LOGAN CITY COUNCIL FLOOD PLANNING REVIEW RESPONSE AND POLICY CONSIDERATIONS

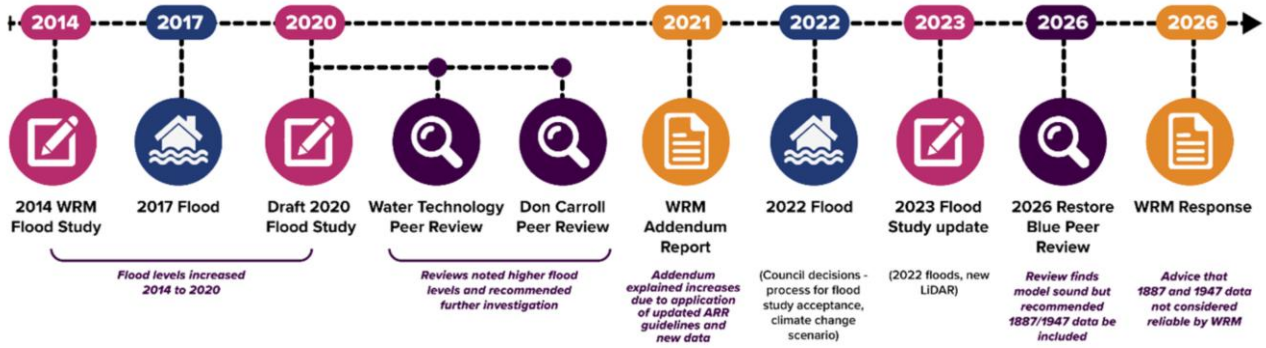
June 2026

Part A: *Albert and Logan Rivers Flood Study Review* - Findings and Observations for Consideration by Council

Logan Community Alliance has reviewed the information provided by Logan City Council on their *Flood Maps Information* page along with the suite of documents published by Council relating to the *Logan and Albert Rivers Flood Study* including:

- *WRM Logan and Albert Rivers Flood Study (Finalisation Project) dated 31 October 2025 (WRM 2021 Flood Study)*
- *Water Technology Peer Review Summary Report: Logan and Albert Rivers Flood Study Update 2019 dated 5 May 2020 (WT Review)*
- *Don Carroll Project Management Review of Logan and Albert Rivers Flood Study issued by WRM and dated 24th March 2020 (DCPM Review)*
- *WRM Logan Albert Rivers Flood Study Addendum Report dated 16 April 2021 (WRM Addendum)*
- *Restore Blue Independent Review: Logan and Albert Rivers Flood Study dated 1 April 2026 (Restore Blue Review)*
- *WRM Response to Independent Review: Logan and Albert Rivers Flood Study dated 15 May 2026.*

Figure 1: Logan City Council Infographic on Flood Study Timeline



Source: Logan City Council, 2026

Whilst it is welcome news that Restore Blue "… found that the general approach used in the study is in line with the industry practice as existed at the time of the study," a number of their findings appear to warrant further investigation to ensure the accuracy and integrity of the published results. In addition, there are a number of items raised collectively by all three reviewers that also require investigation along with several key omissions from the Restore Blue scope.

In the Special Council Meeting held on 5 November 2025, it was noted that council officers had not identified any requirement to undertake the proposed independent review, however, it appears from the peer review documentation (available to council officers prior to that meeting) that all recommendations, uncertainties and omissions identified during the peer review process may not have been fully resolved prior to hazard mapping being implemented into Council's planning framework.

Given the significant influence it will have on development outcomes, insurance premiums, emergency planning property rights, land values and long-term land use decisions, Logan's flood mapping and risk framework must be clearly and defensibly based on a transparent and fully evidenced approach which is of high quality and not just 'generally sound.'

Whilst there are numerous technical recommendations and improvements which appear to remain unresolved, this letter aims to outline the key areas requiring consideration. Importantly, it is noted that most of the following concerns originate not from community speculation, but from matters identified within the independent review process itself.

While a detailed methodology can be found in WRM's 2021 Flood Study report, to assist with interpretation and context, the following points are noted:

a) Hydrology refers to the ways in which water enters a catchment system, including rainfall and runoff. For the Logan and Albert Rivers Flood Study, hydrology was modelled using XP-RAFTS software;

b) Hydraulic modelling investigates how water moves through a river system. It uses topographic, bathymetric and other terrain data to model flows, velocity, depths and flooding. For the Logan and Albert Rivers Flood Study, hydraulic modelling was generally undertaken using TUFLOW software which takes inputs from XP-RAFTS.

1. Possible Inaccuracies in the WRM 2021 Logan and Albert Rivers Flood Study Hydrological Model

Collectively, all three reviewers identified potential inaccuracies in the hydrological model.

These reviews validate concerns raised by the Logan Community. They highlight a number of areas where key recommendations, acknowledged omissions and deviations from best practices appear to remain unaddressed by WRM.

Why this Matters…

Inaccuracies in the modelling could potentially mis-present flood risk, not only in depth and extent, but also in behaviour. This could lead to:

- Land use planning decisions which are not effective in managing flood risk as intended
- Unnecessary land use restrictions
- Allocation of emergency services resources and planning to the wrong locations
- Increased risk for residents due to inaccurate information available for decision making, evacuation routes and emergency preparedness.

While it is acknowledged that modelling must include assumptions for where no data exists or it cannot be absolutely quantified, the Logan community has raised hundreds (if not more) of concerns, backed with not only many years of lived experience and first hand observations, but in many cases photographic and other verifiable evidence which clearly demonstrate variances between actual and mapped flood events.

Viewed in isolation, each individual concern identified can perhaps be seen as just an anomaly, however, when read in combination and in conjunction with the uncertainties and concerns raised by not one, but three professional peer reviews, the need for further, detailed investigation into particular aspects of the data to ensure information accuracy and transparency becomes unquestionable.

1.1. Omission of Available Historical Flood Data from Calibration

a) Restore Blue noted the following key finding in their review:

"…no consideration was given to large historic floods that occurred before systematic streamflow records began (e.g. the 1887 and 1947 floods). Considering all available records, the information on large floods that have occurred over a 140-year period suggests that the derived design flood levels for present day catchment and floodplain conditions have been over-estimated. A preliminary statistical assessment undertaken as part of this review indicates that the 1 in 100 AEP peak flow

rate estimate at the Yarrahappini gauging site would be in the order of 25% lower if these earlier historical floods had been considered. Estimating the impact of these historic floods on flood levels across the floodplain would require further detailed analysis and modelling which lies outside the scope of this review.

The preliminary assessments undertaken for this review indicate that the 1 in 100 AEP flood levels at the Yarrahappini gauge, when adjusted to account for the earlier historic floods (in 1887 and 1947) and global warming up to current (and near-term) climate conditions, may be over-estimated by approximately 1.6 m. This degree of over-estimation is expected to reduce further downstream as the floodplain widens, and inspection of the modelling results suggests that the 1 in 100 AEP flood levels in the more populated downstream areas may have been over-estimated by approximately 1m or more. Any revision of the flood levels that may be required for floodplain planning purposes to account for earlier historic floods and revised climate change impacts would require a significant reworking of the flood study models."

b) WRM defended their decision not to include the 1887 and 1947 historical events in their response to the Restore Blue review dated 15 May 2026 for the reasons summarised below:

- Lack of recorded levels available at the Yarrahappini gauging station;
- Lack of quality observed/recorded water levels at Maclean Bridge;
- Investigations indicated that the recorded Bureau of Meteorology (BoM) data at Maclean Bridge was likely under-reported;
- Lack of certainty in the relationship between Maclean Bridge and Yarrahappini gauging stations for application in interpolation due to potential changes in hydraulic conditions between 1887 and 1974.

c) In their response, WRM provided additional calculations relating to interpolating of the Maclean Bridge data to a likely level at the Yarrahappini gauge point. WRM's calculations indicate a possible overstatement in the order of 3%.

d) It is observed that WRM's calculations, while more detailed than Restore Blue's, also appear to be high-level and focused only on extrapolation of the available readings from the Maclean Bridge to Yarrahappini gauging stations.

e) The review by DCPM also identified the benefits of including a wider data set of historical floods into the model, stating that while uncertain, historical "dataset[s] can assist in characterizing peak flood level recurrence frequencies for the Logan Albert rivers and assist in benchmarking results from more sophisticated studies, such as the WRM's flood study."

f) It is further noted that Maclean Bridge is not the only obtainable data source of historical flood records for the 1887 or 1947 floods, with additional data available from at least Waterford, Eagleby and Beenleigh (Table 1 of the DCPM review) available from BoM and the Department of Natural Resources and Mines (DNRM).

DCPM notes the Waterford station in particular as a key station for the Logan area.

Data from these additional sources could be used to provide more accurate verification of the data accuracy at Maclean Bridge.

g) To further support Restore Blue's recommendation, while identifying the historic events selected by WRM for calibration as generally sound, in their review, Water Technology also recommended "an audit of available gauges be undertaken across all historical events and that the calibration process be reviewed with the focus on utilising all available historical rainfall information" (Water Technology Memorandum dated 1 October 2019).

h) It is understood that both Brisbane and City of Gold Coast Councils have undertaken flood modelling in historical flood events of a comparable time period, demonstrating the suitability of this recommendation.

i) Restore Blue goes on to highlight that the 1% AEP flood event level at Maclean Bridge noted in Table 10.6 of the WRM 2021 Flood Study as "around 2.5m higher than the 2022 event, and around 0.8m higher than the largest flood recorded in 140 years… this highlights an apparent inconsistency with historic evidence that is not addressed in the [flood study] report."

Restore Blue further notes that "design estimates derived by WRM suggest that the AEP [(Annual Exceedance Probability)] of the 1887 flood is approximately a 1 in 50 AEP flood event." If this AEP was correct, it would be expected that Logan would have experienced another flood of similar magnitude "at least once some time over the past 140 years."

This is clearly not the case and as such, identifies sufficient inconsistency to warrant further investigation.

j) Even if the possible 25% discrepancy noted by Restore Blue was overstated and the actual discrepancy was closer to WRM's purported 3%, a reduction in flood level at Yarrahappini would have a material impact on the mapped risk of downstream properties, particularly considering the layered factors of safety applied at each step following the hydrology modelling.

k) It is consistently noted throughout all three reviews, that increasing the number of data points can improve the accuracy of the modelling. As such, the available information points to a discrepancy that requires further detailed (not high level) analysis to resolve.

1.2. Concerns regarding differences between 2014 and 2021 models

a) All three reviewers identified concerns relating to considerable increases in peak flood level estimates in the WRM 2021 Flood Study when compared to the previous 2014 study (also undertaken by WRM). Both Water Technology and DCPM recommended for WRM to undertake a detailed, critical review into the reason/s for the increase and provide a separate response prior to finalisation of the study.

b) WRM provided their response to this via the *Logan Albert Rivers Flood Study Addendum Report* (dated 16 April 2021) which tabled the differences and provided possible reasons for the discrepancy. These reasons are summarised below:

- The 2021 study was able to include 10 additional years of data compared to the 2014 study (sect 2.2);
- The adopted rating curve at the Yarrahappini gauging station in the 2021 WRM Flood Study was likely to be more accurate due to the use of higher resolution hydraulic modelling (10m vs 20m grid) (sect 2.2);
- The WRM 2021 Flood Study was undertaken in accordance with the updated methodologies within the 2019 Australian Rainfall and Runoff (ARR2019) guidelines whereas the 2014 study was prepared under the 1987 ARR guidelines;
- Potential errors in the 2014 XP-RAFTS model at Yarrahappini (WRM noted that despite adopting minimum rainfall losses, the 2014 XP-RAFTS model could not be reconciled to match the 2014 1% AEP FFA).

a) While WRM provide possible causes for the differences, their response does not contain substantive reasons that justify the inconsistencies. When commenting on WRM's addendum, Restore Blue noted that WRM "did not address the root cause of the shortcomings in the flood frequency analysis."

b) No evidence could be found that WRM's Addendum report was critically reviewed by a suitably qualified flood engineer at the time it was received. As such, the technical accuracy and quality of the response is unknown beyond Restore Blue's comments and additional review/information should be provided regarding this aspect.

1.3. Pluviograph (Rain Precipitation Gauge) Data

Whilst assessed as 'generally satisfactory,' in addition to the points raised in Item 1.1 above, all three reviews identified areas of potential improvement relating to general calibration methodology.

a) Water Technology consistently recommended increasing the range of rainfall data source points, stating:

> *"Our previous review identified that not all available rainfall gauge data was used or applied in the model calibration events. We recommend that an audit of available gauges be undertaken across all historical events and that the calibration process be reviewed with the focus on utilising all available historical rainfall information. We note that the WRM response has offered to include the further and additional rainfall gauge data which was proposed as a variation to the project.*
>
> *From a hydrological modelling approach, we consider that the use of all available rainfall gauge information represents a critical aspect to maximise the outcomes and certainty of the flood study update. Accordingly, we recommend that the following approach is now undertaken:*
>
> 1. *The additional rainfall data should be sourced for this project;*
> 2. *WRM should utilise the full data sets and re-assess the rainfall sub-catchment allocations and Theisen polygon assessments. Spatial maps quantifying the differences between utilising all available rainfall data compared to that currently applied in the WRM calibration should then be prepared. This will quantify the differences and importantly identify the likely significance of the inclusion of the additional rainfall data for this study; and*
> 3. *Pending the outcomes from Task 2 above, an informed decision can then be made as to whether the calibration events need to be re-assessed."*

b) In their response to Water Technology dated 10 October 2019, WRM noted:

> *"The models have been calibrated using pluviograph data supplied by LCC, which has been reviewed by WRM for errors. It was assumed that all relevant pluviograph data was supplied by LCC, however it appears there is additional pluviograph data available from BOM flood warning alert gauges for the 2013 and 2017 events which has not been supplied by LCC. The additional pluviograph data is located both inside and around the edge of the Logan and Albert Rivers catchment. If LCC would like WRM to update the model calibration to include this data this can be undertaken as a variation."*

c) A table of pluviograph data available within and around the Logan-Albert catchment is included in the WRM 2021 Flood Study (Table 3.1). WRM notes that the stations listed in this table were used to create isohyet maps for the 1974, 1990, 2013, 2017 and 2022 historical flood events.

d) It is unclear whether this issue was resolved as there is further specific commentary found and it is not clear if Table 3.1 includes all available pluviograph data or just data supplied by Logan City Council.

e) Notwithstanding this, Restore Blue notes the limitations of isohyet mapping and recommends instead to utilise data from the Australian Gridded Climate Data.

f) It is understood that a model based on insufficient gauge data could yield incorrect temporal rainfall patterns and distort the hydrology calculated in a model.

