Forward | Stand Up | Stand Down |
|------------------------|---|--|---|--|
| Activation trigger | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly |
| Actions | <ul style="list-style-type: none"> Liaise with the DSTDM, DDO and LEC re situation Consider the need to appoint a Recovery Coordinator. The Recovery Coordinator is then responsible for the follow through on actions to close out all matters and works outstanding after the initial emergency is over. Create Incident Report record Update Sunwater intranet with dam status Record all communication | <ul style="list-style-type: none"> As per previous activation level <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: IC to carry out LEC actions unless LDMG is stood up</p> </div> | <ul style="list-style-type: none"> As per previous activation level, AND Activate EAP to section 5 (Flood) | <ul style="list-style-type: none"> Complete all internal and external notifications Forward all communications including relevant emails for EER to [REDACTED] Close Incident Report Record Update Sunwater intranet with dam status Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DSTDM DDO LEC/ORR SMT SRT | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Email all previously notified contacts of stand down |
| External notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As per previous activation level, AND DDMG | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Phone all previously notified contacts of stand down |

Table 29: Gate malfunction—LEC and IC external communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|---------------------|---|--|---|---|
| Alert | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | <p>Describe current situation with gates What is the status? (e.g. time to repair?) Advise of current storage level Advise any issues you are aware of—investigation continues Standby for further advice</p> |
| Lean Forward | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | <p>Describe current situation with gates What is the status? (e.g. time to repair?) Advise of current storage level Advise any issues you are aware of—investigation continues Discuss any potential road/bridge closures Standby for further advice</p> |
| Stand Up—1 | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | <p>Describe current situation with gates What is the status? (unknown time to repair?) Advise of current storage level Advise of flooding risk if loss of control of gates continue Advise any issues you are aware of—investigation continues Prepare for possible evacuations</p> |
| Stand Down | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly | <ul style="list-style-type: none"> LDMG DDMG | <ul style="list-style-type: none"> Phone | <p>Describe current situation with gates What is the status? (Dam hazard Stood Down) Confirmation that all gates are functioning correctly, and EAP has been deactivated</p> |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 30: gate malfunction—DSTDM emergency action

| Activation level | Alert | Lean Forward | Stand Up | Stand Down |
|------------------------|---|---|---|--|
| Activation trigger | <ul style="list-style-type: none"> Loss of control of one or more gates in a dry weather event | <ul style="list-style-type: none"> Loss of control of one or more gates with forecast rainfall | <ul style="list-style-type: none"> Loss of control of one or more gates in a flood event, OR Loss of control of one or more gates with forecast rainfall, AND Timeframe for restoration of gate control cannot be determined | <ul style="list-style-type: none"> Confirmation that all gates are functioning correctly |
| Action | <ul style="list-style-type: none"> Arrange an inspection of the dam to assess its condition as soon as possible, when safe to do so Monitor situation and assess risks Liaise with the DDO, IC and LEC Record all communication Notify DSR | <ul style="list-style-type: none"> As per previous activation level, AND Determine if risks can be reduced by lowering storage (if the storage is required to be drawn down, then the DSTDM needs to assess the maximum rate of drawn down based on latest available data and advise in writing to IC and DDO) Supervise* remedial repairs (if applicable) | <ul style="list-style-type: none"> Assess risk and determine if failure likely or in progress | <ul style="list-style-type: none"> Forward all communications and relevant emails for EER to [REDACTED] Return to routine activities |
| Internal notifications | <ol style="list-style-type: none"> DDO IC LEC/ORR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |
| External notifications | <ol style="list-style-type: none"> DSR | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> As per previous activation level | <ul style="list-style-type: none"> Inform all previously notified contacts of stand down |

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



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g. taking photographs/video, dam inspections, instrument readings



10. Other emergency situation—communications failure

10.1 Overview

The emergency action described in this section (Other emergency situation—communications failure) 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.
- An emergency situation where all means of communication with Brisbane site have been lost.

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

10.2 Emergency actions

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

10.2.1 Activation triggers

Table 31: Communications failure emergency activation trigger summary

| | |
|-----------------------------------|--|
| Comms Failure – Site | <ul style="list-style-type: none"> • Unable to communicate to or from dam site (usually affects DDO) |
| Comms Failure – Local area | <ul style="list-style-type: none"> • Unable to communicate to or from local area (likely to affect LEC/ORR) |
| Comms Failure – Brisbane | <ul style="list-style-type: none"> • Unable to communicate to or from Sunwater Brisbane (could affect DSTDM or FODM & will affect IC) |

10.2.2 Assessment of circumstances that indicates the likelihood of communications failure escalating the activation level of a current Dam Hazard

The FODM will assess the weather and flood warnings daily in accordance with the Ops Centre Guideline and reference S. They will escalate to the IC any warnings that have the potential to generate an inflow event.

The on-call IC will escalate to the FODM any local intelligence on catchment conditions that could increase the probability of inflows to the dam.

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. If so assessed the FODM may instruct the IC to escalate the activation level of any current dam hazards.

10.2.3 Emergency action roles

Table 32 to Table 37 specify emergency actions for the following roles:

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

Table 32: Communications failure—DDO emergency action

| Activation level | Comms Failure – Local Area | Comms Failure – Brisbane |
|------------------------|--|--|
| Activation trigger | <ul style="list-style-type: none"> Unable to communicate to local area including LEC/ORR | <ul style="list-style-type: none"> Unable to communicate to Sunwater Brisbane including IC or DSTDM or FODM |
| Actions | <ul style="list-style-type: none"> As much as practicable, assume the role of LEC Continue tasks in accordance with any other current Emergency Action Every hour, attempt communications noting the following: <ul style="list-style-type: none"> Mobile phone - try texting instead of voice, much higher probability of success Satellite phone - needs to access open sky unless external antenna fitted Fax - generally uses fixed landline and is therefore less likely to have failed Social media - e.g. Facebook (Internet may be available via landline) Record all communication and attempts via Dam Logbook entries as per SOP 12 and communications log if EAP event is current | <ul style="list-style-type: none"> Determine if LEC is in communication and if not, assume the LEC role as much as is practicable Continue tasks in accordance with any other current Emergency Action Every hour, attempt communications noting the following: <ul style="list-style-type: none"> Mobile phone - try texting instead of voice, much higher probability of success Satellite phone - needs to access open sky unless external antenna fitted Fax - generally uses fixed landline and is therefore less likely to have failed Social media - e.g. Facebook (Internet may be available via landline) Record all communication and attempts via Dam Logbook entries as per SOP 12 and communications log if EAP event is current |
| Internal Notifications | <ul style="list-style-type: none"> IC SO (if available) | <ul style="list-style-type: none"> LEC SO (if available) |
| External Notifications | <ul style="list-style-type: none"> As required | <ul style="list-style-type: none"> As required |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 33: Communications failure—LEC emergency action

| Activation level | Comms Failure – Dam Site | Comms Failure – Brisbane |
|------------------------|--|---|
| Activation trigger | <ul style="list-style-type: none"> Unable to communicate to dam site | <ul style="list-style-type: none"> Unable to communicate to Sunwater Brisbane including IC or DSTDM or FODM |
| Actions | <ul style="list-style-type: none"> Every hour, attempt communications, noting the following: <ul style="list-style-type: none"> Mobile phone-try texting instead of voice, much higher probability of success Satellite phone - needs to access open sky unless external antenna fitted Fax - generally uses fixed landline and is therefore less likely to have failed Social media - e.g. Facebook (Internet may be available via landline) Record all communication and attempts Assume that the DDO is carrying out LEC role at site as much as practicable Liaise with IC Liaise with DSTDM As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action | <ul style="list-style-type: none"> Create Incident Report Record Every hour, attempt communications, noting the following: <ul style="list-style-type: none"> Mobile phone - try texting instead of voice, much higher probability of success Satellite phone - needs to access open sky unless external antenna fitted Fax - generally uses fixed landline and is therefore less likely to have failed Social media - e.g. Facebook (Internet may be available via landline) Record all communication and attempts Liaise with the DDO and assume IC role As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action |
| Internal Notifications | <ul style="list-style-type: none"> IC DSTDM SO (if available) | <ul style="list-style-type: none"> DDO DSTDM (if available) SO |
| External Notifications | <ul style="list-style-type: none"> LDMG | <ul style="list-style-type: none"> LDMG DDMG |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 34: Communications failure—IC emergency action

| Activation level | Comms Failure – Dam Site | Comms Failure – Local Area |
|------------------------|---|--|
| Activation trigger | <ul style="list-style-type: none"> Unable to communicate to dam site | <ul style="list-style-type: none"> Unable to communicate to local area including LEC and ORR |
| Actions | <ul style="list-style-type: none"> Create Incident Report Record Every hour attempt communications noting the following: <ul style="list-style-type: none"> Mobile phone-try texting instead of voice, much higher probability of success Satellite Phone-needs to access open sky unless external antenna fitted Fax-generally uses fixed landline and is therefore less likely to have failed Social media-e.g. Facebook (Internet may be available via landline) Record all communication and attempts Liaise with LEC Liaise with DSTDM As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action | <ul style="list-style-type: none"> Create Incident Report Record Every hour attempt communications noting the following: <ul style="list-style-type: none"> Mobile phone-try texting instead of voice, much higher probability of success Satellite Phone-needs to access open sky unless external antenna fitted Fax-generally uses fixed landline and is therefore less likely to have failed Social media-e.g. Facebook (Internet may be available via landline) Record all communication and attempts Liaise with the DDO and carry out functions of the LEC as much as practicable As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action |
| Internal Notifications | <ul style="list-style-type: none"> LEC DSTDM SO (if available) | <ul style="list-style-type: none"> DDO (if available) DSTDM SO (if available) |
| External Notifications | <ul style="list-style-type: none"> DDMG | <ul style="list-style-type: none"> LDMG (if available) DDMG (if available) |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 35: Communications failure—LEC and IC communication plan

| Activation level | Trigger for communications | Group to contact | Method | Message text |
|-----------------------------------|--|--|---|---|
| Comms Failure – Site | <ul style="list-style-type: none"> Unable to communicate to or from dam site, AND DDO is at dam site | <ul style="list-style-type: none"> IC/LEC DSTDM SO (if available) LDMG DDMG | <ul style="list-style-type: none"> 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"> Unable to communicate to or from local area including LEC/ORR | <ul style="list-style-type: none"> DDO (if available) DSTDM SO (if available) LDMG (if available) DDMG (if available) | <ul style="list-style-type: none"> Phone | Describe current situation with dam communications. What is the status – estimated time to restore communications? |
| Comms Failure – Brisbane | <ul style="list-style-type: none"> Unable to communicate to or from Sunwater Brisbane | <ul style="list-style-type: none"> DSTDM (if available) LDMG DDMG | <ul style="list-style-type: none"> Phone | Describe current situation with dam communications. What is the status – estimated time to restore communications? |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 36: Communications failure—DSTDM emergency action

| Activation level | Comms Failure – Site | Comms Failure – Local Area |
|------------------------|---|--|
| Activation trigger | <ul style="list-style-type: none"> Unable to communicate to dam site | <ul style="list-style-type: none"> Unable to communicate to local area including LEC and ORR |
| Actions | <ul style="list-style-type: none"> Provide technical advice to IC/LEC on a needs basis Record all communication As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action | <ul style="list-style-type: none"> Provide technical advice to IC on a needs basis Record all communication Assume that the DDO is assisting IC with LEC role As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action |
| Internal Notifications | <ul style="list-style-type: none"> IC LEC CEO (if time permits) | <ul style="list-style-type: none"> IC DDO (if available) CEO (if time permits) |
| External Notifications | <ul style="list-style-type: none"> DSR (if applicable) | <ul style="list-style-type: none"> DSR (if applicable) |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



Table 37: Communications failure—FODM emergency action

| Activation level | Comms Failure – Site | Comms Failure – Local Area |
|------------------------|--|---|
| Activation trigger | <ul style="list-style-type: none"> Unable to communicate to dam site, | <ul style="list-style-type: none"> Unable to communicate to local area including LEC/ORR |
| Actions | <ul style="list-style-type: none"> Liaise with IC Record all communication As much as is practicable, continue other tasks associated with the role in accordance with any other current Emergency Action | <ul style="list-style-type: none"> Liaise with IC Record all communication Assume that the DDO is assisting IC with LEC role As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action |
| Internal Notifications | <ul style="list-style-type: none"> IC LEC/ORR DSTDM | <ul style="list-style-type: none"> IC DDO (if available) DSTDM |
| External Notifications | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Not applicable |



ALL ACTION MUST BE TAKEN WHEN IT IS SAFE TO DO SO
e.g., taking photographs/video, dam inspections, instrument readings



APPENDIX A NOTIFICATION AND COMMUNICATION LISTS

- A1 Sunwater regional notification list
- A2 Sunwater Brisbane notification list
- A3 External notification list
- A4 D/S resident notification list
- A5 Other D/S resident notification list (outside area—from previous EAP/requested messaging)
- A6 D/S irrigators notification list
- A7 Mallowa Board (Moolabah Weir) notification list
- A8 Other reference contacts
- A9 Emergency alert polygon
- A10 Dam failure emergency alert request – Failure of Beardmore Dam (Balonne River)
- A11 Dam failure emergency alert request – Failure of Beardmore Dam through Thuraggi Channel

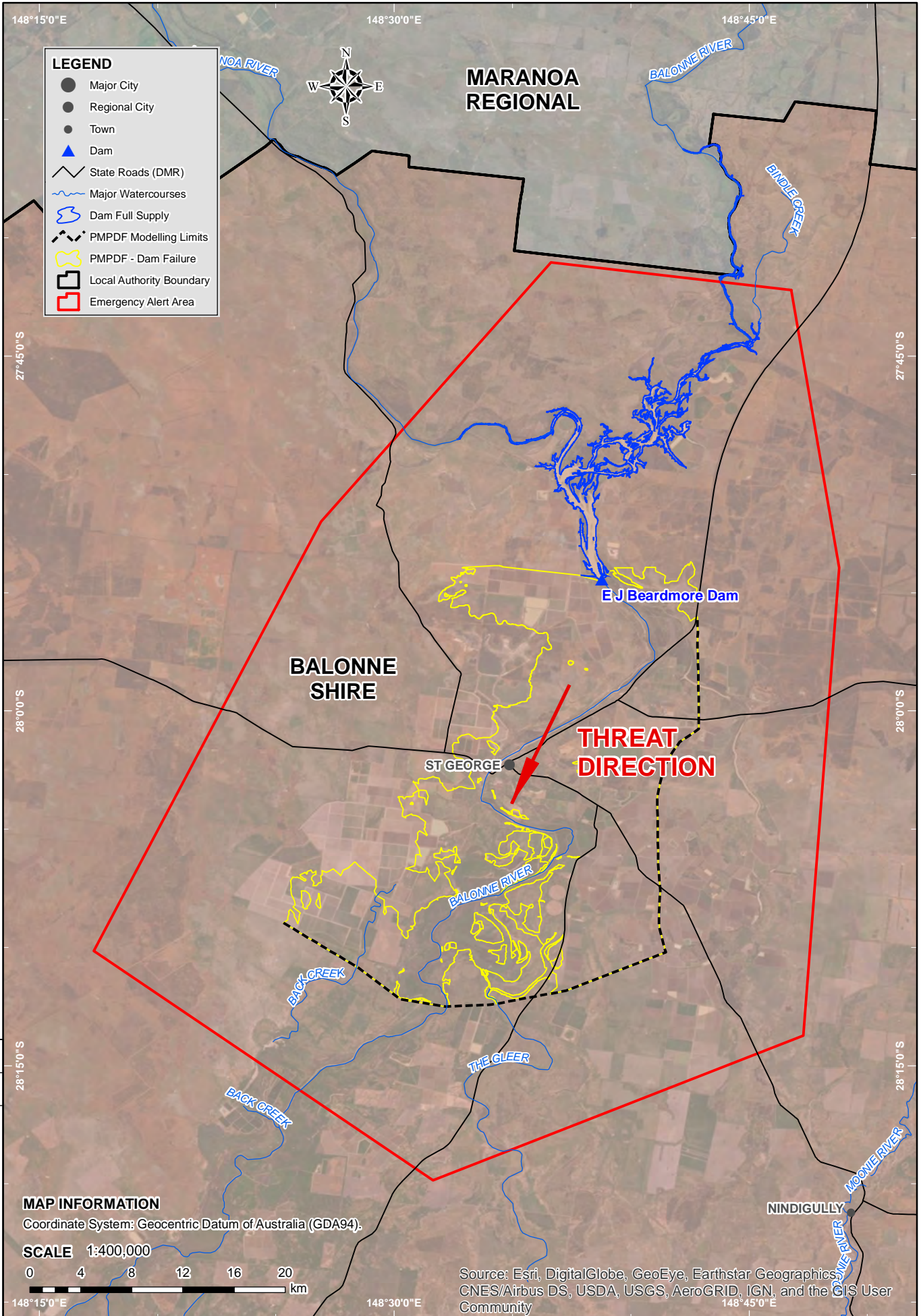
Appendix A1 to Appendix A8 have been redacted

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Document: S:\BW Asset Delivery\SW-BW Service Delivery\YR-WSRW-38-01-05-01 EAP Mapping\Drawings\wcm\Map1
Emergency Alerts\249567-B.mxd
Printed: Tuesday, 09/07/2019 12:21:05 PM

MAP PRODUCED BY:
ASSET DELIVERY
TEL. (07)3120 0000

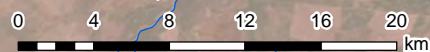
| REVISION | EMERGENCY ALERT AREA UPDATED | | EMERGENCY ALERT AREA | | REMARKS |
|----------|------------------------------|----|----------------------|----|---------|
| | MB | MH | MB | MH | |
| 09/07/19 | | | | | |
| 23/01/18 | A | | | | |
| | DATE | | | | |
| | | | | | |



MAP INFORMATION

Coordinate System: Geocentric Datum of Australia (GDA94).

SCALE 1:400,000



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

| | |
|-----------|----------|
| DRAWN | DESIGNED |
| IDH | |
| CHECKED | CHECKED |
| MB | |
| APPROVED | |
| M. HUGHES | |
| 23/1/2018 | |



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ACN 131 034 985

BEARDMORE DAM EMERGENCY ACTION PLAN EMERGENCY ALERT AREA

| | |
|-------------------|------|
| CONTRACT NUMBER | |
| DRAWING NUMBER | REV. |
| 249567 | B |
| SHEET 1 OF 1 | |
| DATE JANUARY 2018 | |

Appendix A10: Beardmore Dam failure EA request

Queensland emergency alert request guidelines

An Emergency Alert Request form should be completed, if required (see Sections 5 to 10 for actions) and sent to the SDCC Watch Desk to activate the Beardmore Dam Emergency Polygon (Figure A1).

Instructions

- This form is not to be used for flood UNLESS a flood has triggered an emergency event.
- Print off the following Queensland Emergency Alert Request form.
- Telephone the SDCC Watch Desk on [REDACTED] and tell them your intention to use the Emergency Alert for an emergency event for Beardmore Dam.
- A KML Polygon for this dam is stored in the Sunwater area of the Disaster Management Portal in the Emergency Alert area. Ask the SDCC operative to locate the polygon. It will be a KML file called [REDACTED]
- Give them your phone number, confirm their name, and end the call after advising the form will be sent shortly.
- IC and DSTDM will work together to craft a message relevant to the hazard and discuss with the LDMG, if there is time.
- Fill in the form and send to SDCC watch desk email: [REDACTED] This form must come from the IC, DSTDM, or member of the Executive.
- Phone back to check the message has been sent and ask for an email to confirm.
- Create a Sunwater Incident report to advise of completion.
- This form MUST be sent from a Sunwater email address. If Sunwater email is not functional, they can confirm identification through the RDMW (Regulator), if required.
- Use the following text to complete the emergency alert request:

| Filename: | Voice Message: | SMS: |
|------------|--|--|
| [REDACTED] | FLOOD EMERGENCY WARNING from Sun water: People downstream of E J Beard more Dam including St George must LEAVE IMMEDIATELY. E J Beard more Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to St George Showground. More information here: Balonne Shire Council emergency dot balonne dot que el dee dot gov dot ay you. | FLOOD EMERGENCY WARNING from Sunwater: People downstream of EJ Beardmore Dam including St George must LEAVE IMMEDIATELY. EJ Beardmore Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to St George Showground. More information here: Balonne Shire Council emergency.balonne.qld.gov.au/ |

The next two pages contain a pre-filled Beardmore Dam Emergency Alert request.

| | | | |
|---|-------------------------|--|--|
|  (01 May 2018) | EMERGENCY ALERT REQUEST | | |
| Location: Beardmore Dam Failure (Balonne River) | | Date: / / Time: : hrs | |
| Requesting Officer: | | Telephone: | |
| Agency/Position: | | Email: | |

| | | | | |
|------------------|--|--|---|---|
| Event Type | <input type="checkbox"/> Cyclone <input type="checkbox"/> Bushfire <input type="checkbox"/> Tsunami (NOTE Tsunami EA campaigns will be sent as Location Based Text Message ONLY) <input checked="" type="checkbox"/> Other (please specify): Catastrophic Dam Failure | <input type="checkbox"/> Storm Surge <input type="checkbox"/> Fire Incident | <input type="checkbox"/> Flash Flood <input type="checkbox"/> Smoke or Toxic Plume | <input type="checkbox"/> Flood <input type="checkbox"/> Chemical Spill |
| Message Severity | <input checked="" type="checkbox"/> Emergency Warning (NOTE activates the SEWS) <input type="checkbox"/> Watch & Act <input type="checkbox"/> Advice | | | |
| Campaign Mode | <input checked="" type="checkbox"/> Voice <input checked="" 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 |
|----------------------------|---|---|

| | |
|---|--|
| STEP 1. EA Polygon Area: <input checked="" type="checkbox"/> Map attached STEP 3. Spatial format: (Indicate the format used) <input checked="" 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 type="checkbox"/> MapInfo TAB *.dat, *.id, *.map, *.tab <input type="checkbox"/> MapInfo Mid/Mif *. MIDI Sequence, *.mif <input type="checkbox"/> OTHER (insert) | STEP 2. Filename: STEP 4. Messaging/spatial data, is it supplied via <input checked="" type="checkbox"/> DMportal - 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) or handwritten Voice message (Ideally message should be less than 450 characters).

