# PERRY RIVER DAM EMERGENCY ACTION PLAN

Approved by the delegate of the Chief Executive, Department of Natural Resources, Mines and Energy until 3 May 2021

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<th>Date</th>
<th>Description</th>
<th>Prepared By</th>
<th>Approved By</th>
<th>Position</th>
<th>Signature</th>
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Appendix A Emergency Contact List
Appendix B Dam Safety Review Report
Appendix C Monthly Inspection Template
Appendix D Failure Impact Assessment
1 INTRODUCTION

1.1 Background

Evolution Mining Limited (Evolution) is the owner/operator of the Mt Rawdon Mine Operation (MRO), acquiring the project as part of the purchase of MRO from Newcrest Mining Ltd in November 2011. The project site is located some 14km south east of the township of Mount Perry in South East Queensland. As part of the project infrastructure the Perry River Dam exists to supply make-up water for the operation, of which MRO is the registered owner and operator of the storage. This raw water storage is an on-stream facility located some 5km to the north east of MRO.

1.2 Regulatory Context

Under the Water Supply (Safety and Reliability) Act 2008 the owner/operator of a referable dam must have an approved Emergency Action Plan for the dam. Section 352H of the Act sets out requirements for EAPs in order to manage the consequences of a dam hazard event and dam emergency event to protect people and property. The conditions specific to the development of this EAP are as follows:

352 H Requirements for plan

(1) The emergency action plan must –
   (a) Identify each dam hazard for the dam; and,
   (b) for each dam hazard –
      (i) identify the area likely to be affected by a dam hazard event or emergency event arising from the dam hazard, including, for example, by attaching to the plan maps showing areas vulnerable to flooding if the event were to happen; and,
      (ii) identify each circumstance that indicates a material increase in the likelihood of the dam hazard event or emergency event happening; and,
      (iii) state when and how the owner of the dam plans to warn persons who may be harmed, or whose property may be harmed, by the dam hazard event or emergency event, if a circumstance mentioned in subparagraph (ii) arises or the dam hazard event or emergency event happens, including the order of priority in which the persons or categories of persons are to be warned; and,
      (iv) state when and how the owner plans to notify the relevant entities for the dam if a circumstance mentioned in subparagraph (ii) arises or the dam hazard event or emergency event happens, including the order of priority in which the relevant entities are to be notified; and,
      (v) state the actions the owner plans to take in response to a dam hazard event or emergency event; and
   (c) be accompanied by each notice given by a local government or district group under section 352HB(3) or 352HC(2) for the plan, and any notice responses by the owner; and
   (d) include any other relevant matter prescribed by regulation.

The Act requires that relevant regional council governments and disaster management groups be consulted in the development of the EAP. The Perry River Dam is located within the North Burnett Regional Council jurisdiction, and the Council was consulted in the development and implementation of this EAP.
1.3 Purpose and Scope

This Emergency Action Plan details the roles, responsibilities and actions to be undertaken in relation to the Perry River Dam under circumstances identified as an emergency condition. The Perry River Dam is controlled/managed by Evolution as owner/operators of the Mt Rawdon Mine Operations.

The area downstream of the dam, bounding the Perry River, has been identified as being potentially impacted by failure to contain scenarios, and is identified as the area with a Population at Risk (PAR). Potentially impacted downstream residents will be notified by site staff in the event of a prescribed incident.

This EAP details emergency events and action procedures for:

- Flooding;
- Excessive Seepage;
- Embankment Instability / Movement / Earthquake; and
- Sabotage / Vandalism.

Emergency event identification, assessment of level of risk and emergency action procedures are provided in tabulated format to proceduralise the actions/responses to be undertaken by site staff responsible for the control and evacuation of the inundation area.

1.4 Associated Documents

This Emergency Action Plan should be read in conjunction with the following documents:

- AWA, (2013), Mt Rawdon Gold Mine - Perry River Dam - Acceptable Flood Capacity Assessment 2013 (Ref: 0400-RAW-001-r001-d), May 2013, Allan Watson Associates Pty Limited. (Refer Appendix B)
- ATCW (2018), Mt Rawdon Gold Mine - Perry River Dam - Failure Impact Assessment (Ref: 111359-56-R02-A), October 2018, ATC Williams Pty Ltd. (Refer Appendix D)
2 DETAILS OF PERRY RIVER DAM

2.1 Dam Location

The Perry River Dam is an on-stream dam located some 5km to the north east of MRO site. The dam is a roller compacted concrete (RCC) embankment dam (see Plate 1), and is used primarily for raw water storage for MRO. The weir was designed to overtop during extreme rainfall events up to the 1 in 10,000 year ARI event\(^1\) with a flow of 1,347m\(^3\)/s. A scour pipe and valve is located within the embankment on the eastern side of the RCC embankment. The system comprises an inlet cage, and a concrete lined steel pipe with a butterfly valve located on the downstream embankment face, which can only be accessed safely when the weir is not overflowing.

Water is recovered from the weir via a floating off-take located adjacent to the decant tower which is situated on the eastern side, some 100m upstream from the RCC embankment. The pump and pipe delivery system comprises a four-inch centrifugal pump with electric motor with an above ground 300mm HDPE pipeline, which discharges at the Mt Rawdon Plant Site.

The Perry River Dam water level is monitored with an automatic river gauge (Station No. 539147), of which real-time data and previous historical levels can be accessed via the Bureau of Meteorology (BoM) website, by the following link:


Plate 1
Perry River Dam Area Map

The specific details regarding the Perry River Dam are listed in Table 1, below.

