



Moreton Bay Regional Council Local Disaster Hazard Specific Arrangements

2022 | Version 1.1





Acknowledgement of Country

Council acknowledges the Kabi Kabi, Jinibara and Turrbal Peoples as the Traditional Custodians of the lands and waterways of the Moreton Bay Region, and pay our respects to their Elders, past, present and emerging. Council recognises that the Moreton Bay Region has always been a place of cultural, spiritual, social and economic significance to First Nations people.

Council is committed to working in partnership with Traditional Custodians and other First Nations communities to shape a shared future that celebrates First Nations history and culture as an irreplaceable foundation of our region's collective identity.

Disclaimer

Moreton Bay Regional Council has produced this document based on accurate information at the time of issue. Some information supplied from information contained in the Council's records may have been furnished to the Council by other organisations. Persons making decisions with financial or legal implications must not rely upon the details shown in this plan for the purpose of determining whether any particular facts or circumstances exist. Moreton Bay Regional Council (and its officers and agents) expressly disclaims responsibility for any loss or damage suffered as a result of placing reliance upon this information.

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Document Control

Amendments and version control

The Hazard Specific Arrangements supplement document is a controlled document. The controller of the document is the Emergency Management and Public Safety Manager.

Any proposed amendments to this plan are to be forwarded in writing to:

Post: Disaster Management Unit
PO Box 159, Caboolture QLD 4510

Email: disastermanagement@moretonbay.qld.gov.au

The Emergency Management and Public Safety Manager may approve minor amendments to this document. Any significant alterations that change the intent of the plan must be submitted to the Moreton Bay Local Disaster Management Group (LDMG) for endorsement and be approved by Council.

Distribution

A copy of the document or each amendment will be forwarded to LDMG members. Where required, on receipt of an amendment, this is to be inserted into the document and version control records updated.

Amendment Register

Version No.	Date issued	Amendment content	Date inserted / Approved by Council
1.0	November 2019	First publication Approved by LDMG and QFES	
1.1	20 July 2022	Annual review and amendments Approved by LDMG: 28 April 2022 Endorsed by Council: 20 July 2022	20 July 2022

Review and renewal

The Hazard-Specific Arrangements supplement document will be reviewed by Council on an annual basis to ensure alignment with governing legislation, documentation and the best available information at the time from a range of sources including Local, State, Federal and International centres of best practice in Disaster Hazard Arrangements, as deemed appropriate.

Council reviews the effectiveness of this supplement in concert with the Local Disaster Management Plan using the Emergency Management Assurance Framework through assurance activities to validate performance and through an annual disaster management training programme.

Interpreting Services



The Moreton Bay Regional Council is committed to providing accessible services to Queenslanders of all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 131 450 and ask them to telephone the Moreton Bay Regional Council on (07) 3205 0555.

Introduction

The Moreton Bay Region is exposed to a wide range of disaster hazards as detailed in the [Local Disaster Management Plan](#)¹ (LDMP). Moreton Bay Regional Council (MBRC) has developed detailed arrangements to support community understanding and provide useful information to community members as to how these hazards will be mitigated and managed appropriately. This document provides additional detail and information on Hazard-Specific Arrangements to supplement that provided in the LDMP. This provides the community with a range of easily accessible documents, targeted appropriately to inform interested community members.

The MBRC Hazard-Specific Arrangements Supplement forms part of Council's commitment to disaster management planning and ensures that Council has a coordinated and planned response to disasters.



¹ MBRC Local Disaster Management Plan: www.moretonbay.qld.gov.au/Services/Reports-Policies/Local-Disaster-Management-Plan
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PART 1 – HAZARD SPECIFIC ARRANGEMENTS - BUSHFIRE

Overview

The Moreton Bay Region is particularly vulnerable to bushfires. This section provides supplementary information on the responsibilities, considerations and activities required to prevent and mitigate the risk of bushfires in addition to the information provided in the Local Disaster Management Plan.

Key responsibilities

The following agencies have responsibilities relating to bushfire management and contribute to the maintenance of this plan.

Entity	Specific Bushfire Responsibilities
LDMG	<ul style="list-style-type: none"> - Responsibility across the PPRR spectrum to enhance public safety - Primary agency for public information related to bushfire management - Responsibility for post bushfire community recovery
Queensland Fire Emergency Services (QFES) Fire and Rescue (FRS) Rural Fire Service (RFS)	<ul style="list-style-type: none"> - Primary agency for bushfire response - Primary agency for post-bushfire “make safe” operations - Primary agency for bushfire community education - RFS to Chair the Greater Brisbane Area Fire Management Group (AFMG) and the Regional Bushfire Committee (RBC) to coordinate bushfire management - Develop the Bushfire Risk Mitigation Plan and Regional Bushfire Annex as part of the State Bushfire Plan - Provide advice and support to the LDMG in relation to disaster management and disaster operations.
MBRC	<ul style="list-style-type: none"> - Identification of bushfire prone areas and implementation of development controls to reduce bushfire risk under the region’s planning scheme - Management of council-owned land including prescribed burns to reduce fuel loads - Supporting agency for bushfire warnings in the region - Supporting agency for public information - Supporting agency for community education on bushfire risk, warnings, advice and support to landowners and bushfire preparedness - Member of AFMG and RBC
Queensland Police Service (QPS)	<ul style="list-style-type: none"> - Lead agency for post-bushfire disaster victim identification - Supporting agency for bushfire warnings - Supporting agency for bushfire management within the region - Provide support to QFES Incident Control Centres (ICC) - Member of RBC

Entity	Specific Bushfire Responsibilities
Queensland Parks and Wildlife Service (QPWS)	<ul style="list-style-type: none"> - Supporting agency for bushfire warnings in relation to fires in national parks and other state-owned reserves - Supporting agency for public information regarding bushfire management of national parks and other state-owned reserves - Provide support, as required, to QFES ICC when established - Member of AFMG and RBC
Department Transport and Main Roads (DTMR)	<ul style="list-style-type: none"> - Supporting agency for bushfire warnings in relation to fires and associated hazards along state and federal roads and transport corridors - Supporting agency for public information regarding bushfire management in relation to fires and hazards along State and Federal roads and transport corridors. - Member of AFMG and RBC
Seqwater	<ul style="list-style-type: none"> - Provide advice to the LDMG on bushfire impacts on strategic water assets - Member of AFMG
Unitywater	<ul style="list-style-type: none"> - Provide advice public information relating to impacts of bushfire on water supply - Member of AFMG
Energex	<ul style="list-style-type: none"> - Provide representation on RBC
Hancock Plantations	<ul style="list-style-type: none"> - Member of the AFMG and RBC

All agencies are also responsible for bushfire mitigation for agency-owned land and assets. This includes fuel load reduction activities for agency-controlled areas. These responsibilities are part of individual agency core business and details are contained within agency documentation.

Bushfire prone areas

The bushfire prone areas in Queensland mapped under the State Planning Policy (SPP) enable councils to identify areas of high-risk and very-high-risk and provide the basis for the application of additional controls to mitigate the bushfire risk. The Moreton Bay Region shows an increased risk in the western areas of the region where significant tracts of bushland and mountainous terrain exist. Small pockets of very high bushfire risk occur throughout the region.

While these bushfire hazard areas are mapped primarily for land use planning purposes, they are useful in identifying areas of high risk for general planning and mitigation purposes.

The SPP Interactive Mapping System is a repository for all Geographic Information System mapping that relates to matters of state interest under the SPP. Layers for bushfire hazards can be accessed allowing users to zoom in to individual parcels of land to view the general level of bushfire risk for that parcel of land. It should be noted that these layers are primarily for use as part of the Development Application process. However, they provide a useful tool to visualise the bushfire hazard across the region.

