No. 7 Dam – Mount Morgan Emergency Action Plan (EAP)

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Date: September 2020
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Approved by the delegate of the Chief Executive, Department of Natural Resources, Mines and Energy until 1 June 2021.
Approval and Revision Control

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1 Procedural Flow Chart and Notification List

The purpose of the procedural flow chart is to clearly summarise the responsibilities of all relevant parties, the prioritised order in which individuals are to be notified and the individuals that are to be notified. The contact details for all parties outlined in the procedural flow chart have been summarised in the notification list for quick reference and to facilitate efficient communications.
1.1 Procedural Flow Chart

**FIELD STAFF**

- **TSO OE DO**
  - Regular Dam Surveillance and Level Monitoring

- **TSO OE DO**
  - Monitor and record situation at dam (include photos)
  - Provide regular status report to DM or MFRW.

- **TSO OE DO**
  - Inspect dam as soon as safe access is possible following emergency.

- **TSO OE DO**
  - Forward Damage and Action Report to CTS.

**EMERGENCY ACTION CENTRE**

- **DM CM MFRW GM**
  - Implement FRW response.

- **DM or MFRW**
  - Set up and coordinate as per requirements of DAM EAP.

- **DM or MFRW**
  - Monitor Emergency / Condition and evaluate situation in accordance with DAM EAP.

- **DM or MFRW**
  - Request end of EAP Activation to:
    - GM
    - LDCC
    - MFRW

- **GM LDCC MFRW**
  - Authorise end of EAP Activation.

- **CM**
  - Forward Emergency Event Report to MFRW/GM/LDMG.

- **MFRW**
  - Undertake emergency maintenance as required in accordance with OM Manual.

**3RD PARTY TO FRW**

- **DM or MFRW**
  - Advise Local Disaster Coordinator of impending situation.

- **DM or MFRW**
  - Advise Director of Dam Safety, Brisbane - DEWS, that Dam EAP has been activated.

- **DM or MFRW**
  - Provide regular Status Reports to:
    - GM
    - CEO
    - Mayor
    - LDMG / LDCC

- **DM or MFRW**
  - If necessary, consult with experienced Dam Engineer (Consultant) with RPEQ status.

- **DM or MFRW**
  - If contacting of residents is required contact LDC.

- **LDC**
  - Contact or Evacuate in accordance with Dam EAP.

- **LDC or MFRW**
  - Provide regular status reports to LDCC.

- **RPEQ Eng**
  - Inspect dam as soon as safe access is possible.
  - Forward Damage and Action Report to CTS.

- **GM**
  - Forward Emergency Event Report to Director of Dam Safety (DEWS).

**Legend:**
- CM - Coordinator Maintenance
- DM – Duty Manager
- DO – Duty Officer
- EAP – Emergency Action Plan
- OE – Operations Engineer
- GM – General Manager, Regional Services RRC
- LDC – Local Disaster Coordinator
- MFRW – Manager, Fitzroy River Water
- RPEQ Eng – RPEQ Engineer
- TSO - Treatment and Supply Officer

Section 1.2 has been redacted
2 Purpose, Scope, Roles and Responsibilities

2.1 Purpose
The purpose of this Emergency Action Plan is to pre-plan the coordination of necessary actions by Rockhampton Regional Council (RRC) and its business unit Fitzroy River Water (FRW) and to provide timely notification to the Department of Energy and Water Supply (DEWS), police and other local counter disaster groups so that communication with potentially affected persons in either RRC or Banana Shire Council (BSC) can be completed in the event that a condition at No.7 Dam triggers the action of this EAP. This document is prepared in order to comply with our requirements under the Water Supply (Safety and Reliability) Act 2008.

Specifically, this document is not the primary mechanism for communicating with external parties including PAR (RRC or BSC) but rather it defines how the Dam Owner will respond to a range of events to ensure that an appropriate disaster response is initiated by Rockhampton’s Local Disaster Management Group through the activation of its Local Disaster Coordination Centre or through associated interactions with other district disaster management groups or agencies.

2.2 Scope
This document applies to No.7 Dam, Mount Morgan, and:
- identifies emergency conditions which could endanger the integrity of the dam and the safety of people downstream, and which require immediate action,
- prescribes procedures which are to be followed in the event of an emergency condition developing.
- is reviewed annually with the current approved version of the EAP available for free download from the following website for the Department of Natural Resources, Mines and Energy: https://www.dews.qld.gov.au/water/dams/safety/eap/emergency-action-plans

OR

can be obtained by contacting FRW or RRC on 1300 225577.

2.3 Roles and Responsibilities

2.3.1 General
The Dam is owned by Rockhampton Regional Council (RRC) and operated and maintained by its business unit, Fitzroy River Water (FRW).

The Manager FRW is responsible for the revision and distribution of this EAP.

Roles and responsibilities for particular parties are as follows:
2.3.2 Treatment & Supply Officer

- Be thoroughly aware and capable of implementing the requirements of this document.
- Advise Manager (MFRW) before periods of absence from the dam to ensure regular dam monitoring duties are delegated to others.
- Advise the Coordinator Maintenance (CM) / Duty Manager (DM) / Manager Fitzroy River Water (MFRW) or General Manager Regional Services (GM) if a problem has been identified requiring the Emergency Action Plan to be activated.
- Follow the EAP and ensure the actions outlined in Section 6.0 be immediately implemented in the event of an emergency.
- Monitor and record emergency situation (including photos) in an Incident Log. An Incident Log shall be maintained on site by the Treatment & Supply Officer. Activities and decisions undertaken during any incident shall be recorded in chronological order in the Incident Log.

The Incident Log shall contain the following information as a minimum:

- A description of the incident / event.
- Time and date of the incident / event.
- Time and date of all actions.
- Regular recordings of water level.
- Regular recordings of rainfall.
- Instrumentation recordings.
- Description of observed damage.
- Photographs and / or sketches of observed damage.
- Details of communication which took place during the emergency.
- Any further comments considered necessary.

Incident Logs (refer Appendix I) shall be supported by other relevant documentation and photographs.

Comments regarding the adequacy of the EAP and any recommended changes to the EAP should be included.

- Provide regular status reports to Duty Manager coordinating the FRW response.
- Inspect the dam as soon as safe access is possible following an emergency.
- Forward a Damage and Action Report to Coordinator Maintenance (CM).

2.3.3 Operations Engineer (OE)

- Be thoroughly aware and capable of implementing the requirements of this document.
- Advise Coordinator Network Operations (CNO) before periods of absence from the dam to ensure regular dam monitoring duties are delegated to others.
- Support and back up Treatment & Supply Officer (TSO) to implement the requirements of this document.
Advise the Coordinator Maintenance (CM) / Coordinator Network Operations (CNO) / Duty Manager (DM) / Manager (MFRW) or General Manager (GM) if a problem has been identified requiring the Emergency Action Plan to be activated.

Follow the EAP and ensure the actions outlined in Section 6.0 be immediately implemented in the event of an emergency,

Monitor and record emergency situation (including photos) in an Incident Log,

An Incident Log shall be maintained on site by the Treatment and Supply Officer. Activities and decisions undertaken during any incident shall be recorded in chronological order in the Incident Log.

The Incident Log shall contain the following information as a minimum:

- A description of the incident / event.
- Time and date of the incident / event.
- Time and date of all actions.
- Regular recordings of water level.
- Regular recordings of rainfall.
- Instrumentation recordings.
- Description of observed damage.
- Photographs and / or sketches of observed damage.
- Details of communication which took place during the emergency.
- Any further comments considered necessary.

Incident Logs (refer Appendix I) shall be supported by other relevant documentation and photographs.

Comments regarding the adequacy of the EAP and any recommended changes to the EAP should be included.

Provide regular status reports to Duty Manager (DM) coordinating the FRW response.

Inspect the dam as soon as safe access is possible following an emergency.

Forward a Damage and Action Report to Coordinator Maintenance (CM).

### 2.3.4 Coordinator Maintenance (CM)

- Be thoroughly aware and capable of implementing the requirements of this document.
- Monitor situation when a potential emergency event could occur.
- Activate the EAP in the case of a potential emergency condition.
- Advise the Duty Manager (DM) / Manager (MFRW) / General Manager (GM) if a problem has been identified requiring the Emergency Action Plan to be activated.
- Forward a Damage and Action Report to Manager (MFRW) upon completion of emergency.
- Prepare and forward Emergency Event Report to Manager (MFRW).
- The downstream residents are to be provided with the communication arrangements by the Manager (MFRW) annually prior to the wet season.
2.3.5 Coordinator Network Operations (CNO)

- Be thoroughly aware and capable of implementing the requirements of this document.
- Monitor situation when a potential emergency event could occur.
- Advise the Duty Manager (DM) / Manager (MFRW) / General Manager (GM) if a problem has been identified requiring the Emergency Action Plan to be activated.
- Forward a Damage and Action Report to Manager (MFRW) upon completion of emergency.
- Prepare and forward Emergency Event Report to Manager (MFRW).
- The downstream residents are to be provided with the communication arrangements by the Manager (MFRW) annually prior to the wet season.

2.3.6 Duty Officer (DO)

- The Duty Officer is the regular 24 hour operator located at Glenmore Water Treatment Plant and has continuous access to online storage level data.
- Be thoroughly aware and capable of implementing the requirements of this document.
- Monitor situation when a potential emergency event could occur.
- Advise the Duty Manager (DM) / Manager (MFRW) / General Manager (GM) if a problem has been identified requiring the Emergency Action Plan to be activated.

2.3.7 Duty Manager (DM)

- The Duty Manager is one of three senior FRW Officers rostered on as the out of hours Manager – On Call, should an FRW response need to be implemented. [Contact details are updated and posted on a weekly basis].
- Be thoroughly aware and capable of implementing the requirements of this document.
- Activate and manage the FRW response.
- Notify the Manager that the Dam Emergency Action Plan has been activated.

2.3.8 Manager Fitzroy River Water (MFRW)

- Be thoroughly aware and capable of implementing the requirements of this document.
- As Document Sponsor, approve this document.
- Activate the Emergency Action Plan if not previously done by the Duty Manager.
- Monitor actions of the FRW response.
- Review and forward Emergency Event Report to General Manager – Regional Services, RRC (GM)
- Undertake post emergency maintenance where required in accordance with the Operation and Maintenance Manual.
- Incorporate learnings from Emergency Events into the EAP through the annual review process
- Conduct exercises to test the EAP on an annual basis or as otherwise defined
- Conduct community awareness campaigns to inform the Population at Risk and broader community of the general requirements and importance of Dam Safety management relevant to No. 7 Dam.
- Forward Emergency Event Report within 30 days of the event to the Director of Dam Safety, Dept. Energy and Water Supply (DEWS), PO BOX 2454, BRISBANE Q 4001 and Chief Executive Officer, RRC.

2.3.9 General Manager Regional Services, RRC (GM)
- Maintain and operate this Emergency Action Plan,
- Represent the dam operator by attending the Local Disaster Management Group meetings.
- Ensure Emergency Action Plan is reviewed annually or when contact details for any parties have changed and it is compliant with the Dam Safety Regulators requirements,
- Advise the Manager (MFRW) if a problem has been identified and needs to be drafted into an amended Emergency Action Plan.

2.3.10 Local Disaster Coordinator, RRC (LDC)
- Be thoroughly aware and capable of implementing the requirements of this document.
- Brief the Rockhampton Regional Council Local Disaster Management Group of impending situation.
- Assist in Initiation of the Local Counter Disaster Management Plan if required.
- Ensure the communication with and evacuation of property owners in accordance with this Emergency Action Plan upon the direction of the Duty Manager (DM) or Manager FRW.
- Provide regular feedback to the Duty Manager (DM) or Manager (MFRW).

2.3.11 Local Disaster Management Group, RRC (LDMG)
- Complete all the legislative requirements associated with planning and preparing for the management of disasters through the liaising with all relevant community stakeholder groups and government agencies (e.g. SES, QPS, QFES)
- Prepare, review and publish Local Disaster Management Plans and sub-plans to provide information for the community and District Disaster Management Group for the purpose of managing disaster responses
- Be responsible for the activation of the Local Disaster Coordination Centre (LDCC) in response to relevant triggers associated with specific disaster-related events

2.3.12 Local Disaster Management Group, BSC (LDMG-BSC)
- Complete all the legislative requirements associated with planning and preparing for the management of disasters through the liaising with all relevant community stakeholder groups and government agencies (e.g. SES, QPS, QFES)
- Maintain open and effective communications with the RRC LDMG and also the RRC LDCC in the event that it is activated in relation to this EAP.
2.3.13 Banana Shire Council, (BSC)
- Refer any queries relating the Dam Safety aspects of the No. 7 Dam or this EAP from residents in BSC to the key contacts in RRC to ensure that appropriate information is provided in response to these queries.