---

### Table 1
**Perry River Dam Specifications**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referable Dam Register No.</td>
<td>0416</td>
</tr>
<tr>
<td>Latitude</td>
<td>-25.25°</td>
</tr>
<tr>
<td>Longitude</td>
<td>151.80°</td>
</tr>
<tr>
<td>Physical Address</td>
<td>Swindon Road, Mount Perry</td>
</tr>
<tr>
<td>Property Description</td>
<td>3/BN37400 &amp; 1/BON222</td>
</tr>
<tr>
<td>Construction Type</td>
<td>Roller Compacted Concrete (RCC)</td>
</tr>
<tr>
<td>Local Authority</td>
<td>North Burnett Regional Council</td>
</tr>
<tr>
<td>Maximum Height of Dam</td>
<td>12m</td>
</tr>
<tr>
<td>Dam Crest Length</td>
<td>104m</td>
</tr>
<tr>
<td>Dam Crest Width</td>
<td>4.3</td>
</tr>
<tr>
<td>Upstream Batter Slopes</td>
<td>600mm steps, with overall slope 0.6H: 1V</td>
</tr>
<tr>
<td>Downstream Batter Slopes</td>
<td>0.8H: 1V</td>
</tr>
<tr>
<td>Catchment Area</td>
<td>9,800ha</td>
</tr>
<tr>
<td>Total Storage Capacity</td>
<td>1,050 ML</td>
</tr>
<tr>
<td>Embankment Crest Level (spill elevation)</td>
<td>RL 98.0m</td>
</tr>
<tr>
<td>Reservoir Full Supply Level</td>
<td>RL 98.0m</td>
</tr>
<tr>
<td>Consequence Category</td>
<td>Significant</td>
</tr>
</tbody>
</table>

#### 2.2 Population at Risk

A Failure Impact Assessment (FIA) for the Perry River Dam was completed in 2011:


The assessment was undertaken pursuant to the Guideline for the Failure Impact Assessment of Water Dams (DERM 2010).

The assessment determined a Population-At-Risk (PAR) as follows:

- Sunny Day Failure Condition: <1 PAR
- Flood Failure Condition: 2.9 PAR

Consequently, the Perry River Dam was classified as a Category 1 Referable Dam, as a result of impact arising from a flood failure condition.

The Failure Impact Assessment (FIA) for the Perry River Dam was reviewed in 2018:


The assessment determined a Population-At-Risk (PAR) as follows:
2.3 Maps

The Failure Impact Assessment of the Perry River Dam is provided in Appendix D and contains the relevant flood inundation maps. Figure 006 of the Perry River Dam Failure Impact Assessment shows the modelled impacted downstream residences which should be evacuated in the event of a flooding failure of the Perry River Dam. Figure 006 has been attached to this document.

2.4 Downstream Public Road Crossings

The road crossings expected to be impacted by flood conditions are as follows:

- Tenningering Road Crossing
- Agnes Road Crossing
- Mingo Road/Walla Road Crossing
- Eddingtons Road Crossing

It is anticipated that warning signs would be installed both sides of these crossings, which could include barricades and amber warning lights.
3 ROLES AND RESPONSIBILITIES

3.1 Distribution of EAP

The Perry River Dam is owned and operated by Evolution and as such the Site Manager of Evolution is ultimately responsible for the revision and distribution of this EAP.

3.2 Organisation Roles & Responsibilities

The following table shows the relevant entities with dam safety incident responsibilities.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| Evolution Mining | - Prepare, implement and maintain an Emergency Action Plan for the Perry River Dam in accordance with the requirements of the Water Supply (Safety and Reliability) Act 2008.  
- Preparedness, including staff training, emergency planning and undertaking of simulated incident exercises. Training should be undertaken and revised every 2 years.  
- Maintaining an ongoing Incident and Emergency Roster in accordance with the Emergency Response Plan.  
- Monitoring the dam during normal operations, major climatic events or other emergency situations.  
- Initial triggering of each activation level of the Emergency Action Plan, as per Tables 5 to 9.  
- Undertaking required actions and notifications for each activation level of the EAP, including evacuation of site personnel and downstream PAR as appropriate.  
- Initiating, managing and terminating emergency situations. |
| North Burnett Regional Council (Local Disaster Management Group) | - Organize all appropriate resources to contribute to response and emergency recovery measures during the dam safety event.  
- Utilize assistance from other relevant groups and agencies in response to the dam safety event. |
| Dam Safety Regulator (Department of Natural Resources, Mines and Energy) | - Provide regulatory input during a dam safety emergency in accordance with the requirements of the Water Supply (Safety and Reliability) Act 2008. |

3.3 Staff Roles & Responsibilities

Table 3 shows the roles of Evolution staff with respect to dam safety incident responsibilities.
### Table 3

**Evolution Staff Responsibilities**

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
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</table>
| **Site Manager**| - Custodian of the EAP and responsible for the development, implementation of the EAP,  
                  - Monitoring the dam monthly during normal operations and as required during emergency situations,  
                  - Initiating, managing and terminating emergency situations,  
                  - Undertaking required actions and notifications for each activation level of the EAP, as per *Tables 5 to 9*,  
                  - Preparedness, including staff training, emergency planning and undertaking of simulated incident exercises. These actions should be undertaken every 2 years. |
| **Dam Engineer**| - Dam engineering support, including special inspections, emergency works supervision and recommendation of remedial works. |

### 3.4 Associated Responsibilities

The responsibilities of other supporting entities, are as follows:

- Police / fire / ambulance / emergency services – as needed, including to assist with control of public traffic access to the site during an emergency situation.
- The administering authority - DNRME (the Queensland Government Department of Natural Resources, Mines and Energy).
- A nominated civil works contractor, in case emergency works are required.
4 NOTIFICATION FRAMEWORK

4.1 Notification Hierarchy

Plate 2, below, presents an Emergency Notification Hierarchy, which is to be followed if an emergency situation occurs at the Perry River Dam.

