FACT SHEET

Scenic Rim Planning Scheme 2020

Planning for the Risk of Flooding

What is Council's role in flood hazard management?

Through their planning schemes, Councils are required to ensure that the risks associated with flooding, including the projected impacts of climate change, are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards. This is a Queensland Government requirement expressed in the *State Planning Policy 2017*.

Our region has always been affected by riverine flooding and the community has adapted and shown resilience throughout several significant floods.

Following the Queensland floods of 2011 and subsequent events, the awareness of flood risk and how to better integrate flood risk management with land use planning has improved.

How does the Planning Scheme regulate development in flood prone land?

The Flood Hazard Overlay Code in the *Scenic Rim Planning Scheme 2020* (planning scheme) will guide the future development of sites at risk of flooding by including overlay mapping to show a Flood Hazard Area. This triggers specific assessment criteria to ensure that development addresses the potential flood hazard on the site.

These regulations only apply to new development (including extensions, rebuilds and expansions).

What do the Overlay Maps in the Planning Scheme show?

In the Planning Scheme, the Flood Hazard Overlay Map shows a *Flood Hazard Area* incorporating:

1. a *Defined Flood Event* (based on 1% AEP, including climate change flood modelling);
2. an *Investigation Area* (based on the Queensland Reconstruction Authority's Interim Flood Assessment Overlay).

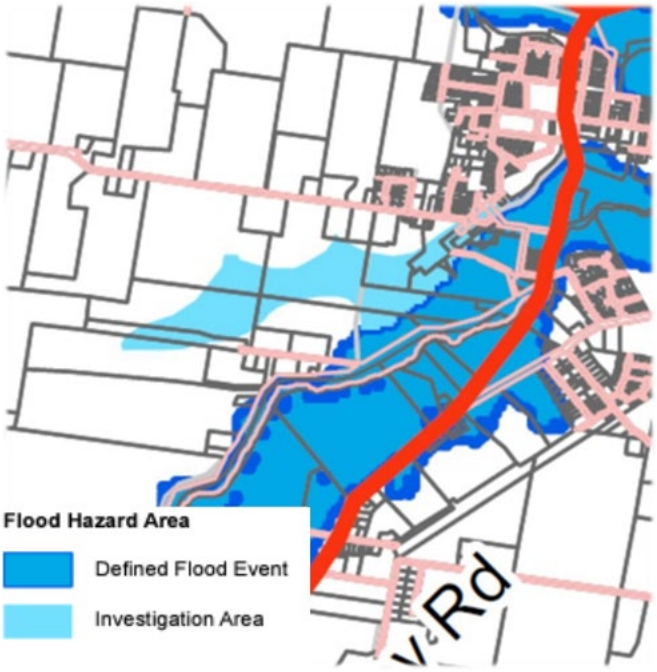

Figure 1: Mapped Flood Hazard Areas - Defined Flood Event; and Investigation Area

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What is the 1% AEP?

Annual Exceedance Probability (AEP) refers to the probability of a particular flood event occurring in any year. The probability is expressed as a percentage and is determined by undertaking a flood model for a site or area.

A flood event with **a 1% AEP is a flood that is calculated to have a 1% chance of occurring in any one year.** The 1% AEP is also known as the 1 in 100 year Average Recurrence Interval (ARI) or Q100 event and is commonly used for urban planning purposes as the line of acceptable risk for most types of development.

The 1% AEP represents the probability of occurrence - a 1% (or 1 in 100) chance that the event will be equalled or exceeded in any year. For that reason, 100 years of data to determine the 1% AEP is not required as it is about the percentage probability, not frequency of occurrence. A 1% AEP event should not be interpreted as only occurring once in 100 years.

While the 1% AEP flood event is commonly used for urban planning purposes as the line of acceptable risk to protect people and new buildings, there is always a possibility of rainfall beyond that contemplated by the 1% AEP event that may exceed the defined flood event.

What kind of flood modelling has Council undertaken?

As part of its commitment to improving planning for land affected by flooding in the region, Council is undertaking ongoing investigations which result in flood models that show flood events at the 1% Annual Exceedance Probability (AEP) that includes an additional climate change factor.

A flood model is developed by combining a range of data in a computer-based model that produces mapping showing the area that is predicted to be impacted by flooding during the modeled flood event. The data includes:

- Rainfall and storm event information;
- Mapping of land contours, hills and waterway locations;
- Studies of local catchments;
- Assessment of various rainfall events and the potential volume of water involved;
- Hydrological assessment of the amount of rainfall expected in particular modelled events; and
- Predicted increases in rainfall intensity to address climate change.

