EMERGENCY ACTION PLAN — BJELKE-PETERSEN DAM (ID 219)

ISSUE: 10.0 —April 2024 **Expiry:** 1 October 2027

Prepared by **Sunwater Limited**

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Approved by the delegate of the Chief Executive, Department of Local Government, Water and Volunteers until 1 October 2027.

Emergency activation quick reference – Dam Hazards

The Emergency Action Plan (EAP) for Bjelke-Petersen 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. **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			
	Alert	Lean Forward	Stand Up	Stand Down
	Activation triggers for dam hazards			
Flood operations **See section 5**	• EL 307.20 m and rising (0.1 m below FSL)	• Storage above FSL 307.30 m	• Storage above EL 310.20 m	• Storage level EL 307.40 m and falling with no forecast increase in EL
Piping: embankment, foundation, or abutments **See section 6**	• Increasing leakage through an embankment, the foundations, or abutments	• Increasing leakage through an embankment, the foundations, or abutments with cloudy water	• Piping condition has been established	• Risk assessment has determined that failure risk has reduced
Earthquake **See section 7**	• Earthquake reported or felt in the area, AND • Intensity less than 5 Modified Mercalli (MM)	• Earthquake reported or felt in the area, AND • Intensity greater than or equal to 5MM, OR • Intensity less than 5 MM and change detected during surveillance inspection	• Earthquake reported or felt in the area, AND • A possible failure path has been identified	• Risk assessment has determined that failure risk has reduced
Terrorist threat/ activity or high energy impact **See section 8**	• Not applicable	• Not applicable	• 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, and • sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced

CONTINUED NEXT PAGE: EMERGENCY ACTIVATION QUICK REFERENCE

Emergency activation quick reference – Other Emergency Situations

The EAP for Bjelke-Petersen 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 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 to activate the EAP.**

Table 1 (continued): Emergency activation quick reference.

Other Emergency Situations and section numbers	Activation level		
	Communications Failure – Dam Site (DDO)	Communications Failure – Local Area (LEC/ORR)	Communications Failure – Brisbane (IC/DSTDM)
	Site managed (DDO – becomes LEC)	Brisbane managed by IC	Locally managed by LEC
Comms Failure **See section 9**	• Unable to communicate to or from dam site	• Unable to communicate to or from local area	• Unable to communicate to or from Sunwater Brisbane

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Document control

Authorisation of document

Name	Position/role	Signature	Date
[redacted]	EAP Program Lead — Prepared for submission	[redacted]	15/11/2024
[redacted]	Principal Engineer – Dam Safety Compliance – Approved for submission	[redacted]	15/11/2024
[redacted]	GM Asset Integrity – Approved for submission	[redacted]	25/11/2024
[redacted]	EGM – Engineering and Water Resources (or delegate) — Dam Owner Authorising Officer	[redacted]	26/11/2024

Document revision history

Version	Date	Prepared By	Reason for Change	Reference No.
2	May 2008		Significant changes of Bjelke-Petersen Dam Emergency Action Plan to reflect Sunwater Management Structure and other minor changes.	HB # 711932
3	October 2011		Significant changes to all sections of Bjelke-Petersen Dam Emergency Action Plan to reflect current Sunwater Management structure and other changes.	HB # 1060254
3C	September 2016		Amendments due to new legislative requirements.	HB # 1060254
4	August 2016		New Emergency Action Plan developed at expiry of 3E approval. Issued for consultation with Relevant Disaster Management Groups.	HB # 1880976
5	October 2017		New Emergency Action Plan with minor amendments including contact list updates.	HB # 2090797
6	June 2018		Revised and reviewed Emergency Action Plan 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 (Other Emergency Situations). LDMG3, LDMG4 and DDMG2 were removed after consultation and agreement, as they were determined not to be affected by a dam hazard.	HB # 2273053
7	December 2018		Amended contacts and associated sections, e.g. Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes.	HB # 2367459
7.1	September 2019		Amended contacts and associated sections, e.g. Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes.	HB # 2457503
7.2	September 2020		Amended contacts and associated sections, e.g. Organisation chart & Controlled Copy Holders list. Minor error corrections and other non-substantive changes.	HB # 2570596
7.3	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 (2.9) and simplifying FODM role in Activation triggers (5.2.1) including removing para 5.2.2.	HB # 2652573
7.4	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 # 2722776
8.0	January 2023		Inclusion of Gympie and North Burnett councils. Updated threat direction polygon and amended EA messaging to comply with AWS requirements in Appendix A. Inundation maps and downstream notification map updated in Appendix B. Discharge Curve updated in Appendix C. Fatigue management added in section 2.5. PAR updated per 2022 CRA. Emergency action tables updated through sections 5 to 9. Minor error corrections and other non-substantive changes.	eDOCS # 2743851

Version	Date	Prepared By	Reason for Change	Reference No.
9.0	August 2023		Addition of cross-reference links Addition of 2 new Councils (various places in body text). Format troubleshooting and general proofreading. Updated all reference to SMS messaging in action tables to read 'Liaise with Sunwater customer support and communications to send appropriate messaging via SMS. Schedule of Matters addressed throughout document. Annexe added for AWS Messaging	eDOCS #2804446
10.0	April 2024		Full review pending expiry	eDOCS #2840920

Controlled document distribution list

Copy no.	Position	Location
1	Storage Supervisor	Sunwater, Bjelke-Petersen Dam
2	General Manager, Burnett & Lower Mary	Sunwater, Bundaberg
3	Emergency Action Plan Lead	Sunwater, Brisbane
4	Local Disaster Coordinator—Local Disaster Management Group (LDMG 1)	South Burnett Regional Council, Kingaroy
5	Local Disaster Coordinator (CEO)—Local Disaster Management Group (LDMG 2)	Cherbourg Aboriginal Shire Council, Cherbourg
6	Local Disaster Coordinator—Local Disaster Management Group (LDMG 4)	North Burnett Regional Council, Gayndah
Notes: Communication information for each 'Controlled Copy Holder' is attached in Appendix A		

Electronic document distribution list

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Position	Location
Local Disaster Coordinator—Local Disaster Management Group (LDMG 3)	Gympie Regional Council, Gympie
Executive Officer—Gympie DDMG	Police, Gympie
Executive Officer— Bundaberg DDMG	Police, Bundaberg
Emergency Management Coordinator	Queensland Police Service
Officer in Charge—Murgon Police	Police, Murgon
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 — Current 08 March 2022	https://www.legislation.qld.gov.au/view/whole/pdf/inforce/current/act-2008-034
B	Emergency action plan for referable dam guideline (RDMW 2023)	https://www.dnrme.qld.gov.au/__data/assets/pdf_file/0018/84015/eap-guideline.pdf
C	Queensland State Disaster Management Plan 2023 (Queensland's Disaster Management Committee)	Interim-2023-QSDMP-V1.2.pdf (disaster.qld.gov.au)
D	Professional Engineers Act 2002 (RPEQ) (September 2013)	https://www.legislation.qld.gov.au/view/pdf/inforce/2013-09-23/act-2002-054
E	Queensland Emergency Alert Manual – M.1.174 (February 2022)	M.1.174 Queensland Emergency Alert Manual (disaster.qld.gov.au)
F	Sunwater website — Emergency Action Plans, Flood Maps and Dam Emergency Sirens	https://www.sunwater.com.au/community/preparing-for-weather-events/emergency-management/
G	Sunwater website — Emergency Notification Service	https://www.sunwater.com.au/community/preparing-for-weather-events/stay-informed/emergency-notification-service/
H	Sunwater (internal) Standing Operating Procedure (SOP) 12 – Dam Logbooks	SOP12 – Dam Logbooks
I	Sunwater (internal) Bjelke-Petersen Dam Comprehensive Risk Assessment (March 2022)	eDOCS #2720037
J	Sunwater (internal) Bjelke-Petersen Dam Operation and Maintenance Manual	Bjelke-Petersen_Dam_O&M_Manual
K	Sunwater (internal) Bjelke-Petersen Dam Safety Condition Schedule	eDOCS #2742292
L	Queensland Disaster Management Guidelines	QLD-Disaster-Management-Guideline.pdf
M	Queensland Rainfall and River Conditions (Flood Warning)	Queensland Rainfall and River Conditions (bom.gov.au)
N	Emergency Alert Protocol	eDOCS # 15-001003/001
O	Sunwater (internal) Fatigue Management Procedure WHS42	Fatigue Management Procedure

1.2 Abbreviations and acronyms

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AMTD	Adopted Mean Thread Distance
ANCOLD	Australian National Committee on Large Dams
AWS	Australian Warning System
BOM	Bureau of Meteorology
CED	Chief Engineer Dams
CEO	Chief Executive Officer
CRA	Comprehensive Risk Assessment
CTG	Counter Terrorism Group
D/S	Downstream
DCF	Dam Crest Flood
DCL	Dam Crest Level
DDC	District Disaster Coordinator
DDMG	District Disaster Management Group
DDMP	District Disaster Management Plan
DDO	Dam Duty Officer
DDS	Director Dam Safety
DSR	Dam Safety Regulator
DSSC	Dam Safety Surveillance Coordinator
DSTDM	Dam Safety Technical Decision Maker
EAP	Emergency Action Plan
EA	Emergency Alert
EER	Emergency Event Report
EGMO	Executive General Manager Operations
EGME&WR	Executive General Manager Engineering & Water Resources
EL	Elevation Level
FCL	Fixed Crest Level
FODM	Flood Operations Decision Maker
FSL	Full Supply Level
GM	General Manager
IC	Incident Coordinator
IFHC	Incremental Flood Hazard Category
IGEM	Inspector-General Emergency Management
LB	Left Bank
LDC	Local Disaster Coordinator
LDMG	Local Disaster Management Group
LDMP	Local Disaster Management Plan
LEC	Local Event Coordinator
MAP	Manager Asset Planning
Max. OL	Maximum Operating Level
ME	Manager Environment
MM	Modified Mercalli
O&M	Operation & Maintenance
OB	Observation Bore
OC	Operations Centre
OCDO	Operations Centre Duty Officer
OM	Operator Maintainer
OMGR	Operations Manager
OS	Operations Supervisor
ORR	Owner's Regional Representative
PAR	Population at Risk
PDSE	Principal Dam Safety Engineer
PFRM	Predictive Flood Routing Model
PLL	Probable Loss of Life
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PMPF	Probable Maximum Precipitation Flood
PWRE	Principal Water Resources Engineer
QDMC	Queensland Disaster Management Committee
QPS	Queensland Police Service
RB	Right Bank
RC	Regional Council
RCC	Roller Compacted Concrete
RDMW	Department of Regional Development, Manufacturing and Water
ROC	Regional Operations Centre
RPEQ	Registered Professional Engineer of Queensland
RSL	Reduced Supply Level
SCED	Senior Civil Engineer Dams
SCTN	Security and Counter Terrorism Network
SDCC	State Disaster Coordination Centre
SDF	Sunny Day Failure
SDTE	Senior Dam Technical Engineer
SES	State Emergency Service
SMS	Short Message Service
SMT	Sunwater Media Team
SO	Standby Operator
SOP	Standing Operating Procedure
SRT	Strategic Response Team
SS	Storage Supervisor
SWL	Storage Water Level
SWRE	Senior Water Resources Engineer
U/S	Upstream
WHS	Workplace Health & Safety
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 *Water Supply (Safety and Reliability) Act 2008 (Qld) – Amended*	
Australian Warning System	A national approach to information and warnings during emergencies like bushfire, flood, storm, extreme heat, and severe weather.
Dam hazard	Means a reasonably foreseeable situation or condition that may: • 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 *dam hazard* if: • persons or property may be harmed because of the event, AND • a coordinated response, involving 2 or more of the following relevant entities, is unlikely to be required; each local group and district group for the EAP, each local government whose area may be affected, the Chief Executive, another entity the owner of the dam considers appropriate, AND • the event is not an emergency event.
Disaster management plan	Of a *district group* or local government, means the group's 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 *dam hazard*.

Emergency event	Means an event arising from a *dam hazard* if:
	• persons or property may be harmed because of the event, AND
	• any of the following apply:
	  ○ a coordinated response, involving 2 or more of the following *relevant entities*, is likely to be required; each *local group* and *district group* for the EAP, each local government whose area may be affected, the Chief Executive, another entity the owner of the dam considers appropriate, OR
	  ○ the event may arise because of a disaster situation declared under the Disaster Management Act, OR
	  ○ an entity performing functions under the State *disaster management plan* may, under that plan, require the owner of the dam to give the entity information about the event.

Local group (Local Disaster Management Group)	For an EAP, means a local group established under the Disaster Management Act, section 29 whose local government area could, under the plan, be affected by a *dam hazard*.
Notice response	A dam owner's written response to a notice following an assessment of an EAP by a local government or *district group*.

Term	Definition
Referable dam	A dam, or a proposed dam after its construction, will be a referable dam if: • 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. Also, a dam is a referable dam if: • 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	Means each of the following under the EAP for the dam: • 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	The four levels of EAP activation are: • **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. 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. Triggering one of these levels of activation may not necessarily mean a similar activation of LDMGs or DDMGs.

Term	Definition
AWS Warning Levels	The three AWS warning levels are: • **Advice:** The first warning level of the Australian Warning System meaning an incident has started but there is no immediate danger. Stay up to date in case the situation changes. • **Watch and Act:** The second warning level of the Australian Warning System meaning there is a heightened level of threat. Conditions are changing you need to start taking action now to protect you and your family. • **Emergency:** The third and highest warning level of the Australian Warning System meaning lives may be in danger and action should be taken immediately. **Notes:** These AWS Warning levels do not change the Activation Levels of the EAP and are intended for external public facing information only. There is no Stand Down equivalent in AWS warning levels
Bureau of Meteorology flood level classifications	The three levels of flooding are: • **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 flood	The flood event that causes reservoir levels to reach the lowest point of non-overflow section of a dam.
Dam failure	Dam failure is the physical collapse of all or part of a dam or the uncontrolled release of any of its contents.
Downstream releases	Downstream releases are outflows from the dam made through appurtenant structures such as spillways or outlet works that are in accordance with the design of the dam.
Earthquake	A sudden release of energy in the earth's crust or upper mantle, usually caused by movement along a fault plane or by volcanic activity, resulting in the generation of seismic waves that can be destructive. The potential consequences of an earthquake include: • 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 (additional structures such as spillways) 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.

Term	Definition
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.
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, fail or contaminate 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) (ref A), 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 and piping):

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

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

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

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

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

The local government whose areas may be affected by a dam hazard for Bjelke-Petersen Dam have been assessed as **South Burnett Regional Council** (SBRC), **Cherbourg Aboriginal Shire Council** (CASC), **Gympie Regional Council** (GRC), and **North Burnett Regional Council** (NBRC). Sunwater has provided all councils 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 groups for Bjelke-Petersen Dam are **Gympie District Disaster Management Group** (Gympie DDMG) and **Bundaberg District Disaster Management Group** (Bundaberg DDMG). Sunwater has provided the DDMGs 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 Bjelke-Petersen 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 Bjelke-Petersen 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 Bjelke-Petersen Dam by the owner of the dam (Sunwater) and the communication and notification of dam hazards to the LDMGs, DDMGs and broader community. However, the EAP sits within the broader emergency response framework. This EAP has been developed to be consistent with and support the objectives of the South Burnett Regional Council, Cherbourg Aboriginal Shire Council, Gympie Regional Council, and North Burnett Regional Council's Local Disaster Management Plans.

2.3 Scope

The Bjelke-Petersen 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 and/or emergency event happening
- triggers for activation of a tiered response to dam hazards and/or emergency event happening
- roles and responsibilities in responding to a dam hazard
- notification and communication protocols
- inspection, monitoring, and reporting protocols during emergencies
- other relevant information that may assist with identifying the area affected by a dam hazard and/or emergency event happening, and the management of such dam hazards.

2.4 Sunwater 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 period, Sunwater staff complete work instructions for site preparations, and during July to September carry out checks on stores, supplies of fuel, and on the current EAP, such as 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. The training is presented to relevant Sunwater staff (DDO's, LEC's and IC's) and disaster management stakeholders. DSTDM and FODM 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 Sunwater employees in these various roles also have a walkthrough of the EAP.

NOTE: All enquiries regarding EAP training should be directed to

Sunwater is also working towards carrying out a full test once annually involving each local authority and disaster management stakeholders. 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 State Disaster Coordination Centre (SDCC) and include the (non-live) testing of emergency alerts. The test results relating to numbers of alerts generated will be shared with local authority and disaster management stakeholders.

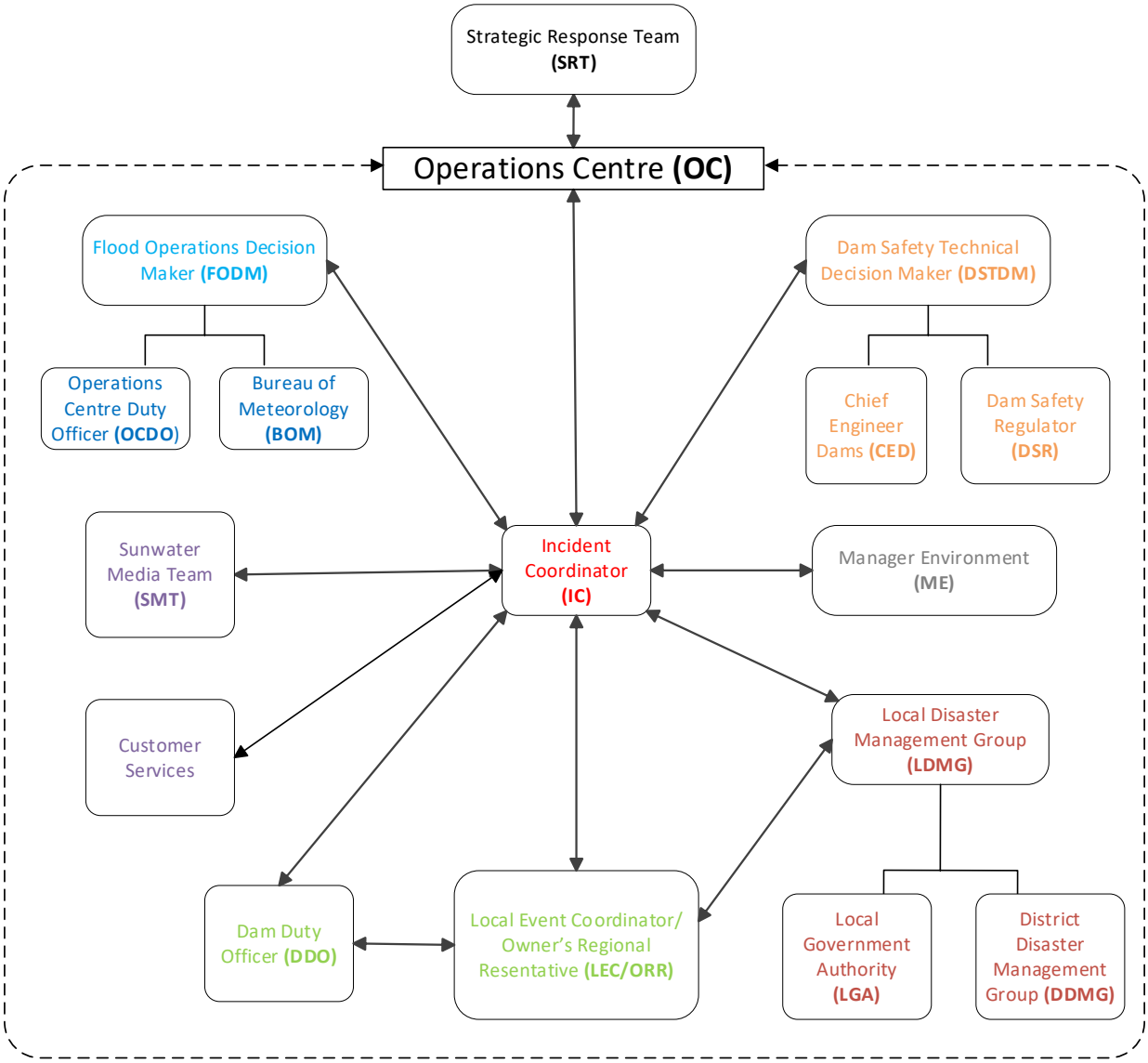
2.5 Fatigue Management Plan

Sunwater has a Fatigue Management Procedure (ref O). 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 hazard management within Sunwater

The Sunwater emergency management framework generally utilises the organisation's hierarchy and in-house experts as illustrated in 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 and subsequent activation levels. 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 decision. 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.
- These 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.

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

In the event of a dam failure or when required, Sunwater also have the use of the National Emergency Alert System to send a voice message and SMS (ref E). This service is provided by Telstra and is managed by the State Disaster Coordination Centre and the process Sunwater follows is documented in Appendix A9.

A copy of all Sunwater approved EAPs are available to the public on the Business Queensland website https://www.sunwater.com.au/community/preparing-for-emergencies/emergency-management/

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 regulator 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 RDMW as appropriate.

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

3. Dam Details

3.1 General dam information

Location: The dam is situated approximately 67 km south-west of Gympie and 8 kms south of Murgon. The dam is located on the Barker Creek (AMTD 1.3 km) and just upstream of the confluence with Barambah Creek.

Purpose: The purpose of the dam is to provide an assured supply of water for irrigation for the Barker-Barambah irrigation project and to supplement the town water supply for the townships of Murgon, Wondai, Byee, and Cherbourg.

Catchment: 1,670 km^2.

Storage Capacity: The storage capacity at FSL is 134,900 ML.

Construction: The Bjelke-Petersen Dam was originally constructed in 1988. Additional works (Stage 1 Upgrade) involving the construction of a crest parapet wall, were carried out in 2007 as part of the spillway upgrade program to improve the discharge capacity of the dam to safely pass the 50% Probable Maximum Precipitation Flood (PMPF)—flood event.

Specification: The table below lists general specifications of Bjelke-Petersen Dam.

Table 2: Bjelke-Petersen Dam specifications

Description	Specification
Main dam type	**Central core earth and rock-fill**
Full Supply Level (FSL)	EL 307.30 m
Historical recorded max storage—Jan 2011	EL 311.819 m
Storage capacity at FSL	134,900 ML
Storage area at FSL	2,250 ha
Dam Crest Level (DCL)	EL 315.60 m (embankment crest) EL 317.45 m (Stage 1 Upgrade – top of parapet wall)
Dam length (m)	550 m—Original 620 m—Stage 1 Upgrade
Dam height above foundation	44 m (approx.)
Dam Crest Level Flood (DCF)	1 in 100,000 AEP (Stage 1 Upgrade – top of parapet wall) – CRA 2022
Spillway type	**Un-gated concrete ogee crest spillway chute and dissipator**
Spillway crest level	El 307.30 m
Spillway capacity at DCL	4,920 m^3/s (425,088ML/d)
Maximum spillway depth at DCF	8.3 m (embankment crest) 10.15 m (Stage 1 Upgrade – top of parapet wall)
Spillway crest length	80 m
Outlet description	Irrigation and river outlets—2400 mm concrete-lined mild steel pipe with a 900 mm offtake to Joe Sippel Weir and 2 x 1200 mm offtakes to Barker Creek

Description	Specification
Outlet control	Each offtake controlled by fixed cone dispersion valves and isolated by butterfly valves
Saddle dam type	**Earth and rock-fill embankment with inclined core**
Saddle dam embankment crest level	EL 315.60 m (embankment crest) EL 317.45 m (Stage 1 Upgrade – top of parapet wall)
Length	590 m—Original 826 m—Stage 1 Upgrade
Embankment max height	15 m

3.2 Population at risk

Total Population at Risk (PAR) downstream of Bjelke-Petersen Dam as per the 2022 Comprehensive Risk Assessment (CRA) (ref I):

- Flood Overtopping PAR of 1239 in a dam crest flood event
- 229 PAR in a sunny day failure event.

Additional information on the hydrology, hydraulics and dam failure studies is available upon request to Sunwater.

3.3 General Arrangement

The general arrangement drawings are in Appendix B.

3.4 Emergency inspections and monitoring

The Bjelke-Petersen 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 Bjelke-Petersen Dam.