Summary of risk factors

The risk factors that may influence bushfire risk include:

- the region's extensive areas of retained forest cover, particularly in the western parts, with connectivity into urbanised areas

- the proximity of bushland areas in the eastern parts of the region to urban populations (and an associated increased ignition risk)
- the high proportion of native vegetation that is fire-prone
- roads, overhead power lines, telecommunications equipment and other key community infrastructure that is situated in positions where it can be cut or damaged by bushfires
- weather and climate conditions
- the proximity of bushfire-prone areas to isolated communities and the limited road network to support evacuation i.e. Mt Nebo/Mt Glorious
- limited access to fire-prone areas that may hamper bushfire mitigation and response
- general lack of community awareness of fire risk, fire behaviour, fire danger or how to prepare and respond to bushfire threats
- changing climate that may extend traditional bushfire seasons.

Mitigation strategies

Hazard reduction programmes

Each of the bushfire mitigation entities is responsible for planning, coordinating, undertaking and evaluating their own hazard reduction programs using their own resources, with support from other agencies and landowners as required.

Agencies and entities undertaking fire management activities must follow the relevant legislative and published guidelines:

- Environmental Protection and Biodiversity Conservation Act 1999
- Sustainable Planning Act 2009 – State Planning Policy
- Fire and Emergency Services Act 1990
- Fire and Emergency Services Regulation 2011
- Land Act 1994
- Nature Conservation Act 1992
- Vegetation Management Act 1999

Bushfire hazard reduction programs are usually conducted before the fire season and are aimed at reducing fuel loads in high and very high bushfire risk areas. They are typically conducted during the period February to August each year when conditions are suitable; although, burns may be undertaken outside this window subject to appropriate approvals.

Education programs

Annual bushfire education programs utilise multiple strategies to communicate with the public and may include:

- use of traditional media outlets e.g. television, radio, newspapers
- agency websites
- social media including Facebook, Instagram, YouTube, etc
- displays at public events and in public spaces
- community meetings (useful for high-risk communities)
- mailouts and provision of pamphlets, guidelines and other paper-based/electronic information products.

In addition, MBRC is an active member of the Brisbane Community Engagement Working Group, which facilitates a coordinated process with various agencies for collaborative prioritising, planning and delivery of bushfire and severe weather event community engagement activities across Southeast Queensland.

Bushfire - preparedness and planning

Community plans

Bushfire community plans for high-risk areas include the following:

- Community profiles (such as population, services, facilities, vulnerable persons, evacuation centres, neighbourhood safe zones, MoretonAlert groups, land usage)
- Arrangements for specific bushfire warnings (includes MoretonAlert, EA and emergency warning systems where fitted, such as Mt Glorious and Mt Nebo)
- Specific arrangements for the evacuation of the community, including evacuation routes and traffic plans (such as road capacity, travel times, traffic control points and possible traffic congestion points)

Community bushfire education and awareness

To prepare the community for the potential for bushfires and provide ways for residents to minimise their personal risk emphasis is placed on the following:

- The current seasonal outlook for bushfires including information on seasonal variations may apply e.g. High fuel loads, season rain outlooks, etc;
- Information on fire weather to help educate the community on the conditions that are conducive to start and spread of bushfires;
- The FDR system including where the community can access information on the current fire danger rating;
- The system of fire controls e.g. permits and fire bans and the fire warden system;
- Guidance on bushfire survival planning;
- Bushfire warning systems;
- Public information - the MBRC website details evacuation routes and evacuation centres; and
- Community and school presentations and information sessions, particularly in high-risk communities.

Bushfire - emergency communications

Effective communication across the community and between agencies is critical. This section outlines the emergency communication systems and outlines procedures for their use during bushfires.

Bureau of Meteorology (BoM) - fire weather warnings

Wind, temperature, humidity and rainfall are weather elements that affect the behaviour of bushfires. In Australia, there is a system of assessing these in conjunction with the state of the available fuels to determine a "fire danger" or suppression difficulties. The BoM issues Fire Weather Warnings to alert the public when conditions are likely to be dangerous. QFES agencies in each jurisdiction determine Fire Danger Rating (FDR) and, in some cases, declare fire restrictions or bans. The major trigger for QFES to increase their response level is when the FDR is 50+. The information contained in Fire Weather Warnings includes:

- The local time, day and date that it was issued;
- A description of the relevant meteorological conditions and FDR;
- The area where weather conditions are conducive to the spread of dangerous fires; and
- The time for which it will be in effect.

Fire Weather Warnings are distributed through the media, fire agencies and other key emergency service organisations. Warnings are normally issued in the afternoon for the following day so to be available for evening television and radio news broadcasts. Warnings are renewed at regular intervals and generally at the same time major forecasts are issued. However, warnings may be issued or amended and reissued at any time if a need is identified.

Bushfire warning messages

QFES is responsible for issuing bushfire warnings to affected communities during periods of increased fire risk. Bushfire warnings are issued by QFES and are disseminated by radio, social media and the RFS website. There are 3 levels of warning issued for a defined area at risk of a bushfire event. They are Advice, Watch & Act and Emergency Warning.




		MoretonAlert issued by MBRC	Emergency Alert issued by QFES
 ADVICE MONITOR CONDITIONS.	This advice is issued when a fire or other related emergency has started; however, there is no immediate threat to the community.	Yes	No
 WATCH & ACT CONDITIONS ARE CHANGING.	When a Watch & Act warning is issued there is a heightened level of threat. The public are advised to be aware of the situation and take action to be prepared and protect yourself and your family.	No ¹	Yes
 EMERGENCY WARNING YOU ARE IN DANGER.	When an emergency warning is issued, people in the path of the fire are in danger and should take immediate action as recommended in the warning.	No ¹	Yes

Figure 1: Three levels of warning messages issued by QFES

¹ MBRC will issue a MoretonAlert when no Emergency Alert is issued

Mt Nebo/Mt Glorious Emergency Warning System

The [Mt Nebo/Mt Glorious Emergency Warning System](#)² (EWS) is a purpose-built system dedicated to providing early warning to these communities. The EWS is designed to enhance the safety of the residents in the Mt Nebo and Mt Glorious areas. The use of sirens, roadside signage and SMS messages is designed to provide warnings to residents of the threat of bushfire.

The system comprises of a siren with variable sounds and road signs. However, it is critical that residents living in this high-risk area develop a bushfire survival plan, register to receive weather alerts, and understand the actions to be taken if the alert sirens are sounded. Residents should always follow the advice of QFES and be ready to follow the actions provided to protect themselves, their families and their property.

Registering for [MoretonAlert](#)³ will ensure you receive up-to-date bushfire and severe weather advice. The Mt Nebo/Mt Glorious EWS does not negate the use of other emergency warning or alert systems.

Neighbourhood safer places

Other information for the use of Neighborhood Safe Places (NSPs):

- Firefighters may not be present, due to operational needs to fight the fire front elsewhere;
- NSPs are not evacuation centres and do not have security measures or any other provisions or services;
- NSPs do not cater for animals or pets;
- NSPs do not provide meals or amenities;
- People should not drive through fire-affected areas to get to a NSP; and
- NSPs may not provide shelter from the elements, particularly flying embers

For a list of NSPs in the region, visit ruralfire.qld.gov.au

² MBRC Mt Nebo/Mt Glorious EWS: www.moretonbay.qld.gov.au/Services/Disaster-Management/Disaster-Portal/Mt-Nebo-and-Mt-Glorious-EWS

³ MBRC MoretonAlert: www.moretonbay.qld.gov.au/Services/Disaster-Management/MoretonAlert

Bushfire - Response

Primary responsibilities for bushfire response & community consequences

QFES is the primary agency for bushfire response - QFES will undertake the actions necessary to combat fire and minimise loss of life and damage to property. LDMG agencies may support QFES to minimise the community consequences of bushfires.

Scalable nature of bushfire response

Bushfire response is often escalatory in nature where increasing levels of response occur as a fire grows in size and intensity. This increasing level of response is driven by the FDR where small fires on low-risk FDR days will typically involve fewer resources than a similar fire on a high-risk FDR day. On high-risk FDR days, QFES will position resources in accordance with their preparedness levels and will apply a greater level of attack to fires to prevent dangerous and uncontrollable fires.

Moreton Bay region - bushfire preparedness level framework

The QFES bushfire preparedness level (BPL) framework provides the means to control QFES resources involved in combatting and coordinating responses to fires. It cannot, however, effectively manage the community consequences that may arise from bushfire events.

