

SUBMISSIONS SUMMARY

То:	Council	From:	Team Leader Floodplain Management
CC:	File	Date:	14/02/2023
SUBJECT:	Proposed Flood Risk Management Policy Total Submissions: 25. Total Topics: 71		

# Raised	Topic Category	Percentage
16	Concessional Development within the Camden Heritage Conservation precinct	23%
8	2022 NSW Independent Flood Inquiry Report	11%
8	How the impacts of climate change are incorporated into the policy	11%
6	Community engagement / consultation	8%
4	Allocated Evacuation Centres/ Routes	6%
3	Development in flood prone / floodway/ High hazard areas	4%
3	Lowes Creek Maryland Precinct	4%
3	Council to confirm that no design changes are required to approved strategies.	4%
3	How the latest frequent flood events have been factored into the draft Policy.	4%
2	How often/regularly Council will update/ review the flood model to incorporate proposed development changes in the catchment?	3%
2	Flood considerations in areas between the FPL and the PMF	3%
13	Miscellaneous*	18%
71	Total	100%

* List of Miscellaneous Topics

The maps provided are of poor resolution and do not give sufficient detail down to the individual property level



No supporting or other information can be found regarding this policy on councils' website; need to be more 'user friendly'.

Definition of 'Floodway'? How is this defined when an existing floodway requires rehabilitation or reconstruction?

An improved information service (Flood warnings and emergency events) from council during the flood event is necessary

The modelling is not validated against the latest version of ARR Guidelines (ARR 2019)

Adopting floodplain policies and plans until the plans regarding Warragamba Dam are finalised and can be taken into consideration.

Formatting 'flood risk management policy' document.

Clear up and fix the large-scale destruction of the riverbank and the loss of big healthy trees which were holding the riverbank.

Definition of the term 'structure' in the policy- 'Structural Soundness'?

When Upper South Creek Regional Flood Model and User Guide will be freely available for use?

The levee options and the likelihood of them being considered; the effect of displaced floodwaters on other properties

Structural Soundness - The controls 1) and 2) say the same.

'Greenfield Development' - does it include transport infrastructure (new roads and rail)



SUBMISSION RESPONSES SUMMARY

Submission	Submission Topic	Response
Ref.		
1	Concessional Development within the Camden Heritage Conservation precinct	The Camden Town Centre Urban Design Framework was adopted by Council in 2018. This document included a recommendation for Council to review its Flood development controls in the Camden Heritage Conservation Precinct (HCP). Following the review an additional draft concessional development clause for the Camden HCP was proposed to be included in the Flood Policy. As a result of community consultation, the draft clause has been removed. Development within this precinct will be considered undercurrent Development Control Plan requirements.
	2. How the impacts of climate change are incorporated into the policy	Climate change concerns have been considered in the Nepean River Floodplain Risk Management Study and Plan (FRMSP). The approach used was based on current best practice and additional details can be found in Appendix K of the document. Climate change flood mapping can also be found in Appendix B.
		The flood policy includes current freeboard values based on the most recent FRM Studies and Plans. Looking toward the future it is expected that more data and information will become available including the implications of climate change and associated risks.
		Council may consider adopting changes to its policy in the future to address the impacts and of climate change. This would be managed under the Floodplain Risk Management process and based on up-to-date information and industry standards at the time.
2	The Heritage Conservation Area clause	As per 1.1.
	2. The levee options , and the likelihood of them being considered and the effect of displaced floodwaters on other properties	Flood mitigation options are provided as part of the Nepean FRMSP. While levees at several locations have been considered only two have been listed as high priority in the Plan. Further investigations on the



suitability of the levees are yet to be undertaken to determine feasibility and impacts.

The levee option at Alpha Rd, Camden (FM1.6) was investigated but not included in the FRMSP. This was due to its multi-criteria analysis returning a negative score outcome. The multi-criteria analysis is a tool which considers impacts such as environment, cost etc

Voluntary House Raising is being considered by Council but needs further investigation and State government funding.