EMERGENCY EMERGENCY. BEARDMORE DAM IS FAILING/EXPECTED TO FAIL. RESIDENTS DOWNSTREAM OF THE DAM NEED TO act TO PROTECT LIFE AND LEAVE IMMEDIATELY. FAILURE OF THE DAM WILL RESULT IN EXTREMELY DANGEROUS FLOODING DOWNSTREAM INCLUDING: ST. GEORGE. DO NOT DELAY. LEAVE NOW. BOLLON AND MUNGINDI ARE SAFE.

Type or handwritten SMS below (maximum of 160 characters including spaces)

IMMINENT FAILURE OF BEARDMORE DAM. TAKE ACTION TO PROTECT LIFE & LEAVE NOW. ST GEORGE IS AT RISK. INFO ON ABC RADIO (711 AM). BOLLON AND MUNGINDI ARE SAFE.

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 | |
| EA Manual and the Emergency Alert Request Form Template are available at: www.disaster.qld.gov.au | | | |

DO NOT SEND THIS PAGE

GUIDE TO COMPLETE STEPS 1 – 4

| | |
|----------------|--|
| STEP 1. | 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. |
| STEP 2. | Tick applicable box and note the file name. |
| STEP 3. | <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> |
| STEP 4. | 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.

//RELEVANTAUTHORITY//

//DIRECTIONANDAREA//

//NAME//

//NUMBER//

//TIME//

//TIMEandDAY//

//DIRECTIONandPLACE//

//HOURSMINUTES//


//PLACE//

//PLACEPLACE//

//EXTERNAL/INTERNAL//

//SUBURBS//

//FireIncident//

| | | | |
|---|-------------------------|--|--|
|  (01 May 2018) | EMERGENCY ALERT REQUEST | | |
| Location: Beardmore Dam Failure through Thuraggi Channel | | Date: / / Time: : hrs | |
| Requesting Officer: | | Telephone: | |
| Agency/Position: | | Email: | |

| | | | | |
|------------------|--|--|---|---|
| Event Type | <input type="checkbox"/> Cyclone <input type="checkbox"/> Bushfire <input type="checkbox"/> Tsunami (NOTE Tsunami EA campaigns will be sent as Location Based Text Message ONLY) <input checked="" type="checkbox"/> Other (please specify): Catastrophic Dam Failure | <input type="checkbox"/> Storm Surge <input type="checkbox"/> Fire Incident | <input type="checkbox"/> Flash Flood <input type="checkbox"/> Smoke or Toxic Plume | <input type="checkbox"/> Flood <input type="checkbox"/> Chemical Spill |
| Message Severity | <input checked="" type="checkbox"/> Emergency Warning (NOTE activates the SEWS) <input type="checkbox"/> Watch & Act <input type="checkbox"/> Advice | | | |
| Campaign Mode | <input checked="" type="checkbox"/> Voice <input checked="" 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 |
|----------------------------|---|---|

| | |
|---|--|
| STEP 1. EA Polygon Area: <input checked="" type="checkbox"/> Map attached STEP 3. Spatial format: (Indicate the format used) <input checked="" 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 type="checkbox"/> MapInfo TAB *.dat, *.id, *.map, *.tab <input type="checkbox"/> MapInfo Mid/Mif *. MIDI Sequence, *.mif <input type="checkbox"/> OTHER (insert) | STEP 2. Filename: STEP 4. Messaging/spatial data, is it supplied via <input checked="" type="checkbox"/> DMportal - 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) or handwrite Voice message (Ideally message should be less than 450 characters).

EMERGENCY EMERGENCY. BEARDMORE DAM IS FAILING/EXPECTED TO FAIL THROUGH THURAGGI CHANNEL. RESIDENTS DOWNSTREAM OF THE DAM NEED TO act TO PROTECT LIFE AND LEAVE IMMEDIATELY. FAILURE OF THE DAM WILL RESULT IN EXTREMELY DANGEROUS FLOODING DOWNSTREAM INCLUDING: ST. GEORGE. DO NOT DELAY. LEAVE NOW. BOLLON AND MUNGINDI ARE SAFE.

Type or handwrite SMS below (maximum of 160 characters including spaces)

IMMINENT FAILURE OF BEARDMORE DAM. TAKE ACTION TO PROTECT LIFE & LEAVE NOW. ST GEORGE IS AT RISK. INFO ON ABC RADIO (711 AM). BOLLON AND MUNGINDI ARE SAFE.

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 | |

EA Manual and the Emergency Alert Request Form Template are available at: www.disaster.qld.gov.au

DO NOT SEND THIS PAGE

GUIDE TO COMPLETE STEPS 1 – 4

| | |
|----------------|--|
| STEP 1. | 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. |
| STEP 2. | Tick applicable box and note the file name. |
| STEP 3. | <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> |
| STEP 4. | 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.

//RELEVANTAUTHORITY//

//DIRECTIONANDAREA//

//NAME//

//NUMBER//

//TIME//

//TIMEandDAY//

//DIRECTIONandPLACE//

//HOURSMINUTES//

//PLACE//

//PLACEPLACE//

//EXTERNAL/INTERNAL//

//SUBURBS//

//FireIncident//

APPENDIX B Drawings and maps

- B1 Drawings
- B2 Flood impact—downstream
- B3 Inundation maps
- B4 Catchment maps (Queensland river maps from the BOM website)

NOTE: Actual levels may differ from those shown in flood inundation maps due to variations in assumptions made in the models to actual flood events.

Appendix B1: Drawings

The following drawings are applicable to the General Arrangement:

General Arrangement (1 of 3)

General Arrangement (2 of 3)

General Arrangement, channel section (3 of 3)

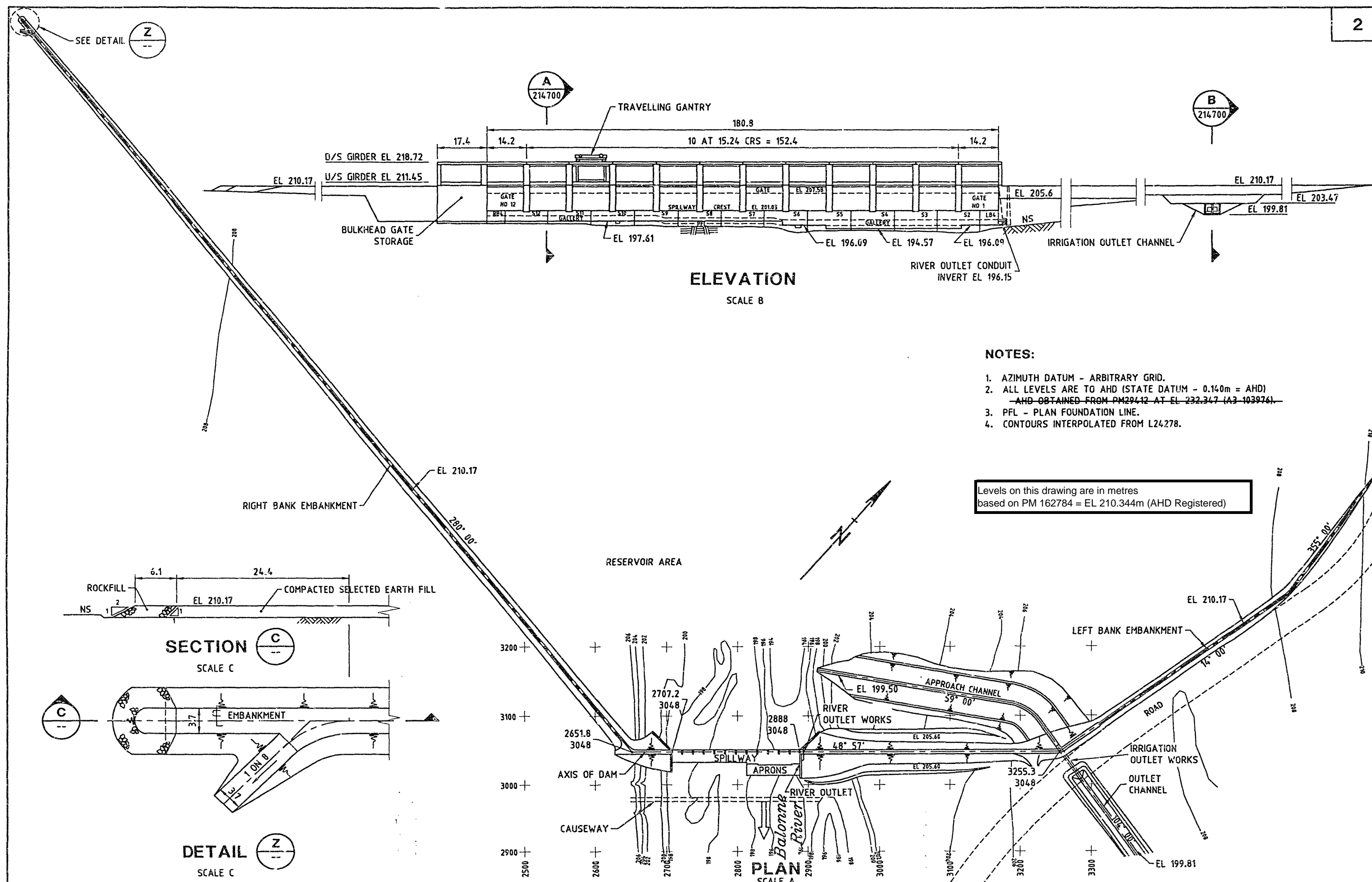
Right embankment crest survey


Right embankment crest survey (Detail)

Left embankment survey (below design level)

The following drawing displays the instrumentation and monitoring equipment:

Instrumentation layout

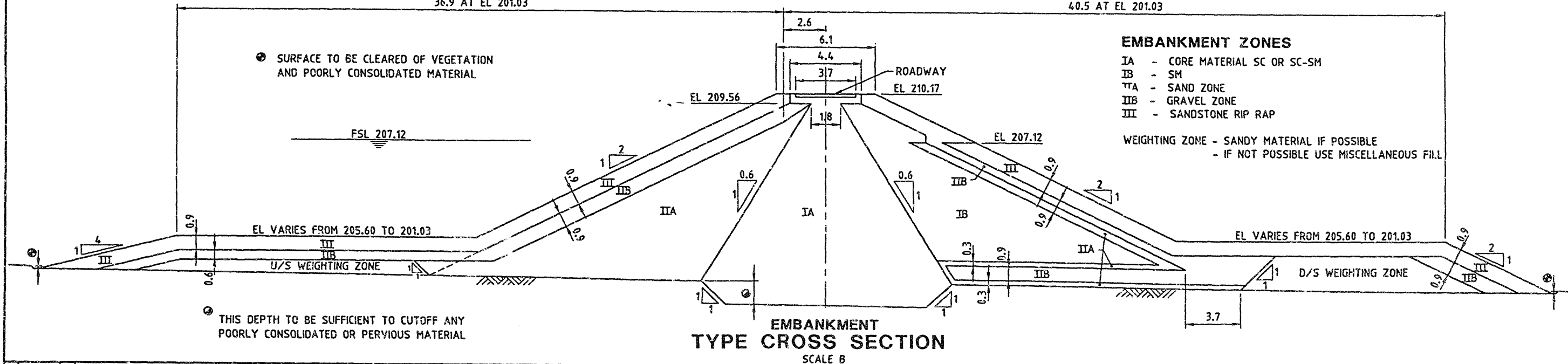


| | | | | | | | | | | | | | | |
|----------|---|----------------------|-----|-----|--------------------|-------------------------------|------------|--------|--|----------------|-----------------|---|--|-----------------|
| REVISION | | | | | REFERENCE DRAWINGS | | | SCALES | <div><div>A</div><div>0 50 100 150 200 250 METRES</div><div>1:5000</div></div> <div><div>B</div><div>0 12.5 25 37.5 50 62.5 METRES</div><div>1:1250</div></div> <div><div>C</div><div>0 5 10 15 20 25 METRES</div><div>1:500</div></div> | DRAFTING | RECOMMENDED | <div>Services</div> <div>Engineering</div> <div></div> | DAM SAFETY REVIEW 2000 BEARDMORE DAM GENERAL ARRANGEMENT | CONTRACT NUMBER |
| | | | | | | DRAFTING RET | H J KHADKA | | | DRAWING NUMBER | | | | |
| | | | | | | DRAFTING CHK | | | | | A3-214699 | | | |
| | | | | | | DESIGN | APPROVED | | | | DATE MARCH 2000 | | | |
| 7.7.00 | A | DETAIL Z, FOUNDATION | | | | | | | | K L EHM | | SH 1 OF 2 | A | |
| DATE | | REMARKS | CKD | PSD | A3-214700 | GENERAL ARRANGEMENT - SHEET 2 | | | | | | | | |



29.6 AT EL 204.69
36.9 AT EL 201.03

33.2 AT EL 204.69
40.5 AT EL 201.03



SCALES

A 0 5000 10000 MILLIMETRES
1:200

B 0 2.5 5 7.5 10 12.5 METRES
1:250

C 0 5 10 15 20 METRES
1:400

| | |
|-----------------|--------------------------------|
| DRAFTING RET | RECOMMENDED <i>mskhadka</i> |
| DRAFTING CHK | |
| DESIGN | APPROVED <i>Kellen</i> |
| DESIGN CHK | |


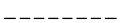







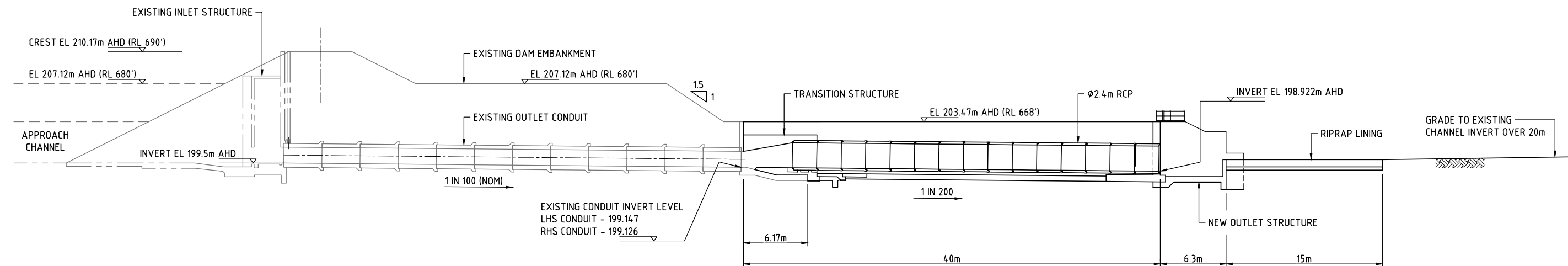
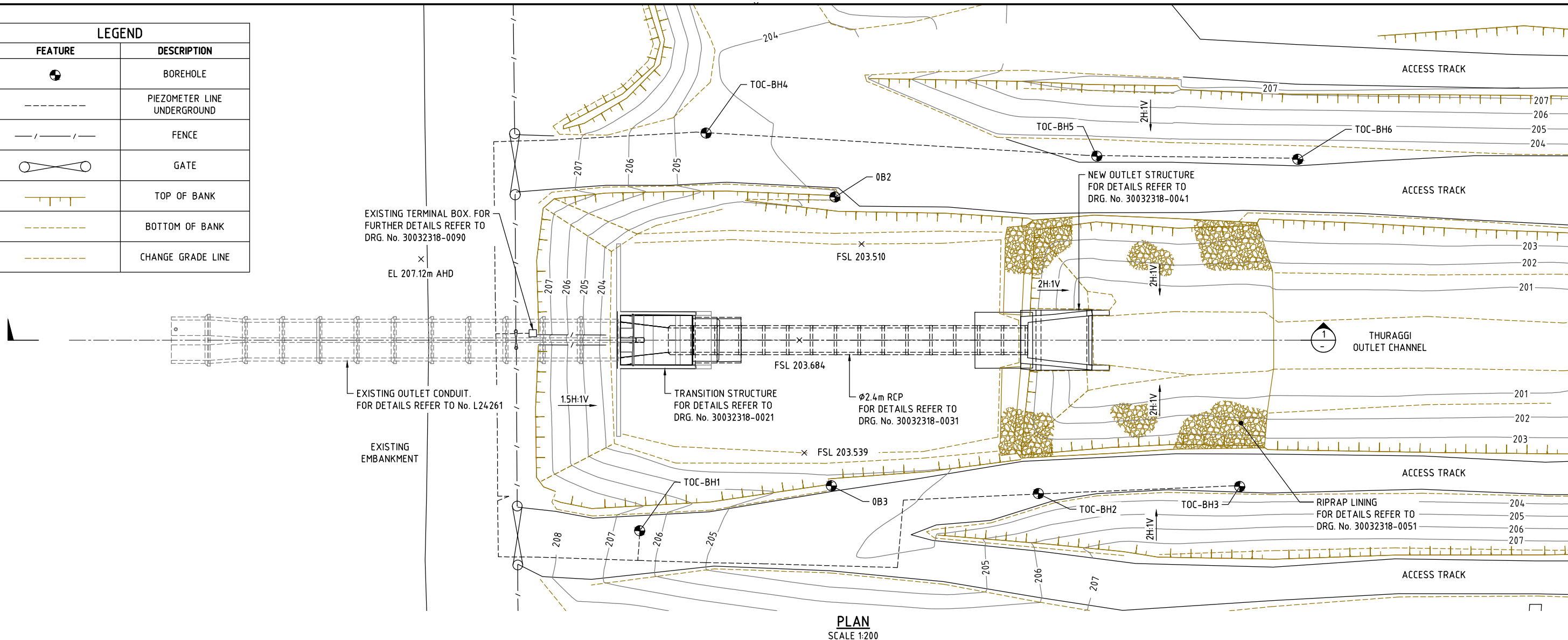
DAM SAFETY REVIEW 2000
BEARDMORE DAM
GENERAL ARRANGEMENT

| |
|------------------------------------|
| CONTRACT NUMBER |
| DRAWING NUMBER A3-214700 |
| DATE MARCH 2000 |

150 mm ON ORIGINAL

A1

| LEGEND | |
|---|-----------------------------|
| FEATURE | DESCRIPTION |
|  | BOREHOLE |
|  | PIEZOMETER LINE UNDERGROUND |
|  | FENCE |
|  | GATE |
|  | TOP OF BANK |
|  | BOTTOM OF BANK |
|  | CHANGE GRADE LINE |



DRAWING No: 251807

NOTES

- FOR GENERAL NOTES REFER TO DRG. No. 30032318-0002.