Equally, fire response operations for complex and dangerous fires may require significant resources from the community and the state. The Bushfire Preparedness Level Activation Table provides a summary of the actions and notifications that are triggered as increases in the Moreton Bay Region BPL are notified to MBRC.

While QFES operations may escalate over time, the requirements for support from disaster management arrangements may also escalate. As complex or dangerous bushfires develop, or where the FDR poses a potential risk of such fires developing, it will be necessary for other agencies to become involved to support fire response operations and to manage community consequences. Other entities in the region have firefighting responsibilities within defined areas including QPWS, MBRC and Hancock Plantations.

QFES bushfire response framework

QFES manage bushfire response operations through a framework of initial response teams, Forward Control Points, ICCs and Regional Operation Centres.

Provision of liaison officers

Liaison Officers from agencies such as QFES and QPS may be deployed to both the ICC and Council to facilitate improved communication and decision making at both centres.

Media management

Media management during large scale, dangerous bushfires, is particularly critical to ensure public messages and bushfire warnings are delivered effectively. QFES maintain their own media management arrangements for bushfire response. Council's media staff also play a crucial role in coordinating and delivering public messages and bushfire warnings.

Bushfire preparedness level activation table

Actions/Notifications	Bushfire Preparedness Level (BPL)				
	BPL 1	BPL 2	BPL 3	BPL 4	BPL 5
Generic Staff & Agency Actions	Business As Usual	Maintain Situational Awareness	Notify staff and partner agencies	Notify all staff and partner agencies	State-led notifications to all regions and contact with all partner agencies
Weight of Initial Fire Response		Normal response	Increase initial response	Maximise initial response	Strategic use of aircraft and ground resources to potential areas of extreme risk
Resources Prepared		Additional resources identified	Additional resources verified	Optimum resources staged where appropriate	<ul style="list-style-type: none"> All resources activated / supported with interstate Resources considered to be staged Earth moving machinery on standby
Community Warnings		Provide general Community Safety info & advice	Contact key stakeholders and consider issuing general Community Warning	Issue Community Warnings	State-led Community Warnings for all incidents
Fire Permits		Ensure adequate Fire Permit Conditions	Consider Local Fire Permit restrictions or Local Fire Ban as appropriate	Implement Fire Ban	Consider declaring State of Fire Emergency
QFES Incident Command Centre		Incident Controller to determine Level of Activation			Established, staffed, reporting as directed
QFES Regional Operations Centre		Chief Regional Officer to determine Level of Activation			Fully staff, roster for 24/7 operations, reporting as directed
DDMG Arrangement		Stand Down	<ul style="list-style-type: none"> Stand Down Maintain Situational Awareness 	Alert	Lean Forward
LDMG Arrangements		Maintain Situational Awareness	<ul style="list-style-type: none"> Stand Down LDCC Alert Identify staff availability Very High Fire Danger Rating (FDR), consider placing fire management and evacuation centre staff 'on-call' 	<ul style="list-style-type: none"> Alert LDCC Lean Forward Develop staff rosters Severe FDR, place fire management and LDCC / Evac Centre 'on-call' 	<ul style="list-style-type: none"> Lean Forward / Stand Up LDCC Stand Up Activate 'on-call' roster Consider regional reinforcement request

PART 2 - HAZARD SPECIFIC ARRANGEMENTS - SEVERE WEATHER

Overview

Each year, on average, severe weather is responsible for more damage and cost to the insurance industry than tropical cyclones, earthquakes and bushfires combined. This section provides supplementary information on the responsibilities, considerations and activities required to prevent and mitigate the risk of Severe Weather in the Moreton Bay Region. This information is provided to support effective preparation for, management and coordination of Severe Weather responses, in addition to the information provided in the LDMP.

Key responsibilities

The following agencies have responsibilities relating to severe weather hazard management, response and recovery activities:

Entity	Specific Severe Weather Responsibilities
LDMG	<ul style="list-style-type: none"> - The LDMG has overarching responsibility for severe weather hazard management to enhance public safety.
MBRC	<ul style="list-style-type: none"> - Primary agency for severe weather response. - Undertaking flood studies, preparing, & maintaining flood mapping & modelling. - Floodplain & land use management and environmental assessments. - Community education, staff training & exercises. - Road closures. - Stormwater & catchment management. - Public warnings for potential or actual severe weather. - Clearing debris from public assets. - Assisting the community as required regarding storm debris removal. - Activating resources and operational centres for disaster response and recovery. - Opening and managing evacuation centres.
QPS	<ul style="list-style-type: none"> - Supporting agency for public information and warnings. - Policing of road closures as required. - Support to evacuations as required. - Coordination of search and rescue operations.

Entity	Specific Severe Weather Responsibilities
QFES	<ul style="list-style-type: none"> - Supporting agency through the provision of swift water rescue capability and damage assessments. - Response to vehicle accidents, building collapse, hazardous materials, search & rescue. - Provide advice and support to the LDMG in relation to disaster management and disaster operations
SES	<ul style="list-style-type: none"> - Storm damage response. - Assist with search and rescue. - Flood response operations.
DTMR	<ul style="list-style-type: none"> - Supporting agency for flood warnings and public information on flood events in relation to State/Federal roads and major transportation corridors. - Road closures for State roads.
Seqwater	<ul style="list-style-type: none"> - Operation of the North Pine Dam in accordance with its 'Flood Operation Manual'. - Providing advice to the LDMG on the impact of proposed releases that may affect downstream communities. - Additional information relating to Seqwater's responsibilities for North Pine Dam and Sideling Creek Dam is provided in subsequent paragraphs.
Energex	<ul style="list-style-type: none"> - Public information regarding power outages and restoration times. - Restoration of impacts on electricity supply.
BoM	<ul style="list-style-type: none"> - Provision of generalised storm and flood warnings for coastal rivers <p>Note: the BoM does not provide Flood Warnings for the Pine and Caboolture Rivers due to the relatively fast nature of flooding in these areas.</p>
Department Communities, Housing and Digital Economy (DCHDE)	<ul style="list-style-type: none"> - Provision of Human/Social support to storm and flood-affected people and communities as required.
Queensland Health	<ul style="list-style-type: none"> - Provision of public health information in relation to health and safety during severe weather events.
Australian Red Cross	<ul style="list-style-type: none"> - Support in evacuation centres and recovery management as required. - Provide outreach services.

Flood - hazard-specific information

The Moreton Bay Region is affected annually by severe weather that can deposit large amounts of rain in the river and creek catchments resulting in riverine flooding, flash flooding and overland flows which can have a significant impact on communities.

Flooding general characteristics

Very high tides can also cause flooding in coastal areas and can exacerbate inland flooding by disrupting river and creek outflows. Flooding in the region occurs quickly as the water drains from the mountainous areas in the west of the region. The relatively narrow nature of the floodplain means that flooding occurs quickly after heavy rain and generally recedes within a day.

Flooding is often the result of a slow-moving thunderstorm, cyclone or east coast low that results in heavy rainfall in a relatively short period of time. Catchment areas, creeks and river systems and drainage infrastructure unable to cope with the large volume of water may result in localised flooding.

Areas which have historically been affected by river/creek flooding are the older developed areas. Many of these areas were constructed prior to the development of the current minor/major drainage standards and therefore, drainage capacity for larger rainfall events was not included in the design. Key locations where this occurs are Burpengary, Caboolture, Morayfield, Dayboro and Woodford. The impacts from flooding in these areas are increased for older structures, constructed before the improved building codes were implemented.

Types of flooding in the region

The region is particularly prone to flash flooding and overland flows. Flash flooding occurs when soil absorption, runoff or drainage cannot adequately disperse intense rainfall. The most frequent cause of flash flooding is slow-moving thunderstorms. These systems can deposit extraordinary amounts of water over a small area in a very short time.

Overland flow is generally shallow fast-moving stormwater that may carry debris during intense rain events.

Most flooding is dependent on rain falling within the region's catchments, although there are isolated catchments outside the region that can contribute to potential flooding. Warning times for flooding in the region are generally considered extremely short with timeframes of about 6-9 hours between rainfall events. Some localities may be subject to fast flood conditions of less than 2 hours between heavy rain and flooding conditions.