1.4. Calibration and Reconciliation Methodology

a) The WRM 2021 Flood Study identifies a number of limitations throughout the documented calibration process. Most notably:

- A number of stream gauges reconciled poorly against the XP-RAFT models of the corresponding historical event;

- The model parameters were adjusted to achieve the best calibration across all events, resulting in a compromise between model accuracy and model simplicity. It is noted that calibration of the models for individual events can be improved by adopting a different set of model parameters for each of the different events." A number of specific examples of this are included within the report;
- "The hydrologic model calibration at all other gauges was optimised as much as possible without compromising the calibration at the five key gauges. A reliable calibration of the hydrologic model cannot be achieved at other gauging stations (Logan River at Macleans Bridge, Logan Village, Waterford, Parklands and Riedel Road) due to the lack of accurate rating curves, and the influence of tailwater. (section 5.2);"
- "It is also considered likely that the XP-RAFTS model cannot adequately represent the large amount of floodplain storage available in the lower Logan River, and therefore cannot replicate the attenuation of the flood hydrograph downstream of Yarrahappini;"
- "The issues associated with calibration in the Upper Logan and Albert River models appear to be associated with unrepresentative input rainfall data. The April 1990 event was relatively minor, and rainfall varied significantly both spatially and temporally across the catchment. It is considered likely that the dearth of pluviograph availability (only five available pluviographs within the Logan-Albert catchment) has impacted on the calibration results."

b) There appears to be a divide in the preferred calibration methodology between Restore Blue and DCPM when considering calibration between the hydrological and hydraulic models. While DCPM notes a preference for joint calibration (sect Overall Design Flood Methodology), Restore Blue note that while this approach is endorsed by the Australian Rainfall and Runoff 2019 guidelines (ARR2019) as applicable modelling, joint calibration is considered "less than ideal as it prevents the identification and treatment, of errors from different sources to be dealt with in an appropriate manner" (sect 4.2.3).

c) Restore Blue identifies that:

> *"…catchment routing parameters were obtained from calibration to historic flood events, which is an appropriate approach. With loss parameters, estimates of uniform losses relevant to selected historic events were also obtained from calibration, but these were not used for design purposes. Instead, the design loss parameters were obtained by adjusting the loss parameters "until a good match" (the WRM Report Section 9.6) was achieved with the flood frequency results.*
>
> *While it could be argued that this is a reasonable approach, the problem is that by forcing the XP-RAFTS model to match flood frequency results the modelling cannot be regarded as providing an independent line of evidence for flood behaviour. A better approach is based on model reconciliation rather than matching [see ARR2019 Book 5, sect 3.3.3 and Book 7, Chapter 7], whereby model parameters and associated design assumptions are only minimally adjusted within bounds that are supported by alternative lines of evidence to ensure that any differences can be explained by the uncertainties inherent in both methods. Such an approach affords some degree of independence between the rainfall-based and statistical methods, and the process of reconciling estimates provides the opportunity to question the assumptions used in both methods.*
>
> *The lack of independence between the rainfall-based and statistical methods (i.e. between XP-RAFTS and flood frequency results) is a particular issue in this study as it is considered that the flood frequency results are over-estimated. The reasoning for this is discussed further in Section 4.7, but if the flood frequency results are over-estimated, then it follows that the adopted XP-RAFTS design inputs have produced flood estimates which are also over-estimated."*

d) Amending the loss factor parameters of the hydrology model to 'match' the XP-RAFTS model discharges with the Flood Frequency Analysis (FFA) estimates and gauge data is noted as a documented process, however, adjusting loss factors in isolation and without proper

investigation into the root cause of variances between the model and estimate could result in missed opportunities to correct inaccuracies or errors in the input data or modelling parameters. WRM have not provided adequate justification of this methodology or any indication that other investigations were undertaken to identify the root cause.

Viewed in conjunction with some of the other concerns raised (including the differentials between the 2014 and 2021 models, it appears that this data should be rigorously reviewed to ensure its accuracy. This is supported by Water Technology in section 6 of their final report who noted concerns relating to the calculated discharge estimates, recommending:

> *"…that a critical review of all design discharge estimates be undertaken across the Logan/Albert River catchment to ensure that current estimates are fully supported and given the implications for since development and future development across the catchment. This review should also consider the corresponding discharge estimates for the Logan River and Teviot Brook catchments as have been noted, along with the Albert River."*

1.5. Catchments

a) The Water Technology peer review confirmed that the WRM XP-RAFTS model adopted a single catchment rather than a dual catchment model for the assessment of fraction impervious. While Water Technology notes that this is an acceptable practice, this is not the approach recommended by the authors of XP-RAFTS and can cause inaccuracies in the runoff and loss data over the catchment (see the XP-RAFTS user guide).

b) It is observed that Water Technology provided recommendations in relation to sub-catchment boundary modifications, including ensuring that the XP-RAFTS model included "defined sub-catchments at each gauge location to maximise utility of the model." It is not clear on how sub-catchments were selected, nor has any information been located on how Logan City Council planning zones were reflected in the sub-catchment selection in order to capture an appropriate fraction impervious.

1.6. Channel routing parameters

a) WRM notes in the WRM 2021 Flood Study report (sect 4.2.4) that a channel routing parameter of 0.25 for the 'X' value was "adopted for all routing links within the model. 'K' values were set to represent the "estimated flow travel times (in hours), calculated based on average recorded flood peak travel times between gauges in the catchment." This equated to a flow rate of 1m/second.

b) In the Muskingum-Cunge routing method 'X' values are used to attempt replication of known bathymetry and channel characteristics at each section of the river. This is particularly important in rivers with highly variable river bathymetry.

c) It is noted that XP-RAFTS provides an option to derive 'K' and 'X' values using the Muskingum-Cunge routing method based on uploading bathymetric data for each section of the river. Given the bathymetric and survey data available as noted in the WRM 2021 Flood Study Report, no commentary has been provided in any of the reviews as to why a uniform 'X' routing parameter was used along the entire river in preference to utilising the derivation function in XP-RAFTS. Allowing XP-RAFTS to derive the 'X' routing parameter would be expected to provide higher confidence with attenuation application and improve the calibration process.

2. Joint Probability Analysis

a) All three reviews recommend the use of joint probability analysis to model the potential joint impacts of catchment and tidal surge in accordance with the Australian Rainfall and Runoff 2019 (ARR2019) guideline. They further agreed that its omission is considered a non-compliance with the ARR2019 v4.1 guidelines.

b) WRM identified that they did not undertake this analysis as it was not included in their scope of works.

c) WRM instead undertook sensitivity analysis of storm surge on model results, based on the City of Gold Coast hydrodynamic storm surge model, applied at the catchment boundary (not at the mouth of the river).

d) WRM noted that their method extracted peak storm surge levels for future climate conditions from the City of Gold Coast model and tested the 5% AEP flood event coinciding with a 1% AEP storm surge event. WRM stated that the model's 5% AEP flood levels were not particularly sensitive upstream of the confluence of the Logan and Albert Rivers.

   This statement from WRM appears to be in direct conflict with another made by DCPM which notes that "joint probability analysis between floods and tidal surge should be undertaken, particularly due to the Logan River's extreme sensitivity of tailwater levels and that this should be carried out as per the ARR2019 guidelines."

e) WRM also notes in other sections that a "significant amount of tidal influence [exists] in the lower Logan River System" and that this influence contributed to an inability "to jointly calibrate the hydrologic model to match the hydraulic model."

f) Given the observable tidal sensitivity on the Logan River as far up as Maclean Bridge, particularly during large flood events, not including the recommended joint probability modelling could result in an underestimation of the flood levels during less frequent events when riverine and storm tide flooding occur simultaneously. This could impair flood emergency planning for less frequent and rare events.

g) It is noted that the historical calibration events of 1974 (Cyclone Wanda) and 2017 (Cyclone Debbie) both coincided with cyclone weather systems which impacted storm surge at the mouth of the river. It is not clear what allowances for storm surge were made during the model calibration relating to these events.

3. Climate Change

Sea Level Rise

a) In WRM's response to the Restore Blue review, WRM noted that a 0.8m sea level risk factor had been adopted under instruction from Logan City Council officers who had sought clarification from a Queensland Government Senior Planning Officer.

b) Investigation confirms that this advice is correct, with the Queensland Government formally adopting a 0.8m sea level rise within the definitions of the State Planning Policy. This level is noted to be from present day to the year 2100. This does not appear to have been considered in the Restore Blue review.

c) Whilst this level *may* result in a higher sea level than some other methodologies (as demonstrated by the method noted by Restore Blue), the State Planning Policy directs Councils to utilise the methodologies set out in the Coastal Hazards Technical Guide 2013, which states:

> *"… estimated sea level rise is based on the best information currently available, with the current projected rise adopted for calculating the erosion prone area being 0.8m by the year 2100. This value was based on the 2007 Forth [sic] Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) sea level rise projections to 2100 relative to the 1990 level, however the preference is to adopt a 100 year planning period. Therefore a sea level rise value of 0.8m from present day to 2100 was adopted rather than the strict scientific value of 0.84m from 1990 to 2100 to simplify determinations and prevent inaccuracies from using older (1990) tidal plane estimates. As the sea level rise value is updated in line with future IPCC projections, errors from a diminishing time period with a fixed sea level rise will be minimised."*

d) Based on the provided information, it is recommended for Council to include this issue in its correspondence with the Queensland Government to be considered in the current review of the

State Planning Policy to ensure this direction is sound and no duplication or over-estimation of sea level rises has occurred.

Estimated Changes in Rainfall Intensities and Durations

e) The Water Technology review identifies that it is unclear on which Representative Concentration Pathway (RCP) scenario has been adopted by WRM. This information should be confirmed to evaluate its consistency with Council's chosen position on climate change estimates.

f) Logan City Council have confirmed that their chosen position is to utilise the RCP4.5 for climate future estimates. The WRM 2021 Flood Study identifies that a multiplication factor was adopted in line with the RCP4.5 climate change projection, however, no evidence has been found to suggest that this was verified by Water Technology.

g) "[t]o obtain climate change scenario design flow hydrographs, design rainfall in the XP-RAFTS hydrologic model was increased by a factor of 1.095 (9.5% increase) in accordance with guidelines in Book 1 Chapter 6 of the 2016 ARR." "The adopted multiplication factor is based on the RCP4.5 climate change projection, a planning horizon of year 2090 and a projected warming of 1.862 degrees Celsius."

h) It is noteworthy that the ARR2019 v4.1 states that Probable Maximum Flood (PMF) flood modelling should not be adjusted for climate change as the Probable Maximum Precipitation (PMP) estimates (on which the PMF is based) published by the BoM already include an appropriate degree of conservatism.

i) Unfortunately, the Restore Blue review does not appear to review the WRM 2021 Flood Study for compliance against the applicable ARR2019 (V4.1) nor specifically examine the computational accuracy of WRM's calculations for their climate change adjustment factors, instead focusing on commentary around the climate change updates available in the new version of the ARR (V4.2).

j) As such, this Restore Blue review should be revised to assess the WRM 2021 Flood Study against the applicable ARR revision (V4.1).

k) The application of new methodologies in the ARR V4.2 is a matter for future flood study updates which would include a whole range of updated information.

4. PMF Flood Scenario

a) Throughout their response to the community in relation to their concerns regarding the flood mapping changes, Council have consistently directed their primary focus on the removal of the PMF from the planning scheme. This formed the main action item voted on at the Special Council Meeting held Wednesday 27 May 2026.

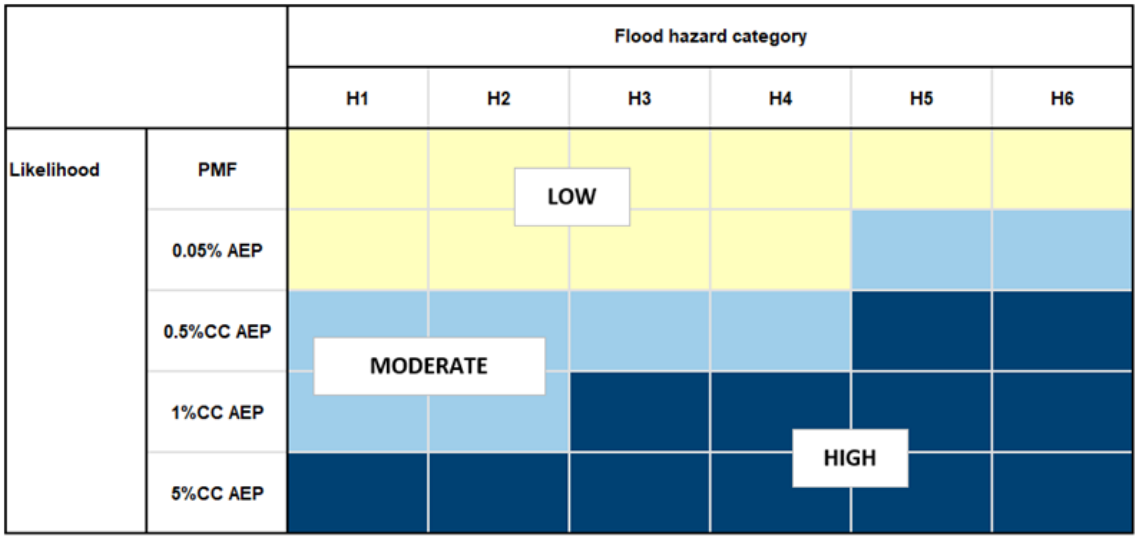
b) Removal of the PMF flood mapping will have very little material impact on development restrictions relating to residential uses (and very little impact elsewhere in the planning scheme).

Planning controls apply only to properties mapped within the following overlay maps:

- High Flood Risk
- Moderate Flood Risk
- Flood Investigation
- Low Flood Island.

c) ***Figure 2*** below shows the Hydraulic Risk Matrix adopted in both the current and Draft Logan Planning Schemes, showing PMF flooding categorised as low risk.

Figure 2: Logan Planning Scheme Figure 1.8.2 – Hydraulic Risk Matrix



Source: Logan City Council Planning Scheme Policy SC6.2.10 Flood

d) While removing the PMF will result in some properties being removed from the mapped Low Flood Risk extent, it is noted that many of the properties that will benefit from this change may not even be aware that their properties had been affected by the mapping.

Properties impacted only by the Low Flood Risk overlay were not included in the *Draft Logan City Council Feasible Alternatives Assessment Report* (FAAR2024) for the Logan Plan and subsequently were not informed of the mapping changes.

e) Most importantly, it is noted that PMF modelling is **not** a mandated requirement under the State Planning Policy.

f) The guidance material produced by the Queensland Government 'Integrating state interests in a planning scheme: Guidance for local governments' Vs 1.2 and dated November 2021 states in Section 13.1.1.3.3 Flood Risk Assessment that "[l]ocal government is to identify the natural hazard areas in the planning scheme area and undertake a risk assessment."

It goes on to say that flood mapping should reflect a "broad spectrum of flood risk and/or flood potential of [an] area (wherever available information permits) by including events of greater and lesser magnitude than the DFE…" (defined flood event).

The Flood risk assessment principles recommend councils consider the widest range of floods possible to create a full picture of flood behaviour across the floodplain. The description given to accompany this recommendation notes:

> *"At a minimum this should include:*
>
> - *the defined flood event*
> - *several more frequent floods and a slightly rarer/more extreme flood*
> - *the probable maximum flood (if available)."*

Section 113.1.4.2 of the guidance materials also provides an example which considers the PMF when identifying zones, overlays and local plans.

The term is again mentioned in the Flood related definitions on page 189 where the PMF is defined as:

> *"A probable maximum flood (PMF) is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation and, where applicable, snow melt, coupled with the worst flood-producing catchment conditions. It is not physically or economically possible to provide complete protection against this event.*

The PMF defines the extent of flood-prone land – the floodplain. The extent, nature and potential consequences of flooding associated with a range of events rarer than the flood used for designing mitigation works and controlling development, up to and including the PMF event, should be addressed in a floodplain risk management study."