3.4.1 Inspections

- Routine Visual Inspection: Conducted as per the ANCOLD Guidelines or as directed by the DSTDM
- Detailed Inspection: Conducted annually
- Comprehensive Inspection: Conducted five-yearly

4. EAP Roles and Responsibilities

EAP roles and responsibilities	Position holder

Owner
• Liaise with the Board and Minister
• Activate Sunwater Strategic Response and Business Continuity Plans if required
• Ensure necessary resources are available to manage any dam hazard and emergency events
• Record communications, notifications and observations as required
• At all times, aim to provide timely advice and support to the local disaster management groups (LDMGs) in the affected local government areas and the district disaster management groups (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:
  ○ Notify the downstream residents listed in the EAP via SMS
  ○ Contact SDCC Watch Desk to request an Emergency Alert campaign as detailed in the emergency alert request and threat direction polygon
• Where a dam hazard event occurs with adequate time to warn downstream residents, notify the residents listed in the EAP via SMS (unless otherwise agreed with the LDMGs)
	CEO
	EGMO
	EGM E&WR

Owner's Head Office Representative • 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 as per the Condition Schedule • Undertake and prepare the five yearly Comprehensive Inspection Reports with suitably qualified personnel within the time specified in the Condition Schedule and 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

EAP roles and responsibilities	Position holder
Owner's Regional Representative (ORR) • 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 • Ensure necessary resources are available to manage any dam hazard and emergency events • Undertake the role of LEC as required • Record communications, notifications and observations as required • Ensure all work orders, work instructions and lesson learned outcomes are fully implemented.	GM Burnett & Lower Mary OS
Technical Advisor • 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 communications, notifications and observations as required	GM Environment
Dam Safety Technical Decision Maker (DSTDM) • 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 warning on dam failure and advise on protective measures • Ensure the EAP is implemented appropriately and carry out the DSTDM role as required • Maintain current RPEQ accreditation • Liaise with Regulator as required • Record communications, notifications and observations as required	Various personnel as per DSTDM roster
Flood Operations Decision Maker (FODM) • 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 Procedure (Sunwater internal) • Interpret and apply rainfall data in accordance with the OC Procedure, including, as required under the OC Procedure, 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
Operations Centre Duty Officer (OCDO) • Decide if a flood is imminent and record modes of operation • Extract data relative to the event from available sources • Utilise this data in predictive flood models and determine results from these models for approval by FODM • Liaise with the FODM or IC to update current flood situation and routing data • Record communications, notifications and observations as required	Various personnel as per OC roster

EAP roles and responsibilities	Position holder
Sunwater Media Team (SMT) • 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 QDMG of flood events • Record communications, notifications and observations as required	Various personnel as per Media Team roster
Incident Coordinator (IC) • Notify council of intent to use the Emergency Alert • Activate the EAP • 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
Local Event Coordinator (LEC) • Liaise with the Local Disaster Coordinator or proxy • Activate the EAP when necessary • Ensure the EAP is implemented appropriately and carry out the LEC role as required • Record communications, notifications and observations as required	Various personnel as per LEC roster
Dam Duty Officer (DDO) • 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	SS OM
Councils **South Burnett Regional Council, Cherbourg Aboriginal Shire Council, Gympie Regional Council, and North Burnett Regional Council** Councils have legislated local government functions, as per Section 80 of the Qld Disaster Management Act (2003). These include: • 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 District Disaster Coordinator 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 Water Legislation (Dam Safety) Amendment Act (2017): • Must assess (in consultation with its LDMG) the EAP for consistency with the Local Disaster Management Plan	

EAP roles and responsibilities	Position holder
Queensland Police Service (QPS) Manage the initial situation based on local operational procedures; including but not limited to: • Conduct emergency operations • Coordinate and support Sunwater during a declared emergency at the dam • Liaise with relevant organisations • Evacuation of persons if required • Security of specific area	
Disaster Management Groups/Personnel – (In addition to requirements outlined in the Qld. Disaster Mgmt. Act (2003) LDMG • Assist 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 manpower and resources that may be required for an EAP event • Identify and provide advice to DDMG about support services required by the LDMG to manage an EAP event • Provide reports and make recommendations to the relevant DDMG about matters relating to EAP events and any support required QPS • Work with dam owner and LDMGs to ensure Emergency Alerts polygons are prepared, stored, and tested DDMG • DDMG may review plan with consistency with the District Disaster Management Plan	LDMG DDMG QPS
Dam Safety Regulator (DSR) • Liaise with relevant Minister on necessary actions. • Approve this document as required under legislation • Liaise with Chief Executive as required in administering (regulating) the Water Supply (Safety and Reliability) Act 2008	DDS
Strategic Response Team (SRT) • Facilitate the assessment, escalation and notification and management of strategic response and recovery for a high or extreme risk, or impact, event. • Initial and ongoing assessment of event status and requirements • Development, and revision of, strategic objectives based on requirements • Identifying, managing, and monitoring strategic risks • Monitor media and stakeholder/customer impacts • Managing/overseeing event communications including media, stakeholder, customer and internal communications. • Record communications, notifications and observations as required.	SRT

5. Dam hazard—flood operations

5.1 Overview

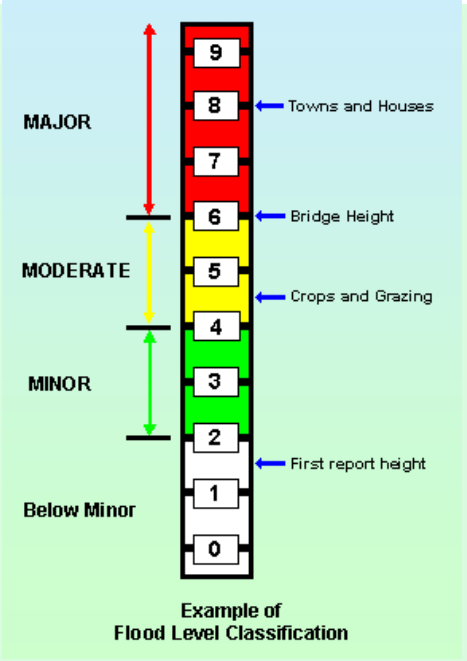
The emergency action described in this section (Dam hazard—flood operations) relates to:

- A dam hazard where natural catchment inflows fill Bjelke-Petersen Dam to FSL 307.30m and the rate of inflow exceeds the capacity of the outlet works. The spillway will then discharge water downstream into the Barker and Barambah Creeks. These flood flows can create a dam hazard. Inflows will also cause the storage to temporarily rise to above the full supply level of the storage. Note:
  - The greater the rate of inflow, the higher the storage will rise.
  - The higher the storage level rises, the greater the loads on the dam structure.
  - Although unlikely, the greater the loading, the higher the likelihood of a dam failure.
  - Typically, the level of surveillance is increased during flood operations (refer tables in this section).
- Spillway discharge from the dam, where there have been no indications that a dam failure may be initiating or in progress.

The area likely to be affected by this emergency event is described as:

- For small flows, the water will be contained within Barker and Barambah creeks.
- As the rate of discharge increases, there will be an impact on low-level road crossings on the Barker and Barambah Creeks and other infrastructure in the river such as pump sites.
- When the storage height exceeds major flood levels (3.5m over the spillway) EL 310.80m, extensive rural areas and/or urban areas are inundated, potentially to above floor level. Properties and towns are likely to be isolated and major rail traffic routes closed. Evacuation of flood affected areas may be required. Utility services may be impacted.

Table 3: Flood classification triggers

	Flood Classification Level	Depth over Spillway (m)	Storage Elevation (m AHD)
	Major	3.50m	310.80m
	Moderate	2.90m	310.20m
	Minor	1.70m	309.00m

Source: Bureau of Meteorology

The following table shows historical floods experienced at Bjelke-Petersen Dam.

Table 4: Historical floods experienced at Bjelke-Petersen Dam

Flood rank	Date	Peak Height EL	Peak Height (m over crest)
1	Jan 2011	311.82m	4.52m
2	Jan 2013	310.01m	2.71m
3	Mar 2013	309.15m	1.85m
4	Feb 2022	308.68m	1.38m
5	Feb 1999	308.41m	1.11m

5.2 Emergency actions

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

5.2.1 Activation triggers

Table 5: Flood emergency activation trigger summary

EAP Flood Activation Trigger	Trigger Summary	AWS Warning Level
Alert	• EL 307.20 m and rising (0.1 below FSL)	
Lean Forward	• Storage above FSL 307.30 m	**Advice**
Stand Up 1 — Greater than moderate flood level	• Storage above EL 310.20 m (Moderate flood classification level)	**Watch and Act**
Stand Up 2 — Greater than flood of record	• Storage above EL 311.82 m (Flood of record—Jan 2011)	
Stand Up 3	• Storage above EL 317.45 m (allowing for wave action) OR • As advised by the DSTDM	**Emergency**
Stand Down	• Storage level EL 307.40 m and falling with no forecast increase in EL	

While this EAP is not triggered until Bjelke-Petersen Dam reaches a level of 307.20 m, Sunwater and the South Burnett Regional Council, Cherbourg Aboriginal Shire Council, Gympie Regional Council, and North Burnett Regional Council LDMGs will work cooperatively and will endeavour to share intelligence of any rainfall event as and when either organisation becomes aware of a situation that could result in the activation of the EAP.

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 6 to Table 11 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 Operation Decision maker (FODM).

Table 6: Flood operations—DDO emergency action

Activation level	Alert	Lean Forward	Stand Up 1 — Greater than moderate flood level	Stand Up 2 — Greater than flood of record	Stand Up 3	Stand Down
Activation trigger	• EL 307.20m and rising (0.1m below FSL)	• Storage above FSL 307.30m	• Storage above EL 310.20m	• Storage above EL 311.82m	• Storage above EL 317.45m (allowing for wave action) OR • As advised by the DSTDM	• Storage level EL 307.40m and falling with no forecast increase in EL
Actions	• Record all communication • Inspect the main embankment and Saddle Dam as per **routine** work instructions (or as instructed by the DSTDM) and photograph/video and record using the approved forms and send to DSTDM and IC • Undertake site preparations (if not already complete) including but not limited to: – Check fuel and operation of backup generator – Check communication systems (including backup radio and satellite phones) – Monitor catchment conditions • Record the storage level twice daily (or as instructed by the DSTDM) using the gauge boards and confirm accuracy of gauging station • Record rainfall daily • Update Dam Logbook as per SOP 12	• As per previous activation level, AND • Inspect the main embankment and Saddle Dam **daily** (or as instructed by the DSTDM) and photograph/video and record using the approved forms and send to IC and DSTDM. Attention will be given to: – Visual inspection of flow patterns over spillway and dissipator for evidence of scouring or loss of concrete in the chute – Inspect embankment for leaks, deformation, slumping, or slides – Obvious signs of seepage • Report any unusual readings or observations to the DSTDM and IC as soon as practical • Read Main Dam and Saddle Dam instrumentation daily (or as instructed by the DSTDM) on activation of this level • NOTE: Site access may be limited before reaching **Stand Up**	• As per previous activation level, AND • Inspect the main embankment and Saddle Dam **twice daily** (or as instructed by the DSTDM) and photograph/video and record using the approved forms and send to DSTDM and IC	• As per previous activation level, AND • Monitor tailwater and photograph discharge • Inspect the main embankment and Saddle Dam at **6-hourly intervals** (or as instructed by the DSTDM) and photograph/video and record using the approved forms and send to DSTDM and IC • **NOTE**: Once at EL 315.60m (DCL) there will be an impact on ability to undertake surveillance	• As per previous activation level, AND • **Remotely** inspect the main embankment and Saddle Dam (or as instructed by the DSTDM) and photograph/video and record using the approved forms and send to DSTDM and IC. Attention will be given to: – Any damage created by water overtopping the embankments • Report observed damage immediately • Record rainfall as often as necessary • Check signs of erosion on D/S face especially near spillway, if possible	• Return to routine surveillance activities and frequencies—inspect the dam for any damage identified • Forward all EER material to IC email as required • Update Dam Logbook as per SOP 12 • Return to routine activities
Notifications	• IC • SO • DSTDM • LEC	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level,
AWS Warning Level		**ADVICE**	**WATCH AND ACT**		**EMERGENCY**	

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

Table 7: Flood operations—LEC emergency action

Activation level	Alert	Lean Forward	Stand Up 1 — Greater than moderate flood level	Stand Up 2 — Greater than flood of record	Stand Up 3	Stand Down
Activation trigger	• EL 307.20m and rising (0.1m below FSL)	• Storage above FSL 307.30m	• Storage above EL 310.20m	• Storage above EL 311.82m	• Storage above EL 317.45m (allowing for wave action) OR • As advised by the DSTDM	• Storage level EL 307.40m and falling with no forecast increase in EL
Actions	• Record all communication • Develop/implement staff roster • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• IC • DDO • LDMG 1 • LDMG 2	• As per previous activation level, and • LDMG 4	• As per previous activation level	• As per previous activation level, and • LDMG 3	• As per previous activation level	• As required
AWS Warning Level		**ADVICE**	**WATCH AND ACT**		**EMERGENCY**	

Table 8: Flood operations—IC emergency action

Activation level	Alert	Lean Forward	Stand Up 1 — Greater than moderate flood level	Stand Up 2 — Greater than flood of record	Stand Up 3	Stand Down
Activation trigger	• EL 307.20m and rising (0.1m below FSL)	• Storage above FSL 307.30m	• Storage above EL 310.20m	• Storage above EL 311.82m	• Storage above EL 317.45m (allowing for wave action) OR • As advised by the DSTDM	• Storage level EL 307.40m and falling with no forecast increase in EL
Actions	• Record all communication • Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging • Obtain catchment conditions from the DDO • Create Incident Report Record • Update Sunwater intranet with dam status • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level, AND • Prepare Daily Situation Report, unless otherwise directed • Ensure all abnormal observations or damage has been reported to DSTDM • Consider the need to appoint a Sunwater Recovery Coordinator. The Sunwater Recovery Coordinator is responsible for the follow through on actions to close out all matters and works outstanding after the initial emergency is over. • Confirm EAs and other messages are prepared in advance – if required. • Note: Site access may be limited before reaching Stand Up	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • Liaise with FODM and DSTDM on possible impacts to Paradise Dam	• Deactivate EAP • Compile EER and deliver to DSR if required • Close Incident Report Record • Update Sunwater intranet with dam status • Return to routine activities
Notifications	• FODM • DDO • LEC/ORR • DSTDM • SMT • D/S Residents • LDMG 1 • LDMG 2 • DDMG • QPS • SRT	• As per previous activation level, and • LDMG 4	• As per previous activation level	• As per previous activation level AND • LDMG 3	• As per previous activation level AND • SDCC	• Inform previous notifications of deactivation as required. The SDCC does not require notification.
AWS Warning Level		**ADVICE**	**WATCH AND ACT**		**EMERGENCY**	

Table 9: Flood operations—LEC & IC communication plan

Activation level	Trigger for communications	Group to contact	Method	Message text	AWS Warning Level
Alert	• EL 307.20m and rising (0.1m below FSL)	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	
		• LDMG 1 • LDMG 2 • DDMG • QPS	• Phone and email	Describe current situation with dam—What is the event? What is the status? Advise current storage level	
Lean Forward	• Storage above FSL 307.30m	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	**ADVICE**
		• LDMG 1 • LDMG 2 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? What is the status? Advise of current storage level	
Stand Up 1 — moderate flood level	• Storage above EL 310.20m	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	**WATCH AND ACT**
		• LDMG 1 • LDMG 2 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than moderate flood level) Advise current storage level Advise of any forecasts you are aware of	

Activation level	Trigger for communications	Group to contact	Method	Message text	AWS Warning Level
Stand Up 2 — greater than flood of record	• Storage above EL 311.82m	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? What is the status? (storage is greater than flood of record) Advise current storage level Advise of any forecasts you are aware of	
Stand Up 3	• Storage above EL 317.45m (allowing for wave action) OR; • As advised by the DSTDM	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	EMERGENCY
		• SDCC	• Phone & Email	Complete Emergency Alert Request Form as per instructions (copies in Appendix A9) and email to the SDCC to send.	
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? What is the status? Advise current storage level Advise of any forecasts you are aware	
Stand Down	• Storage level EL 307.40m and falling with no forecast increase in EL	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), FODM and/or DSTDM to send appropriate messaging** **Refer to Annexe for sample message**	
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? What is the status? Advise current storage level Advise EAP has been deactivated	

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

Table 10: Flood operations—DSTDM emergency action

Activation level	Alert	Lean Forward	Stand Up 1 — moderate flood level	Stand Up 2 — greater than flood of record	Stand Up 3	Stand Down
Activation trigger	• EL 307.20m and rising (0.1m below FSL)	• Storage above FSL307.30m	• Storage above EL 310.20m	• Storage above EL 311.82m	• Storage above EL 317.45m (allowing for wave action) OR • As advised by the DSTDM	• Storage level EL 307.40m and falling with no forecast increase in EL
Action	• Record all communication • Provide technical advice to DDO and IC on a needs basis • Review surveillance reports and determine if any additional responses are required	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • Liaise with FODM and IC on possible impacts to Paradise Dam	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• IC • DDO • DSR	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • CEO—if time permits	• As per previous activation level
AWS Warning Level		**ADVICE**	**WATCH AND ACT**		**EMERGENCY**	

Table 11: Flood operations—FODM emergency action

Activation level	Alert	Lean Forward	Stand Up 1 — moderate flood level	Stand Up 2 — greater than flood of record	Stand Up 3	Stand Down
Activation trigger	• EL 307.20m and rising (0.1m below FSL)	• Storage above FSL307.30m	• Storage above EL 310.20m	• Storage above EL 311.82m	• Storage above EL 317.45m (allowing for wave action) OR; • As advised by the DSTDM	• Storage level EL 307.40m and falling with no forecast increase in EL
Action	• Record all communication • Extract relevant data from available sources • Update flood models as per OC Procedure (Sunwater internal) • Update and issue flood operations report • Update DSTDM and IC re: current flood situation and PFRM results	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • Liaise with DSTDM and IC on possible impacts to Paradise Dam	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• IC • DSTDM • DDO	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As per previous activation level
AWS Warning Level		**ADVICE**	**WATCH AND ACT**		**EMERGENCY**	

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 embankments (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 maybe 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 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 1.3.

6.1.1 Assessment of circumstances that indicate 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 increased likelihood of piping. This circumstance is the trigger for the lean forward status for piping.

6.2 Emergency action roles

Table 12 to Table 16 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

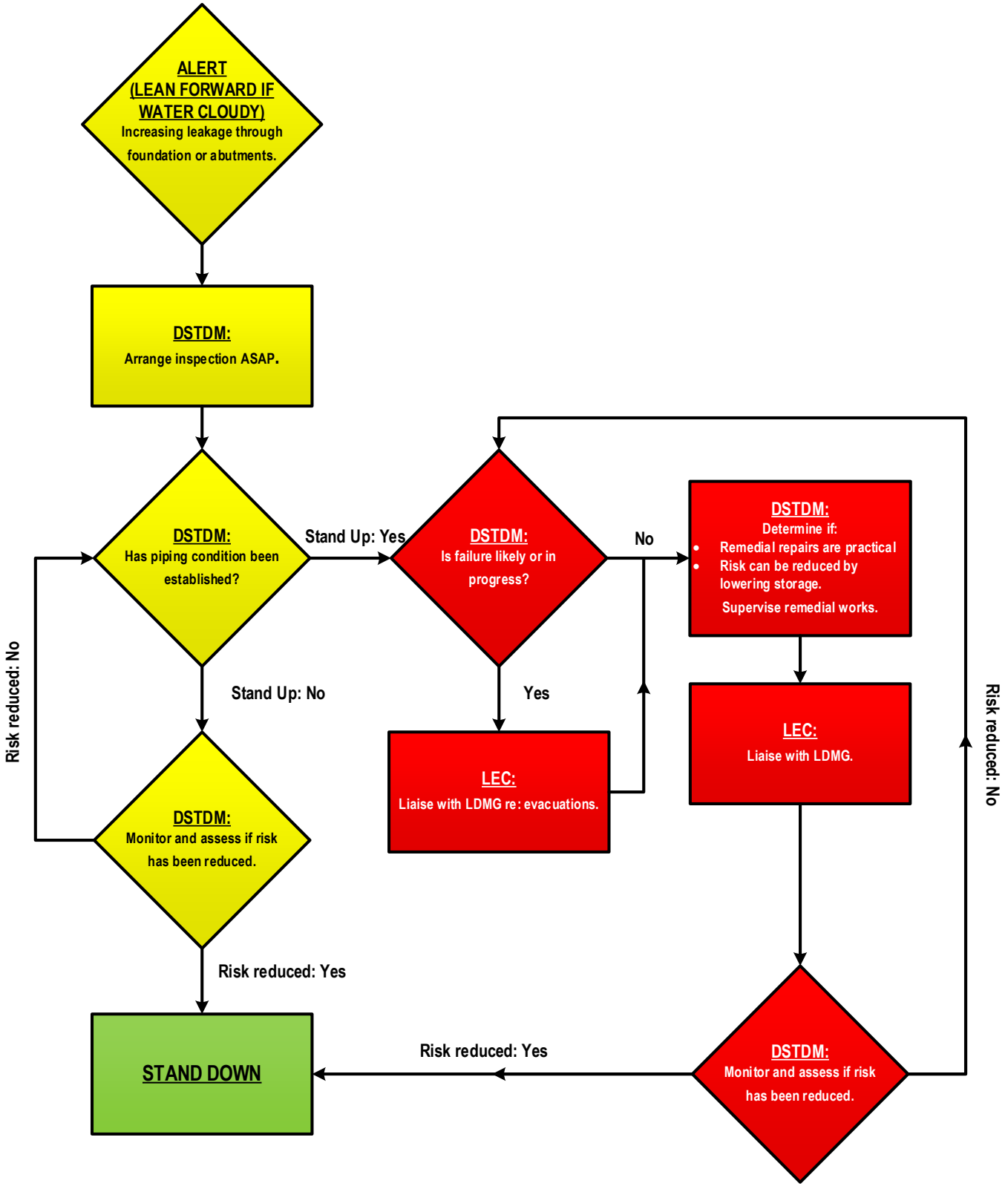


Table 12: Piping: embankment, foundation, or abutments—DDO emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Increasing leakage through the embankment, the foundations, or abutments	• Increasing leakage through the embankment, the foundations, or abutments with cloudy water	• Piping condition has been established	• Failure in progress or likely due to piping, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Record all communication • 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 DSTDM and IC • Update Dam Logbook as per SOP 12	• As per previous activation level	• As per previous activation level, AND • Support/supervise remedial works as required • Close any affected roads if not already closed by others • Maintain surveillance of area immediately downstream of Main Dam or Saddle Dam (if safe to do so) and move on any members of the public	• 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	• Inspect the dam for any damage and photograph any damage identified during the event. • Forward all EER material to IC email as required • Update Dam Logbook as per SOP 12 • Return to routine activities
Notifications	• DSTDM • IC • SO • LEC	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As required

Table 13: Piping: embankment, foundation, abutments or gates—LEC emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Increasing leakage through the embankment, the foundations, or abutments	• Increasing leakage through the embankment, the foundations, or abutments with cloudy water	• Piping condition has been established	• Failure in progress or likely due to piping, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Record all communication • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level	• As per previous activation level, AND • Liaise with relevant council(s) regarding potential road/bridge closures	• As per previous activation level	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• IC • DDO	• As per previous activation level, AND • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• As per previous activation level	• As per previous activation level	• As required

Table 14: Piping: embankment, foundation, or abutments—IC emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Increasing leakage through the embankment, the foundations, or abutments	• Increasing leakage through the embankment, the foundations, or abutments with cloudy water	• Piping condition has been established	• Failure in progress or likely due to piping, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Record all communication • Complete Situation Report, unless otherwise directed • Create Incident Report Record • Update Sunwater intranet with EAP status • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• 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 Sunwater Recovery Coordinator. The Sunwater 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. • Confirm EAs and other messages are prepared in advance – if required.	• As per previous activation level, AND, • Liaise with Sunwater Media on-call to send appropriate message to D/S residents and phone those without mobiles • Mobilise resources to undertake remedial works if directed by DSTDM	• 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 • Liaise with FODM on likely impacts to Paradise Dam	• Deactivate EAP • Compile EER and deliver to DSR if required • Close Incident Report Record • Update Sunwater intranet with dam status • Return to routine activities
Notifications	• DDO • LEC/ORR • DSTDM • SMT • SRT	• As per previous activation level, AND • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• As per previous activation level, AND • D/S Residents • SDCC	• As per previous activation level, AND • FODM	• Inform previous notifications of deactivation as required

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—LEC & IC communication plan

Activation level	Trigger for communications	Group to contact	Method	Message text
Alert	• Increasing leakage through the embankment, the foundations, or abutments			N/A internal communications only
Lean Forward	• Increase in leakage through an embankment, the foundations, or abutments with cloudy water	• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? *(Unconfirmed piping risk)* What is the status? (Unconfirmed leakage—Investigation continues) Advise current storage level Advise any issues you are aware of Standby for further advice
Stand Up 1	• Piping condition has been established	• D/S Residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s) and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	Complete Emergency Alert Request Form as per instructions (copies in Appendix A9) and email to the SDCC to send. Develop messages in consultation with DSTDM
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? *(Confirmed piping risk)* What is the status? (Confirmed piping/leakage) Advise current storage level Advise any issues you are aware of. Discuss any potential road/bridge closures Prepare for possible evacuations

Activation level	Trigger for communications	Group to contact	Method	Message text
Stand Up 2	• Failure in progress or likely due to piping, AND • Sufficient water in storage to create an emergency event	• D/S Residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	**Complete Emergency Alert Request Form as per instructions** (copies in Appendix A9) and email to the SDCC to send. *Develop messages in consultation with DSTDM*
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? *(Confirmed piping risk)* What is the status? (Possible Dam Failure) Advise current storage level Prepare coordinated evacuations
	• Dam failure in progress	• D/S Residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	**Complete Emergency Alert Request Form as per instructions** (copies in Appendix A9) and email to the SDCC to send.
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? *(Confirmed piping risk)* What is the status? (Dam Failure In Progress) Advise current storage level LDMG to coordinate evacuations of affected Downstream Residents and move people to higher ground
Stand Down	• Risk assessment has determined that failure risk has reduced	• D/S Residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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 failure risk has reduced, and EAP has been deactivated

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

Table 16: Piping: embankment, foundation, or abutments—DSTDM emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Increasing leakage through the embankment, the foundations, or abutments	• Increasing leakage through the embankment, the foundations or abutments with cloudy water	• Piping condition has been established	• Failure in progress or likely due to piping, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Action	• Record all communication • 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 • Advise DSR on EAP activation	• As per previous activation level	• As per previous activation level, AND • Assess risk and determine if failure likely or in progress • Determine if remedial repairs are practical • Determine if risks can be reduced by lowering storage • Supervise remedial repairs (if applicable). (Supervise means provide technical oversight to the work. It does not necessarily mean on-site supervision)	• As per previous activation level, AND • Liaise with the IC and advise on need to recommend evacuations • Liaise with FODM on likely impacts to Paradise Dam	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• DDO • IC • DSR	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • FODM	• As required

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 embankments (Main Dam or Saddle Dam), foundations, or dam abutment. Damage could take the form of cracking or slumping of the embankment, deformation or land slip, or increased seepage.

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

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

- Use the SDF outline when a dam failure is in progress or likely due to earthquake damage 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 earthquake damage and concurrent flooding or downstream releases are occurring or expected to occur.