Riverine flooding in the areas of Caboolture and Pine Rivers is a less common threat; although, major floods have been experienced in these river systems.

River/Stream catchments

A total of 14 separate drainage catchments are located within the region including the Pine and Caboolture Rivers, the headwaters of the Mary River, the Stanley River (a major tributary of the Brisbane River) and numerous large creek catchments. Some of these catchments straddle the boundary of the region.

The 14 catchment basins in the region are:

- Brisbane Coastal (BCC)
- Bribie Island (BRI)
- Burpengary Creek (BUR)
- Byron Creek (BYR)
- Caboolture River (CAB)
- Hays Inlet (HAY)
- Lower Pine River (LPR)
- Mary River (MAR)
- Neurum Creek (NEU)
- Pumicestone Passage (PUM)
- Redcliffe (RED)
- Sidling Creek (SID)
- Stanley River (STA)
- Upper Pine River (UPR)

Possible flooding scenario characteristics

According to the BoM (2012), major flooding in the region requires large-scale rainfall situated over the Pine and Caboolture River catchments. When the North Pine Dam is at full capacity, overflow may occur, and inundation of Petrie is likely. The likelihood of flooding in the catchment is as follows:

- Average catchment rainfalls more than 200mm in 12-hours cause minor to moderate flooding in both the Pine and Caboolture catchments. This flooding may lead to minor traffic difficulties as well as the inundation of low-lying areas.
- Average catchment rainfalls more than 300mm in 12-hours may cause major flooding. Rises in stream height may severely affect traffic capabilities and may affect houses and businesses on a widespread level. Releases from the North Pine Dam spillway during flood events usually result in the closure of Young's Crossing Road.

Information relating to MoretonAlert flood warning groups and associated gauges is available on the Council website moretonbay.qld.gov.au⁴.

Flood categories

The flood categories, as categorised by the BoM are:

Minor flood	May cause inconvenience. Low-lying areas next to watercourses are likely to be inundated. Minor roads may be closed, and low-level bridges submerged. In urban areas, inundation may affect some backyards and buildings below floor level as well as bicycle and pedestrian paths. In rural areas, removal of stock and equipment may be required.
Moderate flood	In addition to the above, the area of inundation is more substantial. Main traffic routes may be affected. Some buildings may be affected above the floor level. Evacuation of flood-affected areas may be required.
Major flood	Many buildings may be affected above the floor level. Properties and towns are likely to be isolated and major road and traffic routes closed. Evacuation of flood-affected areas may be required. Utility services may be disrupted.
Extreme flood	This causes inundation of houses and business premises and is beyond the current 1 in 100-year flood level used to control development levels. The general evacuation of people from significantly populated areas is likely to be required. Inundation up to the maximum footprint of the floodplain corresponding to probable maximum flood is considered very unlikely to occur but may be possible.
Flash flood	The BoM describes flash flooding as situations where the rain to flood time is less than 6 hours. As with the locations where river/creek flooding occurs, it is typically the older developed areas which are subject to flash flooding. The short duration of flash flooding events makes them harder to predict and more difficult to provide warnings. Flash flooding is considered the most dangerous form of flooding and the most likely to cause loss of life

Summary of risk factors

The risk factors that may influence flood risk:

- The nature of flooding in the region is characterised by the short interval between intense rainfall caused by slow-moving thunderstorms or east coast lows and the resultant flood impact
- Generally, this interval is between 6 to 9 hours but for some areas of the region is less than 2 hours
- The reduction in warning time increases the need for early activation of flood prediction and response capabilities

⁴ MBRC Flood gauge information: www.moretonbay.qld.gov.au/Services/Disaster-Management/Flood-Gauges

- Older, developed areas of the region are more vulnerable to flash flooding caused by the inability of existing drainage structures to cope with large rainfall events
- Large numbers of people live in these older areas and flooding is likely to have a greater effect on people in these older developed areas
- Many roads within the region may be affected by flooding and may need to be closed to ensure public safety
- The rapid onset of flooding means that many roads may need to be closed in very short time frames
- The short duration of flooding across the region dictates the need for well- developed post-flood operations procedures including damage assessment, disaster relief services, debris clearance and clean-up
- Changing climate that may lead to greater intensity in storms with higher levels of short duration rainfall could increase the flood risk across the region

Flood - hazard mitigation & risk reduction

This section outlines the hazard mitigation and risk reduction measures to reduce flood vulnerability. Minimising or mitigating the flood risks to life and property is generally achieved in three ways:

1. **Property modification** – by modifying or removing existing buildings and infrastructure and/or by imposing controls on future development (e.g. planning scheme and development controls).
2. **Flood modification** – by modifying the behaviour of the flood itself (capital works, drainage improvements and local building protective measures).
3. **Response modification** – by modifying the response of the population at risk to better cope with a flood event (flood prediction & warnings, community education and preparedness, emergency response plans, etc).

Flood mitigation strategies

Mitigation through planning schemes - property modification

A flood or overland flow hazard area is a zone that is considered likely to be impacted by flooding and overland flow that will impact on the community in a significant way.

Under the SPP, areas that have been identified as flood or overland flow prone require additional development controls to reduce flooding risk. Applications for development in these areas are to be assessed against the following requirements:

- Avoids natural hazard areas or mitigates the risks of the natural hazard to an acceptable or tolerable level;
- Supports, and does not unduly burden, disaster management response or recovery capacity and capabilities;
- Directly, indirectly and cumulatively avoids an increase in the severity of the natural hazard and the potential for damage on the site or to other properties;
- Maintains or enhances natural processes and the protective function of landforms and vegetation that can mitigate risks associated with the natural hazard; and
- Facilitates the location and design of community infrastructure to maintain the required level of functionality during and immediately after a natural hazard event.

The MBRC Planning Scheme outlines provisions and development controls that relate to the level of risk for premises. Free Flood Check Property Reports and further information on flooding is available

online in Council's [Flood Check](#)⁵ webpage, Overland flow path overlay and [Flood Hazard Overlay](#)⁶. These documents are available online at moretonbay.qld.gov.au.

Council has developed the 'Your Flood Smart Building Guideline' which will help a homeowner rebuild or retrofit if their home or building has been affected by flood or is in an area prone to flooding. This will assist in minimising life and work disruption during and after a flood event. This guideline is available online at moretonbay.qld.gov.au⁷.

Mitigation through hazard reduction programs - flood modification

Flood modification involves changing the characteristics of the land or flood-proofing buildings to eliminate or reduce flood hazards. Flood modification can include property owners undertaking local drainage improvements on their properties to avoid or minimise flooding risk. These may be permanent works or temporary in nature, such as the laying of sandbags to provide protection to the property. Correct installation of sandbags is critical to ensure they are effective. Sandbag locations, availability and instructions for the correct use of sandbags are available online at moretonbay.qld.gov.au⁸

Mitigation through community education programs

Council is an active member of the Brisbane Community Engagement Working Group which facilitates various agencies in the planning and delivery of severe weather community engagement activities across Southeast Queensland.

LDMG annual review community flood awareness & safety education programs

The LDMG periodically reviews the efforts of relevant agencies in delivering community flood awareness and safety education.

MBRC flood information centre

During a flood event, the MBRC Drainage Waterways and Coastal Planning unit activates the Flood Information Centre (FIC), to provide all flood information to the Local Disaster Coordinator (LDC).

Memorandum of understanding

The BoM, in accordance with an MoU with Council, operates a flood warning system for the Pine and Caboolture Rivers, based on the network of rainfall and river height stations.