Refer to Section 5.1 herein for guidance regarding identification of incidents that could result in an emergency situation. Refer also to Section 5.2 herein for guidance regarding EAP activation levels and required notifications for each activation level. The timeline for notifications as required for each activation level should be immediately (e.g. within 15 minutes or as soon as practical thereafter) once each activation level has been reached.

Plate 2
Emergency Notification Hierarchy and Contact Details
4.2 EAP Activation Levels

Timely activation of the EAP is a crucial element in the effectiveness of the plan, with appropriate warning systems imperative to reduce the risk of loss of life and property damage downstream from the dam.

The EAP is to be activated via an escalation model based on the following levels of EAP activation:

- **NORMAL**  
  Normal operations.

- **ALERT**  
  A heightened degree of vigilance.

- **LEAN FORWARD**  
  Increased operational readiness, monitoring and reporting vigilance.

- **STAND UP**  
  Full implementation of the EAP, including evacuation, reporting and intervention (if safe to do so).

- **STAND DOWN**  
  Transition from responding to an event and back to normal (or recovery) operations, once the threat has sufficiently diminished.

4.3 Notification Procedure

The emergency contact list, shown in **Appendix A**, details the notifications required as a consequence of the escalating EAP activation levels. The emergency contacts are categorised according to relevant organisations/groups and are listed in order of priority. The primary phone numbers provided are the first point of contact to be attempted by Evolution staff. Evolution staff must request acknowledgment from emergency contacts, to ensure messages have been received. If impacted downstream residents can not be reached by the primary or secondary methods of contact, the General Manager or representative must send appropriate personnel to these properties to ensure clearance of the interim evacuation zone. Appropriate personnel may include Evolution employees or the Police. Where residences are not reachable due to flooded roads, helicopter access may be required. Evacuated residents without mobile telephones would be able to receive further instruction on the evacuation orders through the local Police Service.
5 EMERGENCY EVENTS AND ACTION LIST

5.1 Incident Identification

Table 4 lists potential conditions that are considered most likely to initiate a failure of Perry River Dam.

<table>
<thead>
<tr>
<th>Potential condition</th>
<th>Indicator(s)</th>
</tr>
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<tr>
<td>Embankment Instability</td>
<td>Defects observed on or near to embankment (cracking, deformation or settlement). Significant erosion of the embankment that threatens integrity of the embankment.</td>
</tr>
<tr>
<td>Embankment Sabotage</td>
<td>Intentional attack/damage of the embankment in attempt to fail the embankment and initiate uncontrolled release.</td>
</tr>
<tr>
<td>Flooding</td>
<td>An extreme rainfall event is forecast, predicted to cause a significant flooding event downstream.</td>
</tr>
<tr>
<td>Excessive Seepage</td>
<td>Increased levels of seepage observed or a new area of seepage located.</td>
</tr>
</tbody>
</table>

This list of indicators forms the basis for routine operational inspections and checks of the dam to be completed.

5.2 EAP Activation

For each of the potential conditions listed in Table 4, above, EAP activation levels and corresponding actions are provided in Tables 5 to 8, and the associated Plates 5 to 8 provide a schematic of actions to be completed by Evolution staff.

The intent of these EAP activation level tables is that they outline the steps to identify, evaluate, classify the urgency, and manage some, not necessarily all, of the events that can lead to failure of the dam.
Plate 3
Embankment Instability Actions Flowchart

- ALERT Embankment Distress
- Arrange Monitoring and Inspections
- Has signs of Embankment Stress Enhanced?
  - Yes - STAND UP
  - No
    - No
      - Monitor and Assess if Risk Has Been Reduced?
        - Yes - Risk is Reduced
        - No
          - Continue Evacuations
            - Yes - Risk is Reduced
  - No
    - No
      - Is Failure Likely or In Progress?
        - Yes
          - Monitor and Assess if Risk Has Been Reduced?
            - Yes - Risk is Reduced
        - No
          - Stand Down
            - Yes - Risk is Reduced

Legend
- ALERT
- STAND UP
- LEAN FORWARD
- STAND DOWN
### Table 5
#### EAP Activation Table - Embankment Instability