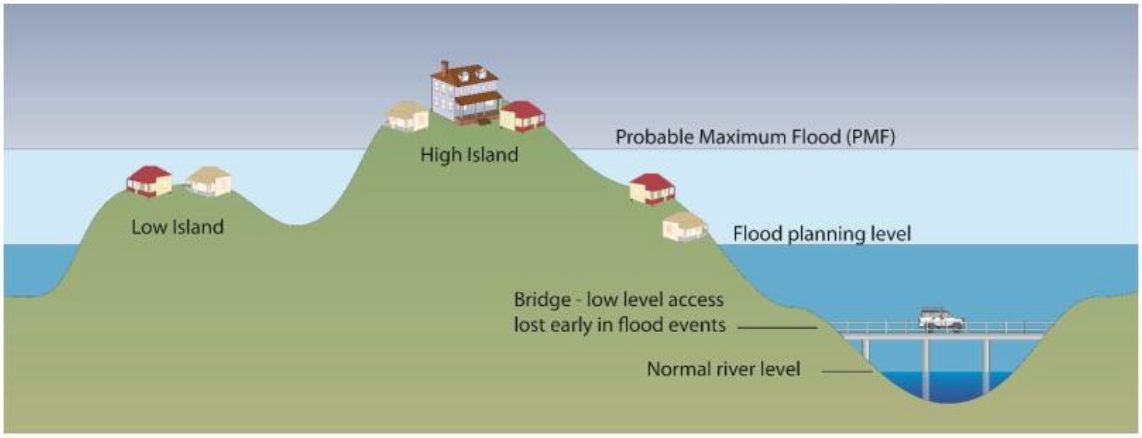
g) A floodplain management study extends the flood study to increase understanding of the impacts of floods on the existing and future community, and test management options. It provides a basis for informing the development of a management plan to increase community safety through the treatment of existing, future and residual risk.

Community engagement is vital to the successful development of the management study. The community should be consulted to allow their concerns, suggestions and comments about management and options to be considered.

h) Logan City Council have yet to confirm how many properties are currently mapped as low flood hazard as a result of the PMF.

i) It became evident through information provided in the Flood Risk Assessment for Logan Plan 2025 – Final report prepared by BMT in May 2023, that the PMF flood event, rather than the defined flood event (DFE) is utilised to identify properties impacted by low and high flood islands in the Logan Planning Scheme flood mapping.

Figure 3: Low and High Flood Islands



Source: BMT Flood Risk Assessment for Logan Plan 2025 – Final (2023)

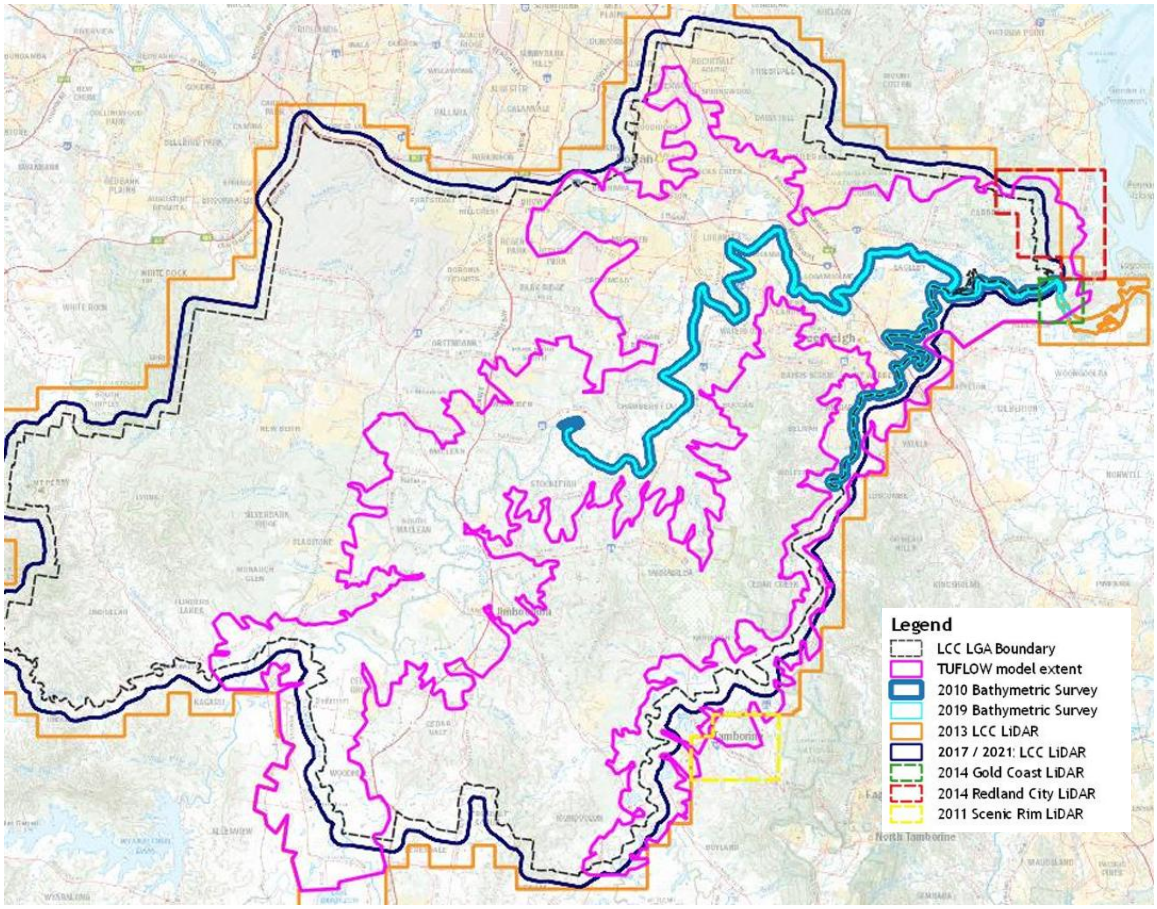
j) As development on properties mapped in the Low Flood Island category are subject to assessment under the planning scheme flood provisions, it is unclear what impact the removal of the PMF will have on these properties and if redefinition of the low and high flood islands is necessary to facilitate this assessment.

5. Outdated LiDAR Survey Data

a) The review conducted by Water Technology noted that a number of "holes" existed in the 2017 LiDAR (Light Detecting and Ranging) survey data set used for the WRM 2021 Flood Study model. These holes were infilled using 2013 data. The WRM 2021 Flood Study report further confirms this, identifying infill sections found in the upper eastern Albert, the upper western Logan and at the floodplain near the Logan river mouth.

Figure 4 below is taken from the WRM 2021 Flood Study report Figure 3.1 which shows the extent of LiDAR surveys used in modelling.

Figure 4: WRM 2021 Flood Study Report Figure 3.1 – Extent of Topographical Data Used



Source: WRM Logan and Albert Rivers Flood Study: Finalisation Project (31 October 2025)

b) While Restore Blue concluded that "[t]he topographic methodology applied to develop the applied model DEM [digital elevation model] is considered sound, and the sources and accuracy of the underlying data, are considered suitable to support the flood study TUFLOW model," ambiguity in the survey data still exists.

c) The final WRM 2021 Flood Study notes that WRM undertook validation of the February 2022 flood event using the latest 2021 LiDAR topographic data for the flood plan.

No information or peer review of this validation model has been located and despite the information in ***Figure 4*** above, the extent of each vintage of LiDAR information remains unclear. The extents of 2017 and 2021 survey data have been combined

d) It is estimated that close to 30,000 homes have been constructed across Logan City Council since 2013. This estimate does not even take into account development outside the local government area but within the Logan and Albert catchment, nor does it account for commercial development and operational works that have been undertaken during the same period.

e) Based on the volume of construction and corresponding operational work, infrastructure works and changes to ground level since the LiDAR datasets were produced, transparency on this key parameter is vital as outdated LiDAR survey data could significantly impact the model's behaviour, depth, velocity and extent.

f) While it is discussed in more depth as part of our Part B Policy Discussions, it is worth noting in this section that Logan City Council have the software, technical expertise and information to run additional models internally for verification and refinement purposes. Logan City Council have a vested interest and community responsibility to obtain the most accurate and defensible flood risk model.

Logan City Council obtains valuable and up-to-date as-constructed data from developments across the area. This information could be utilised to undertake periodic updates to the broader model to ensure a process of continuous improvement and manage information lag between flood studies. As the data provided has already been peer-reviewed by the Development Assessment team during the development assessment process, the survey data should be considered to provide a good level of accuracy.

This speaks directly to the large number of residents who have provided evidence of being mapped within the flood risk areas, despite the fact that changes in ground levels and flood mitigation works have been undertaken in accordance with known and approved development approvals, resulting in the removal of actual flood risk to their properties. Evidence of these examples has been made available to Council during the Draft Planning Scheme submission period.

Logan City Council could also improve the accuracy of flood estimates by running the catchment survey data using a 5m grid, which is considered a reasonable size based on the complexity and topographies observed in the Logan and Albert catchments.

g) It is clear from the available information that further investigation into this area is warranted to provide transparency and inform if any additional actions are required.

6. Hydraulic Model

a) The Restore Blue review notes the following regarding the hydraulic modelling:

> *"The model results presented in the WRM Report demonstrate a reasonable calibration has been achieved in terms of matching peak water levels, hydrograph volume (rising limb and falling limb of hydrographs) and flood timing through the floodplain for the different historical calibration events.*
>
> *The calibration results presented for the different events show that the shape and timing of the historical event hydrographs have been reasonably matched with the flood peak typically matched to within +/- 6 hours. Peak flood levels at flood gauges are generally matched within +/- 0.3."*

Restore Blue go on to say:

> *"While these two models as configured have been shown to adequately reproduce the observed behaviour of historical flood events, there are shortcomings with their application to support design flood estimation.*
>
> *The design flood model results as presented are dependent on several key assumptions that are not fully consistent with the available evidence as inferred using version 4.1 of Australian Rainfall and Runoff (relevant at the time of the execution of technical work supporting the study), particularly with regard to the catchment hydrology. In particular:*
>
> - *The study failed to give consideration to information on documented historic floods that occurred prior to systematic gauging records, and this omission has led to design flood level estimates for present day catchment and climate conditions that are likely to be over-estimated…*
> - *The approach used to match the results of rainfall-based (XP-RAFTS) modelling to the flood frequency results reduces the level of independence between the two sets of estimates, and consequently reduces confidence in the results.*
> - *The study has not adequately documented the assumptions and approach adopted to account for storm surge levels in Moreton Bay and insufficient consideration has been given to the joint probabilities between storm surge and catchment floods."*

It is noted that comments relating to compliance with the ARR2019 V4.2 have been omitted as they are not considered to apply to the WRM 2021 Flood Study and it was released *after* the substantial completion of the study.

7. Ground truthing / Catchment Walkovers

a) Numerous submissions in response to the 2025 Draft Logan Planning Scheme provided Council with documented evidence of model/mapping inaccuracies. Many submissions included digital photographs which are timestamped and can be accurately geolocated.

b) No information has been found which identifies if WRM have been provided with this information by Logan City Council, assessed the information or undertaken ground truthing as part of validation of the WRM 2021 Flood Study.

c) Restore Blue identifies that "[b]ased on [WRM's] responses it can be inferred that WRM staff directly involved in the modelling reported in the WRM Report have spent a significant amount of time in the catchment and floodplain both pre- and post-flood events gaining first-hand knowledge of flood behaviour."

d) The information provided to Restore Blue (through Council Officers) noted that WRM personally undertook 20 site-specific flood damage inspections through the Logan and Albert River catchments immediately following the 2017 flood event. In addition, WRM stated that they had undertaken more than 50 visits following the 2022 event.

e) Whilst post-flood visits are useful and encouraged, this number of visits does not, in our opinion, constitute a 'significant amount of time spent in the catchment and floodplain' nor does it include any pre-flood visits or verification surveys.

f) Despite WRM's 'sound' approach, there is documented evidence (photos, survey marks, etc) which demonstrate significant opportunity to improve the limitations and assumptions used in the model. This missed opportunity is obvious to the community, particularly given the community's willingness to share this valuable information at no cost to Council.

8. General Observations

8.1. As identified in several of the above areas, (apart from the review undertaken by Restore Blue), it is unclear from the documents provided if any further peer review or checking was undertaken on the final WRM 2021 Flood Study or associated correspondence. Items of interest include:

- Were all recommendations made by the Water Technology and DCPM reviews implemented into the final report or otherwise adequately addressed as not required?
- Was *WRM's Logan Albert Rivers Flood Study Addendum Report* (16 April 2021) reviewed?

8.2. Has Council made any investigation into the extent and degree to which previous development approvals and building floor levels are affected under the amended mapping (as recommended by Water Technology in their overall conclusions and recommendations)?

8.3. It appears from their report, Restore Blue have reviewed the methodology used by WRM in development of the WRM 2021 Flood Study, but not necessarily interrogated the accuracy of the data and parameters at a detailed level. The next logical step would be to undertake a 'deeper dive' into the details to achieve the recommend improvements.

8.4. The WRM 2021 Flood Study identifies that ultimate catchment conditions, based on ultimate development of the catchment in accordance with the *current* Council planning scheme were used to select model parameters for design event modelling.

a) Given that the draft 2025 Logan Plan proposes a number of key zoning changes, does the model accurately reflect the correct information for future development?

b) If ultimate development has been used in modelling to the year 2100, does that mean that Logan City Council are expecting 100% maximum development within the catchment areas

to be achieved by 2100? Is this a feasible assumption and does it align with Council's expectations?

8.5. When reviewing the staged Water Technology peer reviews and corresponding WRM responses, a notable evolution in language emerges from within the documents.

a) The first and second Water Technology reviews appear robust, thorough and provide detailed commentary on their observations and recommendations.

Details noted in the third review indicate that WRM had failed to provide documentation as required for assessment under the third peer review.

By the final review, the language and commentary used by Water Technology appeared deliberately minimal, offering far fewer suggestions on how to improve the study above 'bare minimum.' Without full knowledge of the situation, the language implies that the final deliverables may have been rushed or that WRM did not agree with the findings of the peer reviews. This is further inferred by the engagement of a separate reviewer (DCPM) to essentially 'review the reviewers.'

b) Language used to describe the WRM 2021 flood study by all three reviewers incorporated terms such as 'adequate, 'acceptable,' and generally satisfactory. These terms do not convey a high level of quality or alignment of methodologies with industry best practices. Given what is at stake for the Logan community, consideration must also be given to the relative quality of the study delivered and a critical evaluation undertaken of whether the delivered study meets the professional expectations of Council and the Logan community.

Part B: Policy Considerations

The issues surrounding proposed planning scheme changes in relation to flood risk and its effects on the Logan community are numerous and complex. There are many stakeholders and many competing interests that must be carefully balanced to ensure good planning outcomes for the future of Logan while not imposing unnecessarily restrictive (and sometimes devastating) impacts on the current community.

