

ITEM 07.23.190 LOWER CLARENCE FLOOD MODEL 2022 UPDATE AND FLOOD PLANNING LEVELS

Meeting	Council	24 October 2023
Directorate	Environment & Planning	
Prepared by	Manager Development & Land Use Planning, Murray Lane; Manager Water Cycle, Greg Mashiah	
Reviewed by	Director Environment & Planning, Adam Cameron	
Attachments	A. Report 6b.20.096 to 15 December 2020 Council meeting ↓	

SUMMARY

Consultants Jeremy Benn Pacific (JBP) have completed a high level review and validation of the Lower Clarence Flood Model Update 2022 (2022 Flood Model), and following concurrence from the Department of Planning & Environment (DPE), Council is advised, that the review did not significantly alter the model. Accordingly, the 2022 Flood Model has been adopted and placed on Council's website in accordance with Point 2 of Council resolution 06.23.009 at the 27 June 2023 meeting.

This report provides updated advice about the next steps to establish interim Flood Planning Levels forward of completing a new Floodplain Risk Management Study and Plan for the Clarence River floodplain, and the process for updating the Floodplain Management Controls in Council's Development Control Plans (DCPs).

The consensus recommendation from the Floodplain Risk Management Committee (FRMC) meeting of 11 September 2023 is that proposed interim Flood Planning Levels be placed on public exhibition for 28 days for comment and that flood planning levels be adopted through the Development Control Plans (DCP). Council officers support the FRMC's recommendation.

OFFICER RECOMMENDATION

That Council:

1. note concurrence from the Department of Planning & Environment that the high level peer review and validation of the Lower Clarence Flood Model 2022 Update did not significantly alter the model and therefore the model has been adopted and placed on Council's website.
2. note the Department of Planning advice that a planning proposal to change the Flood Planning Levels in the *Clarence Valley Local Environment Plan 2011* cannot be made due to changes to the *Standard Instrument – Principal Local Environmental Plan* which no longer includes a statutory Flood Planning Map.
3. note the new approach to establish Flood Planning Levels is under the provisions of the Flood Risk Management Manual 2023 and that Council may determine interim Flood Planning Levels by way of Council resolution.
4. publicly exhibit proposed interim Flood Planning Levels (as contained in the adopted Lower Clarence Flood Model Update 2022) for an extended period from Friday 3 November 2023 until Monday 29 January 2024, being 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm Freeboard, including media communication, consultation material that explains and seeks feedback on proposed changes, and in-person an online community engagement opportunities.
5. consider any submissions received during exhibition on the interim Flood Planning Levels before adopting the finalised interim Flood Planning Levels.
6. commence the process of modifying Floodplain Management Controls in Council's Development Control Plans to align with the interim Flood Planning Levels, including:
 - a) controls that require all new residential development to have a primary habitable floor level above the 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm Freeboard
 - b) Removal of clauses that permit Primary Habitable Floor Levels in North Grafton below the interim Flood Planning Levels;
 - c) include Objectives and Controls that permit habitable floor levels below the Flood Planning Level in limited circumstances, such as being limited to alterations and additions to existing dwellings;
 - d) update controls that any development below the Flood Planning Level must be constructed from Flood Compatible Building Components;
 - e) consideration of any feedback received during exhibition of the interim Flood Planning Levels; and
 - f) any other necessary amendments to effect these changes; and
 - g) reporting the draft amendments to Council for endorsement before exhibition.

LINKAGE TO OUR COMMUNITY PLAN

Theme Environment

Objective We will foster a balance between sustainable development and the environment considering climate change impacts

KEY ISSUES

Finalisation of the Lower Clarence Flood Model Update 2022

Consultants JBP were engaged to undertake a high level review and validation of the *Lower Clarence Flood Study 2022* which was prepared by Consultants BMT. The high-level review and validation concluded:

Overall, this has been a thorough, well thought out and collaborative assessment of flooding in the Lower Clarence Floodplain. The majority of the concerns with the assessment are relatively minor and may only require better explanation in the reporting.

