



SMEC INTERNAL REF. 30034151

Bundaberg East Levee

# EPW00390 – Emergency Response Plan (30034151-PLA-2.1-001) – Revision C

Client Reference No. EPW00390

Prepared for: Department of Housing, Local Government, Planning and Public Works (DHLGPPW)

23 May 2024

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DRAFT

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## Foreword

This Draft Emergency Response Plan (ERP) has been prepared for the Bundaberg East Levee project. This ERP should be read in conjunction with the Draft O&M Manual for the Bundaberg East Levee. The Draft ERP has been prepared on the basis of information available at the time of writing, should be further developed and finalised during subsequent stages of design and construction implementation.

The Draft ERP, together with the levee O&M Manual, are being developed as part of design development for the Bundaberg East Levee in accordance with guidance given by the International Levee Handbook (CIRIA, 2013). The first version of the ERP and O&M manual will not be formally issued until after completion of construction.

**The Draft ERP has been sent Bundaberg Regional Council (BRC), Bundaberg Local Disaster Management Group (LDMG) and Bundaberg District Disaster Management Group (DDMG) for review and comment.** Critically, the roles and responsibilities in the ERP need to be agreed as some of these may be held by members of the Local Disaster Management Group. Wider consultation with other third parties that hold responsibility for key infrastructure (i.e. roads, rail and utilities) may also be required. The outcomes of these consultations will need to be reflected in this ERP prior to first issue.

Section 9 contains a list of actions and inputs to this ERP, to be undertaken by DHLGPPW, Bundaberg Regional Council and other external organisations during subsequent stages of the project.

Details of the ERP revision status are given in the next section of this plan. Subject to confirmation of Bundaberg Regional Council's continued support for the project, BRC is responsible for ensuring this ERP is maintained and updated in accordance with any changes to legislation or guidance. This includes keeping contact information up to date, and obtaining buy-in from LDMG and DDMG, as required. Evidence of approval should be included in the final issue and any subsequent revisions.



# Document Control and Review

## Revision Status of the ERP

Revision number	Date	Revision Description
DRAFT Document	May 2024	ERP under development as part of the on-going design of Bundaberg East Levee

## Controlled Copy Distribution List

Controlled copy number	Position	Location
1	Director Strategic Infrastructure	Bundaberg Regional Council offices, 190 Bourbong St, Bundaberg Central QLD 4670, Australia
2	LDMG Local Disaster Co-ordinator	Bundaberg Regional Council offices, 190 Bourbong St, Bundaberg Central QLD 4670, Australia
3	Levee Incident Manager	Bundaberg Regional Council offices, 190 Bourbong St, Bundaberg Central QLD 4670, Australia
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5	Gates and Pumping Stations Co-ordinator	Bundaberg Regional Council offices, 190 Bourbong St, Bundaberg Central QLD 4670, Australia

## Electronic Copy Distribution List

Position
Communications Officer
Chair of the Local Disaster Management Group
Queensland Police Service
Queensland Fire Department
Other BRC emergency response personnel – As required.

**Important Note:** On revision of the ERP an updated hard copy is to be issued to all persons listed in the Controlled Copy Distribution List. An updated electronic copy is to be issued to the Electronic Copy Distribution List.

The Director Strategic Infrastructure is responsible for ensuring controlled copies of the ERP are current.

The ERP shall be reviewed annually by BRC. Controlled copies of the ERP shall be stamped on each page to indicate that it is a controlled original copy. Controlled copies should be used for emergency response. Users are reminded that any uncontrolled documents may not be current and should not be used for emergency response.



# Glossary of Terms

Abbreviation/Acronym	Description
AHD	Australian Height Datum
ARI	Average Recurrence Interval
AWS	Australian Warning System
BEL	Bundaberg East Levee
BoM	Bureau of Meteorology
BRC	Bundaberg Regional Council
DDMG	District Disaster Management Group
DHLGPPW	Department of Housing, Local Government, Planning and Public Works
DSI	Director Strategic Infrastructure
EA	Emergency Alert
ERL	Emergency Response Level
ERP	Emergency Response Plan
GL	Ground Level
LDC	Local Disaster Coordinator
LDCC	Local Disaster Coordination Centre
LDMG	Local Disaster Management Group
LDMP	Local Disaster Management Plan
O&M	Operations & Maintenance
QAS	Queensland Ambulance Service
QFD	Queensland Fire Department
QPS	Queensland Police Service
RPEQ	Registered Professional Engineer Queensland
SES	State Emergency Services
SEWS	Standard Emergency Warning Signal
SOP	Standard Operating Procedure

# Definitions



Activation levels

The four levels of ERP activation are:

**Alert:** a heightened level of vigilance due to the possibility of an event in the area of responsibility. No action is required however the situation should be monitored by someone capable of assessing the potential of the threat.

**Lean Forward:** An operational state prior to ‘stand up’ characterised by a heightened level of situational awareness of a disaster event (either current or impending) and a state of operational readiness. Disaster coordination centres are on standby; prepared but not activated.

**Stand Up:** The operational state following ‘lean forward’ whereby resources are mobilised, personnel are activated, and operational activities commenced. Disaster coordination centres are activated.

**Stand Down:** Transition from responding to an event back to normal core business and / or recovery operations. There is no longer a requirement to respond to the event and the threat is no longer present.

The movement through these levels of activation is not necessarily sequential. It should be applied with flexibility and adaptability and be tailored to the location and event.

Triggering one of these levels of activation may not necessarily mean a similar activation of LDMG.

AWS / AWS levels

The Australian Warning system is a standardised colour coded system used by the State Emergency Services to communicate warnings and instructions to members of the public during an emergency. The AWS has been developed with a consistent set of hazard icons (shape, symbol, colours) for each warning level.

The three warning levels are:

**Advice (yellow):** There is a hazard in your area. There is no immediate danger. Stay informed, the situation could change.

**Watch and Act (orange):** There is a threat to lives and properties. Conditions are changing. Take action protect yourself and your family.

**Emergency Warning (red):** This is the highest warning level. You are in danger. Take action immediately. Any delay will put your life at risk.

The symbols relating to flooding are shown below:



BoM flood level classifications

The three levels of flooding are:

**Minor flooding:** This causes inconvenience such as closing of minor roads and the submergence of low-level bridges and makes the removal of pumps located adjacent to the river necessary.

**Moderate flooding:** This causes the inundation of low-lying areas requiring the removal of stock and/or the evacuation of some houses. Main traffic bridges may be closed by flood waters.

**Major flooding:** This causes inundation of large areas, isolating towns and cities. Major disruptions occur to road and rail links. Evacuation of many houses and business premises may be required. In rural areas, widespread flooding of farmland is likely.

# 1. Introduction

## 1.1 Project context

SMEC has been engaged by the Department of Housing, Local Government, Planning and Public Works (DHLGPPW) to undertake preliminary design for the Bundaberg East Levee (BEL) project.

The proposed site of the Bundaberg East Levee is along the South bank of the Burnett River in Bundaberg, Queensland. The area is currently mixed-use and includes urban industrial and residential areas. The project site area boundaries are Walla Street to the West, Bourbong Street and Cran Street to the South, and Bundaberg Sugar Mill to the East. The Northern boundary is the Burnett River.

Two creeks discharge into the Burnett River within the extents of the proposed levee, Saltwater Creek and Distillery Creek. To the South of the proposed levee alignment there is a fork in Saltwater Creek, at the point where Saltwater Creek meets with Bundaberg Creek. Saltwater Creek flows in an approximately southwest to northeast direction whilst Bundaberg flows approximately east to west. The confluence of these two creeks is to the Southwest of the Kendall Flat area, downstream of which the creek continues North as Saltwater Creek until it meets the Burnett River. Distillery Creek, to the Northwest, runs adjacent to the Bundaberg Sugar property.

Ground elevations across the site typically range from 2-11m AHD. The lowest lying areas are close to Bundaberg Creek and Distillery Creek.

## 1.2 The Bundaberg East Levee

The proposed Bundaberg East Levee will run parallel to the South bank of the Burnett River and across Saltwater Creek and Distillery Creek. The proposed floodwall is formed of two main segments, the City Alignment to the South and the Sugar Mill Alignment to the East (refer to Figure 1). The levee will comprise a concrete flood wall with a crest elevation of 9.5m AHD. This level has been set 300mm above the 100-year average recurrence interval (ARI) design flood elevation, to allow for a margin of error in the flood modelling and to provide a nominal freeboard allowance.

Pumping stations and flood gate structures are proposed at the crossing points for Saltwater Creek and Distillery Creek. Vertical lift gates will be used for both flood gate structures. Saltwater Creek is larger than Distillery Creek and has a greater contributing upstream catchment. As such, a more significant structure is required. A permanent pumping station, with equipment building has been proposed at both locations. The pumping station at Saltwater Creek will house three (duty assist and one standby) electric-motor-driven submersible axial pumps. While at Distillery Creek the pumping station will house two (duty standby) electric-motor-driven submersible axial pumps.

An indicative figure showing the general arrangement plan of the proposed scheme is included in Figure 1.



Figure 1: Bundaberg East Levee – Concept Design Location Plan (NTS)

## 1.3 Purpose

The purpose of this Emergency Response Plan (ERP) is:

- To define roles, responsibilities and actions that will be taken in the event of a flood emergency. The ERP considers and plans response in the lead-up, during and following an emergency event.
- To allow BRC to act quickly and effectively in a flood emergency situation.