Floodplain risk management framework

Council has developed a risk management framework to help ensure that floodplains within the region are managed for the long-term benefit of the community, hazards to people and infrastructure are minimised, and environmental values of the floodplain are protected. The framework is designed to meet the following broad principles:

- All levels of government and the local community know and accept their responsibilities for managing flood risk;

⁵ MBRC Flood Check Property Report: www.moretonbay.qld.gov.au/Services/Property-Ownership/Flooding/Flood-Check

⁶ MBRC Planning Scheme - Flood hazard overlay: <https://www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/MBRC/Info-Sheets/Flood-Hazard-Overlay>

⁷ MBRC Your Flood Smart Building Guideline: www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/Your-Home-And-Living

⁸ MBRC Sandbags and locations: www.moretonbay.qld.gov.au/Services/Disaster-Management/Sandbags

- All relevant agencies provide aid to the community in recovering from the devastating impacts of flooding;
- Flood risk and flood behaviour is understood and considered in a strategic manner in the development decision-making process;
- Land use planning and development controls minimise both the exposure of people to flood hazard and the potential damages to property and infrastructure;
- A broad range of floodplain management measures are assessed across a broad range of floods up to the Probable Maximum Flood;
- Floodplain management measures appropriate to the location and acceptable to the local community economically, socially and environmentally are used to manage flood risk;
- All relevant agencies work in partnership to provide flood forecasting and warning systems; and
- Emergency response arrangements that cope with the impacts of flooding on the community considering the available flood intelligence.

Council maintains a [Floodplain risk management framework](http://www.moretonbay.qld.gov.au) available for public access on its website [moretonbay.qld.gov.au](http://www.moretonbay.qld.gov.au)⁹.

Flood - response

Primary responsibilities for flood response

Council is the primary agency for flood management and has the following key strategies for flood response operations.

Provision of warnings and public information

Specific flood warnings will be provided to warn people who may be significantly affected by flooding. An example may include door-knocking campaigns by council staff or emergency services where public safety may be jeopardised in areas of high flood risk. Other information issued may include:

- road closures, traffic diversions and reopening of closed roads;
- public safety messages;
- opening of evacuation centres;
- likely duration of flood events;
- anticipated clean-up operations and information on property clean-up and safety advice; and
- information on the council operations and the operations/activity of key supporting agencies.

⁹ MBRC Floodplain risk management framework: www.moretonbay.qld.gov.au/Services/Reports-Policies/Floodplain-Risk-Management-Framework

PART 3 - HEATWAVE HAZARD SPECIFIC INFORMATION

Overview

As defined by the BoM, a heatwave is 'three days or more of high maximum and minimum temperatures that are unusual for that location'. Heatwaves have the potential to kill more people than any other hazard in Australia. They can also cause economic losses through livestock and crop loss, damage to roads, transport infrastructure, bridges and essential services.

Maximum temperatures in the region typically occur between November and February; however, excessive heat can occur between October and March. January is the most common month where heatwave conditions are experienced. The mean annual temperature in the region has risen by 0.2 degrees centigrade per decade since 1960, and the predicted rise in temperature by 2070 is three degrees centigrade.

The level of individual discomfort is determined by the following factors:

- Meteorological: air temperature, humidity, wind and direct sunshine
- Cultural: clothing, occupation and accommodation
- Physiological: health, fitness, age, level of acclimatisation

Impacts of high temperatures, above 35 degrees centigrade include:

- heat exhaustion;
- increased mortality among people with vulnerabilities;
- reduced food crops;
- increase in plant diseases and pests;
- reduced water supply; and
- increased bushfire hazards.

The Queensland State Heatwave Risk Assessment 2019 (SHRA) represents the most comprehensive analysis of future climate risk undertaken for a natural hazard risk assessment in Queensland and is available at disaster.qld.gov.au.

Heatwave - response

Queensland Health is the primary agency responsible for managing the effects of a heatwave in our region.

The LDMG will provide support to Queensland Health as required, to reduce the effects on residents. This may include providing temporary shelters from the heat and public information.

Heatwave - emergency communications

Queensland Health in conjunction with the LDMG and State Government agencies will provide warnings and public information relating to heatwave events.

PART 4 - STORM HAZARD SPECIFIC INFORMATION

Overview

Thunderstorms are typically short-lived storms that are small in extent but can traverse large distances and can inflict significant damage. In summary:

- The thunderstorm 'season' is usually October to April;
- The predominant storm approach direction is from the south-west;
- The typical forward speed of storms is 40 km/hr;
- Approximately 30% of severe storm days involve severe hail; and
- Tornadoes occur on average about 1 day per year in the region.

Historically, a total of 33 cyclone events within 200km of the region have been recorded over the past 100 years. Apart from strong winds, these systems bring intense storms and heavy rainfall over wide areas and produce extensive localised and regional flooding.

It is expected that climate change could result in an increase in the severity of cyclones and associated severe thunderstorms and possibly extend their tracks southward. Projected southward shifts in the primary regions of cyclone development through the coming century could result in a greater cyclone impact within the region in the future.

Although a thunderstorm is typically approximately 10km across and exists for 30 minutes, severe storms can have devastating impacts due to structural damage, flooding and disruption to infrastructure. Hail causes the greatest proportion of the damage, accounting for nearly half the total losses from severe storms. Severe winds can be associated with severe storms. Recent severe localised thunderstorm events experienced in the region have proved that they can cause significant community disruption and damage.

Severe thunderstorms bring destructive winds over limited areas as well as intense rainfall that can cause localised flash flooding. The characteristics of destructive winds include gusts over open flat land of between 125-164 kilometres per hour.

These wind speeds are associated with Category 2 Tropical Cyclones and can cause:

- minor house damage;
- significant damage to signs, trees and caravans;
- damage to crops;
- risk of power failure; and
- small craft to break their moorings.

Lightning strikes that reach the ground ('forked lightning') can spark fires and cause electrocution. Hailstones can form in a thunderstorm and have been recorded to become larger in size than cricket balls across Queensland.

Thunderstorms can bring intense rainfall that can exceed 200mm/hr, provided enough humidity exists. Flash floods often result from such a deluge where a relatively confined area receives most of the rain, but the drainage and runoff characteristics on the ground can also determine the area of greatest impact (see Hazard Specific Arrangements – Flood).

There is a high risk to the community should a very rare, high-intensity severe storm, move across populated areas.

The most significant impact of storms in our region is severe wind, even without rainfall or hail occurring. No part of the region is immune. Rural areas are more likely to suffer the impact of severe wind and hail than urban centres. However, when a severe storm does hit in an urban centre the damage and economic losses can be considerable.

Summary of risk factors

The factors that may influence storm risk include:

- a lack of public knowledge and understanding of the risks posed by severe storms;
- the characteristic rapid formation and movement of an individual or multiple storm cells across the region making localised predictions difficult and limiting the issue of timely warnings;
- inadequate maintenance of homes and businesses that increases the risk of property damage due to storm impact;
- lack of public knowledge of where to seek assistance in the event of loss of life, injury or damage to property; and
- road closures due to vehicle accidents, wind debris or localised flooding limiting operational response and pose a public safety risk to the travelling public.

Storm - hazard mitigation & risk reduction

Strategies used within the region in response activities are aimed at delivering effects needed by the community in a timely manner. They include:

1. Provision of community education and awareness of storm risks.
2. Encouraging the community to enhance their resilience to protect life and property.
3. Provision of timely warnings of potential and actual severe storms that pose a threat within the region.
4. Early activation of emergency services and council operations staff to provide timely responses.
5. Provision of evacuation centres.

LDMG storm mitigation strategies

Community education and awareness programs

Council, with support from other LDMG agencies, is responsible for defining and delivering storm awareness and safety programs. Key elements of these include:

- general information on storm risks in the region;
- preparations that the community can undertake to improve their resilience to storm events;
- general advice on storm safety (avoiding flooded areas, safety from lightning);
- how and where the community can access severe weather and storm warnings from sources such as the Council Disaster Portal and BoM; and
- where to access additional information or seek assistance before, during and after storms. For example, seeking SES assistance for storm damage.

Mitigation through the provision of public warnings

Providing timely public warnings of severe storms is critical to ensure the community is aware of the storm risk and can take precautionary and preventative action for personal safety and protection of property. The BoM is the primary agency responsible for the provision of severe weather and storm warnings.

Severe thunderstorm warnings are provided by the BoM when thunderstorms are expected to produce dangerous or damaging conditions. Severe weather warnings are also issued for land gales and destructive gusts or flash flooding.