- 3. Allocated **Evacuation** Centre and How evacuation is to be managed especially when the access road would be completely cut off in a PMF
- >Evacuation routes
- >Evacuation Centres
- >Flood mitigation measures

Evacuation is a core function of SES, and the Bureau of Meteorology is responsible for issuing flood warnings to the SES for the Regional Nepean River.

The two key requirements for an evacuation strategy are 1) sufficient warning to allow evacuation, and 2) a safe refuge in an evacuation centre. The Floodplain Risk Management Studies and Plans have identified the current flood evacuation and emergency response.

Evacuation centres have been identified only in flood free areas. Access to some of these centres can be cut-off depending on the flood event and so it is important that evacuation is undertaken prior to access being cut.

Evacuation Routes have been assessed and mentioned noted in respective FRMSP's. New developments will be required to provide an emergency response plan. This will assist SES and ensure they do not burden the current evacuation routes and SES resources.

Sufficient warning time would give residents time to relocate some household items, pack some belongings, and walk to the evacuation centre. Options considered in the FRMSP address this with high recommendation such as:

EM1 – Emergency Management - Public awareness and education &

Option EM2 - For flash flooding, flood warning system.



		The feedback has been noted. Evacuation Routes have been assessed and as mentioned in Section 10.3.1, many roads experience loss of access in the 20% AEP event. New developments will be required to provide an emergency response plan. This will assist SES and ensure they do not burden the current evacuation routes and SES resources. Camden township gets flooded and hence not suitable for evacuation. Evacuation centres have been identified on land that is flood free and mostly accessible.
		While levees at several locations have been considered only two have been listed and prioritised as High in the Plan. Both these levees provide benefits for flood events up to 1% AEP events. Further investigations on the suitability of the levees are yet to be undertaken. Voluntary House Raising is being considered by Council but needs further investigation and State government funding
	4. How the impacts of climate change are incorporated into the policy	As per 1.2
3	Concessional Development clause for the Camden Heritage Conservation Area.	As per 1.1.
4	The maps provided are of poor resolution and do not give sufficient detail down to the individual property level	The Floodplain Management Team helped members of the community directly who were having difficulty viewing PDF flood maps during the public exhibition as requested.
	2. No supporting or other information can be found regarding this policy on councils' website ; need to be more 'user friendly'.	These documents were available in the public exhibition website – "Your Voice Camden" which is widely used for Exhibiting similar Council documents. Residents were assisted to find information as required.
	3. Concessional Development within the Camden Heritage Conservation precinct; how the current policy differs from the 2006 policy	As per 1.1.



5	Clarification of Development in flood prone / floodway/ High hazard areas	Flood prone land includes all land affected by flooding regardless of its use.
	2. If the Lowes Creek Maryland rezoning report/study is to be included in Council's flood studies and plans	The Upper South Creek Flood Study document is a standalone flood study and does not need to reference the Lowes Creek Maryland Precinct Water Cycle Management Strategy Report, which was produced after the flood study update commenced. The Flood Policy also does not need to reference specific studies undertaken by third parties. The policy only references those studies that have been undertaken by Council in accordance with NSW Government's Flood Program, having also received funding from the State Government. The policy will not refer to individual third-party reports such as the Lowes Creek Maryland Precinct Water Cycle Management Strategy Report. The flood policy aims to control development on the floodplain based on Council's latest modelling. Where there are significant changes proposed (for example the development of precincts within the Upper South Creek catchment), a pragmatic approach will be adopted to ensure that any development application will correctly reflect the flood risk (i.e., it should rely on updated modelling if widespread landform changes are in place).
	3. Definition of 'Floodway'? How is this defined when an existing floodway requires rehabilitation or reconstruction?	A floodway area is where a significant volume of water flows during floods and are often aligned with naturally defined channels. They are areas that, even if only partially blocked, would cause a significant redistribution of flood flow, which may in turn adversely affect other areas. They are often, but not necessarily, areas of deeper flow or areas where higher velocities occur. An absolute definition of floodway however is not available. Council has mapped the floodway as described in the relevant study and each relevant flood studies/floodplain risk management studies identify how the floodway was defined.
	4. Which flood level will be utilised to indicate the Section 10.7 Planning Certificates (i.e., 1% AEP flood level, 1% AEP Flood level + FB, PMF)	The land that is affected by Flood Planning level means the land is below the 1% AEP plus freeboard. The Flood Risk Management Policy states the floor level requirement based on the land use.