This ERP sits within the broader emergency response framework for Bundaberg. This ERP has been developed to be consistent with and to support the objectives of BRC's Local Disaster Management Plan (LDMP).

This Draft Emergency Response Plan has been developed as part of the preliminary design phase of the Bundaberg East Levee project. The ERP will require review and update as part of future project phases and will be issued alongside the O&M Manual upon construction completion.

## 1.4 Scope

The Bundaberg East Levee ERP covers:

- Emergency response to a flood emergency for areas that will be given flood protection by the Bundaberg East Levee.
- Trigger levels for activation of a tiered response to a potential or imminent flood event.
- Notification, warning and communication protocols
- Inspection, monitoring and reporting protocols
- Other relevant information that may assist in a flood emergency.

The ERP does not cover:

- Response to a potential security risk or threat.
- Regular maintenance activities, which are/will be covered by the associated O&M Manual.

## 1.5 Local and District Disaster Management Groups

Disaster management in Queensland, including flooding, is coordinated by local and district disaster management groups.

- The District Disaster Management Group (DDMG) for Bundaberg East Flood Levee is the Bundaberg DDMG.
- The Local Disaster Management Group (LDMG) is Bundaberg LDMG.

## 1.6 Related Documents

The documents listed below are associated with disaster management and disaster management planning and should be referred to for the wider context of this ERP.

### 1.6.1 Disaster Management in Queensland

The following legislation, policies, guidelines and plans are applicable to disaster management in Queensland (current at the time of writing):

- Queensland Disaster Management Act 2003
- Queensland Disaster Management Regulations 2014
- Queensland Disaster Management Strategic Policy Statement 2016
- Queensland Prevention, Preparedness, Response and Recovery (PPRR) Disaster Management Guideline 2018
- Queensland Strategy for Disaster Resilience 2022-2027



- Standard for Disaster Management in Queensland 2019
- Queensland Disaster Management Plan 2023 (Interim)
- Service Level Specification for Flood Forecasting and Warning Services for Queensland, Version 3.4, 2022 (BOM)

### 1.6.2 Disaster Management in Bundaberg

The following plan is specific to the Bundaberg District:

- Bundaberg Local Disaster Management Plan 2023

A document hierarchy is presented in Figure 2.

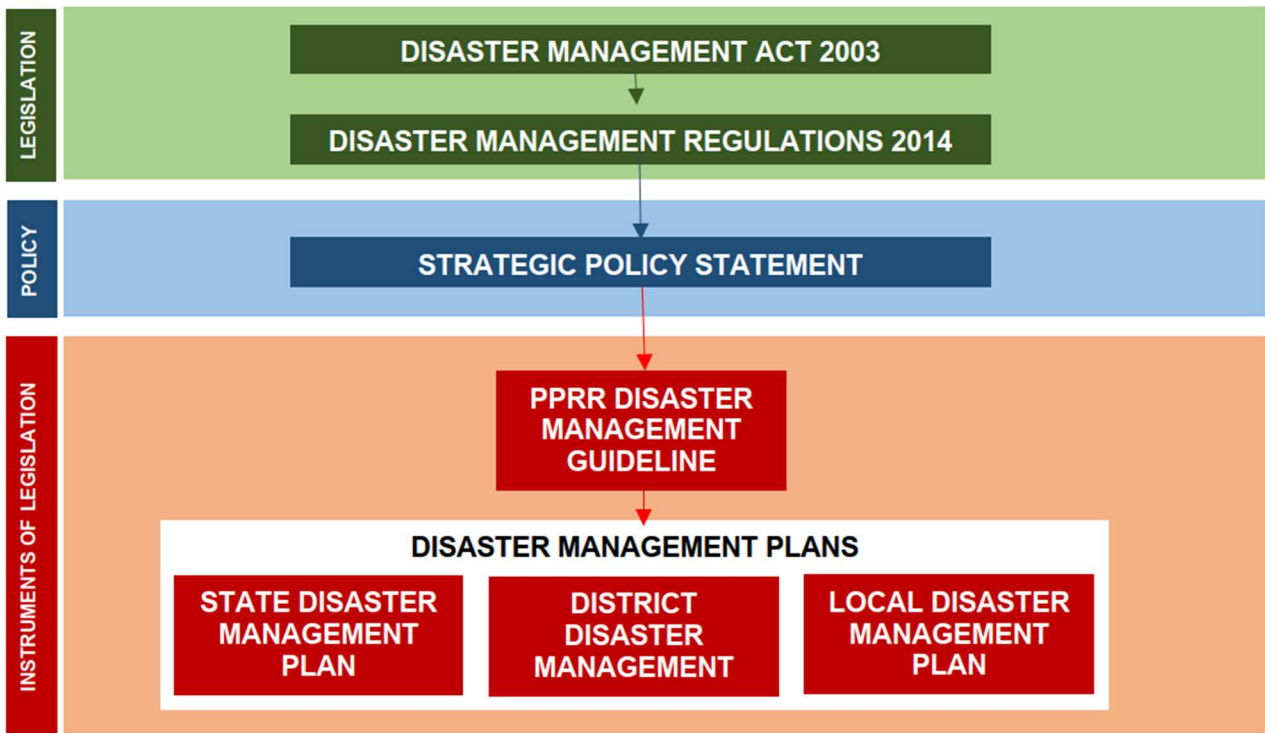


Figure 2: Document hierarchy for Disaster Management (Bundaberg LDMP, 2023)

### 1.6.3 Bundaberg East Levee Project Documents

The following documents associated with the Bundaberg East Levee project:

- Bundaberg East Levee O&M Manual (DRAFT)

## 2. Procedural Flow Chart and Notification List

### 2.1 Procedural flow chart

A procedural flow chart is to be developed and added to this section of the ERP.

The procedural flow chart summarises actions to be taken in an emergency.

Third parties, including individuals and organisations who will be contacted or notified in the event of an emergency are to be identified in the procedural flow chart. The priority of internal and external notifications must be clearly shown, along with the nominated personnel for issuing notifications to each party.

Roles, names and contact information are to be included or referenced.

The procedural flow chart should be developed by or in consultation with the levee owner and operators. This is preferably undertaken during the construction phase. The procedural flow chart is to be updated during each review of the ERP (See Section 8.1).

The procedural flow chart must consider the different possible emergency events, as discussed in Section 5 of this ERP. It may be necessary to develop separate procedural flow charts for each scenario.

### 2.2 Notification list

A DRAFT notification list is included in Appendix A.

The notification list includes all nominated persons with responsibility under this ERP, as well as other organisations and third parties to whom notification should be given in an emergency event.

The responsibility for notifying each entity in an emergency situation is detailed in Section 5 of this ERP, in order of priority.

The notification list is to be finalised in consultation with DHLGPPW, BRC and Bundaberg LDMG prior to completion of the works.

The list is to be reviewed and updated as part of each ERP revision, as discussed in Section 8.1.

### 2.3 Resource Contacts

A PLACEHOLDER for a resource contact list is included in Appendix B.

The resource contact list is to include businesses, suppliers and/or persons with whom contact may be required/useful in an emergency event. The list is not intended to be exhaustive and BRC are not limited to using the listed contacts.

The Resource Contact list should be reviewed and updated as part of each ERP revision (See Section 8.1), to ensure that it remains current.



### 3. Responsibilities

Bundaberg East Levee will be owned and operated by Bundaberg Regional Council.

The Director of Strategic Infrastructure will be responsible for the implementation and revision of this Emergency Response Plan.

The following roles hold responsibilities under the plan:

- Director of Strategic Infrastructure
- Local Disaster Co-ordinator (Bundaberg LDMG)
- Levee Incident Manager
- Levee Structure Co-ordinator
- Gates and Pumping Stations Co-ordinator
- Communications Officer

Note: The responsibilities of Queensland emergency response agencies under the Bundaberg LDMP are not covered by this ERP. The LDMG Local Disaster Co-ordinator acts as the interface with these agencies.

Prior to completion and first issue of this ERP, these roles should be reviewed to align with BRC’s organisational structure. The roles and titles may be amended to align with existing or planned roles/positions within BRC. An organogram is to be added to this ERP to clearly show internal lines of communication and those with Bundaberg LDMG and other organisations.

A description of the responsibilities assigned to each role in the ERP is given in the table below.