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

7.2 Emergency action roles

Table 17 to Table 21 to 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

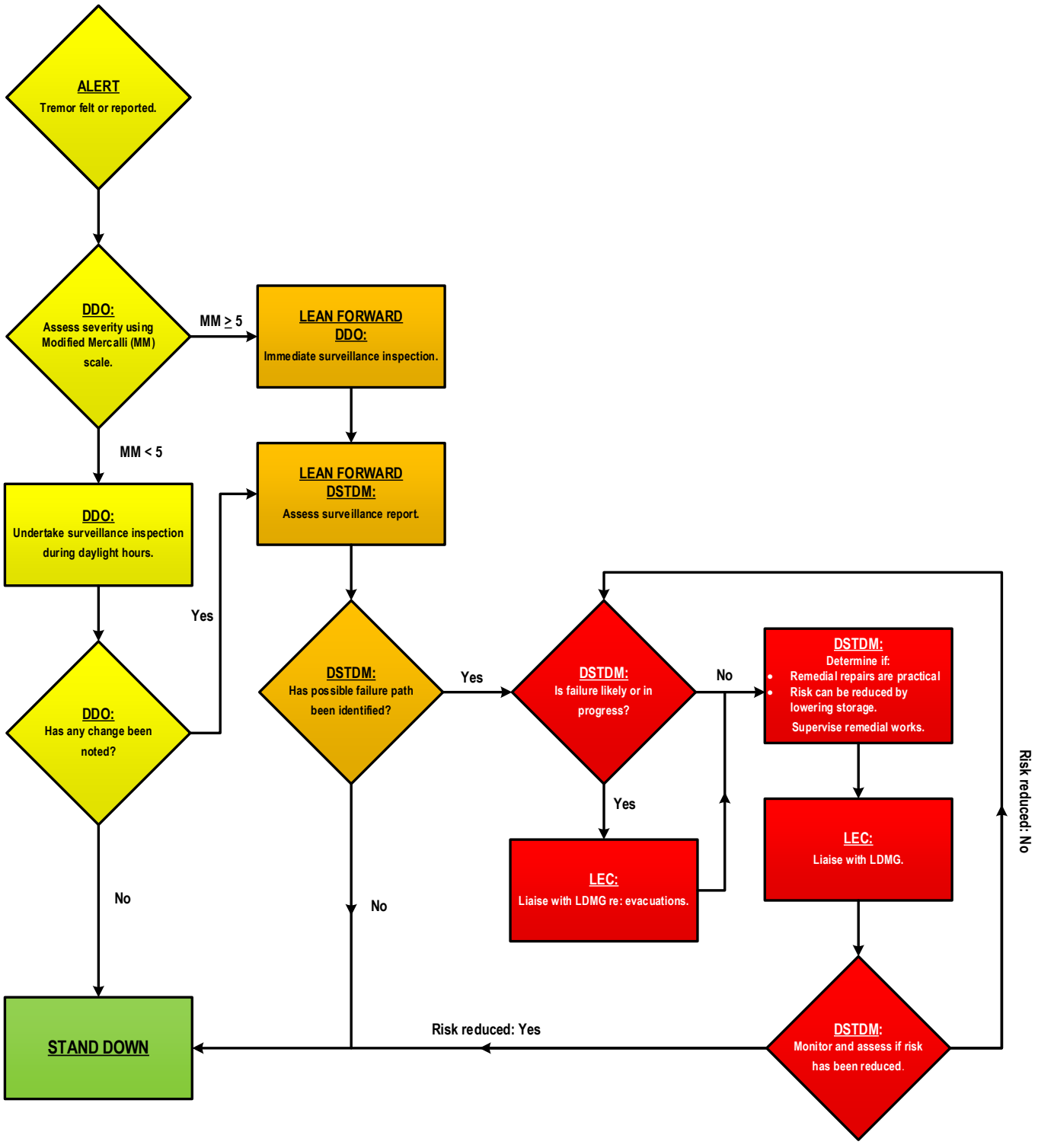


Table 17: Earthquake—DDO emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Earthquake confirmed* (by DSTDM) or felt in the area, AND • Intensity less than 5MM	• 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	• Earthquake confirmed* (by DSTDM) or felt in the area, AND • A possible failure path has been identified	• Failure in progress or likely due to earthquake, AND • Sufficient water in storage to create an emergency event	• Risk assessment has been determined that failure risk has reduced
Actions	• DDO to assess magnitude (MM Scale) at dam location • Record all communication • Inspect the Main Embankment, Spillway Structure, Abutments, and Saddle Dam 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 DSTDM and IC • Check for leaks, deformation, erosion, and concrete damage • Update Dam Logbook as per SOP 12	• As per previous activation level, AND • Immediately inspect the Main Embankment, Spillway Structure, Abutments, and Saddle Dam (if safe to do so) and report to the DSTDM and IC—photograph/video and record using the approved forms and send to DSTDM and IC • Repeat the inspection as directed	• As per previous activation level, AND • Support/supervise remedial work as required • Liaise with LEC regarding potential road closure • Maintain surveillance of area immediately downstream of dam or Saddle Dam (if safe to do so) and move on any members of the public • Vacate the immediate vicinity of the embankment	• 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	• Inspect the dam for any damage and photograph any damage identified during the event • Forward all EER material to IC email as required • Update Dam Logbook as per SOP 12 • Return to routine activities
Notifications	• DSTDM • IC • LEC • SO	• As per previous activation level	• As per previous activation level	• As per previous activation level	• As required

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

Table 18: Earthquake—LEC emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Earthquake confirmed* (by DSTDM) or felt in the area, AND • Intensity less than 5MM	• 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	• Earthquake confirmed* (by DSTDM) or felt in the area, AND • A possible failure path has been identified	• Earthquake confirmed (by DSTDM) or felt in the area, AND • Sufficient water in storage to create a dam hazard	• Risk assessment has been determined that failure risk has reduced
Actions	• Record all communication • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level	• As per previous activation level, AND • Liaise with DDO & relevant council(s) regarding potential road/bridge closures	• As per previous activation level	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• IC • DDO	• As per previous activation level, AND • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• As per previous activation level	• As per previous activation level	• As required

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

Table 19: Earthquake—IC emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Earthquake confirmed* or felt in the area, AND • Intensity less than 5MM	• Earthquake confirmed* or felt in the area, AND • Intensity greater than or equal to 5MM, OR • Intensity less than 5 MM and change detected during surveillance inspection	• Earthquake confirmed* or felt in the area, AND • A possible failure path has been identified	• Failure in progress or likely due to earthquake, AND • Sufficient water in storage to create an emergency event	• Risk assessment has been determined that failure risk has reduced
Actions	• Record all communication • Liaise with DDO, LEC and DSTDM • Create Incident Report Record • Update Sunwater intranet with dam status • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• 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 • Complete Situation Report, unless otherwise directed • Send SW Incident and Near Miss Alert • Consider the need to appoint a Sunwater Recovery Coordinator. The Sunwater Recovery Coordinator is responsible for the follow through on actions to close out all matters and works outstanding after the initial emergency is over. • Confirm EAs and other messages are prepared in advance – if required.	• As per previous activation level, AND • Liaise with Sunwater Media on-call to send appropriate messaging to D/S residents and phone those without mobiles • Mobilise resources to undertake remedial works if directed by DSTDM	• 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 • Liaise with FODM on likely impacts to Paradise Dam	• Deactivate EAP • Compile EER and deliver to DSR if required • Close Incident Report Record • Update Sunwater intranet with dam status • Return to routine activities
Notifications	• DDO • DSTDM • LEC • ORR • SMT • SRT	• As per previous activation level, AND • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• As per previous activation level, AND • D/S Residents • SDCC • DDMG • QPS	• As per previous activation level, AND • FODM	• Inform previous notifications of deactivation as required

* '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

Table 20: Earthquake—LEC & IC communication plan

Activation level	Trigger for communications	Group to contact	Method	Message text
Alert	• Earthquake confirmed* or felt in the area, AND • Intensity less than 5MM			N/A—Internal communications only
Lean Forward	• 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	• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• Phone	Describe current situation with dam—What is the event? *(Dam Safety Risk—Earthquake damage)* What is the status? (Under investigation) Advise current storage level Stand by for further information
Stand Up 1	• Earthquake confirmed or felt in the area, AND • A possible failure path has been identified	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	Complete Emergency Alert Request Form as per instructions (copies in Appendix A9) and email to the SDCC to send. Develop messages in consultation with DSTDM
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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 current storage level. Discuss any potential road/bridge closures. Activate emergency response

Activation level	Trigger for communications	Group to contact	Method	Message text
Stand Up 2	• Failure likely due to earthquake, AND • Sufficient water in storage to create an emergency event	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	**Complete Emergency Alert Request Form as per instructions (copies in Appendix A9) and email to SDCC Watch Desk to send.** *Develop messages in consultation with DSTDM*
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	Describe current situation with dam—What is the event? *(Dam Safety Risk—earthquake damage)* What is the status? (Dam Failure Likely) Advise current storage level. Discuss any potential road/bridge closures (if not discussed at Stand Up 1) Prepare coordinated evacuation
	• Dam failure in progress	• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	Complete Emergency Alert Request Form as per instructions (copies in Appendix A9) and email to the SDCC to send.
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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
Stand Down	• Risk assessment has determined that failure risk has reduced	• D/S residents (if from Stand Up)	• SMS • Email • Phone (for those without mobiles))	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG (if from Stand Up) • QPS (if from Stand Up)	• 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

Table 21: Earthquake—DSTDM emergency action

Activation level	Alert	Lean Forward	Stand Up 1	Stand Up 2	Stand Down
Activation trigger	• Earthquake confirmed* or felt in the area, AND • Intensity less than 5MM	• 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	• Earthquake confirmed* or felt in the area, AND • A possible failure path has been identified	• Failure in progress or likely due to earthquake, AND • Sufficient water in storage to create an emergency event	• Risk assessment has been determined that failure risk has reduced
Action	• Record all communication • Review surveillance inspection of the dam and assess its condition as soon as possible • Review instrumentation data and determine if any additional responses are required • Monitor situation and assess risks • Advise DSR of EAP activation	• As per previous activation level, AND • Determine if there are any possible failure paths from reported damage	• 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 • Determine if remedial repairs are practical • Determine if risks can be reduced by lowering storage • Supervise remedial repairs (if applicable). Supervise means provide technical oversight to the work. It does not necessarily mean on-site supervision	• As per previous activation level, AND • Liaise with FODM on likely impacts to Paradise Dam	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• DDO • IC • DSR	• As per previous activation level	• As per previous activation level	• As per previous activation level, AND • FODM	• As required

* '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

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 Bjelke-Petersen Dam to a terrorist attack is low.

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

- Use the SDF outline when a dam failure is in progress or likely due to a terrorist attack or a high energy impact 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 a terrorist attack or a high energy impact and concurrent flooding or downstream releases are occurring or expected to occur.

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

8.1.1 Assessment of circumstances that indicate 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 a dam, this circumstance would trigger Stand Up 1 activation level.

8.2 Emergency action roles

Table 22 to Table 26 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

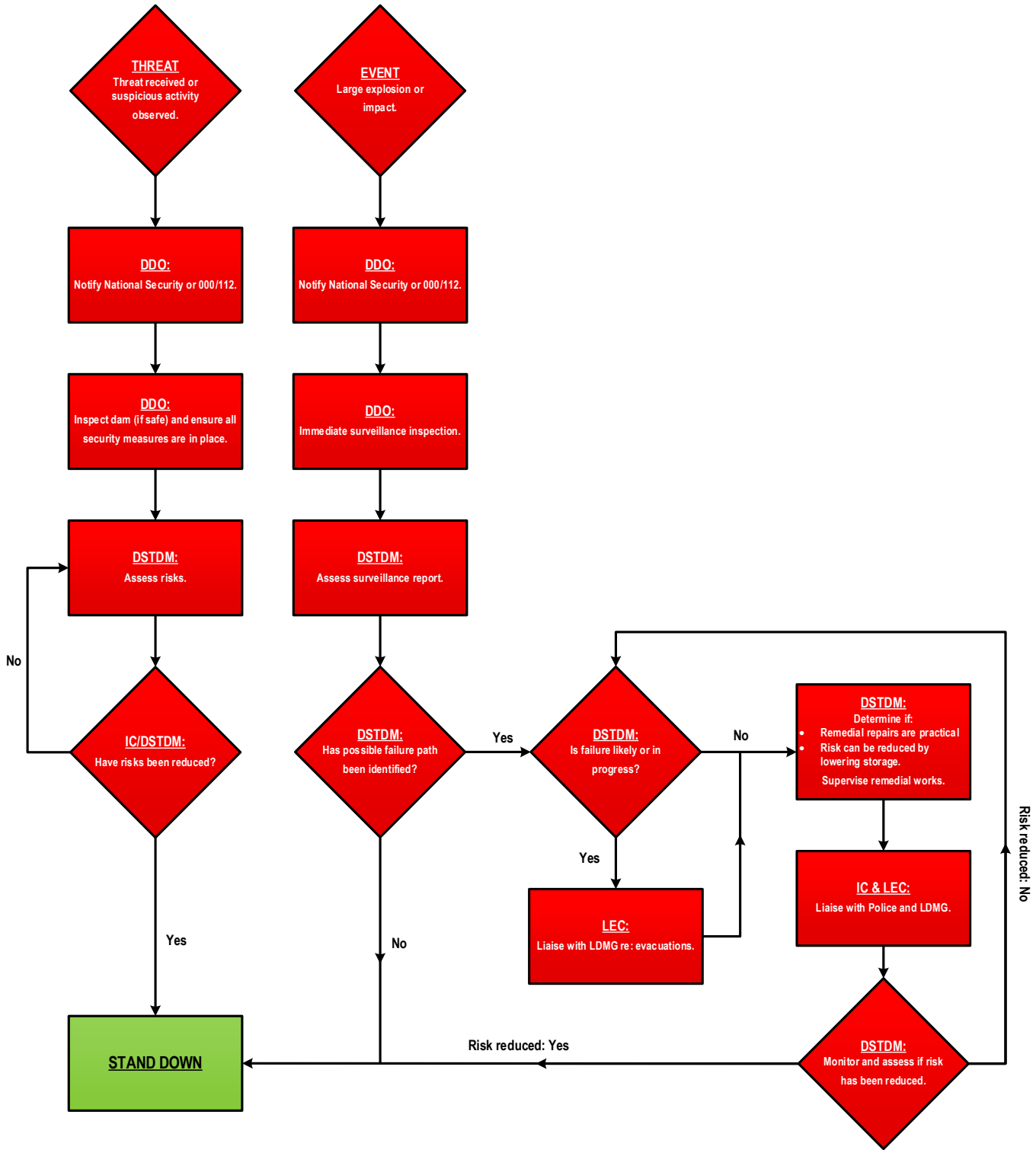


Table 22: Terrorist threat/activity or high energy impact—DDO emergency action

Activation level	Alert/Lean Forward	Stand Up 1	Stand Up 2	Stand Up 3	Stand Down
Activation trigger	• Not applicable	**THREAT** • Possible terrorist activity/suspicious behaviour noticed at the dam, OR • Threat received	**EVENT** • Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit)	**RESPONSE** • Failure in progress or likely due to impact or explosion, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Not applicable	• **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: – 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 and send to IC & DSTDM • If Police appoint Incident Manager, support and follow instructions • Close any affected roads as directed • Update Dam Logbook as per SOP 12	• As per previous activation level, AND • Vacate the immediate vicinity of the affected area • Undertake surveillance inspect dam (if safe)	• As per previous activation level	• Forward all EER material to IC email as required • Return to routine activities • Update Dam Logbook as per SOP 12
Notifications	• Not applicable	• **#000 Emergency** • DSTDM • IC • SO • LEC	• As per previous activation level	• As per previous activation level	• As required

Table 23: 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	• Not applicable	**THREAT** • Possible terrorist activity/suspicious behaviour noticed at the dam, OR • Threat received	**EVENT** • Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit)	**RESPONSE** • Failure in progress or likely due to impact or explosion, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Not applicable	• Record all communication • If Police appoint Incident Manager, support and follow instructions • Monitor situation and assess risks • Liaise with relevant council(s) regarding possible road/bridge closures • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level	• As per previous activation level, AND • Liaise with DDO and LDMGs re: potential for evacuations	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• Not applicable	• DDO • IC • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• As per previous activation level	• As per previous activation level	• As required

Table 24: 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	• Not applicable	**THREAT** • Possible terrorist activity/suspicious behaviour noticed at the dam. OR • Threat received	**EVENT** • Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit)	**RESPONSE** • Failure in progress or likely due to impact or explosion, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Actions	• Not applicable	• Record all communication • Contact National Security • If Police appoint Incident Manager, support and follow instructions • Create Incident Report Record • Update Sunwater intranet with dam status • Consider the need to appoint a Sunwater Recovery Coordinator. The Sunwater Recovery Coordinator is responsible for the follow through on actions to close out all matters and works outstanding after the initial emergency is over. • Confirm EAs and other messages are prepared in advance – if required. • Note: IC to contact LDMGs unless LDMG 1 is Stood Up	• As per previous activation level	• As per previous activation level, AND • Mobilise resources to undertake remedial works if directed by DSTDM • Liaise with FODM on likely impacts to Paradise Dam	• Deactivate EAP event • Compile EER and deliver to DSR if required • Close Incident Report Record • Update Sunwater intranet with dam status • Return to routine activities
Notifications	• Not applicable	• CTG • DDO • LEC/ORR • DSTDM • SMT • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • SRT	• As per previous activation level, AND • D/S residents • SDCC	• As per previous activation level, AND • FODM	• Inform previous notifications of deactivation as required

Table 25: Terrorist threat/activity or high energy impact—LEC & IC communication plan

Activation level	Trigger for communications	Group to contact	Method	Message text
Alert	**ALERT NOT APPLICABLE**			
Lean Forward	**LEAN FORWARD NOT APPLICABLE**			
Stand Up 1	**THREAT** • Possible terrorist activity/suspicious behaviour noticed at the dam, OR • Threat received	• CTG • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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** • Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit)	• CTG • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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
		• D/S Residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
		• SDCC	• Email & Phone	**Complete Emergency Alert Request form as per instructions (copies in Appendix A9) and email to the SDCC to send.** *Develop messages in consultation with DSTDM*

Activation level	Trigger for communications	Group to contact	Method	Message text
Stand Up 3	**RESPONSE** • Failure in progress or likely due to impact or explosion, AND • Sufficient water in storage to create an emergency event	• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• 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
		• SDCC	• Email & Phone	Complete Emergency Alert Request form as per instructions (copies in Appendix A9) and email to the SDCC to send.
		• D/S residents	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**
Stand Down	• Risk assessment has determined that failure risk has reduced	• LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG (if from Stand Up) • QPS (if from Stand Up)	• 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
		• D/S residents (if from Stand Up)	• SMS • Email • Phone (for those without mobiles)	**Liaise with Sunwater Media on-call, LDMG(s), and DSTDM to send appropriate messaging** **Refer to Annexe for sample message**

Table 26: 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	• Not applicable	**THREAT** • Possible terrorist activity/suspicious behaviour noticed at the dam • Threat received	**EVENT** • Large explosion heard/observed at dam (e.g. bomb explosion, aircraft hit)	**RESPONSE** • Failure in progress or likely due to impact or explosion, AND • Sufficient water in storage to create an emergency event	• Risk assessment has determined that failure risk has reduced
Action	• Not applicable	• Record all communication • Assess risks	• 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 • Determine if remedial repairs are practical • Determine if risks can be reduced by lowering storage • Supervise remedial repairs (if applicable). Supervise means provide technical oversight to the work. It does not necessarily mean on-site supervision • Monitor situation and assess risks	• As per previous activation level, AND • Liaise with the IC and advise on need to recommend evacuations • Liaise with FODM on likely impacts to Paradise Dam	• Forward all EER material to IC email as required • Return to routine activities
Notifications	• Not applicable	• IC • DDO • SRT • DSR	• As per previous activation level	• As per previous activation level, AND • FODM	• As required

9. Other emergency situation—communications failure

9.1 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.

9.2 Emergency actions

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

9.2.1 Activation triggers

Table 27: Communications failure emergency activation trigger summary

Comms Failure – Site	• Unable to communicate to or from dam site (usually affects DDO)
Comms Failure – Local area	• Unable to communicate to or from local area (likely to affect LEC)
Comms Failure – Brisbane	• Unable to communicate to or from Sunwater Brisbane (could affect DSTDM or FODM and will affect IC)

9.2.2 Assessment of circumstances that indicate the likelihood of communications failure escalating the activation level of a current dam hazard

The Operations Centre Duty Officer (OCDO) will assess the weather and flood warnings on a daily basis in accordance with the Operations Centre (OC) SOP. The OCDO will escalate to the Flood Operations Decision Maker (FODM) any warnings that have the potential to cause a significant communications failure.

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

The FODM will determine whether it is reasonably likely that there will be a significant communications failure within the subsequent 24 hours and assess the likely effect on current dam hazards. If required, the FODM will instruct the IC to escalate the activation level of any current dam hazards.

9.2.3 Emergency action roles

Table 28 to Table 33 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 28: Communications failure—DDO emergency action

Activation level	Comms Failure – Local Area	Comms Failure – Brisbane
Activation trigger	• Unable to communicate to local area including LEC	• Unable to communicate to Sunwater Brisbane including IC or DSTDM or FODM
Actions	• As much as practicable, assume the role of LEC • Continue tasks in accordance with any other current emergency action. • Every hour, attempt communications by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – 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.	• 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 by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – 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.
Notifications	• IC • SO	• LEC • SO

Table 29: Communications failure—LEC emergency action

Activation level	Comms Failure – Dam Site	Comms Failure – Brisbane
Activation trigger	• Unable to communicate to dam site	• Unable to communicate to Sunwater Brisbane including IC or DSTDM or FODM
Actions	• Every hour, attempt communications by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – 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. • As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action.	• Issue Sunwater Incident Alert. • Every hour, attempt communications by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – 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.
Notifications	• IC • DSTDM • SO • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4	• DDO • DSTDM • SO • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS

Table 30: Communications failure—IC emergency action

Activation level	Comms Failure – Dam Site	Comms Failure – Local Area
Activation trigger	• Unable to communicate to dam site	• Unable to communicate to local area including LEC
Actions	• Issue Sunwater Incident Alert. • Every hour, attempt communications by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – Social media – e.g. Facebook (Internet may be available via landline) • Record all communication and attempts. • As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action.	• Issue Sunwater Incident Alert. • Every hour, attempt communications by any and all means noting the following: – Mobile phone – try texting instead of voice, much higher probability of success – Satellite phone – needs to access open sky unless external antenna fitted – 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.
Notifications	• LEC • DSTDM • SO • DDMG • QPS	• FODM • DDO • DSTDM • SO • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS

Table 31: Communications failure—LEC and IC communication plan

Activation Level	Trigger for communications	Group to contact	Method	Message Text
Comms Failure – Site	• Unable to communicate to or from dam site, AND • DDO is at dam site	• IC/LEC • DSTDM • SO • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	• Describe current situation with dam communications. • What is the status – estimated time to restore communications?
		• IC to send Sunwater Incident and Near Miss Alert		• EAP Alert Notification—Bjelke-Petersen Dam—Site Communications Failure
Comms Failure – Local Area	• Unable to communicate to or from local area including LEC	• DDO • FODM • DSTDM • SO • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	• Describe current situation with dam communications. • What is the status – estimated time to restore communications?
		• IC to send Sunwater Incident and Near Miss Alert		• EAP Alert Notification—Bjelke-Petersen Dam—Local Area Communications Failure
Comms Failure – Brisbane	• Unable to communicate to or from Sunwater Brisbane	• DSTDM • LDMG 1 • LDMG 2 • LDMG 3 • LDMG 4 • DDMG • QPS	• Phone	• Describe current situation with dam communications. • What is the status – estimated time to restore communications?
		• LEC to send Sunwater Incident and Near Miss Alert		• EAP Alert Notification—Sunwater Brisbane Communications Failure

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

Table 32: Communications failure—DSTDM

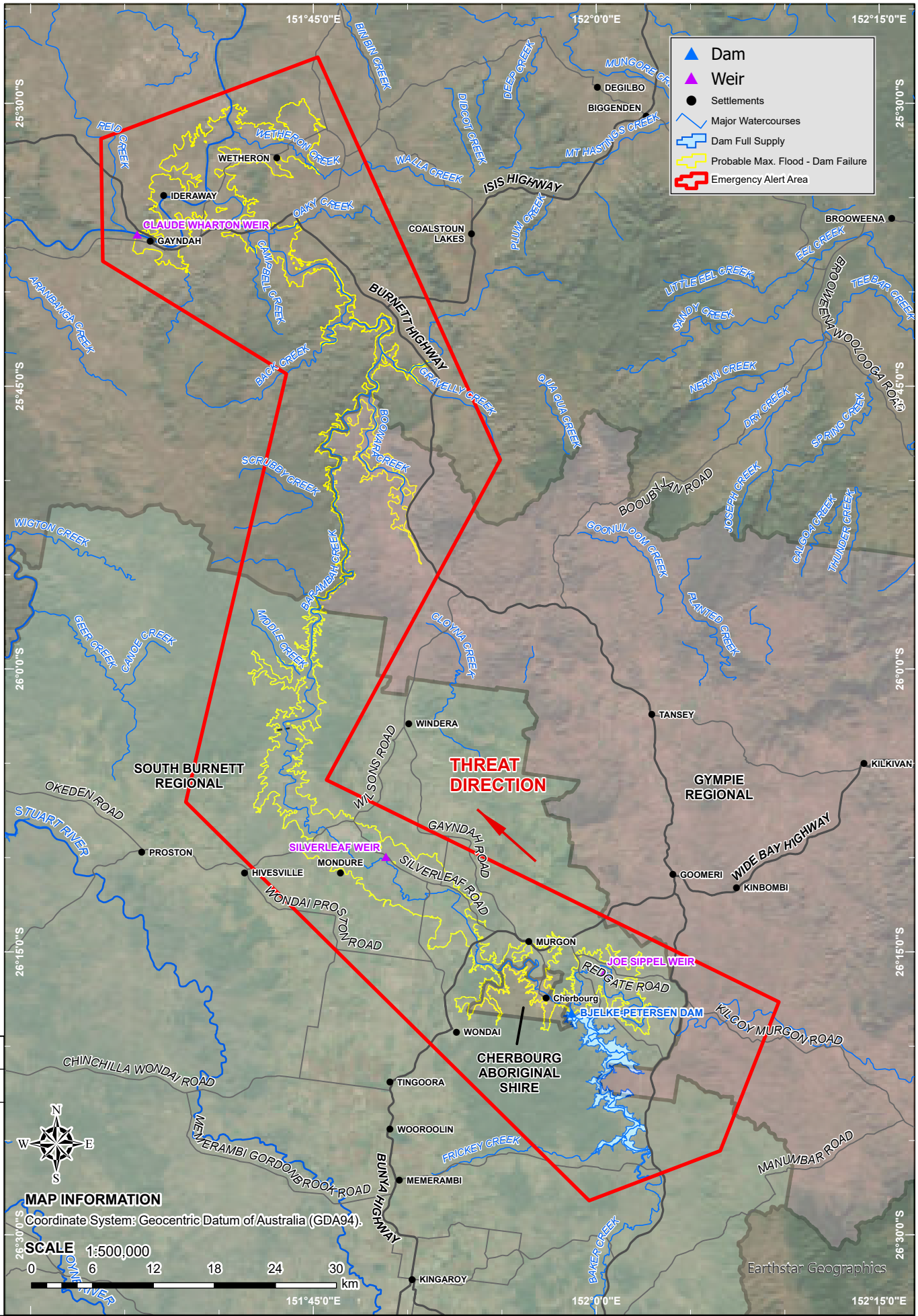
Activation level	Comms Failure – Site	Comms Failure – Local Area
Activation trigger	• Unable to communicate to dam site	• Unable to communicate to local area including LEC and SM
Actions	• Provide technical advice to IC/LEC on a needs basis. • Record all communication. • As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action.	• Provide technical advice to IC on an as 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.
Notifications	• IC • LEC • CEO • DSR	• IC • DDO • CEO • DSR

Table 33: Communications failure—FODM emergency action

Activation level	Comms Failure – Site	Comms Failure – Local Area
Activation trigger	• Unable to communicate to dam site	• Unable to communicate to local area including LEC and SM
Actions	• Record all communication. • As much as is practicable, continue other tasks associated with the role in accordance with any other current emergency action.	• 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.
Notifications	• IC • LEC • DSTDM	• IC • DDO • DSTDM

APPENDIX A Notification and communication lists

Appendix A1 to Appendix A7 have been redacted



S:\BW Asset Delivery\SW-BW Service Delivery\R-WSRW-38-01-05-01 EAP Mapping\Drawings\ArcMap\Emergency Alerts\249568-D.mxd
Last exported: 18/06/2024 11:33 AM

MAP PRODUCED BY: SUNWATER GIS

REVISION			
17/06/24	D	EA AREA SIMPLIFIED	MH
23/06/23	C	EA, PMF AREAS UPDATED	MB
03/09/18	B	ALERT AREA AMENDED	MB

DRAWN: simmonse
CHECKED: jensenr
APPROVED: M. HUGHES 23/06/2023

sunwater

BJELKE PETERSEN DAM
EMERGENCY ACTION PLAN
EMERGENCY ALERT AREA

CONTRACT NUMBER
DRAWING NUMBER 249568
REV. D
SHEET 1 OF 1
DATE JUNE 2023

Appendix A9: Dam failure emergency alert request

Queensland emergency alert request guidelines

An Emergency Alert Request form should be completed, if required (see Sections 5 to 9 for actions), and sent to the SDCC Watch Desk to activate the Bjelke-Petersen dam Emergency Polygon.