<table>
<thead>
<tr>
<th>Potential condition</th>
<th>Activation level</th>
<th>General characteristics</th>
<th>Actions</th>
<th>Required notifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embankment instability</td>
<td>NORMAL</td>
<td>An ALERT or higher activation level has not been triggered.</td>
<td>Daily monitoring and inspection.</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>ALERT</td>
<td>Identification of signs of embankment distress such as: Cracks or scars near the crest, bulging near downstream banks of river Significant erosion of the river banks upstream or downstream Significant earthquake within the immediate region.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services, and relevant Evolution site staff and management Monitoring and Inspections: More frequent depending on how quickly conditions are changing. Action: Evolution to arrange for: (1) stockpiling of emergency rock buttress materials; and (2) plant and operators to be on standby in case emergency remedial works are required. (3) set aside warning signs, barricade and amber warning lights (if safe to do so)</td>
<td>NOTIFY: Evolution to notify residences, NBRC, Dam Engineer and Environmental Superintendent (see Attachment A) MESSAGE: 1-Alert</td>
</tr>
<tr>
<td></td>
<td>LEAN FORWARD</td>
<td>Signs of distress becoming more enhanced to the point where safety of the dam could be impaired, e.g. river banks deformation or erosion have visibly increased.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution to place warning signs, barricade and amber warning lights both sides of downstream road crossings. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue with frequent monitoring and inspections depending on how quickly conditions are changing. Action: IF SAFE and effective to do so, Evolution arrange for plant mobilisation in case emergency remedial works are required.</td>
<td>NOTIFY: Evolution to notify residences, NBRC, DNRME, Dam Engineer, Environmental Superintendent (see Attachment A), and coordinate all emergency management at LEAN FORWARD MESSAGE: 2-LEAN FORWARD</td>
</tr>
<tr>
<td></td>
<td>STAND UP (Full implementation of EAP - Declared Incident)</td>
<td>Signs of distress becoming more enhanced to the point where safety of the dam is impaired, e.g. shallow slumping has initiated (or worse).</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue monitoring and inspections while maintaining adequate personal safety. Action: Undertake remedial works IF SAFE and effective to do so, e.g. via supervised construction of an emergency filter / stabilisation buttress and / or emergency auxiliary spillway channel on left (east) abutment (supervised by PERRY RIVER DAM ENGINEER).</td>
<td>NOTIFY: Evolution to notify residences, NBRC, DNRME, Dam Engineer, General Environmental Manager (see Attachment A), and coordinate all emergency management at STAND UP MESSAGE: 3-STAND UP</td>
</tr>
<tr>
<td></td>
<td>STAND DOWN</td>
<td>Imminent threat to dam safety has subsided.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of de-escalation in conditions. Evolution to assess if warning signs, barricade and amber warning lights at downstream road crossings can be removed. Monitoring and Inspections: Undertake special inspections as necessary. Action: Prepare EER and further remedial works as necessary. Return to ALERT or NORMAL activation level as appropriate.</td>
<td>Notify: Dam Engineer, EVOLUTION, DNRME &amp; police concur MESSAGE: 4-STAND-DOWN EVOLUTION SUBMIT EER</td>
</tr>
<tr>
<td>Potential condition</td>
<td>Activation level</td>
<td>General characteristics</td>
<td>Actions</td>
<td>Required notifications</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
<td>--------------------------</td>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Embankment Sabotage</td>
<td>NORMAL</td>
<td>An ALERT or higher activation level has not been triggered.</td>
<td>Daily monitoring and inspection whenever personnel (authorised or unauthorised) are in the vicinity of the Perry River Dam. Observation for unusual behaviour in the proximity of the embankment.</td>
<td>Nil</td>
</tr>
<tr>
<td>ALERT/LEAN FORWARD</td>
<td></td>
<td>Threat made in relation to the safety of the dam and dam infrastructure or likely to be associated to the dam.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the dam break inundation zone, except those approved by Evolution for security and monitoring. Action: Evolution arrange appropriately trained security staff to investigate the threat and inspect the dam. IF SAFE and effective to do so, Evolution arrange for plant mobilisation in case emergency remedial works are required.</td>
<td>NOTIFY: EVOLUTION to notify residences, NBRC,Dam Engineer and Environmental Superintendent (see Attachment A) EVOLUTION NOTIFY Police MESSAGE: 2-LEAN FORWARD</td>
</tr>
<tr>
<td>STAND UP (Full implementation of EAP - Declared Incident)</td>
<td></td>
<td>Sabotage incident occurs</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the dam break inundation zone, except those approved by Evolution for security and monitoring. Action: Police to control the incident</td>
<td>NOTIFY: EVOLUTION to notify residences, NBRC, DNRME, Dam Engineer and General Environmental Manager (see Attachment A) EVOLUTION NOTIFY Police MESSAGE: 3-STAND UP</td>
</tr>
<tr>
<td>STAND DOWN</td>
<td></td>
<td>Imminent threat to dam safety has subsided.</td>
<td>Following release of site from Police: Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of de-escalation in conditions. Actions: Prepare EER. Undertake special inspection and further remedial works as necessary. Return to ALERT or NORMAL activation level as appropriate.</td>
<td>Dam Engineer, EVOLUTION, DNRME &amp; police concurrence NOTIFY: Evolution to notify residences, NBRC, and General Environmental Manager (see Attachment A). MESSAGE: 4-STAND-DOWN EVOLUTION SUBMIT EER</td>
</tr>
</tbody>
</table>
Perry River Dam Emergency Action Plan

Plate 5
Overtopping Actions Flowchart

Legend
- ALERT
- STAND UP
- LEAN FORWARD
- STAND DOWN

ALERT
Dam is at RL 96.5m and rain or a large rainfall event (>20.2mm in 24 hours) is forecast

No

Arrange Monitoring and Inspections

No

Does Flow Depth Exceed RL 100.0m?

Yes

No

Has the Water Level Exceeded RL 101.0m?

Yes

- STAND UP

No

Monitor and Assess if Risk Has Been Reduced?

No

Yes

Is Failure Likely or In Progress?

No

Monitor and Assess if Risk Has Been Reduced?