Position	Responsibilities
Director Strategic Infrastructure (DSI)	<ul style="list-style-type: none"> <li>• Ensure that an approved ERP is in place and kept up to date.</li> <li>• Liaise with LDMG on the ERP content and alignment with the LDMP.</li> <li>• Distribute the ERP in accordance with the plan.</li> <li>• Ensure staff are assigned to the roles identified in the ERP. Arrange ERP training.</li> <li>• Activate the ERP in an emergency event in accordance with the defined trigger levels. Direct the LIM to take action in accordance with the ERP.</li> <li>• Monitor all emergency events.</li> <li>• Authorise deployment of personnel, equipment and plant. Authorise activation of gates and pumps.</li> <li>• Receive event notifications from the LIM. Update and liaise with the LDC, as required.</li> <li>• Advise the LDC of likely or necessary evacuations and the areas affected.</li> <li>• Approve external communications, as appropriate.</li> <li>• Maintain event record and undertake post-event reporting.</li> <li>• Review and approve the post-event report. Trigger ERP updates in accordance with lessons learned.</li> </ul>
Levee Incident Manager (LIM)	<ul style="list-style-type: none"> <li>• Receive and review all data and information received from the Levee Structure Co-ordinator and Gates &amp; PS Co-ordinator. Disseminate relevant information to the DSI and LDC.</li> <li>• Communicate with the LSC and GPSC to keep them informed of status, decisions and/or actions being taken in response to the event.</li> <li>• Support the Co-ordinators with ERP implementation and staff co-ordination and administration, as required.</li> <li>• Monitor/delegate and oversee monitoring and recording conditions, to create an event timeline/log of water levels and BoM warnings. The log should use data from BoM, automated monitoring gauges and manual monitoring gauges. Receive regular updates and review data throughout the event.</li> </ul>

	<ul style="list-style-type: none"> <li>• Assess likely areas that would be inundated in the event of levee overtopping. Communicate these to the DSI and LDC.</li> <li>• Record actions and decisions. To include material and plant authorisation and staff assignment.</li> <li>• Maintain event record and undertake post-event reporting.</li> </ul>
<p>Levee Structure Co-ordinator (LSC)</p>	<ul style="list-style-type: none"> <li>• Acting in accordance with the O&amp;M manual, safe working procedures and the ERP during emergency events.</li> <li>• Co-ordination of staff for levee inspection and monitoring. Directing and tracking staff activities. Ensure inspection and monitoring staff are suitably qualified. Arrange RE PQ assistance, as required.</li> <li>• Ensuring that staff have appropriate equipment and PPE to act safely and in accordance with the O&amp;M manual and ERP.</li> <li>• Co-ordinate a full inspection during the preliminary response phase. Review inspection reports and initiate/co-ordinate action on any existing issues. Ensure the removal of any hazardous materials.</li> <li>• Establish a Staging Area for emergency repair works during a flood event. To include materials and plant for repairs and temporary access, PPE, portable pumps and lighting.</li> <li>• Review monitoring reports and initiate/co-ordinate action on any structural issues that develop over the course of the emergency event.</li> <li>• Reporting on manual and/or automated gauge readings to the LIM. Keep the LIM informed of the developing situation. Collect reports from monitoring staff and pass to the LIM.</li> <li>• Maintain contact with the Emergency Services Staging Area.</li> <li>• Monitor and record actions taken and decisions made, including photographic records, materials and equipment use, personnel deployment.</li> <li>• Co-ordinate post-event inspections, removal of temporary defences.</li> <li>• Post-event reporting.</li> </ul>
<p>Gates and Pumping Stations Co-ordinator (GPSC)</p>	<ul style="list-style-type: none"> <li>• Acting in accordance with the O&amp;M manual, safe working procedures and the ERP during emergency events.</li> <li>• Co-ordination of staff for operating gates and pumps. Directing and tracking staff/operator activities. Ensuring operators are suitably qualified. Arrange RE PQ assistance, as required.</li> <li>• Ensuring that staff have appropriate equipment and PPE to act safely and in accordance with the O&amp;M manual and ERP.</li> <li>• Ensure that the necessary equipment is on-site during the preliminary response phase.</li> <li>• Inspect and test pumps during the preliminary response phase. Report any issues when operating the gates or pumps and action repairs. Ensure emergency pumps are on standby.</li> <li>• Monitoring of SCADA.</li> <li>• Keeping the LIM informed of the developing situation. Collect reports from monitoring staff and pass to the LIM.</li> <li>• Maintain contact with the Emergency Services Staging Area.</li> <li>• Monitor and record actions taken and decisions made, including photographic records, materials and equipment use, personnel deployment. Record details of gate and pump operation.</li> <li>• Post-event reporting.</li> </ul>
<p>Local Disaster Co-ordinator (LDC) (LDMG)</p>	<ul style="list-style-type: none"> <li>• Receive and review all data and information received from the LIM.</li> <li>• Advise the LDMG of the developing issue or event.</li> <li>• Alert/advise emergency response agencies to the developing situation and possible need to mobilise/implement emergency actions.</li> <li>• Implement the LDMP, as required.</li> <li>• Co-ordinate emergency response and establish Emergency Services Staging Area, including provision of resources.</li> </ul>

- Approve media alerts and information.
  - Approve warning and evacuation messages.
  - Assist emergency response agencies with evacuations and/or event information to inform co-ordination of evacuations.
  - Maintain event record and undertake post-event reporting.
- 

Communications Officer  
(CO)

- Manage communications in accordance with the BRC LDMG Communication Plan.
  - Assist the LDMG Local Disaster Co-ordinator with the dissemination of information.
  - Contact with the press, including information for TV and radio broadcasts, news websites and social media.
  - Contact with the public, including persons affected by flooding.
  - Assisting with the coordination of notifications to residents in affected areas including notification to stand-by, prepare to evacuate and evacuate.
  - Liaising with external agencies affected by the flooding.
  - Liaising with authorities and third parties to keep them informed of gate and pump operations.
  - The communications officer should maintain a log of actions and timeline record, including decisions made over the course of the event.
  - Post-event reporting.
-

## 4. Operational Procedures

### 4.1 Overview of the Flood Levee

An overview of the flood levee is to be added in this section of the Emergency Response Plan, including the overall levee arrangement, details of the pumping stations and gates, cross sections, long sections and/or elevations. The long section drawing/s should include chainages and it is recommended that these are marked at regular intervals on the physical levee to facilitate communication when executing the ERP.

Any drawings that are referenced should be added to the Appendices for ease of access in an emergency event.

### 4.2 Activation of the ERP

**Bundaberg Regional Council is responsible for activating the ERP** in an emergency event in accordance with the defined trigger levels (Section 5.1). The specific responsibilities of staff within BRC are described in Section 3 of this ERP and expanded upon for the different ERP activation levels in Section 5.

The Local Disaster Co-ordinator will act as the primary BRC contact within the LDMG, and will initiate **LDMP activation**, as required.

It is noted that ERP activation and LDMP activation are separate, albeit closely linked. Inclusion of the LDC in ERP activation and escalation is crucial. It is recommended that the LDMG be consulted on activation of the ERP as part of ERP development/finalisation.

### 4.3 Mobilisation

The Director of Strategic Infrastructure at BRC shall be responsible for nominating appropriate staff to fill the roles defined in this ERP. This is with the exception of the LDC and CO, which are existing roles under the LDMP. The scope of these roles shall be expanded to include ERP execution.

When the ERP is activated by the DSI, the LIM will co-ordinate a team meeting to include the following members of staff:

- Director of Strategic Infrastructure
- Local Disaster Co-ordinator (Bundaberg LDMG)
- Levee Incident Manager
- Levee Structure Co-ordinator
- Gates and Pumping Stations Co-ordinator
- Communications Officer

The meeting will seek to establish:

- Lines of communication between those with responsibility under the ERP
- The estimated flood magnitude
- The emergency response level (see Section 5)
- Immediate actions and staff responsible for these

### 4.4 Embankment Monitoring

Inspection and monitoring procedures are to be developed as the project progresses. These should be in accordance with recommendations given in the International Levee Handbook (CIRIA, 2013), and will be included in Appendix E of this ERP. The inspection and monitoring procedures will include details of the necessary actions to be taken at each of the emergency response levels defined in Section 5.

## 4.5 Gate and Pumping Station Operation

Gate and pumping station procedures are to be developed as the project progresses. The plan for emergency operation of the pump stations should consider:

- Criteria for gate closure and start/stop criteria for commencing pumping operations.
- Criteria for gate opening.
- Fuel supply, transport and on-site storage, resiliency of supply and alternative options for fuel provision.
- Procedures for re-fuelling operations during an emergency event.
- Monitoring requirements.
- Details of automatic and manual operation of the gates and pumps.
- Actions to be taken in the event of pump/gate failure including manual pumping and provision/operation of temporary pumps.
- Inspection, testing and maintenance works during normal operation/outside of an emergency event.
- Cleaning, inspection, testing and maintenance/repair works following activation of the ERP.

## 4.6 Staging Area

The levee staging area is to be established during the 'Lean Forward' phase of ERP activation. The levee staging area is separate from and additional to the emergency services staging area, as may be required by the LDMP. The purpose of the levee staging area is to ensure availability of material and equipment required to quickly execute emergency repair works to the levee during a flood event, as well as associated items such as PPE, portable pumps and lighting.

It is the responsibility of the levee structure co-ordinator to set-up the levee staging area. The operational procedures will define the preferred staging area location, as well as alternative locations if the preferred location cannot be made available. The procedures will include details of the material and equipment to be supplied to the staging area (to be listed in Appendix C), as well as potential suppliers (to be listed in Appendix B).

## 4.7 Traffic Management

Traffic management plans and procedures are to be developed as part of this ERP. Road closures should be considered where there is a potential hazard to users, who may underestimate the depth and/or velocity of flood waters and so attempt to use roads that have become unsafe. The flooding of roads may also impact routes for provision of materials, fuel, and access to the levee for inspections or emergency works.