The following items outline critical considerations that we urge Council to consider when making policy decisions around the planning scheme changes relating to flood risk. These are focused around the impacts on individual property owners and residential uses (dwelling houses, secondary dwellings and dual occupancies) as proponents of such small-scale developments do not generally have the financial capacity, time or technical knowledge to appeal Council decisions and are often most relatively disadvantaged in these processes.

For impacted residents, the stakes are high. The impacts are real. They are already experiencing the weight of these changes.

Insurance premium increases (or in some cases refusal)

- Many property owners have reported significant insurance premium increases and in some case refusal for flood coverage following the introduction of the flood mapping. While insurance premium calculations are based on a number of factors, many of these increases appear to have coincided with the release of the first TLPI in October 2023 and relate specifically to a change in flood risk.
- Increased premiums have resulted in additional financial stress on impacted property owners.
- In circumstances where flood insurance is refused or owners are unable to afford premiums, the cost of flood recovery is shifted from insurance companies to individuals, state and local governments in order to reinstate flood impacted properties.

Policy Considerations:

- *Council may consider the introduction of a formal process for Logan residents to obtain assistance with insurance price gouging. We understand Mayor Raven has already been working with individual community members, however, given the large number of impacted residents, a formal process may help streamline this process.*
- *Logan City Council is encouraged to continue liaising with the Insurance Council of Australia and insurers to ensure information provided to insurers is current and accurate.*
- *Logan City Council to ensure the provision of clear insurance risk mapping for industry use which is fair and relevant to today's current risk.*

Housing Availability Pressures

- Logan has already witnessed a huge and very visible increase in homelessness.
- Planning restrictions, where applied unnecessarily, further limit housing supply and choice by removing options such as secondary dwellings and extensions that increase the number of bedrooms in existing homes. Many homeowners are choosing to renovate to accommodate changing family circumstances, as they are unable to afford the costs associated with selling and upsizing.

  Secondary dwellings are often the most cost-effective and socially appropriate solution for families seeking to accommodate intergenerational living arrangements, particularly when the costs of entering the housing market or accessing aged care are beyond reach.

Policy Considerations:

- *Council must consider not only the community impacts from a reduction in housing choice and availability but also ensure that State interests under the State Planning Policy are effectively balanced.*

Property Value Impacts

- Significant property value decreases have been observed on flood mapped properties since the introduction of the proposed flood map and planning scheme changes.
- This has impacted many owners' ability to sell, refinance, or access the equity in their properties.
- Property owners often make long-term financial decisions based on the planning framework in place at the time of purchase.
- Reduced property values can affect household wealth, borrowing capacity, retirement planning, and financial security. The impacts may be particularly significant for long-term residents, retirees, and lower-income households whose primary asset is their home.

Policy Considerations:

- *The potential decline in property values resulting from adverse planning changes should be carefully considered alongside the intended public benefits. Planning policy should seek to achieve a fair and proportionate balance between risk management objectives and the economic wellbeing of affected property owners.*

  Where significant impacts on property values are anticipated, Council should consider whether less restrictive alternatives or appropriate transitional arrangements could achieve similar outcomes while reducing adverse consequences for the community.

Diminished land use rights

- By adopting an 'avoidance' approach to flood risk management, Logan City Council is allowing flood risk overlays to justify land use restrictions, rather than focusing on improving flood resilience through safer building design and sustainable development.
- An avoidance approach unnecessarily restricts land uses in areas where flood risk is considered tolerable by the community, or where risk could be reduced to a tolerable level through measures other than outright prohibition.
- These restrictions will significantly impact the wider community economically, socially, and psychologically, especially at a critical time for housing availability and affordability.
- Owners' rights to develop their property, including established lawful use rights, risk be restricted, reduced, or abolished due to the proposed changes. It is evident that Logan City Council is seeking to avoid having these changes categorised as an adverse planning change, removing the right for impacted residents to seek appropriate compensation.
- The Queensland Government supports increasing housing supply through the provision of secondary dwellings to meet population growth and affordability needs of an aging population. The proposed restrictive land use planning used by Logan City Council contradicts this by preventing existing homeowners from creating on site intergenerational and affordable housing on their properties within the bounds of their existing land use rights.

Policy Considerations:

- *Council to review its avoidance policy and pursue smarter planning that does not adversely impact landowners, especially when based on potentially overstated data.*

- *Council to consider the economic and social disadvantages created by these policies without a corresponding reduction in actual flood risk, and to revise the avoidance approach in favour of innovation and in line with Queensland's performance-based planning system.*
- *Removal of land use restrictions where risk can be reduced to a tolerable level.*
- *Council to engage with the community to understand its tolerance for risk, and to implement a fit-for-purpose approach that recognises differences in tolerance and preparedness across different zones and areas*

Social and Wellbeing Impacts

- Many community members have been severely affected by the impacts on their properties, causing distress, and economic and social disadvantage.
- Logan City Council does not appear to have adequately considered the devastating social and emotional impacts that the proposed flood planning changes are having on those impacted.
- Many residents have lost significant value in their most important asset—their home. This affects long-term residents, particularly in established rural residential and low-density areas, who have worked their entire lives and relied on their property's value to support them in retirement. It also impacts hardworking families and individuals who have recently purchased properties prior to the changes.
- For many, the term 'adverse planning change' does not capture the depth of distress felt throughout the community.

Policy Considerations:

- *We urge Council to acknowledge the invisible toll these proposed changes have taken on the community and their mental health.*
- *Council to improve transparency, engagement, and real communication with the community.*
- *Council to provide assistance to those adversely impacted.*
- *Council to build into their Communication Strategy, a free mental health resource for residents to access when planning changes are significant enough to potentially trigger distress, stress and trauma.*

9. State Planning Policy and Balancing Competing State Interests

a) The proposed application of Section 8.8 of the proposed Flood Hazard Overlay Code raises significant concerns regarding the balance between flood risk management and the State's other planning objectives, particularly housing supply, housing diversity, and housing affordability.

b) Under Part E of the Overlay Code, development is effectively restricted in areas mapped as having a moderate or greater flood risk, including properties classified as "Low Flood Island," rather than allowing for site-specific assessment and risk mitigation. The proposed code adopts an avoidance-based approach that prevents development regardless of whether flood risks can be appropriately managed through design, engineering, emergency planning, or other mitigation measures.

This approach appears inconsistent with the intent of the *State Planning Policy* (SPP), which seeks to balance competing state interests and enable locally responsive planning outcomes. The SPP Guidance Materials states:

> *"The local government is to consider how best to balance the integration of state interests in a planning scheme, to enable a local response informed by the environmental, economic, cultural and social factors in differing communities."*

The guidance materials further require local governments to explain how and why particular state interests have been prioritised and how competing interests have been balanced within the planning scheme. In this instance, there is little evidence that the competing State interest of

Housing Supply and Diversity has been adequately considered. The proposed amendments prioritise hazard avoidance while seemingly disregarding the State's objective of facilitating a range of housing opportunities that cater for varying household types, lifestyles, incomes, and community needs.

This observation has clearly been recognised by the State Government as evidenced in the correspondence sent by the Deputy Premier and Minister for State Development, Infrastructure and Planning, Jarrod Bleijie in his correspondence dated 19 May 2026 that "[i]t has been made very clear to the Council that the Crisafulli Government anticipates a significant review of the draft flood mapping in the next revision of the draft Logan plan to ensure that responding to natural hazards is appropriately balanced with facilitating housing and economic development outcomes."

c) The State Planning Policy recognises that "[h]ousing across the state needs to cater for different households and family types, ages, community needs, lifestyles, and incomes." It further acknowledges that a diverse housing supply is necessary to accommodate changing demographics, including families, seniors, single-person households, students, people requiring assisted living, and households on low to moderate incomes.

   By imposing blanket restrictions across large areas of land, the proposed flood mapping and overlay provisions have the potential to significantly reduce housing opportunities, constrain housing choice, and increase barriers to affordable development outcomes. These impacts are particularly concerning in the context of ongoing housing shortages and increasing affordability pressures throughout South East Queensland.

d) The State Planning Policy does not require absolute avoidance of flood-prone land, rather, it recognises that development may proceed where risks can be reduced to an 'acceptable' or 'tolerable level.' Policy 2 of the Natural Hazards State Interest requires that a "fit-for-purpose risk assessment is undertaken to identify and achieve an acceptable or tolerable level of risk for personal safety and property in natural hazard areas."

   Similarly, the SPP benchmark provisions acknowledge that where development cannot avoid a natural hazard area, risks may be mitigated to an acceptable or tolerable level.

e) The proposed Overlay Code appears to depart from this risk-based approach by prohibiting or severely limiting development even where site-specific investigations and mitigation measures could demonstrate that risks are manageable. In doing so, it removes the opportunity for landowners to demonstrate compliance through performance-based assessment and engineering solutions.

f) A further concern is the apparent absence of any meaningful consideration of community risk tolerance. The SPP framework recognises that determining what constitutes an acceptable or tolerable level of risk requires consideration of community expectations and local circumstances. There is little evidence that this assessment has occurred.

   In particular:

   - No meaningful public consultation appears to have been undertaken regarding community risk tolerance;
   - There is no indication that differing risk tolerances across land use zones have been considered;
   - Rural and rural residential communities often have different expectations, levels of preparedness, self-sufficiency, and reliance on public infrastructure compared with urban residential areas (e.g. little to no reliance on mains infrastructure or utilities).
   - The application of a single risk threshold across vastly different development contexts may not reflect the realities of how flood risk is managed within those communities.

g) It is noted that the community is not advocating for unsafe development outcomes. Rather, we are seeking a planning framework that is consistent with State policy, recognises the importance of housing supply and diversity, and allows appropriately designed development to proceed where risks can be demonstrated to be acceptable or tolerable through site-specific assessment and mitigation.

h) A modern planning scheme should manage risk, not simply avoid it. The current approach risks unnecessarily sterilising land, reducing housing opportunities, and undermining confidence that the proposed flood mapping amendments have appropriately balanced all relevant State interests.

10. Community Consultation, Local Knowledge and Risk Tolerance

Many members of the Logan community feel they have not been genuinely heard throughout the flood mapping review process. For many affected property owners, the issue extends beyond the flood mapping itself and into the way the mapping has been developed, communicated, and implemented.

a) The *Queensland Government's Guide for Flood Studies and Mapping* recognises that community engagement is not an optional addition to flood studies but a fundamental component of their success. The guide identifies three critical stages where community involvement should occur:

   1. During the scoping phase, to assist with data collection and provide local knowledge of historical flood behaviour, flood marks, photographs, videos, and firsthand observations.
   2. During the model calibration phase, to review preliminary results and provide additional information that may improve model accuracy
   3. At the completion of the study, when flood mapping outputs are shared with the community.

b) The importance of community participation is reinforced throughout disaster resilience and local government guidance documents. The *National Strategy for Disaster Resilience* recognises that resilient communities are built through partnership, trust, and the effective use of local knowledge and social capital. It states:

> *"Disaster resilience is based upon existing strengths and relationships. Individuals and communities are the starting point to build disaster resilience and the way to work with communities is to connect with what is already there. At a practical level this means working in partnership with the community, building on existing networks, resources and strengths, identifying and supporting the development of community leaders and empowering the community to exercise choice and take responsibility. It means adopting flexible approaches in the way we communicate with, and within, communities. This concept requires decision makers to recognise the fundamental role of social capital and social resources in building disaster resilient communities."*

c) Logan has a highly engaged community with significant experience of flood events and a strong desire to contribute constructively to flood risk management. Long-term residents understand how floodwaters move through their neighbourhoods, where access routes become isolated, how drainage systems perform during extreme events, and how flooding has changed over time.

d) Rather than viewing community feedback as a challenge to the process, Council has an opportunity to harness this knowledge to improve outcomes. Genuine engagement can build community confidence, improve the quality of decision-making, and create a stronger evidence base for future planning decisions.

Understanding Community Risk Tolerance

e) A further concern is the apparent lack of consideration given to community risk tolerance. The State Planning Policy requires councils to consider what constitutes an acceptable or tolerable level of risk within their communities. Determining these thresholds is not purely a technical exercise; it requires an understanding of community expectations, values, preparedness, and resilience.

f) Different communities have different capacities, expectations, and approaches to managing risk. Rural and rural-residential communities, for example, often have a greater awareness of natural hazards and a higher degree of self-sufficiency. Many residents maintain emergency supplies, backup power generation, on-site water and wastewater systems, and possess extensive local knowledge regarding flood-prone roads and evacuation routes. These communities frequently make conscious lifestyle choices that involve accepting a greater level of natural hazard exposure in exchange for the benefits of rural living.

g) In contrast, residents within urban residential areas are typically more reliant on public infrastructure and services and may have different expectations regarding risk management and service continuity.

h) Planning policy that applies a single risk threshold across all communities may fail to recognise these important differences. There appears to be limited evidence that the updated flood mapping or associated planning controls have considered the varying levels of risk tolerance that exist across Logan's diverse communities.

i) The Logan City Council Local Recovery Group has itself recognised the importance of community-led recovery and the need for flexible approaches that reflect differing community circumstances and recovery pathways.

Opportunities for Partnership

j) Many residents have expressed a willingness to participate constructively in this process. They want to contribute local knowledge, historical flood information, and practical ideas that may improve flood modelling accuracy and identify localised infrastructure improvements capable of reducing flood impacts.

k) The community is not seeking to ignore flood risk. Rather, it is seeking a meaningful opportunity to contribute to the decisions that affect homes, properties, businesses, and future development opportunities.