The peer review identified that the rainfall increases used in the two climate change scenarios (CC1 - SSP2/RCP4.5 and CC2 - SSP5/RCP8.5) were potentially underestimating the increase in rainfall and the resultant runoff. While JBP suggested these climate change scenarios could be remodelled with increased rainfall at the Floodplain Risk Management Study (FRMS) stage, to avoid future confusion the two climate change scenarios were remodelled prior to adoption of the model.

While remodelling the two climate change scenarios, consultants BMT also addressed the minor anomalies identified by JBP in the flood study and have expanded the report to address the concerns raised in the assessment. The minor anomalies have resulted in minimal difference to results (up to 2mm at localised locations in the 1% AEP).

Remodelling of the two climate change scenarios with increased rainfall has resulted in the CC1 (RCP4.5) flood levels increasing by up to 70mm and the CC2 (RCP8.5) flood level increasing by up to 400mm compared with the draft flood model considered by Council in June 2023. Point 2 of resolution 06.23.009 endorsed CC1 (RCP4.5) as the basis for establishing residential floor levels.

The 0.5% and 0.2% events can be used as proxies for the RCP4.5 and RCP8.5 scenarios. When remodelling the two climate change scenarios, BMT identified that the 0.5% and 0.2% events (which had been derived from a flood frequency analysis) were somewhat lower than the modelled CC1 and CC2 scenarios. BMT therefore remodelling the 0.5% and 0.2% events using an alternative technique specified in Australian Rainfall and Runoff to derive rare event peak discharges, which has given closer agreement to the CC1 and CC2 modelled outputs.

On 30 August 2023, DPE's Floodplain staff confirmed:

We believe that Council has a quality flood study update report by BMT which will include the revised 0.5% and 0.2% events below. We also believe that the peer review has been thorough and we accept the recommendations made by JBP. On this basis we recommend that Council adopts the report upon finalisation.'

On this basis and in line with the 27 June 2023 Council resolution (06.23.009), the 2022 Flood Model is now endorsed by Council and has been made publicly available on Council's website (<https://www.clarence.nsw.gov.au/files/assets/public/v/1/council/files/flood-plans/lower-clarence-flood-model-update-2023-final-report-small.pdf>) and on Council's website mapping system (Intramaps).

While Point 4 of Resolution 06.23.009 noted that DPE confirmed the Probable Maximum Flood (extreme flood) did not require further validation, the JBP peer review confirmed an appropriate methodology was used to develop the extreme flood. The significant increase in the extreme flood compared with the 2013 Flood model has significant planning implications for "sensitive" development, and preliminary discussions have been held with DPE on how this issue could be addressed without sterilising floodplain development.

The proposed PMF uses a different scaling factor to the 2013 flood study and plan and the PMF in the 2022 Flood Model represents a roughly 1 in 90,000 year event (from the recommended value in Figure 8.3.2 of *Australian Rainfall & Runoff, 2019*). While land use planning should follow a multi-generation approach, the implications of planning for a 1 in 90,000 year event need further consideration through the FRMC and development of the new floodplain risk management study and plan. The existing PMF based on previous

studies is already mapped and utilised for flood planning purposes and will be relied on until the new plan is finalised. This approach remains consistent with the 27 June 2023 Council resolution (06.23.009).

On 30 June 2023, the state government gazetted a new *Flood Risk Management Manual: the policy and manual for flood liable land*. DPE is currently developing guidance on the FRMS and FRMP process under the new manual.

It is important to note that most new housing development is planned for urban release areas off the floodplain in Junction Hill, Clarenza, James Creek, Gulmarrad and other areas. In existing settlements like Grafton where some development is encouraged to support a vibrant town centre, habitable floor levels will not be provided at ground level in the CBD and development would only be supported where a *flood impact and risk assessment* supports development (this includes resilience and evacuation considerations).

Updating Our Local Environmental Plan

Recent advice from the DPE indicates that the Standard Instrument – Principal Local Environmental Plan across NSW will no longer include a statutory Flood Planning Map. This means that the DPE will not accept a planning proposal to change the Flood Planning Map, Flood Planning Area and Flood Planning Levels in the *Clarence Valley Local Environment Plan 2011* (CVLEP) and that point 4 of the 27 June 2023 Council resolution (Resolution 06.23.009) cannot be progressed.