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 [redacted] and tell them your intention to use the Emergency Alert for an emergency event for Bjelke-Petersen 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 [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.
- Send an internal Incident Alert 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 Bee yell key Petersen Dam including Sher borg and Mur gone must LEAVE IMMEDIATELY. Bee yell key Petersen Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to a safe place away from the flood. Goo merry and King ah roy are safe. Get full warnings and what you should do at South Burnett Regional Council h tee tee pee colon back slash back slash disaster dashboard dot south burnett dot que el dee dot guv dot ay you.	FLOOD EMERGENCY WARNING from Sunwater. People downstream of Bjelke-Petersen Dam including Cherbourg and Murgon must LEAVE IMMEDIATELY. Bjelke-Petersen Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to a safe place away from the flood. Goomeri and Kingaroy are safe. Get full warnings and what you should do at South Burnett Regional Council. http://dashboard.southburnett.qld.gov.au

The following two pages are a pre-filled copy of the default Bjelke-Petersen Dam Emergency Alert request form.

Queensland Government

PHONE THE [redacted] – ADVISE EA IS BEING DEVELOPED

EMERGENCY ALERT REQUEST

Location of Alert: Bjelke-Petersen Dam (e.g. Suburb, Town)	**Date:**
LGA/Agency requesting:	**Time:**

Requesting Officer (e.g. Disaster Coordinator/Incident Controller)
Name:
Agency/Position:

Telephone:
(SDCC Watch Desk may telephone you)

Email:

Advised **LDC/LDMG**: ☐ YES **DDC/DDMG**: ☐ YES **Neighbouring LDMG/LGA**: ☐ YES ☐ N/A

Send Alert **Immediately**: ☐ YES **Scheduled**: ☐ YES Date & Time / / : hrs

Event Type

☐ Cyclone ☐ Storm Tide ☐ Flash Flood ☐ Flood
☐ Bushfire ☐ Fire Incident ☐ Smoke / Toxic Plume ☐ Chemical Spill
☐ Tsunami (Sent as Location Based Text Message ONLY)
☒ Other (please specify): Catastrophic Dam Failure

Distributed by: (Channel)

☒ Voice (Landline only) ☒ SMS – Location Based (Location of phone at time of distribution) ☐ SMS – Service Address Based (Registered billing address)

Message Severity

☒ Emergency Warning (Activates SEWS) ☐ Watch & Act ☐ Advice

Threat Direction Required? (e.g. Fire, Dam Spill) ☐ YES ☐ N/A

Threat location indicated on map? Only For Emergency Warning Voice & Service Address SMS ☐ YES ☐ N/A

EA Messaging Filename (Doc, Pdf):

Polygon Filename, (Kml, Kmz, Gml, GeoJSON):

Number of polygons _____ (if multiple, attach list in order of priority)

Supplied via: ☒ DM Portal ☐ Email ☐ Verbal ☐ Other
Other (please specify):

Supplied via: ☒ DM Portal ☐ Email ☐ Verbal ☐ Other
Other (please specify):

Voice: Type or handwrite, max 4000 characters incls spaces. (Ideally message should be < 450 characters)

FLOOD EMERGENCY WARNING from Sun Water: People downstream of Bee yell key Petersen Dam including Sher borg and Mur gone must LEAVE IMMEDIATELY. Bee yell key Petersen Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to a safe place away from the flood. Goo merry and King ah roy are safe. Get full warnings and what you should do at South Burnett Regional Council h tee tee pee colon back slash back slash disaster dashboard dot south burnett dot que el dee dot guv dot ay you.

SMS: Type or handwrite, use capitals for clarity, max 612 characters incls spaces. (Ideally should be < 160 characters incl. spaces)

FLOOD EMERGENCY WARNING from Sunwater: People downstream of Bjelke-Petersen Dam including Cherbourg and Murgon must LEAVE IMMEDIATELY. Bjelke-Petersen Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to a safe place away from the flood. Goomeri and Kingaroy are safe. Get full warnings and what you should do at South Burnett Regional Council http://dashboard.southburnett.qld.gov.au

Remove EA from websites:

☐ 12 hrs ☐ 24 hrs ☐ 48 hrs ☐ Specify Date & Time: ☐ Check back in 12 hrs:
☐ Replace previous EA message / / : hrs Contact #:_____

Requesting Officer: **Signature:** **Date:** / /

Send to [redacted] to confirm receipt

FOR USE BY SDCC

EA Request Form completed by: SDCC Watch Desk ☐ Requesting Officer ☐

Notification of any delays provided to Requestor: ☐ YES ☐ NO

EA User Name:
Signature: Date: / /

Emergency Alert No:

Authorising Officer Name:
Signature: Date: / /

EMS EA Campaign Report ID:

Report provided to Requestor on EA outcomes: ☐ YES ☐ NO

The EA Manual, EA Quick Reference Guide, EA Request Form Template are available at: www.disaster.qld.gov.au

DO NOT SEND THIS PAGE

(Sunwater internal use only)

Emergency Alert (EA) Request instructions

Complete ALL initial fields, especially contact details, and check applicable boxes.

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. Check applicable box.
STEP 2.	Enter the Polygon file name/s.
STEP 3.	*Sunwater Polygons are all in *.kml format.* Check applicable box.
STEP 4.	*Sunwater Messaging/spatial data is always supplied via DMportal.* Check applicable box. Enter the file name.

Voice Message: Either type or handwrite the required message in CAPITALS. 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.
An Emergency Warning message must start with "EMERGENCY EMERGENCY" Do not use special characters.

SMS: Either type the message or handwrite the characters into the boxes.
Capitals only required as per normal grammar rules, but an Emergency Warning message must start with "EMERGENCY EMERGENCY" (in capitals). Do not use special characters.

Voice example:

EMERGENCY. EMERGENCY. SUN WATER ADVISE IMMINENT FAILURE OF CANIA DAM. 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: MOONFORD AND MONTO. DO NOT DELAY. LEAVE NOW. CENTRAL MONTO AND BILOELA ARE SAFE LOCATIONS.

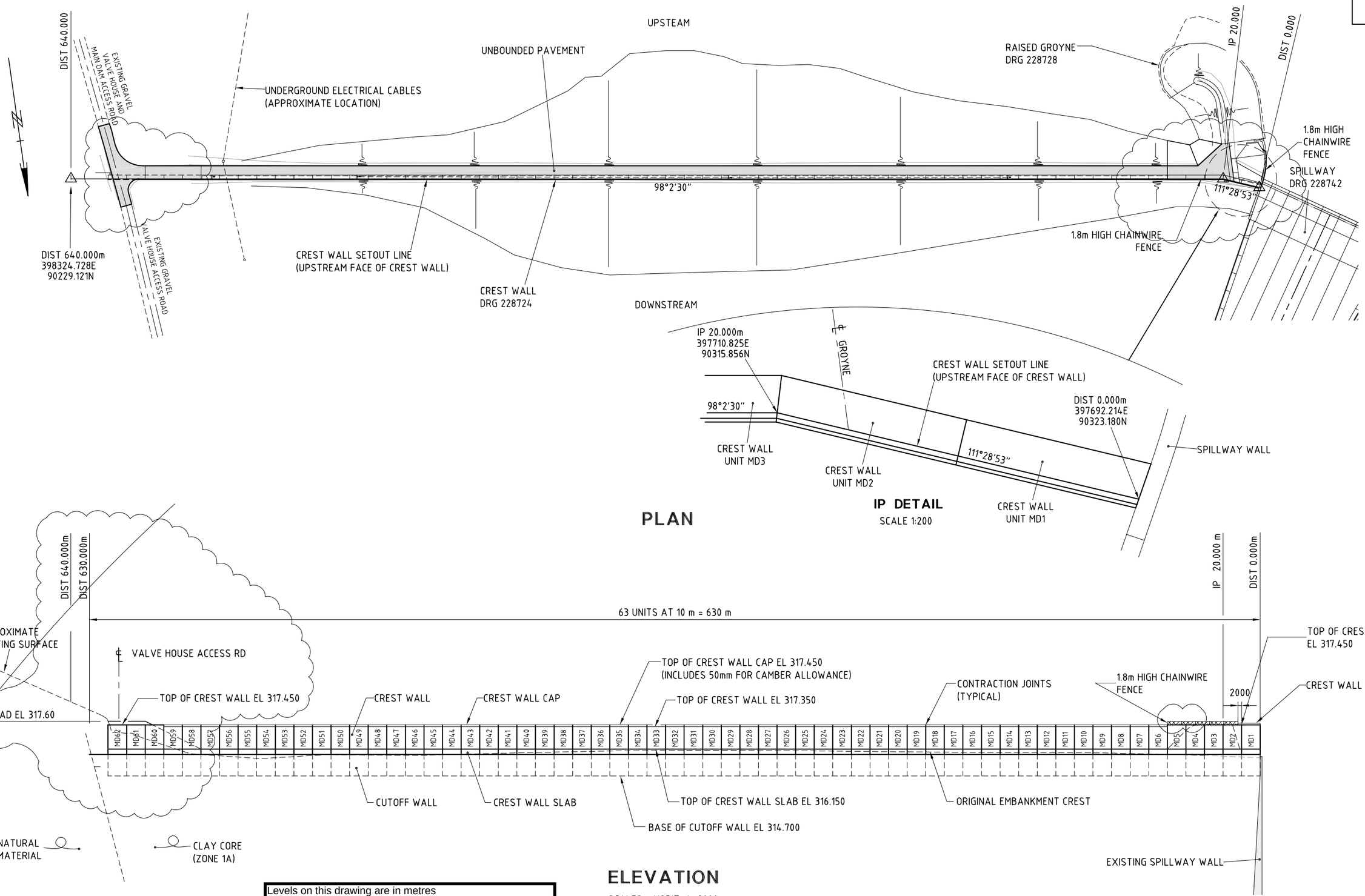
SMS example:

EMERGENCY. EMERGENCY. Sunwater advise imminent failure of Cania Dam. Take action to protect life and leave now. Moonford and Monto are at risk. Info on ABC Radio. Central Monto & Biloela are safe.

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

APPENDIX B Drawings, maps and emergency control measures

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.



Levels on this drawing are in metres
based on PM89215 = EL 287.631 (AHD Registered)

NOTES:

1. FOR SURVEY DATUMS REFER DRG 228626

AS-BUILT

REVISION						REFERENCE DRAWINGS		
15.11.07	B	AS BUILT	BT	JKR				
20.03.07	A	REVISED	LMD	JKR				
DATE		REMARKS	CKD	PSD		.	.	

SCALES

H 0 50 100 METRES 1 : 2000

V 0 5000 10000 MILLIMETRES 1 : 200

DRAWN	DESIGNED
LMD	BJMT
CHECKED	CHECKED
	RR

APPROVED
J.K.RICHARDSON
for
CHIEF DESIGN ENGINEER

SunWater
Level 9, 120 Edward Street
Brisbane Qld 4002
Tel: (07) 3120 0000

BJELKE-PETERSEN DAM SPILLWAY CAPACITY UPGRADE STAGE 1 MAIN DAM EMBANKMENT CREST WALL ARRANGEMENT

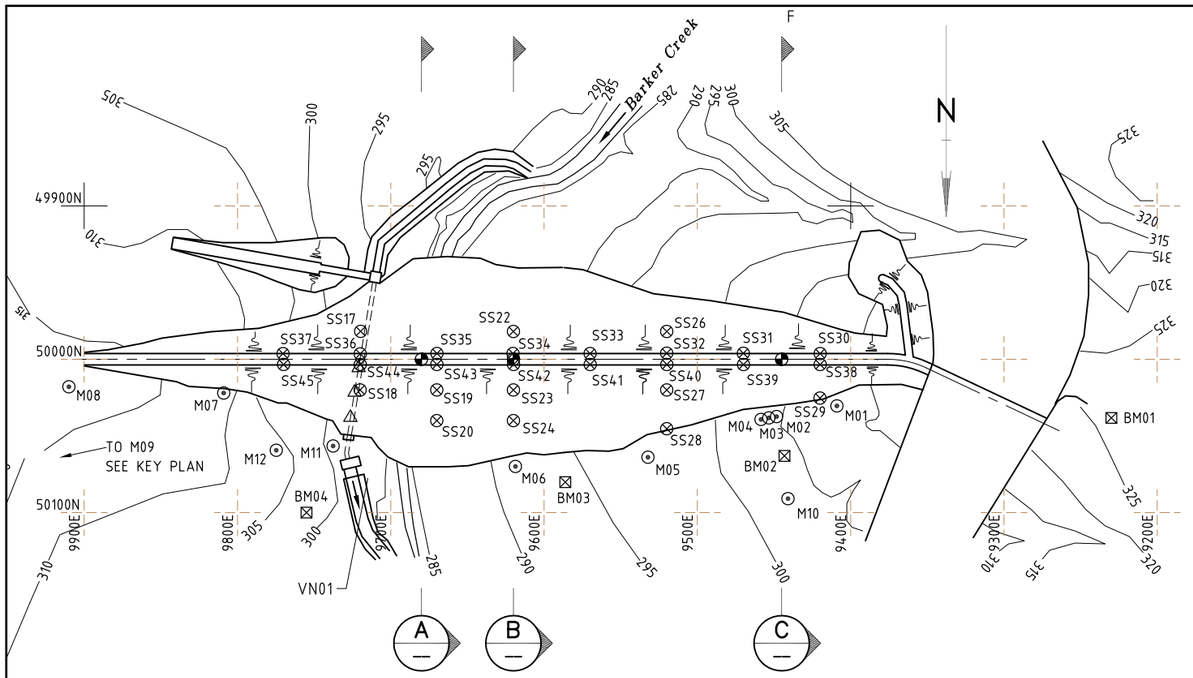
SH 2 OF 6

CONTRACT NUMBER .

DRAWING NUMBER 228723

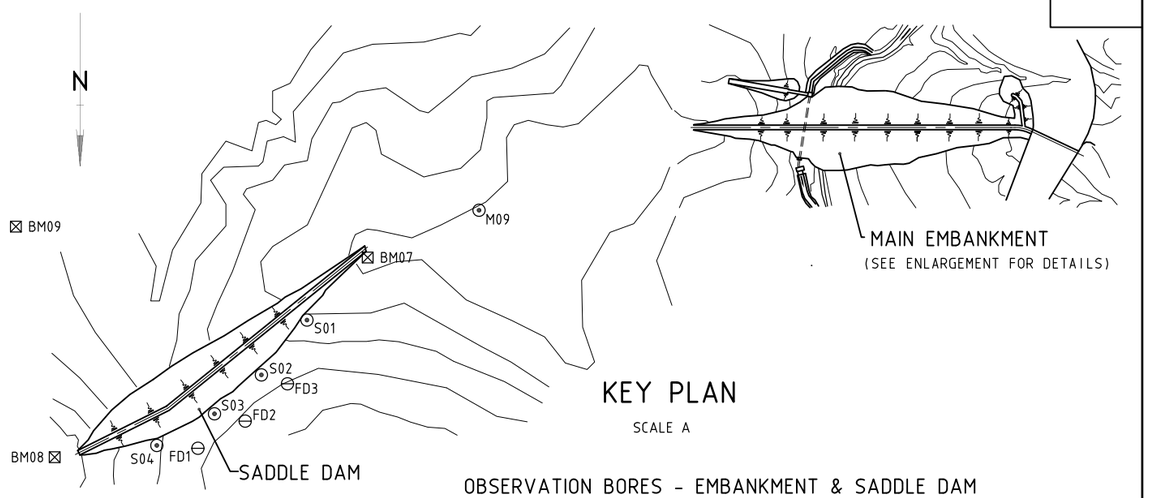
DATE NOV 2007

A B



MAIN EMBANKMENT

SCALE B



KEY PLAN

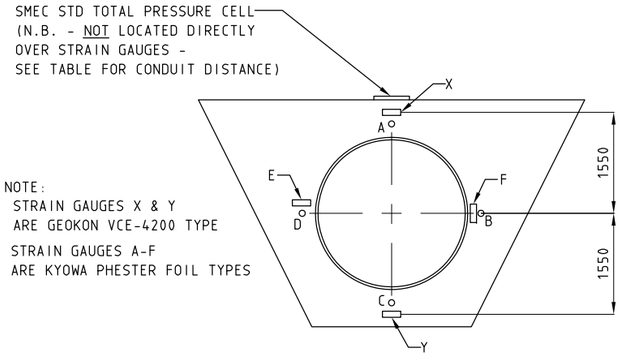
SCALE A

OBSERVATION BORES - EMBANKMENT & SADDLE DAM

No	EASTING	NORTHING	ELEVATION	DEPTH (m)	COMMENTS
M01	9408.97	50030.41	306.09	20	LEFT ABUTMENT PHYLLITE
M02	9448.35	50037.36	302.12	25	LIMESTONE/PHYLLITE CONTACT
M03	9453.38	50038.23	301.58	25	" "
M04	9458.52	50039.22	300.87	25	" "
M05	9532.25	50063.85	294.80	20	LIMESTONE - DRY
M06	9618.70	50069.89	288.61	25	LIMESTONE / ANDESITE
M07	9808.99	50022.02	311.27	15	ANDESITE
M08	9910.00	50017.94	316.03	25	LIMESTONE FEATURE 1
M09	10249.95	50134.93	315.94	25	LIMESTONE FEATURE 2 - DRY
M10	9440.91	50090.88	302.34	25	
M11	9737.64	50056.54	287.68	10	VALVE HOUSE ACCESS LEVEL
M12	9774.72	50059.33	307.16	20	
S01	10530.54	50313.96	309.49	10	WESTERN BORDER FAULT
S02	10604.89	50403.37	302.49	10	
S03	10681.38	50466.75	302.25	15	SYNCLINE
S04	10775.39	50518.33	305.25	15	

FOUNDATION DRAINS

No	EASTING	NORTHING	ELEVATION
FD1	10708.33	50522.91	300.91
FD2	10631.23	50478.63	299.26
FD3	10562.32	50417.83	299.76



DIVERSION CONDUIT SECTION

NOT TO SCALE

V-NOTCH WEIR

No	LOCATION	COMMENTS
VN01	TOE OF MAIN DAM	

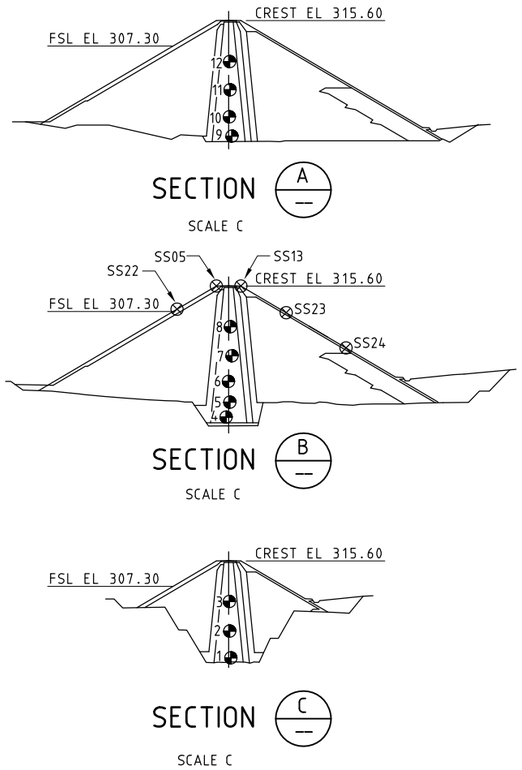
TOTAL PRESSURE CELL INSTALLATIONS - CONDUIT

No	CONDUIT DISTANCE	OFFSET FROM AXIS	ELEVATION
TP13*	63.64	0	286.09
TP14*	79.88	0	285.95
TP15*	96.49	0	285.77

* SEE NOTE 1.