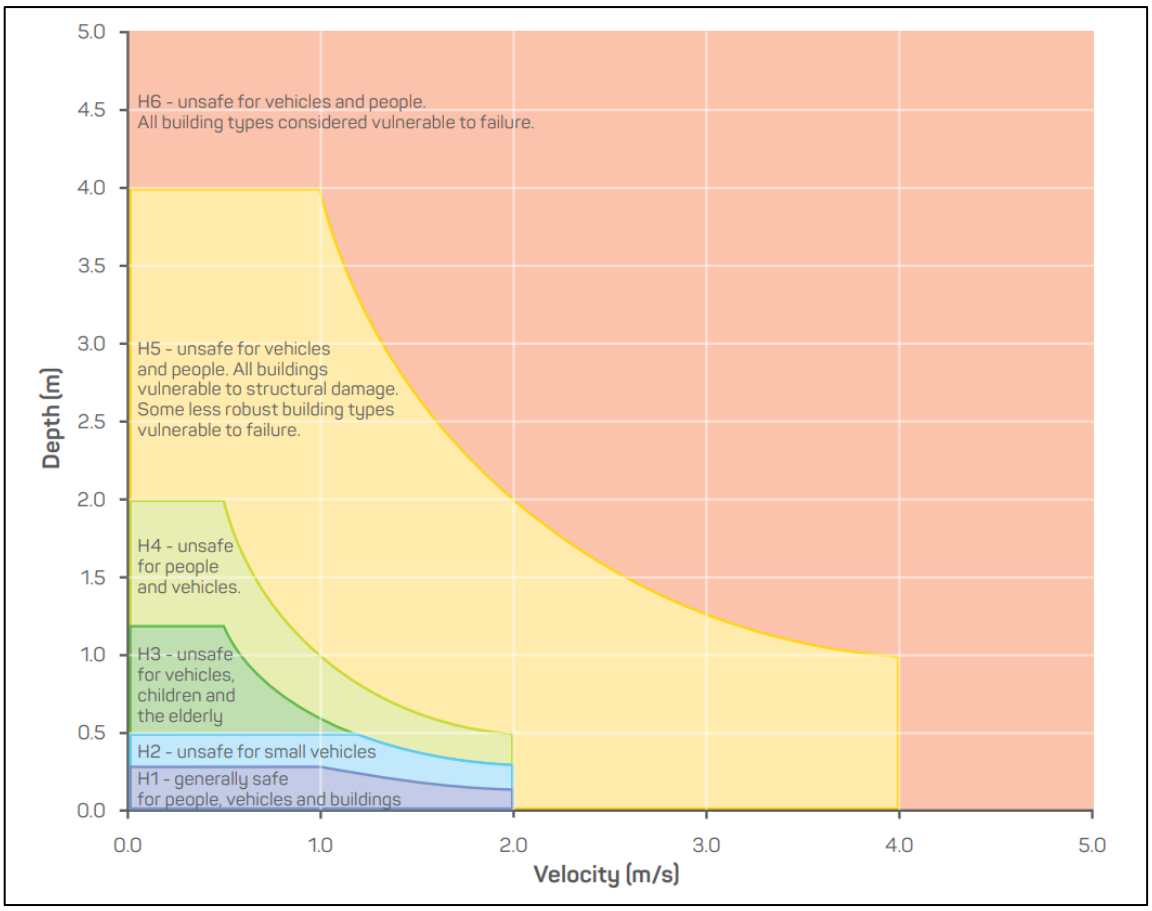
l) Council now has an opportunity to rebuild trust by undertaking genuine engagement with affected communities, openly discussing risk tolerance, testing alternative planning responses, and incorporating local knowledge into future refinements of the flood mapping and planning framework.

m) A collaborative approach will produce better outcomes than one that relies solely on technical modelling and regulatory controls. The most resilient communities are those where governments and residents work together, drawing upon both scientific expertise and lived experience to manage risk and plan for the future.

11. Risk Levels

a) The Logan Draft Planning Scheme classifies flood hazard using nationally recognised vulnerability curves based primarily on flood depth and velocity (see ***Figure 5*** below).

Figure 5: Hazard Vulnerability Curves – Logan City Council Draft Planning Scheme



Source: Logan City Council Draft Planning Scheme

b) Logan City Council's Hydraulic Risk Matrix assigns a level of risk based on the estimated frequency of each hazard (see ***Figure 6*** below).

Figure 6: Risk Matrix – Logan City Council Draft Planning Scheme

		Flood hazard category					
		H1	H2	H3	H4	H5	H6
Likelihood	PMF			LOW			
	0.05% AEP						
	0.5%CC AEP		MODERATE				
	1%CC AEP					HIGH	
	5%CC AEP						

Source: Logan City Council Draft Planning Scheme

c) The risk assessment framework contained in Schedule 6.6 (Flood) of the Draft Logan Planning Scheme appears to apply overly conservative risk classifications that are not proportionate to the actual flood hazard being modelled.

   For example, an H1 Hazard Vulnerability classification includes flood depths of less than 300mm, velocities below 2m/s, and events with an annual exceedance probability as low as 0.5% AEP (a 1-in-200-year event). Despite the Planning Scheme describing H1 as "generally safe for people, vehicles and buildings," these areas are classified as Moderate Risk and become subject to significant development restrictions.

   As another example, an H4 Hazard with a 0.5% AEP is classified as having the same level of risk as a H1 Hazard PMF event.

d) This apparent inconsistency raises concerns that the current methodology may overstate flood risk and impose planning controls that are disproportionate to the actual hazard.

e) The inclusion of PMF events within the risk assessment framework may further skew risk classifications.

f) A further concern is that the adoption of only three risk categories may not adequately differentiate between varying levels of flood risk. The *BMT Flood Risk Assessment for Logan Plan 2025 – Final (May 2023)* considered several alternative risk matrices, many of which incorporated five risk levels to provide a more graduated approach. This approach may allow planning responses to be better aligned with actual flood risk and reduce the likelihood of low-risk properties being subject to disproportionate restrictions.

g) BMT identifies that the SPP "does not mandate or recommend specific responses, rather it calls for a fit-for-purpose and locally specific risk assessment for each local government to determine its own levels of risk tolerance. This approach enables Logan City Council to have regard to the impacts of different flood events and the nature of different land uses and localities. "

h) Review of the risk assessment methodology is required to ensure that risk classifications properly reflect the actual level of risk and provide for reasonable assessment of risk in terms of the risk levels identified in the SPP (acceptable, tolerable, intolerable and residual).

i) We understand that Council has already given consideration to removing the PMF from the planning framework and public mapping. This change is supported by the community and further backed up by Restore Blue in their review of the WRM 2021 Flood Study where they identified that while potentially useful to emergency services and other agencies responsible for managing societal level safety risks, the PMF is not relevant to managing infrastructure and housing within the floodplain.

12. Feasible Alternatives and Feasible Alternatives Assessment Report (FAAR)

12.1. Legislative Context

a) A FAAR report is only required where a council seeks to avoid a planning scheme amendment being classified as an "adverse planning change," which could give rise to compensation considerations under sections 30 and 31 of the *Planning Act 2016*.

b) The *Planning Act 2016* defines an adverse planning change as a "change that reduces the value of an interest in premises." This may include reductions in development entitlements implemented through planning scheme amendments, including changes adopted to manage natural hazard risk.

c) Under the *Planning Act 2016*, the *Minister's Guidelines and Rules* set out the inclusions and required content of a FAAR report. Due to its importance, *Part 2 - Minister's rules for preparing a report assessing feasible alternatives for reducing the risk stated in section 30(4)(e) of the Act* has been included below in its entirety.

*"**1 When this part applies***

1.1. This part applies to a local government when it is preparing a feasible alternatives assessment report. Feasible alternative assessment report.

2. Feasible alternatives assessment report

2.1 The assessment of feasible alternatives by the local government must—

(a) be made in good faith under the circumstances;

(b) be carried out by persons appropriately qualified in relation to the relevant natural events or processes; and

(c) use the best available information at the time the assessment commenced.

2.2 The feasible alternatives assessment report must include—

(a) the site description, including real property description and site address, for all premises potentially affected by the proposed planning change;

(b) the anticipated risk to premises associated with natural events or processes to be undertaken in accordance with AS ISO 31000:2018 Risk Management - Guidelines, detailing the impact for the whole premises, not just the part of the premises at risk;

(c) any existing uses on the premises;

(d) the current intended outcomes of the planning scheme for the premises;

(e) details of the proposed planning change and the resultant intended outcomes under the planning scheme for the premises;

(f) a statement about the proposed planning change's consistency with the SPP and State Interest Guidelines with regard to natural hazards, risk and resilience; and

(g) feasible alternatives to the proposed planning change that have been identified and investigated in accordance with the SPP and associated State Interest Guidelines, any relevant Australian Standard, contemporary best practice guidance or other specifications, and the results of those investigations.

2.3 In investigating the feasibility of alternatives to the proposed planning change, the local government must—

(a) consider the impacts of not making the proposed planning change (i.e. do nothing);

(b) consider the reduction in the level of risk of serious harm to persons or property on the premises from natural events or processes for each alternative identified, including the alternative of imposing development conditions on development approvals;

(c) identify the planning change that would most effectively reduce the risk of serious harm to persons or property on the premises from natural events or processes to an acceptable level; and

(d) consider alternatives that do not involve making a planning change.

2.4 For each alternative identified, the local government must investigate all options for avoiding or mitigating the risk to persons or property on the premises from natural events or processes.

3 Criteria for not feasible

For an alternative to be assessed as not feasible, there must be—

(a) an unacceptable remaining or residual risk of serious harm to persons or property on the premises;

(b) environmental or social disadvantage;

(c) an unacceptable economic cost to state, local government, community or individual;

(d) technical impracticability; or

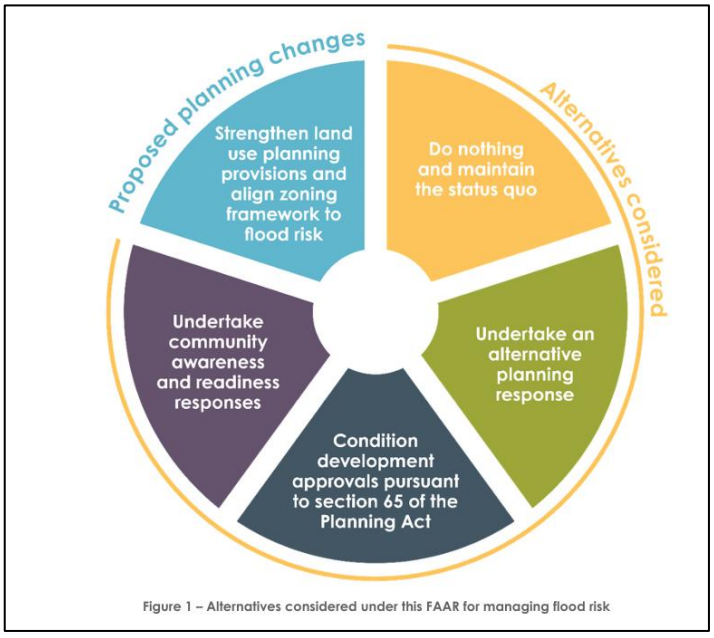
(e) other unusual or unique circumstances.

3.1 An alternative that merely has greater expense or reduced profit for the landowner is not sufficient to determine that the alternative is not feasible."

d) It is noted that the *Draft Report Feasible Alternatives Assessment Report for Logan Plan* prepared by Meridian Urban in December 2024 (FAAR2024) appears to omit several key requirements:

- The report contains a large, tabulated dataset (approximately 300 pages) listing affected premises. However, the specific planning impacts on individual properties are not clearly explained in a way that allows affected landowners to readily interpret changes compared to previous planning schemes.
- The format and level of technical detail make the document difficult to navigate, particularly for non-technical users. Changes in flood risk classification are not clearly summarised in a comparative format.
- It is unclear whether a risk assessment consistent with AS ISO 31000:2018 has been undertaken at a premises-specific level.
- The report does not clearly demonstrate that all feasible alternatives, as defined under the Minister's Guidelines and Rules, have been systematically identified, assessed, and documented.
- The FAAR2024's scope is limited only to relative alternatives in the context of planning controls as outlined in the BMT Flood Risk Assessment for Logan Plan 2025 – Final (May 2023), forming part of the FAAR2024 as Appendix A.

Figure 7: BMT Flood Risk Assessment Scope Summary



Source: BMT Flood Risk Assessment for Logan Plan 2025 – Final (May 2023).

12.2. Reference standards and guidance material

a) A range of relevant best practice and guidance documents exists for flood risk management, including, but not limited to:

- Queensland Flood Risk Management Framework – June 2021
- Queensland Statewide Assessment of Flood Risk Factors – Technical Report - May 2023
- Queensland Flood Risk Management Framework
- State Guideline: Flood Evacuation Route Improvements – May 2021

- Flood Resilient *Building Guidelines for Queensland Homes (2019)*
- Economic Assessment Framework for Flood Risk Management Projects (April 2021)
- Australian Disaster Relief Handbook Collection
- Guide for Flood Studies and Mapping in Queensland
- Queensland *Development Code MP3.5*.

b) These documents collectively support an integrated approach to flood risk management incorporating planning controls, structural mitigation, emergency management, and community resilience measures.

12.3. Feasible Alternatives

a) While, the SPP recognises land use planning as a key mechanism for reducing exposure to natural hazards, it also emphasises that effective outcomes rely on an integrated, evidence-based approach that considers environmental, economic, social, and cultural factors.

> *"Land use planning is recognised as being one of the most important and effective mechanisms at reducing flood risk within a city."*
>
> *"Taking appropriate account of the potential impacts of natural hazards through effective land use planning and development decisions can significantly reduce the likelihood and severity of impacts…".*
>
> *"…the key to achieving these outcomes is an integrated, evidence-based process that enables local government and the community to plan for their local circumstances, and that contributes to achieving a safer and more resilient Queensland. Land use planning provisions are one component of an integrated disaster management strategy. Other risk management strategies include building controls, mitigating infrastructure, early warning systems, community education and awareness, and disaster management."*

b) The Australian *Disaster Resilience Handbook 7: Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia* states that " [t]here is no single treatment or set of treatments to manage the full range of flood risks that are valid for all communities… the selection of suitable options requires the consideration of community aspirations and what can be done to reduce the flood risk. Treatments may be developed at the regional, community or individual property level."

c) The FAAR2024 does not clearly demonstrate that a comprehensive range of feasible alternatives to land use planning controls has been systematically assessed.

d) Best practice floodplain management requires a comprehensive, integrated approach that includes both structural and non-structural measures alongside planning controls, rather than treating land use restrictions as the dominant or sole mechanism for risk management. Key areas requiring consideration include:

- Building controls (flood resistant building design – e.g. QDC MP3.5);
- Mitigating infrastructure (levees, flood mitigation dams, detention basins, wetlands, river and water maintenance, flow conveyance modifications, flood storage increases, river dredging, flood proofing key roads and infrastructure, strategic infrastructure upgrades);
- Increased early warning systems;
- Community education and awareness;
- Revisions and improvements to disaster management; and
- House raising, buybacks or floodproofing to existing developments.

e) These measures are intended to operate as part of an integrated system that reduces risk at multiple scales (catchment, community, and property-wide), while maintaining floodplain function and supporting long-term environmental sustainability.

f) Guidance materials further emphasise that effective flood risk management requires balancing social, economic, and environmental considerations.

g) Utilising planning controls as the primary (or sole) flood risk management strategy means the cost of achieving a broader public benefit may be disproportionately borne by a relatively small group of affected landowners, rather than being fairly and equitably shared by the broader Logan community. Furthermore, the proposed changes push responsibility for catchment and flood management onto individual property owners who are the least capable of managing the risk.

h) In general, there is limited evidence of a coordinated, catchment-wide flood management plan within the Logan area that integrates maintenance, infrastructure upgrades, and environmental restoration measures such as riparian rehabilitation, wetland reconnection, and improved stormwater capacity. This would be a valuable addition to Council's planning policy.

i) The FAAR2024 presents no evidence that any of these alternatives were assessed and found to be unfeasible prior to reliance on planning controls. Overall, this raises concerns that land use planning has been treated as the primary response, rather than one component of an integrated flood risk management strategy as required under best practice guidance

Innovation in Alternative Flood Risk Management Strategies

j) Logan City Council consistently holds itself as a progressive and innovative council, as such additional opportunities exist for Council to take a leading role in flood risk management and through the use of not only best-practice, but pilot strategies:

- Development of practical and effective Flood Emergency Management Plan frameworks as possible alternative risk management measures;
- Consideration of technology opportunities such as Drone wing delivery to service areas potentially cut off by flood waters;
- Continuous data collection, improvement and updates to flood modelling and mapping to facilitate a dynamic flood planning approach, based on the most up-to-date information available;
- Community grants and partnerships to deliver flood resilience projects (road improvement works, drainage works, cleaning/maintaining stormwater/waterway infrastructure, rehabilitation of riverbanks and runoff improvements in locally impacted communities with opportunity for shared funding of capital works.