This reform seeks to resolve consistent definitions across NSW to allow inclusion of mandatory clause 5.21 – Flood planning and optional Clause 5.22 – Special flood considerations.

Instead, the CVLEP flood planning clauses will rely on the following definitions:

Flood planning area has the same meaning as it has in the *Floodplain Development Manual*.

Floodplain Development Manual means the *Floodplain Development Manual* (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

[the DPE advises this definition will shortly be updated to the *Flood Risk Management Manual 2023*].

There will no longer be any operative definitions for Flood Planning Map in the CVLEP once optional clause 5.22 commences.

The *Flood Risk Management Manual 2023* includes the following relevant definitions:

Flood planning area (FPA): *The area of land below the FPL*

Flood planning level (FPL): *The combination of the flood level from the DFE and freeboard selected for FRM purposes*

Defined flood event (DFE): *(otherwise known as design flood) The flood event selected as a general standard for the management of flooding to development.*

What this change of approach means is that the new *Flood Risk Management Manual 2023* generally requires that Flood Planning Levels are determined through a Floodplain Risk Management Study and incorporated into a Floodplain Risk Management Plan, but does not prevent councils from separately determining updated Defined Flood Event, Flood Planning Levels, and the Flood Planning Area by way of Council resolution, and without needing to recomplete both a full new Floodplain Risk Management Study and Plan.

The current state of play is that Council has:

- a number of older Flood Plain Risk Management Plans which remain current as an established policy basis under the *Floodplain Development Manual 2005*;
- the 2013 Lower Clarence Flood Model, which includes established policy about including climate change assumptions in the current Flood Planning Levels;
- the updated 2022 Flood Study indicates increased levels of risk from flooding, especially if reasonable climate change assumptions are made in accordance with adopting the 1% AEP Climate Change 1 (RCP 4.5) as the Defined Flood Event; and
- the 27 June 2023 Council resolution (06.23.009) to commence a new Floodplain Risk Management Study and Plan for the Clarence River floodplain, noting this process is estimated to take at least 18 months to complete.

Given the above, it is necessary to adopt an interim Flood Planning Level as soon as possible now that the 2022 Flood Model is endorsed, and some heightened flood risks are known.

This approach is recommended to manage Council's duty of care to the community, its responsibilities under s733 of the *Local Government Act 1993*, the need to consider the precautionary principle in floodplain management, and requirements to properly consider flood risk (inclusive of climate change) when assessing development applications under the *Environmental Planning and Assessment Act 1979*.

As Council has endorsed the 1% AEP Climate Change 1 (RCP 4.5) as the basis of establishing floor levels, and this event assumes rainfall and sea-level increases to 2123, consideration of the interim freeboard level is relevant. The typical starting point for Flood Planning Levels is the 1%AEP + 500mm freeboard (without incorporation of climate change assumptions) under the Flood Risk Management Manual 2023. The FRMC discussed the merits of 500mm freeboard compared with a 300mm freeboard and the consensus recommendation was that a 500mm freeboard be adopted.

Accordingly, the interim Flood Planning Levels (as contained in the adopted Lower Clarence Flood Model Update 2022) are recommended to be publicly advertised for an extended period from Friday 3 November 2023 until Monday 29 January 2024, which is in excess of the minimum of 28 days required by the Community Participation Plan.

As part of the recommended public exhibition, a community engagement and communication plan will be prepared and the communication approach will include:

Communications	Engagement
Media release and advertising (print, radio)	Drop-in sessions for the community (Grafton, Maclean, Yamba, Iluka)
CVC Online Noticeboard + CVC Facebook	Industry forums (in-person and online), meetings by request
Industry newsletter (direct contact of key stakeholders)	Advice in prelodgement / applicant meetings and written planning advice
A dedicated Council internet page, including information that clearly explains the changes in plain English	Online and written submissions

Updating our Development Control Plans

In North Grafton the previous flood study and plan set a minimum floor level at 6.4m AHD where the amenity and streetscape character considerations meant the 1%AEP + freeboard floor level did not have to be met. This has meant that a lot of new development in North Grafton is being approved below the existing known 1% AEP flood level. The new flood study has further highlighted the risk of flooding in North Grafton and generally increased flood heights above the 2013 1%AEP up to 900mm for the new 2022 modelled 1%AEP (+CC1).