AS CONSTRUCTED


V:_Vault\Projects\30032318\110_CADD\CAD\DWG\30032318-0011.dwg

30 Sep 2019 11:41:58

| EXTERNAL REFERENCE FILES | REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No. | APPROVAL | TITLE | NAME |
|---|-----|------------|----------------------------------|---------|----------|------------------|------------|
| X:\30032318_SunWater\110_CADD\CAD\DWG\30032318-0011.dwg | A | 09.05.2019 | DRAFT ISSUE | 001 | P.D. | DRAFTER | J. PARISI |
| | B | 20.05.2019 | DRAFT ISSUE | 002 | P.D. | DRAFTING CHECK | P. DARLING |
| | 0 | 29.05.2019 | ISSUED FOR CONSTRUCTION | 004 | P.D. | | |
| | 01 | 30.08.2019 | AS CONSTRUCTED | 009 | P.D. | DESIGNER | M. MCKAY |
| | 02 | 06.09.2019 | AS CONSTRUCTED | 010 | P.D. | DESIGN CHECK | P. DARLING |
| | 03 | 30.09.2019 | AS CONSTRUCTED | 011 | P.D. | PROJECT MANAGER | I. LONIE |
| | | | | | | PROJECT DIRECTOR | M. BOX |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



DESIGNER



SMEC

Member of the Surlana Jurong Group

© ABN 47 065 475 149

TOWER 4, LEVEL 20, 727 COLLINS STREET

DOCKLANDS VIC 3008

SMEC PROJECT No 30032318

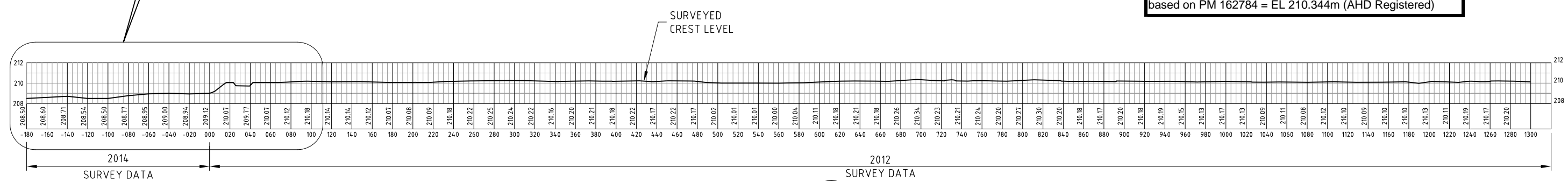
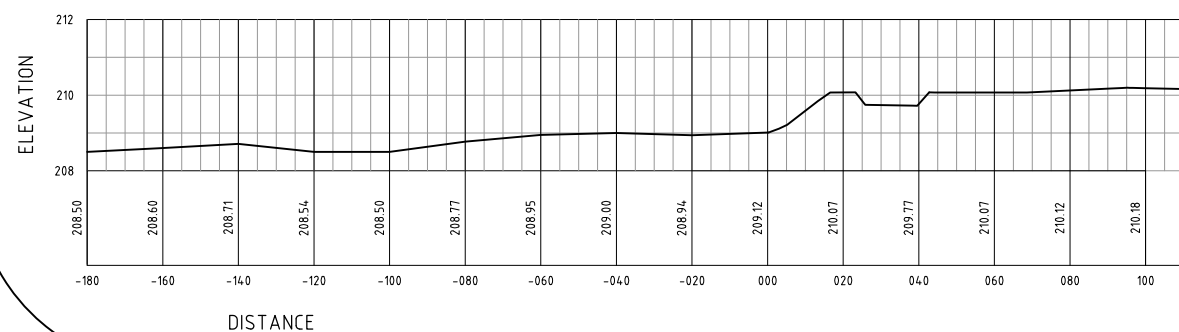
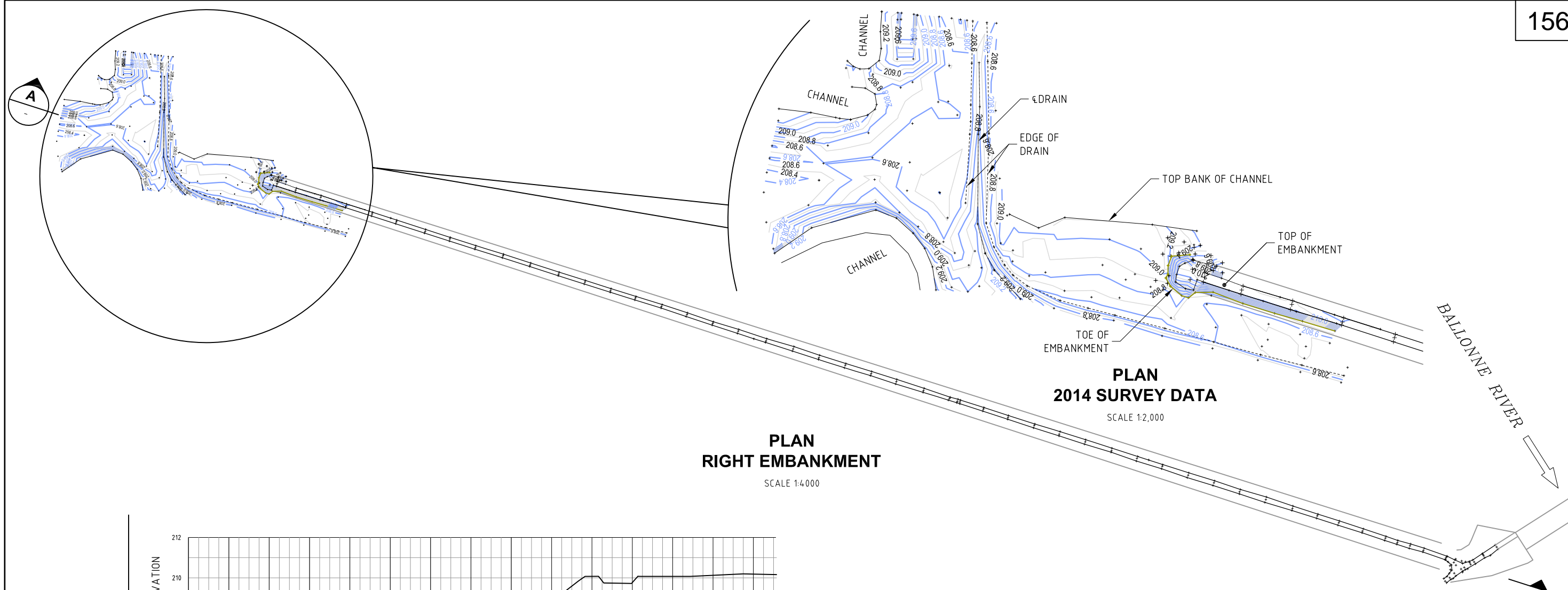
CLIENT



sunwater



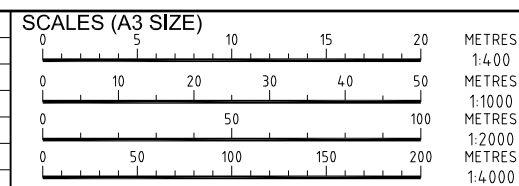
| PROJECT TITLE | | | |
|-----------------------------------|----------------|-----------------------|----------|
| BEARDMORE DAM THURAGGI CHANNEL | | | |
| GENERAL ARRANGEMENT | | | |
| SCALE | PHASE | PROJECT / DRAWING No. | REVISION |
| AS NOTED | AS CONSTRUCTED | 30032318-0011 | 03 |



Levels on this drawing are in metres
based on PM 162784 = EL 210.344m (AHD Registered)

SECTION A

HOR: 1:4,000
VER: 1:400



| | |
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| DRAWN AJN/CSS | DESIGNED |
| CHECKED | CHECKED |
| APPROVED A. BUTLER | |



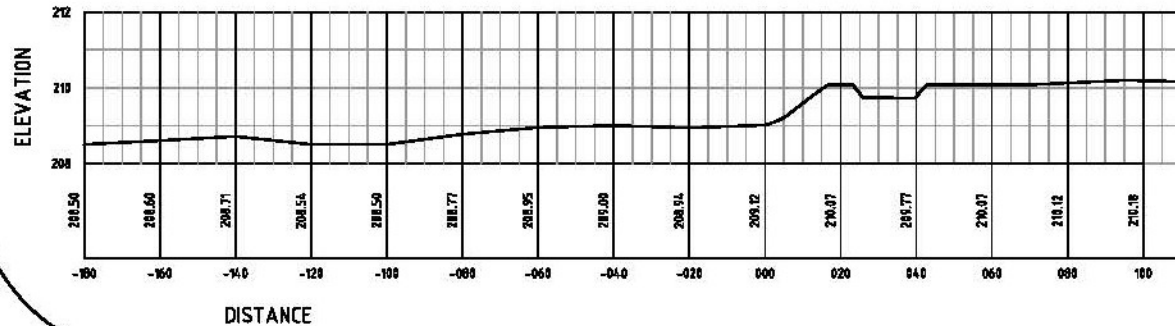
BEARDMORE DAM RIGHT EMBANKMENT CREST SURVEY - MARCH 2012

| | |
|-----------------|---|
| CONTRACT NUMBER | |
| DRAWING NUMBER | |
| 243296 | |
| DATE | |
| A | B |

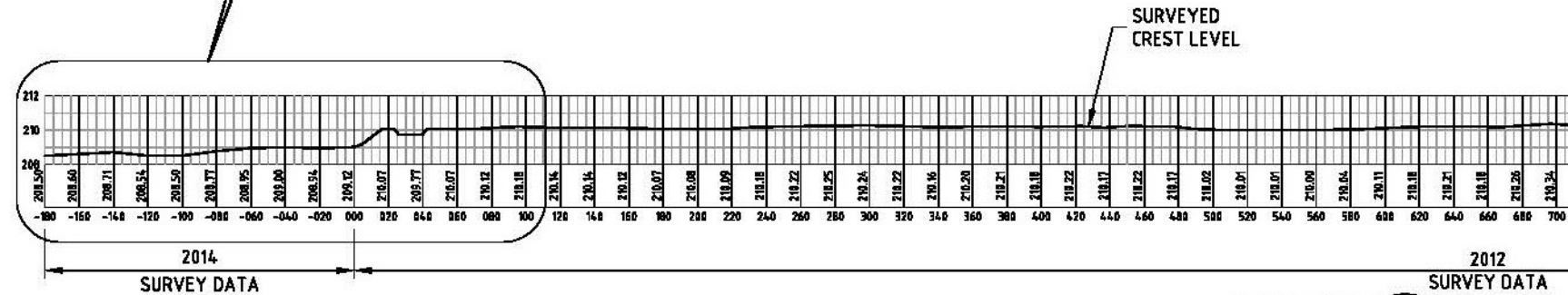
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| REVISION | | | | | |
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| | 11/02/14 | B | ISSUED FOR USE | MR | AMB |
| | 25/07/13 | A | ISSUED FOR USE | AN | AMB |
| | DATE | REMARKS | | CKD | PASSED |

PLAN RIGHT EMBANKMENT

SCALE 1:4000



Detail of low point on right embankment



SECTION

A

HOR: 1:4,000
VER: 1:400



CREST LEVEL INFORMATION

| CHAINAGE (m) | ELEVATION (m) | DESCRIPTION |
|--------------|---------------|-------------|
| 0.0 | 210.30 | CL |
| 10.1 | 210.40 | CL |
| 19.3 | 210.49 | CL |
| 26.3 | 210.42 | CL |
| 31.8 | 210.42 | CL |
| 38.7 | 210.34 | CL |
| 45.6 | 210.38 | CL |
| 58.9 | 210.33 | CL |
| 70.6 | 210.40 | CL |
| 83.2 | 210.37 | CL |
| 90.4 | 210.41 | CL |
| 95.7 | 210.40 | CL |
| 106.2 | 210.48 | CL |
| 115.5 | 210.42 | CL |
| 126.8 | 210.37 | CL |
| 140.5 | 210.41 | CL |
| 152.2 | 210.38 | CL |
| 160.1 | 210.37 | CL |
| 166.3 | 210.35 | CL |
| 172.9 | 210.43 | CL |
| 179.1 | 210.39 | CL |
| 185.9 | 210.38 | CL |
| 195.6 | 210.43 | CL |
| 202.4 | 210.41 | CL |
| 210.5 | 210.41 | CL |
| 217.9 | 210.36 | CL |
| 230.7 | 210.35 | CL |
| 242.0 | 210.40 | CL |
| 248.5 | 210.32 | CL |

| | | |
|-------|--------|----|
| 261.7 | 210.30 | CL |
| 273.6 | 210.35 | CL |
| 290.0 | 210.28 | CL |
| 302.8 | 210.23 | CL |
| 314.2 | 210.24 | CL |
| 328.6 | 210.24 | CL |
| 349.7 | 210.24 | CL |
| 357.4 | 210.24 | CL |
| 363.4 | 210.22 | CL |
| 369.5 | 210.24 | CL |
| 376.3 | 210.23 | CL |
| 386.7 | 210.22 | CL |
| 392.9 | 210.23 | CL |
| 403.6 | 210.25 | CL |
| 408.0 | 210.27 | CL |
| 410.3 | 210.27 | CL |
| 420.5 | 210.14 | CL |
| 432.2 | 210.03 | CL |
| 445.1 | 210.11 | CL |
| 460.5 | 210.15 | CL |
| 467.4 | 210.22 | CL |
| 477.3 | 210.23 | CL |
| 489.2 | 210.17 | CL |
| 507.2 | 210.11 | CL |
| 524.7 | 210.11 | CL |
| 541.4 | 210.24 | CL |
| 558.2 | 210.37 | CL |
| 572.4 | 210.39 | CL |
| 585.5 | 210.30 | CL |
| 595.6 | 210.26 | CL |

| | | |
|-------|--------|---------|
| 610.0 | 210.25 | CL |
| 625.5 | 210.24 | CL |
| 630.4 | 210.19 | CL |
| 639.9 | 210.18 | CL |
| 657.8 | 210.21 | CL |
| 675.2 | 210.17 | CL |
| 692.2 | 210.14 | CL |
| 709.4 | 210.19 | CL |
| 726.7 | 210.15 | CL |
| 742.4 | 210.28 | CL |
| 756.6 | 210.35 | CL |
| 762.4 | 210.40 | CL |
| 775.3 | 210.36 | CL |
| 789.1 | 210.33 | CL |
| 798.0 | 210.33 | CL |
| 805.3 | 210.29 | CL |
| 814.4 | 210.32 | CL |
| 828.3 | 210.19 | CL |
| 842.4 | 210.28 | CL |
| 860.9 | 210.21 | CL |
| 876.3 | 210.14 | CL |
| 891.9 | 210.08 | CL |
| 901.9 | 210.10 | CL |
| 915.5 | 210.16 | CL |
| 926.3 | 210.21 | CL |
| 937.2 | 210.23 | CL |
| 949.3 | 210.19 | CL |
| 959.1 | 210.13 | CL |
| 968.2 | 210.07 | CL |
| 978.8 | 209.90 | CL/GATE |

- NOTES:
- CHAINAGE IS IN METRES UNLESS NOTED OTHERWISE.
 - LEVELS DATUM: AUSTRALIAN HEIGHT DATUM.
 - DATE OF SURVEY: 6TH FEBRUARY 2015.
 - SHADED SURVEY LEVELS ARE BELOW ORIGINAL DESIGN CREST LEVEL (DCL) EL 210.17m AHD.

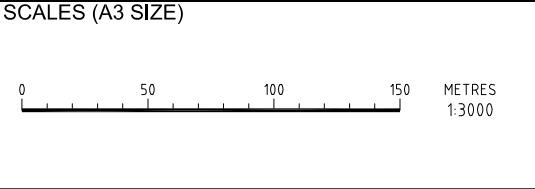
Levels on this drawing are in metres
based on PM 162784 = EL 210.344m (AHD Registered)

DRAWING PRODUCED BY:
BULK WATER, ASSET DELIVERY
TEL: (07) 3120 0000

S:\BW Asset Delivery\SW-St George WSS\B-WBS-02-01-01 - Beardmore Dam Deformation Survey 2015\Drawings\AutoCAD\245609-A.dwg
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| REVISION | DATE | REMARKS | CKD | PASSED |
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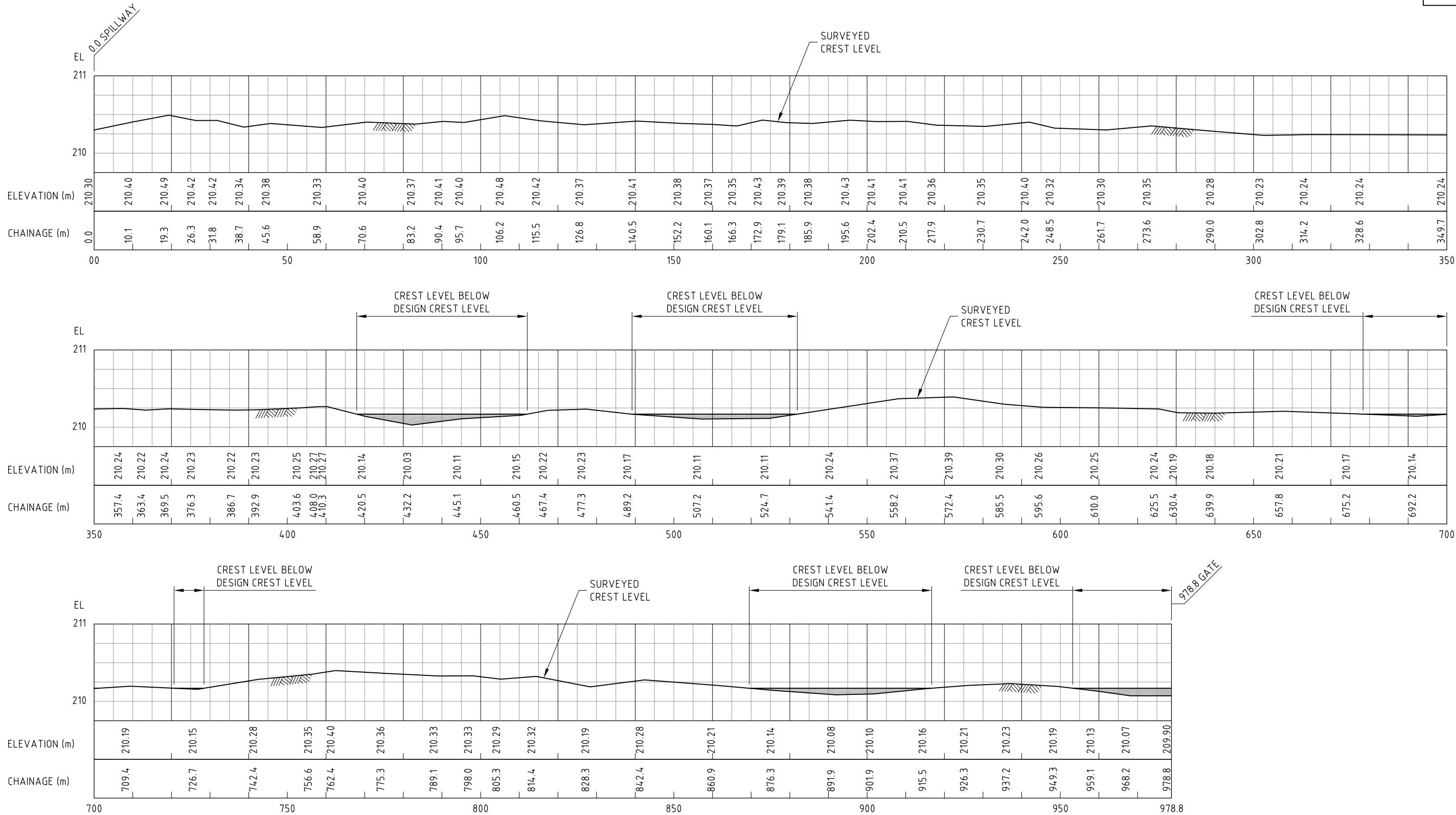
| REFERENCE DRAWINGS | 243296 | RIGHT BANK, CREST LEVEL SURVEY |
|--------------------|--------|--------------------------------|
|--------------------|--------|--------------------------------|



| | |
|----------------------|-------------------|
| DRAWN RB | DESIGNED MR |
| CHECKED RB | CHECKED AMB |
| APPROVED K.L. EHM | 10/3/15 RPEQ 2930 |



| | |
|---|-------------------------------|
| BEARDMORE DAM (BALONNE RIVER 251.4km) LEFT EMBANKMENT CREST LEVEL SURVEY | CONTRACT NUMBER |
| | DRAWING NUMBER |
| | 245609 SHEET 1 OF 2 |
| | DATE FEBRUARY 2015 |



CREST LEVEL SURVEY LONGITUDINAL SECTION

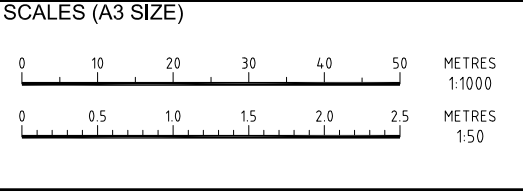
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NOTES:
- FOR DETAILS NOTES REFER SHEET 1.