Inundation maps should be reviewed to confirm which roads are likely to be flooded when the levee is functioning as designed (i.e. no overtopping/damage), and those that will be flooded in the event of levee damage or breach. The likely depth of inundation and requirement for road closures should be assessed for different flood magnitudes and ERP activation levels. The procedures should identify alternative routes in the event that the preferred access route has been inundated. Criteria for closing roads should be defined, as well as operational procedures for doing so. This should include diversion plans, provision of signage and road barriers, implementation plans, frequency of review/inspection.

Once developed, this ERP should be reviewed in light of the proposed traffic management plans, in particular Sections 3 and 5.

## 4.8 Post-event Operations

This section of the ERP considers the steps necessary to return the levee to normal operation following ERP activation.

### 4.8.1 Stand Down

The Director of Strategic Infrastructure will confirm when Stand Down is to take place, in accordance with Section 5.1. Section 5.8 identifies staff responsibilities upon stand down.

The operational procedures should identify criteria to trigger stand down, as well as the point at which the staging area can be demobilised and at which monitoring may cease.

#### **4.8.2 Recovery Operations**

Recovery operations will be undertaken in accordance with the LDMP. No additional or specific recovery operation tasks (i.e. clean-up, pumping floodwaters, support to residents, etc.) are identified in this ERP. The levee ERP team shall support the LDC as requested through provision of information, communication support and other tasks as required.

#### **4.8.3 Post-event Inspections and Damage**

The ERP team are responsible for recording any damage that occurred to the levee, gates and/or pumps during the flood event. This includes the location and details of structural damage, emergency repairs and/or other temporary measures installed over the course of the flood event. Temporary or emergency measures should not be retained in the longer term and the ERP team shall initiate planning for permanent solutions. A full inspection of the levee by a suitably experienced RPEQ should be arranged as soon as possible after water levels in the river have dropped sufficiently.

The gates and pumping stations should be inspected and tested. Any required maintenance or repair should be scheduled at the earliest possible time. Materials used during the event should be checked and replenished for future use and additional fuel should be removed from pumping stations, as appropriate.

#### **4.8.4 Reporting**

Requirements for post-event reporting are detailed in Section 6.3 of this ERP.

## 5. Emergency Events and Actions

### 5.1 Overview of Emergency Response Levels

Emergency Response Levels are defined in the table below for different flood risk scenarios. The actions to be taken depend on the ERL and have been defined in the subsequent parts of this section of the ERP, as cross-referenced in the table. Note that any outstanding actions from the preceding ERL may need to be completed if not undertaken prior to ERL escalation. Record keeping in accordance with Section 6.1 is required throughout.

Trigger levels are to be defined using flood hydrograph information from the hydrology study. These must be based on a post-construction scenario which takes the levee into consideration.

Trigger levels will be based on the Burnett River Bundaberg gauge, reference 039352, and both datum and mAHD levels are specified for the gauge in the table below. It may, however, be prudent to also include monitoring of upstream gauges, along with high-level information on flood travel times and flood level relationships between upstream gauge levels and river levels at Bundaberg. This should be considered in ERP development. Any action in response to readings in the upper catchment must take into consideration the presence of Paradise Dam (as mentioned below). Flooding downstream of the dam will be significantly impacted by reservoir levels prior to the rainfall event. Only flood waters being discharged downstream of the dam will impact upon flooding in Bundaberg East.

Flood Risk Description	Activation Status	Emergency Response Level (ERL)	Burnett River Bundaberg Gauge Level (Gauge datum)	Burnett River Bundaberg Gauge Level (mAHD)	ERP Section
BOM Flood Watch – Early information on potential flood events *	Pre-ALERT	-	N/A	N/A	-
Burnett River Flood Warning issued by BoM downstream of Paradise Dam **	ALERT	1	N/A	N/A	Section 5.2
Flood waters arrive in Bundaberg. Flood waters are within <b>XXX</b> metres of the levee crest and rising.	LEAN FORWARD	2	<b>XXX</b>	<b>XXX</b>	Section 5.3
Flood waters are approaching the levee crest and rising ***	STAND UP	3	<b>XXX</b>	<b>XXX</b>	Section 5.4
Flood waters overtop the levee crest	STAND UP	4	<b>XXX</b>	<b>XXX</b>	Section 5.5
Levee structural problems	STAND UP	5	N/A	N/A	Section 5.6
Levee breach	STAND UP	6	N/A	N/A	Section 5.7
The event has passed, flood waters have receded and any breaches have been repaired.	STAND DOWN	0	<b>XXX (falling)</b>	<b>XXX (falling)</b>	Section 5.8

\* Flood Watch alerts issued by BoM to inform early ramp-up / pre-ALERT activation.

\*\* It is noted that many Minor, Moderate and Major flood warnings issued by BOM for the upper catchment of the Burnett River will not require activation of the ERP, as they may not result in significant outflows from the reservoir (subject to water levels prior to the event).

\*\*\* This level of activation may be triggered earlier at the discretion of the DSI based on forecast information, to provide additional lead time, rather than solely relying on observations / gauge levels.



## 5.2 Burnett River Flood Warning issued by BoM – ALERT

ERL description: A minor, moderate or major flood warning has been issued by BoM for the Burnett River downstream of Paradise Dam. A flood event is expected and preparatory action is required.

Role	Actions	Internal Notifications	External Notifications
Director of Strategic Infrastructure	<ul style="list-style-type: none"> <li>Activate the Emergency Response Plan.</li> <li>Ensure adequate staffing of emergency response roles, including plans for staff rotation, as required. Establish comms with LDC and LIM.</li> <li>Check and confirm preliminary flood estimate information and level. Monitor ERL and advise LIM and LDC of the anticipated level of response, and any changes to the ERL.</li> <li>Notify the LDMG that the ERP is being activated and continue to provide updates.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>LIM</li> </ol>	<ol style="list-style-type: none"> <li>LDMG</li> </ol>
Levee Incident Manager	<ul style="list-style-type: none"> <li>Establish comms with LDC, LIM, LSC and GPSC. Schedule/co-ordinate a team meeting, as appropriate. Liaise with DSI and Co-ordinators on staffing.</li> <li>Monitor/oversee monitoring of water levels using BoM data, automated/manual gauge readings and on-site observations. Provide information to DSI and LDC.</li> <li>Provide information to the LSC and GPSC on the anticipated level of flood response based on information from DSI. Update LSC and GPSC on event status including any changes.</li> <li>Determine the expected inundation extents in the event of failure or overtopping and inform the LDC.</li> <li>Inform the CO of the ALERT status.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>DSI</li> <li>LSC and GPSC</li> <li>CO</li> </ol>	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Organise full pre-inspection of the levee and pre-emptively respond to any issues identified. Inform the LIM of any issues/damage identified, action being taken to rectify and/or additional monitoring required at specific locations.</li> <li>Make initial RPEQ contact / request RPEQ to be on standby.</li> <li>Review lists of stockpiles, suppliers and personnel. Make initial contact to confirm standby/availability of supplies.</li> <li>Remove any hazardous materials from the levee vicinity, including boats.</li> <li>Prepare for monitoring. Ensure monitoring equipment is available and teams are on standby.</li> <li>Maintain regular contact with LIM.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Gates and Pumping Stations Co-ordinator	<ul style="list-style-type: none"> <li>Organise full pre-inspection of pumping stations and respond to any issues. Inform the LIM of issues/action being taken to rectify.</li> <li>Organise testing of the gates and respond to any issues. Inform the LIM of issues/action being taken to rectify.</li> <li>Mobilise pumping equipment to Distillery Creek. Test mobile equipment.</li> <li>Review lists of stockpiles, suppliers and personnel. Make initial contact to confirm standby/availability of supplies.</li> <li>Maintain regular contact with LIM.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Local Disaster Co-ordinator (LDMG)	<ul style="list-style-type: none"> <li>Review event reports and information coming from the LIM and DSI.</li> <li>Consider notifying those on the evacuation notification list of ALERT status.</li> <li>Consider issuing YELLOW AWS warning message / Emergency Alert ADVICE warning message.</li> <li>Action road/rail closures or sign for possible closures as appropriate.</li> <li>Liaise with the CO and LDMG on any media releases.</li> <li>Review resourcing for emergency management. Liaise with QFD, QPS and LDMG as required.</li> </ul>	<ol style="list-style-type: none"> <li>CO</li> </ol>	<ol style="list-style-type: none"> <li>Emergency evacuees</li> <li>QFD</li> <li>QPS</li> <li>LDMG</li> </ol>
Communications Officer	<ul style="list-style-type: none"> <li>Liaise with the LDC on any media releases.</li> <li>Maintain a record of information received, internal/external comms and decisions.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> </ol>	<ol style="list-style-type: none"> <li>Public/media</li> </ol>

## 5.3 Flood waters arrive in Bundaberg – LEAN FORWARD

ERL description: Commencement of active response, including the closing of gates and activation of pumping stations.