It is recommended that to reflect the changes in predicted flood levels that Council commence the process of modifying Floodplain Management Controls in Council's Development Control Plans to align with the interim Flood Planning Levels, including:

- a) Controls that require all new residential development to have a primary habitable floor level above the 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm Freeboard
- b) Removal of clauses that permit Primary Habitable Floor Levels in North Grafton below the interim Flood Planning Levels.
- c) Include Objectives and Controls that permit habitable floor levels below the Flood Planning Level in exceptional circumstances, such as being limited to alterations and additions to existing dwellings.
- d) Update controls that any development below the Flood Planning Level must be constructed from Flood Compatible Building Components.

Preparing and drafting updated DCP objectives and controls, workshoping with councillors, undertaking community consultation, analysing submissions and re-drafting DCPs is likely to be a more time-consuming process than updating the interim Flood Planning Level. Accordingly, it is recommended this process be undertaken separately to ensure the interim Flood Planning Levels are implemented as soon as possible to better manage flood risk and provide certainty for the community and development industry.

Floodplain Risk Management Committee Meeting of 11 September 2023

The FRMC considered these issues at its meeting of 11 September 2023 meeting, with five members in attendance (a quorum of seven was not established). The consensus recommendation from the FRMC to Council is:

- *Publicly exhibit proposed interim Flood Planning Levels (as contained in the adopted Lower Clarence Flood Model Update 2022) for a minimum of 28 days, being 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm Freeboard*
- *Consider any submissions received during exhibition on the interim flood planning levels before adopting the finalised interim Flood Planning Levels.*
- *Commence the process of modifying Floodplain Management Controls in Council's Development Control Plans to align with the interim Flood Planning Levels, including:*
 - a) *Controls that require all new residential development to have a primary habitable floor level above the 1% AEP Climate Change 1 (RCP 4.5) scenario as the Defined Flood Event + 500mm Freeboard*
 - b) *Removal of clauses that permit Primary Habitable Floor Levels in North Grafton below the interim Flood Planning Levels.*
 - c) *Include Objectives and Controls that permit habitable floor levels below the Flood Planning Level in limited circumstances, such as being limited to alterations and additions to existing dwellings.*
 - d) *Update controls that any development below the Flood Planning Level must be constructed from Flood Compatible Building Components.*
 - e) *Any other necessary amendments to effect these changes.*
 - f) *Reporting the draft amendments to Council for endorsement before exhibition.*

The FRMC consensus recommendation is supported by Council staff.

BACKGROUND

At its meeting of 27 June 2023 Council resolved (Resolution 06.23.009):

That Council

1. *engage an independent flooding consultant to undertake a high-level review and validation of the Lower Clarence Flood Model Update 2022 modelling methodology.*
2. *adopt a final report addressing any comments received from DPE and the peer review and place the final report on Council's website, subject to concurrence from DPE that the high level review (and validation) has not significantly altered the Lower Clarence Flood Model Update 2022.*
3. *endorse the revised flood model Climate Change 1 (RCP 4.5) as the basis for establishing Flood Planning Levels (residential floor levels) in accordance with Council's existing floor heights policy (with the exception of North Grafton for the time being).*
4. *note the Department of Planning & Environment has confirmed the Probable Maximum Flood (extreme flood) does not require further validation.*
5. *prepare a planning proposal to amend the Clarence Valley Local Environmental Plan 2011 to update the Flood Planning Map and Flood Planning Level to incorporate the 1% AEP Climate Change 1 (RCP 4.5) scenario, as contained in the Lower Clarence Flood Model Update 2022.*
6. *commence preparation of a Floodplain Risk Management Study and Plan in accordance with the NSW Floodplain Development Manual on receipt of the Final Flood Study report (as per dot point 2) noting that the process will also determine flood planning levels in North Grafton and the extreme flood/probable maximum flood.*

Flood Planning Level for Grafton and South Grafton

Flood Planning Levels for North and South Grafton have not been updated since recommendations were made in the Grafton and Lower Clarence Floodplain Risk Management Plan 2007. This issue was sought to be progressed in 2020 by the Floodplain Risk Management Committee and was considered by Council at its 15 December 2020 meeting (refer to the **Attachment A** for Council report and minutes). This report provides the relevant background to the issue.