2.3.14 District Disaster Management Group (DDMG)
- Complete all the legislative requirements associated with planning and preparing for the management of disasters through the liaising with all relevant community stakeholder groups and government agencies (e.g. SES, QPS, QFES).

2.3.15 Downstream Population at Risk (PAR)
- Once identified as PAR and following the provision of information relating to this EAP and the relevant need to be aware of the general requirements as it may relate to them, it is the role and responsibility of the PAR to ensure they retain ready access to this information or alternatively identify any of their own site-specific Dam Safety emergency response actions not included in this EAP.
- Be aware of the possible impact of a Dam Safety emergency on access to and from their property, including any necessary evacuation arrangements that may need to be implemented in the event that communication is received to do so.
2.3.16 **RPEQ Engineer – Consultant – Experienced in dam design and operation (Dam Engineer – RPEQ)**

- Provide technical advice and assistance to RRC and FRW personnel, when requested,
- Detail the requirements of post emergency maintenance, where requested.

Note: The local consultants who would be recommended are:

**GHD**

Senior Engineer - Civil

**AECOM Pty Ltd**

Rockhampton Office Manager
3 Communication Plan

3.1 Internal Communications
Listed below is the preferred method of communication between FRW staff at Mount Morgan and FRW staff at Rockhampton should the normal lines of communication be unavailable.

Mount Morgan ←-----→ Rockhampton

1. Landline Phones / Internet *
2. Mobile Phones / Internet*
3. Satellite Phones / Internet*
4. Drive to top of range and use Mobile Phone and/or drive to Mt Morgan

Mount Morgan ←-----→ Mount Morgan

1. Landline Phones / Internet*
2. Mobile Phones / Internet*
3. 2 Way UHF radios / Internet*
4. Satellite Phones / Internet*

3.2 External Communications
Initially letters will be sent to all residents identified as being in the maximum flood zone downstream of the dam explaining the procedures undertaken in the case of an emergency, the communication methods, and maps of the design flood levels. Further meetings or discussion will be held if required with these residents and any other interested persons to explain and discuss these procedures and what can be expected. These letters and meetings will be held annually prior to the wet season.

Each year in advance of the approaching wet season FRW will review the list of current contact phone numbers of downstream residents to make sure this contact list is as accurate as possible in the event that it is required for notification purposes. This involves contacting all stakeholders to inform them of the purpose of the call to remind them specifically of the Dam Safety relating to No. 7 Dam whilst also confirming all their current contact information. General communications and media releases will be made each year to increase community awareness about the importance of managing Dam Safety during emergency events.

Because of the speed that a potential emergency could occur and the number to people to be contacted it is impractical to rely solely upon contact by telephone, even if it is still operational. For these reasons the primary contact with the downstream residents will be via radio or other public media.

Upon the activation of this plan, all public warnings will be distributed through the LDC (or LDCC) upon the recommendation of the Duty Manager or Manager FRW and on the authorisation of the Chairperson LDMG. Warnings are to be issued by the most effective means as determined by the LDMG and may include phone (to effected properties), radio warnings and local electronic and print media outlets.

The issue of local warnings must take into account community warning principles.

The following strategies will be used for the distribution of local warnings and/or information:
If power is available;
  o Broadcast warnings, alerts and information will be issued by radio (ABC Radio), TV, mobile phone SMS to local area facilities where possible and internet using official social media and other relevant billboards;
  o Attempts will be made to utilise other radio stations and TV channels both local and Brisbane based wherever possible

If local power and/or telecommunications are lost;
  o Maintain communications through operations within LDCC;
  o Manually distribute information brochures and handouts, which if required, will be made available in languages other than English where possible;
  o Broadcast warnings and alerts by radio, TV and internet (where auxiliary power is available)

If general power is lost along with telecommunications;
  o Maintain communications through operations within the LDCC;
  o Manually distribute information brochures and handouts, which if required, will be made available in languages other than English where possible;
  o Establish radio communications within the LDCC and with the DDCC;
  o Broadcast warnings and alerts by radio, TV and internet (where auxiliary power is available).

The Morning Bulletin will also be used to provide information wherever possible.

Partner agencies that also provide public information and warnings in the event of an emergency or disaster include:

- Queensland Fire and Emergency Service (QFES) – coordinates media and public information regarding fire, chemical or gas emergency situations;
- BoM - provides cyclone, flood (flood alert, flood watch and flood advice), severe storm (including thunderstorm), tsunami, land gales and severe bushfire weather advice;
- State Disaster Coordination Centre - where the State-wide management of a terrorist or other emergency incident is required;
- Queensland Police Service (QPS) - has responsibility for providing information about a locally managed terrorist incident;
- DDC – advises detail of mandatory evacuations and declarations under the Disaster Management Act 2003 (DMA), relating to any disaster event;
- Queensland Health - for information regarding a public health epidemic or heat wave;
- RRC – for local information on road closures, traffic routes, evacuations, evacuation centres, welfare centres, debris clean-up and all matters relating to the activation of the LDMG and LDMP.

COMMUNITY WARNING PRINCIPLES

The following is a list of 12 recognised principles that should be followed in providing warnings to the community. Warnings and warning systems should be:

- Coordinated: A warning system should avoid duplication of effort where possible and support a shared understanding of the situation among all agencies involved in managing the incident;
- Authoritative and accountable: Warnings should be disseminated on the decision of an authorised person, unless of course imminent and extreme danger exists;
- Consistent/Standards based: Information content should be consistent across all sources to ensure credibility;
- Complete: The message should include relevant details, may include a direction on the need to consult other sources, and be presented in an easily understood way. Messages should target the entire community, including culturally and linguistically diverse communities and those who are vision or hearing impaired;
- Multi-modal: The use of a variety of delivery mechanisms and multiple formats will complement each other and reach the most people;
▪ All hazards-based: Any emergency warning system should be capable of providing warnings, where practicable, for any type of emergency;
▪ Targeted: Messages should be targeted to those at risk in order to reduce complacency from ‘over warning’;
▪ Interoperable: Coordinated delivery methods should be capable of operation across jurisdictional borders;
▪ Accessible and responsive: Systems should be able to respond and deliver warnings during demographic, social and technological change;
▪ Verifiable: The warning is able to be verified by the community, to reduce accidental activations;
▪ Underpinned by education and awareness raising activities: Agencies should be active in the community to raise awareness and educate people in regards to particular emergencies;
▪ Compatible: The warning system should avoid adverse impacts upon other communication networks.

The Duty Manager or Manager FRW will assist the LDC to make regular 2 hourly or more frequent media releases in accordance with the suggested content below or otherwise required by this EAP. Should an evacuation order be broadcast, the LDC or Manager FRW will direct on-site ground visits (subject to the safety of available officers) to ensure the message has been received and the residents have evacuated.

Suggested Communications Template

**Notification of Activation of EAP**
The Emergency Action Plan for Mount Morgan No 7 Dam has been activated. Residents downstream of the Mount Morgan dam are advised that the level in the dam is continuing to rise and you should be alert and listen to ABC radio for further announcements. At this stage there is no need for people to move from their homes they will be advised of any changes as they come to hand.

**Notification of Need to Evacuate**
Following the heavy rainfall and the chance of further rain in the next few hours, FRW and the Local Disaster Coordinator advise that residents and property owners located in all low lying areas adjacent to the Dee River in Mount Morgan should take prompt action and move immediately from their properties to higher ground as a precaution against a possible dam failure emergency.

4 Area Map and Storage Catchment Area Plan

4.1 Area Map

An Area Map showing travel times and distances for various routes of travel from Rockhampton to the Mount Morgan No 7 Dam has been produced. See Appendix A.

4.2 Storage Catchment Area Plan

A Storage Catchment Area Plan has been provided. See Appendix B.
5 Emergency Events

5.1 General
Officers set out in Section 2.3 can activate this EAP by contacting the Duty Manager. (Generally the EAP will be activated by the Duty Manager (DM) or Manager (MFRW) following contact with the Duty Officer (DO) who remotely monitors the No. 7 Dam storage level using an ultrasonic level sensor that is linked to FRW’s SCADA and weather conditions OR the Treatment & Supply Officer (TSO) who will be monitoring the No. 7 Dam storage level and the weather or dam conditions on site.

5.2 Flood Related Events
As flow over the dam increases with rising flood levels the effect of downstream flooding in the Dee River will increase. Areas along Byrnes Parade, River Street, Bridge Street, Sheil Crescent, Thompson Avenue, Tipperary Flats and parts of Red Hill are likely to be worst affected. Access to the dam by road is via Byrnes Parade. As downstream flood levels increase this access may be restricted. Access may have to be gained by travelling overland to the dam from William Street. (4WD Access only).

The calculated maximum water level for the level of the probable maximum precipitation (PMP) event is RL 251.43 for an unblocked spillway crest which is also the Non Overflow Abutment Crest level.

Flood Related Events have the potential to destabilise the dam structure and cause it to failure. These events including Probable Maximum Precipitation flood events represent the greatest risk to the downstream population. As such, a considerable level of detail and activation levels (Table 1) are provided to cater for the often very rapid, flash-flooding type events that are normally caused by simultaneous extreme weather events. Because of these extremely short-lived events, the entire PAR is considered as being the population to be notified during this type of emergency event.

5.3 Photographic record of flood related events downstream
Photographic records of river heights throughout the town and downstream of the dam will be required for the different flood capacities relevant to dam storage heights. For consistency, the recommended locations to photograph flood heights both sides of the Dee River are as set out below.

It is important that the time and location of photographs are recorded in the incident log.

Site 1: Immediately downstream of the dam at the eastern end of Perlick St.
Site 2: Between the western end of Perlick St. and River St.
Site 3: Between Pugh St. and Edward St.
Site 4: Upstream of the suspension bridge at Dee Esplanade.
Site 5: Both sides of river at James St traffic Bridge.
Site 6: Western end of Nicholson St.
Site 7: Western end of Dee St.
Site 8: New Gauge board installed in the No. 7 Dam at the William St site
5.4 Non-Flood Related Events

Table 1 contains a list of non-flood related events and their associated EAP number and activation levels. The nature of these events varies significantly and several of these events may lead to the potential for structural failure and therefore trigger an emergency response. The planned operation of the dam scour valve is not included due to its relatively small size and resultant downstream release rate (<1 cumec).

5.5 Flood and Non-Flood Related Trigger Levels

The following flood and non-flood related trigger events have been identified as events that would lead to the activation of this Emergency Action Plan.

<table>
<thead>
<tr>
<th>Flood Related Trigger Description</th>
<th>EAP Number</th>
<th>Escalation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage level at AHD 248.6 and rising (0.3m above Spillway Crest)</td>
<td>6.1</td>
<td>ALERT</td>
</tr>
<tr>
<td>Storage level at AHD 248.8 and rising (0.5m above Spillway Crest)</td>
<td>6.2</td>
<td>LEAN FORWARD</td>
</tr>
<tr>
<td>Storage level at AHD 249.8 and rising (1.5m above Spillway Crest)</td>
<td>6.3</td>
<td>STAND UP</td>
</tr>
<tr>
<td>Storage level at AHD 250.5 and rising (2.2m above Spillway Crest)</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Storage level at AHD 251.0 and rising (2.7m above Spillway Crest)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>Storage level at AHD 251.43 (3.13m above Spillway Crest and overtopping of Non Overflow Abutment &amp; Levee)</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Storage level at less than AHD 248.8m (less than 0.5m above Spillway Crest) and falling</td>
<td>N/A</td>
<td>STAND DOWN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Flood Related Trigger Description</th>
<th>EAP Number</th>
<th>Escalation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant Increase in Seepage or New Area of Seepage is Observed giving rise to Piping Failure of Levee</td>
<td>6.7</td>
<td>ALERT</td>
</tr>
<tr>
<td>Earthquake / Tremor felt in the area OR Landslide</td>
<td>6.8</td>
<td>ALERT</td>
</tr>
<tr>
<td>Excessive Movement of Dam Embankment</td>
<td>6.9</td>
<td>LEAN FORWARD</td>
</tr>
<tr>
<td>Slope failure of Levee</td>
<td>6.10</td>
<td>LEAN FORWARD</td>
</tr>
<tr>
<td>Cracking in structural concrete</td>
<td>6.11</td>
<td>LEAN FORWARD</td>
</tr>
<tr>
<td>Wave Erosion</td>
<td>6.12</td>
<td>ALERT</td>
</tr>
<tr>
<td>Toxic Spill in Storage/Catchment</td>
<td>6.13</td>
<td>ALERT</td>
</tr>
<tr>
<td>Algae Bloom in Storage/Catchment</td>
<td>6.14</td>
<td>ALERT</td>
</tr>
<tr>
<td>Imminent Dam Failure Emergency Due to Structural Failure</td>
<td>6.15</td>
<td>STAND UP</td>
</tr>
<tr>
<td>Potential for emergency event eliminated or issue rectified</td>
<td>N/A</td>
<td>STAND DOWN</td>
</tr>
</tbody>
</table>
5.6 Downstream Population at Risk
Following on from comments made in Section 5.2, the entire PAR (see Appendix C and D) is considered as one with respect to the need for notification in relation to the various flood or non-flood related emergency events that may occur and pose a risk to this population. This is done due to the dependence of many residents on the same low-lying access roads and public thoroughfares in which these members of the PAR may be located at the time of the emergency. In effect, although the location of a given property may only be considered at risk during a PMP flood related event, in the interests of protecting public safety, the resident of this given property will still be contacted if an emergency occurs that may pose a risk to the overall area including public access and public thoroughfare locations even though the likely potential for inundation is unlikely to include their more elevated property. In this way, the entire PAR will be made aware of the impending emergency and be able to act accordingly.