		The tagging of lots for Section 10.7 certificates is outlined in the relevant flood studies/floodplain risk management studies/plans.
	5. How often/regularly Council will update the flood model and flood mapping to incorporate proposed development changes in the catchment?	Flood mapping: As per Floodplain Development Manual flood mapping is reviewed at least every 5 years.
	6. Upper South Creek Regional Flood Model and User Guide will be freely available for use?	At this stage the Upper South Creek Regional Flood Model is freely available to developers' consultants working in the Upper South Creek catchment. In future there may be a requirement to sign a user agreement (as for Nepean River catchment). If required, the models with results submitted to Council to assess will be reviewed by the Council's consultant. Further to that these models are required to update the base regional flood model for future developments / precinct developments.
	7. Will there be any change to design requirements for climate change impacts?	2.4 Addressing Climate Change Impact: As the flood policy states, the current freeboard for the Upper South Creek catchment is 500mm. It cannot be guaranteed that this freeboard will always be adopted. As more data and information become available regarding the implications of climate change on rainfall. For Example: Council may change the design flood level or change the adopted freeboard (to account for climate change).
	8. Definition of the term 'structure' in the policy- ' Structural Soundness '?	1.2.3 Structural Soundness: Structure means any works such as but not limited to buildings, walls, bridges, infrastructure, etc in the floodplain.
	9. Council to confirm that no design changes are required to approved strategies.	1.2.4 Flood Affectation: 1) No further assessment is required to Lowes Creek Maryland Precinct Water Cycle Master (WCM) Plan unless either the WCM or the Indicative Layout Plan is changed. However, each DA is to be assessed based on the adopted Flood Risk management Policy.2) same answer as above for (1), for an example, this includes the requirement of further assessment if the topography changes compared to WCM model. Regarding the filling requirements, there is no net import of fill in 1% AEP floodplain, but you can cut and fill within the floodplain (flood fringe and flood storage areas), as



		long as there is no net loss of floodplain storage and demonstration of no offsite impacts.
6	Concessional development in the case of development (commercial/residential) within the Camden Heritage Conservation Precinct	As per 1.1.
	2. Impacts of the 2022 NSW Independent Flood Inquiry Report	The 2022 NSW Independent Flood Inquiry is a comprehensive document that details investigations that were commissioned by the NSW Government into the 2022 flood events, with a particular focus on the hardest hit regions of the Northern Rivers. The recommendations that have come out of this report are primarily for:
		a) The NSW Government/Bureau of Meteorology/SES to begin changing the way that floods are predicted, monitored, and communicated [pre-flood].
		b) The NSW Government/SES to begin changing the way that floods are responded to [during flood].
		c) The NSW Government to begin changing the way that flood recovery takes place. This includes the establishment of the NSW Reconstruction Authority (NSWRA), similar to the successful Queensland Reconstruction Authority (QRA) [post-flood].
		The recommendations from this report are strategic in nature and will take time to manifest in policies and directions from the NSW State Government that Council will be directed to consider or adopt. The current flood studies, floodplain risk management studies and plans and the flood policy have been developed in accordance with the current NSW Flood Prone Land Policy.
		The Nepean River Floodplain Risk Management Study and Plan was prepared prior to the release of the 2022 NSW Independent Flood Inquiry report. As mentioned in Section 16, the Floodplain Risk Management Study and Plan "should be regarded as a dynamic plan requiring review and modification over time. The catalysts for change include new floods and enhanced collection of flood data, legislative change, alterations in the availability of funding and reviews of Council planning policies. Notwithstanding these catalysts for review, a review