DRAWING PRODUCED BY:
BULK WATER, ASSET DELIVERY
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| REVISION | | | | | |
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| 23/2/15 | A | ISSUED FOR USE | | RB | K.L. EHM |
| DATE | | REMARKS | | CKD | PASSED |

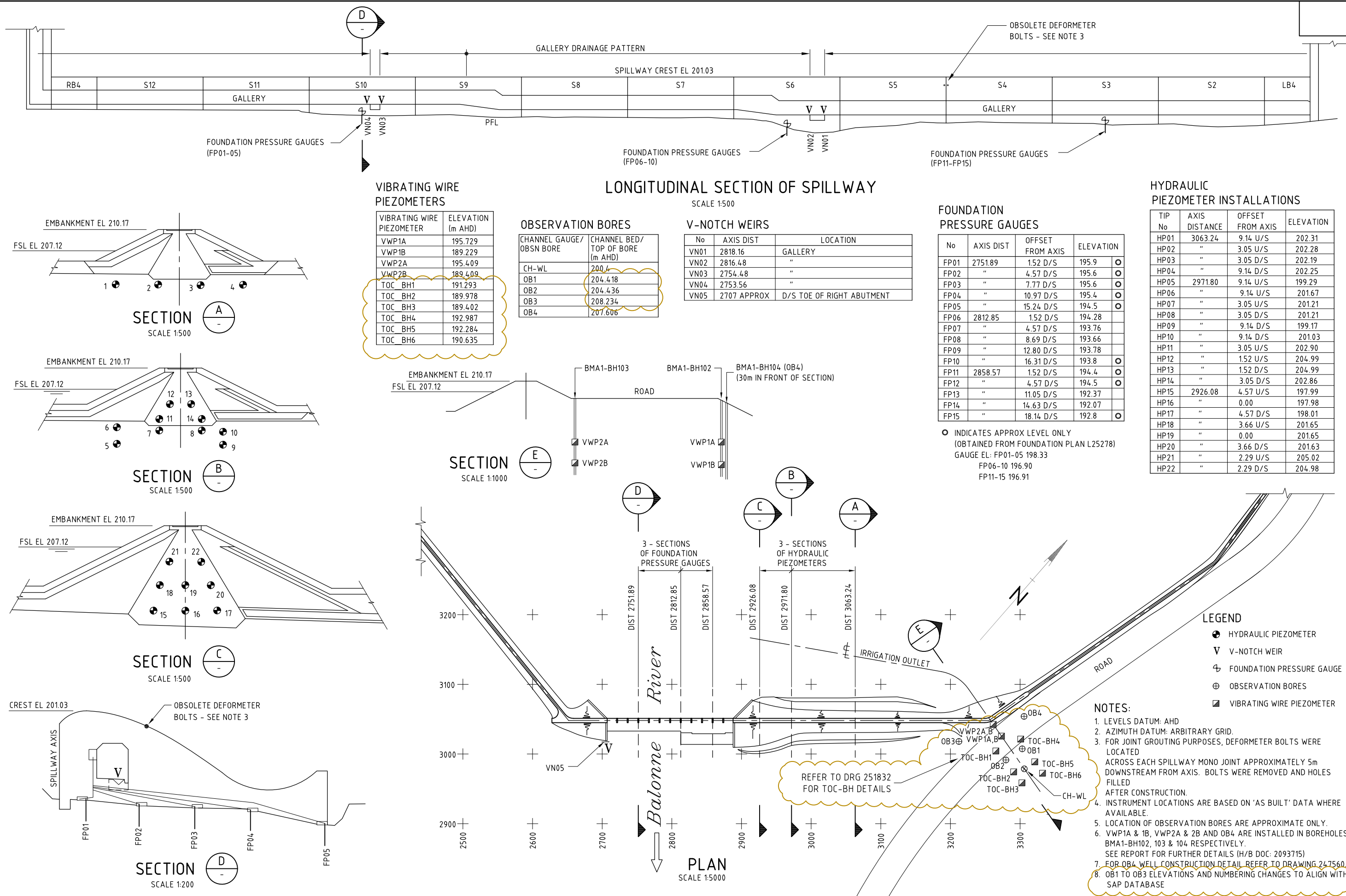
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|--------------------|--------------------------------|--|--|
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| 243296 | RIGHT BANK, CREST LEVEL SURVEY | | |



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| DRAWN PH | DESIGNED MR |
| CHECKED RB | CHECKED AMB |
| APPROVED K.L. EHM | |
| 10/3/15 | RPEQ 2930 |

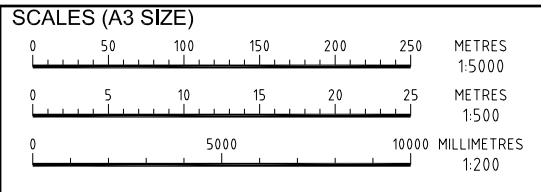


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|---------------------------------------|--|--------------------|--|
| BEARDMORE DAM (BALONNE RIVER 251.4km) | | CONTRACT NUMBER | |
| LEFT EMBANKMENT | | DRAWING NUMBER | |
| CREST LEVEL SURVEY | | 245609 | |
| | | SHEET 2 OF 2 | |
| | | DATE FEBRUARY 2015 | |
| A | | | |



| REVISION | DATE | REMARKS | CKD | PASSED |
|----------|------|---|-----|-----------|
| 06/06/20 | C | OB & BH NUMBERS AND ELEVATIONS ADJUSTED | KP | PS |
| 17/05/18 | B | VWP1A & 1B, VWP2A & 2B AND OB4 ADDED. | RB | S. SPONZA |
| 07/07/00 | A | PLAN SIZE, OBSERVATION BORES | | HK |

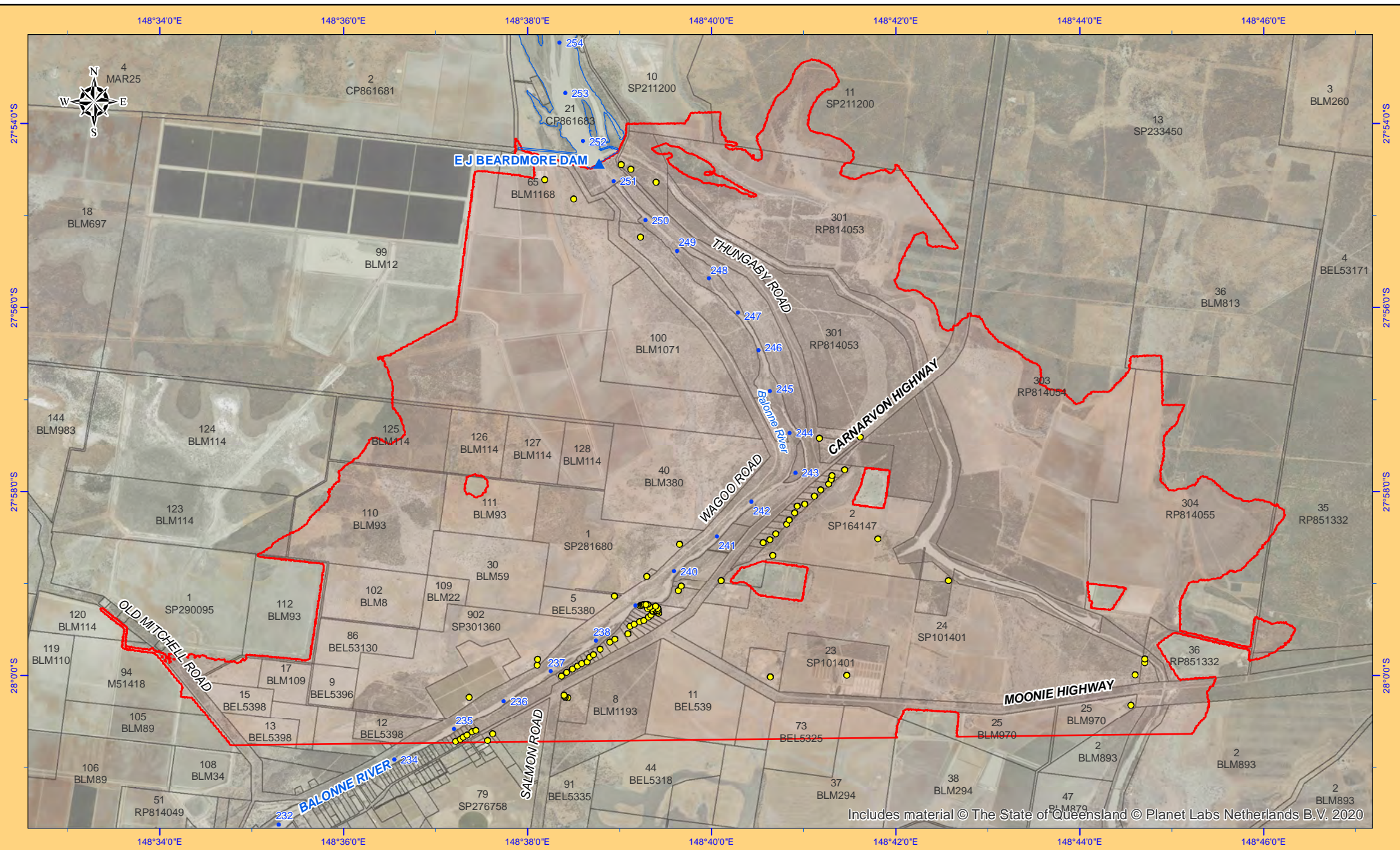
| REFERENCE DRAWINGS | 251832 | PIEZOMETER LOCATIONS AND DETAILS |
|--------------------|--------|--|
| | 46858 | RIGHT BANK DRAINAGE WORKS |
| | 24269 | GALLERY & FOUNDATION GROUTING |
| | 26520 | DEFORMETER INSTALLATION & GROUTING CIRCUIT |
| | 24256 | FOUNDATION PRESSURE GAUGES |
| | 26049 | PIEZOMETER LEVELS |
| | 25562 | POEZOMETER LOCATIONS |



| | |
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| DRAWN KFP | DESIGNED |
| CHECKED | CHECKED |
| APPROVED | |



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| DAM SAFETY INVESTIGATIONS | | CONTRACT NUMBER | |
| BEARDMORE DAM | | DRAWING NUMBER | REV. |
| INSTRUMENTATION LAYOUT | | 102263 | C |
| | | SHEET 1 OF 1 | |
| | | DATE | |



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MAP INFORMATION

Coordinate System: Geocentric Datum of Australia (GDA2020).

SCALE (A4 SIZE)

0 1,000 2,000 3,000 4,000 5,000
m 1:100,000

LEGEND

- AMTD (Markers)
- PAR - No Dam Failure
- Beardmore Dam FSL
- Limit of Downstream Notification Area

BEARDMORE DAM DOWNSTREAM NOTIFICATION AREA

NOTES

Areas further downstream will become progressively more impacted by other rainfall and inflows that occur downstream of the dam (not shown here).

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DRAWING No. 250705 C

Appendix B3: Inundation maps

The following maps are derived from the EJ Beardmore Dam 2022 Comprehensive Risk Assessment (CRA) (reference X).

Drawings:

- Keymap
- SDF Balonne River
- PMF Monolith Failure

Disclaimer: Every effort has been made to ensure the currency of the flood inundation maps reproduced in this EAP. However, as the maps have been extracted from external sources, their accuracy cannot be guaranteed. Please refer to the Local Disaster Management Plan for the most current information.

Document: S:\BW_WaterResources\GIS_Data\SW_St George WSS\BeadmoreDam_CRA\2022\Drawings\ArchMap\2566971-A.mxd
Printed: Tuesday, 20/12/2022 08:45:37 AM

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| 20/12/22 | A | ISSUED FOR USE | LH | MGH | |
| DATE | | REMARKS | CKD | PSD | |

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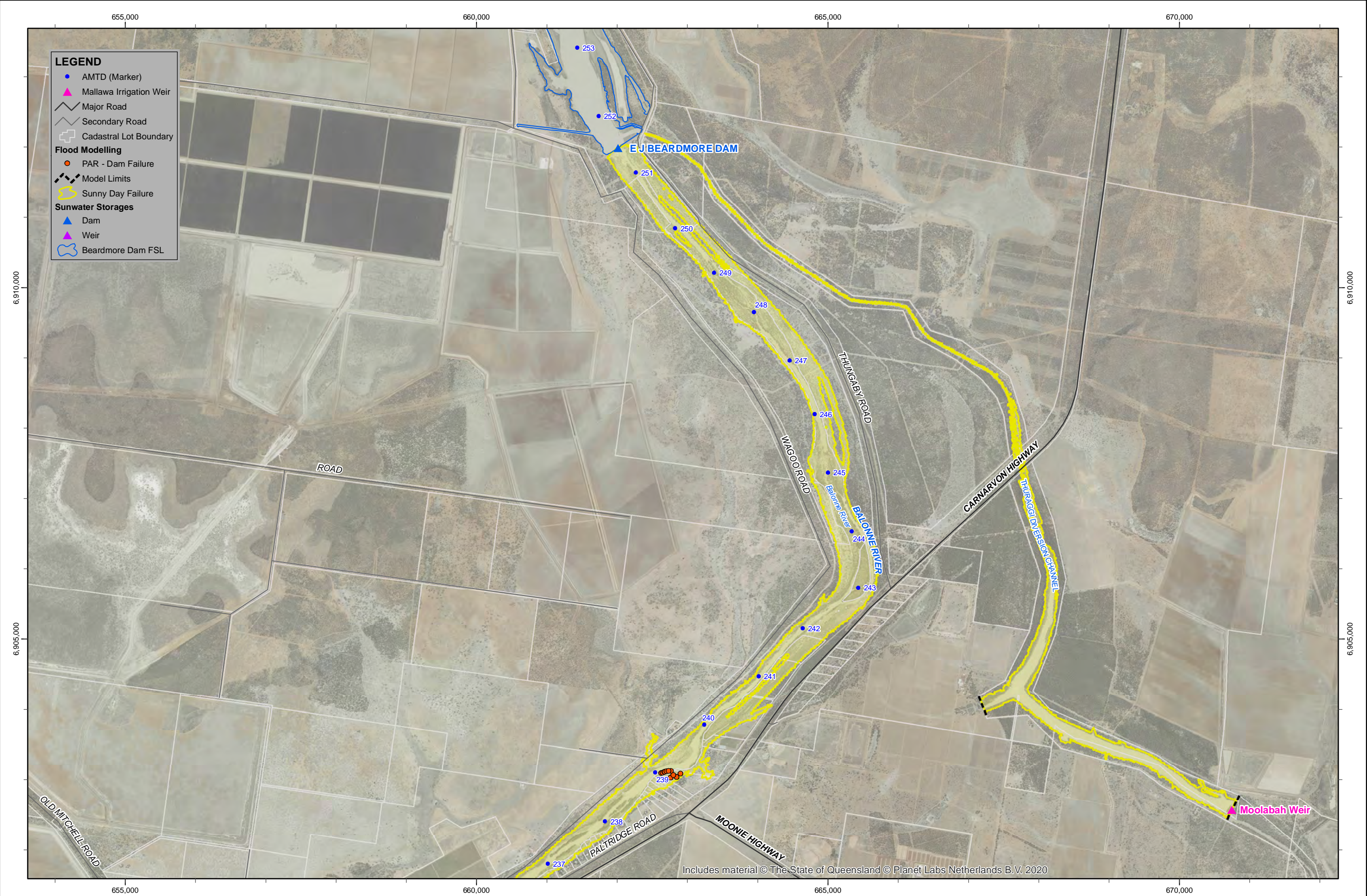
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| BEARDMORE DAM DAM BREAK ANALYSIS 2022 INUNDATION PLANS KEYMAP | CONTRACT NUMBER | |
| | DRAWING NUMBER | REV. |
| | 256971 | A |
| | SHEET 1 OF 1 | |
| | DATE DECEMBER 2022 | |

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| 20/12/22 | A | ISSUED FOR USE | LH | MGH | |
| DATE | | REMARKS | CKD | PSD | |

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55.

REFERENCE DRAWINGS
256971 - Keymap

SCALES (A3 SIZE)

0 500 1,000 1,500 2,000 2,500 m

1:50,000

DRAWN
IDH

CHECKED
LH

APPROVED
M.G. HUGHES
20/12/2022
RPEQ: 18351

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BEARDMORE DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE
(MONOLITH FAILURE)
INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER
256972

REV.
A

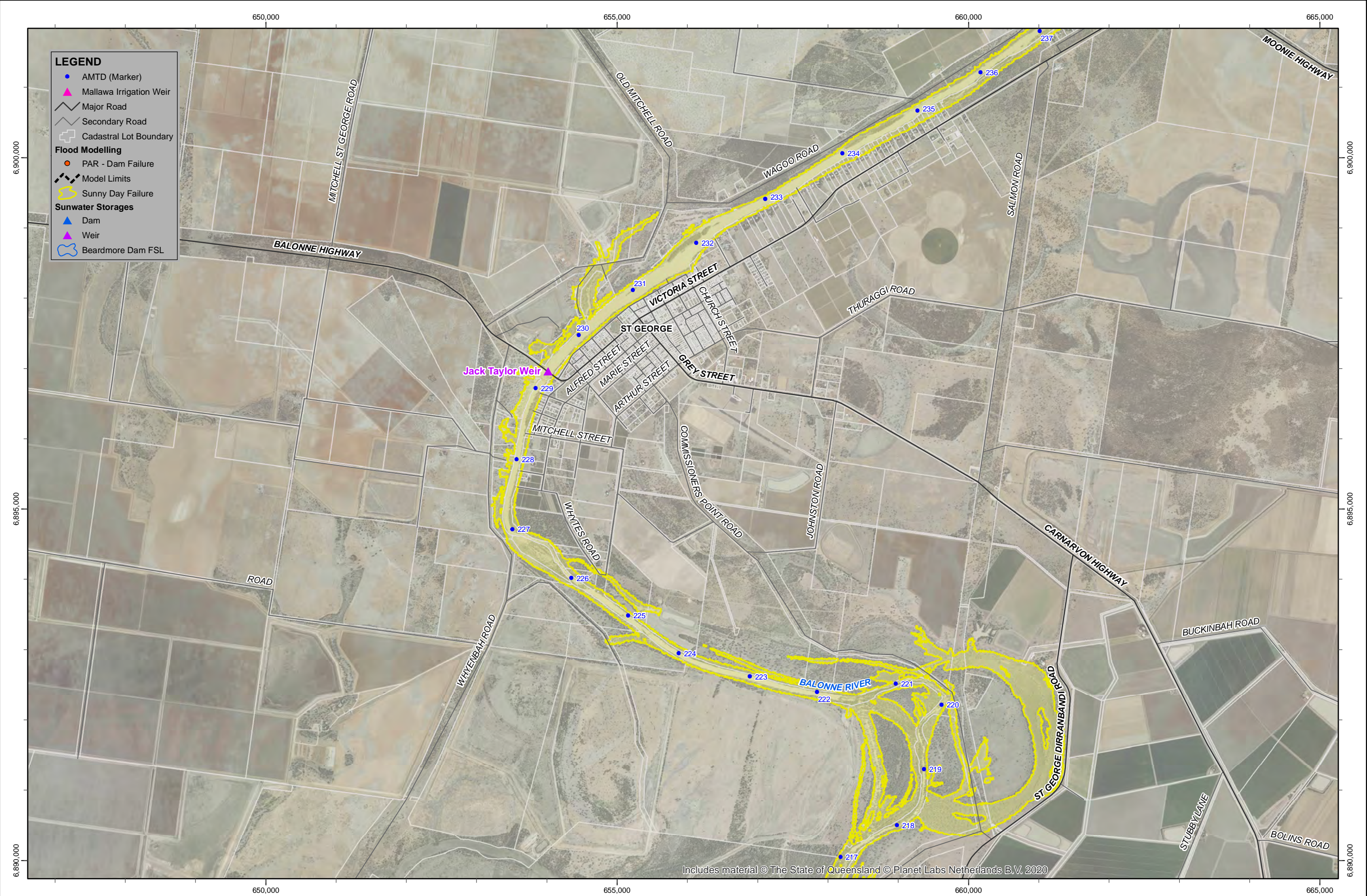
SHEET 1 OF 4

DATE
DECEMBER 2022

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Printed: Tuesday, 20/12/2022 08:49:10 AM

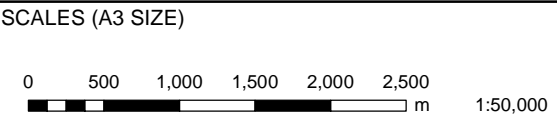
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| | | | | | |
| 20/12/22 | A | ISSUED FOR USE | | LH | MGH |
| DATE | | REMARKS | | CKD | PSD |

| MAP INFORMATION | |
|---|--|
| Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55. | |
| REFERENCE DRAWINGS | |
| 256971 - Keymap | |



| | |
|-------------|----------|
| DRAWN | DESIGNED |
| IDH | |
| CHECKED | CHECKED |
| | LH |
| APPROVED | |
| M.G. HUGHES | |
| 20/12/2022 | |
| RPEQ: 18351 | |

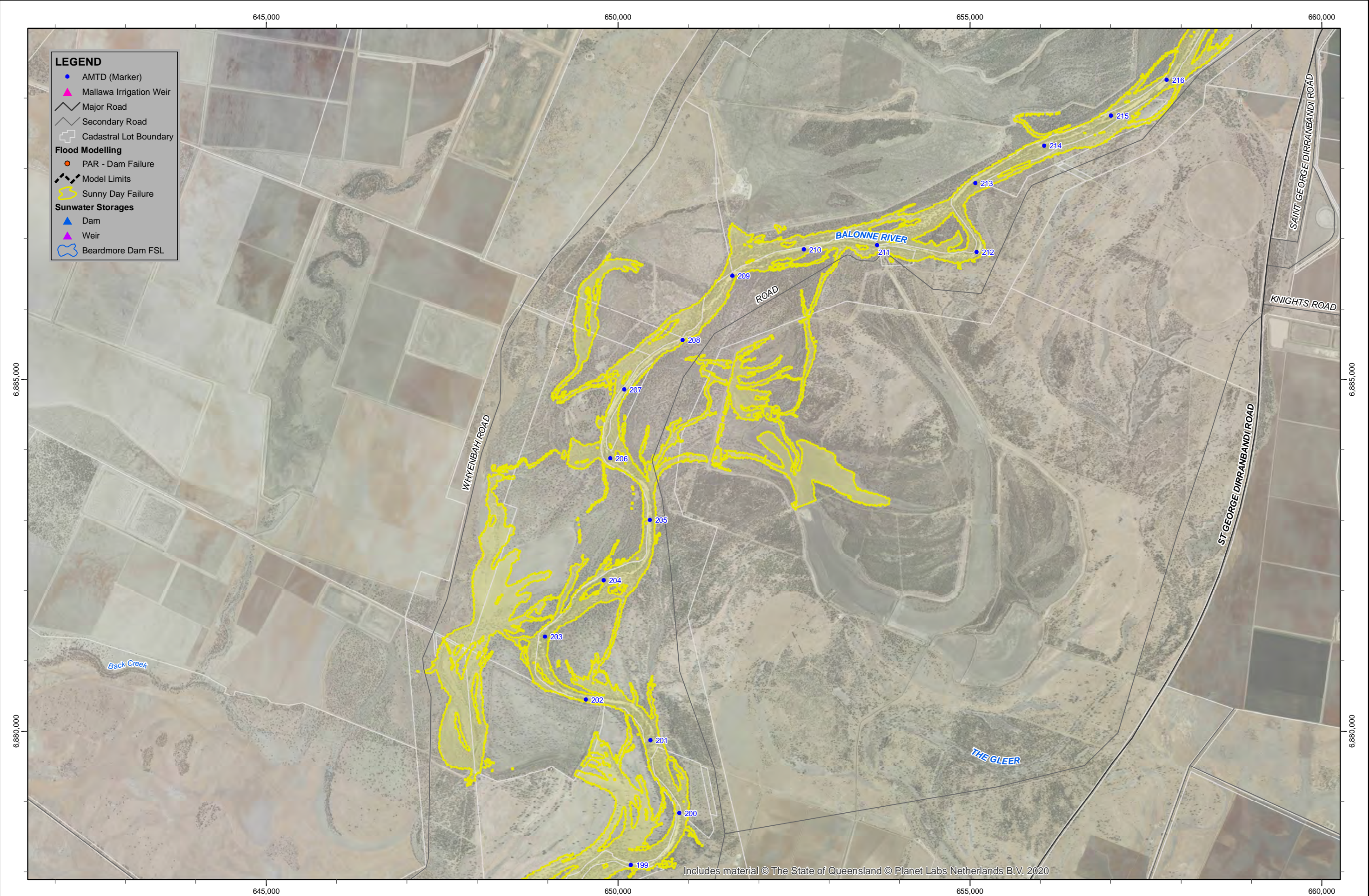


| BEARDMORE DAM DAM BREAK ANALYSIS 2022 SUNNY DAY FAILURE (MONOLITH FAILURE) INUNDATION PLAN | |
|--|------|
| CONTRACT NUMBER | |
| DRAWING NUMBER | REV. |
| 256972 | A |
| SHEET 2 OF 4 | |
| DATE DECEMBER 2022 | |