Warnings may not provide much advance notice (can be less than 15 minutes). Warnings are usually issued only after evidence of severe thunderstorms has been received. There can also be delays in communications systems and in getting the warning broadcast by radio and TV.

Severe thunderstorms should not be expected to occur everywhere in the warned area or for the entire period covered by the warning. Warnings can only be effective if people take appropriate protective actions.

Mitigation through response plans

Considerations include:

- the LDMG/Local Disaster Coordination Centre (LDCC) is to provide strategic direction and coordination of the response between multiple agencies;
- opening of evacuation centres as required to provide support to people displaced by the storm event;
- Council's operational response teams including road closure crews;
- SES activated to provide storm damage assistance to the community;
- QPS to provide additional public safety and traffic management functions as required;
- Energex to manage and restore electricity supply disrupted by the storm event;
- QFES to provide response crews to a range of emergency situations including traffic accidents, Urban Search & Rescue; swift-water rescue; and
- conduct of interagency damage assessment in impacted areas.

Storm - preparedness & planning

The onset of storm events dictates that the LDMG and response agencies maintain an ongoing preparedness to respond to short notice severe weather. Elements of readiness include:

- activation of resources such as the LDCC and FIC;
- engagement with the Disaster District for possible District support requirements;
- mobilisation of emergency services agencies;
- pre-positioning of signage at strategic locations;
- stocking of sand and sandbags at designated locations;
- planning and preparation for specific response operations at known high-risk locations;
- planning for the potential closure of roads, schools and public facilities;
- planning for the opening of evacuation centres including preparing resources needed for their operation;
- provision of public warnings and public information to prepare the community;
- the stocking of critical supplies such as fuel, generators and storm damage supplies by key agencies;
- provision of assistance to move vulnerable people to areas of safety;
- aiding the community to remove potential wind-borne debris through the provision of increased waste removal services; and
- undertaking key asset protection measures on public assets.

LDMG review of annual community storm awareness and safety education programs

The LDMG periodically reviews the collective efforts of all relevant agencies in delivering community storm awareness and safety education throughout the year with a focus on increasing community awareness prior to the storm season.

Storm - emergency communications

Effective emergency communications across the community and between agencies are critical due to the fast-moving nature of storm events. For the various public information warnings and information issued during a storm event, please refer to the Public Information and Warnings section located under 'Part 7 - Response' in the LDMP.

Storm – response

The LDMG has overall responsibility for managing severe storm response and manages this through the following strategies:

1. Early activation of resources to prepare for, plan and coordinate disaster operations, as well as the transition to recovery.
2. Provision of timely and accurate public warnings and information.
3. Effective and timely management of storm-related disaster operations.
4. Appropriate resourcing to deliver road closures, diversions and associated signage, clearance of storm debris, search and rescue and provision of evacuation centres.

Storm - relief & transition to recovery

Most storm events will not require a formal recovery effort. However, major or catastrophic storm events will likely require a comprehensive recovery phase. In such cases, it is vital that the transition from disaster operations to recovery is planned and implemented seamlessly, through the following strategies:

1. Effective planning for post-storm operations that establishes the priority of effort across the region.
2. Undertaking timely and coordinated storm damage assessments.
3. Timely clearance of debris and other hazards from public assets (roads, bridges, culverts, etc).
4. Re-opening of closed roads and providing up to date public information.
5. Providing timely assistance to the community for clean-up operations in storm-affected areas.
6. Providing appropriate and timely disaster relief to people impacted by the storm.
7. Formal handover procedures from disaster operations to recovery.

Planning post-storm operations during the response phase

Some areas may have little impact while other areas may have small pockets of devastation. In some cases, there may be many areas that require clean-up, debris removal, infrastructure inspections and safety assessments that will require the setting of clear priorities based on available resources.

Timely and coordinated storm damage assessment and reporting processes

Damage may occur to public assets, businesses, and private residences. Council is the lead agency for damage/safety assessments for public assets such as bridges, culverts and local roads. QFES may undertake assessments of damage to business and private homes. Assessment of damage to utilities will be undertaken by the operators of those utilities e.g. Unitywater, Energex, etc. These assessments provide a comprehensive understanding of the overall storm impact.

Timely clearance of debris and other storm-related hazards from public assets

Debris clearance is required from public assets before these can be properly inspected, deemed safe and returned to normal use. In addition, storm debris may include hazardous materials that pose a safety risk to the public or the environment.

Timely re-opening of roads including public information

A priority task in post-storm operations is the re-opening of closed roads. Closed roads can have a significant economic impact on a region as well as causing significant inconvenience to the travelling public. Public expectations are high that roads will be re-opened as soon as possible.

Coordination between debris clearance teams and asset safety assessors is required to minimise delays in re-opening roads and bridges.

Provision of assistance to the community for clean-up operations

The removal of storm debris and storm damaged goods from homes and businesses is primarily the responsibility of the owner. However, storm events can cause significant damage and the community will often require assistance in the removal and clean-up of damaged goods after an event.

Clean-up operations can only commence when it is safe for home/business owners to return to their properties after a storm. Community safety may be affected by the nature of storm debris e.g. sewerage, electrical safety concerns or lack of access due to excessive amounts of debris on roads.

It is important to identify vulnerable people that may have been impacted by the storm event and put in place measures to provide appropriate disaster relief to those who require support.

Where significant impact on business and industry has occurred, it is important that some form of economic outreach led by Council's Planning and Economic Development Directorate be undertaken to determine possible economic impacts and to enable economic recovery issues to be identified and addressed.

PART 5 - STORM TIDE HAZARD SPECIFIC INFORMATION

Overview

A storm tide is a rise in seawater that occurs during a cyclone or storm. High rainfall associated with a storm may also cause river and creek rises. A storm tide that coincides with river or creek flooding may disrupt normal outflows leading to increased flooding upstream.

Storm tide is not the same as a tidal wave (which is a towering wall of seawater which comes crashing into shore). A storm tide comes in like a rapidly rising tide, but it can be extremely dangerous and destructive.

Key responsibilities

This section outlines the key agency responsibilities for storm tide management in the region.

Entity	Specific Severe Weather Responsibilities
LDMG	<ul style="list-style-type: none"> - Prepare relevant plans to manage possible storm tide events
MBRC	<ul style="list-style-type: none"> - The primary agency for storm tide mitigation through the provision of storm tide modelling & mapping (including evacuation zones) and managing development under the MBRC Planning Scheme in accordance with the SPP. In addition, Council is responsible for: <ul style="list-style-type: none"> - Community education and public information regarding storm tide risks - Provision of public warnings to affected communities based on storm tide advice received from the BoM - Road closures in storm tide affected areas as required for public safety - Provision of community support including evacuation support to people affected by storm tides - Assisting in the recovery of storm tide affected communities
QPS	<ul style="list-style-type: none"> - Police public safety and property security - Supporting agency for the dissemination of storm tide warnings Supporting agency for public information on storm tide impact or potential impact - Assistance with the policing of road closures as required Support to evacuations as required
QFES	<ul style="list-style-type: none"> - Supporting agency for flood response through the provision of swift water rescue capability as required - Coordination of SES support to assist with storm tide warnings and evacuations as required - Provide advice and support to the LDMG in relation to disaster management and disaster operations
Energex	<ul style="list-style-type: none"> - The primary agency for the maintenance of electricity supply before, during and after storm tide impacts

Entity	Specific Severe Weather Responsibilities
BoM	<ul style="list-style-type: none"> - Monitoring the progress of cyclones, east coast lows and other severe weather events and issuing Cyclone, Storm and Storm Tide Warnings as necessary - Being available to provide technical warning advice to the LDMG before and during a storm tide event
Department Environment and Science (DES)	<ul style="list-style-type: none"> - Monitoring water levels using a network of storm tide gauges Liaising with the BOM to confirm the information in Storm Tide Warnings. - Being available to provide technical advice on storm tide to the LDMG before and during a storm tide event
DCHDE	<ul style="list-style-type: none"> - Provision of Human/Social support to storm tide affected persons and communities as required
Queensland Health	<ul style="list-style-type: none"> - Provision of Health Public Information in relation to health and safety during storm tide events
Red Cross	<ul style="list-style-type: none"> - Support in Evacuation Centre Management as required

Storm tide - hazard mitigation and risk reduction

This section outlines the hazard mitigation and risk reduction measures applied within the region to reduce the effects of a storm tide event. Preventing a storm tide is not possible and measures that reduce the impact of such events must be applied.