Inundation Mapping
Detailed inundation maps for the possible downstream PAR are shown in Appendix C for three specific emergency events as follows:

1. PMP Design Event with Dam Failure
2. PMP Design Event with No Dam Failure
3. Sunny Dam Failure Event

Location of Downstream PAR Without Inundation Mapping
Appendix C shows area maps of the potential PAR within the area as far as approximately 61 km downstream of No. 7 Dam. Sites >35 km downstream are located in the Banana Shire Council. Detailed inundation mapping has not yet been completed for these more distant locations, however, analysis has been completed to identify specific buildings at locations adjacent to the Dee River downstream of the No. 7 Dam as far as approximately 61 km from the No. 7 Dam. Buildings identified in this area are listed in the Appendix C with specific information provided as follows:

- Distance downstream from No. 7 Dam
- Distance from the centre of the stream (Dee River channel)
- Elevation of the building above the stream level

Over this extended distance, eight separately located buildings (i.e. different properties) are located within 100 m of the Dee River channel, one as close a 48 m and two others at 61 m from the river channel. These closely located buildings range in elevation from 10 m to 13 m above the stream elevation. In the absence of detailed inundation mapping, it is not possible to predict the extent to which these buildings are inundated during one of the three dam emergency events listed above, however, given the relative distance from the river channel and elevation above stream level and the significant distance downstream of No. 7 Dam, it seems likely that inundation would occur only during a PMP Design Event with Dam Failure if at all.

In the coming year, more detailed flood modelling will be completed for these areas downstream of No. 7 Dam to better understand streamflow and possible levels of inundation during different events and with flow inputs from different sub-catchments.
6 Emergency Actions

6.1 Storage Level is at AHD 248.6 (0.3m above Spillway Crest) and rising, or further rain is forecast.

Although this is not an emergency event, it is included in the EAP to provide advance warning of a possible event. **THIS IS AN ALERT LEVEL CONDITION.**

The Treatment & Supply Officer should observe the dam from an appropriate vantage point on the right abutment.

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Monitor rainfall and storage levels hourly.</td>
<td>Notify the Manager of FRW of storage water level and rainfall forecast.</td>
</tr>
<tr>
<td>• Check rainfall predictions with Bureau of Meteorology (BOM)</td>
<td></td>
</tr>
<tr>
<td>• Notify the Manager FRW of storage water level and rainfall forecast.</td>
<td></td>
</tr>
<tr>
<td>• Monitor hourly or as required, keeping notes and photographs for the Incident Log.</td>
<td>Inform the Manager FRW and General Manager Regional Services of the situation.</td>
</tr>
<tr>
<td>Advise Coordinator Maintenance or Manager FRW.</td>
<td></td>
</tr>
<tr>
<td>• Monitor downstream flooding with photographs and relate to dam gauge height. Record</td>
<td></td>
</tr>
<tr>
<td>times of photographs and observations. (See EAP 5.3).</td>
<td></td>
</tr>
<tr>
<td>IF ANY DAMAGE IS OBSERVED</td>
<td>On receipt of damage report, proceed with EAP 6.7 – EAP 6.12 as appropriate.</td>
</tr>
<tr>
<td>Advise the Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate.</td>
<td></td>
</tr>
<tr>
<td>IF WATER LEVEL RISES ABOVE AHD 248.8m (0.5 m OVER SPILLWAY CREST LEVEL)</td>
<td>Advise Manager FRW and General Manager Regional Services and proceed with EAP 6.2.</td>
</tr>
<tr>
<td>Advise Manager FRW and proceed with EAP 6.2.</td>
<td></td>
</tr>
<tr>
<td>IF WATER LEVEL DROPS TO AHD 248.4 (0.1M above SPILLWAY) AND NO MORE RAIN IS FORECAST</td>
<td>Advise the Manager FRW and General Manager Regional Services and close the Incident.</td>
</tr>
<tr>
<td>Advise Manager FRW.</td>
<td></td>
</tr>
<tr>
<td>Complete an Event Report and submit to Coordinator Maintenance or MFRW.</td>
<td>Review and complete and file the Event Report.</td>
</tr>
</tbody>
</table>

Complete an Event Report and submit to Coordinator Maintenance or MFRW.
6.2 Storage Level is at AHD 248.8 (0.5m above Spillway Crest) and rising and major rainfall is forecast by BOM.

**ACTIVATE THIS EMERGENCY ACTION PLAN.**

- (by whoever first is aware of the situation i.e. Treatment and Supply Officer; Coordinator Maintenance; Manager FRW; Duty Officer or Duty Manager)

**THIS IS A LEAN FORWARD LEVEL CONDITION.**

The Treatment & Supply Officer / Operations Engineer should observe the dam from an appropriate vantage point on the right abutment.

(The right abutment cannot be accessed via Byrnes Parade with storage level above AHD 249.1. Access may have to be gained by travelling overland to the dam via William Street (4WD Access Only) and checking the gauge board level reading at this location. There is no access to the left abutment with a flow over the spillway.)

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Continue to monitor water level and rate of change in level on an hourly basis.</td>
<td>Seek to activate Emergency Action Plan by making contact with the Duty Manager / Manager FRW who will activate the plan accordingly.</td>
</tr>
<tr>
<td>▪ Check rainfall predictions with Bureau of Meteorology (BOM).</td>
<td></td>
</tr>
<tr>
<td>▪ Notify the Coordinator Maintenance or Manager FRW of storage water level and rainfall forecast and that Emergency Action Plan is to be Activated.</td>
<td></td>
</tr>
<tr>
<td>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / COORDINATOR MAINTENANCE</td>
<td>DUTY MANAGER / MANAGER FRW</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| ▪ Monitor hourly, keeping notes and photographs for the Incident Log. Advise Duty Manager / Manager FRW regularly of developing situation.  
▪ Monitor downstream flooding with photographs and relate to dam gauge height. Record times of photographs and observations. (See EAP 5.3). | ▪ Notify General Manager and the Local Disaster Coordinator that the Emergency Action Plan has been activated.  
▪ Assist LDC to advise downstream residents of the situation and regularly update information at least in 30m intervals by radio and television broadcasts in accordance with the communication procedures.  
▪ Using the latest rates of rise, calculate the time the water level will reach AHD 249.1m (Estimated flood level for access via Byrnes Pd to be cut) and advise Queensland Police Service (QPS) and make a radio / television release.  
▪ Keep General Manager Regional Services updated on situation.  
▪ Have Media Communications Officer keep the media informed of developing situations.  
▪ Advise the Dam Safety Regulator (within 48hrs) that the EAP has been activated and of the general situation. |

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / COORDINATOR MAINTENANCE</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
</table>
| **IF ANY DAMAGE IS OBSERVED**  
Advise the Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate. | On receipt of damage report, proceed with EAP 6.7 – EAP 6.12 as appropriate. |
| **IF WATER LEVEL RISES ABOVE AHD 249.8 m (1.5 m above Spillway Crest)**  
Advise Manager FRW and proceed with EAP 6.3. | Advise Manager FRW and General Manager Regional Services and proceed with EAP 6.3. |
| **WHEN WATER LEVEL DROPS BELOW RL 248.8m (0.5 above Spillway Level) AND NO MORE RAIN IS FORECAST**  
Advise Duty Manager / Manager FRW and proceed with EAP 6.1. | ▪ Proceed with EAP 6.1.  
▪ End of the Emergency Action Plan activation.  
▪ Review and complete the Incident Log.  
▪ Stand down, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.  
Forward Emergency Event Report within 30 business days of the end of the emergency event to the Director of Dam Safety, Department of Natural Resources Mines and Energy (DNRME) damsafety@dnrme.qld.gov.au |
6.3 Storage Level is at AHD 249.8 (1.5m above Spillway Crest) and rising, or further heavy rain is forecast by BOM.

EMERGENCY ACTION PLAN STILL ACTIVATED. THIS IS A STAND UP LEVEL CONDITION.

The Treatment & Supply Officer /Operations Engineer should observe the dam from an appropriate vantage point on the right abutment.

(The left abutment cannot be accessed via Byrnes Parade with storage level above AHD 249.8. Access may have to be gained by travelling overland to the dam via William St and checking the gauge board level reading at this location. (4WD Access Only).)

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / COORDINATOR MAINTENANCE</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Continue to monitor water level and rate of change in level on an hourly basis.</td>
<td>▪ Assist the LDC and Queensland Police Service to advise downstream residents by radio / television that the dam water level is still rising and they should be prepared to move to higher ground. Regularly advise downstream residents of the situation in accordance with the communication procedures.</td>
</tr>
<tr>
<td>▪ Check rainfall predictions with Bureau of Meteorology (BOM).</td>
<td>▪ Using the latest rates of rise, calculate the time the water level will reach RL 250.5m (Water level is 0.1m above overflow Abutment Level) and advise Rockhampton Regional Council Local Disaster Management Group and Queensland Police Service (QPS).</td>
</tr>
<tr>
<td>▪ Notify the Duty Manager / Manager FRW of storage water level and rainfall forecast.</td>
<td>▪ Keep General Manager Regional Services updated on situation.</td>
</tr>
<tr>
<td>▪ Monitor hourly, keeping notes and photographs for the Incident Log. Advise Duty Manager / Manager FRW.</td>
<td>▪ Have Media Communications Officer keep the media informed of developing situations.</td>
</tr>
<tr>
<td>▪ Monitor downstream flooding with photographs and relate to dam gauge height. Record times of photographs and observations. (See EAP 5.3).</td>
<td>▪ Assist with provision of event information to LDC as required.</td>
</tr>
<tr>
<td>▪ Undertake a Visual Check of the dam if safe to do so and check Dam Storage Level at the William St Gauge Board</td>
<td></td>
</tr>
<tr>
<td>▪ If Dam Storage Level Monitoring is no longer possible remotely or at site proceed to EAP 6.5.</td>
<td></td>
</tr>
</tbody>
</table>

IF ANY DAMAGE IS OBSERVED
Advise the Duty Manager / Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate.

On receipt of damage report, proceed with EAP 6.7 – EAP 6.12 as appropriate.

IF WATER LEVEL RISES ABOVE AHD 250.5 m (2.2 m above Spillway Crest)
Advise Duty Manager / Manager FRW and proceed with EAP 6.5.

Advise Manager FRW and General Manager Regional Services and proceed with EAP 6.5.

WHEN WATER LEVEL DROPS BELOW AHD 249.8 m (1.5m above Spillway Crest) AND NO MORE RAIN IS FORECAST
Proceed with EAP 6.2.

Proceed with EAP 6.2.
6.4 Storage Level is at AHD 250.5 (2.2m above Spillway Crest) and rising, or further heavy rain is forecast by BOM. Discharge is 0.1m over the overflow abutments.

EMERGENCY ACTION PLAN STILL ACTIVATED. THIS IS A STAND UP LEVEL CONDITION.

The Treatment & Supply Officer /Operations Engineer /Coordinator Maintenance should observe the dam from the William St site or higher ground only.

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / COORDINATOR MAINTENANCE</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Continue to monitor water level and rate of change in level on an hourly basis.</td>
<td>▪ Assist LDC and Queensland Police Service to advise downstream residents by radio / television that the dam water level is still rising and they are to evacuate from within the inundation zone to higher ground.</td>
</tr>
<tr>
<td>▪ Check rainfall predictions with Bureau of Meteorology (BOM).</td>
<td>▪ Using the latest rates of rise, calculate the time the water level will reach RL 251.0m and advise Rockhampton Regional Council Local Disaster Management Group and Queensland Police Service (QPS).</td>
</tr>
<tr>
<td>▪ Notify the Duty Manager / Manager FRW of storage water level and rainfall forecast.</td>
<td>▪ Keep General Manager Regional Services updated on situation.</td>
</tr>
<tr>
<td>▪ Monitor hourly, keeping notes and photographs for the Incident Log. Advise Duty Manager / Manager FRW.</td>
<td>▪ Have Media Communications Officer keep the media informed of developing situations.</td>
</tr>
<tr>
<td>▪ Monitor downstream flooding with photographs and relate to dam gauge height. Record times of photographs and observations.(See EAP 5.3)</td>
<td></td>
</tr>
</tbody>
</table>

**IF ANY DAMAGE IS OBSERVED**
Advise the Coordinator Maintenance or Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate.