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| 20/12/22 | A | ISSUED FOR USE | | LH | MGH |
| DATE | | REMARKS | | CKD | PSD |

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| MAP INFORMATION | |
| Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55. | |
| REFERENCE DRAWINGS | |
| 256971 - Keymap | |



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|------------------------------------|--|
| SCALES (A3 SIZE) | |
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| 1:50,000 | |

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| IDH | |
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| APPROVED | |
| M.G. HUGHES | |
| 20/12/2022 | |
| RPEQ: 18351 | |

sunwater

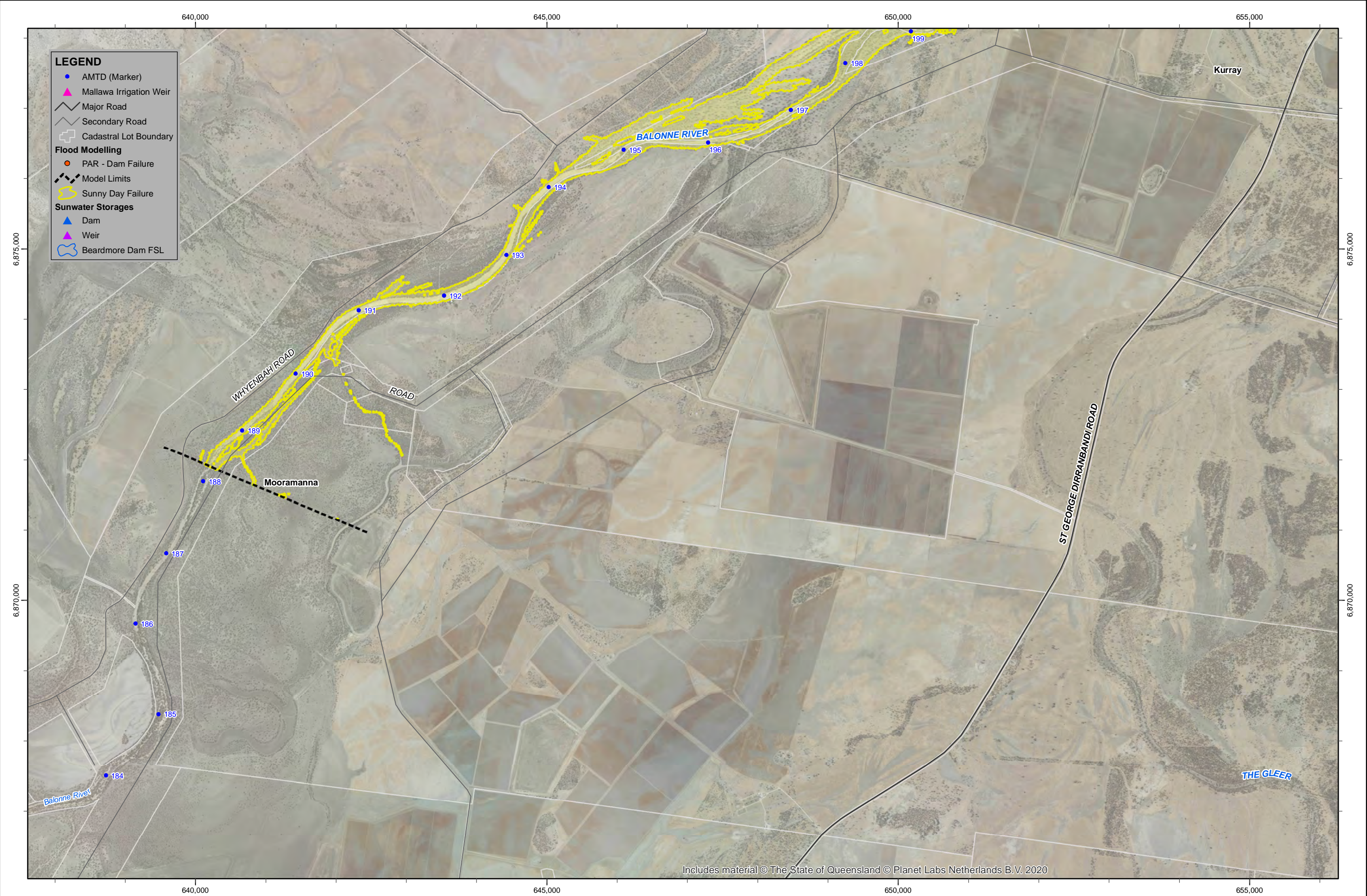
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|--|------|
| BEARDMORE DAM DAM BREAK ANALYSIS 2022 SUNNY DAY FAILURE (MONOLITH FAILURE) INUNDATION PLAN | |
| CONTRACT NUMBER | |
| DRAWING NUMBER | REV. |
| 256972 | A |
| SHEET 3 OF 4 | |
| DATE DECEMBER 2022 | |

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| REVISION | | | | | |
|----------|---|----------------|-----|-----|--|
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| | | | | | |
| 20/12/22 | A | ISSUED FOR USE | LH | MGH | |
| DATE | | REMARKS | CKD | PSD | |

| MAP INFORMATION | |
|---|--|
| Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55. | |
| REFERENCE DRAWINGS | |
| 256971 - Keymap | |



| SCALES (A3 SIZE) | |
|------------------------------------|--|
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| 1:50,000 | |

| | |
|---|----------------------|
| DRAWN <i>IDH</i> | DESIGNED |
| CHECKED | CHECKED <i>LH</i> |
| APPROVED <i>M.G. HUGHES</i> 20/12/2022 RPEQ: 18351 | |

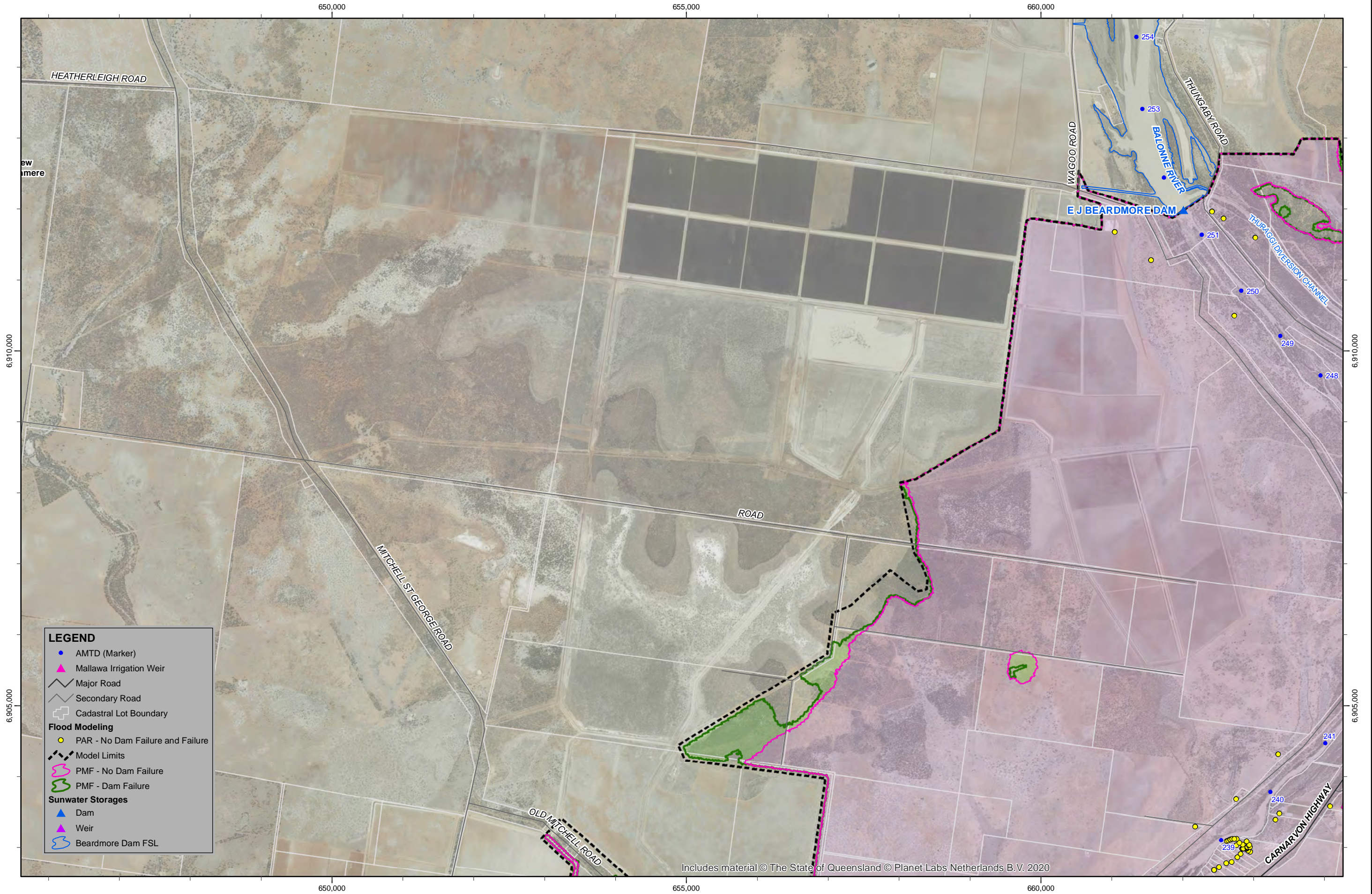
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| BEARDMORE DAM DAM BREAK ANALYSIS 2022 SUNNY DAY FAILURE (MONOLITH FAILURE) INUNDATION PLAN | |
|--|------------------|
| CONTRACT NUMBER | |
| DRAWING NUMBER 256972 | REV. A |
| SHEET 4 OF 4 | |
| DATE DECEMBER 2022 | |

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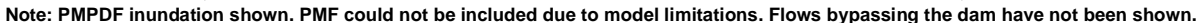
MAP PRODUCED BY:
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TEL: (07) 5120 0000



Note: PMPDF inundation shown. PMF could not be included due to model limitations. Flows bypassing the dam have not been shown.

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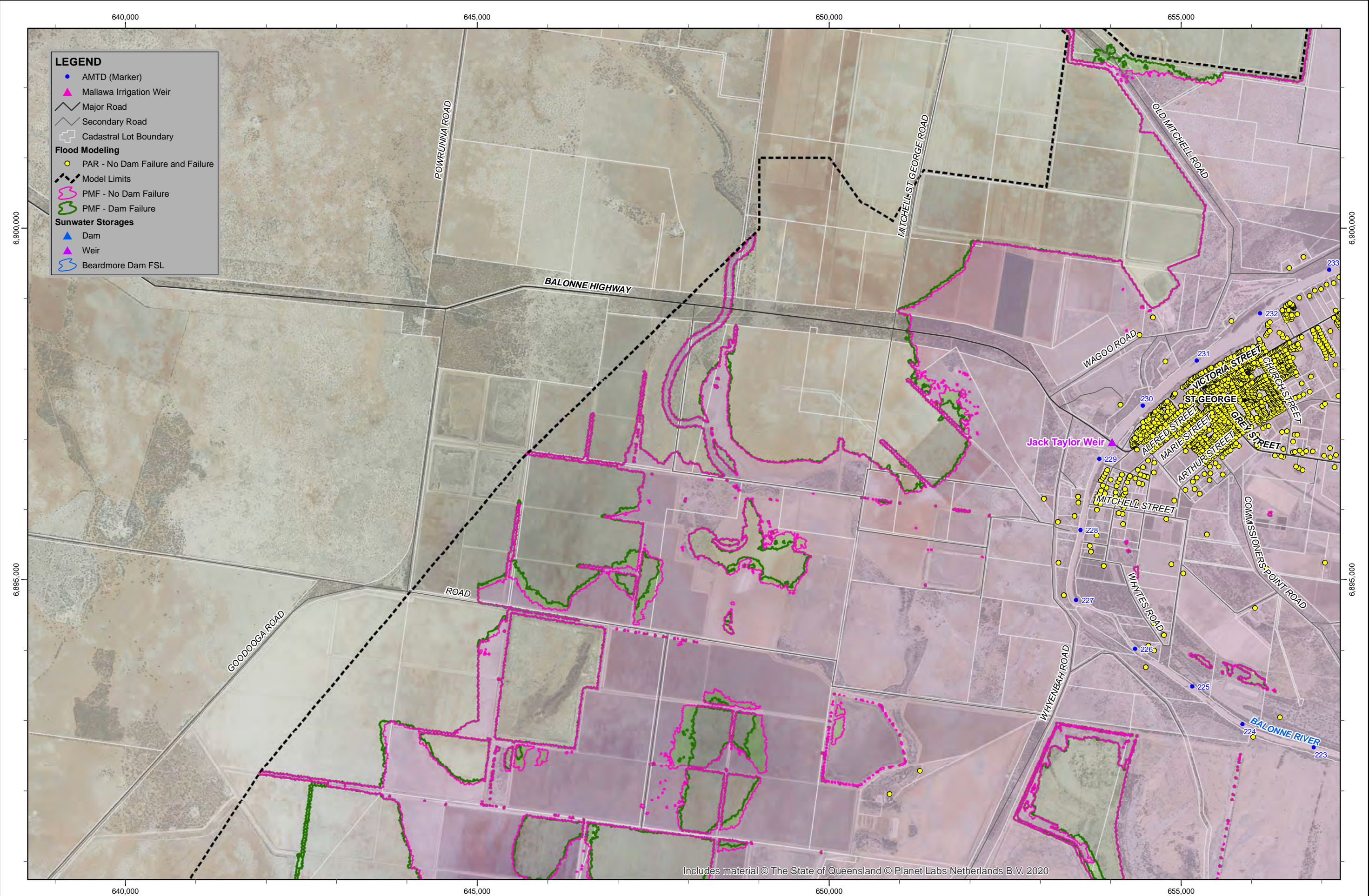


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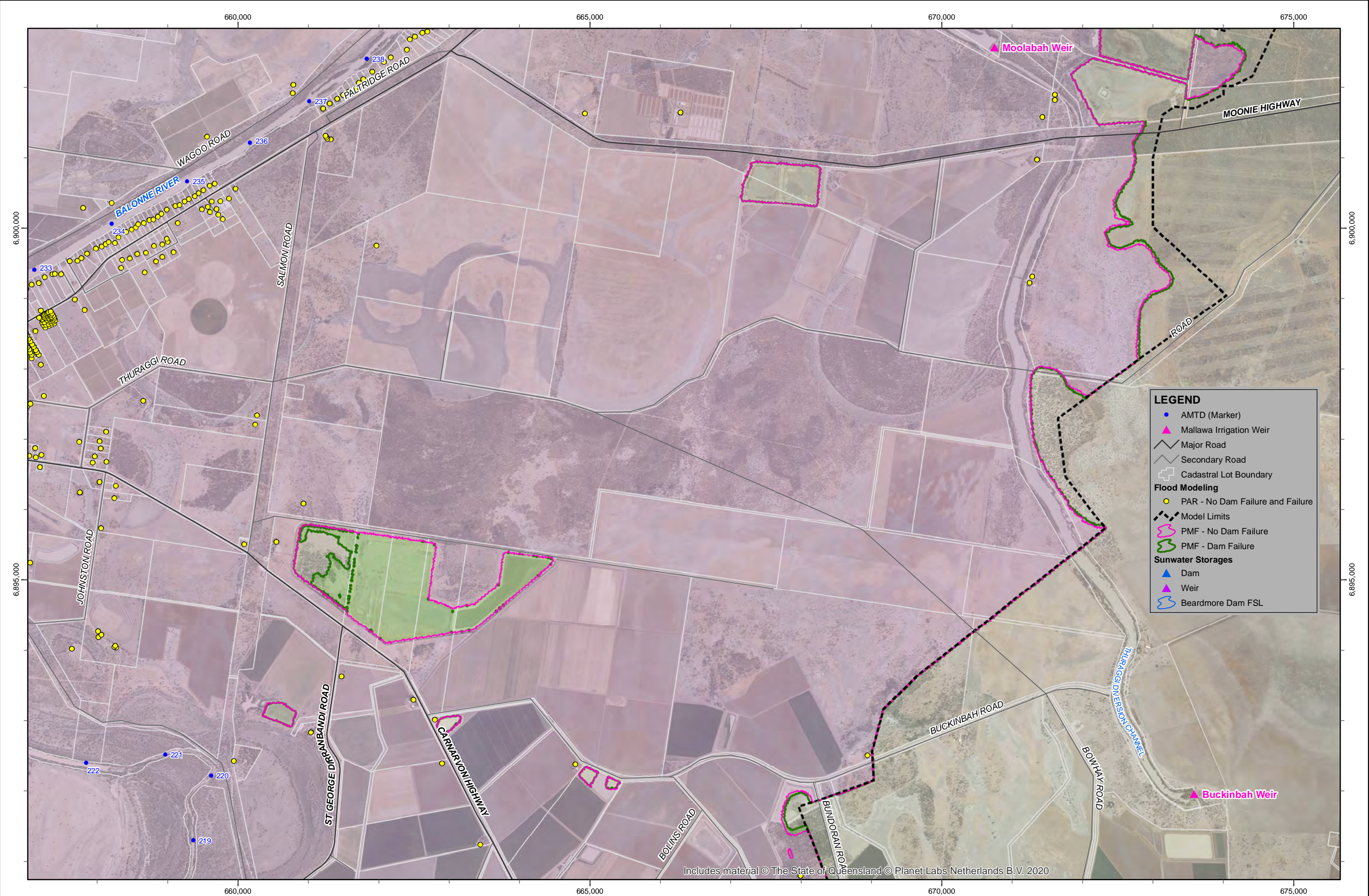
Note: PMPDF inundation shown. PMF could not be included due to model limitations. Flows bypassing the dam have not been shown.