Role	Actions	Internal Notifications	External Notifications
Director of Strategic Infrastructure	<ul style="list-style-type: none"> <li>Upgrade the ERL when triggered. Inform LDC and LIM and maintain comms.</li> <li>Review flood estimate information and level.</li> <li>Notify the LDMG of the change in response level and continue to provide updates.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>LIM</li> </ol>	<ol style="list-style-type: none"> <li>LDMG</li> <li>Media (support to CO)</li> </ol>
Levee Incident Manager	<ul style="list-style-type: none"> <li>Notify LSC and GPSC of the upgraded ERL.</li> <li>Receive updates from the LSC and GPSC and provide updates to the LDC and DSI.</li> <li>Liaise with DSI and Co-ordinators on staffing.</li> <li>Monitor/oversee monitoring of water levels using BoM data, automated/manual gauge readings and on-site observations.</li> <li>Review the expected inundation extents in the event of failure or overtopping.</li> <li>Inform the CO of the LEAN FORWARD status.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>DSI</li> <li>LSC and GPSC</li> <li>CO</li> </ol>	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Establish levee Staging Area and stockpile materials in preparation.</li> <li>Mobilise inspection/monitoring teams. Monitor water levels at least every 3-hours. Undertake additional inspections/monitoring at specific locations where warranted due to damage/high risk.</li> <li>Maintain regular contact with LIM. Inform the LIM immediately of any damage to the levee or other unusual observations and action being taken.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Gates and Pumping Stations Co-ordinator	<ul style="list-style-type: none"> <li>Ensure 24/7 staffing of the gates and pumping station.</li> <li>Co-ordinate gate closures.</li> <li>Co-ordinate pump operation.</li> <li>Co-ordinate fuel supplies to pump stations.</li> <li>Co-ordinate pump station monitoring.</li> <li>Co-ordinate response to any issues. Inform the LIM of issues/action being taken to rectify.</li> <li>Maintain regular contact with LIM.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Local Disaster Co-ordinator (LDMG)	<ul style="list-style-type: none"> <li>Review event reports and information coming from the LIM and DSI.</li> <li>Consider notifying those on the evacuation notification list of LEAN FORWARD status.</li> <li>Consider issuing ORANGE AWS warning message / Emergency Alert WATCH AND ACT warning message.</li> <li>Action road/rail closures as appropriate.</li> <li>Liaise with the CO and LDMG on media releases.</li> <li>Co-ordinate establishment of Emergency Services staging area.</li> <li>Advise on any necessary evacuations.</li> <li>Liaise with QFD, QPS and LDMG to co-ordinate emergency response as per the LDMP.</li> </ul>	<ol style="list-style-type: none"> <li>CO</li> </ol>	<ol style="list-style-type: none"> <li>Emergency evacuees</li> <li>QFD</li> <li>QPS</li> <li>LDMG</li> </ol>
Communications Officer	<ul style="list-style-type: none"> <li>Liaise with the LDC on media releases. Ensure these are provided at a suitable frequency in accordance with the BRC LDMG Communications Plan.</li> </ul>		<ol style="list-style-type: none"> <li>Public/media</li> </ol>

## 5.4 Flood waters approaching levee crest and rising – STAND UP

ERL description: Flood levels are high and continuing to rise. Gates remain closed and pumping stations remain active. There is a risk that the levee walls will be overtopped, breached or otherwise damaged by the rising flood waters. Response teams are active and rapid action is required.

Role	Actions	Internal Notifications	External Notifications
Director of Strategic Infrastructure	<ul style="list-style-type: none"> <li>Upgrade the ERL when triggered. Inform LDC and LIM and maintain comms.</li> <li>Notify the LDMG of the change in response level and continue to provide updates.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>LIM</li> </ol>	<ol style="list-style-type: none"> <li>LDMG</li> <li>Media (support to CO)</li> </ol>
Levee Incident Manager	<ul style="list-style-type: none"> <li>Notify LSC and GPSC of the upgraded ERL.</li> <li>Receive updates from the LSC and GPSC and provide updates to the LDC and DSI.</li> <li>Continue to liaise with DSI and Co-ordinators on staffing, as required.</li> <li>Monitor/oversee monitoring of water levels using BoM data, automated/manual gauge readings and on-site observations.</li> <li>Inform the CO of the STAND UP / upgraded ERL status.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>DSI</li> <li>LSC and GPSC</li> <li>CO</li> </ol>	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Move personnel away from the levee.</li> <li>Maintain levee Staging Area.</li> <li>Co-ordinate water level monitoring at least every 30 minutes.</li> <li>Co-ordinate levee inspection/monitoring teams. Teams must not access the levee and continuous monitoring should be continued at a safe distance.</li> <li>Receive information from monitoring teams and co-ordinate action to address any reported issues provided it is safe to do so.</li> <li>Maintain regular contact with LIM. Inform the LIM immediately of any damage to the levee or other unusual observations and action being taken, or requirement for ERL upgrade.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Gates and Pumping Stations Co-ordinator	<ul style="list-style-type: none"> <li>Move personnel away from the levee.</li> <li>Maintain 24/7 staffing of the gates and pumping station.</li> <li>Co-ordinate pump station monitoring.</li> <li>Co-ordinate response to any issues. Inform the LIM of issues/action being taken to rectify.</li> <li>Prepare to open the flood gates to equalise internal and external levels in the event of overtopping / flood waters reaching the levee crest.</li> <li>Co-ordinate additional fuel supplies as required.</li> <li>Maintain regular contact with LIM.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Local Disaster Co-ordinator (LDMG)	<ul style="list-style-type: none"> <li>Review event reports and information coming from the LIM and DSI.</li> <li>Liaise with emergency response agencies on evacuations.</li> <li>Liaise with QFD, QPS and LDMG to co-ordinate emergency response as per the LDMP.</li> <li>Liaise with the CO and LDMG on media releases.</li> </ul>	<ol style="list-style-type: none"> <li>CO</li> </ol>	<ol style="list-style-type: none"> <li>Emergency evacuees</li> <li>QFD</li> <li>QPS</li> <li>LDMG</li> </ol>
Communications Officer	<ul style="list-style-type: none"> <li>Liaise with the LDC on media releases. Ensure these are provided at a suitable frequency in accordance with the BRC LDMG Communications Plan.</li> </ul>		<ol style="list-style-type: none"> <li>Public/media</li> </ol>

## 5.5 Flood waters overtop the levee crest – STAND UP

ERL description: Flood level has exceeded the levee crest. Areas protected by the levee begin to experience flooding. Flood gates may be opened to equalise internal and external levels, depending on the severity and duration of overtopping that is predicted. There remains to be a risk that the levee walls will be breached or otherwise damaged by the flood waters. Response teams are active and rapid action is required.

Role	Actions	Internal Notifications	External Notifications
Director of Strategic Infrastructure	<ul style="list-style-type: none"> <li>Upgrade the ERL when triggered. Inform LDC and LIM and maintain comms.</li> <li>Notify the LDMG of the change in response level and continue to provide updates.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>LIM</li> </ol>	<ol style="list-style-type: none"> <li>LDMG</li> <li>Media (support to CO)</li> </ol>
Levee Incident Manager	<ul style="list-style-type: none"> <li>Notify LSC and GPSC of the upgraded ERL.</li> <li>Receive updates from the LSC and GPSC and provide updates to the LDC and DSI.</li> <li>Continue to liaise with DSI and Co-ordinators on staffing, as required.</li> <li>Monitor/oversee monitoring of water levels using BoM data, automated/manual gauge readings and on-site observations.</li> <li>Inform the CO of the STAND UP / upgraded ERL status.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>DSI</li> <li>LSC and GPSC</li> <li>CO</li> </ol>	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Keep personnel away from the levee.</li> <li>Maintain levee Staging Area.</li> <li>Co-ordinate water level monitoring at least every 30 minutes.</li> <li>Co-ordinate levee inspection/monitoring teams. Teams must not access the levee and continuous monitoring should be continued at a safe distance.</li> <li>Receive information from monitoring teams and co-ordinate action to address any reported issues provided it is safe to do so.</li> <li>Maintain regular contact with LIM. Inform the LIM immediately of any damage to the levee or other unusual observations and action being taken, or requirement for ERL upgrade.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Gates and Pumping Stations Co-ordinator	<ul style="list-style-type: none"> <li>Keep personnel away from the levee.</li> <li>Maintain 24/7 staffing of the gates and pumping station.</li> <li>Co-ordinate pump station monitoring.</li> <li>Co-ordinate response to any issues. Inform the LIM of issues/action being taken to rectify.</li> <li>Open the flood gates to equalise internal and external levels, as appropriate.</li> <li>Co-ordinate additional fuel supplies as required.</li> <li>Maintain regular contact with LIM.</li> <li>Ensure the use of PPE and safe working procedures.</li> </ul>	<ol style="list-style-type: none"> <li>LIM</li> </ol>	N/A
Local Disaster Co-ordinator (LDMG)	<ul style="list-style-type: none"> <li>Review event reports and information coming from the LIM and DSI.</li> <li>Liaise with emergency response agencies on evacuations.</li> <li>Liaise with QFD, QPS and LDMG to co-ordinate emergency response as per the LDMP.</li> <li>Liaise with the CO and LDMG on media releases.</li> </ul>	<ol style="list-style-type: none"> <li>CO</li> </ol>	<ol style="list-style-type: none"> <li>Emergency evacuees</li> <li>QFD</li> <li>QPS</li> <li>LDMG</li> </ol>
Communications Officer	<ul style="list-style-type: none"> <li>Liaise with the LDC on media releases. Ensure these are provided at a suitable frequency in accordance with the BRC LDMG Communications Plan.</li> </ul>		<ol style="list-style-type: none"> <li>Public/media</li> </ol>

## 5.6 Levee structural problems

ERL description: Structural issues have been identified, which put the levee wall/s at risk of failure. A flood is either occurring or imminent. Response teams are active and rapid action is required.