Yes

- Risk is Reduced

Continue Evacuations

Yes

- Risk is Reduced

Stand Down

Yes

- Risk is Reduced

STAND UP

STAND DOWN
<table>
<thead>
<tr>
<th>Potential condition</th>
<th>Activation level</th>
<th>General characteristics</th>
<th>Actions</th>
<th>Required notifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERTOPPING</td>
<td>NORMAL</td>
<td>An ALERT or higher activation level has not been triggered.</td>
<td>Continue monitoring of predicted rainfall events utilising online BOM websites, news, and radio.</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>ALERT</td>
<td>A large rainfall event is forecasted, with total rainfall predicted to exceed 2822mm (1 in 100 yr. ARI 24-hour rainfall event), or Flow depth over weir crest exceeding 1.5m (RL 99.5m) and rising.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services and relevant Evolution site staff and management Monitoring and Inspections: More frequent monitoring of predicted rainfall events utilising online BOM websites, news, and radio. Action: Evolution to complete release requirements stipulated in EA EPML00712113, effective 29 September 2017, and, to arrange for: (1) stockpiling of emergency rock buttress materials: and, (2) plant and operators to be on standby in case emergency remedial works are required.</td>
<td>NOTIFY: Evolution to notify residences, NBRC, Dam Engineer and Environmental Superintendent (see Attachment A) MESSAGE: 1-Alert</td>
</tr>
<tr>
<td></td>
<td>LEAN FORWARD</td>
<td>Flow depth over weir crest exceeding 2.0m (RL 100.0m) and rising.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalating conditions. Evolution to place warning signs, barricade and amber warning lights both sides of downstream road crossings (if safe to do so). Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue with frequent monitoring of predicted rainfall events utilising online BOM websites, news, and radio. Action: Evolution to complete release requirements stipulated in EA EPML00712113, and, IF SAFE and effective to do so, Evolution arrange for plant mobilisation in case emergency remedial works are required.</td>
<td>NOTIFY: Evolution to notify residences, NBRC, DNRME, Dam Engineer, Environmental Superintendent (see Attachment A), and coordinate all emergency remedial works at LEAN FORWARD MESSAGE: 2-LEAN FORWARD</td>
</tr>
<tr>
<td>STAND UP (Full implementation of EAP - Declared Incident)</td>
<td>Flow depth over weir crest in excess of 3.0m (RL 101.0m).</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalating conditions. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue monitoring and inspections while maintaining adequate personal safety. Action: Evolution to complete release requirements stipulated in EA EPML00712113, and, to undertake remedial works IF SAFE and effective to do so, e.g. via supervised construction of an emergency filter and / or emergency auxiliary spillway channel on left (east) abutment (supervised by PERRY RIVER DAM ENGINEER).</td>
<td>NOTIFY: EVOLUTION to notify residences, NBRC, DNRME, Dam Engineer and General Environmental Manager (see Attachment A) EVOLUTION NOTIFY Police MESSAGE: 3-STAND UP</td>
<td></td>
</tr>
<tr>
<td>STAND DOWN</td>
<td>Flow depth over weir crest has receded to 0.2m (RL 98.2m) and is falling, or Dam Engineer advises it is safe to commence stand down.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of de-escalation in conditions. Monitoring and Inspections: Undertake special inspections as necessary. Action: Prepare EER and further remedial works as necessary. Return to ALERT or NORMAL activation level as appropriate.</td>
<td>Dam Engineer, EVOLUTION, DNRME &amp; police concur NOTIFY: Evolution to notify residences, NBRC, and General Environmental Manager (see Attachment A) MESSAGE: 4-STAND-DOWN EVOLUTION SUBMIT EER</td>
<td></td>
</tr>
</tbody>
</table>
Plate 6
Excessive Seepage Actions Flowchart

Legend
- ALERT
- STAND UP
- LEAN FORWARD
- STAND DOWN

ALERT
Increased Seepage Levels Recorded

Arrange Monitoring and Inspections

Has Seepage Rate Exceeded 2l/s?

Yes - STAND UP

No

Is Failure Likely or In Progress?

No

Monitor and Assess if Risk Has Been Reduced?

Yes

Continue Investigations

Yes - Risk is Reduced

No

Monitor and Assess if Risk Has Been Reduced?