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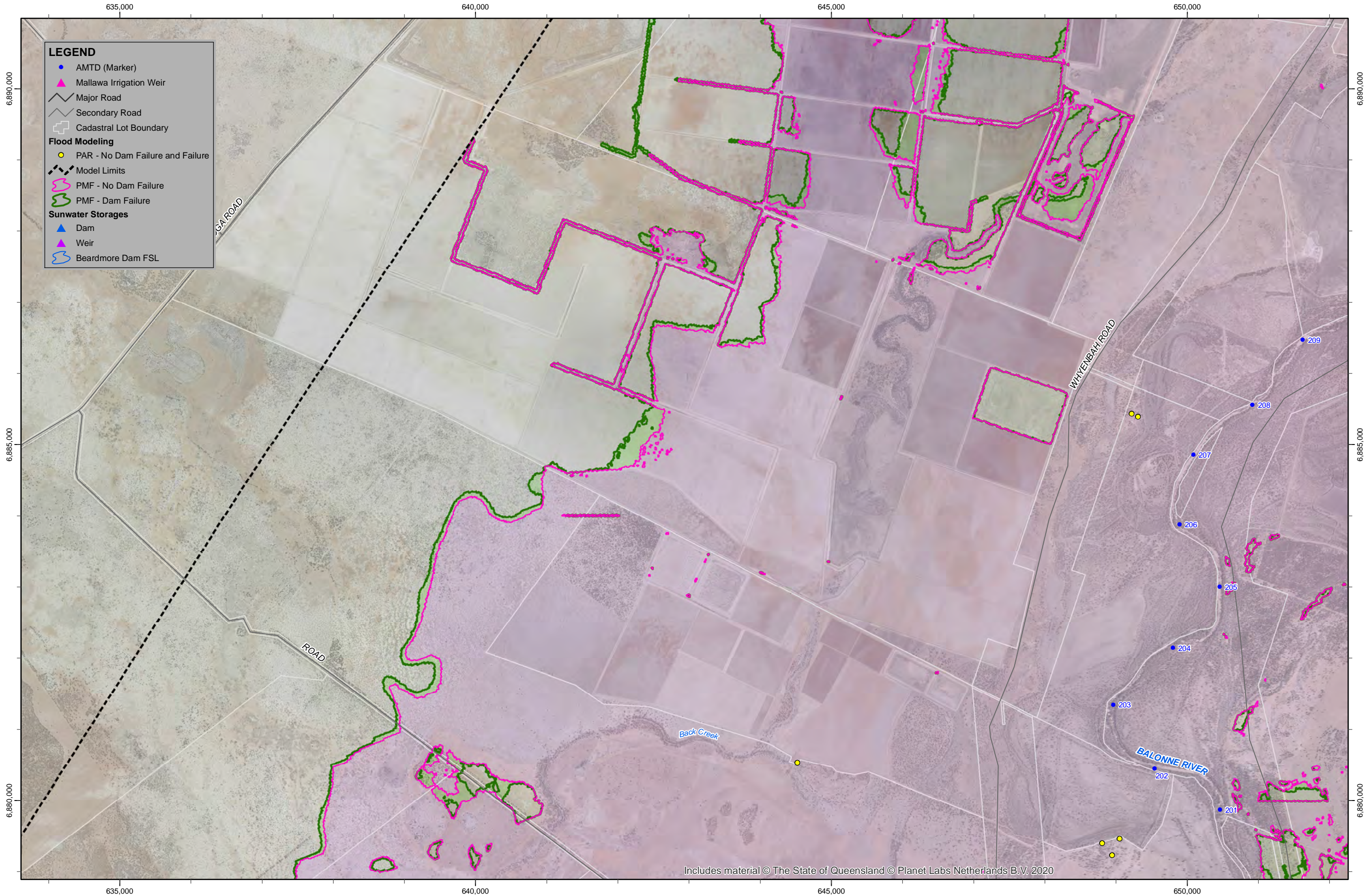
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| REVISION | | | | MAP INFORMATION | | | | SCALES (A3 SIZE) | | | | DRAWN | | DESIGNED | | BEARDMORE DAM | | | | CONTRACT NUMBER | |
| | | | | Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55. | | | | 0 500 1,000 1,500 2,000 2,500 m 1:50,000 | | | | IDH | | | | DAM BREAK ANALYSIS 2022 | | | | DRAWING NUMBER | |
| | | | | REFERENCE DRAWINGS | | | | | | | | CHECKED | | LH | | PROBABLE MAXIMUM FLOOD | | | | REV. | |
| | | | | 256971 - Keymap | | | | | | | | APPROVED | | | | (MONOLITH FAILURE) | | | | SHEET 4 OF 8 | |
| 20/12/22 | | | | ISSUED FOR USE | | | | | | | | M.G. HUGHES | | ©SUNWATER LIMITED | | INUNDATION PLAN | | | | DATE | |
| DATE | | | | REMARKS | | | | | | | | 20/12/2022 | | ACN 131 034 985 | | | | | | DECEMBER 2022 | |
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While every care is taken to ensure the accuracy of this product, SunWater makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Document: S:\BW_WaterResources\GIS_Data\SW_St George\WSS\BeardmoreDam_CRA2022\Drawings\ArcMap\256973-A.mxd
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Note: PMPDF inundation shown. PMF could not be included due to model limitations. Flows bypassing the dam have not been shown.


| REVISION | DATE | BY | APP'D | REMARKS |
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| MAP INFORMATION | REFERENCE DRAWINGS |
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| Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 55. | 256971 - Keymap |
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| SCALES (A3 SIZE) |
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| M.G. HUGHES | |
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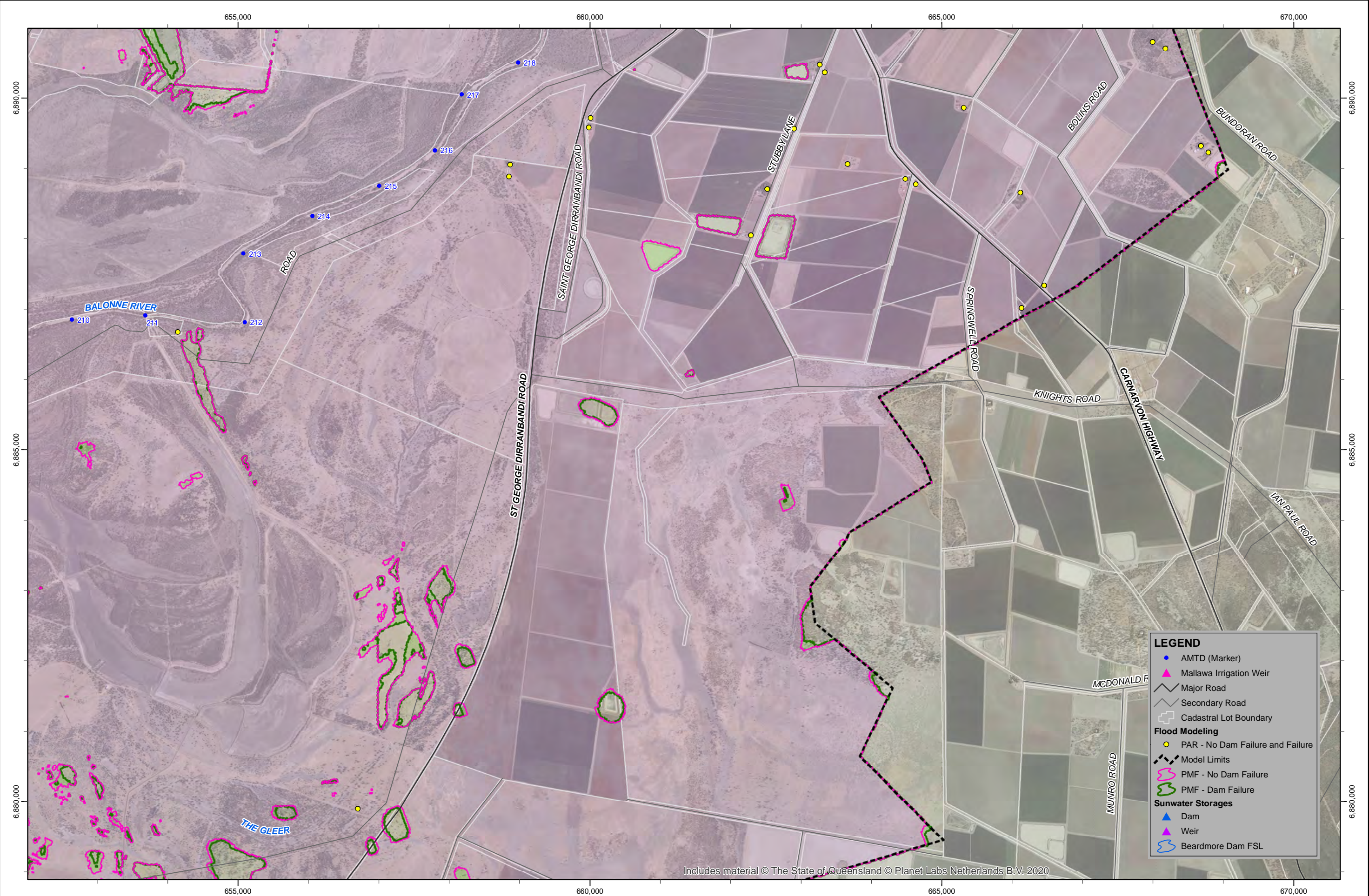
| BEARDMORE DAM DAM BREAK ANALYSIS 2022 PROBABLE MAXIMUM FLOOD (MONOLITH FAILURE) INUNDATION PLAN |
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| DRAWING NUMBER | 256973 |
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| SHEET | 5 OF 8 |
| DATE | DECEMBER 2022 |

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MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
TEL: (07) 5120 0000



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LEGEND

●

AMTD (Marker)

▲

Mallawa Irrigation Weir

—

Major Road

—

Secondary Road

—

Cadastral Lot Boundary

Flood Modeling

●

PAR - No Dam Failure and Failure

Model Limits

—

PMF - No Dam Failure

—

PMF - Dam Failure

Sunwater Storages

▲

Dam

▲

Weir

—

Beardmore Dam FSL

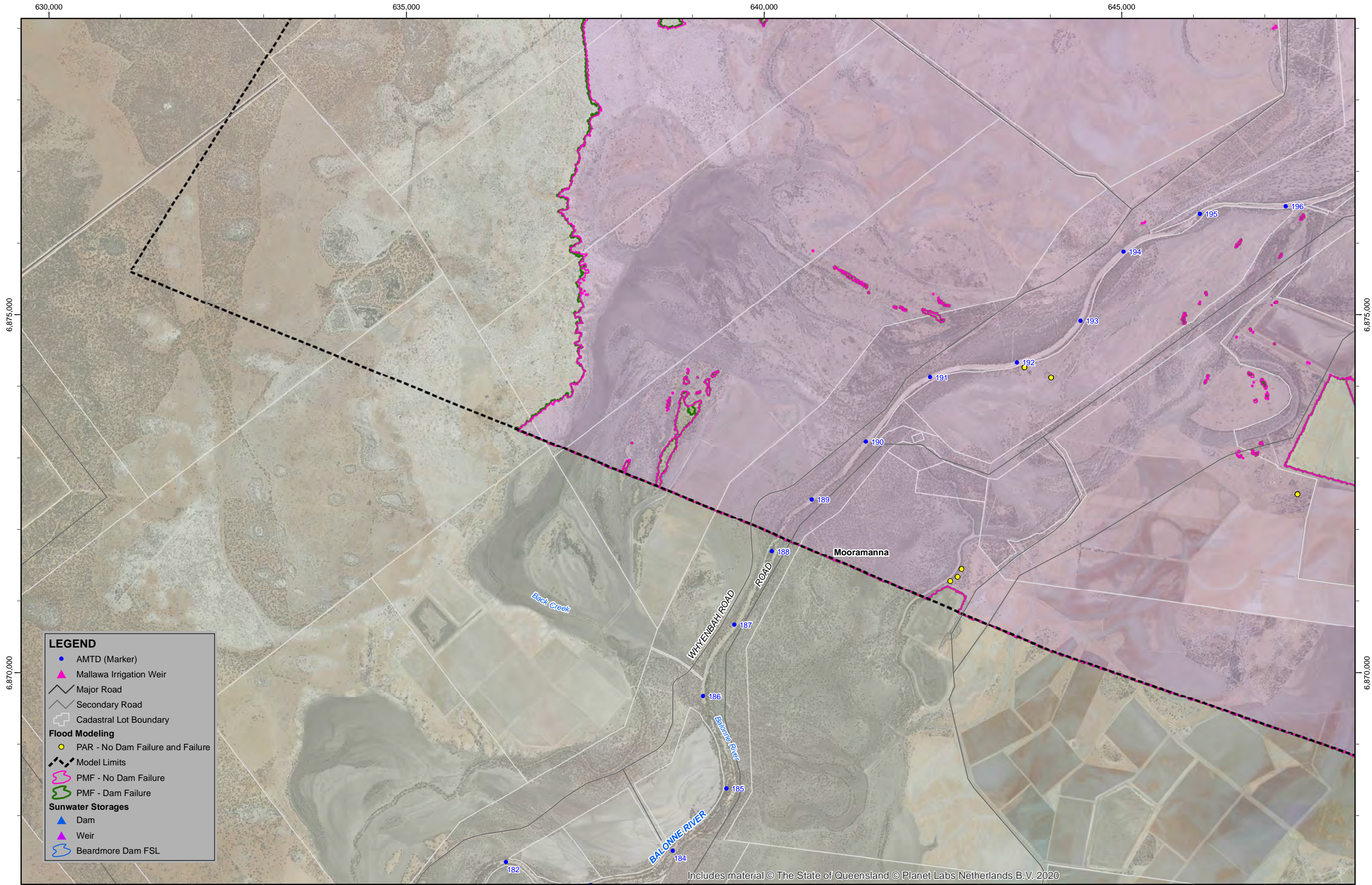
Note: PMPDF inundation shown. PMF could not be included due to model limitations. Flows bypassing the dam have not been shown.

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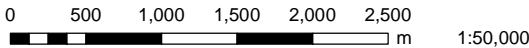
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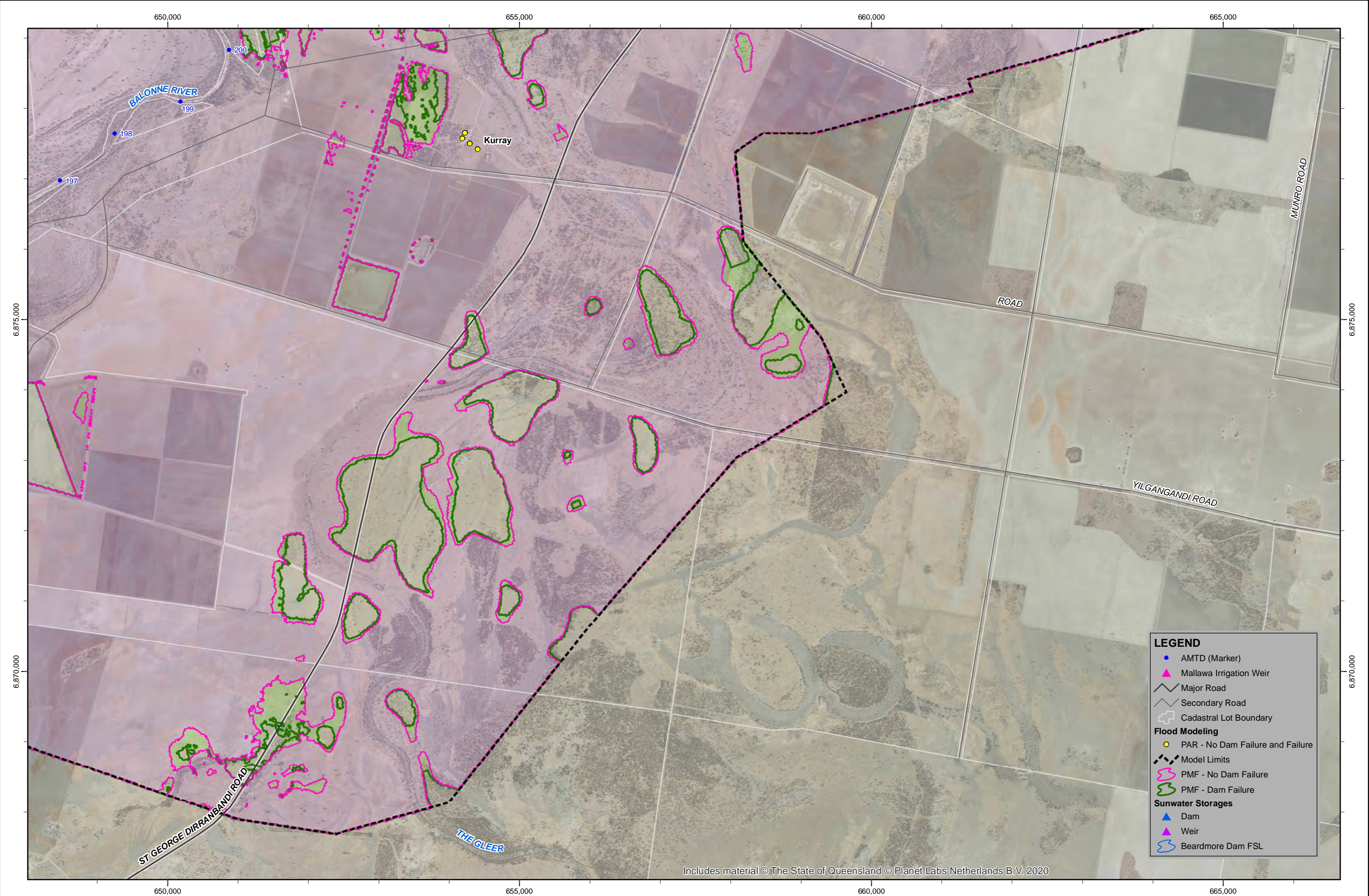
**BEARDMORE DAM
DAM BREAK ANALYSIS 2022
PROBABLE MAXIMUM FLOOD
(MONOLITH FAILURE)
INUNDATION PLAN**

| | |
|--------------------|----------|
| CONTRACT NUMBER | |
| DRAWING NUMBER | REV. |
| 256973 | A |
| SHEET 7 OF 8 | |
| DATE DECEMBER 2022 | |

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Document: S:\BW_WaterResources\GIS_Data\SW_St George\WSS\BeardmoreDam_CRA2022\Drawings\ArcMap\256973-A.mxd
Printed: Tuesday, 20/12/2022 08:56:54 AM

MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
TEL: (07) 5120 0000



Includes material © The State of Queensland © Planet Labs Netherlands B.V. 2020

Note: PMPDF inundation shown. PMF could not be included due to model limitations. Flows bypassing the dam have not been shown.

| REVISION | | | | | |
|----------|---|----------------|--|-----|-----|
| | | | | | |
| | | | | | |
| | | | | | |
| 20/12/22 | A | ISSUED FOR USE | | LH | MGH |
| DATE | | REMARKS | | CKD | PSD |

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia
(MGA2020) Zone 55.

REFERENCE DRAWINGS
256971 - Keymap

SCALES (A3 SIZE)

1:50,000

DRAWN
IDH

CHECKED
LH

APPROVED
M.G. HUGHES
20/12/2022
RPEQ: 18351

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ACN 131 034 985

BEARDMORE DAM
DAM BREAK ANALYSIS 2022
PROBABLE MAXIMUM FLOOD
(MONOLITH FAILURE)
INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER
256973

REV.
A

SHEET **8 OF 8**

DATE **DECEMBER 2022**

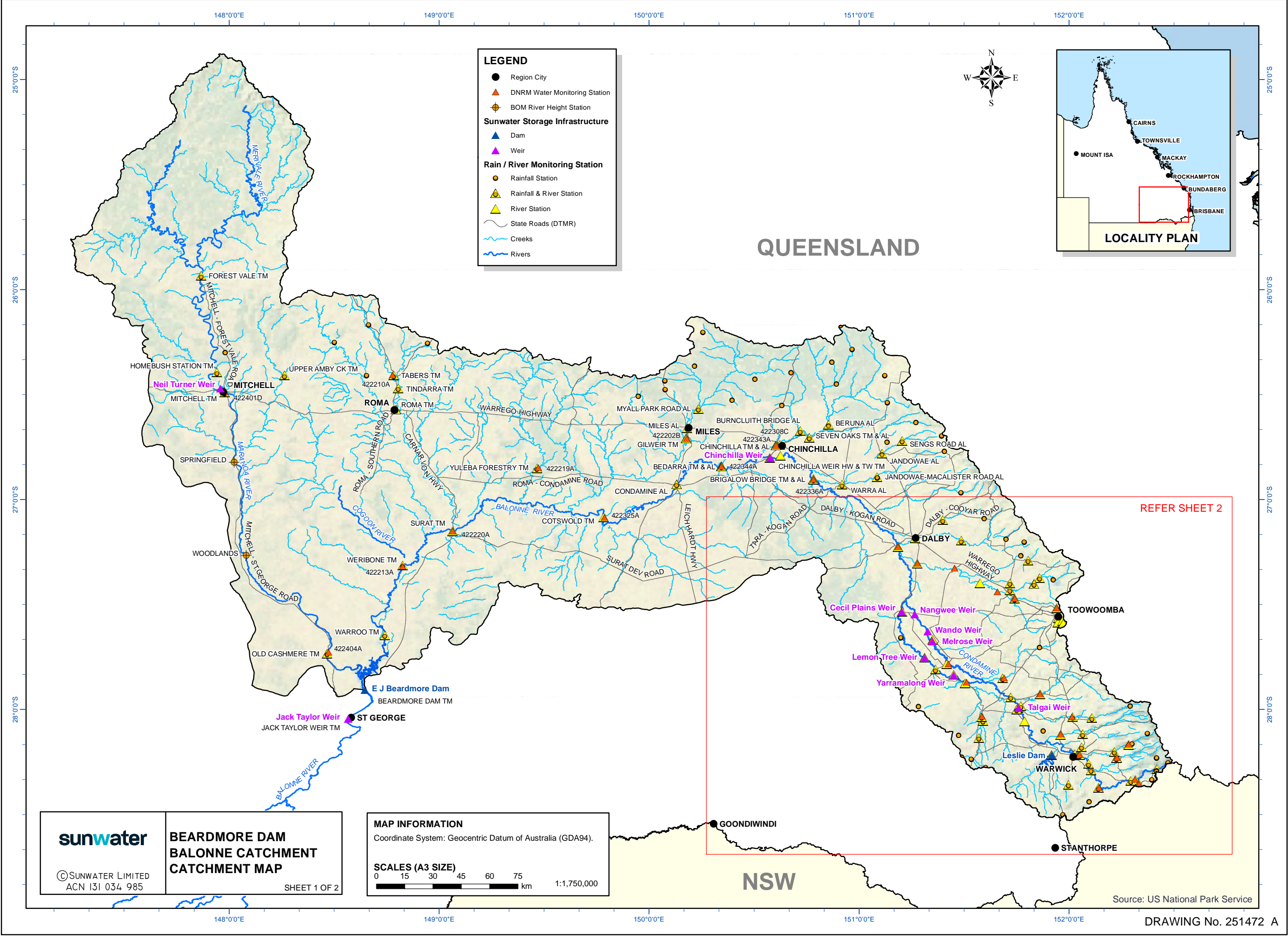
Appendix B4: Catchment maps


The following pages contain copies of the Beardmore Dam catchment area maps:

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Document: S:\BW Asset Delivery\GIS_Data\Enterprise_GIS\Water_Supply_Schemes\Upper_Condamine\Drawings\ArcMap\251472-A-Sh1 to 2.mxd
Printed: Monday, 08/07/2019 01:28:10 PM

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**BEARDMORE DAM
BALONNE CATCHMENT
CATCHMENT MAP**

SHEET 1 OF 2

MAP INFORMATION

Coordinate System: Geocentric Datum of Australia (GDA94).