**ON RECEIPT OF DAMAGE REPORT, PROCEED WITH EAP 6.7 – EAP 6.12 AS APPROPRIATE.**

**IF WATER LEVEL RISES ABOVE AHD 251.0 m (2.7 m above Spillway Crest)**
Advise Manager FRW and proceed with EAP 6.6.

**WHEN WATER LEVEL DROPS BELOW AHD 250.5 m (2.2 m above Spillway Crest) AND NO MORE RAIN IS FORECAST**
Proceed with EAP 6.3.
6.5 Storage Level is at AHD 251.0 (2.7m above Spillway Crest) and rising, or further heavy rain is forecast by BOM. Discharge over the non-overflow abutments is a possibility.

EMERGENCY ACTION PLAN STILL ACTIVATED. THIS IS A STAND UP LEVEL CONDITION.

The Treatment & Supply Officer /Operations Engineer /Coordinator Maintenance should observe the dam from an appropriate vantage point on the right abutment.

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / COORDINATOR MAINTENANCE</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Continue to monitor water level and rate of change in level on an hourly basis.</td>
<td>▪ Assist LDC and Queensland Police Service to continue to advise downstream residents by radio / television that the dam water level is still rising and <strong>they are to evacuate from within the inundation zone to higher ground.</strong> Also assist with providing regular advice of the situation to the LDC so that downstream residents can be advised in accordance with the communication procedures.</td>
</tr>
<tr>
<td>▪ Check rainfall predictions with Bureau of Meteorology (BOM).</td>
<td>▪ Using the latest rates of rise, calculate the time the water level will reach RL 251.43 m and advise Rockhampton Regional Council Local Disaster Management Group and Queensland Police Service (QPS).</td>
</tr>
<tr>
<td>▪ Notify the Duty Manager / Manager FRW of storage water level and rainfall forecast.</td>
<td>▪ Keep General Manager Regional Services updated on situation.</td>
</tr>
<tr>
<td>▪ Monitor hourly, keeping notes and photographs for the Incident Log. Advise Duty Manager / Manager FRW.</td>
<td>▪ Have Media Communications Officer keep the media informed of developing situations.</td>
</tr>
<tr>
<td>▪ Monitor downstream flooding with photographs and relate to dam gauge height. Record times of photographs and observations. (See EAP 5.3).</td>
<td></td>
</tr>
<tr>
<td>▪ <strong>Undertake a Routine Dam Safety Inspection.</strong> During the inspection, note rainfall, water level, signs of slumps, erosion, springs. Cracks or any deformation, which could be classified as damage to the dam and relay details back to the Duty Manager / Manager FRW.</td>
<td></td>
</tr>
</tbody>
</table>

**IF ANY DAMAGE IS OBSERVED**

Advise the Coordinator Maintenance or Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate.

On receipt of damage report, proceed with EAP 6.7 – EAP 6.12 as appropriate.

**IF WATER LEVEL APPROACHES AHD 251.43 m (3.13 m above Spillway Crest)**

Advise Duty Manager / Manager FRW and proceed with EAP 6.6.

Advise Manager FRW and General Manager Regional Services and proceed with EAP 6.6.

**WHEN WATER LEVEL DROPS BELOW AHD 251.0 m (2.7 m above Spillway Crest) AND NO MORE RAIN IS FORECAST**

Proceed with EAP 6.4.

Proceed with EAP 6.4.
6.6 Storage Level at AHD 251.43 (3.13m above Spillway Crest) and rising, or further heavy rain is forecast by BOM. Overtopping of the levee is imminent.

**EMERGENCY ACTION PLAN STILL ACTIVATED. THIS IS A STAND UP LEVEL CONDITION.**

The Treatment & Supply Officer/Operations Engineer/Coordinator Maintenance should observe the dam from an appropriate vantage point on the right abutment.

The following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER / DUTY OFFICER</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Continue to monitor water level and rate of change in level on an hourly basis.</td>
<td>▪ Assist the LDC and Queensland Police Service to notify downstream residents by radio / television that the dam water level is still rising and they must evacuate from within the inundation zone to higher ground. Continue to facilitate provision of relevant information for further updating of the downstream population.</td>
</tr>
<tr>
<td>▪ Check rainfall predictions with Bureau of Meteorology (BOM).</td>
<td>▪ Advise Rockhampton Regional Council Local Disaster Management Group and Queensland Police Service (QPS) that the water level has reached RL 251.43 m and overtopping of the complete structure is imminent.</td>
</tr>
<tr>
<td>▪ Notify the Duty Manager / Manager FRW of storage water level and rainfall forecast.</td>
<td>▪ Keep General Manager Regional Services updated on situation.</td>
</tr>
<tr>
<td>▪ Monitor hourly, keeping notes and photographs for the Incident Log. Advise Duty Manager / Manager FRW.</td>
<td>▪ Have Media Communications Officer keep the media informed of developing situations.</td>
</tr>
<tr>
<td>▪ Monitor downstream flooding with photographs and relate to dam gauge height. Record times of photographs and observations. (See EAP 5.3).</td>
<td>▪ Provide information so that the LDC can advise downstream residents of the situation and regularly advise situation at 3hr intervals or every 0.5m rise of water in the storage.</td>
</tr>
<tr>
<td>▪ <strong>Undertake a Routine Dam Safety Inspection.</strong> During the inspection, note rainfall, water level, signs of slumps, wash outs, erosion, springs, Cracks or any deformation, which could be classified as damage to the dam and relay details back to the Duty Manager / Manager FRW.</td>
<td>▪ As water level rises above AHD 250.9, all downstream residents should have been evacuated from within the inundation zone.</td>
</tr>
</tbody>
</table>

**IF ANY DAMAGE IS OBSERVED**
Advise the Coordinator Maintenance or Manager FRW and proceed with EAP 6.7 – EAP 6.12 as appropriate.

On receipt of damage report, proceed with EAP 6.7 – EAP 6.12 as appropriate.

**IF WATER LEVEL EXCEEDS AHD 251.43 m (3.13 m above Spillway Crest)**
Advise Duty Manager / Manager FRW and maintain observations at the dam.

Advise Manager FRW and General Manager Regional Services and maintain a vigilant watch on the dam structure and downstream infrastructure.

**WHEN WATER LEVEL DROPS BELOW AHD 251.4 m (3.1m above Spillway Crest) AND NO MORE RAIN IS FORECAST**
Proceed with EAP 6.5.

Proceed with EAP 6.5.
6.7 **Significant Increase in Seepage or New Area of Seepage is Observed.**

(This could give rise to Piping Failure of Levee or be indicative of another potential issue that could lead to dam failure.)

**ACTIVATE EMERGENCY ACTION PLAN. THIS IS AN ALERT LEVEL CONDITION.**

Seepage is the loss of storage contents by movement of water through the dam, levee or foundation. Seepage may be observed at joints in concrete structures, at the downstream toe of the spillway, abutments or levee, and in downstream areas generally. Seepage may be evidenced by the presence of boggy ground, pools of water or flowing water, and by environmental changes such as evergreen areas or areas of reed growth. Seepage in the levee may lead to piping failure.

In the event of any significant increase in seepage (>20%) which is not attributable to rainfall the following actions are required.

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
</table>
| Notify the Coordinator Maintenance or Manager FRW of any noticeable increase or changes in seepage (seepage rate or colour) or surface slumping on any dam embankment. | ▪ Inform the Manager FRW and General Manager Regional Services of the situation.  
▪ Seek to activate Emergency Action Plan by making contact with the Duty Manager or Manager FRW who will activate the plan accordingly. |
<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER / OPERATIONS ENGINEER</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Monitor daily or more frequently if required by measuring the rate of seepage flow and observe the clarity, especially cloudy appearance of the seepage flow. Keep notes and photographs for the Incident Log.</td>
<td>▪ Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety Inspection.</td>
</tr>
<tr>
<td>▪ Inspect dam for damage so long as safe access is possible.</td>
<td>▪ Direct action of FRW and RRC personnel during an emergency event to protect property and life to the maximum extent considered possible under the prevailing conditions and with the resources available.</td>
</tr>
<tr>
<td>▪ Report situation regularly to the Duty Manager / Manager FRW.</td>
<td>▪ Arrange for immediate action to be undertaken as prescribed by Dam Safety Consultant (RPEQ).</td>
</tr>
<tr>
<td>▪ Maintain an Incident Log</td>
<td>▪ Decide whether or not to instigate immediate repairs.</td>
</tr>
</tbody>
</table>

▪ If during an inspection evidence of an imminent potential piping failure in the levee bank, excessive movement in the dam embankment, slope failure of the levee, or potential for cracking of structural concrete; then,

  ▪ Escalate this matter immediately to the relevant Activation Level (6.9, 6.10 or 6.11)

  ▪ If there is no specific evidence of an imminent potential failure as indicated above and only minor repairs or no action is required please proceed accordingly.

  ▪ This matter now needs to be escalated to the Lean Forward level of activation.

  ▪ Please refer to the relevant Activation Level information for the relevant actions to be taken.
## On Completion of Repairs

**TREATMENT & SUPPLY OFFICER / OPERATIONS ENGINEER**
- Monitor daily or as required and report to the Duty Manager / Manager FRW.

**COORDINATOR MAINTENANCE**
- If repairs appear to have stabilised the damage, confirm with the Dam Safety Consultant and close the Incident.
- The Dam Safety Consultant is to confirm the closure of any Incident associated with damage to the dam.
- **End of the Emergency Action Plan activation.**
- The Dam Safety Consultant is to identify any required follow up repairs or works. Document these required works in the Incident Log and in the Dam Data Book.

## After the Event

**TREATMENT & SUPPLY OFFICER / OPERATIONS ENGINEER**

Prepare an Emergency Event Report and submit, along with the Incident Log, to Duty Manager / Manager FRW.

**DUTY MANAGER / MANAGER FRW**
- Review and complete the Incident Log.
- Stand down the Incident Management Team, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.

Forward Emergency Event Report within 30 business days of the end of the emergency event to the Director of Dam Safety, Department of Natural Resources, Mines and Energy (DNRME) damsafety@dnrme.qld.gov.au
# 6.8 Earthquake is Reported and Felt in the Vicinity of the Dam

**ACTIVATE EMERGENCY ACTION PLAN. THIS IS AN ALERT LEVEL CONDITION.**

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inform the Coordinator Maintenance or Manager FRW that an earthquake has been felt in the area.</td>
<td>If possible, contact Geoscience Australia to ascertain epicentre and magnitude of earthquake (contact details below).</td>
</tr>
<tr>
<td></td>
<td>Seek to activate Emergency Action Plan by making contact with Duty Manager or Manager FRW who will activate the plan accordingly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately perform a Routine Dam Safety Inspection. During the inspection, note signs of slumps, erosion, springs/seepage, cracks, or deformation, this could be classified as damage to the dam.</td>
<td>Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety Inspection.</td>
</tr>
<tr>
<td>Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.</td>
<td>Direct action of FRW and RRC personnel during an emergency event to protect property and life to the maximum extent considered possible under the prevailing conditions and the resources available.</td>
</tr>
<tr>
<td>If during an inspection evidence of an imminent potential piping failure in the levee bank, excessive movement in the dam embankment, slope failure of the levee, or potential for cracking of structural concrete; then, Escalate this matter immediately to the relevant Activation Level (6.9, 6.10 or 6.11)</td>
<td>Arrange for action to be undertaken as prescribed by Dam Safety Consultant (RPEQ)</td>
</tr>
<tr>
<td>If there is no evidence of any damage or change in structures that could have the potential to lead to a dam failure and it is considered that no action is required please note accordingly.</td>
<td>Have Media Communications Officer keep the media and downstream residents informed in accordance with the Communication Plan.</td>
</tr>
<tr>
<td>This matter now needs to be escalated to the Lean Forward level of activation.</td>
<td>Should situation be considered critical by the Dam Safety Consultant, consider evacuation of downstream residents.</td>
</tr>
<tr>
<td>Please refer to the relevant Activation Level (6.9, 6.10 or 6.11) for the relevant actions to be taken.</td>
<td>Advise the Manager FRW and General Manager Regional Services of the situation.</td>
</tr>
</tbody>
</table>
Contact Information for Geoscience Australia