STRAIN GAUGES

No	CONDUIT DISTANCE	DIRECTION	FIXING DETAILS
1A	66.326	L	STRUCT REINF
1B	"	L	"
1C	"	L	"
1D	"	L	"
1E	"	T	DUMMY REINF
1F	"	V	"
1X	"	T	CONCRETE
1Y	"	T	"
2A	82.226	L	STRUCT REINF
2B	"	L	"
2C	"	L	"
2D	"	L	"
2E	"	T	DUMMY REINF
2F	"	V	"
2X	"	T	CONCRETE
2Y	"	T	"
3A	98.127	L	STRUCT REINF
3B	"	L	"
3C	"	L	"
3D	"	L	"
3E	"	T	DUMMY REINF
3F	"	V	"
3X	"	T	CONCRETE
3Y	"	T	"



TOTAL PRESSURE CELL INSTALLATIONS - EMBANKMENT

No	AXIS DISTANCE	OFFSET FROM AXIS	ELEVATION
TP01	9445.10	0.04 D/S	284.11
TP02	9445.52	0.45 U/S	292.83
TP03	9445.11	0.47 U/S	302.41
TP04	9620.18	0.39 U/S	272.92
TP05	9619.77	0.05 U/S	277.86
TP06	9620.52	0.62 U/S	284.61
TP07	9620.37	0.24 D/S	292.94
TP08	9620.56	0.00	302.35
TP09	9680.41	0.69 D/S	278.03
TP10	9680.03	0.27 U/S	284.33
TP11	9680.10	0.32 U/S	293.11
TP12	9675.06	0.08 U/S	302.33

PNEUMATIC PIEZOMETER INSTALLATIONS

TIP No	AXIS DISTANCE	OFFSET FROM AXIS	ELEVATION
PP01	9445.60	0.72 D/S	284.01
PP02	9445.83	0.36 D/S	292.74
PP03	9445.49	0.24 D/S	302.38
PP04	9619.59	0.82 U/S	272.89
PP05	9619.12	0.40 D/S	277.75
PP06	9619.81	0.05 U/S	284.51
PP07	9619.94	1.10 D/S	292.87
PP08	9620.77	0.58 D/S	302.34
PP09	9679.61	1.08 D/S	277.96
PP10	9680.69	0.24 D/S	284.25
PP11	9680.41	0.46 D/S	293.05
PP12	9675.50	0.34 D/S	302.25

SURFACE MOVEMENT POINTS

No	EASTING	NORTHING	ELEVATION
SD01	10545.249	50292.186	317.560
SD02	10607.133	50342.840	317.584
SD03	10684.545	50406.196	317.586
SD04	10762.552	50468.696	317.595
SD05	10824.898	50500.461	317.603
SS17	9719.662	49981.808	307.942
SS18	9719.903	50020.041	306.984
SS19	9669.945	50020.024	306.890
SS20	9669.933	50039.959	295.365
SS22	9620.268	49982.250	307.931
SS23	9619.884	50020.001	306.788
SS24	9619.816	50039.929	295.318
SS26	9520.194	49981.784	307.961
SS27	9519.957	50019.937	307.007
SS28	9519.975	50040.020	295.002
SS29	9419.945	50022.695	305.202
SS30	9419.893	49996.296	316.714
SS31	9470.011	49996.108	316.724
SS32	9520.007	49996.052	316.754
SS33	9569.978	49996.274	316.764
SS34	9620.291	49996.230	316.748
SS35	9669.896	49996.246	316.806
SS36	9719.942	49996.512	316.845
SS37	9770.291	49996.343	316.721
SS38	9419.889	50003.419	317.514
SS39	9469.913	50003.438	317.541
SS40	9519.933	50003.432	317.536
SS41	9569.905	50003.414	317.540
SS42	9619.907	50003.399	317.547
SS43	9669.937	50003.381	317.543
SS44	9719.928	50003.402	317.555
SS45	9769.921	50003.397	317.552
CONTROL STATIONS BM01	9229.965	50038.257	327.203
BM02	9443.171	50063.318	304.731
BM03	9586.145	50080.101	294.383
BM04	9754.998	50099.973	304.672
BM07	10431.519	50212.031	317.820
BM08	10941.937	50537.454	319.689
BM09	11005.304	50161.627	309.702

LEGEND

- COMBINED INSTALLATION OF TOTAL PRESSURE CELL & PNEUMATIC PIEZOMETER
- CONDUIT INSTRUMENTATION INSTALLATION
- SURFACE MOVEMENT POINT
- SURVEY CONTROL STATION
- OBSERVATION BORE
- FOUNDATION DRAIN

NOTES:

1. TOTAL PRESSURE CELL INSTALLATIONS IN THE CONDUIT DISCONNECTED AFTER CONSTRUCTION.
2. STRAIN GAUGES RECORDINGS IN VALVE HOUSE DONE APPROX 5 YEARLY.
3. LEVEL DATUM : AHD BASED ON PM9098 AT EL331.316m AHD.
4. AZIMUTH DATUM : ARBITARY GRID BASED ON BEARING 238° 05' 00" BETWEEN BM783001 AND BM783011.
5. COORDINATE SYSTEM : LOCAL PLANE BASED ON BM783001 E 10 000 N 50 000.
6. TOP OF PILLAR & SETTLEMENT MARKS ARE 0.055m LOWER THAN LEVELS SHOWN IN TABLES.
7. COORDINATES & LEVELS FROM INITIAL DEFORMATION SURVEY IN FEB 1989 (SS17-SS29) & IN AUGUST 2007 (SS30-SS45),(SD01-SD05).
8. SS01-SS16 DESTROYED IN AUG 2007 UPGRADE & REPLACED BY SS30-SS45

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REVISION						DRAWINGS		
	13.05.16	E	FOUNDATION DRAINS ADDED	TJA	RM			
	16.01.08	D	SPILLWAY UPGRADE	RT	WH			
	26.02.07	C	NOTES		DH			
	10.02.04	B	NOTES ADDED, SMP's BACK TO ORIG. DATA	DNH	DNH	REFERENCE	A1-83346	CONDUIT INSTRUMENTATION - CABLE INSTALLATION
	12.03.01	A	DRAWING COMPLETED AND SIGNED		HK		A1-86034	MAIN EMBANKMENT & SADDLE DAM - OBSERVATION BORES
	DATE		REMARKS	CKD	PSD		A1-83347	MAIN EMBANKMENT - INSTRUMENTATION

SCALES

A 0 100 200 300 400 500 METRES 1:10000

B 0 50 100 150 200 METRES 1:4000

C 0 50 100 METRES 1:2000

DRAFTING	DESIGN
DRN	
DRAFTING CHK	DESIGN CHK
	H.Khadka

APPROVED

K.L. EHM 14/3/01

CHIEF ENGINEER CIVIL DESIGN

SunWater

BJELKE-PETERSEN DAM
INSTRUMENTATION
ARRANGEMENT

CONTRACT NUMBER

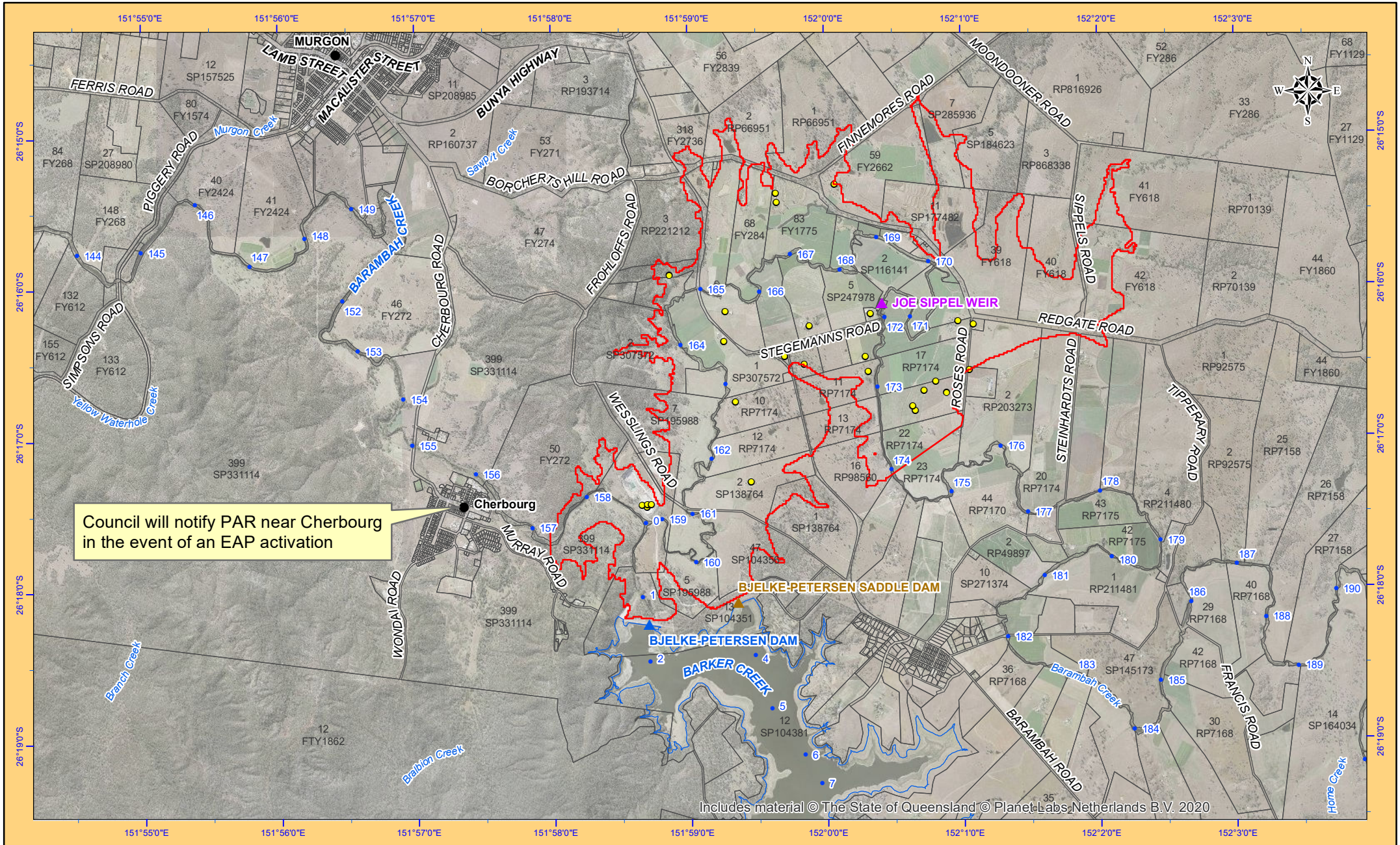
DRAWING NUMBER A3-102260

DATE FEB 2001

A B C D E

Appendix B2: Flood impacts—downstream

Flood Impacts are based on the 2022 Comprehensive Risk Assessment of Bjelke-Petersen Dam (ref I).



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MAP INFORMATION

Coordinate System: Geocentric Datum of Australia (GDA2020).

SCALE (A4 SIZE)

0 600 1,200 1,800 2,400 3,000 m 1:60,000

LEGEND

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

BJELKE PETERSEN 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. 250706 D

Appendix B3: Inundation maps

Drawings:

- Keymap
- Sunny Day Failure (SDF)
- Probable Maximum Flood (PMF)

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.

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LEGEND

- State Road (DTMR)
- Major Watercourse
- Built Up Area
- Qld Local Government Area
- Maximum Flood Event

Sunwater Storages

- Dam
- Weir
- Dam Reservoir

FRASER COAST REGIONAL COUNCIL
GYMPIE REGIONAL COUNCIL
NORTH BURNETT REGIONAL COUNCIL
SOUTH BURNETT REGIONAL COUNCIL

DOVEDALE
BIGGENDEN
DEGILBO
COALSTOUN LAKES
KINBOMBI
GOOMERI
TANSEY
CHERBOURG
MURGON
WONDAI
TINGOORA
HIVESVILLE
ETTIEWYN
THE HAVEN
WINDERA
MONDURE
WETHERON
YENDA
IDERAWAY
GAYNDAH
ARANBANGA
WIGTON
PROSTON

Teebar Creek
Cracker Creek
Wide Bay Creek
Nangur Creek
Boonara Creek
Barker Creek
Barambah Creek
Burnett River
Reid Creek
Stuart River
Boyne River

MARYBOROUGH - BIGGENDEN ROAD
KILKIVAN - TANSEY ROAD
WIDE BAY HIGHWAY
KILKIVAN - MURGON ROAD
BURNETT HIGHWAY
MURGON - BARAMBAH ROAD
COOROOLBA - BIGGENDEN ROAD
MURGON - GAYNDAH ROAD
BYEE ROAD
BUNYA HIGHWAY
GAYNDAH - MOUNT PERRY ROAD
WONDAI - PROSTON ROAD
CHINCHILLA - WONDAI ROAD
OKEDEN ROAD
PROSTON - BOONDOOMA ROAD

Joe Sippel Weir
BJELKE-PETERSEN DAM
Silverleaf Weir
Claude Wharton Weir

SHEET 1 OF 11
SHEET 2 OF 11
SHEET 3 OF 11
SHEET 4 OF 11
SHEET 5 OF 11
SHEET 6 OF 11
SHEET 7 OF 11
SHEET 8 OF 11
SHEET 9 OF 11
SHEET 10 OF 11
SHEET 11 OF 11

7180000 7160000 7140000 7120000 7100000
420000 400000 380000 360000

REVISION				
29/11/22	A	ISSUED FOR USE	LH	MGH
DATE		REMARKS	CKD	PSD

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020), Zone 56.

DRAWING REFERENCE
256771 - Sunny Day Failure
256772 - Probable Maximum Flood

SCALES (A3 SIZE)
0 2.5 5 7.5 10 12.5 km
1:300,000

DRAWN	DESIGNED
IDH	
CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/11/2022	RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
INUNDATION PLANS
KEYMAP

CONTRACT NUMBER
DRAWING NUMBER 256770
REV. A
SHEET 1 OF 1
DATE NOVEMBER 2022

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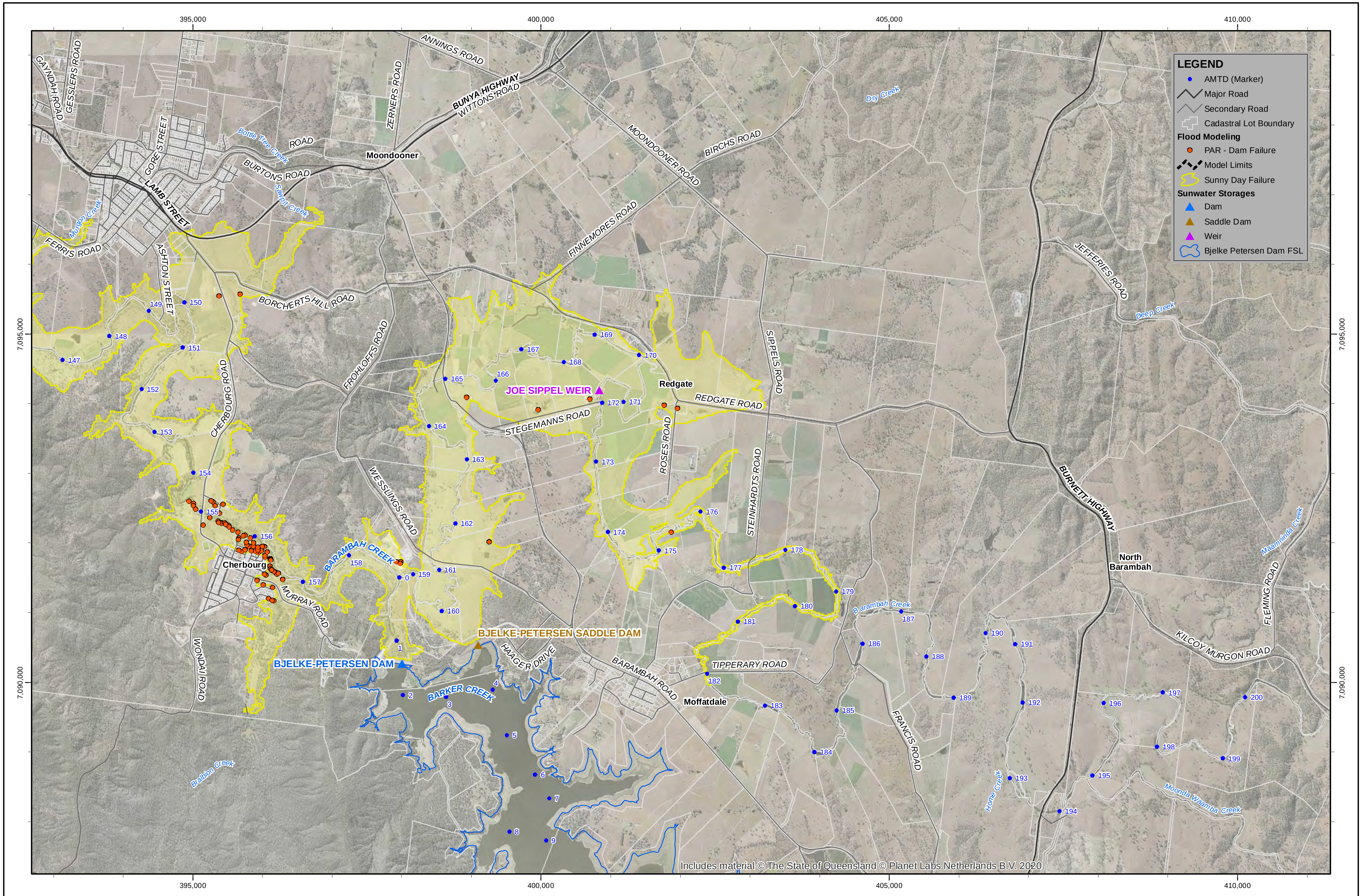

REVISION				
29/11/22	A	ISSUED FOR USE	LH	MGH
DATE		REMARKS	CKD	PSD

MAP PRODUCED BY: WATER RESOURCES AND DAM SAFETY TEL: (07) 3120 0000

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
1:50,000

DRAWN: IDH
DESIGNED:
CHECKED:
CHECKED: LH
APPROVED: M.G. HUGHES 29/101/2022 RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE
(PIPING FAILURE)
INUNDATION PLAN

CONTRACT NUMBER:
DRAWING NUMBER: 256771
REV.: A
SHEET 1 OF 11
DATE NOVEMBER 2022

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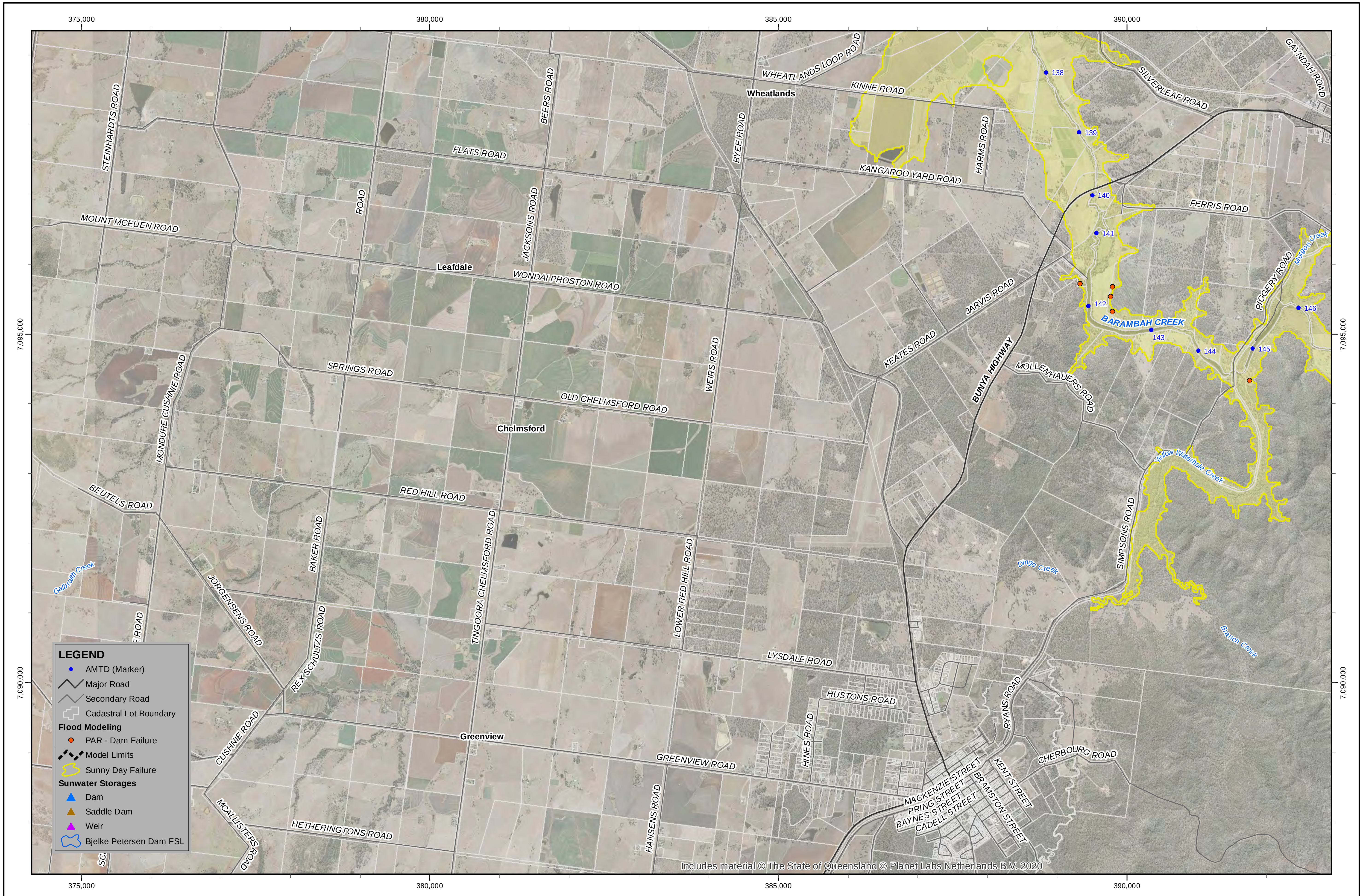

375,000
380,000
385,000
390,000
7,095,000
7,090,000
WHEATLANDS LOOP ROAD
KINNE ROAD
Wheatlands
SILVERLEAF ROAD
GAYNDAH ROAD
STEINHARDTS ROAD
BEERS ROAD
FLATS ROAD
BYEE ROAD
HARMS ROAD
KANGAROO YARD ROAD
ROAD
JACKSONS ROAD
MOUNT MCEUEN ROAD
FERRIS ROAD
Leafdale
WONDAI PROSTON ROAD
JARVIS ROAD
PIGGERY ROAD
Mungon Creek
BARAMBAH CREEK
KEATES ROAD
SPRINGS ROAD
WEIRS ROAD
MONDURE CUSHNIE ROAD
OLD CHELMSFORD ROAD
BUNYA HIGHWAY
MOLLENHAUERS ROAD
Chelmsford
Yellow Waterhole Creek
BEUTELS ROAD
RED HILL ROAD
BAKER ROAD
TINGOORA CHELMSFORD ROAD
LOWER RED HILL ROAD
SIMPSONS ROAD
Dingo Creek
Galbraith Creek
JORGENSENS ROAD
REX SCHULTZS ROAD
Branch Creek
LYSDALE ROAD
HUSTONS ROAD
RYANS ROAD
Greenview
CUSHNIE ROAD
GREENVIEW ROAD
HINES ROAD
CHERBOURG ROAD
KENT STREET
MACKENZIE STREET
PRING STREET
BAYNES STREET
CADELL STREET
BRAMSTON STREET
MCALLISTERS ROAD
HETHERINGTONS ROAD
HANSENS ROAD
138
139
140
141
142
143
144
145
146
Includes material © The State of Queensland © Planet Labs Netherlands B.V. 2020
LEGEND
AMTD (Marker)
Major Road
Secondary Road
Cadastral Lot Boundary
Flood Modeling
PAR - Dam Failure
Model Limits
Sunny Day Failure
Sunwater Storages
Dam
Saddle Dam
Weir
Bjelke Petersen Dam FSL

DATE		REMARKS	CKD	PSD
29/11/22	A	ISSUED FOR USE	LH	MGH

REVISION

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
1:50,000

DRAWN: IDH | DESIGNED
CHECKED | CHECKED: LH
APPROVED: M.G. HUGHES 29/101/2022 RPEQ: 18351

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BJELKE PETERSEN DAM DAM BREAK ANALYSIS 2022 SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER
DRAWING NUMBER: 256771 | REV.: A
SHEET 2 OF 11
DATE NOVEMBER 2022

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Tel: (07) 3120 0000

375,000 380,000 385,000 390,000

7,110,000 7,105,000 7,100,000

WEBBERS BRIDGE ROAD
WOOROONDEN ROAD
BRAND ROAD
WILSONS ROAD
ALTHOUSE ROAD
HEADINGS ROAD
ELBOW ROAD
EISENMENGERS ROAD
BRADLEYS ROAD
BICKS ROAD
MITCHELLS ROAD
SILVERLEAD ROAD
PADDYS ROAD
BARAMBAH CREEK
MOORES ROAD
BLACKS CROSSING ROAD
PRINGLES HILL ROAD
LANCASTERS ROAD
GAYNDAH ROAD
BELLIOTTIS ROAD
SMITHS ROAD
MCCONNEL WAY
WSF RAMKE ROAD
SILVERLEAF ROAD
FRIEBERGS ROAD
RICKERTS ROAD
KAWL KAWL ROAD
CAMPBELLS ROAD
GUEENA LANE
PAUL HOLZNAGEL ROAD
BARILL ROAD
CROWNTHORPE ROAD
MONTEITH ROAD
MONDURE WHEATLANDS ROAD
SEMPFS ROAD
MONDURE CUSHNIE ROAD
KAYES ROAD
STEINHARDTS ROAD
FARRERS ROAD
BEERS ROAD
BYEE ROAD
WHEATLANDS LOOP ROAD
SAKRZEWSKI ROAD
WONDAI PROSTON ROAD
OAKDALE ROAD
Oaky Creek

Woroonden
Sunnynook
Merlwood
Silverleaf
Byee
Oakdale
MONDURE

SILVERLEAF WEIR

105 106 108 109 110 111 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137

LEGEND
- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling
- PAR - Dam Failure
- Model Limits
- Sunny Day Failure

Sunwater Storages
- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
DATE		REMARKS	CKD	PSD	

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
1:50,000

DRAWN	DESIGNED
IDH	
CHECKED	CHECKED
	LH

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER 256771 | REV. A

SHEET 3 OF 11

DATE NOVEMBER 2022

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360,000 365,000 370,000

7,110,000 7,105,000 7,100,000

RANGE ROAD
Genera Creek
STALWORTH ROAD
CRIDLANDS ROAD
ETHERINGTONS ROAD
BARAMBAH CREEK
102
103
104
107
PROSTON ABBEYWOOD ROAD
ROAD
Sunday Creek
GAYNDAH HIVESVILLE ROAD
BASIN ROAD
PADDYS ROAD
OKEDEN ROAD
Cumbanga Creek
BUTLER DRIVE
STONELANDS ROAD
Four Mile Creek
WONDAI PROSTON ROAD
PROSTON BOONDOOMA ROAD
PROSTON
RODNEY STREET
Dangora Creek
HIVESVILLE ROAD
STUMCKES ROAD
OBERLES ROAD
MIDDLE ROAD
HIVESVILLE
Kawl Kawl
THE WEIR ROAD
BACK ROAD
KAWL KAWL ROAD
26
27
BLAWCHS ROAD
Kinleymoore
KAYS ROAD
DIONYSIUS ROAD
KINLEYMORE SCHOOL ROAD
31
Meyhar Creek
TEN CHAIN ROAD
32
KAYES ROAD
MOUNT MCEUEN ROAD
THE BLUFF ROAD
DIP ROAD
33
34

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - Dam Failure
- Model Limits
- Sunny Day Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
DATE		REMARKS	CKD	PSD	

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
1:50,000

DRAWN	DESIGNED
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CHECKED	CHECKED
	LH
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RPEQ: 18351	