SCALES (A3 SIZE)

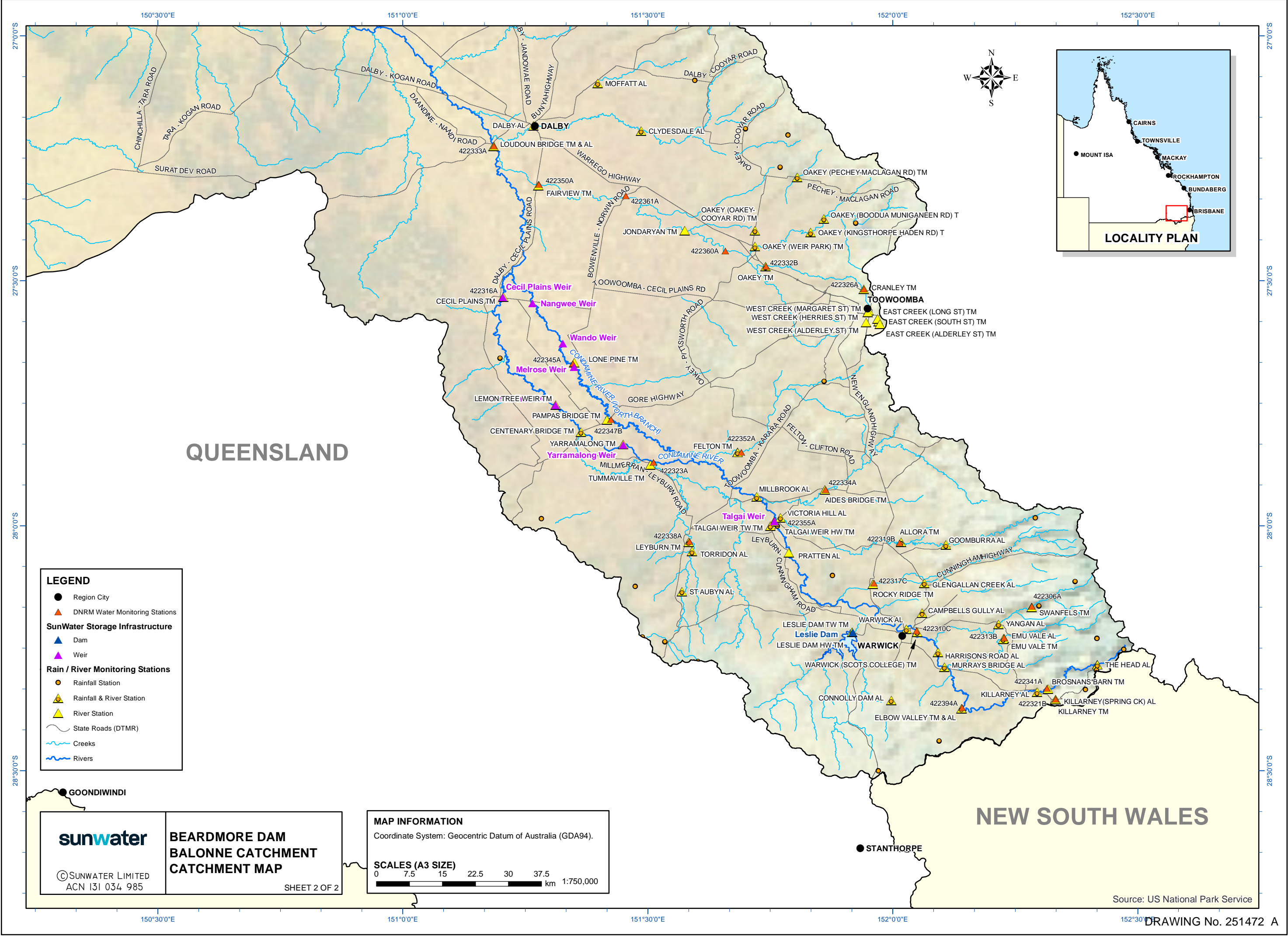
0 15 30 45 60 75 1:1,750,000

km

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Printed: Monday, 08/07/2019 01:31:18 PM

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TEL: (07) 5120 0000



LEGEND

●

Region City

▲

DNRM Water Monitoring Stations

SunWater Storage Infrastructure

▲

Dam

▲

Weir

Rain / River Monitoring Stations

●

Rainfall Station

▲

Rainfall & River Station

▲

River Station

—

State Roads (DTMR)

—

Creeks

—

Rivers

**BEARDMORE DAM
BALONNE CATCHMENT
CATCHMENT MAP**

©SUNWATER LIMITED
ACN 131 034 985

SHEET 2 OF 2

MAP INFORMATION
Coordinate System: Geocentric Datum of Australia (GDA94).

SCALES (A3 SIZE)
0 7.5 15 22.5 30 37.5
1:750,000

Source: US National Park Service

APPENDIX C Equipment and technical information

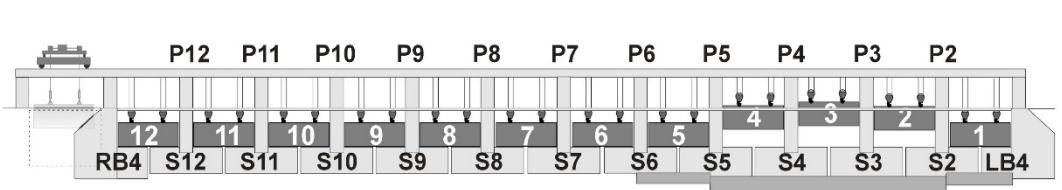
- C1 List of equipment available during an emergency
- C2 E J Beardmore Dam spillway gate discharge tables
- C3 E J Beardmore Dam storage curve
- C4 E J Beardmore Dam spillway discharge curve

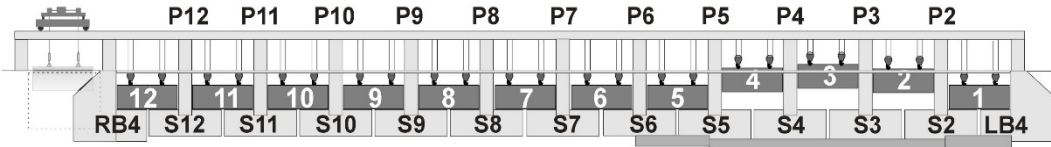
Appendix C1 has been redacted

Appendix C2: E J Beardmore Dam spillway gate discharge tables

The following tables provide gate openings and corresponding outflows for multiple gate and single gate operations.

Table C2: Sequenced gate settings and related discharge

| Gate Opening Sequence |  | | | | | | | | | | | | |
|-----------------------|--|----|----|---|---|---|---|------|------|------|------|------|--------------|
| | Gate number and gate opening in metres | | | | | | | | | | | | Flow in ML/d |
| | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 1 | | | | | | | | | | 0.12 | | | 990 |
| 2 | | | | | | | | | | 0.25 | | | 2,040 |
| 3 | | | | | | | | | 0.06 | 0.25 | 0.06 | | 3,030 |
| 4 | | | | | | | | | 0.06 | 0.36 | 0.06 | | 4,000 |
| 5 | | | | | | | | | 0.13 | 0.36 | 0.13 | | 5,060 |
| 6 | | | | | | | | | 0.15 | 0.44 | 0.15 | | 6,030 |
| 7 | | | | | | | | | 0.19 | 0.48 | 0.19 | | 6,990 |
| 8 | | | | | | | | | 0.25 | 0.49 | 0.25 | | 8,040 |
| 9 | | | | | | | | | 0.31 | 0.49 | 0.31 | | 9,010 |
| 10 | | | | | | | | | 0.33 | 0.58 | 0.33 | | 10,040 |
| 11 | | | | | | | | | 0.39 | 0.58 | 0.39 | | 11,000 |
| 12 | | | | | | | | | 0.43 | 0.63 | 0.43 | | 12,030 |
| 13 | | | | | | | | | 0.49 | 0.64 | 0.49 | | 13,060 |
| 14 | | | | | | | | | 0.49 | 0.77 | 0.49 | | 14,070 |
| 15 | | | | | | | | | 0.55 | 0.77 | 0.55 | | 15,020 |
| 16 | | | | | | | | | 0.62 | 0.76 | 0.62 | | 16,040 |
| 17 | | | | | | | | | 0.62 | 0.89 | 0.62 | | 17,050 |
| 18 | | | | | | | | | 0.67 | 0.92 | 0.67 | | 18,050 |
| 19 | | | | | | | | | 0.74 | 0.92 | 0.74 | | 19,060 |
| 20 | | | | | | | | | 0.80 | 0.92 | 0.80 | | 20,060 |
| 21 | | | | | | | | 0.12 | 0.80 | 0.92 | 0.80 | 0.12 | 22,040 |
| 22 | | | | | | | | 0.25 | 0.80 | 0.92 | 0.80 | 0.25 | 24,070 |
| 23 | | | | | | | | 0.30 | 0.80 | 0.93 | 0.80 | 0.30 | 25,030 |
| 24 | | | | | | | | 0.31 | 0.92 | 0.93 | 0.92 | 0.31 | 27,030 |
| 25 | | | | | | | | 0.31 | 0.96 | 1.25 | 0.96 | 0.31 | 30,040 |
| 26 | | | | | | | | 0.31 | 1.09 | 1.25 | 1.09 | 0.31 | 32,000 |

| Gate Opening Sequence |  spillway viewed from downstream | | | | | | | | | | | | |
|-----------------------|---|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| | Gate number and gate opening in metres | | | | | | | | | | | | Flow in ML/d |
| | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 27 | | | | | | | | 0.31 | 1.25 | 1.34 | 1.25 | 0.31 | 35,040 |
| 28 | | | | | | | | 0.31 | 1.30 | 1.51 | 1.30 | 0.31 | 37,010 |
| 29 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.31 | 1.30 | 1.61 | 1.30 | 0.31 | 40,040 |
| 30 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.50 | 1.30 | 1.61 | 1.30 | 0.31 | 45,020 |
| 31 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.56 | 1.30 | 1.61 | 1.30 | 0.31 | 50,030 |
| 32 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.62 | 1.30 | 1.61 | 1.30 | 0.31 | 55,040 |
| 33 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.62 | 1.30 | 1.61 | 1.30 | 0.31 | 60,100 |
| 34 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.63 | 1.59 | 1.70 | 1.59 | 0.31 | 65,020 |
| 35 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.79 | 1.59 | 1.70 | 1.59 | 0.50 | 70,010 |
| 36 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.96 | 1.73 | 1.80 | 1.73 | 0.63 | 75,020 |
| 37 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.96 | 1.86 | 1.98 | 1.86 | 0.88 | 80,020 |
| 38 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 1.00 | 2.00 | 2.26 | 2.00 | 1.00 | 85,040 |
| 39 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 1.00 | 2.07 | 2.36 | 2.07 | 1.00 | 90,010 |
| 40 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 1.00 | 2.07 | 2.37 | 2.07 | 1.00 | 95,060 |
| 41 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.00 | 2.07 | 2.37 | 2.07 | 1.00 | 100,010 |
| 42 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.28 | 2.21 | 2.53 | 2.21 | 1.00 | 105,010 |
| 43 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 1.28 | 2.51 | 2.71 | 2.51 | 1.00 | 110,050 |
| 44 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 1.30 | 2.51 | 2.70 | 2.51 | 1.00 | 115,040 |
| 45 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 1.41 | 2.75 | 2.89 | 2.75 | 1.00 | 120,040 |
| 46 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 1.84 | 2.85 | 3.00 | 2.85 | 1.00 | 124,990 |
| 47 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 2.13 | 2.95 | 3.00 | 2.95 | 1.25 | 130,040 |
| 48 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 2.15 | 2.95 | 3.00 | 2.95 | 1.25 | 135,030 |
| 49 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 2.50 | 3.03 | 3.30 | 3.03 | 1.25 | 140,020 |
| 50 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 2.53 | 3.03 | 3.30 | 3.03 | 1.25 | 145,060 |
| 51 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 2.56 | 3.03 | 3.30 | 3.03 | 1.25 | 150,050 |
| 52 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 2.56 | 3.39 | 3.45 | 3.39 | 1.25 | 155,010 |
| 53 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 2.56 | 3.70 | 3.76 | 3.70 | 1.25 | 160,020 |

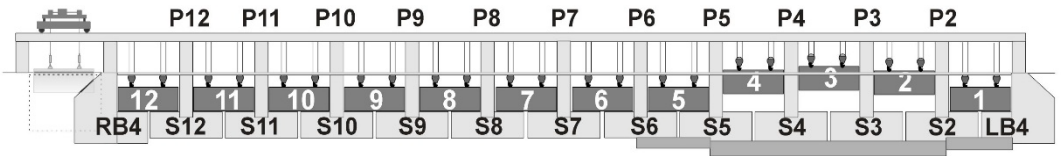
| Gate Opening Sequence |  spillway viewed from downstream | | | | | | | | | | | | |
|-----------------------|---|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| | Gate number and gate opening in metres | | | | | | | | | | | | Flow in ML/d |
| | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 54 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 2.62 | 3.70 | 3.75 | 3.70 | 1.25 | 165,080 |
| 55 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 | 2.66 | 3.70 | 3.75 | 3.70 | 1.25 | 170,040 |
| 56 | 1.25 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 2.65 | 3.70 | 3.75 | 3.70 | 1.25 | 175,010 |
| 57 | 1.25 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 2.68 | 3.70 | 3.75 | 3.70 | 1.25 | 180,040 |
| 58 | 1.25 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 3.15 | 3.70 | 3.75 | 3.70 | 1.25 | 185,040 |
| 59 | 1.25 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 3.19 | 3.70 | 3.75 | 3.70 | 1.25 | 190,020 |
| 60 | 1.25 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 3.23 | 3.70 | 3.75 | 3.70 | 1.25 | 195,000 |
| 61 | 1.25 | 1.77 | 1.77 | 1.77 | 1.77 | 1.77 | 1.77 | 3.23 | 3.70 | 3.75 | 3.70 | 1.25 | 200,040 |
| 62 | 1.25 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 3.22 | 3.70 | 3.75 | 3.70 | 1.25 | 205,030 |
| 63 | 1.25 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 3.24 | 3.70 | 3.75 | 3.70 | 1.25 | 210,050 |
| 64 | 1.25 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 3.23 | 4.03 | 4.08 | 4.03 | 1.25 | 215,020 |
| 65 | 1.50 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 3.26 | 4.13 | 4.13 | 4.13 | 1.50 | 220,040 |
| 66 | 1.50 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 2.01 | 3.66 | 4.33 | 4.33 | 4.33 | 1.50 | 225,030 |
| 67 | 1.51 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 3.65 | 4.33 | 4.33 | 4.33 | 1.51 | 230,020 |
| 68 | 1.70 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 4.10 | 4.33 | 4.33 | 4.33 | 1.70 | 235,020 |
| 69 | 1.70 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 4.43 | 4.60 | 4.60 | 4.60 | 1.70 | 240,060 |
| 70 | 1.70 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 4.61 | 4.95 | 4.95 | 4.95 | 1.70 | 245,020 |
| 71 | 1.70 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 4.61 | 5.45 | 5.45 | 5.45 | 1.70 | 250,000 |
| 72 | 1.95 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 2.13 | 5.00 | 5.45 | 5.45 | 5.45 | 1.95 | 255,020 |
| 73 | 1.95 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 5.05 | 5.45 | 5.45 | 5.45 | 1.95 | 260,010 |
| 74 | 2.10 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 5.45 | 5.45 | 5.45 | 5.45 | 1.95 | 268,270 |
| 75 | 2.25 | 2.55 | 2.55 | 2.55 | 2.55 | 2.55 | 2.55 | 5.45 | 5.45 | 5.45 | 5.45 | 2.20 | 276,730 |
| 76 | 2.50 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 5.45 | 5.45 | 5.45 | 5.45 | 2.45 | 289,360 |
| 77 | 2.75 | 3.05 | 3.05 | 3.05 | 3.05 | 3.05 | 3.05 | 5.45 | 5.45 | 5.45 | 5.45 | 2.70 | 301,570 |
| 78 | 3.00 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 | 5.45 | 5.45 | 5.45 | 5.45 | 2.95 | 313,260 |
| 79 | 3.25 | 3.55 | 3.55 | 3.55 | 3.55 | 3.55 | 3.55 | 5.45 | 5.45 | 5.45 | 5.45 | 3.25 | 324,760 |
| 80 | 3.50 | 3.80 | 3.80 | 3.80 | 3.80 | 3.80 | 3.80 | 5.45 | 5.45 | 5.45 | 5.45 | 3.50 | 335,460 |

Table C3: Full Supply Level single gate settings and related discharge in ML/d

| Gate Opening (m) | Gate Lip Level (m AHD) | Discharge (m³/s) | Discharge (ML/d) | Gate Opening (m) | Gate Lip Level (m AHD) | Discharge (m³/s) | Discharge (ML/d) |
|------------------|------------------------|------------------|------------------|------------------|------------------------|------------------|------------------|
| 0.00 | 201.02 | 0.0 | 0 | 2.75 | 203.77 | 231.4 | 19990 |
| 0.02 | 201.04 | 1.9 | 165 | 2.80 | 203.82 | 235.0 | 20300 |
| 0.04 | 201.06 | 3.8 | 330 | 2.85 | 203.87 | 238.5 | 20610 |
| 0.06 | 201.08 | 5.7 | 495 | 2.90 | 203.92 | 242.0 | 20910 |
| 0.08 | 201.10 | 7.6 | 660 | 2.95 | 203.97 | 245.5 | 21210 |
| 0.10 | 201.12 | 9.5 | 825 | 3.00 | 204.02 | 249.0 | 21510 |
| 0.15 | 201.17 | 14.2 | 1230 | 3.05 | 204.07 | 252.4 | 21810 |
| 0.20 | 201.22 | 18.9 | 1635 | 3.10 | 204.12 | 255.8 | 22100 |
| 0.25 | 201.27 | 23.6 | 2040 | 3.15 | 204.17 | 259.1 | 22390 |
| 0.30 | 201.32 | 28.3 | 2445 | 3.20 | 204.22 | 262.5 | 22680 |
| 0.35 | 201.37 | 32.9 | 2845 | 3.25 | 204.27 | 265.9 | 22970 |
| 0.40 | 201.42 | 37.6 | 3245 | 3.30 | 204.32 | 269.1 | 23250 |
| 0.45 | 201.47 | 42.2 | 3645 | 3.35 | 204.37 | 272.3 | 23530 |
| 0.50 | 201.52 | 46.8 | 4040 | 3.40 | 204.42 | 275.6 | 23810 |
| 0.55 | 201.57 | 51.3 | 4435 | 3.45 | 204.47 | 278.8 | 24090 |
| 0.60 | 201.62 | 55.9 | 4830 | 3.50 | 204.52 | 281.9 | 24360 |
| 0.65 | 201.67 | 60.4 | 5220 | 3.55 | 204.57 | 285.1 | 24630 |
| 0.70 | 201.72 | 64.9 | 5610 | 3.60 | 204.62 | 288.2 | 24900 |
| 0.75 | 201.77 | 69.4 | 5995 | 3.65 | 204.67 | 291.3 | 25170 |
| 0.80 | 201.82 | 73.8 | 6380 | 3.70 | 204.72 | 294.3 | 25430 |
| 0.85 | 201.87 | 78.3 | 6765 | 3.75 | 204.77 | 297.3 | 25690 |
| 0.90 | 201.92 | 82.8 | 7150 | 3.80 | 204.82 | 300.3 | 25950 |
| 0.95 | 201.97 | 87.2 | 7530 | 3.85 | 204.87 | 303.4 | 26210 |
| 1.00 | 202.02 | 91.6 | 7910 | 3.90 | 204.92 | 306.3 | 26460 |
| 1.05 | 202.07 | 95.9 | 8285 | 3.95 | 204.97 | 309.1 | 26710 |
| 1.10 | 202.12 | 100.2 | 8660 | 4.00 | 205.02 | 312.0 | 26960 |
| 1.15 | 202.17 | 104.6 | 9035 | 4.05 | 205.07 | 314.9 | 27210 |
| 1.20 | 202.22 | 108.9 | 9405 | 4.10 | 205.12 | 317.7 | 27450 |
| 1.25 | 202.27 | 113.1 | 9775 | 4.15 | 205.17 | 320.5 | 27690 |
| 1.30 | 202.32 | 117.4 | 10145 | 4.20 | 205.22 | 323.3 | 27930 |
| 1.35 | 202.37 | 121.7 | 10515 | 4.25 | 205.27 | 325.9 | 28160 |
| 1.40 | 202.42 | 125.9 | 10875 | 4.30 | 205.32 | 328.6 | 28390 |
| 1.45 | 202.47 | 130.0 | 11235 | 4.35 | 205.37 | 331.3 | 28620 |
| 1.50 | 202.52 | 134.2 | 11595 | 4.40 | 205.42 | 333.8 | 28840 |
| 1.55 | 202.57 | 138.4 | 11955 | 4.45 | 205.47 | 336.3 | 29060 |
| 1.60 | 202.62 | 142.5 | 12315 | 4.50 | 205.52 | 338.9 | 29280 |