**Phone:** Switchboard: +61 2 6249 9111  
Sales Centre/product information: 1800 800 173  
Earthquake information: 1800 655 739  
Media Hotline: 1800 882 035  

**Fax:** +61 2 6249 9999  

**Email:** General enquiries: clientservices@ga.gov.au  
To email staff, use the following template: firstname.lastname@ga.gov.au  

**Website:** www.ga.gov.au
6.9 Excessive Movement of Dam Embankment

**ACTIVATE EMERGENCY ACTION PLAN. THIS IS A LEAN FORWARD LEVEL CONDITION.**

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Inform the Coordinator Maintenance that movement has been noticed.</td>
<td>▪ Inform the Manager FRW and General Manager Regional Services of the situation.</td>
</tr>
<tr>
<td>▪ Inform the Coordinator Maintenance that significant increase in cloudy water seepage or initiation of formation of a pipe has been escalated to this activation level.</td>
<td>▪ Seek to activate the Emergency Action Plan by making contact with the Duty Manager / Manager FRW who will activate the plan accordingly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Immediately perform a Routine Dam Safety Inspection, note any slumps, erosion, piping, seepage, springs, cracks or any deformation, which could be classified as damage to the dam.</td>
<td>▪ Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety.</td>
</tr>
<tr>
<td>▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.</td>
<td>▪ Direct action of FRW and RRC personnel during this event to protect property and life to the maximum extend considered possible under the prevailing conditions and the resources available.</td>
</tr>
<tr>
<td>▪ If further monitoring or inspection indicates there is an imminent risk of a dam failure that could result in a downstream hazard; then,</td>
<td>▪ Arrange for action to be undertaken as prescribed by Dam Safety Consultant.</td>
</tr>
<tr>
<td>▪ Escalate the matter immediately to activation level 6.15</td>
<td>▪ Advise the Manager FRW and General Manager Regional Services of situation.</td>
</tr>
<tr>
<td>▪ If there is no evidence of any further imminent risk continue to monitor accordingly as required.</td>
<td>▪ If further evidence or reports are provided that indicate there is an imminent risk of a dam failure that could result in a downstream hazard; then,</td>
</tr>
<tr>
<td>▪ This matter now needs to be escalated to the Stand Up level of activation.</td>
<td>▪ Please refer to the Activation Level 6.15 for the relevant actions to be taken.</td>
</tr>
<tr>
<td>▪ Advise the Dam Safety Regulator (within 48hrs) that the EAP has been activated and of the general situation.</td>
<td>▪ Review and complete the Incident Log.</td>
</tr>
</tbody>
</table>

**AFTER THE EVENT**

- Prepare an Emergency Event Report and submit, along with the Incident Log, to the Duty Manager / Manager FRW.
- After the event, review and complete the Incident Log. Stand down the Incident Management Team, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.
<table>
<thead>
<tr>
<th>Forward Emergency Event Report within 30 business days of the end of the emergency event to the Director of Dam Safety, Department of Natural Resources Mines and Energy (DNRME)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:damsafety@dnrme.qld.gov.au">damsafety@dnrme.qld.gov.au</a></td>
</tr>
</tbody>
</table>
6.10 Slope Failure of Levee

Slope failure is the movement (sliding or rotation) of material down the face of the levee embankment. Slope failure may be evidenced by cracks or scarps near the crest of the levee or a bulge at the embankment toe.

**ACTIVATE EMERGENCY ACTION PLAN. THIS IS A LEAN FORWARD LEVEL CONDITION.**

### TREATMENT AND SUPPLY OFFICER
- Inform the Coordinator Maintenance that a slope failure of the embankment has been identified.
- Inform the Coordinator Maintenance that significant increase in cloudy water seepage or initiation of formation of a pipe has been escalated to this activation level.

### COORDINATOR MAINTENANCE
- Inform the Manager FRW and General Manager Regional Services of the situation.
- Seek to activate the Emergency Action Plan by making contact with the Duty Manager / Manager FRW who will activate the plan accordingly.

### TREATMENT AND SUPPLY OFFICER
- Immediately perform a Routine Dam Safety Inspection. During the inspection, note signs of slumps, erosion, springs/seepage, cracks, or deformation, this could be classified as damage to the dam.
- Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.

### DUTY MANAGER / MANAGER FRW
- Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety.
- Direct action of FRW and RRC personnel during an emergency event to protect property and life to the maximum extent considered possible.
- Arrange for action to be undertaken as prescribed by Dam Safety Consultant. (RPEQ)
- Have Media Communications Officer keep the media and downstream residents informed in accordance with the Communication Plan.

### TREATMENT AND SUPPLY OFFICER
- Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.
- If further monitoring or inspection indicates there is an imminent risk of a dam failure that could result in a downstream hazard; then,
  - **Escalate the matter immediately to activation level 6.15**
  - If there is no evidence of any further imminent risk continue to monitor accordingly as required.

### DUTY MANAGER / MANAGER FRW
- If further evidence or reports are provided that indicate there is an imminent risk of a dam failure that could result in a downstream hazard; then,
  - This matter now needs to be escalated to the Stand Up level of activation.
  - Please refer to the Activation Level 6.15 for the relevant actions to be taken.
  - Advise the Dam Safety Regulator (within 48hrs) that the EAP has been activated and of the general situation.
**AFTER THE EVENT**

- Prepare an Emergency Event Report and submit, along with the Incident Log, to Duty Manager / Manager FRW.

**End of the Emergency Action Plan activation.**

- Review and complete the Incident Log.
- Stand down, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.

Forward Emergency Event Report within 30 business days of the end of the emergency event to the Director of Dam Safety, Department of Natural Resources Mines and Energy (DNRME) [damsafety@dnrme.qld.gov.au](mailto:damsafety@dnrme.qld.gov.au)
6.11 Cracking in Structural Concrete

As well as visual signs, cracking may be evidenced by mechanical problems such as a burst outlet pipe. On detection or notification of cracking in the structural concrete the following actions should be undertaken by the nominated officers:

**ACTIVATE EMERGENCY ACTION PLAN. THIS IS A LEAN FORWARD LEVEL CONDITION.**

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Inform the Coordinator Maintenance that cracking in the structural concrete has been identified.</td>
<td>▪ Inform the Manager FRW and General Manager Regional Services of the situation.</td>
</tr>
<tr>
<td>▪ Inform the Coordinator Maintenance that significant increase in cloudy water seepage or initiation of formation of a pipe has been escalated to this activation level.</td>
<td>▪ Seek to activate Emergency Action Plan by making contact with Duty Manager or Manager FRW.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREATMENT AND SUPPLY OFFICER</th>
<th>DUTY MANAGER / MANAGER FRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Immediately perform a Routine Dam Safety Inspection. During the inspection, note signs of slumps, erosion, springs/seepage, cracks, or deformation, this could be classified as damage to the dam.</td>
<td>▪ Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety Inspection).</td>
</tr>
<tr>
<td>▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.</td>
<td>▪ Direct action of FRW and RRC personnel during this event to protect property and life to the maximum extent considered possible.</td>
</tr>
<tr>
<td>▪ If further monitoring or inspection indicates there is an imminent risk of a dam failure that could result in a downstream hazard; then,</td>
<td>▪ Arrange for action to be undertaken as prescribed by Dam Safety Consultant. (RPEQ)</td>
</tr>
<tr>
<td>▪ Escalate the matter immediately to activation level 6.15</td>
<td>▪ Have Media Communications Officer keep the media and downstream residents informed.</td>
</tr>
<tr>
<td>▪ If there is no evidence of any further imminent risk continue to monitor accordingly as required.</td>
<td>▪ Advise the Dam Safety Regulator (within 48hrs) that the EAP has been activated and of the general situation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AFTER THE EVENT</th>
<th>End of the Emergency Action Plan activation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Complete the Emergency Event Report and submit, along with the Incident Log, to the Duty Manager / Manager FRW.</td>
<td>▪ Review and complete the Incident Log.</td>
</tr>
<tr>
<td>▪ Stand down, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.</td>
<td>▪ Stand down, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.</td>
</tr>
</tbody>
</table>

Forward Emergency Event Report within 30 business days of the end of the emergency event to
| the Director of Dam Safety, Department of Natural Resources Mines and Energy (DNRME) |
| damsafety@dnrme.qld.gov.au |
### 6.12 Wave Erosion

**THIS IS AN ALERT LEVEL CONDITION.**

Wave erosion is the beaching or notching of the upstream face of embankments by waves generated over long periods of strong winds. Undertake inspections of upstream face of embankment during, or after, periods of strong winds.

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Notify the Coordinator Maintenance or Manager FRW that wave erosion has been identified on the embankment.</td>
<td><strong>Minor Erosion</strong></td>
</tr>
<tr>
<td>▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log. Advise Manager FRW of change.</td>
<td>▪ Arrange for the Dam Safety Consultant (RPEQ) to inspect the dam immediately in accordance with Special Dam Safety Inspection) and submit a report containing a plan of restoration.</td>
</tr>
<tr>
<td>▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log. Advise Manager FRW of change.</td>
<td>▪ Arrange for action to be undertaken as prescribed by Dam Safety Consultant. (RPEQ)</td>
</tr>
<tr>
<td>▪ When the issue has been resolved, close the Incident.</td>
<td>▪ When the issue has been resolved, close the Incident.</td>
</tr>
</tbody>
</table>

**Minor Erosion**
- Should situation be considered critical by the Dam Safety Consultant, consider Activation of the Emergency Action Plan.
- Advise the Manager FRW and General Manager Regional Services of situation.
- If a significant seepage increase is observed then refer to **Activation Level 6.7**
- If there is evidence of slope failure of the levee refer to **Activation Level 6.10**

**DUTY MANAGER / MANAGER FRW**
- Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log and the Routine Dam Safety Inspection and report to the Duty Manager / Manager FRW.
- If further monitoring or inspection indicates there is an imminent risk of a dam failure that could result in a downstream hazard; then,
- Escalate the matter immediately to activation level 6.15
- If there is no evidence of any further imminent risk continue to monitor accordingly as required.
- If further evidence or reports are provided that indicate there is an imminent risk of a dam failure that could result in a downstream hazard; then,
- Please refer to the Activation Level 6.15 for the relevant actions to be taken.
- Advise the Dam Safety Regulator (within 48hrs) that the EAP has been activated and of the general situation.

**AFTER THE EVENT**
- When the issue has been resolved, prepare an Emergency Event Report and submit to Coordinator Maintenance.
- End of the Emergency Action Plan activation.
  - Review and complete the Incident Log.
  - Stand down, review and complete Emergency Event Report and submit to Manager FRW or General Manager Regional Services.

Forward Emergency Event Report within 30 business days of the end of the emergency event.
6.13 Toxic Spill in Catchment / Storage

**THIS IS AN ALERT LEVEL CONDITION.**

On detection or notification of a toxic or hazardous substance contaminating the catchment or storage the following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
</table>
| ▪ Notify the Coordinator Maintenance or Manager FRW of the Toxic spill in the dam storage or catchment of the dam. | ▪ Notify details of the Toxic Spill, along with storage water level and rainfall forecast to:  
  o the Manager FRW  
  o General Manager Regional Services  
  o Office of the Water Supply Regulator (DEWS)  
  o Dept. Environment and Heritage Protection  
  o Local Disaster Coordinator. |
| ▪ Seek advice so as to determine what the toxin consists of and the source of the toxin and advise Coordinator Maintenance or Manager FRW accordingly. | ▪ Cease pumping to Town Water Supply and test town water supply for contaminants.  
  ▪ Impose immediate water restrictions within town area. (Check potential to pump water from Fletcher Creek Weir).  
  ▪ Determine a clean up procedure or isolation technique so as to contain the toxin.  
  ▪ Have Manager FRW exercise his right to close access to recreational activities on the lake in accordance with the Waterways Management Plan.  
  ▪ Notify affected people (RRC Manager Parks and Open Spaces, nearby residents, recreation users, tourists, campers) if Police/Qld Fire Service have not already done so.  
  ▪ Prepare press release and/or consider detailing facts on RRC website.  
  ▪ Monitor results of water sample tests.  
  ▪ When the issue has been resolved, advise the Manager FRW and General Manager Regional Services and close the Incident. |
| ▪ Undertaken water sampling and testing immediately and over time take regular water samples for testing, especially near the town water supply pump. | |
| ▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log. Advise Coordinator Maintenance or Manager FRW. | |

When the issue has been resolved, prepare an event report and submit to Manager FRW.  