### 5.6.1 Identification of structural issues

Structural issues may be identified during routine inspections, a flood event pre-inspection or over the course of a flood event.

The levee is to be regularly inspected in accordance with the O&M manual, and any necessary repairs undertaken as part of on-going asset management. This ensures that any repairs are appropriately designed, planned and executed in consultation with a qualified RPEQ.

When a flood event occurs, previously unidentified or new structural issues may result or become apparent. There may also be structural issues that were identified prior to an event but which had not yet been addressed. It is these structural issues that are of relevance to this ERP.

### 5.6.2 Emergency repairs

The decision to action any emergency repair works is to be made by the Levee Incident Manager in consultation with an appropriately qualified and experienced RPEQ. Particular consideration is to be given to the safety of personnel, particularly the changing nature of a flood situation, and potential for risk escalation. It may be necessary to stop and amend working methods during the course of emergency repairs to ensure that they are completed safely. Consideration must be given to temporary conditions, including potential overloading of the levee, the nature of the likely saturated ground and loads imposed by vehicles and heavy machinery.

Any measures are temporary and shall be removed at the end of the flood event to assess damage and the need for permanent repair works.

### 5.6.3 Potential issues

The table below identifies some potential issues which may impact the flood levee and result in the need for emergency repairs during a flood event. This is provided for information only and is not comprehensive. As mentioned above, any emergency repair works are the responsibility of the LIM and require appropriate RPEQ consultation.

Potential issue	Comment on emergency repairs
Low points in the levee crest	<p>Check for low points in the levee during the pre-flood inspection.</p> <p>For concrete walls, check for signs of wider instability – Loss of material/settlement from the foundations/adjacent to the wall, rotation of the wall stem. Raise the crest of low/settled sections using sandbags. Consider providing additional foundation support.</p> <p>For embankments, place compacted fill into holes/depressions, or locally raise the crest with sandbags.</p>
Excessive seepage	<p>Where excessive seepage issues are known to BRC prior to a flood event, the levee can be protected by lining the upstream side with an impermeable layer (plastic sheeting or similar).</p> <p>During a flood event, excessive seepage can be protected against by constructing a berm on the dry side of the levee. Various materials can be used for this, subject to what is available.</p> <p>The use of heavy plant or machinery should be avoided as the bearing capacity of the material may be reduced by the seepage flows. It should be noted that pumping local to the area of seepage may increase flows and exacerbate the problem.</p>
Piping (sand boil)	<p>Where high water pressure in the ground exceeds effective stress, internal erosion in the form of piping or sand boil can be triggered. Once a seepage path has been established it can quickly propagate due to accelerating washout of material. This is typically managed by enclosing the boil in a ring of sandbags, to locally increase the overburden pressure. Covering the boil itself is not recommended as it is likely to resurface elsewhere.</p>
Failure of gates	<p>Arrange emergency temporary closure. This may require placing materials (sandbags/fill) to block/plug the outlet.</p>
Failure of pumping stations	<p>Action to be taken in accordance with the O&amp;M manual. This must be undertaken by competent, qualified staff.</p>

### 5.6.4 ERL actions

The actions to be taken by emergency response staff in the event of structural issues are subject to the flood level. Actions should be taken in accordance with the tables in Sections 5.2 to 5.5, above. Additional actions should be taken as per the table below.

Role	Actions	Internal Notifications	External Notifications
Monitoring Teams	<ul style="list-style-type: none"> <li>Identify the issue and clearly mark the location.</li> <li>Communicate the issue to the LSC.</li> </ul>	1. LSC	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Receive notification of structural issues (including evidence/likely indicators) from the monitoring teams.</li> <li>Communicate the nature and location of the problem to the LIM.</li> <li>Arrange inspection by an appropriately qualified RPEQ.</li> <li>Co-ordinate a response in line with the RPEQ's recommendations.</li> <li>Provide instructions to and receive updates from the monitoring team.</li> </ul>	1. LIM	N/A
Levee Incident Manager	<ul style="list-style-type: none"> <li>The LIM should inform the DSI and LDC of the issue and action being taken.</li> <li>Advise on areas that would be affected in the event of a breach and extents of potentially required evacuations.</li> </ul>	1. LDC 2. DSI	N/A
Local Disaster Co-ordinator	<ul style="list-style-type: none"> <li>Determine whether evacuations are warranted and co-ordinate with LDMG and the CO.</li> </ul>	1. CO	1. Emergency evacuees 2. QFD 3. QPS 4. LDMG
Communications Officer	<ul style="list-style-type: none"> <li>Support the LDC with communications regarding evacuations, as required.</li> </ul>	1. LDC	1. Public/media

## 5.7 Levee breach

ERL description: Flood levels are high, they may be below the levee crest or the walls may be overtopping. Gates remain closed and pumping stations remain active. The levee walls have been breached and areas protected by the levee are experiencing flooding.

Response to a breach should only be undertaken where safe to do so.

Options for response include:

- Abandon the levee and evacuate
- Construct a berm to the landward side of the levee
- Raise the levee crest
- Infill the breach

The appropriate action is to be determined by the Levee Incident Manager in consultation with the Local Disaster Co-ordinator, Levee Structure Co-ordinator and an appropriately qualified RPEQ.

The success of interventions shall be monitored and an alternative approach may be adopted, as necessary.

Where action to address a breach requires mobilisation of emergency services personnel and/or equipment, this will be the responsibility of the Local Disaster Co-ordinator.

### 5.7.1 ERL actions

Actions should be taken in accordance with the tables in Sections 5.2 to 5.5, above. The following actions are required to identify and act upon an impending breach or active breach scenario.

Role	Actions	Internal Notifications	External Notifications
Monitoring Teams	<p>Check for:</p> <ul style="list-style-type: none"> <li>• Movement of the levee (rotation, cracking, movement/cracking of ground material at the base of the wall)</li> <li>• Washout of material under the wall</li> <li>• Locally high flows (i.e. uneven overtopping of the wall, flow through a crack in the wall)</li> </ul> <p>These may indicate an impending breach. Monitoring teams should ensure their own personal safety and immediately notify the LSC. If a breach has initiated, teams should ensure their own personal safety and immediately notify the LSC.</p>	2. LSC	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>• The LSC should arrange inspection by an appropriately qualified RPEQ.</li> <li>• Inform the LIM.</li> <li>• Co-ordinate a response in line with the RPEQ's recommendations.</li> </ul>	2. LIM	N/A
Levee Incident Manager	<ul style="list-style-type: none"> <li>• The LIM should inform the DSI and LDC.</li> <li>• Advise on areas that would be affected and extents of required evacuations.</li> </ul>	3. LDC 4. DSI	N/A
Local Disaster Co-ordinator	<ul style="list-style-type: none"> <li>• Determine whether evacuations are warranted and co-ordinate with LDMG and the CO.</li> </ul>	2. CO	5. Emergency evacuees 6. QFD 7. QPS 8. LDMG
Communications Officer	<ul style="list-style-type: none"> <li>• Support the LDC with communications regarding evacuations, as required.</li> </ul>	2. LDC	2. Public/media



## 5.8 Stand down

ERL description: The emergency event has passed and flood waters are subsiding.

Role	Actions	Internal Notifications	External Notifications
Director of Strategic Infrastructure	<ul style="list-style-type: none"> <li>Responsible for determining that the event has passed.</li> <li>Notify the LIM and LDC of STAND DOWN.</li> <li>Notify the LDMG of STAND DOWN.</li> <li>Formal issue to all personnel of a STAND DOWN order.</li> <li>Complete post-event reporting. Review and approve the post-event report as provided by the LIM. Trigger ERP updates in accordance with lessons learned.</li> </ul>	<ol style="list-style-type: none"> <li>LDC</li> <li>LIM</li> </ol>	<ol style="list-style-type: none"> <li>LDMG</li> <li>Media (support to CO)</li> </ol>
Levee Incident Manager	<ul style="list-style-type: none"> <li>Notify LSC, GPSC and CO of STAND DOWN.</li> <li>Complete post-event reporting. Receive and review post-event reports from involved parties and collate for review/approval by DSI.</li> </ul>	<ol style="list-style-type: none"> <li>LSC and GPSC</li> <li>CO</li> </ol>	N/A
Levee Structure Co-ordinator	<ul style="list-style-type: none"> <li>Disassembly of Staging Area including removal of any stockpiled material.</li> <li>Arrange for inspection of emergency equipment prior to return to designated storage locations.</li> <li>Complete post-event reporting.</li> </ul>	N/A	N/A
Gates and Pumping Stations Co-ordinator	<ul style="list-style-type: none"> <li>Arrange for inspection of emergency equipment prior to return to designated storage locations.</li> <li>Complete post-event reporting.</li> </ul>	N/A	N/A
Local Disaster Co-ordinator (LDMG)	<ul style="list-style-type: none"> <li>Notify external affected parties of STAND DOWN.</li> <li>Liaise with the CO regarding public/media comms relating to the stand down.</li> <li>Complete post-event reporting.</li> </ul>	<ol style="list-style-type: none"> <li>CO</li> </ol>	<ol style="list-style-type: none"> <li>Emergency evacuees</li> <li>QFD</li> <li>QPS</li> <li>LDMG</li> </ol>
Communications Officer	<ul style="list-style-type: none"> <li>Liaise with the LDC regarding public/media comms relating to the stand down.</li> <li>Complete post-event reporting.</li> </ul>		<ol style="list-style-type: none"> <li>Public/media</li> </ol>

## 6. Emergency Event Reporting

### 6.1 Action/event logs

All staff involved in executing this emergency response plan are to maintain an action/event log. The log should include the items listed in the table below and should be in a chronological order, so as to provide an overview of the event timeline. The DSI is responsible for providing guidance on the level of detail required, which may be in the form of an example action/event log.