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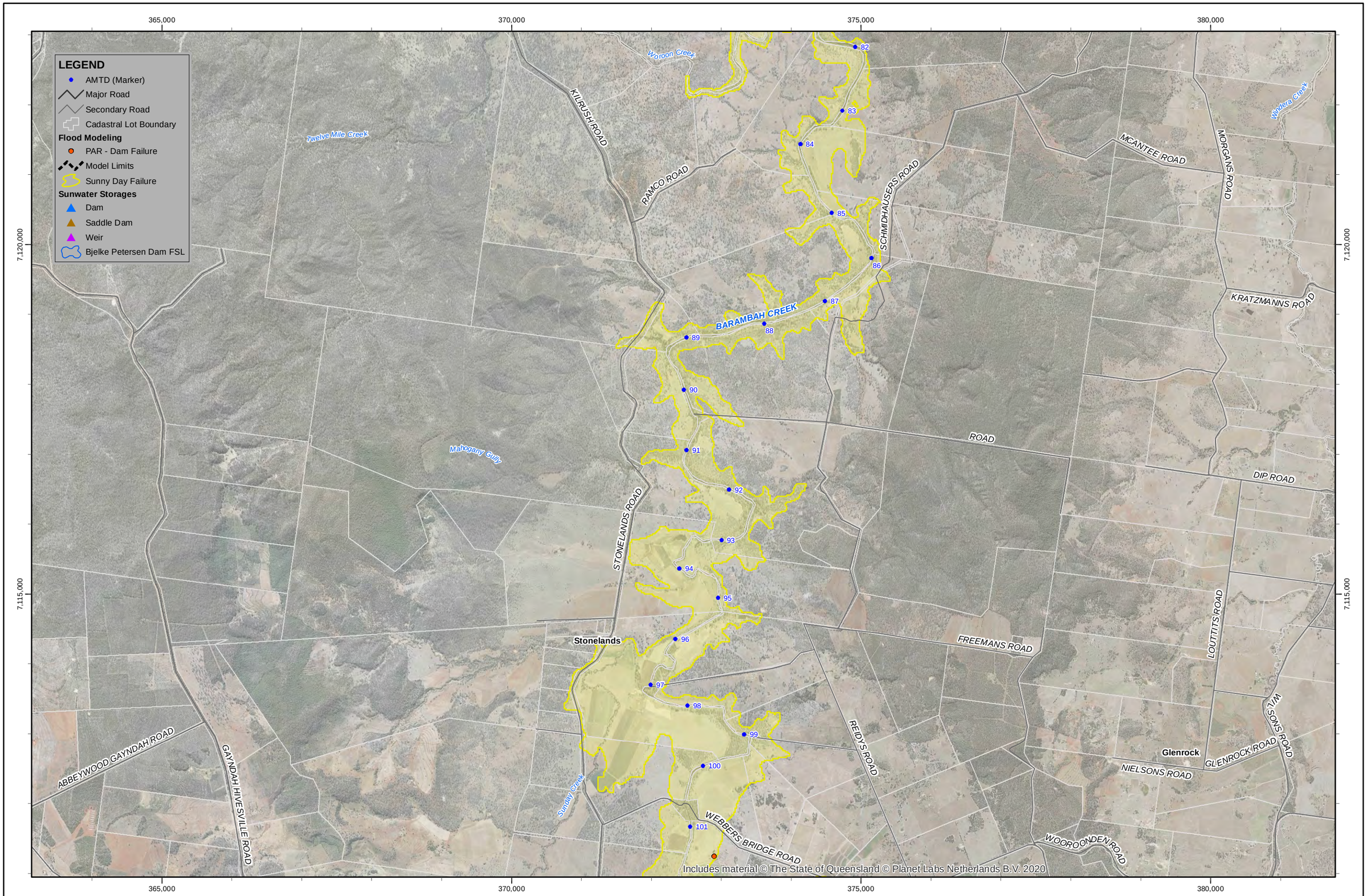
BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE
(PIPING FAILURE)
INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256771	A

SHEET **4 OF 11**
DATE **NOVEMBER 2022**



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DATE		REMARKS	CKD	PSD	

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Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
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1:50,000

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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/101/2022	RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256771	A
SHEET 5 OF 11	
DATE NOVEMBER 2022	

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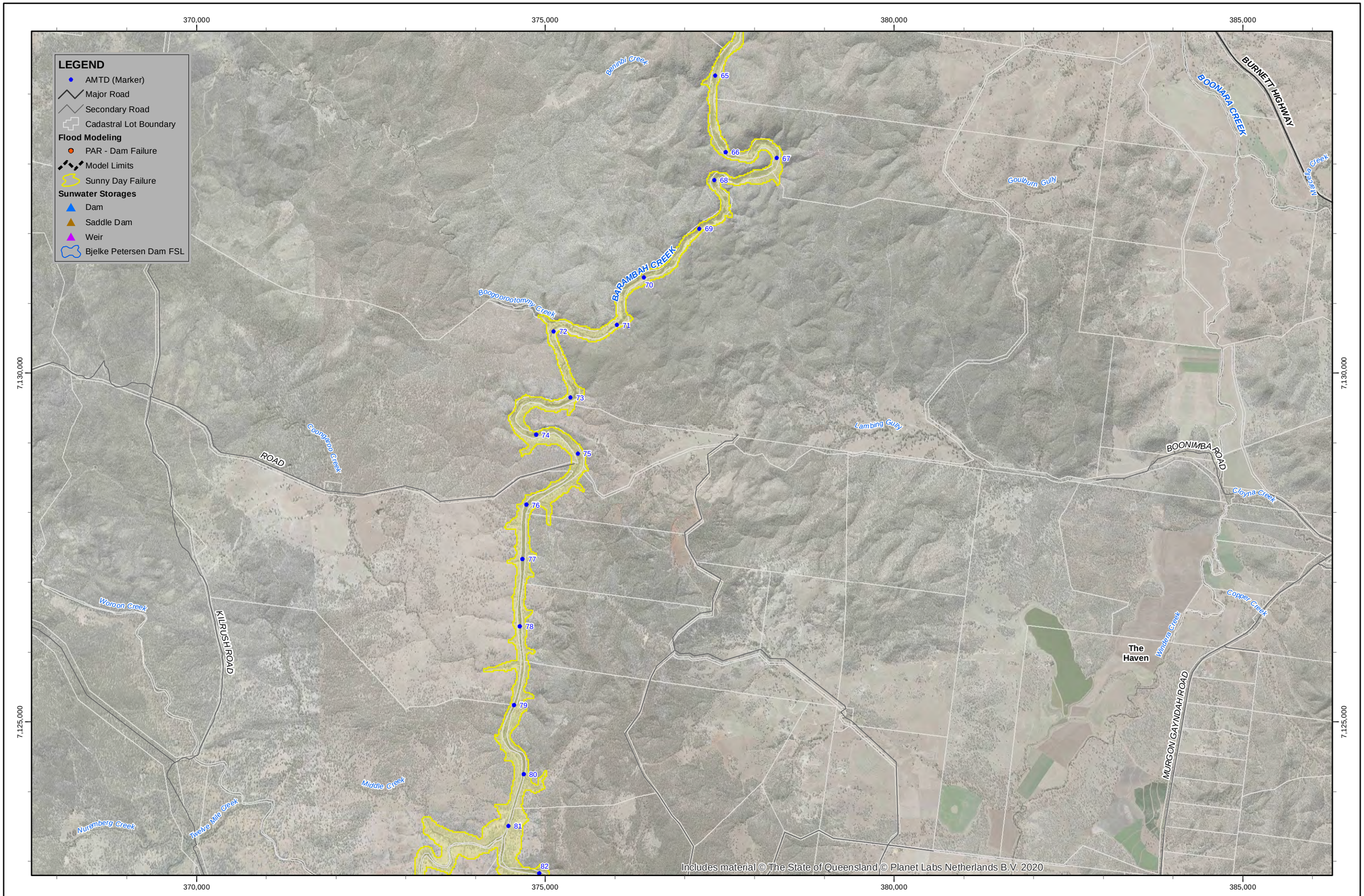
TEL: (07) 3120 0000



REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
DATE		REMARKS	CKD	PSD	

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
1:50,000

DRAWN	DESIGNED
IDH	
CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/101/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE
(PIPING FAILURE)
INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256771	A
SHEET 6 OF 11	
DATE NOVEMBER 2022	

Document: S:\BW_WaterResources\GIS_Data\SW_Barker Barambah WSS\BjelkePetersenDam_CRA2022\Drawings\ArcMap\256771-A.mxd
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Map Produced By:
Water Resources and Dam Safety
Tel: (07) 3120 0000

370,000 375,000 380,000 385,000

7,145,000 7,140,000 7,135,000

Five Mile Creek
Cambalanga Creek
BARAMBAH CREEK
50
51
52
53
Middle Creek
54
55
56
57
58
59
60
61
62
63
64
Little Oaky Creek
BOONARA CREEK
Liney Creek
HOLROYD ROAD
BURNETT HIGHWAY
ROAD
ROSS ROAD
Scrubby Creek
Wahoon Creek
Marcella Creek

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - Dam Failure
- Model Limits
- Sunny Day Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION				
29/11/22	A	ISSUED FOR USE	LH	MGH
DATE		REMARKS	CKD	PSD

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REFERENCE DRAWINGS
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SCALES (A3 SIZE)
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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/101/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256771	A

SHEET 7 OF 11

DATE NOVEMBER 2022

Document: S:\BW_WaterResources\GIS_Data\SW_Barker Barambah WSS\BjelkePetersenDam_CRA2022\Drawings\ArcMap\256771-A.mxd
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MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
TEL: (07) 3120 0000

370,000 375,000 380,000 385,000

7,155,000

7,150,000

THE RIDGES ROAD
STAIBS ROAD
STOCKHAVEN ROAD
BURNETT HIGHWAY
SEFTON ROAD
PENWHAUPELL ROAD
ROAD

One Mile Creek
Campbell Creek
Back Creek
Three Mile Creek
Seven Mile Creek
Spring Creek
Gate Creek
Five Mile Creek
Goosneck Creek
Sandy Creek
Demonbanga Creek
Stockyard Creek
Gravelly Creek
Weir Creek
BARAMBAH CREEK
BOONARA CREEK
Cambalanga Creek

26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - Dam Failure
- Model Limits
- Sunny Day Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/101/2022	
RPEQ: 18351	

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE
(PIPING FAILURE)
INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER 256771	REV. A
SHEET 8 OF 11	
DATE NOVEMBER 2022	

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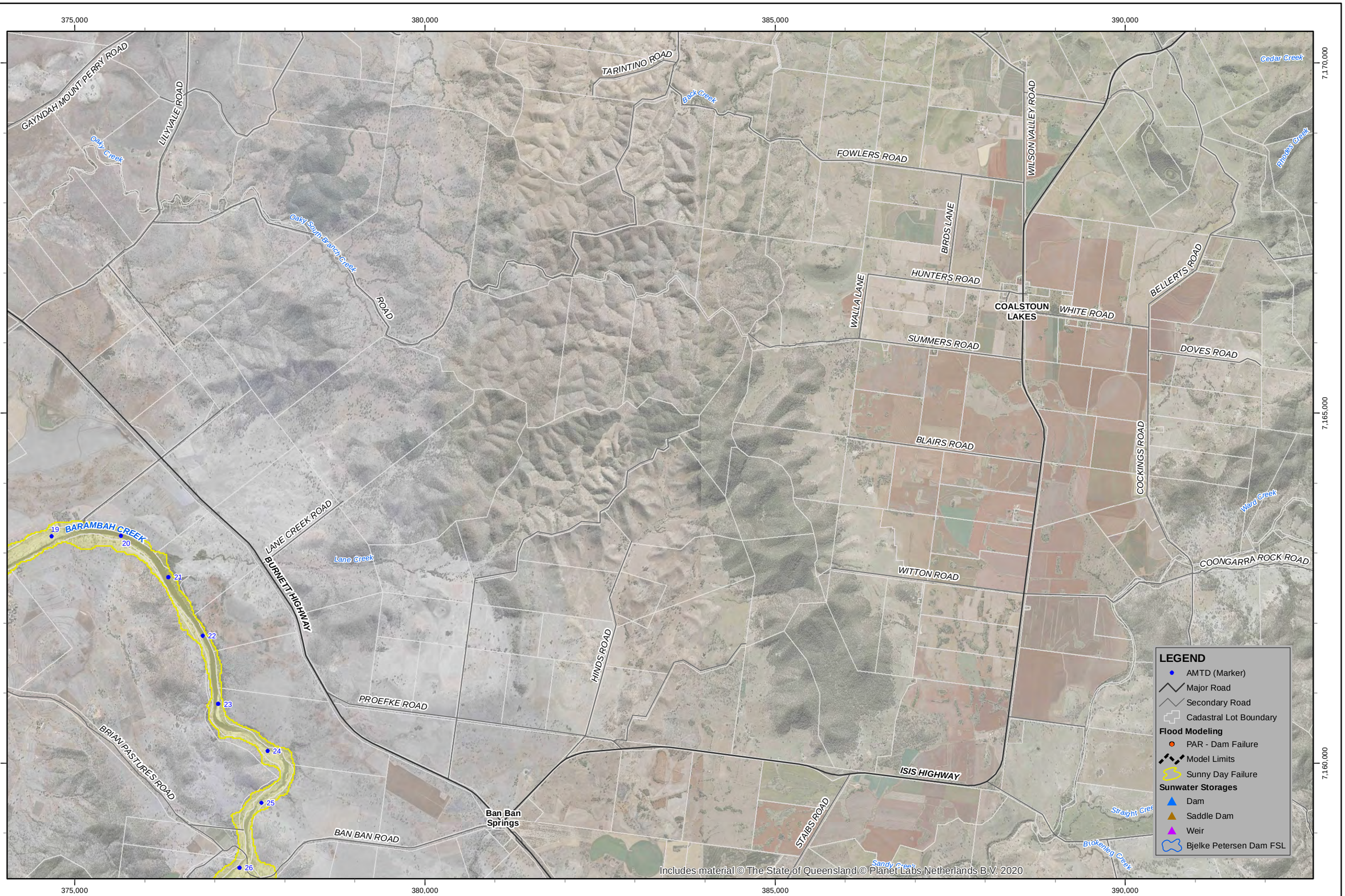

REVISION					
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DATE		REMARKS	CKD	PSD	

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IDH	
CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/101/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256771	A
SHEET 9 OF 11	
DATE NOVEMBER 2022	

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Map Produced By:
Water Resources and Dam Safety
Tel: (07) 3120 0000

360,000 365,000 370,000

7,170,000 7,165,000 7,160,000

IDERAWAY
DIRMBIR ROAD
ABBOTTS ROAD
GINOONDAN WETHERON ROAD
Farley Gully
REID CREEK
BURNETT RIVER
SHEPHERDS ROAD
CLAUDE WHARTON WEIR
RIFLE RANGE ROAD
BERONNE ROAD
RICHARDS ROAD
O'FORD STREET
BON ACCORD WETHERON ROAD
WHARTONS ROAD
BERNIE TAYLORS ROAD
WASHPOOL ROAD
BURNETT HIGHWAY
Four Mile Creek
GAYNDAH MUNDUBBERA ROAD
MESON STREET
ARTHUR STREET
QUEEN STREET
CAPPER STREET
BOYD ROAD
FIELDING STREET
PORTER STREET
GORDON STREET
OLD NANANGO ROAD
TABLELAND ROAD
BRIAN PASTURES ROAD
CAMPBELL CREEK ROAD
WIGTON ROAD
LITTLE WOODMILLAR ROAD
BARLYNE ROAD
WEST WOODMILLAR ROAD
EAST WOODMILLAR ROAD
Oaky Creek
Woodmillar Creek
THE LIMITS ROAD
Piperday Creek
BARAMBAH CREEK

188 1 192 193 191 189 190 194 195 196 197 198 199 200 201 202 203 204 205 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

LEGEND
- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling
- PAR - Dam Failure
- Model Limits
- Sunny Day Failure

Sunwater Storages
- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
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APPROVED	
M.G. HUGHES 29/101/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256771	A

SHEET 10 OF 11

DATE NOVEMBER 2022

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	LH

APPROVED
M.G. HUGHES
29/101/2022
RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
SUNNY DAY FAILURE (PIPING FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256771	A

SHEET 11 OF 11

DATE NOVEMBER 2022

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TEL: (07) 3120 0000

395,000 400,000 405,000 410,000

7,095,000 7,090,000

GAYNDAH ROAD
GESSLERS ROAD
GORE STREET
LAMB STREET
ANNINGS ROAD
ZERNERS ROAD
BUNYA HIGHWAY
WITTONS ROAD
BURTONS ROAD
Bottle Tree Creek
Swamp Creek
Murphy Creek
Moondooner
MOONDOONER ROAD
BIRCHS ROAD
Dry Creek
FERRIS ROAD
ASHTON STREET
BORCHERTS HILL ROAD
FINWEMORES ROAD
JEFFERIES ROAD
Deep Creek
FROHLOFFS ROAD
CHERBOURG ROAD
SIPPELS ROAD
JOE SIPPEL WEIR
Redgate
REDGATE ROAD
STEGEMANNS ROAD
ROSES ROAD
STEINHARDTS ROAD
BURNETT HIGHWAY
WESSLINGS ROAD
Cherbourg
BARAMBAH CREEK
MURRAY ROAD
North Barambah
Maaminda Creek
FLEMING ROAD
WONDAI ROAD
BJELKE-PETERSEN SADDLE DAM
BJELKE-PETERSEN DAM
HAAGER DRIVE
BARAMBAH ROAD
BARKER CREEK
TIPPERARY ROAD
Moffatdale
KILCOY MURGON ROAD
FRANCIS ROAD
Barambah Creek
Home Creek
Moonda Waamba Creek
Brailton Creek

0 1 2 3 4 5 6 7 8 9
147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - No Dam Failure
- Additional PAR - Dam Failure
- Model Limits
- PMF - No Dam Failure
- PMF - Dam Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
DATE		REMARKS	CKD	PSD	

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REFERENCE DRAWINGS
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SCALES (A3 SIZE)
0 500 1,000 1,500 2,000 2,500 m
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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/11/2022	
RPEQ: 18351	

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256772	A

SHEET 1 OF 11
DATE NOVEMBER 2022

Document: S:\BW_WaterResources\GIS_Data\SW_Barker Barambah WSS\BjelkePetersenDam_CRA2022\Drawings\ArcMap\256772-A.mxd
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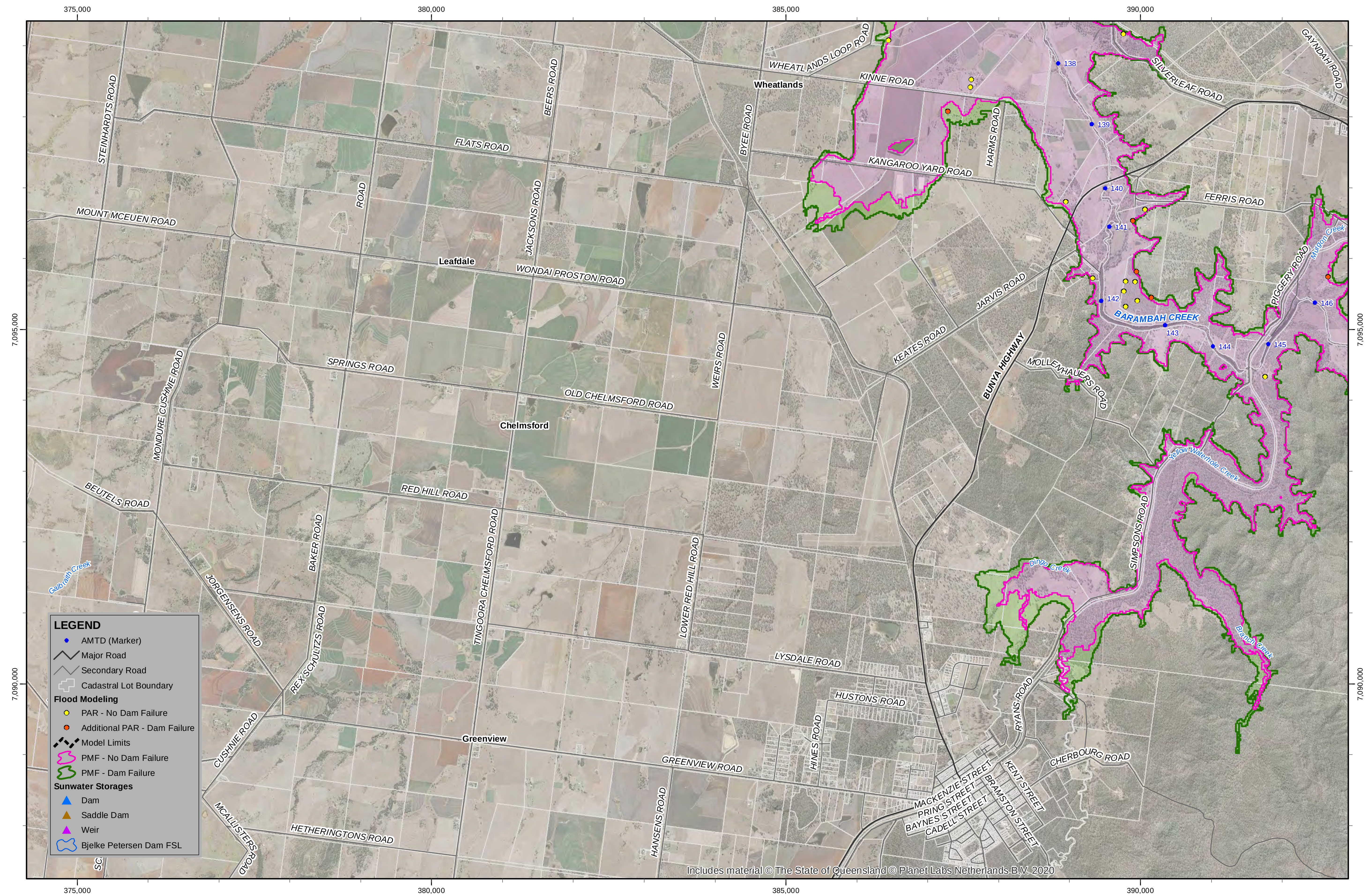

375,000
380,000
385,000
390,000
7,095,000
7,090,000
WHEATLANDS LOOP ROAD
KINNE ROAD
Wheatlands
GAYNDAH ROAD
SILVERLEAF ROAD
STEINHARDTS ROAD
BEERS ROAD
FLATS ROAD
BYEE ROAD
HARMS ROAD
KANGAROO YARD ROAD
ROAD
JACKSONS ROAD
MOUNT MCEUEN ROAD
FERRIS ROAD
Leafdale
WONDAI PROSTON ROAD
JARVIS ROAD
PIGGERY ROAD
Murgon Creek
BARAMBAH CREEK
KEATES ROAD
SPRINGS ROAD
OLD CHELMSFORD ROAD
WEIRS ROAD
BUNYA HIGHWAY
MOLLENHAUERS ROAD
MONDURE CUSHNIE ROAD
Chelmsford
Yellow Waterhole Creek
BEUTELS ROAD
RED HILL ROAD
SIMPSONS ROAD
BAKER ROAD
TINGOORA CHELMSFORD ROAD
LOWER RED HILL ROAD
Galbraith Creek
JORGENSENS ROAD
Dingo Creek
REX SCHULTZS ROAD
LYSDALE ROAD
Branch Creek
HUSTONS ROAD
RYANS ROAD
CUSHNIE ROAD
Greenview
HINES ROAD
GREENVIEW ROAD
CHERBOURG ROAD
KENT STREET
MACKENZIE STREET
PRING STREET
BAYNES STREET
CADELL STREET
BRAMSTON STREET
MCALLISTERS ROAD
HETHERINGTONS ROAD
HANSENS ROAD
138
139
140
141
142
143
144
145
146
LEGEND
AMTD (Marker)
Major Road
Secondary Road
Cadastral Lot Boundary
Flood Modeling
PAR - No Dam Failure
Additional PAR - Dam Failure
Model Limits
PMF - No Dam Failure
PMF - Dam Failure
Sunwater Storages
Dam
Saddle Dam
Weir
Bjelke Petersen Dam FSL
Includes material © The State of Queensland © Planet Labs Netherlands B.V. 2020

REVISION				
29/11/22	A	ISSUED FOR USE	LH	MGH
DATE		REMARKS	CKD	PSD

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
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DRAWN: IDH
DESIGNED:
CHECKED: | CHECKED: LH
APPROVED: M.G. HUGHES 29/11/2022 RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER:
DRAWING NUMBER: 256772
REV.: A
SHEET 2 OF 11
DATE: NOVEMBER 2022

MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
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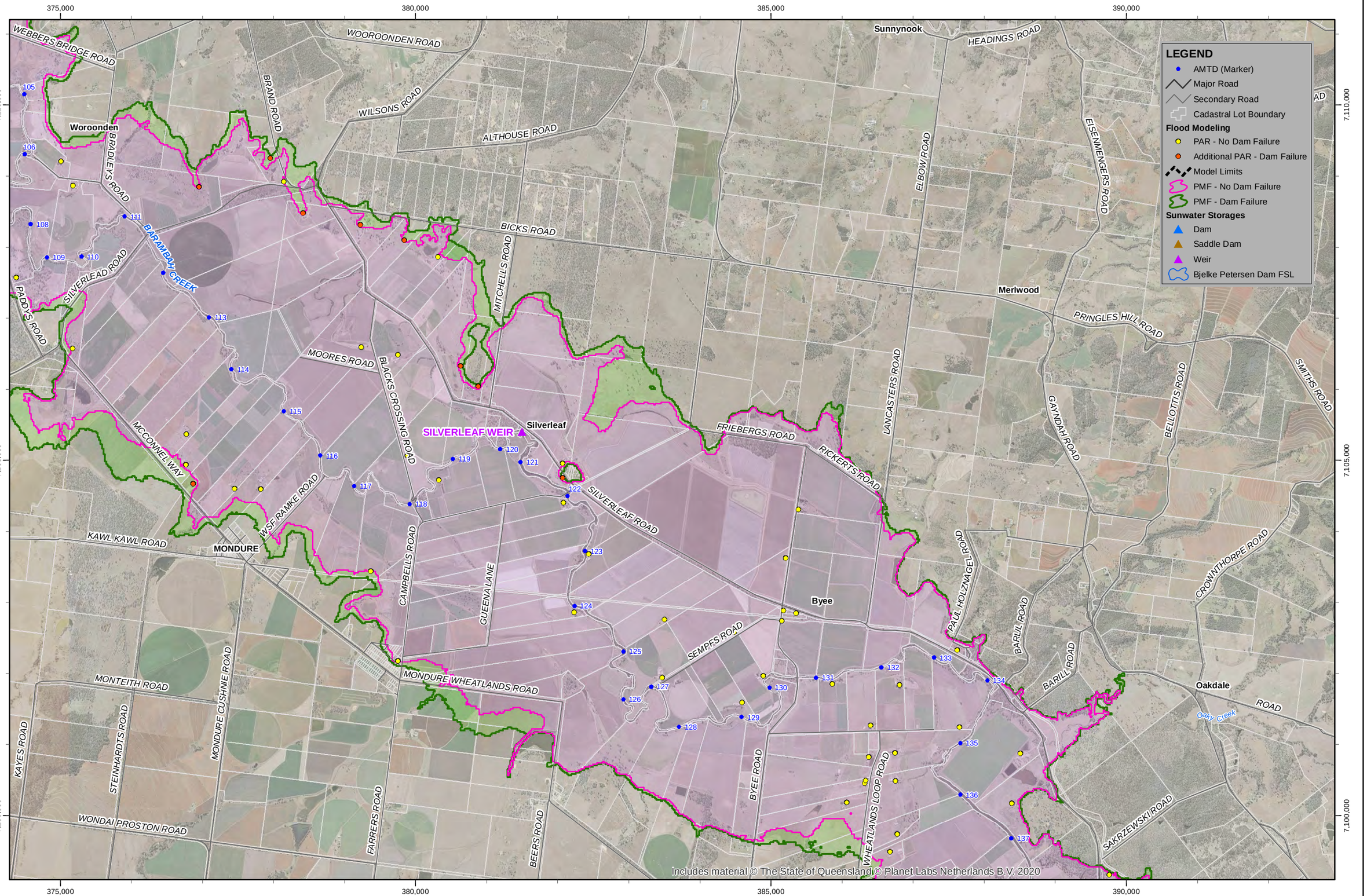