		every five years or so is warranted to ensure the ongoing relevance of the Plan". Council is not required to update the Flood Policy based on an independent inquiry report. Updates to Council's Floodplain Risk Management Documents would be expected following any State Policy updates based on recommendations from the 2022 Report as required.
	3. Clear up and fix the large-scale destruction of the riverbank and the loss of big healthy trees which were holding the riverbank.	Damage to the riverbanks is part of a natural process that occurs to rivers and creeks in flood, and it is generally not feasible to interfere with natural river movements.
		Funding for rehabilitation may be available in some instances and Council does get involved to repair damage located near public infrastructure assets under Council's Control.
7	Concessional development clause for the Camden Heritage Conservation Area	As per 1.1.
8	Formatting 'flood risk management policy' document	Formatting and document quality recommendations have been included.
9	If the Lowes Creek Maryland precinct report/study is to be included in Council's flood studies and plans Council to confirm that no design changes are required to approved strategies	As per 5.2. & 5.9. The Upper South Creek Flood Study document is a standalone flood study and not need to reference the Lowes Creek Maryland Precinct Water Cycle Management Strategy Report, which was produced after the flood study update commenced.
		The Flood Policy also does not need to reference specific studies undertaken by third parties. The policy only references those studies that have been undertaken by Council in accordance with NSW Government's Flood Program, having also received funding from the State Government. The policy will not refer to individual third-party reports such as the Lowes Creek Maryland Precinct Water Cycle Management Strategy Report.
		The tagging of lots for Section 10.7 certificates is outlined in the relevant flood studies/floodplain risk management studies/plans. The flood policy aims to control development on the floodplain based on Council's latest modelling. Where there are significant changes proposed (for example the development of precincts within the Upper South



		Creek catchment), a pragmatic approach will be adopted to ensure that any development application will correctly reflect the flood risk (i.e., it should rely on updated modelling if widespread landform changes are in place). No further assessment is required to Lowes Creek Maryland Precinct Water Cycle Master (WCM) Plan unless either the WCM or the Indicative Layout Plan
		is changed. However, each DA is to be assessed based on the adopted Flood Risk management Policy. For an example, this includes the requirement of further assessment if the topography changes compared to the WCM model.
10	Adopting floodplain policies and plans until the plans regarding Warragamba Dam are finalised and can be taken into consideration.	The Warragamba Dam is located downstream of the Camden LGA and any proposed or rejected work on the dam will not have any influence on flood behaviour in the Camden LGA.
11	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
12	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
13	Climate Change Policy, 10% adjustment justification, Life of the policy Justification for using a 10% rainfall increase in the climate change modelling	As per 1.2.
	> The projected increase of the 1% AEP will exceed the current FPL within the Policy's life. Yet there is no policy for managing or communicating the problem.	
	> Both Nepean River Catchment matrices do not require consideration of cumulative development in all instances	



2. Impacts of the 2022 NSW Independent Flood Inquiry Report > There are concerns regarding the HCA and NSW Flood Inquiry.	As per 1.1 & 6.2.
3. Flood Policy Format Differs from other Council's >Different format and focus to other Council's Flood Risk Management Policies >Rather than relying on existing planning instruments, the Policy introduces specific controls and unique definitions	The policy has been documented based on the outcomes of the Floodplain Risk Management Study and Plans as required by the Floodplain Development Manual. Current best practice approach has been adopted to developing this policy. The policy is documented to best suit Camden Council's requirements. Definitions have been introduced based on the policy requirements. Future reviews of the Policy will be conducted at least every five (5) years with expert input and community consultation.
4. Definition of the terms in the Flood risk Management Policy >The use of unique land use descriptions is inconsistent with the definitions in the Camden Local Environment Plan	This is addressed as concessional development in the Heritage Concessional Precinct is withdrawn. The reference is not clear for any other inconsistency. To Council's knowledge, the land use descriptions in the FRMSP are not inconsistent with the definitions in the Camden Local Environment Plan.
5. Model reference to ARR 2019 - The models use ARR 2016 and not ARR 2019	The Nepean River flood modelling was undertaken prior to the release of the new ARR 2016/2019 guidelines. An ARR 2016 assessment was undertaken, and the results are documented in Appendix C of the Nepean River FRMSP report. Council has updated the Upper South Creek Flood Study to the new ARR2019 guidelines and intends to undertake an ARR2019 assessment for the Nepean River Floodplain Risk Management Study and Plan as well based on State government funding availability. Reviews indicate the updates in ARR 2019 will not make any significant changes to the results.