Minimising or mitigating storm tide risks to life and property can generally be achieved in two ways:

- **Property modification** – identifying properties at risk and by modifying or removing existing buildings and infrastructure and/or by imposing controls on future property and infrastructure development (e.g. Coastal Hazards Overlay and coastal and storm tide inundation mapping)
- **Response modification** – by modifying the response of the population at risk to better cope with a storm tide event. Such measures include:
 - storm tide prediction and warnings
 - community education and preparedness.

Emergency response plans including the identification of storm tide evacuation zones to ensure timely and effective evacuation from areas at risk of storm tide inundation

Below is a list of suburbs in the region that may be affected by a storm tide event (note many of these suburb's experience only minor storm tide effects that do not pose a significant threat to people and property).

- | | | |
|---------------------------|--------------------------|----------------------|
| - Banksia Beach | - Elimbah - Northeast | - Petrie |
| - Beachmere - Northeast | - Godwin Beach | - Redcliffe |
| - Beachmere - Northwest | - Griffin - North | - Rothwell |
| - Beachmere - South | - Griffin - South | - Sandstone Point |
| - Bellara | - Kallangur | - Scarborough |
| - Bongaree | - Kippa-Ring | - Strathpine |
| - Brendale | - Lawnton | - Toorbul - East |
| - Burpengary East - North | - Mango Hill | - Toorbul - West |
| - Burpengary Easy - South | - Meldale | - Welsby - Northeast |
| - Caboolture - Northeast | - Morayfield - Northeast | - Welsby - Northwest |
| - Caboolture - Southeast | - Murrumba Downs | - Welsby - Southeast |
| - Clontarf | - Newport | - Welsby - Southwest |
| - Deception Bay - North | - Ningi - East | - White Patch |
| - Deception Bay - South | - Ningi - Northwest | - Woody Point |
| - Donnybrook - North | - Ningi - Southwest | - Woorim - North |
| - Donnybrook - South | - North Lakes | - Woorim - South |

Community education programs

Council, with support from other agencies as required, is responsible for defining and delivering storm tide awareness and safety programs. Key elements of a community storm tide awareness and safety education program include:

- general information on the storm tide risk in the region to increase community awareness of areas that are subject to seawater inundation;
- the promotion of the storm tide mapping available on the council website;
- ensuring the community can access severe weather, tidal information and storm tide warnings including the BoM, Moreton Alert, Road Conditions Report etc; and
- provision of storm tide safety information detailing the measures at-risk communities should observe during potential storm tide events, specifically the requirement for evacuations from areas of high risk.

Community storm tide awareness and safety education programs utilise multiple strategies to communicate with the public and may include:

- Use of traditional media outlets e.g. television, radio, newspapers
- Agency websites
- Social media including Facebook, Twitter, Instagram, YouTube, etc
- Displays at public events and in public spaces
- Community meetings (useful for high-risk communities)
- Mailouts and provision of pamphlets, guidelines and other paper-based or electronic information products

The LDMG reviews the efforts of agencies in delivering community hazard awareness and safety education throughout the year. This ensures a focus on increasing community awareness prior to the storm season.

Storm tide - preparedness and planning

Storm tide poses a potentially grave risk to people and property and may lead to death by drowning. It is therefore critical to ensure that appropriate preparedness and response arrangements are in place to provide adequate warnings and undertake evacuations from storm tide areas where people may be at risk.

These 2 imperatives underpin the LDMG preparedness and planning strategies which are:

1. Rapid dissemination of location-specific warnings to people and communities that may be at risk of a storm tide.
2. Early evacuation of people from defined storm tide evacuation zones as required to preserve life.

Storm tide warnings to people at risk

The BoM will issue warnings when the predicted tides are expected to exceed Highest Astronomical Tide (HAT) as part of their suite of severe weather/tropical cyclone warning products. Council is the primary agency for ensuring that affected communities within the region are provided with adequate warning of any storm tide risk once the BoM has issued warnings of tides above HAT. Other agencies such as QPS and QFES may assist Council in ensuring warnings are disseminated to people at risk.

Methods for delivering such warnings include, but are not limited to:

- broadcast by television and radio (possibly in conjunction with the use of SEWS);
- warnings to defined Alert Groups using MoretonAlert;
- activation of EA Campaigns;

- warnings issued on social media (Facebook, Twitter, etc);
- door-knocking campaigns in high-risk areas (by council staff, SES, etc); and
- use of public address/loud hailer systems in high-risk areas.

Early evacuation of people from defined storm tide evacuation zones

Storm tides can cause fatalities and the only effective treatment of this risk is to remove people from a place of danger to a place of relative safety. Evacuations from high-risk storm tide zones may be required to preserve life.

Key considerations for storm tide evacuations include:

- **Accuracy of predictions:** In the early stages of a storm tide event, storm tide estimates are a rough approximation due to the limitations of the science behind predicting these events. As the forecast accuracy increases, the time available to evacuate diminishes.
- **Time available:** Any evacuation should be completed before wind conditions prohibit safe movement. For planning purposes, the winds reaching this threshold are most likely to occur 3 to 12 hours before the cyclone centre crosses the coast, though earlier onsets are possible depending on the size and speed of the cyclone. For a cyclone, the outer ellipse on tropical cyclone track maps shows the distance of 100km/hr wind gusts from coastal centres.
- **Associated flooding:** Coincidental River flooding may increase the height and extent of tidal penetration in some localities.

Storm tide - response

If not previously activated during the weather event, the LMDG and the LDCC will be activated for storm tide response operations.

The three operational phases of the storm tide warning system include:

- Initial storm tide warning
- Subsequent storm tide warnings
- Final storm tide warning

The issue of an initial storm tide warning is the trigger for the activation of the LDMG/LDCC to undertake planning and implementation of disaster operations specific to the storm tide threat. Subsequent storm tide warnings may indicate a change in the time, extent and size of any predicted storm tide and may require adjustments to disaster operational plans and public information.

Key response strategies for storm tide

The key strategies for any storm tide response are as follows:

1. Clarify the storm tide threat
2. Determine possible evacuation requirement
3. Determine public warning requirements
4. Implement evacuation plans including the opening of evacuation centres
5. Implement public safety arrangements
6. Provide public information about the event

The strategies are not sequential in nature and may be conducted concurrently. Each is discussed further in the paragraphs below:

Clarify the storm tide threat

In addition to defining the potential localities that may be affected and the size of the storm tide at those locations, Council will consider that subsequent storm tide warnings may change the size, scope and extent of the predicted storm tide. Planners will need to adjust response plans accordingly.

Determine possible evacuation requirements

Reference to evacuation maps and land use data for evacuation zones will assist in determining the likely impact of any storm tide event. Note that more than 1 evacuation zone may be affected.

Determine public warning requirements

Once the BoM advises the community through their standard warning products that tides are expected to exceed HAT, the LDMG must implement a public warning and information campaign to ensure people at risk are appropriately informed.

Implement evacuation plans including the opening of evacuation centres

The LDCC will consider the potential for evacuations based on storm tide predictions from the BoM and should strive to make early assessments of evacuation needs to enable the mobilisation of required people and resources to operate evacuation centres.

Provide public information regarding the event

Public information may include details of:

- road closures, traffic diversions and reopening of closed roads;
- public safety messages such as 'If its Flooded, Forget It'; or public health warnings relevant to the impact of seawater inundation;
- the opening of Evacuation Centres;
- the likely duration of flood events;
- anticipated clean-up operations and information on property clean-up and safety advice; and
- information on the council operations and the operations/activity of key supporting agencies.

All public warnings and information must include details on where the public can seek further information.

Storm tide - relief and transition to recovery

This section supplements the strategies and requirements detailed in the LDMP and the Recovery Plan for the conduct of post-storm tide operations including the provision of relief services and the transition to recovery.