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DATE		REMARKS	CKD	PSD	

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SCALES (A3 SIZE)
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APPROVED	
M.G. HUGHES 29/11/2022	
RPEQ: 18351	

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256772	A
SHEET 3 OF 11	
DATE NOVEMBER 2022	

Document: S:\BW_WaterResources\GIS_Data\SW_Barker Barambah WSS\BjelkePetersenDam_CRA2022Drawings\ArcMap\256772-A.mxd
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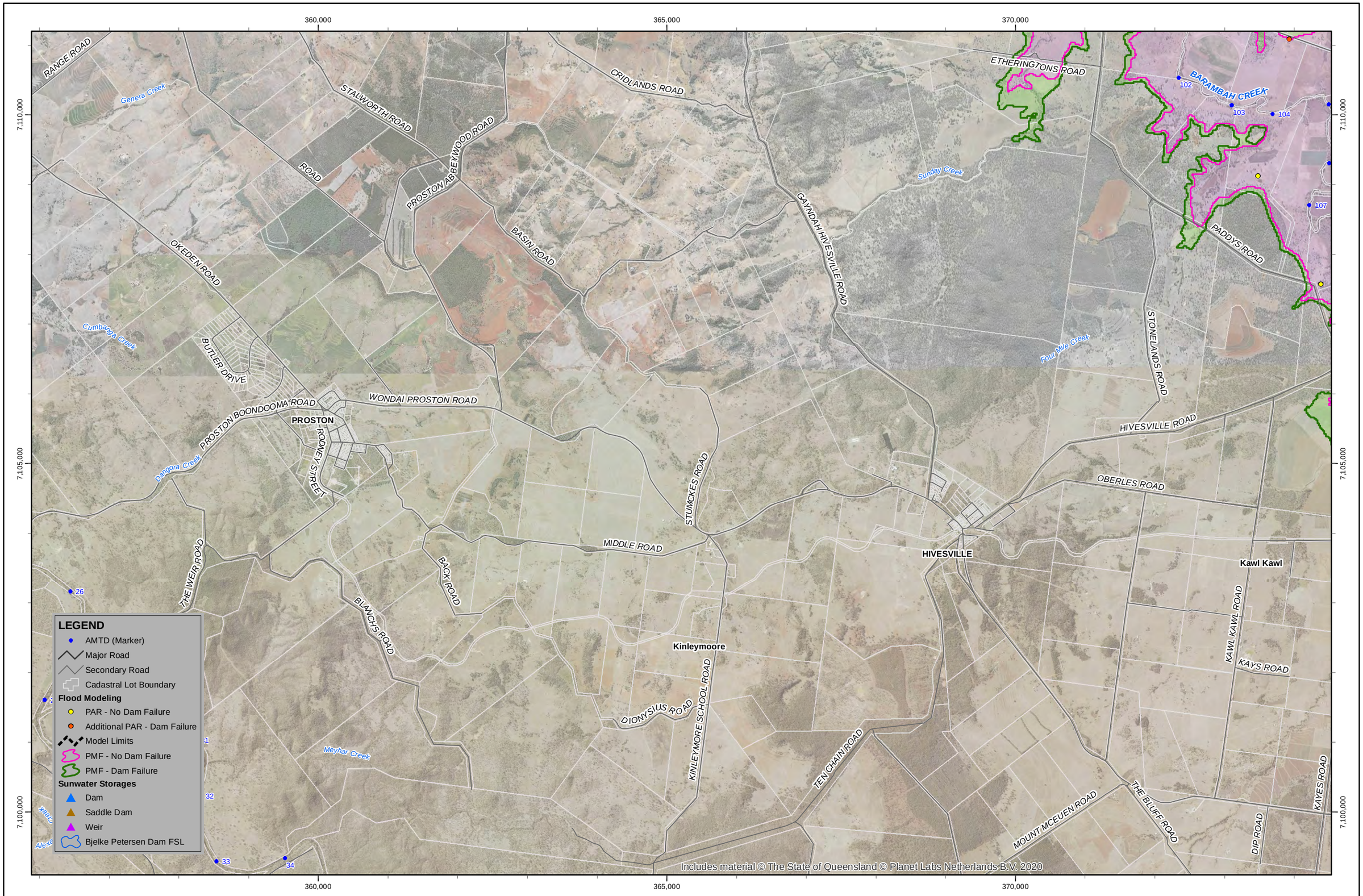

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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/11/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256772	A

SHEET **4 OF 11**
DATE **NOVEMBER 2022**

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Map Produced by:
Water Resources and Dam Safety
Tel: (07) 3120 0000

365,000 370,000 375,000 380,000

7,120,000 7,115,000

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - No Dam Failure
- Additional PAR - Dam Failure
- Model Limits
- PMF - No Dam Failure
- PMF - Dam Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

Twelve Mile Creek
Mahogany Gully
Sunday Creek
Woroon Creek
Windera Creek
BARAMBAH CREEK
KILRUSH ROAD
RAMCO ROAD
SCHMIDHAUSERS ROAD
MCANTEE ROAD
MORGANS ROAD
KRATZMANNS ROAD
DIP ROAD
ROAD
STONELANDS ROAD
FREEMANS ROAD
LOUTTITS ROAD
WILSONS ROAD
GLENROCK ROAD
NIELSONS ROAD
REIDYS ROAD
WEBBERS BRIDGE ROAD
WOOROONDEN ROAD
ABBEYWOOD GAYNDAH ROAD
GAYNDAH HIVESVILLE ROAD
Stonelands
Glenrock
82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101

REVISION					
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DATE		REMARKS	CKD	PSD	

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	LH
APPROVED	
M.G. HUGHES 29/11/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256772	A

SHEET **5 OF 11**

DATE **NOVEMBER 2022**

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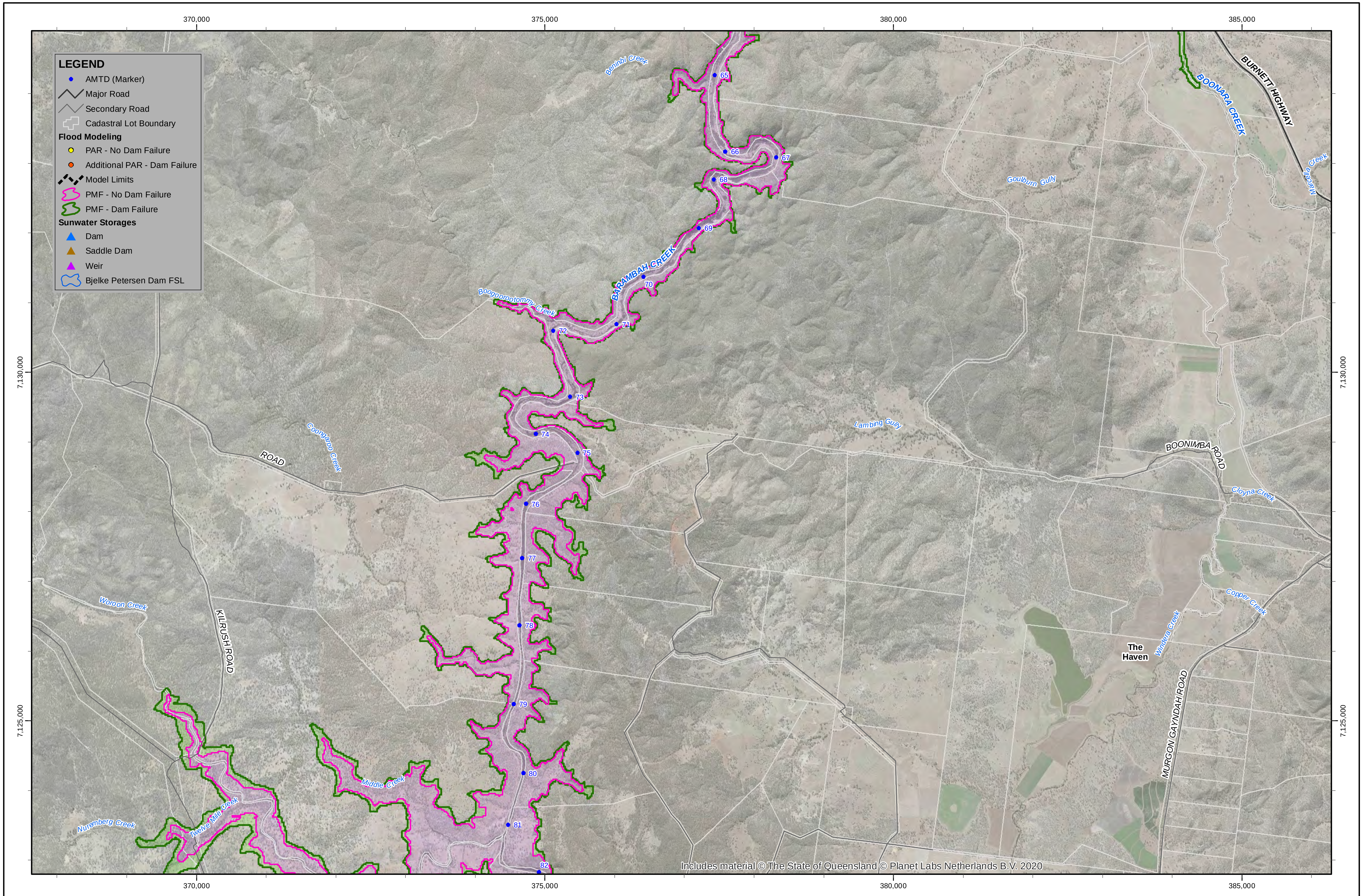

REVISION				
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1:50,000

DRAWN: IDH
DESIGNED:
CHECKED:
CHECKED: LH
APPROVED: M.G. HUGHES 29/11/2022 RPEQ: 18351

sunwater
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BJELKE PETERSEN DAM DAM BREAK ANALYSIS 2022 PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER:
DRAWING NUMBER: 256772
REV.: A
SHEET 6 OF 11
DATE NOVEMBER 2022

MAP PRODUCED BY: WATER RESOURCES AND DAM SAFETY TEL: (07) 3120 0000

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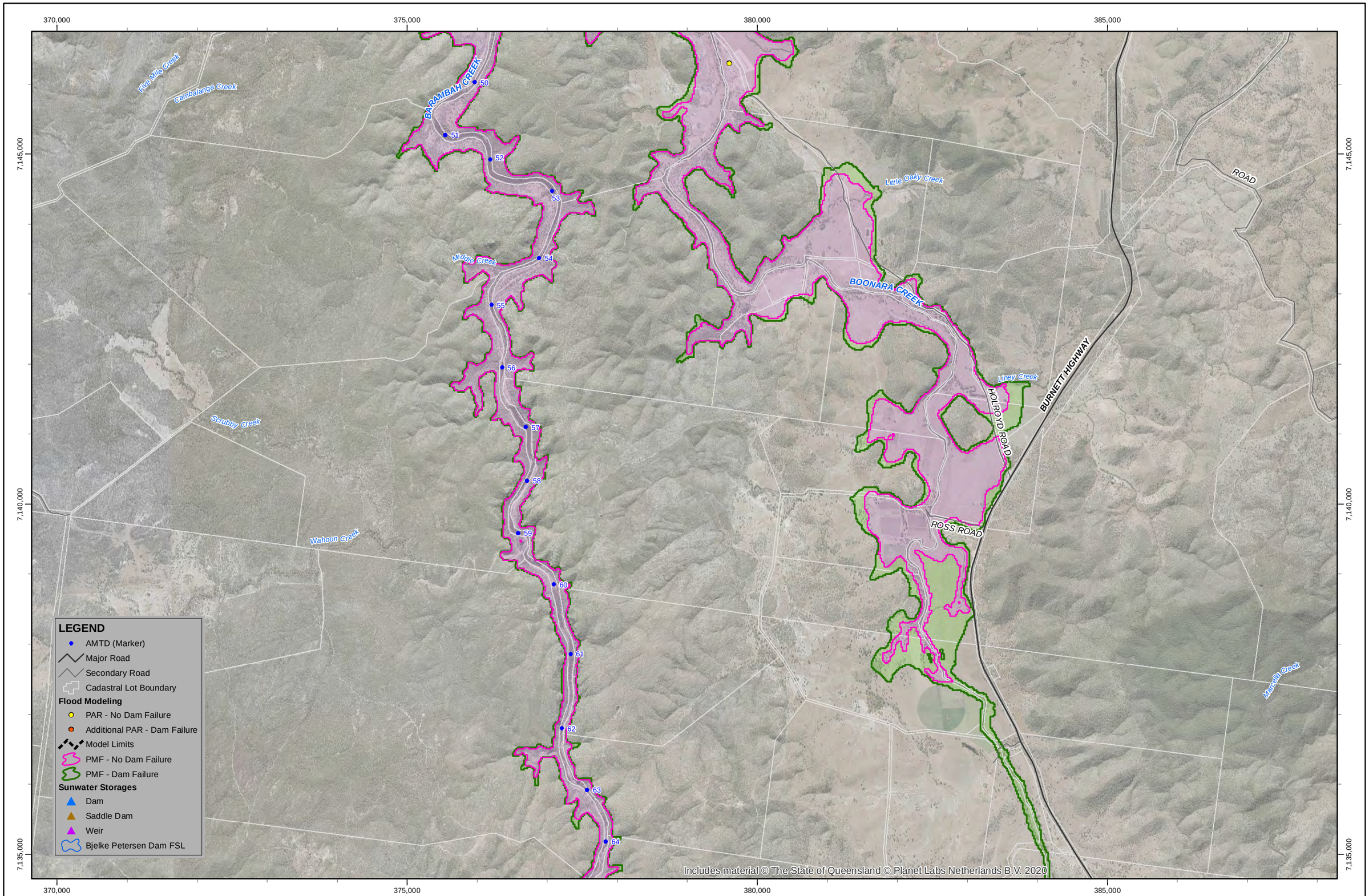

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IDH	
CHECKED	CHECKED
	LH

APPROVED
M.G. HUGHES
29/11/2022
RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
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SHEET 7 OF 11	
DATE NOVEMBER 2022	

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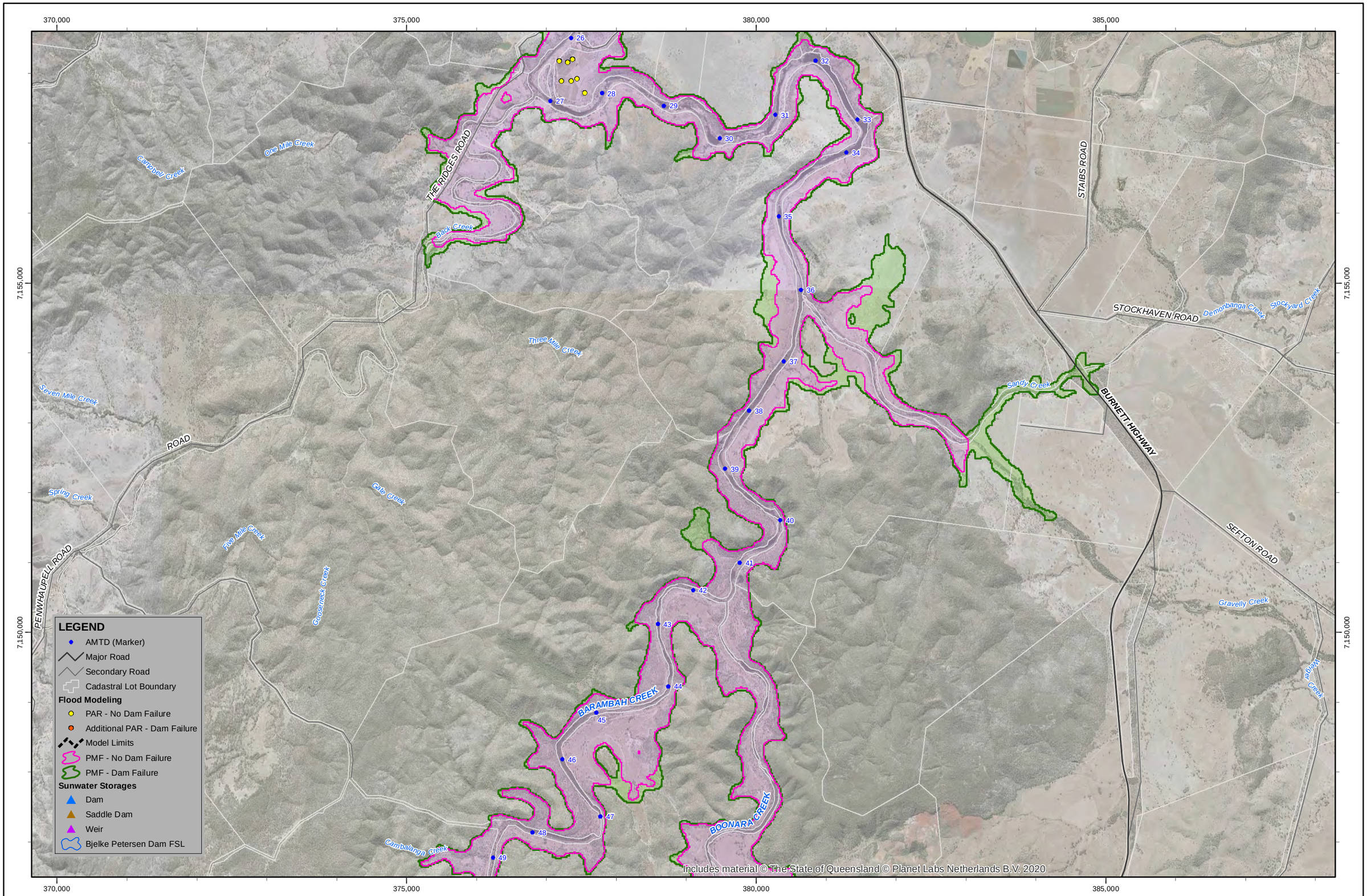

REVISION					
29/11/22	A	ISSUED FOR USE	LH	MGH	
DATE		REMARKS	CKD	PSD	

MAP INFORMATION
Projected Coordinate System: Mapping Grid of Australia (MGA2020) Zone 56.

REFERENCE DRAWINGS
256770 - Keymap

SCALES (A3 SIZE)
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1:50,000

DRAWN	DESIGNED
IDH	
CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/11/2022	RPEQ: 18351

sunwater

BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256772	A
SHEET 8 OF 11	
DATE NOVEMBER 2022	

MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
TEL: (07) 3120 0000

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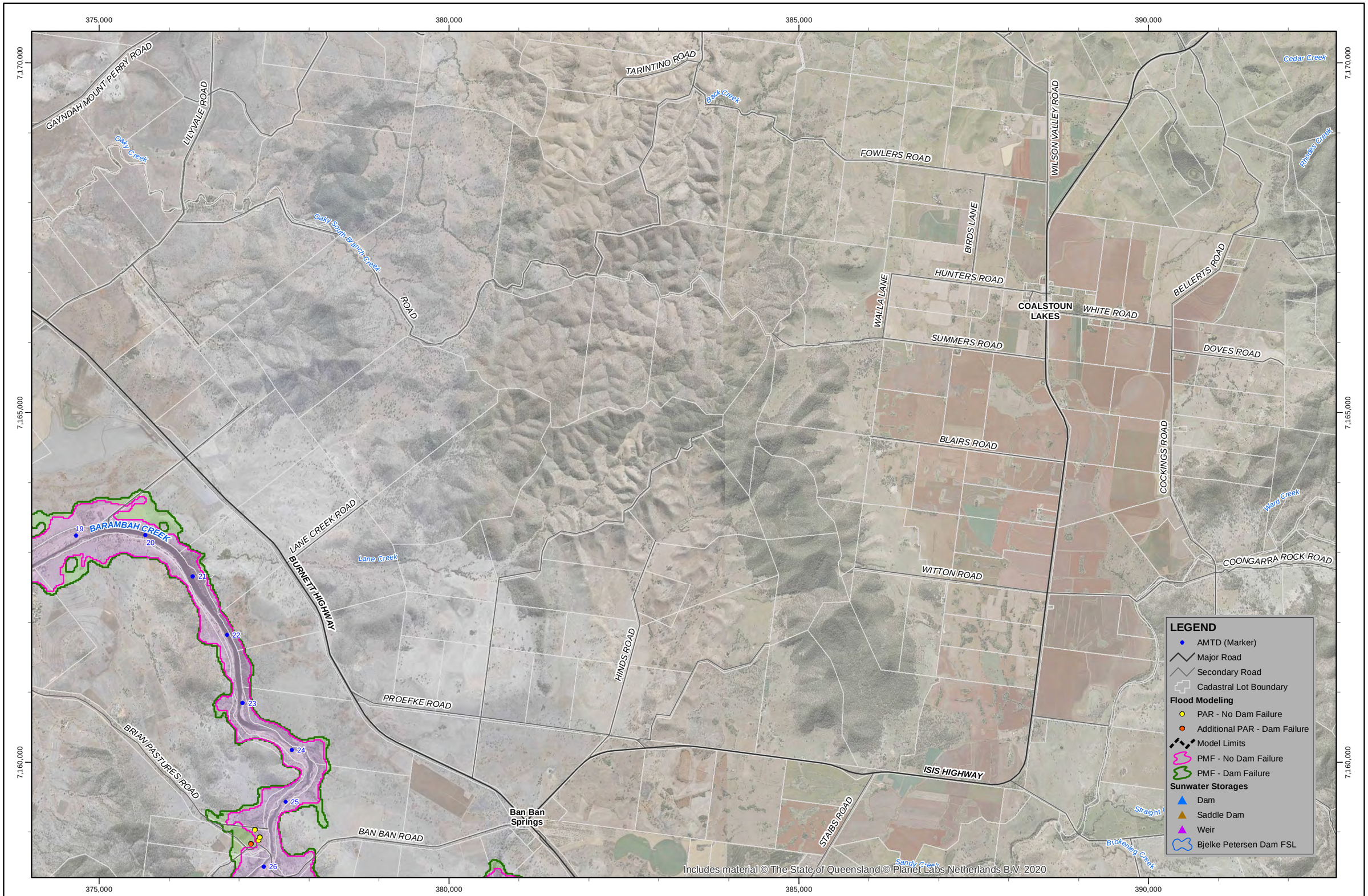
Map Produced By:
Water Resources and Dam Safety
Tel: (07) 3120 0000



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DATE		REMARKS	CKD	PSD	

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CHECKED	CHECKED
	LH
APPROVED	
M.G. HUGHES 29/11/2022	RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER	
DRAWING NUMBER	REV.
256772	A
SHEET 9 OF 11	
DATE NOVEMBER 2022	

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Map Produced by:
Water Resources and Dam Safety
Tel: (07) 3120 0000

360,000 365,000 370,000

7,170,000 7,165,000 7,160,000

IDERAWAY
DIRMBIR ROAD
ABBOTTS ROAD
Farley Gully
REID CREEK
SHEPHERDS ROAD
BURNETT RIVER
CLAUDE WHARTON WEIR
GAYNDAH MUNDUBBERA ROAD
MESON STREET
ARTHUR STREET
QUEEN STREET
OXFORD STREET
CAPPER STREET
PORTER STREET
FIELDING STREET
GORDON STREET
BOYD ROAD
RIFLE RANGE ROAD
BERONNE ROAD
RICHARDS ROAD
BON ACCORD WETHERON ROAD
WHARTONS ROAD
BURNETT HIGHWAY
Four Mile Creek
BERNIE TAYLORS ROAD
GINOONDAN WETHERON ROAD
WASHPOOL ROAD
BRIANPASTURES ROAD
CAMPBELL CREEK ROAD
Campbell Creek
BARAMBAH CREEK
OLD NANANGO ROAD
TABLELAND ROAD
BARLYNE ROAD
WIGTON ROAD
LITTLE WOODMILLAR ROAD
EAST WOODMILLAR ROAD
Oaky Creek
Woodmillar Creek
THE LIMITS ROAD
Piperday Creek

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205

LEGEND

- AMTD (Marker)
- Major Road
- Secondary Road
- Cadastral Lot Boundary

Flood Modeling

- PAR - No Dam Failure
- Additional PAR - Dam Failure
- Model Limits
- PMF - No Dam Failure
- PMF - Dam Failure

Sunwater Storages

- Dam
- Saddle Dam
- Weir
- Bjelke Petersen Dam FSL

REVISION					
DATE		REMARKS	CKD	PSD	
29/11/22	A	ISSUED FOR USE	LH	MGH	

MAP INFORMATION
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256770 - Keymap

SCALES (A3 SIZE)
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1:50,000

DRAWN	DESIGNED
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CHECKED	CHECKED
	LH

