EMERGENCY ACTION PLAN

Dam ID: 2339 and 2341

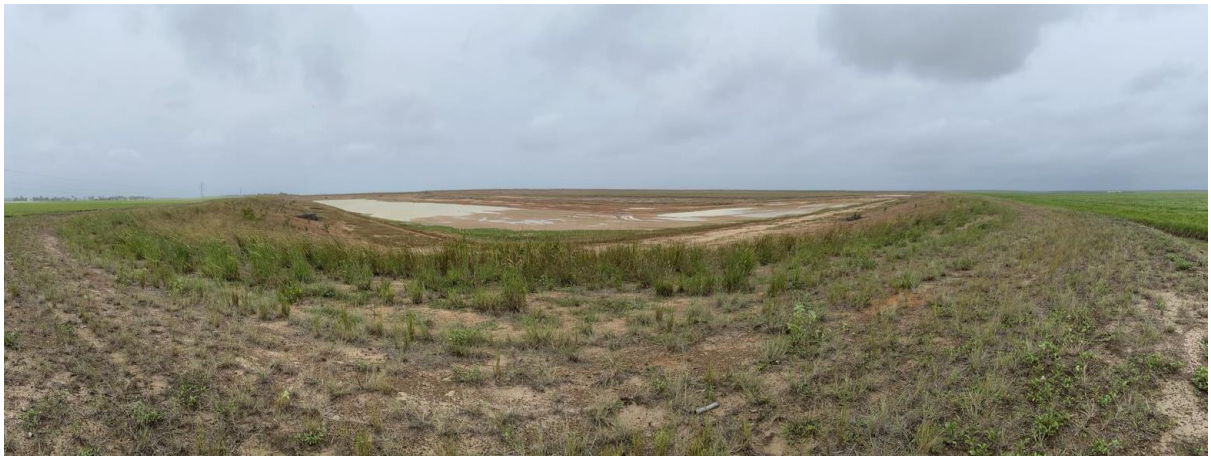
Owner:

Date: **June 2023**

Address:

Version: **1.1**

No. 4



No. 6

Approved by the delegate of the Chief Executive, Department of Regional Development, Manufacturing and Water until 1 July 2027.

QUICK REFERENCE GUIDE
Emergency Condition Level

Dam Hazard	Alert	Lean Forward	Stand Up	Stand Down
Flood Event **Go to Section 6.3**	Storage rising due to rain in catchment	Storage above FSL, unlikely to impact PAR	Storage above DCL, likely to impact PAR	Storage level falling or stabilised to FSL
Contact		• PAR • LDMG	• PAR • LDMG • Local Police/DDMG • DSR	Inform all previously notified contacts of stand down
Sunny Day Failure **Go to Section 6.4**	Earthquake felt in the area, AND Intensity less than 5MM Significant new or increased seepage areas identified at the Dam Seepage flow containing sediment (cloudy appearance) observed at the Dam New structural damage or movement areas identified at the Dam	Earthquake felt in the area, AND Intensity more than 5MM Seepage is increasing or earth material evident in the seepage is increasing The increase cannot be controlled New structural damage or movement areas have not stabilised and are demonstrating indication of continued worsening	Dam failure is considered possible via an identified failure mechanism New structural damage or movement areas indicate some potential for structural failure of the Dam	Seepage through the Dam is controlled and. No indicators of potential Dam failure are present Dam embankment is stable No potential indicators of potential Dam failure are present.
Contact	• LDMG • Local Police/DDMG • DSR	• As per previous activation level, AND: • PAR	As per previous activation level	Inform all previously notified contacts of stand down

- General dam information can be found in section 5
- Contact information can be found in section 7

CONTENTS

1 DOCUMENT OVERVIEW

Authorisation of document

Dam owner	Responsible person	Signature	Date
		Verbal approval during consultation	3/5/2023

Controlled document distribution list

Copy no.	Position	Physical location
1	Dam owner	
2	Property manager	
3	Local Disaster Coordinator Local Disaster Management Group (LDMG1)	Bundaberg Regional Council
4	Executive Officer District Disaster Management Group (DDMG1,	Bundaberg Police
Note: Communication information for each 'Controlled Copy Holder' is attached in dam notification list.		