13. Planning Scheme Implementation

13.1. Performance-based Planning Schemes

a) Queensland's planning system is founded on a performance-based approach to development assessment. Rather than relying solely on prescriptive, quantitative benchmarks (rules), the framework is intended to allow development proposals to be assessed on their individual merits, provided they can demonstrate compliance with the planning scheme's intended outcomes through appropriate design, engineering, mitigation measures, and supporting evidence.

A key strength of a performance-based planning system is its flexibility. It recognises that planning outcomes can often be achieved through a variety of solutions and allows site-

specific circumstances to be considered when assessing risk, constraints, and development opportunities.

b) In the context of planning, a performance-based approach enables applicants to demonstrate that flood risks can be avoided, mitigated, or managed to an acceptable or tolerable level through measures such as building design, site layout, engineering solutions, emergency management planning, and infrastructure improvements.

c) Some aspects of the prescribed 'accepted' and 'performance' outcomes (in both the current Temporary Local Planning Instrument and 2025 Logan Plan Flood Hazard Overlay) depart from these principles by setting development restrictions and quantitative benchmarks as performance outcomes. This significantly limits opportunity for Council to apply discretion or site-specific assessment where developments may otherwise appropriately demonstrate that an acceptable or tolerable level of risk can be obtained through a performance solution and impairs the intended function of a performance-based planning framework.

The following example is used for demonstration purposes.

Under the 2025 Proposed Planning Scheme, Accepted Outcome (AO) 31 states:

> ***AO31***
> *A Dwelling house is located outside a High Flood Risk Area identified on Flood Overlay Map OM-07.04.*
>
> *Note - A Dwelling house includes secondary dwellings.*

The corresponding Performance Outcome (PO) 31 states:

> ***PO31***
> *A Dwelling house in a High Flood Risk Area identified on Flood Overlay Map OM-07.04:*
> *a. does not increase the existing number of bedrooms or dwellings in the High Flood Risk Area;*
> b. *complies with the minimum flood planning levels in Table 8.8.4.6 (Minimum Flood Planning Levels for a Dwelling House).*

AO31 sets a quantitative benchmark that must be met to demonstrate compliance, i.e., the proposed dwelling house must not be located within the High Flood Risk Area.

PO31 also sets a quantitative benchmark that must be met with no allowance for an increase in the number of bedrooms or dwellings within the High Flood Risk Area. This means that, no matter what other conditions occur that can demonstrate an acceptable level of risk can be achieved, Council officers have no way of approving any additional bedrooms or dwellings within the High Flood Risk Area.

Consider if:

- the high risk mapping impacts only a small portion of the proposed development and building controls (flood resistance construction) can adequately address the risk;
- appropriate earthworks can lower or remove the high flood risk;
- there is an error in the mapping that can be clearly demonstrated;
- localised changes in ground level or drainage works (such as those undertaken by a developer during operational works associated with reconfiguration of a lot have been completed which effectively remove or adequately reduce the flood risk from the property.

Regardless of the mitigating circumstances, Council officers have essentially no discretion to approve the development, even though it is appropriate to do so.

In contrast to the Logan Planning Scheme, other Queensland council planning schemes have been constructed to ensure performance outcomes allow sufficient latitude for developments to be approved as appropriate on a case-by-case basis through the development assessment process.

The following example has been taken from the *Brisbane City Plan 2014 v30: 8.2.11 Flood Overlay Code*.

> ***AO1.1***
> *Development for a dwelling house including any secondary dwelling:*
> *a. is not located in the Brisbane River flood planning area 1, 2a or 2b sub-categories or the Creek/waterway flood planning area 1 or 2 sub-categories; or*
> *b. is only located in these sub-categories, if a Registered Professional Engineer Queensland certifies that the dwelling house and any secondary dwelling are structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the defined flood event.*
>
> ***AO1.2***
>
> *Development for a dwelling house and any secondary dwelling complies with the minimum flood planning levels in Table 8.2.11.3.B.*
>
> *Note—If located in an area that has no flood level information available from the Council such as an overland flow path, a Registered Professional Engineer of Queensland with expertise in undertaking flood studies is to certify that the flood level and development levels for the dwelling house and any secondary dwelling achieve the required flood planning levels in Table 8.2.11.3.B.*

The corresponding performance outcome is set out below.

> ***PO1***
> *Development involving any habitable or non-habitable part of a dwelling house, including any secondary dwelling, is located and designed to:*
> *a. minimise the risk to people from flood hazard;*
> *b. achieve acceptable flood immunity;*
> *c. minimise property impacts from a flood event up to and including the defined flood event;*
> d. *minimise disruption to residents, recovery time and rebuilding or restoration costs after a flood event up to and including the defined flood event.*

The above performance outcome avoids restrictive quantitative benchmarks that would prevent Council from assessing each development on its individual merits. Brisbane City Council is arguably one of the leading councils in flood risk management.

This limitation can be seen across several areas of the planning scheme and warrants careful consideration to ensure Council retains the authority to exercise their delegated powers of discretion.

d) Council could consider some of the following policy directions to provide additional flexibility in line with the intent of a performance-based planning scheme:

- Amending the planning scheme to provide separate sections for assessing building works and material changes of use applications. This would allow for the treatment of new uses versus existing uses to be refined in terms of flood risk management and treatments;
- Amending the planning scheme to introduce tiered outcomes based on the level of assessment (e.g. City of Gold Coast Planning Scheme);
- Ensure that performance outcomes are performance-based and do not contain any unnecessary quantitative or restrictive benchmarks that would more appropriately be included in the corresponding accepted outcome;
- Remove benchmarks which are based on PMF flood events (e.g low flood island);

- Remove reference to specific prescribed 'acceptable isolation periods' to allow varied assessment of acceptable isolation based on the individual circumstances and risk tolerance of the development;
- Ensure all benchmark terms are clearly defined (e.g. 'flash flooding');
- Remove duplication in planning scheme outcomes.

13.2. Flood Investigation Areas

a) Flood investigation areas represent locations where a current flood study has not been completed and detailed flood information does not exist to determine the flood risk.

b) Where a new dwelling is proposed within a Flood Investigation Area as identified on the OM-07.4 Flood Overlay Map, PO33 requires:

> **PO33**
> Development for a new dwelling in a Flood Investigation Area identified on Flood Overlay Map OM-07.04 is demonstrated to be compatible with the level of flood risk and achieves the outcomes as relevant for a High Flood Risk Area and Moderate Flood Risk Area.
>
> *Note - Planning Scheme Policy 6 (Flood) provides guidelines on how to prepare a detailed localised flood risk assessment to assist with achieving this outcome. It also includes guidance on how to demonstrate compliance with this performance outcome.*

c) The requirements on how to prepare a Localised Flood Risk Assessment Report (FRA) are set out in 2.2.1 of the SC6.6 Flood Planning Scheme Policy (*Draft 2025 Logan Plan)*.

d) PO29 of the Draft Logan Plan – 8.8 Flood Overlay Code (Part E) contains a note stating that "Planning Scheme Policy 6 (Flood) provides guidance on how to demonstrate compliance with this performance outcome where located in a Flood Investigation Area and it is proposed to undertake a detailed localised flood risk assessment."

e) While FRAs can be an extremely useful tool (and their incorporation into other parts of Part E as an option would be welcomed), in practice, *requiring* these for a new single dwelling, particularly on a residentially zoned lot places unreasonable burden on individual property owners where Council flood studies are lagging.

f) Demonstrating compliance may require applicants to undertake detailed investigations well beyond their own property boundaries, including assessment of flood behaviour across multiple intervening properties and road networks also mapped within the Flood Investigation Zone for the purpose of demonstrating compliance with flood-free access requirements (which extend to a property's closest place with essential goods and services).

g) This is likely to be prohibitively expensive and impractical for many small-scale developments and is inconsistent with the approach that should be taken for developing Logan's planning provisions as identified by BMT in their Flood *Risk Assessment for Logan Plan 2025* - "adopted planning scheme provisions should effectively manage risks, avoid confusion, duplication, and unnecessary regulation, and the associated costs to Council, applicants, and the community."

13.3. Corrections and Updates to Model and Mapping

a) If the proposed flood mapping is incorporated into the planning scheme, there appears to be limited opportunity for individual property owners to seek corrections where mapping is subsequently shown to be inaccurate or outdated.

b) The current pathways for addressing mapping discrepancies, such as overriding the planning scheme or seeking planning exemptions, are often costly, complex, and impractical for most small-scale residential developments.

c) Given that flood modelling is based on assumptions, available data, and evolving technologies, there should be recognition that mapping may require ongoing refinement over time and consideration should be given to establishing a practical and cost-effective process for updating or overriding mapping where:

- conclusive errors are identified;
- new information becomes available;
- modelling assumptions are revised;
- development alters ground levels or stormwater behaviour.

13.4. The Unintended Consequences of Unregulated Building Work

a) Planning controls are most effective when they are reasonable, practical, and capable of being complied with by the community.

b) Where approval pathways become excessively complex, costly, or difficult to achieve, there is an increasing risk that some property owners may proceed with buildings works without the necessary development and building approvals in place.

c) Unregulated building work can have significant impacts on flood risk by introducing unassessed changes to flood storage, stormwater flows, flood conveyance and potentially structurally inadequate structures.

d) Council is urged to adopt a balanced, performance-based planning policy approach that encourages compliance and enables site-specific solutions. This is more likely to achieve positive flood management outcomes and encourage participation in formal approval processes.

14. Data Access to Modelling

a) Section 4.2 of the Queensland Government's *Guide for Flood Studies and Mapping* recommends that local government flood study contracts allow for unrestricted use and distribution of collected data and developed models by government agencies.

b) Given that Logan's flood studies have been publicly funded, there is a reasonable expectation that the resulting modelling, technical data, and supporting information should be accessible to the community through an open source arrangement.

c) While flood models can currently be obtained through development assessment, the associated fees may be prohibitive for many residents, property owners, and small-scale developers seeking to understand the implications of proposed flood mapping changes. Limiting access to modelling data reduces the ability of affected landowners and independent experts to review, verify, and test the assumptions underpinning flood mapping outcomes.

d) Access to modelling data, technical reports, methodologies, assumptions, and limitations is an important component of transparency and informed decision-making and broader access would support independent review, improve community confidence, and contribute to the ongoing refinement and accuracy of flood modelling.

Figure 8: Schedule of River and Catchment Engineering Fees

Schedule of Commercial and Other Charges 2025/26			
Description	**Unit**	**2025/26 Charge Amount (including GST)**	**GST Yes/No**
River and Catchment Engineering			
Release of hydraulic modelling files - small model	Each Application	$2,594.00	No
Release of hydraulic modelling files - large model	Each Application	$3,890.00	No
Release of hydrology modelling files	Each Application	$1,081.00	No
Amendment to flood mapping - completed works	Each Application	POA	Yes
Release of digital flood map / flood model output (grids, hydrograph)	Each Application	$195.00	No
Release of Flood and Stormwater Study Report	Each Application	$98.00	No

Source: Logan City Council Register of Cost-Recover Fees and Schedule of Commercial and other Charges 2025/26

15. Continuous Data Improvement and Update

a) Flood modelling is a critical tool for understanding flood risk, however, it is inherently dependent on the quality of available data. As a result, flood mapping should not be viewed as a static product, but as something that is continuously tested, refined, and improved over time.

b) Logan is one of the fastest-growing local government areas in Queensland and yet, the flood planning framework does not appear to include a mechanism for routinely incorporating changes arising from new developments, infrastructure upgrades, updated survey information, or observed flood behaviour through the importation of as-constructed data obtained during the development assessment process.

This could be completed at regular intervals and/or triggered by development of a size and scale considered to impact on the model.

c) Council's development assessment team already have access to significant amounts of current information, including stormwater modelling, engineering reports, and as-constructed data. This presents an opportunity for greater integration between development assessment, engineering, and flood management functions to ensure this information contributes to future model refinement in real time. Flood risk management could benefit substantially from increased collaboration between Council's Development Assessment and Technical teams.

d) It is understood that Logan City Council have held and could continue to hold software licences for both XP-RAFTS and Tuflow, allowing access to update the model with up-to-date development and survey data, query and test varied modelling parameters, and investigate potential errors.

16. Improved Compliance Processes

a) Community observations identify many areas of flooding which appear to be significantly influenced by urban and man-made factors rather than purely natural flood processes. These include stormwater runoff from adjacent developments, altered overland flow paths, obstructed waterways, and insufficient or poorly maintained drainage infrastructure.

b) There is community concern that these issues are consistently not being adequately addressed through compliance, maintenance, or enforcement processes, particularly where development-related changes have contributed to increased flood risk for neighbouring or downstream properties.

c) The Logan community has voiced concerns that reported issues are consistently not being adequately addressed through compliance, maintenance, or enforcement processes, particularly where development-related changes have contributed to increased flood risk for neighbouring or downstream properties.

d) A number of community members have noted that their reports of flood related maintenance issues, stormwater drainage maintenance and development stormwater runoff issues have not been actioned.

e) Council and the community would greatly benefit from Council taking the following actions:

- Increase public awareness about mechanisms for reporting where properties are affected by development-induced changes to stormwater runoff or overland flow paths;
- Stronger enforcement of compliance where development has increased flood risk, worsened conditions or impacted stormwater runoff and overland flow paths, including investigation of whether technical assessments were deficient, inaccurate, or not properly implemented. Enforcement allows assignment of rectification costs to the responsible party.
- Council taking a more proactive role in identifying, investigating, and rectifying flood impacts arising from urban development activities or damaged, degraded or under-performing infrastructure;
- Implementation of restoration and rehabilitation works where appropriate, including drainage and creek maintenance, sediment and debris removal, and measures to restore natural flow paths and flood storage capacity.