Yes - Risk is Reduced

Stand Down
### Table 8: EAP Activation Table – Excessive Seepage

<table>
<thead>
<tr>
<th>Potential condition</th>
<th>Activation level</th>
<th>General characteristics</th>
<th>Actions</th>
<th>Required notifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive Seepage</td>
<td>NORMAL</td>
<td>An ALERT or higher activation level has not been triggered.</td>
<td>Daily monitoring and inspection whenever personnel are on site.</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>ALERT</td>
<td>Identification of signs of excessive seepage such as: Increased seepage levels on dam walls or downstream banks and/or, New area of seepage identified.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services, and relevant Evolution site staff and management Monitoring and Inspections: More frequent depending on how quickly conditions are changing. Action: Evolution to arrange for: (1) stockpiling of emergency rock buttress material; and, (2) plant and operators to be on standby in case emergency remedial works are required.</td>
<td>NOTIFY: Evolution to notify residences, NBRC, Dam Engineer and Environmental Superintendent (see Attachment A) MESSAGE: 1-Alert</td>
</tr>
<tr>
<td></td>
<td>LEAN FORWARD</td>
<td>Signs of distress becoming more enhanced to the point where safety of the dam could be impaired, e.g. seepage levels on dam walls or downstream banks have further increased.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution to place warning signs, barricade and amber warning lights both sides of downstream road crossings. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue with frequent monitoring and inspections depending on how quickly conditions are changing. Action: IF SAFE and effective to do so, Evolution arrange for plant mobilisation in case emergency remedial works are required.</td>
<td>NOTIFY: Evolution to notify residences, NBRC, DNRME, Dam Engineer, Environmental Superintendent (see Attachment A), and coordinate all emergency management at LEAN FORWARD MESSAGE: 2-LEAN FORWARD</td>
</tr>
<tr>
<td></td>
<td>STAND UP</td>
<td>Signs of distress becoming more enhanced to the point where safety of the dam is impaired, e.g. piping condition has been established.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of escalation in conditions. Evolution staff are to ensure safe and timely evacuation of the interim evacuation zone until clearance is given by Evolution and emergency services to return. No personnel within the potential dam break inundation zone, except those approved by Evolution for monitoring and inspections or remedial works. Monitoring and Inspections: Continue monitoring and inspections while maintaining adequate personal safety. Action: Undertake remedial works IF SAFE and effective to do so, e.g. via supervised construction of an emergency filter / stabilisation buttress and / or emergency auxiliary spillway channel on left (east) abutment (supervised by PERRY RIVER DAM ENGINEER).</td>
<td>NOTIFY: Evolution to notify residences, NBRC, DNRME, Dam Engineer, General Environmental Manager (see Attachment A), and coordinate all emergency management at STAND UP MESSAGE: 3-STAND UP</td>
</tr>
<tr>
<td></td>
<td>STAND DOWN</td>
<td>Imminent threat to dam safety has subsided.</td>
<td>Notifications: Evolution staff are to notify downstream residences and NBRC emergency services of de-escalation in conditions. Monitoring and Inspections: Undertake special inspections as necessary. Action: Prepare EER and further remedial works as necessary. Return to ALERT or NORMAL activation level as appropriate.</td>
<td>Dam Engineer, EVOLUTION, DNRME &amp; police concur NOTIFY: Evolution to notify residences, NBRC, and General Environmental Manager (see Attachment A). MESSAGE: 4-STAND-DOWN EVOLUTION SUBMIT EER</td>
</tr>
</tbody>
</table>
5.3 Response Mechanisms

In developing response mechanisms for this EAP, the potential for utilisation of the ‘Emergency Alert’ national telephone warning system has been adopted.

The evacuation map is depicted in Figure 006 in Appendix D and shows 3 impacted properties.

5.4 Response Messages

Requirements for alert messages from Evolution to NBRC LDMG are as follows. Guidance on message content is provided in italic text:

- Message: 1-ALERT:
  - This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  - My name is _______ and my phone number is _______.
  - I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  - I wish to activate the EAP to the level of ALERT.
  - There is a potential condition related to _______.
  - I have observed the following…(providing short description on when, what and where)
  - You can contact _______ for updates (providing details who to contact or how updates can be obtained).

- Message: 2-LEAN FORWARD
  - This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  - My name is _______ and my phone number is _______.
  - I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  - I wish to activate the EAP to the level of LEAN FORWARD.
  - We will take (or are taking) the following actions…(providing short description on when, what and where)
  - You can contact _______ for updates (providing details who to contact or how updates can be obtained).

- Message: 3-STAND UP
  - This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  - My name is _______ and my phone number is _______.
  - I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  - I wish to activate the EAP to the level of STAND UP.
  - Please be advised that _______ (providing short description on current conditions and if it is normal conditions and under control)
  - You can contact _______ for updates or if you have further concerns related to the event (providing details who to contact or how updates can be obtained).

Requirements for alert messages from Evolution to residents via the telephone announcement system are as follows. Guidance on message content is provided in italic text:
• Message: 1-ALERT
  o This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  o My name is _______ and my phone number is _______.
  o I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  o There is a potential condition related to _______ at Perry River Dam
  o Please remain calm, prepare to evacuated from the Perry River potential inundation areas (not within 200m from the River Bank) and await further instructions.
  o Please confirm receipt of this message using 1 on your phone key pad.

• Message: 2-LEAN FORWARD
  o This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  o My name is _______ and my phone number is _______.
  o I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  o There is a RISK of DAM FAILURE at Perry River Dam
  o All persons must evacuate from the Perry River potential inundation areas (not within 200m from the River Bank)
  o Please remain calm, evacuate and stand by for further instructions.
  o Please confirm receipt of this message using 2 on your phone key pad.

• Message: 3-STAND UP
  o This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  o My name is _______ and my phone number is _______.
  o I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  o There is a RISK of DAM FAILURE at Perry River Dam and all persons should now be evacuated from the Perry River potential inundation areas (not within 200m from the River Bank) and moved to high ground
  o Please remain calm, and stand by for further instructions
  o Please confirm receipt of this message using 3 on your phone key pad.

• Message: 4-STAND DOWN
  o This is the Manager (or delegate) of Mount Rawdon Gold Mine.
  o My name is _______ and my phone number is _______.
  o I am calling with respect to the Perry River Dam Emergency Action Plan (EAP).
  o This is a STAND DOWN ALERT.
  o There is NO LONGER an imminent RISK OF FAILURE of Perry River Dam
  o Conditions are normal and you are able to return to your residences, taking care and reporting potential relevant hazards
  o Please confirm receipt of this message using 4 on your phone key pad.

5.5 Incident Reporting

All incidents are to be reported in accordance with the incident reporting procedures of Evolution. Incidents and accidents associated with the management of the Perry River Dam shall be reported (via an Emergency Event Report, EER) to the administering authority (DNRME). The timing of
The submission of each EER to DNRME shall be within 30 business days of the end of the event. Details of the EER shall be in accordance with DNRME (2013), including the following:

- Description of the event
- Time, date and description of actions taken
- Regular dam levels recording
- Description of the observed damage
- Photographs, sketches and drawings
- Details of communications and actions taken during the emergency
- Description on how the EAP was implemented, comments on adequacy and deficiencies of the EAP and improvements/updates for the EAP.

