

TEMPORARY LOCAL PLANNING INSTRUMENT 01/2019 AND COUNCIL'S FLOOD MODELS

What is Council doing about Flood Hazard Management?

In order to respond to the recommendations of the Queensland Floods Commission of Inquiry (Inquiry) dated 16 March 2012, Council is required to make some changes to the way it deals with flood hazard in its planning schemes and to improve the nature of flood information that is available to residents.

A number of flood hazard investigations have been undertaken to improve Council's flood information base. This information together with the Interim Floodplain Assessment Overlay mapping released by the Queensland Reconstruction Authority (QRA) is proposed to be relied upon to develop or enhance the natural hazard (flood) overlay in each planning scheme.

The new information, mapping and assessment criteria will be implemented in the format of a Temporary Local Planning Instrument (TLPI) in order to provide an interim response to the recommendations in Council's existing planning schemes to ensure that land use planning enhances the community's resilience to flood hazard.

What is the Temporary Local Planning Instrument (TLPI)?

The TLPI is a local planning instrument which suspends and overrides the operation (in part) of Council's planning schemes. The TLPI applies new provisions for the Scenic Rim that either update or introduce a flood hazard overlay map and code that applies to development in a Flood Hazard Area.

The TLPI suspends (in part) the operation of the following planning schemes:

- (a) *Beaudesert Shire Planning Scheme 2007*
- (b) *Boonah Shire Planning Scheme 2006*
- (c) *Ipswich Planning Scheme 2006.*



Figure 1: Flooding at Wilsons Plains Road, Harrisville, 2013.

Where can I find the Temporary Local Planning Instrument (TLPI)?

The Temporary Local Planning Instrument is available on Council's website:
scenicrim.qld.gov.au.

It contains the Flood Hazard Overlay Maps for the relevant planning scheme area which identify land affected by flooding.

Where land is shown to be affected by flooding, development must address certain assessment criteria (Overlay Codes) provided in the TLPI.

What kind of flood modeling has Council undertaken?

As part of Council's commitment to improve planning for land affected by flooding in the Scenic Rim, Council is in the process of undertaking ongoing investigations which result in flood models that show flood levels at the 1% Annual Exceedence Probability (AEP).

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 modeled events.

This information is entered into the modeling software, calibrated against recorded flood events and flood maps are produced for the 1% AEP flood event.



Figure 2: Flooding at Tamrookum, 2013.

What is the 1% AEP?

Annual Exceedence Probability (AEP) refers to the probability of a 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 Defined 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.

The 1% AEP represents the **probability of occurrence** - a 1% (or 1 in 100) chance that the event will be equaled or exceeded **in any year**. As such, 100 years of data to determine the 1% AEP is not required as it is about percentage probability, not frequency of occurrence.

Why is the 1% AEP modeled 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 regions. The flood overlay maps in the TLPI are designed to address the statutory requirement for Council with respect to development assessment by identifying hazard areas that are subject to flood and act as a trigger for development assessment. It is important to recognise that these maps show regional, riverine flooding 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 larger events occurring is much lower.

How has the effect of Climate Change been considered in Council's flood models?

The new State Planning Policy, which came into effect on 3 July 2017, now requires the projected impacts of climate change 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 sea-level rise. Climate change in the region will therefore be assessed for 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.

<i>Representative Concentration Pathway</i>	<i>Temperature Increase at 2090 Horizon</i>	<i>Increase in Rainfall Intensity (%)</i>
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;
- Canungra & Biddadaba Creeks; and
- Upper Coomera River.

Both climate change scenarios have been modelled for the above flood studies. To meet the recently commenced climate change requirement of the State Planning Policy, Council has incorporated the RCP4.5 factor in

establishing the Defined Flood Event for the region, being the 1% Annual Exceedance Probability (AEP) flood event. The climate change consideration (i.e. RCP4.5) has been incorporated within the Defined Flood Event shown on the TLPI Overlay Maps.

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 modeling is not an exact science. It is instead an educated, fact-based indication of the likely outcome of particular rainfall events in specific catchment conditions.

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

Has Council undertaken flood modeling everywhere in the Scenic Rim?

At present, flood modeling based on the 1% AEP flood event has not been undertaken across all catchments in the Scenic Rim. However, Council is committed to improving its flood database by undertaking flood modeling that shows flood levels at the 1% AEP.

The intent is to use the flood information from the 1% AEP flood models to inform future amendments to the mapping in Council's planning schemes.

In the meantime, where a 1% AEP model is not available, Council will rely on the Interim Flood Assessment Overlay (IFAO) prepared by the Queensland Reconstruction Authority.



What does the mapping in the Overlay Maps for the planning schemes represent?

In the Temporary Local Planning Instrument, the Overlay Maps show a *Flood Hazard Area* incorporating:

- 1) a *Defined Flood Event* (based on 1% AEP flood modeling prepared by Council); **and**
- 2) an *Investigation Area* (based on the QRA's Interim Flood Assessment Overlay, where Council has yet to undertake 1% AEP flood modeling).



Legend

-  Defined Flood Event
-  Investigation Area

What is the Investigation Area?

The Investigation Area is based on the Queensland Reconstruction Authority's Interim Floodplain Assessment Overlay (IFAO) maps. The IFAO maps were prepared using a range of existing State wide datasets to determine floodplain maps where floodplain mapping did not exist. The mapping is not based on a particular Annual Exceedance Probability (AEP) event or Defined Flood Event (DFE) 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'.

The Investigation Area seeks to acknowledge that continued improvement and refinement of the overlay mapping will occur as more detailed information is collated through ongoing flood modeling based on the 1% AEP undertaken by Council.



Figure 3: Flooding at Goetsch Road, Kalbar, January 2013

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 on land subject to high hazard is discouraged as flood waters on this land have the potential to reach dangerous depths and velocities.

Approach to regulating development in a Flood Hazard Area

The Temporary Local Planning Instrument seeks to update the existing framework for the assessment of development on land affected by flooding. The proposed changes are summarised as follows:

- 1) Changes to overlay maps to show a Flood Hazard Area incorporating a Defined Flood Event based on the 1% AEP and an Investigation Area;
- 2) Revised levels of assessment for development in a Flood Hazard Area to ensure that levels of assessment align with the level of acceptable risk and the strategic intent for development in flood affected areas; and
- 3) Revised (or new, where applicable) overlay code provisions to incorporate assessment

criteria for development in flood hazard areas and ensure that development addresses the potential flood hazard on the site.

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

Council allows for development in the Flood Hazard Area, but in a controlled way. The Temporary Local Planning Instrument 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.

INFORMATION FOR PROPERTIES IN THE FLOOD HAZARD AREA

How do I obtain Flood Levels?

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, 0.0 metres AHD is close to the mean sea level.

Flood 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 relevant 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 Temporary Local Planning Instrument simply 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.