APPROVED
M.G. HUGHES
29/11/2022
RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER

DRAWING NUMBER	REV.
256772	A

SHEET **10 OF 11**
DATE **NOVEMBER 2022**

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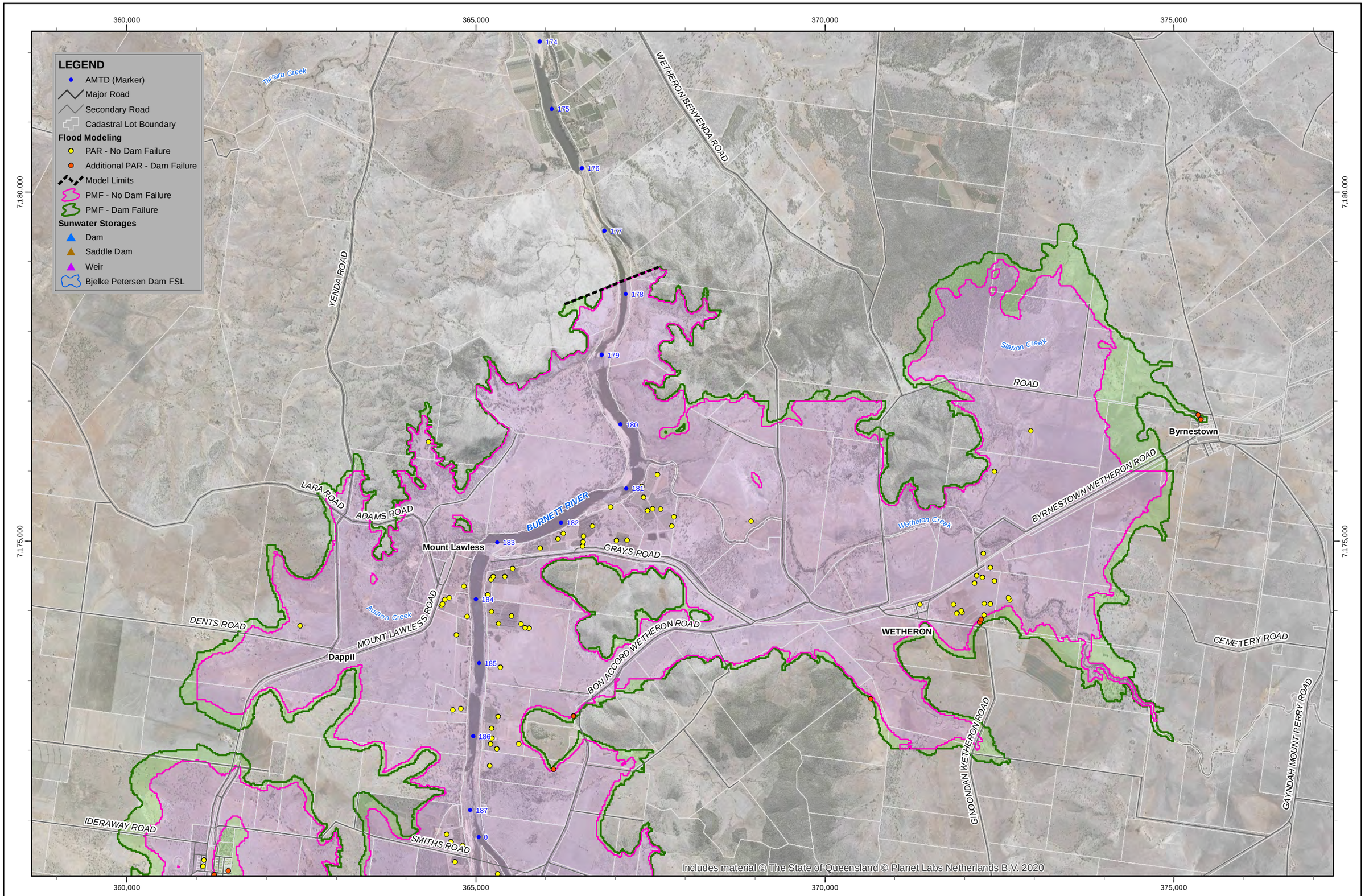
MAP PRODUCED BY:
WATER RESOURCES AND DAM SAFETY
TEL: (07) 3120 0000



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1:50,000

DRAWN	DESIGNED
IDH	
CHECKED	CHECKED
	LH

APPROVED
M.G. HUGHES
29/11/2022
RPEQ: 18351

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BJELKE PETERSEN DAM
DAM BREAK ANALYSIS 2022
PROBALE MAXIMUM FLOOD (EMBANKMENT FAILURE) INUNDATION PLAN

CONTRACT NUMBER

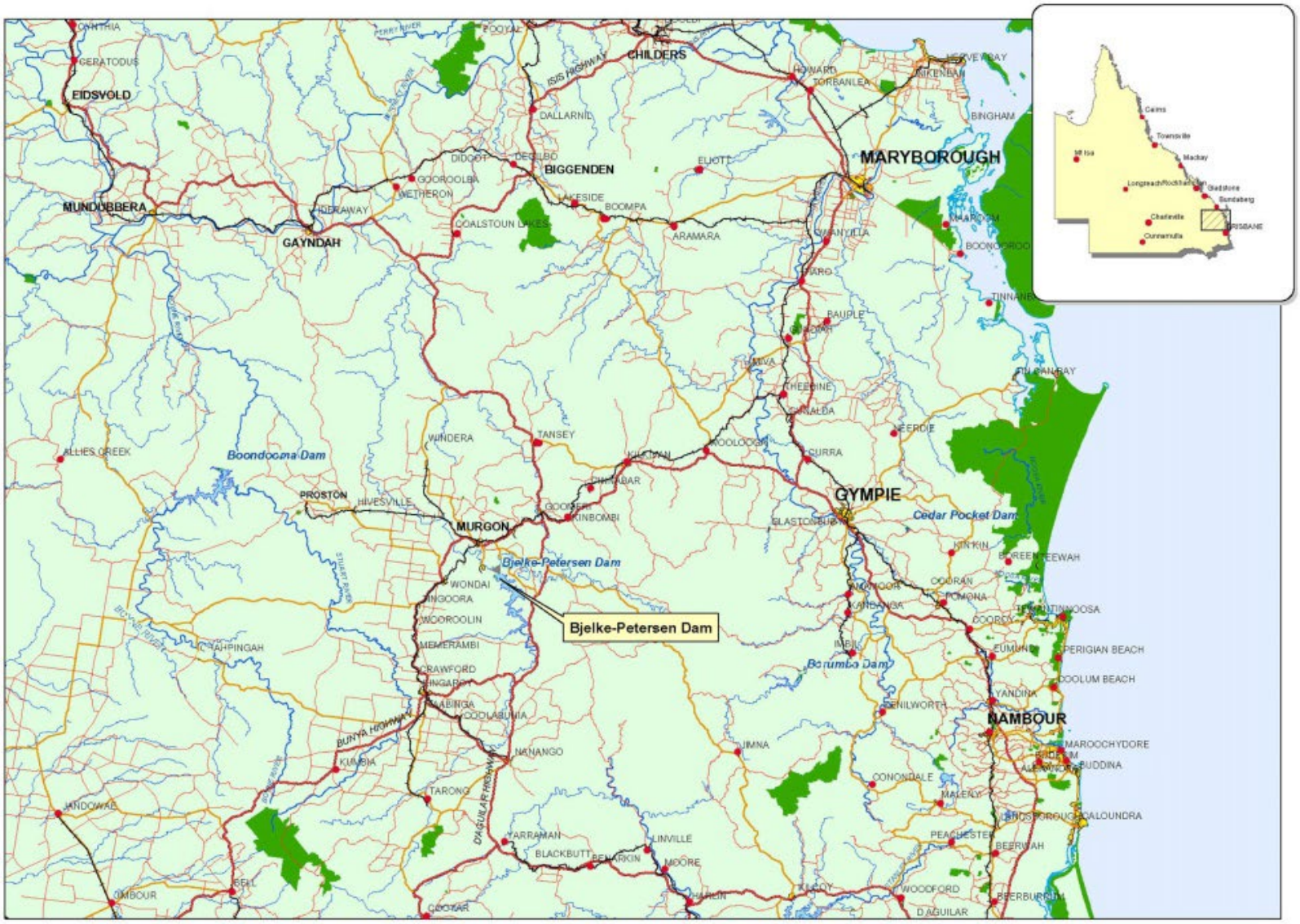
DRAWING NUMBER	REV.
256772	A

SHEET 11 OF 11

DATE NOVEMBER 2022

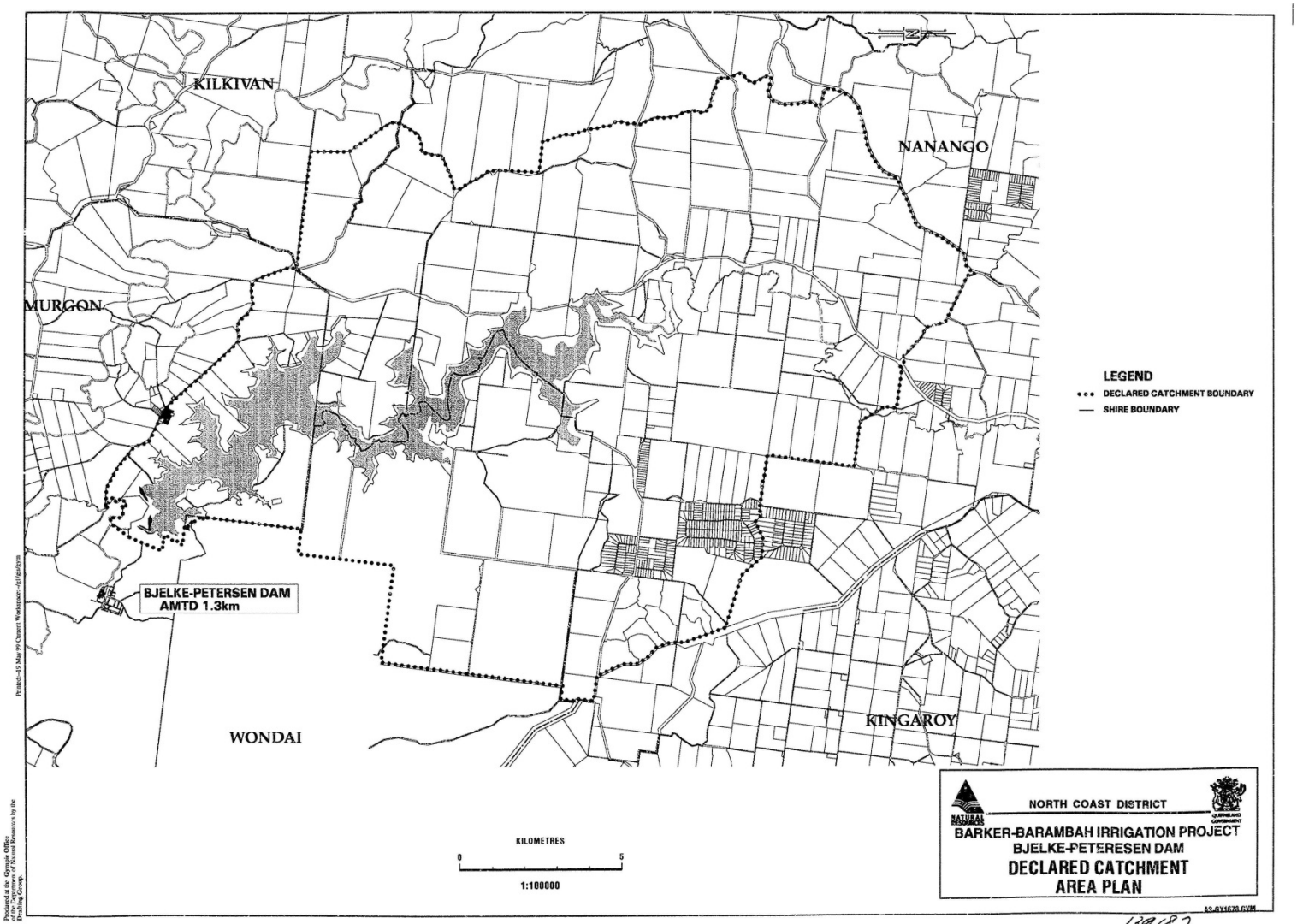
Appendix B4: Locality plan

Figure B7: Bjelke-Petersen Dam locality plan



Appendix B5: Catchment plan

Figure B8: Bjelke-Petersen Dam declared catchment boundary plan



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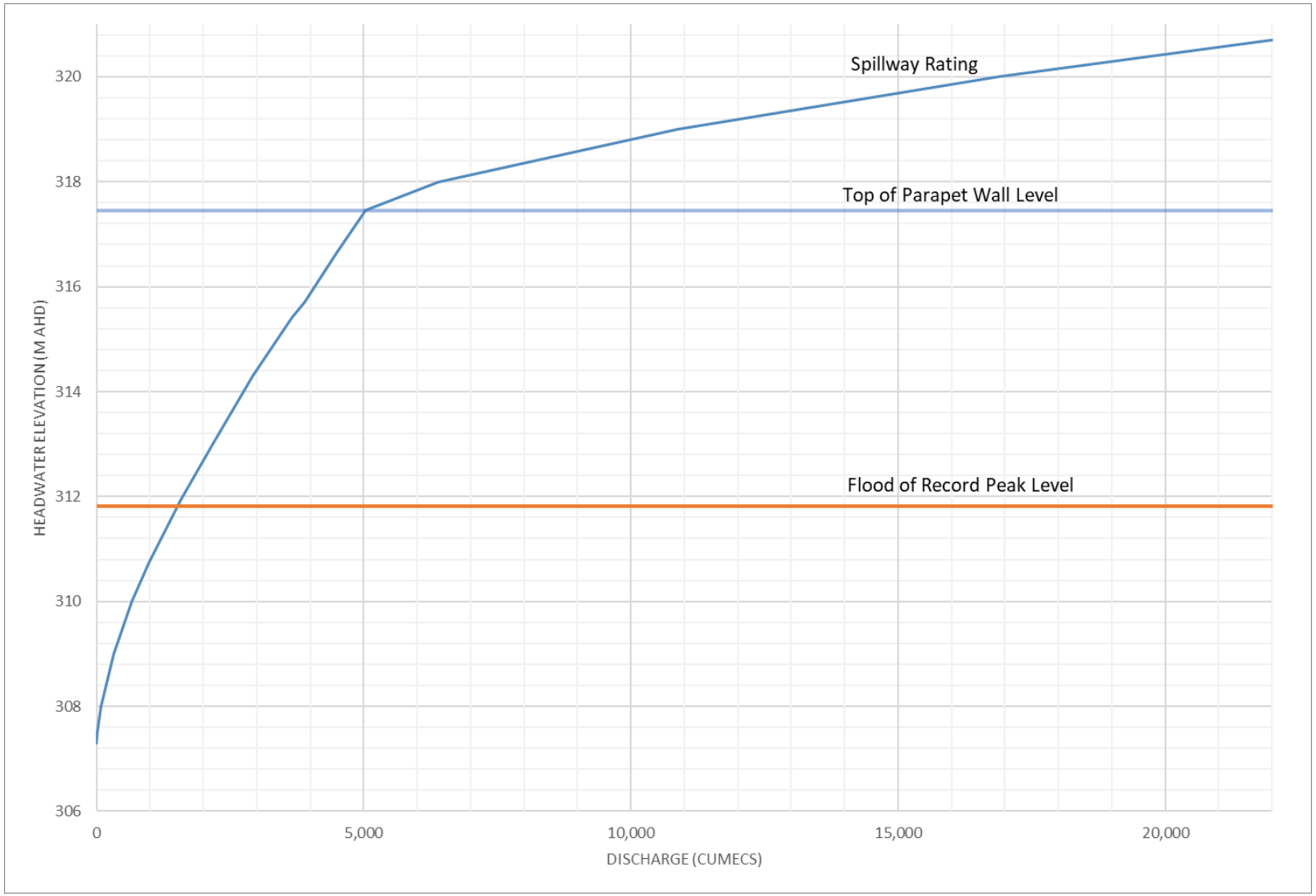
APPENDIX C Equipment and technical information

Appendix C1 has been redacted

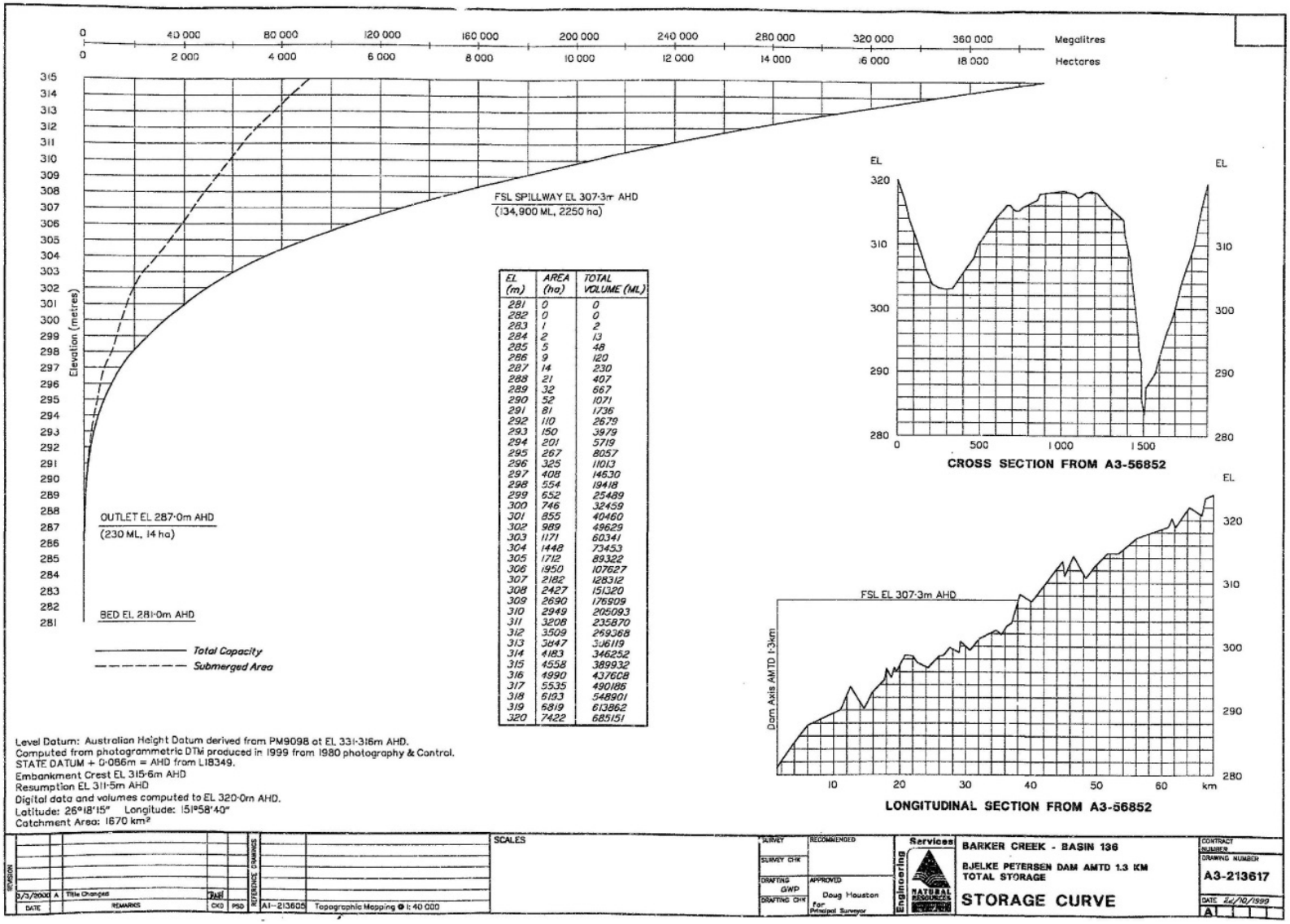
Appendix C2: Bjelke-Petersen Dam discharge curve

Figure C1: Bjelke-Petersen Dam discharge curve



Appendix C3: Bjelke-Petersen Dam storage curve

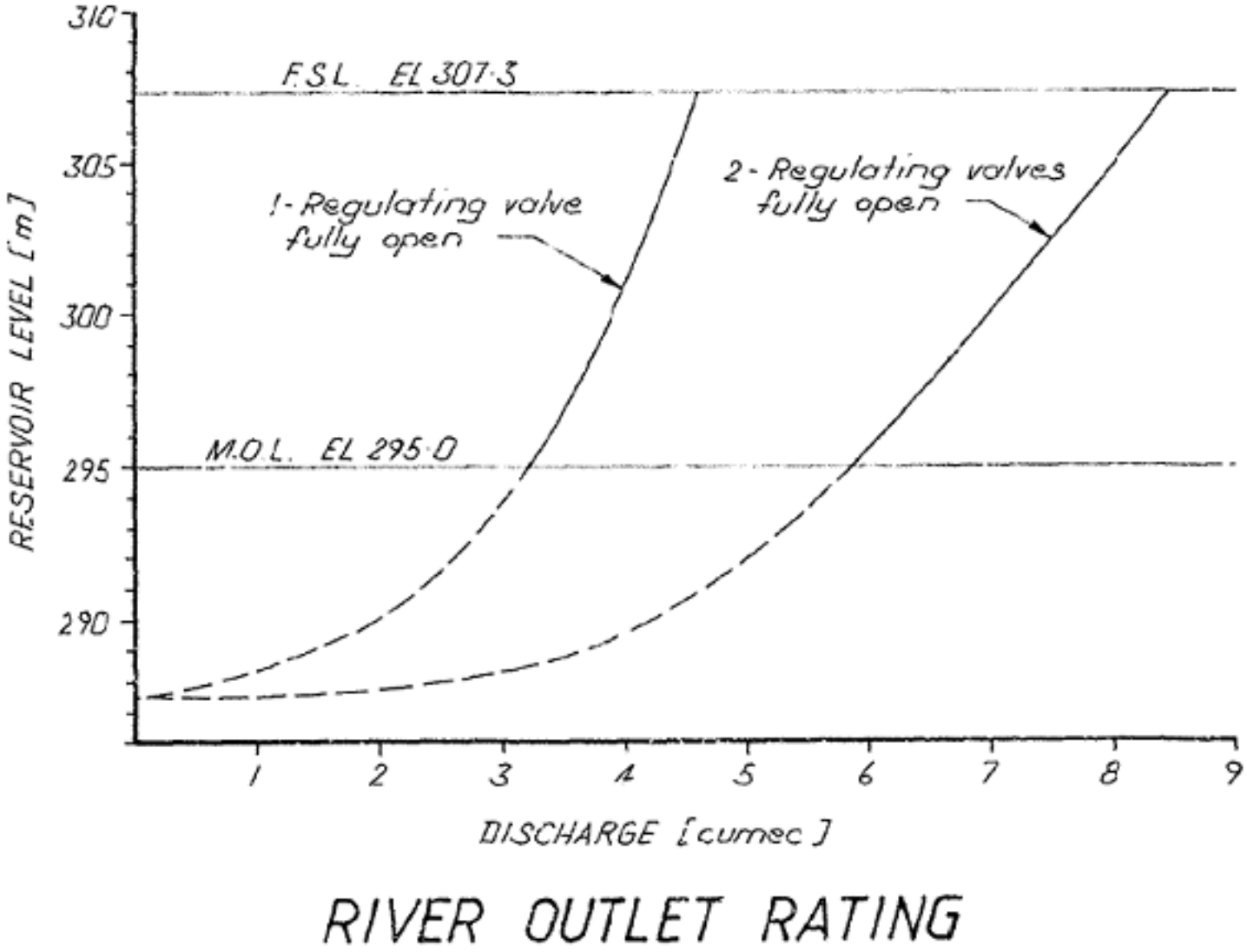
Figure C2: Bjelke-Petersen Dam storage curve (213617)



EL (m)	AREA (ha)	TOTAL VOLUME (ML)
281	0	0
282	0	0
283	1	2
284	2	13
285	5	48
286	9	120
287	14	230
288	21	407
289	32	667
290	52	1071
291	81	1736
292	110	2679
293	150	3979
294	201	5719
295	267	8057
296	325	11013
297	408	14630
298	554	19418
299	652	25489
300	746	32459
301	855	40460
302	989	49629
303	1171	60341
304	1448	73453
305	1712	89322
306	1950	107627
307	2182	128312
308	2427	151320
309	2690	176909
310	2949	205093
311	3208	235870
312	3509	269368
313	3847	306119
314	4183	346252
315	4558	389932
316	4990	437608
317	5535	490186
318	6193	548901
319	6819	613862
320	7422	685151

Appendix C4: Bjelke-Petersen Dam river outlet rating

Figure C3: Bjelke-Petersen Dam river outlet rating



Appendix D Interaction with local government and district groups

Appendix D has been redacted

Annexe — Bjelke-Petersen 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. Bjelke-Petersen Dam is spilling excess water into Barker Creek. People downstream of Bjelke-Petersen Dam should STAY INFORMED and MONITOR CONDITIONS. Water flows from Bjelke-Petersen Dam expected to remain within beds and banks of the creek/may contribute to widespread/localised/ overland flooding. Expect increased flows in 6-12 hours/ later today/overnight/tomorrow. There is no immediate danger. More information here: bit.ly/RecandSafety	FLOOD WATCH AND ACT from Sunwater. Excess water spilling from Bjelke-Petersen Dam into Barker Creek has increased significantly. Water flows from Bjelke-Petersen Dam may contribute to dangerous/widespread flooding downstream. Expect increased flows in 6-12 hours/later today/overnight/tomorrow. People downstream of Bjelke-Petersen 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	FLOOD EMERGENCY WARNING from Sunwater. People downstream of Bjelke-Petersen Dam including Cherbourg and Murgon must LEAVE IMMEDIATELY. Bjelke-Petersen Dam possible failure/is failing. Major flooding is happening now. Your life is at risk. Go now to a safe place away from the flood. Goomeri and Kingaroy are safe. Get full warnings and what you should do at South Burnett Regional Council http://dashboard.southburnett.qld.gov.au