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6  INSPECTION AND SURVEILLANCE RECOMMENDATIONS

6.1  Training

Staff involved and responsible for the dam inspections and surveillance shall undertake a recognised dam operator’s course and demonstrate appropriate knowledge and skills to ensure that the ongoing monitoring and surveillance of the dam is to an appropriate level to fulfil this EAP requirements.

Specific training on dam operation and surveillance is available through several organisations including:

- The National Register on Vocational Education and Training (VET) in Australia; National Water Training Package (NWP); Dam Operations Skill Set (NWPSS00004), refer: https://training.gov.au/Training/Details/NWPSS00004

The Queensland Government Department of Natural Resources, Mines and Energy (DNRME) does also from time to time offer training courses.

Alternatively, there is also an opportunity to utilise the Perry River Dam Engineer to provide on-site training regarding dam operation and surveillance.

6.2  Inspections

It is recommended that inspection of the dam be undertaken weekly.

As outlined in Tables 5 to 9, above, more frequent inspections may be required under EAP activation conditions. Input should be sought from the Perry River Dam Engineer regarding the required frequency and level of detail of inspections during such circumstances.

A template form for performing monthly (or more frequent) inspections is provided in Appendix C herein. It is noted that personnel undertaking inspections should be initially provided with on-site support to maintain consistency in understanding of inspection requirements.

6.3  Special Inspections

In an emergency situation, special inspections should be undertaken as needed by a suitably qualified and experienced dam engineer.

6.4  Other Inspections

Requirements for other inspections (beyond those specifically required during an emergency situation) are beyond the scope of this EAP and will need to be addressed within the broader Standing Operating Procedures for Perry River Dam (yet to be developed at the time of preparation of this EAP).
7 ABBREVIATIONS AND KEY DEFINITIONS

7.1 Abbreviations

The following abbreviations are utilised within this EAP.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Act</td>
<td><em>The Water Supply (Safety and Reliability Act 2008</em></td>
</tr>
<tr>
<td>AHD</td>
<td>Australian Height Datum</td>
</tr>
<tr>
<td>BoM</td>
<td>Bureau of Meteorology</td>
</tr>
<tr>
<td>DCF</td>
<td>Dam Crest Flood</td>
</tr>
<tr>
<td>DMG</td>
<td>Disaster Management Group</td>
</tr>
<tr>
<td>DNRME</td>
<td>Department of Natural Resources, Mines and Energy</td>
</tr>
<tr>
<td>DM</td>
<td>Disaster Management</td>
</tr>
<tr>
<td>EA</td>
<td>Emergency Alert</td>
</tr>
<tr>
<td>EAP</td>
<td>Dam Owner's Emergency Action Plan</td>
</tr>
<tr>
<td>EER</td>
<td>Emergency Event Report</td>
</tr>
<tr>
<td>EMAF</td>
<td>Emergency Management Assurance Framework</td>
</tr>
<tr>
<td>FSL</td>
<td>Full Supply Level</td>
</tr>
<tr>
<td>LDC</td>
<td>Local Disaster Coordinator</td>
</tr>
<tr>
<td>LG</td>
<td>Local Government</td>
</tr>
<tr>
<td>ML</td>
<td>Mega Litre</td>
</tr>
<tr>
<td>PAR</td>
<td>Population at Risk</td>
</tr>
<tr>
<td>PMF</td>
<td>Probable Maximum Flood</td>
</tr>
<tr>
<td>PMP</td>
<td>Probable Maximum Precipitation</td>
</tr>
<tr>
<td>QDMA</td>
<td>Queensland Disaster Management Arrangements</td>
</tr>
<tr>
<td>QDSMG</td>
<td>Queensland Dam Safety Management Guideline</td>
</tr>
<tr>
<td>QPS</td>
<td>Queensland Police Service</td>
</tr>
<tr>
<td>SES</td>
<td>State Emergency Services</td>
</tr>
</tbody>
</table>
### 7.2 Definitions