Information Sources

All Hazards Risk Assessment Report: Local Disaster Management Plan (City of Logan) 30 June 2022
https://www.logan.qld.gov.au/files/assets/public/v/1/residents/disaster/city_of_logan_all_hazards_risk_assessment_report__ahra__review_report_2022_.pdf

Australian Disaster Resilience Handbook 6: National Strategy for Disaster Resilience: Community Engagement Framework
https://knowledge.aidr.org.au/media/3521/adr-handbook-7.pdf

Australian Disaster Resilience Handbook 7: Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia
https://knowledge.aidr.org.au/media/3521/adr-handbook-7.pdf

Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia (version 4.1)
https://www.arr-software.org/pdfs/ARR_190514_V4.1.pdf

BMT Flood Risk Assessment for Logan Plan 2025 – Final (May 2023).
As Appendix A in *Draft Report: Feasible Alternatives Assessment Report for Logan Plan (December 2024)*
https://lcc-docs-planning.s3.ap-southeast-2.amazonaws.com/root/Logan+Plan/Public+Consultation+2025/Logan_Draft_FAAR+(Feasible_Alternatives_Assessment_Report)+-+August_2025.pdf

Don Carroll Project Management (DCPM) Review of Logan and Albert Rivers Flood Study issued by WRM and dated 24th March 2020.
https://s3-ap-southeast-2.amazonaws.com/lcc-docs-planning/root/Flood/Logan_Albert_Study_Reviews/Peer%20Review%20(2020%20Don%20Carroll).pdf

Draft Report: Feasible Alternatives Assessment Report for Logan Plan (December 2024)
https://lcc-docs-planning.s3.ap-southeast-2.amazonaws.com/root/Logan+Plan/Public+Consultation+2025/Logan_Draft_FAAR+(Feasible_Alternatives_Assessment_Report)+-+August_2025.pdf

Economic Assessment Framework for Flood Risk Management Projects (April 2021)
https://www.qra.qld.gov.au/sites/default/files/2021-05/economic_assessment_framework_of_flood_management_projects_2021_0.pdf

Flood Resilient Building Guidelines for Queensland Homes (2019)
https://www.qra.qld.gov.au/sites/default/files/2024-06/Flood_Resilient_Building_Guidance_for_Queensland_Homes_February_2019%29.pdf

Guide for Flood Studies and Mapping in Queensland.
https://www.nrmmrrd.qld.gov.au/__data/assets/pdf_file/0010/332695/guide-flood-studies-mapping-qld.pdf

Integrating State Interests in a Planning Scheme: Guidance for Local Governments – November 2021 VS1.2.
https://www.planning.qld.gov.au/__data/assets/pdf_file/0034/66598/integrating-state-interests-in-planning-schemes-guidance.pdf

Logan City Council Planning Scheme – Draft 2025
https://logan.isoplan.com.au/loganplan/rules/0/265/0/0/0/192

Logan City Council Planning Scheme 2015 v9
https://logan.isoplan.com.au/eplan/rules/0/5/0/0/0/171

Logan City Council Planning Scheme 2015 v9.2 with TLPI 2024/1 (Current)
https://logan.isoplan.com.au/eplan/rules/0/5/0/0/0/203

Logan City Council Flood Maps FAQs.
https://www.logan.qld.gov.au/planning-and-building/Flood-maps#faqs

Logan City Council Register of Cost-Recover Fees and Schedule of Commercial and other Charges 2025/26
Logan City Council – Register of Cost-Recovery Fees and Schedule of Commercial and other Charges 2025/26

Minister's Guidelines and Rules Under the Planning Act 2016 Version 3.0 – 22 July 2024.
https://www.planning.qld.gov.au/__data/assets/pdf_file/0034/93859/ministers-guidelines-and-rules-3-0.pdf

Queensland Development Code MP3.5 – Construction of buildings in flood prone hazard areas
https://www.hpw.qld.gov.au/__data/assets/pdf_file/0015/4263/mandatory3.5constructionofbuildingsinfloodhazardareas.pdf

Queensland Flood Risk Management Framework – 2021
https://www.qra.qld.gov.au/sites/default/files/2021-06/queensland_flood_risk_management_framework_2021_qfrmf_0.pdf

Restore Blue Independent Review: Logan and Albert Rivers Flood Study (Report No. 2026/01, April 2026).
https://s3-ap-southeast-2.amazonaws.com/lcc-docs-planning/root/Flood/Logan_Albert_Study_Reviews/Independent%20Review%20(2026%20Restore%20Blue).pdf

State Guideline: Flood Evacuation Route Improvements – May 2021
https://www.qra.qld.gov.au/sites/default/files/2021-07/state_guideline_flood_evacuation_route_improvements_may_2021_-_double_page.pdf

State Planning Policy - July 2017.
https://www.planning.qld.gov.au/__data/assets/pdf_file/0014/114314/state-planning-policy-july-2017.pdf

Queensland Statewide Assessment of Flood Risk Factors – Technical Report - May 2023
https://www.qra.qld.gov.au/sites/default/files/2023-05/statewide_assessment_of_flood_risk_factors_technical_report_-_final_may_2023.pdf

WRM Logan Albert Rivers Flood Study Addendum Report (16 April 2021).
https://s3-ap-southeast-2.amazonaws.com/lcc-docs-planning/root/Flood/Logan_Albert_Study_Reviews/Logan%20Albert%20Rivers%20Flood%20Study%20Addendum%20Report%20(2021%20WRM).pdf

WRM Logan and Albert Rivers Flood Study Finalisation Project (31 October 2025).
https://s3-ap-southeast-2.amazonaws.com/lcc-docs-planning/root/Flood/Logan%20%26%20Albert%20Rivers%20Flood%20Study%20Report%202023.pdf

WRM Response to Independent Review: Logan and Albert Rivers Flood Study (15 May 2026).
https://s3-ap-southeast-2.amazonaws.com/lcc-docs-planning/root/Flood/Logan_Albert_Study_Reviews/Response%20%E2%80%93%20Independent%20Review%20(2026%20WRM).pdf

XP-RAFTS Key Integrations and Scripts
https://csse.com.au/csim_online_help/xp-rafts.html

Logan City Council Planning Scheme Comparison for Dwelling Houses

2015 Planning Scheme		Current Logan Planning Scheme with TLPI (2024/1)		2025 Proposed Logan Planning Scheme	
9.3.2 Dual Occupancy and Dwelling House Code		**9.3.2 Dual Occupancy and Dwelling House Code**		**8.8 Flood Overlay Code (Part E)**	
Accepted Outcome	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***
		AO31.1 Buildings and structures, other than fences, are located outside of a High flow area identified on Flood hazard overlay map OM-05.02.	**PO31** Development, other than fences, is located outside of a High flow area. Note - Planning scheme policy 10 - Flood provides guidance on how to demonstrate compliance with this performance outcome where located in a Flood investigation area and it is proposed to undertake a detailed localised flood risk assessment.	**AO29.1** Buildings and structures, other than fences, are located outside of a High Flow Area identified on Flood Overlay Map OM-07.02.	**PO29** Development, other than fences, is located outside of a High Flow Area. *Note - Planning Scheme Policy 6 (Flood) provides guidance on how to demonstrate compliance with this performance outcome where located in a Flood Investigation Area and it is proposed to undertake a detailed localised flood risk assessment.*
		AO31.2 Enclosure of existing structures or areas underneath an existing building, such as an undercroft, does not occur in a High flow area identified on Flood hazard overlay map OM-05.02.		**AO29.2** Enclosure of existing structures or areas underneath an existing building, such as an undercroft, does not occur in a High Flow Area identified on Flood Overlay Map OM-07.02.	
		AO32 An undercroft is not walled and remains open in a High flood risk area identified on Flood hazard overlay map OM-05.04.	**PO32** An undercroft in a High flood risk area identified on Flood hazard overlay map OM-05.04: a. does not involve works that would obstruct, alter or worsen water flow characteristics during flood events up to and including the defined flood event; b. may involve works where limited to a gate or screening for security purposes where it is demonstrated that the screen or gate: i. will not impede flows; ii. will not rely on manual intervention to allow for the passage of floodwater. Note - Guidance on undercroft design is provided in Planning scheme policy 10 - Flood.	**AO30** An undercroft is not walled and remains open in a High Flood Risk Area identified on Flood Overlay Map OM-07.04.	**PO30** An undercroft in a High Flood Risk Area identified on Flood Overlay Map OM-07.04: a. does not involve works that would obstruct, alter or worsen water flow characteristics during flood events up to and including the defined flood event; b. may involve works where limited to a gate or screening for security purposes where it is demonstrated that the screen or gate: i. will not impede flows; ii. will not rely on manual intervention to allow for the passage of floodwater. *Note - Guidance on undercroft design is provided in Planning Scheme Policy 6 (Flood).*

2015 Planning Scheme		Current Planning Scheme with TLPI (2024/1)		2025 Proposed Planning Scheme	
Accepted Outcome	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***
AO24 A Dual occupancy (auxiliary unit) or Dwelling house located in the Flooding and inundation area identified on Flood Hazard overlay map OM-05.00: a. has a finished habitable floor level that is a minimum of 500mm above the flood level of the defined flood event; b. has a finished non-habitable floor level that is equal to or greater than the defined flood event. Note - AO24 also applies to extensions to existing development.	**PO24** A Dual occupancy (auxiliary unit) or Dwelling house does not increase the level of risk of damage to property in the Flooding and inundation area identified on Flood hazard overlay map OM-05.00.	**AO33** Development, other than a domestic outbuilding, is located outside a High flood risk area identified on Flood hazard overlay map OM-05.04.	**PO33** Development in a High flood risk area identified on Flood hazard overlay map OM-05.04: a. does not increase the existing number of bedrooms or dwellings in a High risk area; b. complies with the Minimum flood planning levels in Table 9.3.2.3.3 - Minimum flood planning levels; c. provides RPEQ certification demonstrating the Dual occupancy (auxiliary unit) or Dwelling house is structurally designed to withstand the hydrodynamic and hydrostatic loads of the hazard up to and including the defined flood event.	**AO31** A Dwelling house is located outside a High Flood Risk Area identified on Flood Overlay Map OM-07.04. *Note - A Dwelling house includes secondary dwellings.*	**PO31** A Dwelling house in a High Flood Risk Area identified on Flood Overlay Map OM-07.04: a. does not increase the existing number of bedrooms or dwellings in the High Flood Risk Area; b. complies with the minimum flood planning levels in Table 8.8.4.6 (Minimum Flood Planning Levels for a Dwelling House).
		AO34 A domestic outbuilding is located outside a High flood risk area identified on Flood hazard overlay map OM-05.04.	**PO34** A domestic outbuilding in a High flood risk area identified on Flood hazard overlay map OM-05.04 complies with the Minimum flood planning levels in Table 9.3.2.3.3 - Minimum flood planning levels.	**AO32** A Dwelling house in a Moderate Flood Risk Area identified on Flood Overlay Map OM-07.04 complies with the minimum flood planning levels in Table 8.8.4.6 (Minimum Flood Planning Levels for a Dwelling House). *Note - A Dwelling house includes secondary dwellings.*	**PO32** A Dwelling house in a Moderate Flood Risk Area identified on Flood Overlay Map OM-07.04 is located and designed to avoid: a. habitable rooms below the specified flood planning level; b. the exposure of non-habitable rooms to potential inundation during the defined flood event; c. risk to people and minimise damage to property during the defined flood event.
		AO35 Development, including a secondary dwelling and domestic outbuildings, in a Moderate flood risk area identified on Flood hazard overlay map OM-05.04 complies with the flood planning levels in Table 9.3.2.3.3 - Minimum flood planning levels.	**PO35** Development in a Moderate flood risk area identified on Flood hazard overlay map OM-05.04 is located and designed to avoid: a. habitable rooms below the specified flood planning level; b. the exposure of non-habitable rooms to potential inundation during the defined flood event; **c.** risk to people and minimise damage to property during the defined flood event.		

2015 Planning Scheme		Current Planning Scheme with TLPI (2024/1)		2025 Proposed Planning Scheme	
Accepted Outcome	*Performance Outcome*	*Accepted Outcome*	*Performance Outcome*	*Accepted Outcome*	*Performance Outcome*
		AO36 A new dwelling is located outside a Flood investigation area identified on Flood hazard overlay map OM-05.04.	**PO36** Development for a new dwelling in a Flood investigation area identified on Flood hazard overlay map OM-05.04 is demonstrated to be compatible with the level of flood risk and achieves the outcomes as relevant for a High flood risk area and Moderate flood risk area. Note - Planning scheme policy 10 - Flood provides guidelines on how to prepare a detailed localised flood risk assessment to assist with achieving this outcome. It also includes guidance on how to demonstrate compliance with this performance outcome.	**AO33** A new dwelling is located outside a Flood Investigation Area identified on Flood Overlay Map OM-07.04.	**PO33** Development for a new dwelling in a Flood Investigation Area identified on Flood Overlay Map OM-07.04 is demonstrated to be compatible with the level of flood risk and achieves the outcomes as relevant for a High Flood Risk Area and Moderate Flood Risk Area. *Note - Planning Scheme Policy 6 (Flood) provides guidelines on how to prepare a detailed localised flood risk assessment to assist with achieving this outcome. It also includes guidance on how to demonstrate compliance with this performance outcome.*
		AO37 Development, other than for a new dwelling, in a Flood investigation area identified on Flood hazard overlay map OM-05.04: a. does not involve an increase to the existing number of bedrooms on the premises; b. complies with the Minimum flood planning levels in Table 9.3.2.3.3 - Minimum flood planning levels.	**PO37** Development, other than for a new dwelling, in a Flood investigation area identified on Flood hazard overlay map OM-05.04: a. does not result in an increase in the existing number of bedrooms on the premises; b. incorporates increased freeboard to provide resilience to potential flood risk, including taking into account the effects of climate change; or c. demonstrates buildings will not be exposed to potential inundation during the defined flood event, and where applicable, any increase in bedroom numbers is compatible with the level of flood risk. Note - Where detailed flood information does not exist to determine the defined flood event, a Registered Professional Engineer of Queensland with expertise in flood studies is to determine the relevant defined flood event and demonstrate compliance with performance outcome 37(c). Planning scheme policy 10 - Flood provides guidance on how to demonstrate compliance with this outcome.	**AO34** Development, other than for a new dwelling, in a Flood Investigation Area identified on Flood Overlay Map OM-07.04: a. does not involve an increase to the existing number of bedrooms in a Flood Investigation Area; b. complies with the minimum flood planning levels in Table 8.8.4.6 (Minimum Flood Planning Levels for a Dwelling House).	**PO34** Development, other than for a new dwelling, in a Flood Investigation Area identified on Flood Overlay Map OM-07.04: a. does not result in an increase in the existing number of bedrooms in a Flood Investigation Area; b. incorporates increased freeboard to provide resilience to potential flood risk, including taking into account the effects of climate change; or c. demonstrates buildings will not be exposed to potential inundation during the defined flood event, and where applicable, any increase in bedroom numbers is compatible with the level of flood risk. *Note - Where detailed flood information does not exist to determine the defined flood event, a Registered Professional Engineer of Queensland with expertise in flood studies is to determine the relevant defined flood event and demonstrate compliance with Performance Outcome PO34(c). Planning Scheme Policy 6 (Flood) provides guidance on how to demonstrate compliance with this outcome.*