LDMG strategies for transition to recovery

Storm tides in the region are likely to be of relatively short duration, although remnant inundation in low-lying areas may remain for several days. This short event duration means that post-impact operations including the provision of effective and immediate relief services to those affected must be planned early in the response phase to avoid unnecessary delays. It also dictates the need for a rapid transition to recovery after the storm tide (and associated storm/cyclone) has passed. Planning for this transition must coincide with disaster operations.

The passing of the immediate storm tide threat is the trigger for the commencement of post-storm tide operations. It should be noted that impacts might vary across the region. Planning for the provision of relief services, clean-up operations and restoration of services needs to take this variability into account and priorities for post-inundation operations must be established early.

The LDMG strategies for immediate storm tide operations are:

1. Effective planning for post-inundation operations that establishes the priority of effort in affected areas.
2. Undertaking timely and coordinated damage assessments and reporting on impacted areas.
3. Timely clearance of debris and hazards associated with the event from public assets (roads, bridges, culverts, etc).
4. Re-opening of closed roads and providing up to date public information on the opening of roads.
5. Providing timely assistance to the community for clean-up operations in affected areas.
6. Providing appropriate and timely disaster relief to people impacted by the event.
7. The conduct of formal handover procedures from disaster operations to recovery.

Planning post-storm tide operations during the response phase

Seawater inundation will generally recede in some areas more quickly than in others and it is important to identify those areas where post-disaster operations can be undertaken while waiting for seawater to recede in other areas. In some cases, there may be many areas that require clean-up, debris removal, infrastructure inspections and safety assessments that will require the setting of clear priorities for effort based on available resources. A post-event operational plan should be developed as early as possible to:

- assess timings when seawaters are likely to recede in key areas along the coastline to define a geographic priority of effort;
- establish the areas where post-event damage and safety assessments are required in priority order;
- define the post-event assessment process to be applied including resources needed for damage/safety assessments, timeframes for assessment and reporting and analytical processes to be used to produce effective damage assessment intelligence;
- anticipate areas where community support is likely to be needed, either for the provision of disaster relief services or for the assistance required by the community to support clean-up;
- outlines the resources and timeframes necessary for the removal of debris and other storm tide related hazards from public assets; and
- anticipate when re-opening of closed roads is likely to occur.

While Council is considered the lead agency for post-disaster damage/safety assessments, debris and hazard removal and support to the community for clean-up operations, other agencies may provide a supporting or contributing role. For example:

- QFES may be required to assist in providing resources to hose down seawater debris from key facilities such as sporting complexes, etc.
- DCHDE may be required to provide community support to storm tide victims.

The plan may need to be routinely updated and further developed during disaster operations as additional information and damage assessments are received. The plan should be distributed to all agencies that have a contributing role in post-storm tide event operations.

Timely and coordinated storm tide damage assessment and reporting processes

All damage/safety assessments need to be coordinated and collated to develop a comprehensive understanding of the overall impact.

Additionally, some analytical effort of damage reporting is required to identify trends or associated issues that may arise because of specific damage. For example, the time taken to re-open roads may impact on business cash flow for businesses on that road.

The LDCC should ensure that damage assessment reporting processes allow for the capture and analysis of all major damage impact so that effective planning for recovery can be undertaken.

Timely clearance of debris and other storm tide related hazards from public assets

Storm tide events will likely create large volumes of debris that will need to be cleared from public assets such as roads, bridges, culverts, etc. Often this clearance is required before these assets can be properly inspected, deemed safe and returned to normal use. In addition, debris may include hazardous materials that pose a safety risk to the public or the environment. Disposal of significant quantities of debris may pose additional issues and the impact on regional waste management facilities and arrangements should be considered.

Timely re-opening of roads including public information

The re-opening of roads usually requires clearance of debris and the conduct of road safety inspections before the road can be re-opened after significant inundation. Coordination between debris clearance teams and asset safety assessors is required to minimise delays in re-opening roads.

Provision of assistance to the community for clean-up operations

Considerations for assisting the community to clean-up after a storm tide event include:

- Provision of kerbside/street waste collection bins that can be used to deposit damaged goods;
- Provision of assistance in hosing down mud, silt and other debris from properties e.g. QFES may be able to assist with RFS water tankers and hoses to clear away large volumes of mud/silt from affected homes, community or sporting facilities; and
- Provision of advice on:
 - removal of dangerous goods e.g. asbestos;
 - disposal of spoiled food;
 - electrical safety to homes/businesses affected by inundation including required safety inspections;
 - cleaning tips of cleaning mould and fungus caused by the effects of flooding; and
 - health and safety measures to prevent injury/illness when working in affected areas e.g. hygiene tips, use of personal protective equipment, etc.

Clean-up operations can only commence when it is safe for home/business owners to return to their properties after a storm tide event. Community safety may be affected by the nature of storm tide debris e.g. sewerage or by electrical safety concerns or lack of access due to excessive amounts of debris on roads. Initial damage assessments of storm tide affected areas should consider the safety of people to return to their homes/businesses to commence clean-up operations.

Provision of appropriate disaster relief to people impacted by storm tide

It is important to identify vulnerable people that may have been impacted by the event and put in place measures to provide appropriate disaster relief to those who require support. Outreach activities are coordinated through the DCHDE. The purpose of outreach operations is to identify vulnerable people and their needs.

Where significant impact on business and industry has occurred, it is important that some form of economic outreach led by Council to determine possible economic impacts and to enable economic recovery issues to be identified and addressed.

Formal handover from disaster operations to disaster recovery

The Moreton Recovery Group will develop detailed recovery plans to address the needs of the community following a storm tide event.

PART 6 - OTHER HAZARDS

Earthquake and Tsunami

An earthquake offshore may produce a tsunami or a tidal wave that could impact the Moreton Bay Region. People living or working in areas potentially affected by a tsunami need to know that they should move to safer areas if a tsunami warning is issued for their area.

The BoM issues land inundation warnings to advise people to move at least 10-metres above sea level or at least one kilometre away from all beaches and the water's edge of harbours and coastal estuaries.

For further Tsunami information, visit: Queensland Government - [Tsunami information page](#)¹⁰

Major fire

A major fire is a fire that occurs within a built-up area, in contrast to a bushfire which occurs in a rural setting. Major fires within the region's urban settings have the potential to injure or kill large numbers of people due to the higher density of residents. Fires may spread to surrounding buildings and people may become trapped, overcome by smoke and unable to escape. Buildings within the region are regulated in terms of the Building Code of Australia, which sets the standards of building work in Australia.

QFES is the primary agency of fire services in our region, responsible for responding to major fires involving buildings, vehicles, hazardous materials and vegetation.

For further information, visit: [Queensland Fire and Emergency Services](#)¹¹

Pandemic

A pandemic could occur over a prolonged period (over a year) and in several ways. There may be rolling outbreaks of disease and periods where the disease is quite dormant. Its effects could be catastrophic causing geographic widespread death and illness nationally and internationally, and temporary changes in many areas of the region. In the past, pandemics have significantly altered society including the near eradication of some communities and entire nations have been decimated.

The entire population of the region is at risk to a pandemic, with the aged care sector, hospitals and schools having a higher-than-average exposure risk. The high incidence of commuters and users of public transport travelling to/from Brisbane CBD, as well as the numerous community events, increases the risk of infection and spread of disease in these areas.

For further information, visit: [Queensland Health - Pandemic Influenza](#)¹² and most recently the Coronavirus (COVID-19) pandemic [Queensland Health - Coronavirus \(COVID-19\)](#).¹³

¹⁰ QLD Government, Tsunami information: www.qld.gov.au/emergency/dealing-disasters/disaster-types/tsunami

¹¹ QLD Fire and Emergency Services: www.qfes.qld.gov.au

¹² QLD Government, Pandemic Influenza: www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/diseases/influenza/pandemic

¹³ QLD Government, Coronavirus: www.qld.gov.au/health/conditions/health-alerts/coronavirus-covid-19/current-status/statistics

FOR MORE INFORMATION

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