This information is entered into the modelling software, calibrated against recorded flood events and flood maps are produced for the 1% AEP flood event and additional climate change factor is included.

Figure 2: Flooding at Tamrookum 2013

Why is the 1% AEP modelled for the flood maps?

The majority of planning authorities have adopted the 1% AEP flood event to balance the risk of flooding against the future vibrancy and livability of our region. The flood overlay maps in the Planning Scheme are designed to identify hazard areas that are subject to flooding and act as a trigger for development assessment.

It is important to recognise that these maps generally show flooding at the regional catchment level and do not show flood risk in its totality. Infrequent or local floods can affect any property. Larger flood events also occur, however the probability of these is much lower.

How has the effect of climate change been considered in Council's flood models?

The *State Planning Policy 2017* requires the projected impacts of climate change to be considered in the management of natural hazards in the region.

The two main parameters investigated for climate change for inland flooding include the potential for sea level rise and increased rainfall intensities.

The Scenic Rim local government area is located in the upper reaches of the Brisbane, Logan-Albert and South Coast drainage basins. Accordingly, it is not anticipated that these areas will be influenced by rising sea levels. Climate change in the region will therefore be assessed via increased rainfall intensity predictions only.

The latest Australian Rainfall and Runoff (AR&R 2016) recommendations on climate change proposes two Representative Concentration Pathways (RCPs) for greenhouse gas and aerosol concentrations driving climate change for the East Coast Cluster, being RCP 4.5 and RCP 8.5. The predicted increase in rainfall intensity for each climate change scenario is included in the below table.

REPRESENTATIVE CONCENTRATION PATHWAY	TEMPERATURE INCREASE AT 2090 HORIZON	INCREASE IN RAINFALL INTENSITY (%)
RCP4.5	2.25	12
RCP8.5	4.10	22

To address climate change in the management of flood hazard in the region, the predicted increase in rainfall intensities is required to be applied in both the hydrologic and hydraulic flood models for each of the flood studies undertaken for the catchments of the region. In summary, these studies include:

- Bremer River
- Warrill Creek
- Purga Creek
- Teviot Brook
- Logan River
- Albert River
- Upper Coomera River
- Canungra and Biddaddaba Creek (including the Revised Canungra Township Area)
- Veresdale (Cyrus Creek catchment)

Both climate change scenarios have been modelled for the above flood studies. To meet the climate change requirement of the *State Planning Policy 2017*, Council has incorporated the RCP4.5 factor in establishing the Defined Flood Level for the region, being the 1% AEP flood event. The climate change consideration (i.e. RCP4.5) has been incorporated within the Defined Flood Event shown on the Flood Hazard Overlay Map.

Figure 3: Flooding at Wilsons Plains Road, Harrisville 2013

How accurate are Council's flood models?

As with all flood models, Council's flood models are an estimation of the flood event that is projected or anticipated to occur. The models are based on science, but similar to weather forecasting, flood modelling is not an exact science. It is an educated, fact-based indication of the likely outcome of particular rainfall events in specific catchment conditions.

To confirm the accuracy of its flood models, Council has compared the model outputs with historic flood events recorded across the catchments in the Scenic Rim.

Has Council undertaken flood modelling everywhere in the Scenic Rim?

At present, flood modelling based on the 1% AEP flood event (plus climate change) has been undertaken across all major catchments in the Scenic Rim. Where a 1% AEP including climate change model is not available, Council will rely on the Interim Flood Assessment Overlay (IFAO) prepared by the Queensland Reconstruction Authority.

What is the Investigation Area?

The Investigation Area is based on the Queensland Reconstruction Authority's Interim Floodplain Assessment Overlay (IFAO) maps. These maps were prepared using existing State wide datasets to determine floodplain maps where floodplain mapping did not exist. The mapping is not based on a particular AEP event or Defined Flood Event such as a 1% AEP, nor does it represent the Probable Maximum Flood (PMF), which is commonly derived through detailed flood studies to identify the extent of the floodplain.

The mapping also does not include or specify a flood level or flood flow velocity. Instead, the mapping is generally based on various landform datasets that represent or indicate previous inundation. It is a spatial extent based on these datasets to determine an area of interest for potential flooding impacts, hence being named the 'Investigation Area'.