6. Allocated Evacuation Centre and How evacuation is to be managed especially when the access road would	As per 2.3.
be completely cut off in a PMF >Congestion and blockage of evacuation routes	
7. The Heritage Conservation Area (HCA) concessional development	As per 1.1.
clause >The Camden Local Planning Panel	
requested precinct-specific design control for the HCA	
>Concessional status of the HCA and the apparent disregard for equity and flood risk management	
>Concessions for areas subject to frequent flooding at low water levels (i.e., 5% AEP)	
9. Lack of discussion of special flood considerations in areas between the FPL and the PMF	The study was undertaken in accordance with the 2007 Planning Circular and Guideline on Development Controls on Low Flood Risk Area, Ministerial Direction No. 4.3, which had restricted Councils in NSW from applying residential development controls on land between the 1% AEP flood extent and the PMF extent. The new 2021 flood prone land package reverses the effects of this, and Council is currently undertaking investigations on flood considerations for these areas and updating the LEP.
	Consideration of flood risk between the FPA and PMF is provided for in the flood policy through the development controls applicable for the low flood risk precinct areas.



	10. General - Adoption of recommendations >Both Nepean River Catchment matrices do not require consideration of cumulative development in all instances	The Flood Risk Management Policy adopts recommendations of the Nepean River FRMSP including the 500mm freeboard requirements and emergency management plan. The NSW Floodplain Development Manual does not state that there should be no new development below the 1% AEP. Impacts of cumulative development is considered through flood modelling using the Nepean River Hydraulic Flood Model for Flood Impact and Risk Assessment.
14	I. If the Lowes Creek Maryland precinct report/study is to be included in Council's flood studies and plans Council to confirm that no design changes are required to approved strategies.	As per 5.2. As per 5.9.
15	permit development in flood prone / floodway/ High hazard areas	As Per 1.1. 'Flood prone area' or 'Flood affected Land', by definition, include all areas inundated in the PMF event. Not allowing any development of this land is not considered feasible, due to its large extent. The NSW Flood Prone Land Policy allows for development of the floodplain (recognising the benefits of use, occupation, and development of flood prone land), but to be done in a way that ensures the development is compatible with the flood risk. Council's Flood Policy reflects the NSW Flood Prone Land Policy and includes controls and requirements to that effect.
16	The NSW Flood Inquiry Report The Heritage Conservation Area (HCA) concessional development clause	As per 6.2. As per 1.1.
	3. Safe evacuation	As per 2.3. Safe evacuation during a flood event is the responsibility of NSW SES, and as such Council



		cannot comment on 'planned safe evacuations' for potential upcoming flood events.
17	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
	2. Recent NSW Government's declaration Flood Policy announced on 17 August 2022/ The NSW Flood Inquiry	As per 6.2. The document released on 17 August 2022 was not NSW Government's "Policy".
	3. Community engagement / consultation	The Policy has been developed based on the outcomes of the Floodplain Risk Management Study and Plans.
		Council's Floodplain Risk Management Studies and Plans are developed in consultation with the Floodplain Risk Management Committee which has public representation.
		The documents were on public exhibition for the period from 21 July 2022 until 26 August 2022. The purpose of this was community engagement and consultation to gain feedback and community knowledge which has been incorporated into the final documents.
		The policy has incorporated the outcomes of the studies with the documents individually providing a summary. It is noted that an overarching summary will be included for future public exhibitions.
	4. How the latest frequent flood events have been factored into the draft Policy.	The Study commenced in 2016 and hence the various assessments were undertaken for the duration of the study until 2021. Since then, the 2021/2022 flood events have occurred. Council has undertaken an in-house comparison of the recent March 2022 floods. This is provided in Appendix K. Actual flood marks were compared with the Nepean River FRMSP 5yr and 20yr flood extent when Cowpasture bridge gauge was at 12.3m. This shows that the study flood extents mapped are consistent with the actual flood extent observed. The intention of the public exhibition was the gain community feedback and gather community knowledge. Various submissions have been received by Council and are now being investigated and addressed
	5. Climate Change impact	As per 1.2.