Review and file the event report.
### 6.14 Algae Bloom in Storage / Catchment

**THIS IS AN ALERT LEVEL CONDITION.**

On detection or notification of any form of algal bloom within or upstream of the storage the following actions should be undertaken by the nominated officers:

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>COORDINATOR MAINTENANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Notify the Coordinator Maintenance or Manager FRW of the Algae Bloom outbreak in the dam storage or catchment of the dam.</td>
<td>- Notify details of the Algae Bloom to:</td>
</tr>
<tr>
<td>- Determine the severity of the Algae Bloom and advise Manager FRW.</td>
<td></td>
</tr>
<tr>
<td>- Undertake Algae Bloom counts regularly and undertake testing, especially near the town water supply pump.</td>
<td></td>
</tr>
<tr>
<td>- Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log. Advise Manager FRW.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Manager FRW, along with storage water level and rainfall forecast.</td>
</tr>
<tr>
<td></td>
<td>- General Manager Regional Services</td>
</tr>
<tr>
<td></td>
<td>- Office of Water Supply Regulator (DEWS) (Contact details below)</td>
</tr>
<tr>
<td></td>
<td>- Local Disaster Coordinator</td>
</tr>
<tr>
<td></td>
<td>- Request raw water toxin analyses or bioassay if cell count / ml of</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>- Microcystis aeruginosa is greater than 2,000, or if</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Total cell count / ml of BGA known to produce toxins is greater than 15,000.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Toxin producers include the following species...</td>
<td></td>
</tr>
<tr>
<td>Anabaena circinalis</td>
<td></td>
</tr>
<tr>
<td>Anabaena spiroides</td>
<td></td>
</tr>
<tr>
<td>Aphanizomenon ovalisporum</td>
<td></td>
</tr>
<tr>
<td>Cylindrospermopsis raciborskii</td>
<td></td>
</tr>
<tr>
<td>Nodularia spumigena</td>
<td></td>
</tr>
<tr>
<td>Nostoc linkea</td>
<td></td>
</tr>
<tr>
<td>Microcystis aeruginosa</td>
<td></td>
</tr>
<tr>
<td>or if</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cell count / ml of all BGA exceed 100,000.</td>
</tr>
<tr>
<td>If raw water toxin level greater than 1 μg /L or bioassay shows toxicity, implement BGA toxin treatment steps and request analysis of treated water for toxins. BGA toxin treatment steps are outlined in FRW Procedure “Glenmore BGA Toxin Treatment Procedure” (draft).</td>
<td></td>
</tr>
<tr>
<td>If treated water toxin level greater than 1 μg /L or bioassay shows toxicity, implement use of alternative water supplies, consult health department, and issue media alerts to provide advisory notices to the public regarding the situation. Procedures to implement alternative water supplies and advisory notices are documented in FRW Procedure “Glenmore Potable Water BGA Toxin Contamination” (draft).</td>
<td></td>
</tr>
<tr>
<td>Sample frequency:</td>
<td></td>
</tr>
<tr>
<td>Weekly sample of Drinking Water sampling site</td>
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<tr>
<td>TREATMENT &amp; SUPPLY OFFICER</td>
<td>COORDINATOR MAINTENANCE</td>
</tr>
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<td></td>
<td>Cease pumping to Town Water Supply unless the Algae bloom treatment facilities are in place.</td>
</tr>
<tr>
<td></td>
<td>Impose immediate water restrictions within town area. (Check potential to pump water from Fletcher Ck Weir). If treatment facilities are not available.</td>
</tr>
<tr>
<td></td>
<td>Have Manager FRW exercise his right to close access to recreational activities on the lake in accordance with the Waterways Management Plan.</td>
</tr>
<tr>
<td></td>
<td>Notify affected people (RRC Manager Parks and Open Spaces, nearby residents, recreation users, tourists, campers).</td>
</tr>
<tr>
<td></td>
<td>Prepare press release and/or consider detailing facts on RRC website.</td>
</tr>
<tr>
<td></td>
<td>Monitor results of water sample tests.</td>
</tr>
<tr>
<td></td>
<td>When the issue has been resolved, advise the Manager FRW and General Manager Regional Services, Queensland Water Supply Regulator (DEWS) and close the Incident.</td>
</tr>
</tbody>
</table>

When the issue has been resolved, complete an Event Report and submit to Manager FRW. Review and file the Event Report.
### 6.15 Dam Failure Event Imminent Due to Structural Failure

**THIS IS A STAND UP LEVEL CONDITION.**

If this level is reached, it is important that immediate action is taken to notify and evacuate the entire downstream population irrespective of the relative location with respect to sunny day or PMP flood related inundation mapping. This is due to the very narrow margin for error in defining each portion of the downstream population and the relatively steep sided downstream valley.

<table>
<thead>
<tr>
<th>TREATMENT &amp; SUPPLY OFFICER</th>
<th>DUTY MANAGER / MANAGER FRW OR LDC</th>
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<tbody>
<tr>
<td>▪ Notify the Coordinator Maintenance or Manager FRW that a dam failure is imminent if not already aware.</td>
<td>▪ Commence efforts to notify all of the downstream population to advise them</td>
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<tr>
<td>▪ Monitor daily or more frequently if required, keeping notes and photographs for the Incident Log. Advise Manager FRW of change.</td>
<td>▪ Assist the LDC and Queensland Police Service to notify downstream residents by radio / television that the dam water level is still rising and they must evacuate from within the inundation zone to higher ground. Continue to facilitate provision of relevant information for further updating of the downstream population.</td>
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<tr>
<td>▪ Commence efforts to notify all of the downstream population to advise them</td>
<td>▪ Advise the Dam Safety Regulator (within 48hrs) if the EAP has been activated and of the general situation.</td>
</tr>
<tr>
<td>▪ Continue to monitor the dam and downstream river channel daily or more frequently if required to assist with providing updates to the LDC and Duty Manager or Manager FRW.</td>
<td>▪ Expedite consultation with relevant Dam Safety Experts to identify any remedial works that can be done to mitigate the risk to the downstream population and prevent the dam from failing, but only if these actions can be completed safely.</td>
</tr>
<tr>
<td>▪ Continue to monitor the dam and downstream river channel daily or more frequently if required to assist with providing updates to the LDC and Duty Manager or Manager FRW.</td>
<td>▪ Action any works recommended above and continue to provide updates to the local media and downstream population.</td>
</tr>
<tr>
<td>▪ Complete event report and submit to Manager FRW for review.</td>
<td>▪ Forward Emergency Event Report within 30 business days of the end of the emergency event to the Director of Dam Safety, Department of Natural Resources Mines and Energy (DNRME) <a href="mailto:damsafety@dnrme.qld.gov.au">damsafety@dnrme.qld.gov.au</a></td>
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</table>
6.16 Post Emergency Maintenance

Maintenance may be required under post emergency conditions and should be undertaken immediately after an emergency event.

The relevant post emergency maintenance activities are outlined in the accompanying Operation and Maintenance Manual (O&M Manual).

7 Dam Failure Inundation Map

SunWater undertook a Failure Impact Assessment for the Mt Morgan No 7 dam in August 2009, which was subsequently approved by the Regulator.

The Failure Impact Assessment data has been applied to the latest contour and aerial photography data in the Mt Morgan area to produce maps identifying the various calculated flood inundation areas in relation to dwellings and other relevant infrastructure.

Maps (See Appendix C) have been produced showing:
- Maximum Probable Flood – Dam Failure - downstream inundation area.
- Maximum Probable Flood – No Failure - downstream inundation area.
- Sunny Day Failure - downstream inundation area.

Irrespective of the nature of the dam safety emergency event, the entire population at risk will be notified despite their location within the respective inundation areas. This is due to the relative uncertainty differentiating between the different inundation areas and the relatively narrow riparian areas within which the population is located.

It is assumed that areas located downstream of the existing inundation maps are not at as great a risk as the areas covered by the inundation maps due to likely attenuation of flows and limited accurate reference information in some of these more distant downstream locations. It is expected that future planned work will help to confirm this assumption.

8 Emergency Event Reporting

Following the end of an emergency event, an Emergency Event Report should be completed in accordance with the Queensland Dam Safety Management Guidelines. Generally an Emergency Event Report should contain:

- A description of the event,
- Instrumentation readings (where appropriate),
- Description of any observed damage,
- Photographs,
- The EAP,
Details of communication which took place during the emergency,
Comment on the adequacy of the EAP,
Any recommendations or suggested changes to the EAP.

Dam owners have the responsibility for implementing the recommendations contained in the Emergency Event Report. Comprehensive inspections and ultimately audits undertaken by the Regulator, will evaluate the dam owners response to Emergency Event Reports.

It is recommended that the Emergency Event report be prepared in liaison with all parties that were involved in the emergency to ensure all issues and/or successes from the event are captured in the report.

### 9 Testing and Reviewing the EAP

To ensure the EAP is kept up to date and effective, it must be maintained by undertaking testing and reviewing procedures.

#### 9.1 Testing

The EAP is tested by periodically conducting a drill simulating emergency conditions. Such tests can be either field or desk top exercises and are used to refresh and train those likely to be involved if an event occurs.

Operational staff participate in exercises annually. Larger scale exercises involving co-ordination between the Counter Disaster Groups, External Organisations and other authorities should be conducted every five years.

In the last seven years the EAP has been activated on more than three occasions and tested during these events for its adequacy.

#### 9.2 Reviewing

A periodic review of the overall plan should be conducted to assess its workability and efficiency, and to plan for the improvement of weak areas.

Annual reviews should be conducted to ensure contact details, personnel and appendices are up to date and current. A detailed review of the EAP for adequacy should be undertaken at least every five years as part of the comprehensive five yearly inspections.

Once the EAP has been revised, the updated version (or the affected pages) should be distributed to all involved parties, as per the control list on the front page of this document. The distribution of copies of the EAP and the notification flowchart (if issued separately) must be controlled and documented to ensure simultaneous updating of all copies.
Learnings from Emergency Events are also used to update the EAP on an annual basis where applicable.

9.3 Reference to Operation and Maintenance Manual

The O&M Manual should be cross-referenced when any updates are made to the EAP.

Updates made to the EAP that also apply to the O&M Manual are to be noted and applied to ensure consistency.
Appendix A  Area Map
Appendix B  Storage Catchment Area Plan
Appendix C  Dam Failure and Flood Inundation Maps
<table>
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<th>Building ID</th>
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<th>Building Elevation (mAHĐ)</th>
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Mount Morgan
No. 7 Dam

PMP Design Flood
Dam Failure

Legend
- PMP Design Flood Failure
- PMP Design Flood Failure Buffer
- Property Parcels
- Dept. Transport & Main Roads
- Council Roads

Notes
PMP Design Flood - Dam Failure - Data compiled using Sunwater Mount Morgan No. 7 Dam Acceptable Flood Capacity Assessment March 2010 Report and aligned by Rockhampton Regional Council to 2011 Mount Morgan Contours

PMP Design Flood - Dam Failure Buffer - Buffer used to show possible flood extent where no upstream Cross Section levels were available from Sunwater.

Date: 22/07/2013

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The Digital Cadastral Database is current as at July 2013 © The State Government of Queensland Dept. of Environmental Resource Management 2013. All other data © Rockhampton Regional Council 2013.
Mount Morgan
No. 7 Dam

PMP Design Flood
No Dam Failure

Legend

- PMP Design Flood No Failure
- PMP Design Flood No Failure Buffer

Property Parcels
Dept. Transport & Main Roads
Council Roads

Notes

PMP Design Flood - No Dam Failure - Data compiled using Sunwater Mount Morgan No. 7 Dam Acceptable Flood Capacity Assessment March 2010 Report and aligned by Rockhampton Regional Council to 2011 Mount Morgan Contours

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1:10,000 at A3
Date: 22/07/2013

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Mount Morgan No. 7 Dam

PMP Design Flood No Dam Failure

Legend
- PMP Design Flood No Failure
- PMP Design Flood No Failure Buffer
- Property Parcels
- Dept. Transport & Main Roads
- Council Roads

Notes
PMP Design Flood - No Dam Failure - Data compiled using Sunwater Mount Morgan No. 7 Dam Acceptable Flood Capacity Assessment March 2010 Report and aligned by Rockhampton Regional Council to 2011 Mount Morgan Contours

PMP Design Flood - No Dam Failure Buffer - Buffer used to show possible flood extent where no upstream Cross Section levels were available from Sunwater.

Date: 22/07/2013
1:10,000 at A3

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Legend
- Sunny Day Failure
- Sunny Day Failure Buffer
- Property Parcels
- Dept. Transport & Main Roads
- Council Roads

Notes
Sunny Day - Dam Failure - Data compiled using Sunwater Mount Morgan No. 7 Dam Acceptable Flood Capacity Assessment March 2010 Report and aligned by Rockhampton Regional Council to 2011 Mount Morgan Contours

Sunny Day - Dam Failure Buffer - Buffer used to show possible flood extent where no upstream Cross Section levels were available from Sunwater.