Of note, the officer recommendation (**Figure 1** below) was changed by Council resolution so that the updated Flood Planning Levels would apply only to new lots approved after commencement of the updated controls. This would mean that all new development on existing and previously approved lots (i.e., all existing lots; approved but not yet completed subdivisions) would continue to have a minimum primary habitable floor level as low as 6.4 metres AHD.

This Council resolution was not progressed on the basis that new flood modelling was being progressed. Now the subject 2022 Flood Model is complete, it is appropriate to revisit and update the Flood Planning Levels for Grafton.

<p>OFFICER RECOMMENDATION</p> <p>That:</p> <ol style="list-style-type: none"> The floodplain management provisions in all relevant Clarence Valley Development Control Plans are amended to require that: <ol style="list-style-type: none"> all new residential development must have a primary habitable floor level of a minimum of 500mm above the 1% flood height for the site of the development; and flood compatible building materials be used for any part of such premises that are below the level of the minimum primary habitable floor level; and any other necessary amendments to effect these changes are drafted; The proposed DCP amendments are publicly exhibited for a period of at least 28 days; A report be prepared for Council's consideration as soon as practical after completion of the public exhibition period; and Advice of Council's resolution on the abovementioned report be referred to the CVC Floodplain Committee for information.
<p>COUNCIL RESOLUTION – 6b.20.096</p> <p>Baker/Williamson</p> <p>That:</p> <ol style="list-style-type: none"> The floodplain management provisions for all lots approved by development application after the adoption of the amended floodplain management provisions in all relevant Clarence Valley Development Control Plans are amended to require that: <ol style="list-style-type: none"> all new residential development must have a primary habitable floor level of a minimum of 500mm above the 1% flood height for the site of the development; and flood compatible building materials be used for any part of such premises that are below the level of the minimum primary habitable floor level; and any other necessary amendments to effect these changes are drafted; The proposed DCP amendments are publicly exhibited for a period of at least 28 days; A report be prepared for Council's consideration as soon as practical after completion of the public exhibition period; and Advice of Council's resolution on the abovementioned report be referred to the CVC Floodplain Committee for information. <p>Voting recorded as follows: For: Simmons, Kingsley, Baker, Ellem, Clancy, Novak, Williamson, Lysaught, Toms Against: Nil</p> <p style="text-align: right;">CARRIED</p>

Figure 1: Officer and Council resolution – 6b.20.096

COUNCIL IMPLICATIONS

Budget/Financial

N/A

Asset Management

N/A

Policy and Regulation

*Environmental Planning and Assessment Act, 1979
 Clarence Valley Local Environmental Plan 2011
 Clarence Valley Development Control Plans (all)*

Consultation

Council's Development and Land Use Planning Section and DPE – Flooding

Legal and Risk Management

Section 733 of the Local Government Act provides:

(1) A council does not incur any liability in respect of:

(a) any advice furnished in good faith by the council relating to the likelihood of any land being flooded or the nature or extent of any such flooding, or

(b) anything done or omitted to be done in good faith by the council in so far as it relates to the likelihood of land being flooded or the nature or extent of any such flooding.

(4) Without limiting any other circumstances in which a council may have acted in good faith, a council is, unless the contrary is proved, taken to have acted in good faith for the purposes of this section if the advice was furnished, or the thing was done or omitted to be done, substantially in accordance with the principles contained in the relevant manual most recently notified under subsection (5) at that time.

(5) For the purposes of this section, the Minister for Planning may, from time to time, give notification in the Gazette of the publication of:

(a) a manual relating to the management of flood liable land

The *Flood Risk Management Manual: the policy and manual for flood liable land* which was gazetted on 30 June 2023 is the current manual referred to in Section 733(5).

Climate Change

Adoption of a CC1 (RCP4.5) scenario as a basis for establishing flood planning levels incorporates predicted climate change and is consistent with Council's *Risk Frontiers' Physical Climate Risk Assessment – Summary for Policymakers* adopted by Council at its meeting of 26 April 2022 (Resolution 07.22.070).