		>(2d(i))- The potential flood impact from climate change is explained in Table 9.6 of the report. Detailed analysis was undertaken to derive the 10% increase in climate change. This is provided in the attached discussion paper. This approach is based on current best practice and will be further investigated by Council when latest data and information is available. >(2d(ii)) - Climate change flood mapping has been provided (Appendix B).
18	permit development in flood prone / floodway/ High hazard areas	The proposed Flood policy does not allow new development in a floodway. The NSW Government 'regulations' referred to is an Independent Flood Inquiry Report and is not a 'regulation'. See also response to 6.2.
19	Recent NSW Government's declaration Flood Policy announced on 17 August 2022/ The NSW Flood Inquiry	As per 6.2.
	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
	3. Community engagement / consultation	As per 17.3.
	4. Climate Change impact	As per 1.2.
20	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
	2. The NSW Flood Inquiry Report	As per 6.2.
	3. How the latest frequent flood events have been factored into the draft Policy.	As per 17.4. The concerns regarding the Nepean River FRMSP not being up to date is noted. The Study commenced in 2016 and hence the various assessments were undertaken for the duration of the study until 2021. Since then, the 2021/2022 flood events have occurred. Council has undertaken an in-house



		comparison of the recent March 2022 floods. This is provided in Appendix K. Actual flood marks were compared with the Nepean River Floodplain Risk Management Study and Plan 5yr and 20yr flood extent when Cowpasture Bridge gauge was at 12.3m. This showed that the study flood extents mapped are consistent with the actual flood extent observed.
	4. Climate Change impact	As per 1.2. Climate Change considerations are for new developments and Transport in Zone B. This has been captured for greenfield developments including transport infrastructure in Zone B.
	5. Lack of explanation and community engagement /consultation	As per 17.3.
21	Respond to the 2022 NSW Independent Flood Inquiry Report	As per 6.2.
	2. An improved information service (Flood warnings and emergency events) from council during the flood event is necessary 3. Proposed evacuation centres are far from the population that would need them. 4. Evacuation Routes are difficult, hazardous, and time-consuming	As per 2.3. >Evacuation routes - The feedback has been noted. Evacuation Routes have been assessed and as mentioned in Section 10.3.1, many roads experience loss of access in the 20% AEP event. New developments will be required to provide an emergency response plan. This will assist SES and ensure they do not burden the current evacuation routes and SES resources. >Evacuation Centres - Camden township gets flooded and hence not suitable for evacuation. Evacuation centres have been identified on land that is flood free and accessible. >Flood mitigation measures - While levees at several locations have been considered only two have been listed and prioritised as High in the Plan. Both these levees provide benefits for flood events up to 1% AEP events. Further investigations on the suitability of the levees are yet to be undertaken. Voluntary House Raising is being considered by Council but needs further investigation and State government funding



	5. Concessional development in Camden Heritage Conservation Area	As per 1.1.
	6. Lack of explanation and community engagement	As per 17.3
22	How the latest frequent flood events have been factored into the draft Policy.	As per 17.4.
	2. Wide public involvement, consultation with the community	As per 17.3.
	3. Considering the NSW Independent Flood Inquiry Report	As per 6.2.
	4. Concessional Development within the Camden Heritage Conservation precinct	As per 1.1.
	5. Climate Change impact	As per 1.2.
23	The Heritage Conservation Area (HCA) concessional development clause	As per 1.1.
	2. Reviews of the Policy are required every 5 years. Camden's has not been updated since 2006.	Reviews and updates will be conducted at least every 5 years following adoption of this Policy.
	3. The NSW Flood Inquiry Report	As per 16.1.
	4. Community engagement / consultation	As per 17.3
24	1. Structural Soundness - The controls 1) and 2) say the same.	Control 2 was reviewed and removed to reduce ambiguity. Control 1 now applies for both. This has been amended in the Flood Policy.
25	1. 'Greenfield Development' - does it include transport infrastructure (new roads and rail), or should we say 'greenfield development including future transport infrastructure'	It should be everything associated with a greenfield development. This has been amended in the Flood Policy to read "greenfield development including future transport infrastructure".