| Gate Opening (m) | Gate Lip Level (m AHD) | Discharge (m ³ /s) | Discharge (ML/d) | Gate Opening (m) | Gate Lip Level (m AHD) | Discharge (m ³ /s) | Discharge (ML/d) |
|------------------|------------------------|-------------------------------|------------------|------------------|------------------------|-------------------------------|------------------|
| 1.65 | 202.67 | 146.7 | 12675 | 4.55 | 205.57 | 341.3 | 29490 |
| 1.70 | 202.72 | 150.8 | 13025 | 4.60 | 205.62 | 343.8 | 29700 |
| 1.75 | 202.77 | 154.8 | 13375 | 4.65 | 205.67 | 346.2 | 29910 |
| 1.80 | 202.82 | 158.9 | 13725 | 4.70 | 205.72 | 348.6 | 30120 |
| 1.85 | 202.87 | 162.9 | 14075 | 4.75 | 205.77 | 350.9 | 30320 |
| 1.90 | 202.92 | 167.0 | 14425 | 4.80 | 205.82 | 353.2 | 30520 |
| 1.95 | 202.97 | 170.9 | 14765 | 4.85 | 205.87 | 355.6 | 30720 |
| 2.00 | 203.02 | 174.8 | 15105 | 4.90 | 205.92 | 357.8 | 30910 |
| 2.05 | 203.07 | 178.8 | 15445 | 4.95 | 205.97 | 360.0 | 31100 |
| 2.10 | 203.12 | 182.7 | 15785 | 5.00 | 206.02 | 362.0 | 31280 |
| 2.15 | 203.17 | 186.6 | 16125 | 5.05 | 206.07 | 364.1 | 31460 |
| 2.20 | 203.22 | 190.5 | 16460 | 5.10 | 206.12 | 366.2 | 31640 |
| 2.25 | 203.27 | 194.3 | 16790 | 5.15 | 206.17 | 368.2 | 31810 |
| 2.30 | 203.32 | 198.1 | 17120 | 5.20 | 206.22 | 370.1 | 31980 |
| 2.35 | 203.37 | 202.0 | 17450 | 5.25 | 206.27 | 372.0 | 32140 |
| 2.40 | 203.42 | 205.8 | 17780 | 5.30 | 206.32 | 373.8 | 32300 |
| 2.45 | 203.47 | 209.5 | 18100 | 5.35 | 206.37 | 375.7 | 32460 |
| 2.50 | 203.52 | 213.2 | 18420 | 5.40 | 206.42 | 377.4 | 32610 |
| 2.55 | 203.57 | 216.9 | 18740 | 5.45 | 206.47 | 379.2 | 32760 |
| 2.60 | 203.62 | 220.6 | 19060 | 5.50 | 206.52 | 380.8 | 32900 |
| 2.65 | 203.67 | 224.2 | 19370 | 5.55 | 206.57 | 382.4 | 33040 |
| 2.70 | 203.72 | 227.8 | 19680 | 5.60 | 206.62 | 383.9 | 33170 |

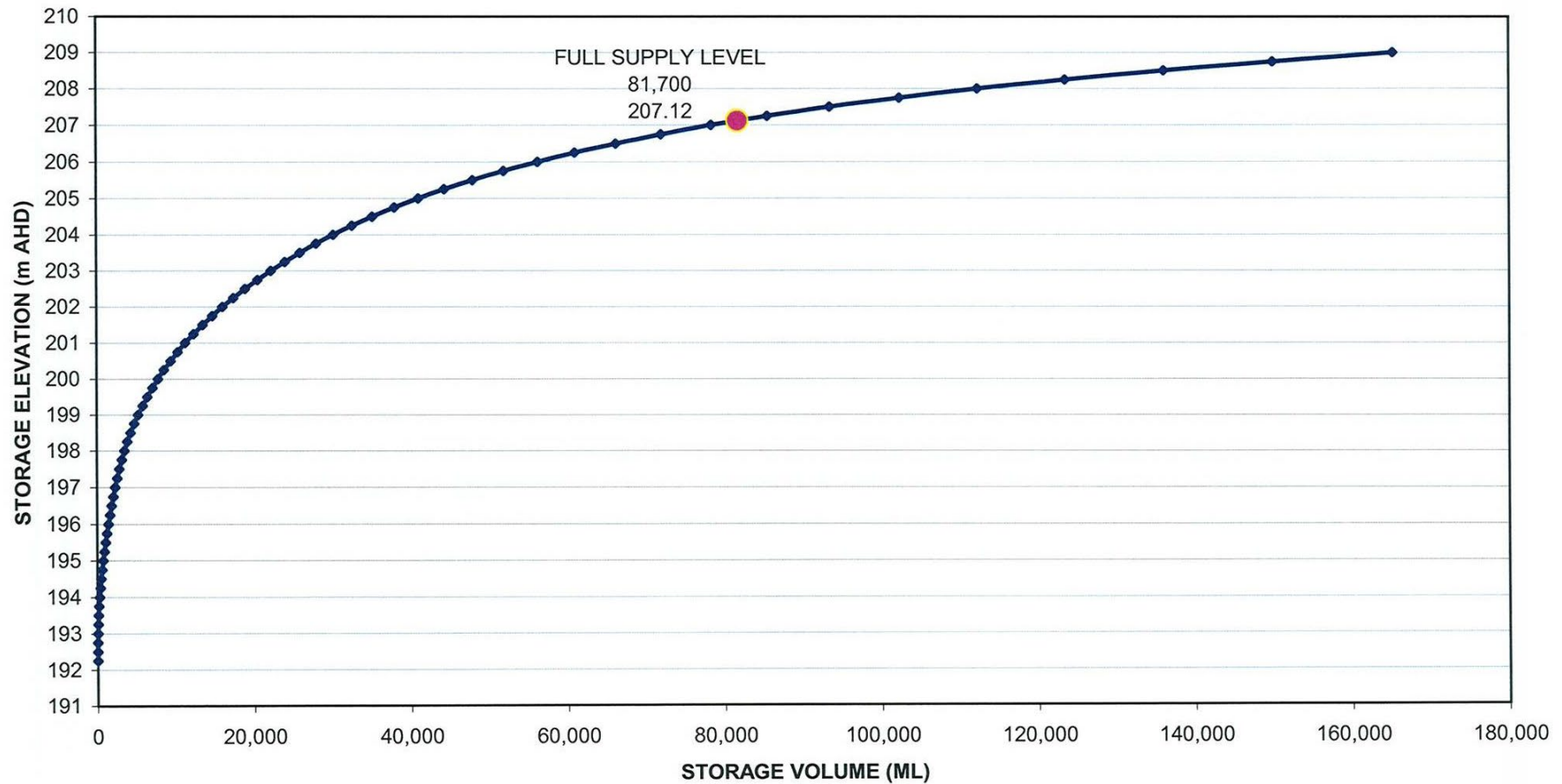
Table C4: Headwater elevation level single gate settings and related discharge in ML/d

| Headwater EL (m AHD) | Gate Bottom Lip Level (m AHD) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 201.07 | 201.12 | 201.22 | 201.32 | 201.42 | 201.52 | 201.62 | 201.82 | 202.02 | 202.22 | 202.42 | 202.62 | 202.82 | 203.02 | 203.22 | 203.42 | 203.62 | 203.82 | 204.02 | 204.22 | 204.42 | 204.62 | 204.82 | 205.02 | 205.52 | 206.02 | 206.52 | 207.02 | 207.52 | 208.02 | 209.02 | 210.02 |
| | Gate Opening (m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.05 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 1 | 1.2 | 1.4 | 1.6 | 1.8 | 2 | 2.2 | 2.4 | 2.6 | 2.8 | 3 | 3.2 | 3.4 | 3.6 | 3.8 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | 8 | 9 |
| 201.50 | 110 | 220 | 410 | 580 | 710 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 | 790 |
| 202.00 | 160 | 320 | 630 | 910 | 1180 | 1430 | 1650 | 2040 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 | 2310 |
| 202.50 | 200 | 400 | 780 | 1160 | 1510 | 1850 | 2180 | 2780 | 3310 | 3760 | 4130 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 | 4280 |
| 203.00 | 230 | 470 | 920 | 1360 | 1780 | 2200 | 2600 | 3360 | 4070 | 4710 | 5300 | 5810 | 6250 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 | 6620 |
| 203.50 | 260 | 520 | 1030 | 1530 | 2020 | 2490 | 2960 | 3850 | 4700 | 5500 | 6250 | 6930 | 7570 | 8140 | 8650 | 9090 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 | 9280 |
| 204.00 | 290 | 570 | 1130 | 1690 | 2230 | 2760 | 3280 | 4290 | 5260 | 6190 | 7070 | 7900 | 8680 | 9410 | 10090 | 10720 | 11280 | 11770 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 | 12230 |
| 204.50 | 310 | 620 | 1230 | 1830 | 2420 | 3000 | 3580 | 4690 | 5770 | 6810 | 7810 | 8750 | 9670 | 10530 | 11360 | 12130 | 12840 | 13500 | 14110 | 14660 | 15140 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 | 15430 |
| 205.00 | 330 | 660 | 1310 | 1960 | 2600 | 3230 | 3850 | 5060 | 6230 | 7370 | 8480 | 9540 | 10560 | 11550 | 12490 | 13390 | 14240 | 15040 | 15790 | 16490 | 17140 | 17730 | 18260 | 18870 | 18870 | 18870 | 18870 | 18870 | 18870 | 18870 | 18870 | 18870 |
| 205.50 | 350 | 710 | 1400 | 2090 | 2760 | 3440 | 4100 | 5400 | 6670 | 7900 | 9100 | 10260 | 11390 | 12480 | 13530 | 14550 | 15510 | 16430 | 17310 | 18140 | 18930 | 19660 | 20340 | 20970 | 22540 | 22540 | 22540 | 22540 | 22540 | 22540 | 22540 | 22540 |
| 206.00 | 370 | 740 | 1470 | 2200 | 2920 | 3630 | 4340 | 5720 | 7070 | 8390 | 9690 | 10930 | 12160 | 13350 | 14500 | 15620 | 16690 | 17720 | 18710 | 19660 | 20560 | 21410 | 22220 | 22980 | 24660 | 26410 | 26410 | 26410 | 26410 | 26410 | 26410 | 26410 |
| 206.50 | 390 | 780 | 1550 | 2310 | 3070 | 3820 | 4560 | 6020 | 7460 | 8860 | 10240 | 11570 | 12880 | 14160 | 15400 | 16620 | 17790 | 18910 | 20010 | 21060 | 22070 | 23040 | 23960 | 24840 | 26820 | 28460 | 30490 | 30490 | 30490 | 30490 | 30490 | 30490 |
| 207.00 | 410 | 820 | 1620 | 2420 | 3210 | 4000 | 4780 | 6310 | 7820 | 9300 | 10760 | 12170 | 13560 | 14930 | 16260 | 17560 | 18820 | 20040 | 21230 | 22380 | 23480 | 24550 | 25580 | 26560 | 28820 | 30750 | 32310 | 34760 | 34760 | 34760 | 34760 | 34760 |
| 207.05 | 410 | 820 | 1630 | 2430 | 3230 | 4020 | 4800 | 6340 | 7860 | 9350 | 10810 | 12230 | 13630 | 15000 | 16340 | 17650 | 18920 | 20150 | 21350 | 22500 | 23620 | 24700 | 25730 | 26730 | 29010 | 30970 | 32550 | 34050 | 35190 | 35190 | 35190 | 35190 |
| 207.10 | 410 | 820 | 1630 | 2440 | 3240 | 4030 | 4820 | 6370 | 7890 | 9390 | 10860 | 12290 | 13700 | 15080 | 16430 | 17740 | 19020 | 20260 | 21460 | 22630 | 23760 | 24840 | 25890 | 26890 | 29200 | 31190 | 32800 | 34330 | 35630 | 35630 | 35630 | 35630 |
| 207.12 | 410 | 820 | 1630 | 2450 | 3250 | 4040 | 4830 | 6380 | 7910 | 9410 | 10880 | 12310 | 13720 | 15110 | 16460 | 17780 | 19060 | 20300 | 21510 | 22680 | 23810 | 24900 | 25950 | 26960 | 29280 | 31280 | 32900 | 34450 | 35810 | 35810 | 35810 | 35810 |
| 207.15 | 410 | 830 | 1640 | 2450 | 3250 | 4050 | 4840 | 6400 | 7930 | 9430 | 10910 | 12350 | 13760 | 15150 | 16510 | 17830 | 19120 | 20360 | 21580 | 22760 | 23890 | 24990 | 26040 | 27060 | 29390 | 31410 | 33050 | 34610 | 36070 | 36070 | 36070 | 36070 |
| 207.20 | 420 | 830 | 1650 | 2460 | 3270 | 4070 | 4860 | 6430 | 7960 | 9470 | 10960 | 12400 | 13830 | 15220 | 16590 | 17920 | 19220 | 20470 | 21700 | 22880 | 24030 | 25130 | 26200 | 27220 | 29580 | 31630 | 33290 | 34890 | 36520 | 36520 | 36520 | 36520 |
| 207.50 | 430 | 850 | 1690 | 2520 | 3350 | 4170 | 4990 | 6590 | 8170 | 9730 | 11260 | 12750 | 14220 | 15660 | 17070 | 18460 | 19800 | 21100 | 22380 | 23620 | 24820 | 25980 | 27100 | 28180 | 30690 | 32890 | 34720 | 36500 | 39210 | 39210 | 39210 | 39210 |
| 208.00 | 440 | 880 | 1750 | 2620 | 3480 | 4330 | 5180 | 6860 | 8510 | 10130 | 11730 | 13290 | 14840 | 16360 | 17850 | 19310 | 20730 | 22120 | 23480 | 24800 | 26080 | 27330 | 28540 | 29710 | 32450 | 34890 | 36970 | 39030 | 40930 | 43830 | 43830 | 43830 |
| 208.50 | 460 | 910 | 1810 | 2710 | 3600 | 4490 | 5370 | 7110 | 8830 | 10520 | 12190 | 13820 | 15440 | 17030 | 18590 | 20130 | 21630 | 23090 | 24530 | 25930 | 27290 | 28620 | 29910 | 31170 | 34130 | 36790 | 39090 | 41410 | 43590 | 45530 | 48620 | 48620 |
| 209.00 | 470 | 940 | 1870 | 2800 | 3730 | 4640 | 5560 | 7360 | 9140 | 10900 | 12630 | 14330 | 16010 | 17670 | 19310 | 20910 | 22480 | 24020 | 25530 | 27010 | 28450 | 29850 | 31220 | 32560 | 35720 | 38590 | 41110 | 43660 | 46090 | 48310 | 53580 | 53580 |
| 209.50 | 490 | 970 | 1930 | 2890 | 3840 | 4790 | 5740 | 7600 | 9440 | 11260 | 13060 | 14820 | 16570 | 18300 | 20000 | 21670 | 23310 | 24920 | 26500 | 28040 | 29560 | 31040 | 32480 | 33890 | 37250 | 40310 | 43030 | 45800 | 48470 | 50930 | 55210 | 58690 |
| 210.00 | 500 | 1000 | 1990 | 2980 | 3960 | 4940 | 5910 | 7830 | 9730 | 11610 | 13470 | 15300 | 17110 | 18900 | 20660 | 22400 | 24110 | 25780 | 27430 | 29040 | 30630 | 32180 | 33690 | 35180 | 38710 | 41970 | 44870 | 47840 | 50730 | 53430 | 58210 | 63960 |

Appendix C3: E J Beardmore Dam storage curve

Figure C1: E J Beardmore Dam storage curve

EJ Beardmore Dam
SWIMS R1 (SAP) Entry List No. 1687



APPENDIX D Interaction with local government and district groups

To be populated when EAP next completes a substantive review

Annexe — E J Beardmore Dam SMS Messages

Advice

Stay informed



Watch and Act

Prepare to leave



Emergency

Leave immediately

To be issued in consultation with council



SMS

ADVICE from Sunwater. EJ Beardmore Dam is spilling excess water into the Balonne River. **People downstream of Beardmore Dam** should STAY INFORMED. Water flows from Beardmore Dam **expected to remain within beds and banks of river / may contribute to widespread/ localised/ overland flooding**. Expect increased river flows in **6-12 hours / later today/ overnight/ tomorrow**. There is no danger yet. Call Triple Zero (000) if your life is in danger. Call the SES on 132 500 for flood help. Get full warnings and what you should do at <https://bit.ly/RecandSafety>

FLOOD WATCH AND ACT from Sunwater. Excess water spilling from EJ Beardmore Dam into the Balonne River has increased significantly. Water flows from Beardmore Dam **may contribute to dangerous/widespread flooding downstream**. Expect increased river flows in **6-12 hours / later today/ overnight/ tomorrow**. People downstream of Beardmore Dam must PREPARE TO LEAVE in case the flood gets worse. Tell others. Call Triple Zero (000) if your life is in danger. Call the SES on 132500 for flood help. Get full warnings and what you should do at <https://bit.ly/RecandSafety>

FLOOD EMERGENCY WARNING from Sunwater: **People downstream of EJ Beardmore Dam including St George** must LEAVE IMMEDIATELY. Beardmore Dam **possible failure/is failing**. Major flooding is happening now. Your life is at risk. Go now to St George Showground. Get full warnings and what you should do at **Balonne Shire Council** <http://emergency.balonne.qld.gov.au/>

Annexe — EJ Beardmore AWS warning levels mapping

| EAP flood activation trigger | EAP trigger summary | Current EAP message (SMS) | AWS-aligned message (SMS) | AWS level |
|------------------------------|---|--|--|-----------|
| ALERT | Storage at EL 207.02m and rising (0.1m below FSL) | SUNWATER ADVICE: EJ Beardmore Dam; spillway discharge likely due to rain in the catchment. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| LEAN FORWARD | Storage above FSL 207.12 m | SUNWATER NOTIFICATION: EJ Beardmore dam now spilling excess water due to rain in the catchment. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | ADVICE from Sunwater. Beardmore Dam is releasing excess water into the Balonne River. People downstream of Beardmore Dam should STAY INFORMED and MONITOR CONDITIONS. Water flows from Beardmore Dam expected to remain within beds and banks of river / may contribute to widespread/ localised/ overland flooding . Expect increased river flows in 6-12 hours / later today/ overnight/ tomorrow. There is no immediate danger. More information here: bit.ly/RecandSafety | ADVICE |
| | Gate Sequence 5 - Discharge approx. 5,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 5,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 10 - Discharge approx. 10,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 10,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 23 - Discharge approx. 25,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 25,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 29 - Discharge approx. 40,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 40,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 34 - Discharge approx. 65,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 65,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 37 - Discharge approx. 80,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 80,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| | Gate Sequence 41 - Discharge approx. 100,000 ML/d | SUNWATER NOTIFICATION: EJ Beardmore dam now discharging approx. 100,000ML/d. All persons who have pumps near the river are advised to monitor the height of the river and consider removal. | | |

| | | | | |
|---|--|---|--|---------------|
| | | Monitor weather and local conditions. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | |
| STAND UP 1 | Storage above EL 207.87 m | SUNWATER EMERGENCY NOTIFICATION: EJ Beardmore Dam has increased spilling excess water due to continuing rain in the catchment. Review your emergency plan and stay alert for further advice. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | FLOOD WATCH AND ACT from Sunwater. Excess water releasing from Beardmore Dam into the Balonne River has increased significantly. Water flows from Beardmore Dam may contribute to dangerous/widespread flooding downstream. Expect increased river flows in 6-12 hours / later today/ overnight/ tomorrow . People downstream of Beardmore Dam must PREPARE TO LEAVE in case the flood gets worse. Call Triple Zero (000) if your life is in danger. Call the SES on 132500 for flood help. More information here: bit.ly/RecandSafety | WATCH AND ACT |
| STAND UP 2 – Greater than flood of record | Storage above EL 208.32 m (Flood of record—Feb 2012) | SUNWATER EMERGENCY NOTIFICATION: EJ Beardmore Dam continues to spill due to continuing rain in the catchment. Storage level now greater than Flood of record. Review your emergency plan and stay alert for further advice. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | FLOOD EMERGENCY WARNING from Sunwater: People downstream of EJ Beardmore Dam including St George must LEAVE IMMEDIATELY. Beardmore Dam possible failure/is failing . Major flooding is happening now. Your life is at risk. Go now to St George Showground. More information here: Balonne Shire Council emergency.balonne.qld.gov.au/ | EMERGENCY |
| STAND UP 3 | Storage above EL 208.65 m (level of right bank bypass) | IMMINENT FAILURE OF BEARDMORE DAM. TAKE ACTION TO PROTECT LIFE & LEAVE NOW. ST GEORGE IS AT RISK. INFO ON ABC RADIO (711 AM). BOLLON AND MUNGINDI ARE SAFE. | | |
| STAND DOWN | Storage at FSL 207.12 m and falling, OR FSL and no forecast rainfall | SUNWATER NOTIFICATION: EJ Beardmore Dam; dam no longer spilling. For dam level updates visit our website https://bit.ly/BeardmoreStorageLevel | | ADVICE |