Date: 22/07/2013
Mount Morgan
No. 7 Dam

Sunny Day Dam Failure

Legend
- Sunny Day Failure
- Sunny Day Failure Buffer
- Property Parcels
- Dept. Transport & Main Roads
- Council Roads

Notes
Sunny Day - Dam Failure - Data compiled using Sunwater Mount Morgan No. 7 Dam Acceptable Flood Capacity Assessment March 2010 Report and aligned by Rockhampton Regional Council to 2011 Mount Morgan Contours

Sunny Day - Dam Failure Buffer - Buffer used to show possible flood extent where no upstream Cross Section levels were available from Sunwater.

1:10,000 at A3  Date: 22/07/2013

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Appendix D List of Parties Affected by Dam Failure

Appendix D has been redacted
Water Level Monitoring Sheet - No.7 Dam

<table>
<thead>
<tr>
<th>Gauge (m)</th>
<th>21</th>
<th>20.5</th>
<th>20</th>
<th>19.5</th>
<th>19</th>
<th>18.5</th>
<th>18</th>
<th>17.5</th>
<th>17</th>
<th>16.5</th>
<th>16</th>
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<tbody>
<tr>
<td>Water Level (m)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of Day</td>
<td>12:00 AM</td>
<td>1:00 AM</td>
<td>2:00 AM</td>
<td>3:00 AM</td>
<td>4:00 AM</td>
<td>5:00 AM</td>
<td>6:00 AM</td>
<td>7:00 AM</td>
<td>8:00 AM</td>
<td>9:00 AM</td>
<td>10:00 AM</td>
</tr>
</tbody>
</table>

- 251.43 Levee Crest
- 251.0
- 250.4 Abutment Crest
- 249.0
- 248.3 Spillway Crest
- 248.0
- 247.4

RL (m)
Appendix F. Storage Capacity Curve
No 7 Dam - Storage Capacity Curve

<table>
<thead>
<tr>
<th>Water Level - AHD</th>
<th>Discharge Capacity m³/s</th>
<th>Discharge Capacity ML/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>248.30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>249.00</td>
<td>114</td>
<td>9,850</td>
</tr>
<tr>
<td>250.00</td>
<td>432</td>
<td>37,425</td>
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<tr>
<td>250.40</td>
<td>593</td>
<td>51,235</td>
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<tr>
<td>251.00</td>
<td>889</td>
<td>85,450</td>
</tr>
<tr>
<td>251.40</td>
<td>1360</td>
<td>117,504</td>
</tr>
<tr>
<td>252.40</td>
<td>2814</td>
<td>243,130</td>
</tr>
</tbody>
</table>

Gauge Reading 0" = 231.6 AHD

Full Supply Level: 248.3 AHD, 2830 ML
Min Operating Level: 237.0 AHD, 30 ML
Concrete Crest Level: 250.4 AHD, 3950 ML
Earth Levee Level: 251.4 AHD (PMF), 4550 ML
## Appendix G - Dam Technical Details

<table>
<thead>
<tr>
<th>Item</th>
<th>Technical Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Owner</strong></td>
<td>Rockhampton Regional Council</td>
</tr>
<tr>
<td><strong>Property Description</strong></td>
<td>R279 Lot 201 RP 836502</td>
</tr>
<tr>
<td><strong>Latitude / Longitude</strong></td>
<td>23°38'42&quot;S / 150°24'36&quot;E</td>
</tr>
<tr>
<td><strong>Construction Completed</strong></td>
<td>1900; Recent construction on spillway completed 1998</td>
</tr>
<tr>
<td>** Licence No.**</td>
<td>51602U</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>AMTD 80 KM Dee River</td>
</tr>
<tr>
<td><strong>Maximum Incremental PAR</strong></td>
<td>324</td>
</tr>
<tr>
<td><strong>Failure Impact Assess. Cat.</strong></td>
<td>Category 2</td>
</tr>
<tr>
<td><strong>Catchment Area</strong></td>
<td>38.8 km²</td>
</tr>
<tr>
<td><strong>Type of Dam</strong></td>
<td>Mass concrete gravity dam with zoned earthfill levee on right bank.</td>
</tr>
<tr>
<td><strong>Total Volume Concrete (Spillway &amp; Abutments)</strong></td>
<td>11,000 m³ approx</td>
</tr>
<tr>
<td><strong>Dam Outlet Works</strong></td>
<td>300 mm NB pipe and valve off existing obsolete intake work.</td>
</tr>
<tr>
<td><strong>Outlet Capacity</strong></td>
<td>32 ML/d</td>
</tr>
<tr>
<td><strong>Intake for Town Water Supply</strong></td>
<td>300 mm NB pipe and valve off existing obsolete intake work.</td>
</tr>
<tr>
<td><strong>Total Length of Dam ( Inc Levee)</strong></td>
<td>464 m</td>
</tr>
<tr>
<td><strong>Full Supply Level</strong></td>
<td>AHD 248.3</td>
</tr>
<tr>
<td><strong>Storage at Full Supply Level</strong></td>
<td>2830 ML</td>
</tr>
<tr>
<td><strong>Dead Storage Level</strong></td>
<td>AHD 237</td>
</tr>
<tr>
<td><strong>Storage at Dead Stor. Level</strong></td>
<td>30 ML</td>
</tr>
<tr>
<td><strong>Inundated Area FSL</strong></td>
<td>54 ha</td>
</tr>
<tr>
<td><strong>SPILLWAY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Uncontrolled Ogee crest concrete gravity</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>AHD 248.3</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>90.6 m</td>
</tr>
<tr>
<td><strong>Ht Crest above River Bed Level</strong></td>
<td>15.8 m max.</td>
</tr>
<tr>
<td><strong>Type of Stilling Basin</strong></td>
<td>Roller &amp; Impact Action</td>
</tr>
<tr>
<td>Item</td>
<td>Technical Details</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>OVERFLOW ABUTMENT</strong></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>150 m</td>
</tr>
<tr>
<td>Crest Level</td>
<td>AHD 250.4</td>
</tr>
<tr>
<td>Vol Storage at Crest Level</td>
<td>3950 ML</td>
</tr>
<tr>
<td><strong>NON OVERFLOW ABUTMENT</strong></td>
<td></td>
</tr>
<tr>
<td>Length (inc levee)</td>
<td>223 m</td>
</tr>
<tr>
<td>Length Levee</td>
<td>193 m</td>
</tr>
<tr>
<td>Length Mass Concrete</td>
<td>30 m</td>
</tr>
<tr>
<td>Crest Level</td>
<td>AHD 251.43</td>
</tr>
<tr>
<td>Vol Storage at Crest Level</td>
<td>4550 ML</td>
</tr>
<tr>
<td><strong>RECOMMENDED DESIGN FLOOD</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>1 in 10,000 year</td>
</tr>
<tr>
<td>Peak Flood Inflow</td>
<td>598 m³/s</td>
</tr>
<tr>
<td>Peak Spillway Discharge</td>
<td>589 m³/s</td>
</tr>
<tr>
<td>Peak Reservoir Level</td>
<td>AHD 250.39</td>
</tr>
<tr>
<td><strong>PROBABLE MAXIMUM FLOOD</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>1 in 1,000,000 year</td>
</tr>
<tr>
<td>Peak Flood Inflow</td>
<td>1364 m³/s</td>
</tr>
<tr>
<td>Peak Spillway Discharge</td>
<td>1350 m³/s</td>
</tr>
<tr>
<td>Peak Reservoir Level</td>
<td>AHD 251.49</td>
</tr>
</tbody>
</table>
Appendix H    Dam Plans
PLAN

SECTION 1 - 1

NOTES:
- All levels and dimensions are in metres

LEGEND:
- C = Crown level
- D = Dam crest
- * = Dam back levee
- O = Overflow area
- E = Evacuation route
- S = Drainage area
- P = Pit
- T = Tunnel
- R = Road
- F = Footpath
- G = Grazing area
- A = Access road
- B = Bastion
- N = Northwest
- S = Southwest
- E = Southeast
- W = Northwest
- M = Mine
- L = Lake
- H = Harbour
- T = Town
- C = Cemetery
- P = Park
- G = Golf course
- A = Airport
- M = Mountain
- S = Sea
- O = Ocean
- L = Lake
- R = River
- D = Dam
- W = Waterfall
- F = Forest
- T = Tower
- P = Palace
- G = Gate
- A = Arbor
- M = Monument
- S = Statue
- O = Observatory
- L = Library
- R = Restaurant
- F = Farm
- T = Theatre
- P = Palace
- G = Garden
- A = Arena
- M = Mine
- S = Sea
- O = Ocean
- L = Lake
- R = River
- D = Dam
- W = Waterfall
- F = Forest
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- M = Mine
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- O = Ocean
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- R = River
- D = Dam
- W = Waterfall
- F = Forest
- T = Tower
- P = Palace
- G = Gate
- A = Arbor
- M = Monument
- S = Statue
Appendix I  Incident Log Forms
<table>
<thead>
<tr>
<th>Site / Location:</th>
<th>No.7 Dam Mt Morgan</th>
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</thead>
<tbody>
<tr>
<td>Date of Incident:</td>
<td></td>
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<tr>
<td>Time of Incident:</td>
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<tr>
<td>Incident Reported by:</td>
<td></td>
</tr>
<tr>
<td>Time of Incident Notification</td>
<td></td>
</tr>
</tbody>
</table>

Description of Incident (attach extra pages if required). Include comment on adequacy of the EAP and recommended changes to the EAP.

Description of any damage, harm or nuisance caused (attached extra pages if required).
### Incident Log (Continued)

Communications and Actions during the incident (attach extra pages, photos and sketches if required):

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Time</th>
<th>Water Level</th>
<th>Rain (mm)</th>
<th>Photo Number</th>
<th>Action Taken</th>
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</tbody>
</table>

Signed [ ] Date [ ]

Forward a copy of the completed form (all pages and attachments) to the Strategic Manager.

Reviewed by Strategic Manager.

Additional comments:...........................................................................................................................................

Signed [ ] Date [ ]
# Appendix J  Discharge Rating Table

<table>
<thead>
<tr>
<th>No 7 DAM LEVEL</th>
<th>Discharge Capacity m3/s</th>
<th>Discharge Capacity ML/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>248.30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>249.00</td>
<td>114</td>
<td>9,850</td>
</tr>
<tr>
<td>250.00</td>
<td>432</td>
<td>37,325</td>
</tr>
<tr>
<td>250.40</td>
<td>593</td>
<td>51,235</td>
</tr>
<tr>
<td>251.00</td>
<td>989</td>
<td>85,450</td>
</tr>
<tr>
<td>251.40</td>
<td>1360</td>
<td>117,504</td>
</tr>
<tr>
<td>252.40</td>
<td>2814</td>
<td>243,130</td>
</tr>
</tbody>
</table>
Appendix K

Dam Safety Conditions
MT MORGAN WATER SUPPLY No.7 DAM (ID #1839)
Dam Safety Condition Schedule
For: Rockhampton Regional Council (RRC)

Introduction
Mount Morgan Water Supply No 7 Dam is a mass concrete gravity dam with zoned earth-fill embankment. The dam is located on Dee River at AMTD 80km, immediate downstream of the confluence with Limestone Creek, approximately 32 kilometres south-west of Rockhampton.

Several water dams were originally constructed on Dee River by the Mount Morgan Gold Mine Company in the 1900s to provide water supply for the gold mining operations in the area. Mining activities ceased in the early 1990s, and the Queensland Government (DERM) took control and successfully decommissioned (in 2004) the three downstream dams namely Dams No. 4, 5 & 6.

Mt Morgan Water Supply No 7 Dam is the remaining major water supply dam that located on the head catchment of Dee River. The dam spillway and abutments were raised in 1999 (to 2.5m & 4.6m correspondingly) by the previous dam owner (Mount Morgan Shire Council) in order to ensure adequate water supply to the township of Mount Morgan.

At present, the dam is owned by Rockhampton Regional Council and managed and operated by its water business trading agency Fitzroy River Water (FRW).