Action/event Log	Details/description	Responsible
Description of the event	-	All staff
Time and date of the event	-	All staff
Decisions made	Details of decision, time, date, name/role of decision maker	All staff
Instructions given/received	Details of instruction, time, date and name/role of instruction giver/receiver	All staff
Actions taken	Include details of personnel, equipment and suppliers involved in any actions taken as part of emergency response	LSC and GPSC
Communications log	Details of communication, time, date, involved parties	All staff
Other relevant information	-	All staff
Lessons learned / recommendations for improvement	-	All staff
Water level readings / records	Name and location of water level gauge, details of recorded levels	LIM / Delegate
Rainfall readings / records	Name and location of rainfall gauge, details of recorded readings	LIM / Delegate
Other instrumentation readings / records	Name, location and nature of instrumentation, details of recorded readings	LIM / Delegate
BoM warnings	Time, date, flood classification level, other details provided by the flood warning	LIM / Delegate

### 6.2 Supply inventory

Following an event, a review should be made of the supply inventory, including equipment, materials and other supplies including personnel. This can be used to inform future response and assess the adequacy of provisions for implementing emergency response for future flood events.

A placeholder for a list of contacts and personnel is included in Appendix 0 and for an equipment list in Appendix 0. These are to be developed prior to final issue of this ERP.

### 6.3 Post event report

Emergency Event Reports (EER) are to be provided for all STAND UP events.

They are not required for ALERT or LEAN FORWARD events unless explicitly requested by the DSI, for example owing to an issue, error, or omission or a potential issue, error or omission encountered during the ALERT or LEAN FORWARD stages which should be further investigated to improve the ERP and its future implementation.

The EER should include:

- Time and date of the event
- A description of the event

- A copy of the event/action logs (as above)
- Records of water levels, rainfall and BoM alerts, as well as other instrumentation, where appropriate
- Details of flooding that occurred including details of any levee breaches/overtopping and approximate extents of inundation, where available
- Details of damage to the levee structure and action taken in response to this
- Photographs/videos
- Equipment, personnel and suppliers involved in the emergency response
- Comment on the adequacy of the ERP and any potential improvements or suggested changes

It is recommended that external parties involved in the emergency response (QFD, QPS and LDMG) are consulted on the EER content and findings.

The EER shall typically be produced by the LIM and submitted to the DSI for approval. The DSI is responsible for wider communication of the EER within BRC and for acting upon any lessons learned or potential improvements, including initiating update of the ERP.

## 7. Communications Plan

### 7.1 Internal communications

The LDC is the key interface between the Bundaberg East Levee emergency response team and the LDMG. The Levee Incident Manager will communicate with the LDMG Local Disaster Co-ordinator, who will be responsible for communication with the wider LDMG and implementation of the LDMP.

Phone or radio contact is preferred as a means of immediate and/or urgent communication. For record purposes and post-event reporting this may be followed-up by email, where appropriate. Email communication may also be used for sharing data and/or wider dissemination of information, conversations and/or decisions.

Emergency co-ordinator/manager communication shall be by phone or two-way radio, whichever is functional and/or works most effectively. The lines of notification established in Section 5 will be adopted. Note that this is expected to be two-way and notifications will pass 'up' and 'down' the lines of communication.

### 7.2 External communications

#### 7.2.1 LDMG

The LDC is responsible for communication with other members of the LDMG, including agencies supporting with the emergency response. This includes QFD, QPS and QAS. Communication with the LDMG will be in accordance with the Bundaberg LDMP.

#### 7.2.2 Public information and warnings

Public information and warnings will be issued in accordance with the LDMP and sub-plan on Public Information & Warnings (formerly the Communications Plan). Emergency warnings are intended to inform the community of an impending or current threat and propose appropriate responsive actions. Community messaging should be frequent and consistent, clear and concise to avoid confusion and provide actions for the at-risk community to take.

##### Public information

The release of public information will be co-ordinated by the LDC through the LDCC in accordance with the LDMP. The following means of communication may be used:

- Electronic media / websites
- Landline and mobile calls and messages
- Social media
- Broadcast media
- Television
- Email
- Door knocking
- UHF repeater network

Direct contact with affected persons will be co-ordinated by the LDC with the LDMG.

##### Emergency Alerts

The national Emergency Alert (EA) telephone and messaging system and Standard Emergency Warning Signal (SEWS) can be used to support and reinforce warning messages via the above mediums.

Emergency Alerts (EA) are issued via the Queensland Emergency Alert system. The EA system will send voice message to landlines and text messages to mobile phones based on defined spatial data, about a likely or actual emergency situation.

Emergency warnings are issued by the agency which has primary responsibility for that hazard, which may be BoM, QPS, QFD, local Council or Queensland Health. The BoM is responsible for administering severe weather alerts and the QFD is responsible for administering EAs and the SEWS. The request for an EA is made by the LDMG at the request of the LDC through an Emergency Alert Request form. Nominated polygons for EA messages are to be lodged with Queensland Fire Department upon finalisation of this ERP.

Warning messages will be prepared by the LDC and should be in accordance with the Australian Warning System (AWS) levels:

**Advice (yellow):** There is a hazard in your area. There is no immediate danger. Stay informed, the situation could change.

**Watch and Act (orange):** There is a threat to lives and properties. Conditions are changing. Take action protect yourself and your family.

**Emergency Warning (red):** This is the highest warning level. You are in danger. Take action immediately. Any delay will put your life at risk.

The symbols relating to flooding are shown below:



### Broadcasts

Media broadcast information shall be consistent with that of the LDMG and emergency services. The communications officer shall work with the LDC to provide information.

- Information regarding evacuations
- Expected flood magnitude, level of protection provided by the levee
- Likely or active road/rail closures
- Sources of emergency assistance
- Where to obtain more information

## 7.2.3 Public education

BRC's campaign '*Get Ready Queensland*' is the key platform for raising disaster awareness, promoting understanding of risks and emergency preparedness.

The need for public engagement specific to the Bundaberg East Levee and the changed nature of the flood risk in Bundaberg should be considered prior to final issue of this plan. Details of any proposed public education activities are to be detailed here.

## 7.2.4 Evacuation plan

Evacuations will be managed by the LDC in accordance with the LDMP and Evacuation Sub-Plan. The DSI and LIM will support the LDC by providing information on the predicted areas of inundation based on the best available flood event information.

Contacts for people and businesses who are most at risk from a flood event should be added to Appendix 0.

## 8. ERP Review and Testing

### 8.1 Review of the ERP

This ERP should be reviewed and updated:

- At least annually.
- As and when there are changes to key personnel, such that the contact list and notification flow chart are kept up to date.
- A detailed review every 5-years or when warranted by a change in circumstances.
- Following an emergency event, to assess adequacy and capture any lessons learned from implementation of the plan.

The updated document or relevant pages shall be circulated as per the distribution list, noting the separate list of controlled copy and electronic copy lists.

The entire document should be re-printed and distributed at least every 5-years. It is recommended this follows-on from the 5-year detailed review.

### 8.2 Testing of the ERP

Training exercises are recommended bi-annually. The first training exercise should be completed within 6-months of formal issue of the ERP, to ensure staff familiarity with ERP procedures, and repeated as needed.

Testing may be undertaken as a desktop exercise, or alternatively as a field exercise, where lines of communication and the response of different organisations are tested. It is recommended that as many of the relevant organisations be involved in testing as possible, including DHLGPPW, BRC, LDMG and other external organisations, as appropriate. As a minimum, testing with all parties that hold responsibility under the plan should be completed at least every 5-years.

The test procedure will be developed by BRC and may include:

- Notification of personnel in accordance with the plan, including back-up communications
- Physical operation of gates and pumps
- Testing of co-ordination and control
- Mobilisation of monitoring teams
- Levee inspections

The test may be run as a 'scenario' where the simulated situation develops over the course of the test.

## 9. ERP Development

The list below captures required actions and inputs to this ERP, to be undertaken during subsequent stages of the project, prior to finalisation and formal issue. This includes inputs from DHLGPPW, BRC, LDMG and other external organisations.