Document revision history

Revision number of approved EAP	Date	Summary of changes
1	May 2023	Initial EAP
1.1	June 2023	Non substantial update following feedback from Dam Safety Regulator

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
- identify dam hazards that could occur at the dam and the area likely to be affected for each hazard
- 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 occur at this 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 this dam by the dam owner and the communication and notification of dam hazards to the Bundaberg Local Disaster Management Group (LDMG) and those persons at risk (PAR) downstream. The EAP sits within the broader local council emergency response framework and has been developed to be consistent with the relevant Local Disaster Management Plan.

3 SCOPE

This EAP covers:

- dam hazards
- details about the dam that are relevant to a dam hazard
- identification of circumstances that indicates an increase in the likelihood of a dam hazard event or emergency event
- triggers for activation of a tiered response to a dam hazard event or emergency event
- roles and responsibilities in responding to a dam hazard event or emergency event
- notification, warning, and communication protocols
- inspection, monitoring, and reporting protocols during emergencies
- the area likely to be impacted by a dam hazard

4 ROLES AND RESPONSIBILITIES

Role	Responsibilities
Dam Owner	• Dam safety is the responsibility of the dam owner. • Develop and maintain an emergency action plan (EAP). • Respond in accordance with the approved EAP in all dam related emergencies. • Ensure the EAP is kept current and up to date, particularly contact details, and seek approval for changes. The EAP must be reviewed by 1 October each year. • Distribution of current approved EAP to all parties listed in the distribution list. • Communicate effectively to all relevant entities listed in the notification list in the event of a dam hazard event or emergency event. Activate the EAP and maintain an incident log when an emergency condition is identified at the dam. • Consider periodic testing of the EAP. • Prepare an Emergency Event Report (EER) and submit to the dam safety regulator within 30 business days after the end of the emergency event. • The dam owner is responsible for conducting regular inspections of the dam to identify any deficiencies (Small dam safety pocketbook). Where deficiencies exist, the dam owner is required to take appropriate steps to address these with a suitably experienced registered professional engineer of Queensland (RPEQ)

Role	Responsibilities
	• Make appropriate dam safety related decisions based on advice from an RPEQ where appropriate. The dam owner is also responsible for authorising immediate expenditure so that urgent repair work will not be delayed.
LDMG	• Notify and communicate with other emergency agencies (i.e., QFES, QPS, SES). • Assess the severity of possible flooding and determine necessary actions based on information provided by the dam owner, as well as other available information such as localised flooding. • Provide DDMG status reports on situation.
DDMG	• Provide support to LDMG where capacity and capability to respond is reached.

5 GENERAL DAM INFORMATION

Table 1 Summary of locality information for

Description	Specification	
Dam name		
Dam ID	2341	2339
Lot/plan	Lot 6 RP800401	Lot 4 RP844192
Address		
Latitude / longitude	24° 56' 23.81" 152° 18' 30.11"	24° 56' 14.086" 152° 18' 53.033"
Local government area	Bundaberg Regional Council	
Nearest town	Bundaberg	
Nearest watercourse	Not applicable	Not applicable
Catchment name and description	Not applicable	Not applicable

Table 2 Summary of technical information for

Description	Specification	
Dam name		
Dam type	Ring tank	Ring tank
Type of embankment	Earth with clay core	Earth with clay core
FSL (m AHD)	TBC	TBC
DCL (m AHD)	43m AHD	TBC
Storage capacity at FSL (ML)	4800ML	700ML
Embankment max height (m)	8.1m	8.4m
Embankment length (m)	TBC	1240m
Embankment crest width (m)	4m	4m
Catchment area (Ha)	Not applicable	Not applicable
Number of spillways	1	1
Type of spillways	By wash	By wash
Spillway crest level(s) (m AHD)	8m	8.3m
Spillway capacity/capacities (m^3/s)	Not applicable	Not applicable
Outlet description	Not applicable	Not applicable
Outlet capacity	Not applicable	Not applicable

6 DAM HAZARDS

Emergency actions

A dam emergency event is an event which has arisen from a dam failure hazard. The events that will initiate emergency conditions at the dam may include floods and seepage etc.

The following events are defined as emergency events that apply to this dam:

- Dam flooding

  Significant rainfall in the dam catchment with the storage level rising rapidly and overtopping expected. This has the potential to overtop and fail the embankment.

  Follow table 3 during flood events.