2015 Planning Scheme		Current Planning Scheme with TLPI (2024/1)		2025 Proposed Planning Scheme	
Accepted Outcome	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***
		Access and evacuation requirements where development involves: • **a new Dual occupancy (auxiliary unit); or** • **a new Dwelling house (including a secondary dwelling); or** • **an increase in the number of bedrooms.**		**Access and evacuation requirements where development involves a new Dwelling house (including a secondary dwelling) or an increase to the number of bedrooms**	
AO25.2 A Dual occupancy (auxiliary unit) or Dwelling house located on a site that is affected by the Flooding and inundation area identified of Flood hazard overlay map OM-05.00 provide flood-free vehicular access to a road that is above the flood level in the defined flood event.	**PO25** A Dual occupancy (auxiliary unit) or Dwelling house does not: a. increase the risk of injury to life; b. add to the emergency management or evacuation burden during or after a flood event.	**AO38.1** During the defined flood event, development other than a domestic outbuilding has: a. flood-free vehicle access to a road above the flood level; b. a flood-free vehicle route that leads to a suitable flood-free area that contains essential goods.	**PO38** During the defined flood event, development other than a domestic outbuilding: a. is not located in a Low flood island identified on Flood hazard overlay map OM-05.01; b. has a vehicle access and a vehicle evacuation route that is: i. low flood hazard and leads to a suitable flood-free area that contains essential goods; or ii. flooded for less than 36 hours and provides shelter on-site that is located outside an area of flash flooding and above the defined flood event. Note - Planning scheme policy 10 - Flood provides guidance to achieving this performance outcome.	**AO35** During the defined flood event, a Dwelling house other than a domestic outbuilding has a: a. flood-free driveway to a road above the flood level; b. flood-free vehicle route that leads to a suitable flood-free area that contains essential goods. *Editor's note -Figure8.8.4.3 (Compliant Dwelling House with Flood-free Driveway) illustrates an example of a development complying with Acceptable Outcome AO35(a).* *Editor's note - Figure 8.8.4.4 (Non-compliant Dwelling House with No Flood-free Driveway) illustrates an example of a development that does not comply with Acceptable Outcome AO35(a).*	**PO35** During the defined flood event, a Dwelling house other than a domestic outbuilding: a. is not located in a Low Flood Island identified on Flood Overlay Map OM-07.01; b. has a driveway and a vehicle evacuation route, to a suitable flood-free area that contains essential goods, that: i. is low flood hazard; or ii. exceeds low flood hazard for less than 36 hours and development provides shelter on-site that is located outside an area of flash flooding and above the defined flood event. *Note - Planning Scheme Policy 6 (Flood) provides guidance to achieving this performance outcome.*
		AO38.2 During the defined flood event, development has a flood-free vehicle or pedestrian route from dwellings to the flood-free road. Editor's note - Figure 9.3.2.3.1 - Compliant dwelling with flood-free vehicle route illustrates an example of a development complying with this acceptable outcome. Editor's note - Figure 9.3.2.3.2 - Non-compliant dwelling with no flood-free vehicle route illustrates an example of a development that does not comply with this acceptable outcome.			
		Preservation of floodplain function			
		AO39 Where located in a High flood risk area or Flood investigation area identified on Flood hazard overlay map OM-05.04, filling and excavation does not exceed: a. a total volume of $20m^3$; b. a total area of $2,000m^2$.	**PO39** Filling and excavation ensures the conveyance function of a High flood risk area and Flood investigation area identified on Flood hazard overlay map OM-05.04 is maintained. Note - Planning scheme policy 10 - Flood provides guidance to achieve this performance outcome.	**AO36** Where located in a High Flood Risk Area or Flood Investigation Area identified on Flood Overlay Map OM-07.04, filling and excavation does not exceed: a. a total volume of $20m^3$; b. a total area of $2,000m^2$.	**PO36** Filling and excavation ensures the conveyance function of a High Flood Risk Area and Flood Investigation Area identified on Flood Overlay Map OM-07.04 is maintained. *Note - Planning Scheme Policy 6 (Flood) provides guidance on achieving this performance outcome.*

2015 Planning Scheme		Current Planning Scheme with TLPI (2024/1)		2025 Proposed Planning Scheme	
Accepted Outcome	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***
AO26.1 A Dual occupancy (auxiliary unit) or Dwelling house located on a site that is affected by the Flooding and inundation area identified on Flood hazard overlay map OM-05.00 does not result in earthworks that increase flooding to other premises, infrastructure and the environment.	**PO26** Development: a. protects and maintains a floodplain to ensure there is no adverse impact to the flooding characteristics of the waterway so as to adversely affect other premises, infrastructure and the environment; b. does not create any worsening of stormwater flows from the site onto adjoining premises or infrastructure.	**AO40** The total volume of fill is equal to or less than the total volume of cut where earthworks are below the level of the defined flood event in a Moderate flood risk area identified on Flood hazard overlay map OM-05.04.	**PO40** Development does not involve earthworks that would either directly or indirectly adversely impact floodplain function below the defined flood event. Note - Planning scheme policy 10 - Flood provides guidance to achieve this performance outcome.	**AO37** The total volume of fill is equal to or less than the total volume of cut where earthworks are below the level of the defined flood event in a Moderate Flood Risk Area identified on Flood Overlay Map OM-07.04.	**PO37** Development does not involve earthworks that would either directly or indirectly adversely impact floodplain function below the defined flood event. *Note - Planning Scheme Policy 6 (Flood) provides guidance on achieving this performance outcome.*
				AO38.1 Where located below the defined flood event, a domestic outbuilding: a. has a floor area no greater than 36m^2; or b. is not walled and remains open so as to not alter, obstruct, or divert floodwater onto adjoining properties, infrastructure or the environment.	**PO38** Development does not involve works that would either directly or indirectly: a. concentrate, intensify or divert floodwater onto upstream, downstream or adjacent properties; b. result in an increase in flood levels or flood hazard on upstream, downstream or adjacent properties; c. adversely impact the role and function of the floodplain, waterways and areas of ecological significance; d. adversely affect adjoining premises, infrastructure or the environment. *Note - Planning Scheme Policy 6 (Flood) provides guidance on achieving this performance outcome.*
				AO38.2 The structure of a Dwelling house (other than a domestic outbuilding) located below the defined flood event is not walled and remains open so as to not alter, obstruct, or divert floodwater onto adjoining properties, infrastructure or the environment.	

2015 Planning Scheme		Current Planning Scheme with TLPI (2024/1)		2025 Proposed Planning Scheme	
Accepted Outcome	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***	***Accepted Outcome***	***Performance Outcome***
AO26.2 A Dual occupancy (auxiliary unit) or Dwelling house located on a site that is affected by the Flooding and inundation area identified on Flood hazard overlay map OM-05.00 provides surface water drainage ensuring that the following is not caused on the site or external to the site: a. increased runoff; or b. erosion or concentration of flow from or onto adjoining premises or infrastructure.	**PO26** Development: a. protects and maintains a floodplain to ensure there is no adverse impact to the flooding characteristics of the waterway so as to adversely affect other premises, infrastructure and the environment; b. does not create any worsening of stormwater flows from the site onto adjoining premises or infrastructure.	**AO41** Development below the defined flood event does not concentrate, obstruct or divert floodwaters onto adjoining premises, infrastructure or the environment.	**PO41** Development does not involve works that would either directly or indirectly: a. concentrate, intensify or divert floodwater onto upstream, downstream or adjacent properties; b. result in an increase in flood levels or flood hazard on upstream, downstream or adjacent properties; c. adversely impact the role and function of		

Editor's note - Planning scheme policy 5 - Infrastructure, Section 3.6.2.10 provides guidance on non-worsening.			the floodplain, waterways and areas of ecological significance; d. adversely affect adjoining premises, infrastructure or the environment. Note - Planning scheme policy 10 - Flood provides guidance on how to demonstrate compliance with this performance outcome.		
AO25.1 A Dual occupancy (auxiliary unit) or Dwelling house where located on a site that is affected by the Flooding and inundation area identified on Flood hazard overlay map OM-05.00 ensures that the building is constructed in accordance with Queensland Development Code, MP 3.5 - Construction of buildings in flood hazard areas	**PO25** A Dual occupancy (auxiliary unit) or Dwelling house does not: c. increase the risk of injury to life; d. add to the emergency management or evacuation burden during or after a flood event.				

LOGAN COMMUNITY ALLIANCE INC. (IA4941842)

Timeline of Events, Reviews, Responses and Key Issues

Based on the peer review report and appendices contained in the uploaded RTI documents

Date	Event / Document	Parties Involved	What Occurred	Key Issues / What Was Alluded To
2014	Previous Logan-Albert Flood Study completed	WRM Logan City Council	Regional flood modelling completed under ARR1987 guidance.	Later peer reviews **consistently compare 2020 outcomes against this study** because the new model produced significantly higher flood levels.
2017	Ex-TC Debbie flood event	Logan-Albert catchment communities	Major flood event occurred providing new calibration data.	The event became a central data source for recalibrating the flood model and updating bathymetry.
Mar 2019	Council tenders flood study update	Logan City Council	Council sought tenders for the Logan-Albert Flood Study Update.	The study aimed to incorporate ARR2019 guidance, LiDAR updates and revised modelling techniques.
Apr 2019	Project awarded	WRM	WRM awarded the flood study update project.	WRM became lead consultant for hydrology and hydraulic modelling.
May 2019	Independent peer reviewer appointed	Water Technology Logan City Council	Water Technology (WT) appointed as independent peer reviewer.	**Peer review was required to run parallel with the project to deliver staged milestone review and all recommendations were expected to be addressed before next milestone submissions.**
13 Jun 2019	WRM Milestone 1 memorandum issued	WRM	WRM submitted hydrologic and hydraulic model schematisation assumptions.	Formed basis of Peer Review 1.
24 Jul 2019	Peer Review 1 completed	WT	WT reviewed hydrology and hydraulic schematisation.	WT generally supported the methodology **but raised concerns regarding sub-catchment boundaries, additional gauge usage, hydraulic boundary extensions, capture of key structures and consistency between fast and detailed models.**

24 Jul 2019	Key recommendation – additional gauges	WT to WRM and Logan City Council	**WT recommended broader rainfall and stream gauge usage.**	**WT alluded to uncertainty in calibration reliability if all available rainfall information was not incorporated.**
24 Jul 2019	Key recommendation – model boundaries	WT	**WT questioned whether requested upstream model extensions had been included.**	**Suggested possible incomplete representation of flooding behaviour and PMF flow paths.**
13 Sep 2019	WRM calibration report issued	WRM	Detailed calibration report produced for 1974, 1990, 2013 and 2017 flood events.	Became basis for Peer Review 2.
1 Oct 2019	Peer Review 2 completed	WT	WT reviewed calibration models and methodology.	WT stated calibration outcomes were **"generally acceptable" but identified important uncertainties and documentation gaps.**
1 Oct 2019	Concern raised about land use parameters	WT	**WT questioned roughness and imperviousness assumptions.**	**WT identified sub-catchment AR006 as having unrealistic imperviousness (83%) and unusually low Manning's roughness for a rural/forested area.**
1 Oct 2019	Concern raised about rainfall allocation	WT	**WT found inconsistencies in temporal rainfall pattern assignment.**	**WT repeatedly stated the methodology for rainfall gauge allocation was unclear and inconsistent between neighbouring catchments.**
1 Oct 2019	Concern raised about gauge reliability	WT	WT questioned rating curves at Round Mountain gauge.	**WT suggested flood discharges may be underestimated because rating curves did not adequately represent overbank flow areas.**
1 Oct 2019	Concern raised about fast vs detailed models	WT	WT identified substantial water level differences between 20m and 10m models.	**WT warned that coarse grid models may misrepresent levees and floodplain behaviour, especially in middle Logan floodplain areas. Differences up to 0.7m in terrain representation and 0.45m in flood levels were identified.**
1 Oct 2019	Concern raised about blockages and culverts	WT	WT reviewed culvert blockage assumptions.	**WT noted inconsistent blockage factors and possible errors in culvert representation across calibration events.**

10 Oct 2019	WRM formal response to WT	WRM	WRM responded to peer review concerns.	**WRM acknowledged some temporal pattern inconsistencies and agreed some corrections would be made.**
10 Oct 2019	WRM states extra pluviograph data not included	WRM Logan City Council	**WRM stated additional BOM flood warning pluviograph data had not been supplied by Council.**	**WRM indicated inclusion of extra rainfall data would constitute a project variation. This subtly shifted responsibility toward Council scope/data supply.**
10 Oct 2019	WRM explains bathymetry methodology	WRM	WRM clarified bathymetry and z-shape usage.	**WRM acknowledged LiDAR limitations due to vegetation and standing water.**
29 Oct 2019	Additional Peer Review memo issued	WT	WT reviewed WRM's response memo.	**WT maintained concerns regarding rainfall allocation methodology and adequacy of rainfall data inclusion.**
29 Oct 2019	WT escalates rainfall concerns	WT	**WT stated inclusion of all rainfall data was "critical".**	**WT recommended re-assessment of Theissen polygon allocations and potentially re-running calibration events depending on results.**
29 Oct 2019	WT states uncertainty still exists	WT	**WT stated there remained "significant uncertainty" around temporal pattern assignment.**	**This is one of the strongest statements in the peer review trail because it indicates unresolved methodological uncertainty in rainfall distribution assumptions.**
29 Oct 2019	WT requests raw DEM and bathymetry data	WT to WRM	**WT requested underlying DEM, bathymetry surfaces and cross sections.**	**Indicates peer reviewer had not yet received sufficient underlying data to fully verify model construction.**
29 Oct 2019	WT questions rating curve methodology	WT	**WT noted calibration relied largely on DNRM/BOM curves.**	**WT suggested hydraulic-model-derived rating curves could reveal discharge errors and improve rigour.**
18 Feb 2020	Peer Review 3 issued	WT	WT reviewed selective design event modelling.	**WT generally supported methodology but noted lack of supporting documentation limited review capability.**
10 Mar 2020	WRM response to Review Point 3	WRM	WRM responded to design modelling comments.	**WRM clarified queries and made some hydrology changes.**

24 Mar 2020	Draft Flood Study report issued	WRM	**Full draft flood study and GIS mapping released.**	**Triggered extensive Peer Review 4 assessment.**
30 Apr 2020	Peer Review 4 issued	WT	WT completed extensive review of draft study and GIS maps.	**WT identified "considerable increases in peak flood levels" compared with the 2014 study and described this as concerning for development control implications.**
30 Apr 2020	**Major concern over higher flood levels**	**WT**	**WT stated flood level increases required separate critical review before adoption.**	**WT alluded to serious implications for existing development approvals, building floor levels and future planning decisions.**
30 Apr 2020	**WT recommends separate discharge review**	**WT**	**WT recommended independent review of all design discharge estimates.**	**WT implied uncertainty in whether the revised flood estimates were fully justified and adequately supported.**
5 May 2020	Consolidated peer review report issued	WT	Final peer review summary prepared.	**WT explicitly stated the project was "not complete" and that not all peer review matters had been addressed.**
5 May 2020	WT states study should not yet be finalised	WT	**WT recommended further works before adoption.**	**WT stated the matters "must be addressed before the project can be finalised and subsequently adopted by Council."**
May 2020	Outstanding matters remained unresolved	WT WRM Logan City Council	**No response yet received from WRM for Peer Review 4 at time of report completion.**	**Indicates the peer review process itself may have remained unfinished when the consolidated report was published.**

Key Themes Emerging Across the Timeline

1. **Persistent uncertainty around rainfall inputs**

   WT repeatedly questioned:

   - rainfall gauge selection,
   - temporal pattern allocation,
   - range of pluviograph data,
   - and Theissen polygon methodology.

   This issue appears in July 2019, October 2019, and again late October 2019 where WT described inclusion of all rainfall data as “critical.”

2. **Concerns about model consistency**

   Repeated references were made to:

   - differences between 20m “fast” and 10m “detailed” models,
   - missing levee representation,
   - inconsistent flood levels, and
   - topographic sensitivity.

   WT warned these differences could materially affect flood behaviour outcomes.

3. **The peer reviewer did not consider the study finalised**

   The strongest concluding statements are:

   - “not all peer review matters have been addressed,”
   - “project is therefore not complete,”
   - and further works “must be addressed before” adoption.

4. **Major implications for planning and development control**

   WT repeatedly alluded to:

   - compromised historical approvals,
   - changed flood planning levels,
   - and substantial impacts on development control across the catchment.