The following conditions apply to Mt Morgan Water Supply No 7 Dam located on Lot 201 on Plan RN836502, County of Raglan, Parish of Calliungal, in the Local Government Area administered by Rockhampton Regional Council:

Category Assessment:
- Failure Impact Rating Category (FIRC): 2
- Incremental Population at Risk (Inc PAR): > 250 (based on Aug 2009 FIA)
- Date Assessment Accepted: October 2009
- Incremental Flood Hazard Category (IFHC): High A
- Acceptable Flood Capacity (AFC): PMP-DF
- Current Flood Discharge Capacity: 100% of the AFC (to be confirmed by dam owner)
- Timing of Spillway Upgrades: May not require (to be confirmed by dam owner)

Basic Description of the Dam: - Mass Concrete Gravity Dam and Earth-fill Embankment
- Location: Lot 201 on RN836502
- Co-ordinates: Latitude 23° 38' 42" S; Longitude 150° 24' 26" E
- Catchment Area: 38.8 km² (approx)
- Purpose: Water Supply
- Full Supply Level: EL 248.3 m
- Full Supply Capacity: 2,926 ML
- Concrete Structure Height: 15.8 m
- Total Dam Length: 465 m (including Embankment, Abutments & Spillway)

LEFT ABUTMENT: - Gravity Concrete Overflow Section
- Abutment Crest Level: EL 250.4 m
- Crest Length and Width: 80 m long
- Crest Width: 1 m wide crest

RIGHT ABUTMENT: - Gravity Concrete Overflow and Embankment Interface Section
- Abutment Crest Level: EL 250.4 m
- Overflow Section Crest Length: 70 m long (7 monoliths)
- Interface Section Crest length: 30 m (3 monoliths)
- Crest Width: 3.5 m wide crest
RIGHT EMBANKMENT: - Zoned Earth-fill Embankment
   Embankment Crest Level:      EL 251.43 m
   Embankment Length:           194 m (approx)
   Maximum Dam Height:          8 m (approx) above the toe level
   Embankment Batters:          1V:2.5H
   Dam Crest Width:             4 m (approx)

SPILLWAY: - Concrete Gravity Ogee Crest
   Fixed Crest Level:           EL 248.3 m
   Fixed Crest Length:          90.9 m (9 monoliths)
   Maximum Designed Discharge:  589 m$^3$/s (EL 250.39 m approx)
   Estimated Maximum Discharge: 1,350 m$^3$/s (DCF level at EL 251.43 m approx)

OUTLET: - Floating Pump for Town Water Supply
   Existing Outlet Size:        300 mm diameter NB pipe (decommissioned)

Notes: Levels (EL) quoted are to Local Mine Datum.
Condition DS 0 – General

1. The dam is to be kept safe, and be maintained and operated in accordance with the current versions of the following guidelines issued in Queensland under the Water Supply (Safety and Reliability) Act 2008 (where specifically referred to in this dam safety condition schedule):
   - Queensland Dam Safety Management Guidelines.
   - Guidelines for Failure Impact Assessment of Water Dams.

2. The current Dam Safety Regulator in the State of Queensland is the Chief Executive, Department of Environment and Resource Management (DERM) or the Department’s Delegate Officers.

Condition DS 1 - Documentation

1. Any documentation prepared in order to comply with these conditions must be stored securely until such time as the dam is decommissioned.

2. The documentation must be made available for inspection by the Dam Safety Regulator within seven (7) days of a written request for access being received by the Dam Owner.

3. The Dam Owner shall maintain a dedicated storage area and index system for all dam related documentation.

4. On change of ownership of the dam, all documentation prepared and stored in compliance with these conditions must be transferred to the new owner.

Condition DS 2 - Incidents and Failures

1. In addition to the requirements detailed within the Emergency Action Plan (EAP), the Dam Owner must report all incidents and failures (as defined in the Queensland Dam Safety Management Guidelines) in writing to the Dam Safety Regulator within forty-eight (48) hours of becoming aware of the incident or failure.

2. The Dam Owner must develop a remedial action plan and provide it to the Dam Safety Regulator within thirty (30) days of the incident or failure.

Condition DS 3 - Design Report

1. The original design report for the dam works is “Raising No. 7 Dam Mount Morgan - Design Report, prepared by McIntyre & Associates Consulting Engineers, September 1997”. Any identified key design documentation must be referenced in the Data Book and securely stored for future reference.

2. Future dam upgrades require a Design Report to be prepared for reference in the Data Book and submitted to the Dam Safety Regulator, at least one (1) month prior to the signing of any contractual construction agreement for such works.

3. Upgrade construction works may not be commenced without approval of the Dam Safety Regulator.

Condition DS 4 - Design and Construction

1. The design and construction of any remedial or upgrade works of the dam must be carried out in accordance with current engineering best practice, and ensure that the dam remains generally in accordance with documentation and drawings included in the Data Book.

2. Where remedial, reconstruction or upgrade works are proposed, a copy of the construction methodology report must be forwarded to the Dam Safety Regulator, at least one (1) month prior to the commencement of construction works.
Condition DS 5 - Data Book

1. The Dam Owner must prepare and maintain a Data Book in accordance with the Queensland Dam Safety Management Guidelines by the 30th of September 2010.

2. The Data Book must contain all pertinent records and history relating to the dam including the documentation of investigation, design, construction, operation, maintenance, surveillance, monitoring measurements and any remedial action taken, and any other issues addressed in the Queensland Dam Safety Management Guidelines.

3. The Dam Owner must ensure the Data Book is reviewed, and updated if necessary to incorporate the latest identified dam safety issues or required upgrade works in accordance with the Queensland Dam Safety Management Guidelines, by the 1st day of September of each year.

4. A written notification confirming that the Data Book has been reviewed (and if necessary updated) shall be signed by the Dam Owner and forwarded to the Dam Safety Regulator by the 30th day of September of that same calendar year.

Condition DS 6 - As Constructed Documentation

1. Information and drawings cited in the Data Book “Construction Report and As Built Drawings” can be accepted as being representative of the “As Constructed” document and plans for the dam.

2. All future upgrade works must produce “As built” drawings for inclusion in the Data Book.

3. The ‘As Constructed’ plans including future upgrade works must be securely maintained, preferably in the Data Book along with relevant photographic records to ensure future availability for reference when required.

Condition DS 7 - Standing Operating Procedures

1. The Dam Owner must maintain and update the SOPs in accordance to the Queensland Dam Safety Management Guidelines, and submit a copy to the Dam Safety Regulator by the 30th day of September 2010.

2. The dam must be operated in accordance with the controlled dam safety document “Standing Operating Procedures (SOPs)”.

3. The SOPs must be kept up to date at all times to cover the following activities (Note that in some cases the Dam Owner may prefer to incorporate the information in other dam safety documentation such as an Operation and Maintenance Manual):
   a) Personnel training and procedural issues.
   b) Emergency Action Planning (including regular review/update of the Emergency Action Plan) and Incident Reporting.
   c) Critical Operating Procedures.
   d) Monitoring and Surveillance.
   e) Maintenance of a Dam Log Book.

4. The Dam Owner must ensure the SOPs are reviewed annually by the 1st day of September of each calendar year and:
   a. where amendments are made to any SOP, the updated documents are to be forwarded to the Dam Safety Regulator by the 30th day of September of that same calendar year.
   b. where no amendments are necessary, a written notification confirming that the SOPs have been reviewed shall be signed by the Dam Owner and forwarded to the Dam Safety Regulator by the 30th day of September of that same calendar year.
Condition DS 8 - Detailed Operation and Maintenance Manuals

1. The Dam Owner must maintain and update the current document "No. 7 Dam Mount Morgan Operation and Maintenance Manual" in accordance with the Queensland Dam Safety Management Guidelines.

2. The Dam Owner must ensure that the Operation and Maintenance Manuals include a comprehensive set of instructions for any equipment operated at the dam that is necessary for the safety management and operation of the dam. This includes data reporting forms and procedures.

3. The Dam Owner must ensure the detailed Operating and Maintenance Manuals are reviewed and if necessary updated by the 1st day of September of each calendar year.

4. A written notification confirming that the Detailed Operating and Maintenance Manuals have been reviewed and/or updated shall be signed by the Dam Owner and forwarded to the Dam Safety Regulator by the 30th day of September of that same Calendar year.

Condition DS 9 - Special Inspections

1. When directed by the Dam Safety Regulator, a Special Inspection must be carried out at the cost of the Dam Owner and a report must be prepared in accordance with the Queensland Dam Safety Management Guidelines.

2. The Dam Safety Regulator shall be advised in writing of the date of the inspection and may elect to observe any or all procedures involved in the inspection process.

3. The Dam Owner must provide one copy of the Special Inspection Report to the Dam Safety Regulator within thirty (30) days of completion of inspection.

Condition DS 10 - Periodic (Annual) Inspections

1. The Dam Owner must undertake a Periodic Inspection of the dam in accordance with the Queensland Dam Safety Management Guidelines on or before the 1st day of September of each calendar year. When a Periodic Inspection falls in a year that a Comprehensive Inspection is also required, this shall be undertaken as part of the Comprehensive Inspection.

2. The Dam Safety Regulator shall be advised in writing of the date of the Periodic Inspection and may elect to observe any or all procedures involved in the inspection process.

3. The Dam Owner must produce a Periodic Inspection Report.

4. A written notification confirming that the Periodic Inspection has been carried out in accordance with the Queensland Dam Safety Management Guidelines shall be signed by the Dam Owner and forwarded to the Dam Safety Regulator by the 30th day of September of that same calendar year.

5. In addition to the items listed in the Queensland Dam Safety Management Guidelines the Periodic Inspection Reports must address the following:
   a. Evidence of any concrete cracking, spalling, or other identified deficiency.
   b. Evidence of any leakage through the structure.
   c. Evaluation of all surveillance data.
   d. Any other issues the inspecting engineer considers appropriate.
   e. Status of review and updates of Dam Safety documentation.
   f. Review the status of recommendations from the previous annual inspection.
   g. Compliance with SOPs.
Condition DS 11 - Comprehensive Inspections

1. The Dam Owner must carry out a Comprehensive Inspection of the dam in accordance with the *Queensland Dam Safety Management Guidelines*, on or before the 1st day of September 2015, and on or before every fifth (5th) anniversary of that date thereafter. When a Comprehensive Inspection falls in a year that a dam Safety Review is also required, this shall be undertaken as part of the Safety Review.

2. The Dam Safety Regulator shall be advised in writing of the date of the Comprehensive Inspection and may elect to observe any or all procedures involved in the inspection process.

3. The Dam Owner must ensure the Comprehensive Inspection Report incorporates a review of dam safety standards of the existing dam against current standards, a review of the adequacy of the dam safety documentation for the dam, and a review of the status of recommended actions from previous inspections.

4. A Comprehensive Inspection Report detailing the findings of the Comprehensive Inspection in accordance with the *Queensland Dam Safety Management Guidelines* must be submitted to the Dam Safety Regulator within three (3) months after completion of the Comprehensive Inspection.

Condition DS 12 - Safety Review

1. The Dam Owner must carry out a Safety Review in accordance with the *Queensland Dam Safety Management Guidelines* by the 1st day of September 2015.

2. The Dam Owner must prepare a Safety Review Report and provide one copy of the Safety Review Report to the Dam Safety Regulator within three (3) months of completing the review.

3. Further Safety Reviews are to be carried out at twenty (20) year intervals, but may be required at more regular intervals by the Dam Safety Regulator in such circumstances as:
   a. There is an absence of adequate documentation.
   b. Abnormal behaviour of the structure has been detected.
   c. Changes to design and/or construction standards warrant dam safety investigations.
   d. The need to comply with a Regulatory requirement.

Condition DS 13 - Emergency Action Plans and Event Reports

This condition has been removed as of 17th June 2015

Condition DS 14 - Decommissioning

1. The dam must not be taken out of service (decommissioned) without a Decommissioning Plan prepared in accordance with the *Queensland Dam Safety Management Guidelines*, and approved by the Dam Safety Regulator.

2. The Decommissioning Plan must address how the dam is to be rendered safe, and consider the environmental, water resource security, social and long term management issues associated with the decommissioning.

Condition DS 15 – Spillway Adequacy Condition

1. The Dam Owner is to provide the following information to the Dam Safety Regulator in relation to the Spillway Adequacy of the dam:
b. The AFC Assessment Report must include the information outlined in Appendix (A) of the Guidelines on Acceptable Flood Capacity for Dams, and conform to the written format requirements of the Guidelines.

c. Flood estimations must be carried out in accordance with the provisions of ARR (IEAust-2001); CRC-FORGE (NRW-2003); GSDM (BoM-2003) or GTSMR (BoM-2003) as detailed in the Guidelines.

d. The Report must include an assessment of the identified current flood discharge capacity of the dam expressed as a percentage of the required AFC. This is of the form:

\[ K(\%) = \frac{\text{Peak inflow for flood able to be currently safely passed}}{\text{Peak inflow for the AFC}} \]

e. Where the dam cannot pass the AFC, the report must include preliminary proposals of the necessary work and timing to upgrade the dam to the AFC together with cost estimates for this work.

2. Documentation detailing the procedures as described in this safety condition is to be supplied to the Dam Safety Regulator by the 30\textsuperscript{th} day of September 2010*  

*Note: This date has been consulted and tentatively agreed with the Dam Owner (RRC)

**Condition DS 16 - Dam Upgrade to AFC Requirements**

Reserved
Appendix L  Review of Emergency Action Plan