- Seepage events

  Detection of new seepage or an increase in previously observed seepage, not due to inflow or a storage level rise. Even if no seepage can be seen, the presence of sinkholes and slumps could indicate internal erosion of the dam.

  Follow table 4 during seepage events.

- Structural issues

  Signs of distress or abnormalities in the embankment such as cracking, deformation or scouring of the embankment. This could also include structural damage identified following an earthquake event.

  Follow table 4 during structural issues.

EAP activation

This EAP will be activated when an emergency condition (activation level) is triggered at the dam.

Hazard– Flood Events

Table 3 Flood event hazard

Activation level	Alert	Lean Forward	Stand Up	Stand Down
Activation trigger	• Storage rising due to rain in catchment	• Storage above FSL, unlikely to impact PAR	• Storage above DCL, likely to impact PAR	• Storage level falling or stabilised to FSL (if no structural damage occurred)
Actions	• Record all communication • Monitor dam and undertake visual inspection	• As per previous activation level, AND • Undertake inspection every 6 hours	• As per previous activation level, AND • Continuously monitor water levels in the dam (if safe to do so) • Support/supervise emergency works as required, such as storage lowering or controlled breaching • Discuss with LDMG, closure of affected roads if not already closed by others • Maintain surveillance of area immediately downstream of dam (if safe to do so)	• Prepare Emergency Event Report (EER) if required • Inspect dam and contact RPEQ if new damage observed, or the dam was overtopped • Return to routine activities
Internal notifications	• Advise onsite personnel if required	• As per previous activation level	• As per previous activation level	• Inform all previously notified contacts of stand down
External notifications		1. PAR 2. LDMG	1. PAR 2. LDMG 3. Police/DDMG 4. DSR	• Inform all previously notified contacts of stand down
External message		• EAP has been activated to Lean Forward • Describe current situation with dam: What is the event? (Flood event) What is the status of the dam? (overtopping has started?)	• EAP has been activated to Stand Up • Describe current situation with dam: What is the event? (Flood event) What is the status of the dam? (any structural damage to dam?) What is the current storage? (dam overtopping flows increasing) • Is more rain coming? (continuing raining forecast) • Confirm evacuations are required/underway/complete	• EAP has been deactivated • Describe current situation with dam: What is the status of the dam? Advise of current storage level (dam at FSL, overtopping flows decreasing) Advise weather conditions (no further rain forecasted)

Dam hazard– Sunny Day Failure

Table 4 Sunny Day Failure Dam Hazard

Activation level	Alert	Lean Forward	Stand Up	Stand Down
Activation trigger	• New embankment cracking or settlement observed, visual movement/slippage of the embankment **OR** • Earthquake felt in the area, AND Intensity less than 5MM	• Embankment abnormalities, dam wall movement, new or increased seepage with cloudy discharge, sinkholes observed on dam embankment or reservoir and/or cracks in the embankment/spillway with seepage **OR** • Earthquake felt in the area, AND Intensity more than 5MM	• Embankment abnormalities, dam wall movement, seepage/piping developing, and dam failure is likely, rapidly expanding sinkhole(s) and/or sudden or rapidly proceeding slides of the embankment slopes	• Seepage/piping is manageable and/or water levels reduced to a 'safe' level
Actions	• Record all communication • Monitor dam (if safe to do so) • Monitor and record any leakage and/or cracks • Liaise with RPEQ if required	• As per previous activation level, AND • Undertake inspection every hour (if safe to do so) • Consider lowering storage (if safe to do so)	• As per previous activation level, AND • Continuously monitor the dam (if safe to do so) • Support/supervise remedial works as required • Lower the storage if directed • Close any affected roads if not already closed by others • Maintain surveillance of area immediately downstream of dam	• Prepare Emergency Event Report (EER) if required • Inspect dam and contact RPEQ if new damage observed • Return to routine activities
Internal notifications	• Advise onsite personnel if required	• As per previous activation level	• As per previous activation level	• Inform all previously notified contacts of stand down
External notifications	1. LDMG 2. Police/DDMG 3. DSR	• As per previous activation level, AND: • PAR	• As per previous activation level	• Inform all previously notified contacts of stand down
External Message	• Advise EAP has been Activated • Describe current situation with dam: What is the event? (Dam Safety risk) What is the status? (. identified embankment movement/cracks/leakage) • Advise of current storage level (dam at FSL)	• Advise EAP is at Lean Forward • Describe current situation with dam: What is the event? (Dam Safety risk) What is the status? (. observations of identified embankment movement/cracks/leakage) • Advise of current storage level (dam at FSL)	• Advise EAP is at Stand Up • Describe current situation with dam: What is the event? (Dam Safety risk) What is the status? (observations of identified embankment movement/cracks/leakage) • Advise of current storage level (dam at FSL) • Confirm evacuations are required/underway/complete	• Advise EAP has been deactivated • Describe current situation with dam: What is the event? (Dam Safety risk) What is the status? (dam embankment is stable) Advise of current storage level (dam at FSL)