Section	Action
General	Review and update as the project progresses through design and construction
General	Review and update with reference to the O&M manual
General	Revise based on any legislation or best practice that is released prior to project completion
General	Review and confirm the involved parties in disaster management in Bundaberg.
General, Section 3 - Responsibilities	Review roles / update in line with BRC structure
General	Review requirements for road/traffic management requirements specific to the Bundaberg East Levee
General	Consult with LDMG RE review or input to the ERP.
General	Review LDCC SOP's with respect to LDC and CO responsibilities. Ensure alignment between the LDCC SOP's and the ERP. Review the level of detail within the ERP and include references to the SOP's and LDMG Communications Plan, as required.
Document Control and Review	Confirm details of Controlled Copy Distribution List with BRC and LDMG.
Document Control and Review	Add details of electronic copy distribution to BRC and LDMG
Definitions	Confirm with BRC whether AWS terminology will be adopted
Section 1 – Introduction	Update project information as this develops. Include references to relevant project documents (Section 1.6.3).
Section 2.1 – Procedural Flow Chart	Develop procedural flow chart for/in consultation with BRC.
Section 2.2 – Notification List	Develop notification list including roles, names and contact details.
Section 2.3 – Resource Contacts	Develop a list of businesses, suppliers and/or persons to contact in an emergency. Must be kept up to date.
Section 3 – Responsibilities	Liaise with BRC and LDMG to finalise roles and responsibilities during an emergency event.
Section 4 – Operational Procedures	To be developed
Section 4 – Operational Procedures	Establish how ERP activation and response align/fit with activation of the existing LDMP.
Section 4 – Operational Procedures	Include details of relevant specifications and operating procedures, once available.
Section 4 – Operational Procedures	Include details of levee monitoring training, procedures and checklists.
Section 4 – Operational Procedures	Develop details of necessary road closures and plans for traffic management. Review the plan in light of these, in particular Sections 3 and 5.
Section 4 – Operational Procedures	Develop a plan for restricting public access, as required, during a flood event.
Section 4 – Operational Procedures	Determine options for where a staging area may be located.
Section 5 – Emergency Events and Actions	Confirm gauge/s and trigger levels for each ERP activation level
Section 5 – Emergency Events and Actions	Review and confirm roles and actions as the project develops. Consult with BRC and LDMG on content.
Section 5 – Emergency Events and Actions	RPEQ to review sections 5.6 and 5.7 on structural problems and breaches.
Section 6 – Emergency Event Reporting	Develop a template for the Action Log.
Section 7 – Communications Plan	Confirm with BRC / LDMG whether the use of Emergency Alerts / AWS is proposed for Bundaberg Levee. Update Section 5 Emergency Events and Actions, accordingly. Develop polygons based on inundation mapping, as required.
Section 7 – Communications Plan	Add details of planned public engagement/education.
Section 8.2 – Testing of the ERP	Develop test procedure
Appendix A – Notifications List	Develop notification list including roles, names and contact details.



Appendix B – Resource Contacts and Support Personnel	Develop a list of businesses, suppliers and/or persons to contact in an emergency. Must be kept up to date. Develop a list of support personnel to contact in an emergency. Must be kept up to date.
Appendix C - Equipment List	Review and update equipment list in consultation with BRC / LDMG.
Appendix D - Security Plan	To be developed in accordance with CIRIA 2013.
Appendix E – Inspection & Monitoring Procedures	To be developed for Bundaberg East Levee in consultation with BRC.
Appendix F – Inundation Mapping	To be added based on preliminary design information.
Appendix G – Evacuation Notifications	Develop list of people and businesses at risk of inundation in a flood event, with names and contact information.
General / Close-out	Issue controlled copies of the ERP in accordance with the distribution list
General / Close-out	Inform LDMG of the ERP for inclusion in the LDMP. Ensure that the LDMG review the LDMP in light of the procedures contained in this ERP.
-	Consider developing contingency plans or providing guidance on contingency planning in the event of planned maintenance works, or similar, which impact on normal operation of the levee.
-	Consider developing a flood response plan to be implemented during the construction phase.

## 10. References

Published references:

**Bundaberg Regional Council (2023)** – Bundaberg Local Disaster Management Plan 2023, Bundaberg Local Disaster Management Group, Bundaberg Regional Council

**Bureau of Meteorology (2022)** – Service Level Specification for Flood Forecasting and Warning Services for Queensland, Version 3.4 - [http://www.bom.gov.au/qld/flood/brochures/QLD\\_SLS\\_current.pdf](http://www.bom.gov.au/qld/flood/brochures/QLD_SLS_current.pdf)

**CIRIA (2013)** – The International Levee Handbook, CIRIA, London, 2013

**Inspector-General Emergency Management (2019)** – Standard for Disaster Management in Queensland, Inspector-General Emergency Management, Office of the Inspector-General Emergency Management, Version 2. 2019

**The State of Queensland (2003)** – Queensland Disaster Management Act 2003

**The State of Queensland (2016)** – Queensland Disaster Management Strategic Policy Statement 2016

**The State of Queensland (QFES) (2018)** Queensland prevention, preparedness, response and recovery (PPRR) Disaster Management Guideline, Queensland Government, January 2018. Prepared by the Queensland Fire and Emergency Services

**The State of Queensland (2023)** – Queensland Disaster Management Plan, Interim 2023

Other references:

Bundaberg East Levee O&M Manual (Under development)

Queensland emergency risk management framework (QERMF) -

<https://www.disaster.qld.gov.au/queensland-emergency-risk-management-framework>

BoM - Bureau of Meteorology - [Australia's official weather forecasts & weather radar - Bureau of Meteorology \(bom.gov.au\)](https://www.bom.gov.au)

# A Notifications List - DRAFT

The responsibility for notifying each entity in an emergency situation is detailed in Section 5 of this ERP, in order of priority. Mobile phone numbers are preferred. An alternative contact number should be provided wherever possible.

Position	Name	Phone	Alternative contact no. (work/home)	Email
<b>Bundaberg Regional Council</b>				
Chief Executive Officer	XXX	XXX	XXX	XXX
Director Strategic Infrastructure	XXX	XXX	XXX	XXX
Levee Incident Manager	XXX	XXX	XXX	XXX
Levee Structure Co-ordinator	XXX	XXX	XXX	XXX
Gates and Pumping Stations Co-ordinator	XXX	XXX	XXX	XXX
Communications Officer	XXX	XXX	XXX	XXX
<b>DHLGPPW Operations Staff</b>				
Operations Manager	XXX	XXX	XXX	XXX
Incident hotline	XXX	XXX	XXX	XXX
<b>Bundaberg Local Disaster Management Group</b>				
Local Disaster Co-ordinator	XXX	XXX	XXX	XXX
Chair LDMG	XXX	XXX	XXX	XXX
<b>Queensland Emergency Services</b>				
Police	XXX	Emergency: 000	General no.: XXX	XXX
State Emergency Services	XXX	Emergency: 000	General no.: XXX	XXX
Queensland Fire Department – Urban Division	XXX	Emergency: 000	General no.: XXX	XXX
Ambulance	XXX	Emergency: 000	General no.: XXX	XXX

## **B Resource Contacts and Support Personnel - PLACEHOLDER**

List of Resource Contacts and Support Personnel to be developed. This may include:

- Contractors – For inspection and emergency repair
- Suppliers – Materials / access to stockpiled materials, plant, equipment, fuel
- Personnel – Levee engineers, pump station engineers, operatives, and technicians
- Media contacts

# C Equipment List - DRAFT



Equipment listed in the table below is to be available or readily obtainable to assist with flood response. Details of where equipment is kept and/or can be sourced from should be captured as part of the equipment list.

### Equipment List

Aspect of flood response	Item	Location / Source
Levee monitoring	PPE including Personal Floatation Device (PFD)	XXX
	Monitoring instructions	XXX
	Phone	XXX
	Radio / two-way	XXX
	Camera	XXX
	Clipboard, checklist, log book	XXX
	Stationary	XXX
	Torches / lights	XXX
	Markers (spray paint / stakes)	XXX
Gates and pumping stations	Mobile pumps (for Distillery Creek)	XXX
	Spare pumps	XXX
	Fuel	XXX
	Plant, generators	XXX
Structural repairs and temporary support	Mobile pumps (for excessive seepage)	XXX
	Plastic sheeting	XXX
	Sandbags	XXX
	Rip rap	XXX
	Fill material	XXX
	Plant, generators	XXX
Rescue operations	Rescue vehicles, boat, helicopter	QFD
	First aid kits **	XXX
Traffic management	Road barriers	XXX
	Signage	XXX
	Vehicles	XXX
Night working	Mobile lighting	XXX
	Generators	XXX

\*\* Must be kept stocked and in-date – Responsibility for this is to be assigned

# **D Emergency Response Security Plan - PLACEHOLDER**

A security plan is to be developed for the Bundaberg East Levee as part of project development. The International Levee Handbook (CIRIA, 2013) recommends that this considers:

- Co-ordination with law enforcement
- Security incident reporting and management
- Physical security
- Communications and cyber-security
- Employee and contractor identification
- Security contracting
- Coordination with emergency / operational plans
- Security issues associated with routine activities – maintenance, tourism, public access

The emergency response security plan will need to align with the O&M manual requirements, but include any specific or additional requirements for an emergency event, where procedures differ from day to day operations.

# **E Emergency Response Inspection & Monitoring Procedures - PLACEHOLDER**

Inspection and monitoring procedures are to be developed for the Bundaberg East Levee as part of project development in accordance with recommendations given in the International Levee Handbook (CIRIA, 2013), page 397, 404-406.

The emergency response inspection and monitoring plans will need to align with the O&M manual requirements, but include any specific or additional requirements for an emergency event, where procedures differ from day to day operations.

# F Inundation Mapping - PLACEHOLDER





# G Evacuation Notifications

Affected residents and businesses who may require evacuation in the event of a flood due to levee overtopping and/or failure are to be listed in the table below. Associated inundation maps are to be included in Appendix F.

ID	Name (Individual/business)	Address	Phone	Mobile



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