Hazard mapping

In addition to the mapping that shows the Flood Hazard Area, mapping is also available for some land, which shows the degree of flood hazard (low, medium and high). Development is discouraged on land subject to high hazard as flood waters on this land have the potential to reach dangerous depths and velocities.

Does Council allow for future development in a Flood Hazard Area?

Council may allow for development in the Flood Hazard Area, but only in a controlled way and where it has been demonstrated that the flood risk cannot be avoided on the land. The planning scheme introduces a number of requirements in the form of assessment criteria that must be met in order to obtain development approval. The purpose of the assessment criteria is to ensure that development in a Flood Hazard Area does not cause any adverse impact on any other properties, on the region as a whole and on Council's capacity to exercise its responsibilities with respect to flood emergency management.

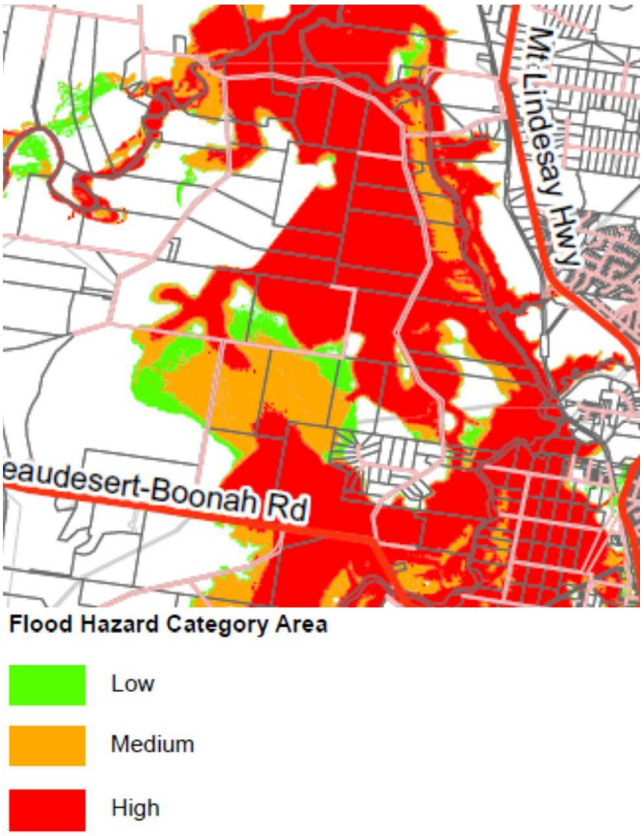

Figure 4: Flood Hazard Categories

How do I obtain flood levels for my property?

You may be able to obtain the flood level for your property if it is located in the Defined Flood Event on the Flood Hazard Overlay Map. To obtain the specific flood level for your property, you will need to apply to Council for a **Flood Level Search**, which involves a moderate fee.

The outcome of a Flood Level Search is the Designated Flood Level, which is reported in metres AHD (Australian Height Datum), the nationally adopted standard to which all elevation for mapping is to be referred. As a general guide, 0.0m AHD is close to the mean sea level.

Flood level search results are associated with riverine or regional flooding only, not local flooding. Regional flooding is caused by long duration rainfall over a whole catchment or number of catchments. Local flooding is caused by high intensity and short duration rainfall over a local drainage catchment.

Where the report indicates no information available, it does not necessarily mean that your property is immune from flooding.

If you require the Defined Flood Level for development purposes, you may be required to commission a flood study undertaken by a suitably qualified professional that investigates the impact of the development on the floodplain and demonstrates compliance with the planning scheme provisions.

Why has Council allowed building and subdivision in areas that are shown in the Flood Hazard Area?

Planning approvals in the past were assessed against the best available information at the time. As such, approval to construct may have been granted on a property that may now be included in the Flood Hazard Area.

If my property is included in the Flood Hazard Area, will my insurance premiums be affected?

The risk of flooding to properties identified in the Flood Hazard Area has always existed. The mapping in the planning scheme documents an existing risk and provides residents with the information they need to assess the risk to their property in a major rainfall event. Any questions regarding changes to your insurance should be directed to your insurance provider.

Related information

The planning scheme and mapping is available to view on Council's website at www.scenicrim.qld.gov.au/planning-and-permits/planning-schemes

The *Overlays* fact sheet can be found here: https://www.scenicrim.qld.gov.au/homepage/138/scenic-rim-planning-scheme-fact-sheets

Talk to a Planner

If you have any questions about this factsheet, please contact Council's Strategic Planning Team on 07 5540 5111 or email mail@scenicrim.qld.gov.au