Table 5 has been redacted

APPENDIX A ABBREVIATIONS AND ACRONYMS

AHD	Australian Height Datum
CEO	Chief Executive Officer
DCF	Dam Crest Flood
DCFF	Dam Crest Flood Failure
DCL	Dam Crest Level
DDMG	District Disaster Management Group
DDMP	District Disaster Management Plan
DDS	Director Dam Safety
DRDMW	Department of Regional Development, Manufacturing and Water
DSR	Dam Safety Regulator
EAP	Emergency Action Plan
EER	Emergency Event Report
FIA	Failure Impact Assessment
FSL	Full Supply Level
LDC	Local Disaster Coordinator
LDMG	Local Disaster Management Group
LDMP	Local Disaster Management Plan
MM	Modified Mercalli
PAR	Population at Risk
PMF	Probable Maximum Flood
RPEQ	Registered Professional Engineer of Queensland
QPS	Queensland Police Services
SDF	Sunny Day Failure
SOP	Standard Operating Procedure

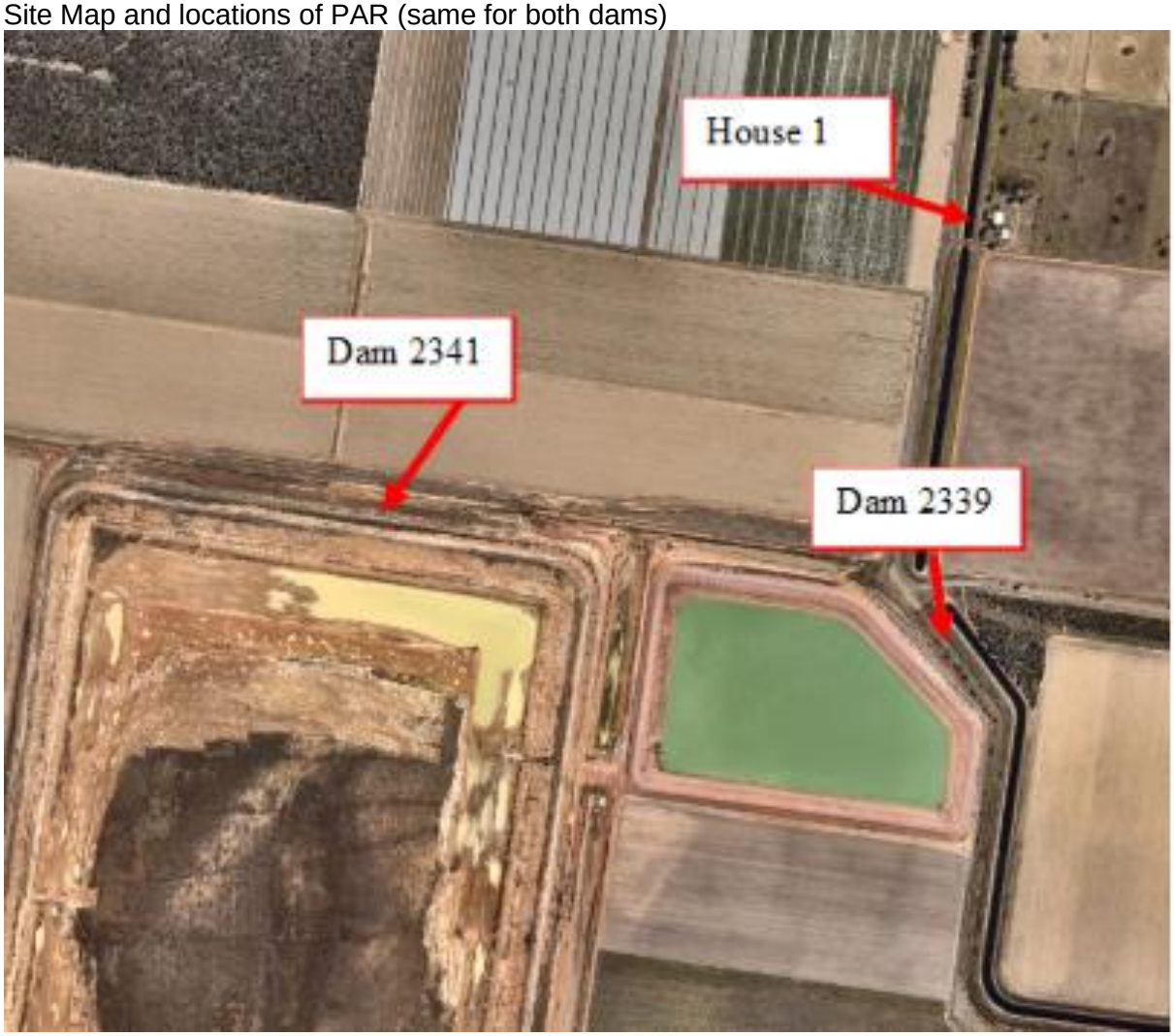
APPENDIX B DRAWINGS AND MAPS

- B.1 - Locality plan
- B.2 - Site Map and locations of PAR
- B.3 - Flood map

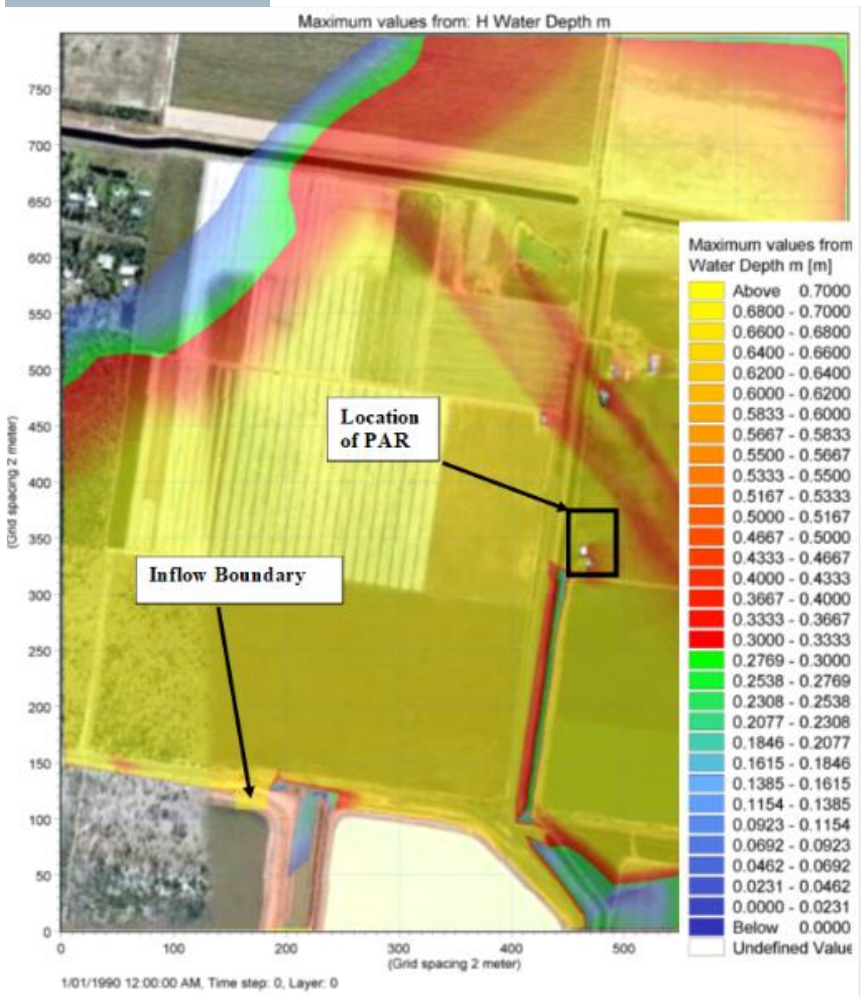
B.1a - Locality plan -

B.1b - Locality plan -

B.2 – Site Map and locations of PAR (same for both dams)



B.3a - Flood map -



B.3a - Flood map -