The following definitions are key concepts used within this EAP.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Act</strong></td>
<td><em>The Water Supply (Safety and Reliability Act 2008)</em></td>
</tr>
<tr>
<td><strong>EAP Activation</strong></td>
<td>Is defined as the actions undertaken by Evolution as per the EAP in response to a dam event if,</td>
</tr>
<tr>
<td></td>
<td>1. Persons or property may be harmed, because of the event; and,</td>
</tr>
<tr>
<td></td>
<td>2. A coordinated response involving two or more of the following relevant entities is likely to be required to respond to the event;</td>
</tr>
<tr>
<td></td>
<td>- Each local government whose local government area may be affected if a dam hazard event or emergency event were to happen for the dam;</td>
</tr>
<tr>
<td></td>
<td>- The DNRME chief executive (the Regulator)</td>
</tr>
<tr>
<td></td>
<td>- Another entity the dam owner considers appropriate i.e QPS, QFES.</td>
</tr>
<tr>
<td><strong>Alert</strong></td>
<td>The first stage of emergency response whereby a heightened level of vigilance is maintained due to the possibility of an emergency event occurring. Action is required to ensure the situation by someone capable of assessing the potential threat to the dam.</td>
</tr>
<tr>
<td><strong>Approved Emergency Action Plan</strong></td>
<td>Refers to an emergency action plan that is approved under Section 352I (1) (a) or taken to be an approved emergency action plan under section 352Q (2).</td>
</tr>
<tr>
<td><strong>Dam Hazard</strong></td>
<td>Refers to a reasonably foreseeable situation or condition that may:</td>
</tr>
<tr>
<td></td>
<td>- (a) Cause or contribute to the failure of the dam, if the failure may cause harm to persons or property; or,</td>
</tr>
<tr>
<td></td>
<td>- (b) Require an automatic or controlled release of water from the dam, if the release of the water may cause harm to persons or property.</td>
</tr>
<tr>
<td><strong>Dam Hazard Event</strong></td>
<td>An event arising from a dam hazard if persons or property may be harmed because of the event; and,</td>
</tr>
<tr>
<td></td>
<td>- (a) A coordinated response involving 2 or more of the relevant entities; and,</td>
</tr>
<tr>
<td></td>
<td>- (b) The event is not an emergency event.</td>
</tr>
<tr>
<td><strong>Disaster Management Group</strong></td>
<td>A district group established under the <em>Disaster Management Act</em>, whose disaster district under the Act could, under the plan be affected by a dam hazard.</td>
</tr>
<tr>
<td><strong>Emergency Alert</strong></td>
<td>The Emergency Alert (EA) system is a national telephone warning system administered in Queensland by the Queensland Fire and Emergency Service. The EA system provides emergency authorities with a rapid mass notification service to deliver preformatted messages via landline and mobile telephones within a defined geographic area.</td>
</tr>
<tr>
<td><strong>Emergency Event</strong></td>
<td>An event arising from a dam hazard if persons or property may be harmed because of the event; and any of the following apply;</td>
</tr>
<tr>
<td></td>
<td>- (i) A coordinated response involving 2 or more of the relevant entities;</td>
</tr>
<tr>
<td></td>
<td>- (ii) The event may arise because of a disaster situation declared under the <em>Disaster Management Act 2003</em>;</td>
</tr>
<tr>
<td></td>
<td>- (iii) An entity performing functions under the State disaster management plan may, under the plan, require the owner of the dam to give the entity information about the event.</td>
</tr>
<tr>
<td></td>
<td>(refer 352A of the Act)</td>
</tr>
</tbody>
</table>
### Table 10
**Key Definitions (Cont’d)**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency Event Report</strong></td>
<td>A report on the performance of the dam and functioning of the EAP during an emergency event which is presented to the chief executive prior to the end of the event at the request of the chief executive.</td>
</tr>
<tr>
<td><strong>Failure Impact Assessment</strong></td>
<td>It is a process under the Water Supply (Safety and Reliability) Act 2008 to determine the number of people whose safety could be at risk should the dam fail. This assessment must be certified by a Registered Professional Engineer Queensland (RPEQ) in accordance with the Water Supply (Safety and Reliability) Act 2008.</td>
</tr>
<tr>
<td><strong>Hazard</strong></td>
<td>A source of potential harm, or situation with a potential to cause loss.</td>
</tr>
<tr>
<td><strong>Lean Forward</strong></td>
<td>The stage of emergency response prior to ‘stand up’ whereby a heightened level of situational awareness of a disaster event (either current or impending) is maintained and state of readiness is developed. Personnel at dams are on standby; ready to activate the next stage of the EAP.</td>
</tr>
</tbody>
</table>
| **Local Disaster Management Group** | Local disaster management groups are established to support local government disaster management activities. The local group is supported by the relevant district group if and when disaster management activates exceed the capacity of the local group. The functions of this local group include (but are not limited to):  
  - Develop, regularly review and assess effective disaster management;  
  - Assist local government for its area to prepare a local disaster management plan;  
  - Ensuring the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovery from a disaster;  
  - Identify, and coordinate the use of resources that may be used for disaster operations;  
  - Manage disaster operations in the area under policies and procedures decided by the State Group; and,  
  - Ensuring disaster management operations in the area are consistent with the State Group’s SPF for disaster management for the State. |
| **Notice**                     | A statement provided to the dam owner from the local government and/or the disaster management group on the outcomes of the assessment of the EAP.                                                              |
| **Early Warning Notification System** | Non-government, commercial subscription-based warning/alert system that provides SMS, landline, email, and social media alert messages.                                                                                      |
| **Population at Risk (PAR)**   | The number of people calculated under the failure impact assessment guideline, whose safety will be at risk if the dam fails.                                                                                |
| **Probable Maximum Precipitation (PMP)** | The theoretical greatest depth of precipitation for a given duration that is physically possible over a particular drainage basin.                                                                             |
| **Referable Dam**              | A dam will be referable dam if;  
  (a) A failure impact assessment of the dam is required to be carried our under the Act; and,  
  (b) The assessment states the dam has a category 1 or category 2 failure impact rating; and,  
  (c) The chief executive has, under section 349 of the Water Supply (Safety and Reliability) Act 2008, accepted the assessment. |
<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Down</td>
<td>The final stage of emergency response when there is no longer a requirement to respond to the event and the threat is no longer present. At ‘stand down’ there is a transition from responding to an event back to normal core business and/or recovery operations.</td>
</tr>
<tr>
<td>Stand Up</td>
<td>The operational site following ‘lean forward’ whereby resources are mobilised, personnel are activated and operational activities commenced. Moving into this operational state triggers the requirement for an emergency event.</td>
</tr>
<tr>
<td>Sunny Day Failure</td>
<td>The failure of a dam without any other general flooding or spillway discharges.</td>
</tr>
</tbody>
</table>
9.1 Appendix A has been redacted
9.2 Appendix B: Dam Safety Review Report
9.3 Appendix C: Inspection Templates
9.4 Appendix D: Failure Impact Assessment
<<PROVIDED IN SITE COPY ONLY>>