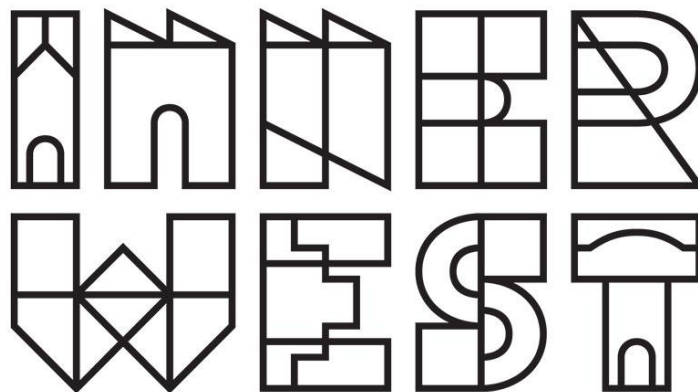


AGENDA



FLOOD MANAGEMENT ADVISORY COMMITTEE MEETING

THURSDAY 29 FEBRUARY 2024

2:00 PM

AGENDA

1 Apologies

2 Disclosures of Interest

3 Confirmation of Minutes

Minutes of 27 July 2023 Flood Management Advisory Committee 3

4 Staff Reports

| ITEM | Page |
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| FMACC0224(1) Item 1 Review of Flood Management Advisory Committee Terms of Reference | 11 |
| FMACC0224(1) Item 2 Future Flood Education | 79 |
| FMACC0224(1) Item 3 Inner West Local Flood Plan | 88 |

5 Reports with Confidential Information

Reports appearing in this section of the Business Paper are confidential in their entirety or contain confidential information in attachments.

The confidential information has been circulated separately.

ITEM

FMACC0224(1) Item 4
 Presentation of Alexandra Canal Flood Risk Management Study & Plan and
 Johnstons Creek / Whites Creek Flood Risk Management Study & Plan

6 General Business

Update on Council Resolutions
Update on Flood Mitigation Programming

7 Close of Meeting

**Minutes of the Flood Risk Management Advisory Committee Meeting
27 July 2023
Meeting Commenced at 1:03pm**

COMMITTEE REPRESENTATIVES PRESENT

| | |
|------------------------|--|
| Clr Mat Howard | Councillor – Midjuburi-Marrickville Ward (Chair) |
| Clr Marghanita Da Cruz | Councillor – Gulgadya-Leichhardt Ward |
| Lois Gray | Community Representative |
| Shad Wall | Community Representative |
| Alexander Bailey | Ashfield-Leichhardt SES |
| Robert Baker | Marrickville SES |

NON VOTING MEMBERS IN ATTENDANCE

| | |
|----------------|--|
| David Paton | IWC Engineering Services Manager |
| James Ogg | IWC Coordinator Stormwater & Asset Planning |
| Rafaah Georges | IWC Stormwater & Asset Planning Engineer |
| Sadeq Zaman | NSW Department of Planning and Environment (DPE) |
| Martin Griffin | Representative from Stantec – IWC’s Flood Modelling Consultant |

Observers

| | |
|------------------|-----------------|
| Klaus Neuscheler | SES |
| Liam Hogan | SES |
| Michael Carney | SES |
| Deborah Kearns | SES |
| Cian Currie | SES |
| Helen Slater | SES |
| Stuart McTaggart | City of Sydney |
| Neville Naicker | Bayside Council |

Apologies

| | |
|------------------|-----------------------------|
| Tim Harnett | Community Representative |
| Ryann Midei | IWC Director Infrastructure |
| Douglas Wylie | SES |
| Shelly Stingmore | SES |
| Peter Kaye | SES |

1. Acknowledgement Of Country – Clr Howard

I acknowledge that we are meeting on the land of the Gadigal and Wangal people of the Eora Nation and pay my respects to the elders past and present and I extend that respect and acknowledgement to any Aboriginal people who are here with us today.

2. Disclosures of Interest

Councillor Howard declared a possible conflict of interest as a local resident of Marrickville. This was considered a non-significant, non-pecuniary interest as the items of the agenda do not address areas of Marrickville.

3. Confirmation of Minutes

That the Minutes of the Flood Management Advisory Committee Meeting held on Thursday, 22 August 2022 be confirmed.

Point of Order

Councillor Da Cruz queried as to why the agenda and previous minutes were not published on the Council website. As it was believed to be a Council requirement to publish the agendas unless matters were considered confidential, and that this committee is under this jurisdiction.

James Ogg replied that it was an oversight of the publishing process and would review the Terms of Reference for the Advisory Committee moving forward. Previous practice has been to publish the minutes once they have been adopted by Council. Council staff have resolved to ensure future meeting agendas are publicly published and would review the minutes process with Council's Governance Team.

Councillor Mat Howard noted it would be better to have the information publicly and in advance of the meetings for the purpose of declaring conflicts.

It was resolved that the meeting could proceed, noting the actions for future meetings.

4. Items for the Committee – FMAC0727(1) – Item 1

Dobroyd Canal and Hawthorne Canal Flood Risk Management Study & Plan – Proposed Endorsement

SUMMARY

A short slideshow presentation for the committee outlining actions to date as it had been a few years since the report was last presented to the committee.

- 2015 – Dobroyd Canal Flood Risk Management Study commenced by Ashfield Council
- 2016 – Hawthorne Canal Flood Risk Management Study commenced by Marrickville Council with Ashfield Council as significant stakeholder
- 2017 – Following Council amalgamations in 2016, these studies were combined into a single project
- 2018 – Initial community consultation conducted to develop proposed options
- Modelling of options undertaken by consultant WMA Water
- 2019 – Multi-criteria analysis of options, considering complexity of construction, impact to public, and cost-benefit ratio
- Draft report presented to Flood Risk Advisory Committee in 2019 prior to public exhibition
- Public Exhibition undertaken in mid 2019, with Your Say Inner West portal, in person information sessions, and phone calls to Council engineers
- Report amended to address community questions about Hawthorne Parade levy & expansion of Dobroyd Canal
- Committee endorses the Flood Risk Management Study & Plan, subject to
- Responses issued to all written submissions
- Review of wording and grammatical errors and Figure inconsistencies
- Additional comments about vulnerability education in an urban catchment

Following these amendments the Flood Risk Management Plan identified 5 flood mitigation options, 3 response modification options, and 2 property modification options.

- FM0403A / FM403B – Grosvenor Street pipe upgrade and Darrell Jackson Gardens detention basin
- FM0404C – Nowranie Street pipeline upgrade
- FM0501G – Petersham Park detention basin

- FM0605C – Sloane Street pipeline upgrade
- FM0702 – Pratten Park detention basin
- RM01 – Investigate Flash Flooding Warning System for Heighway Avenue
- RM02 – Update SES and Council flood model data for future flood response
- RM03 – Community Education Program
- PM01 – Development Controls associated with Flood Planning Levels
- RM02 – Residential Flood Proofing

Items that had best value under multi-criteria analysis were community education options and localised damage minimisation through development controls. Floods upgrade options had a lower score, due to greater constraints and difficulties, but would continue to investigate the viability of these options.

OFFICERS RECOMMENDATION

That the Flood Management Advisory Committee endorse the Final Draft Dobroyd Canal and Hawthorne Canal Flood Risk Management Study and Plan to Council for adoption.

DISCUSSION

Councillor Howard asked what the key concerns were that had been raised in the previous submissions.

Council officers advised that the key concerns were uncertainty about why properties were considered flood affected as flooding had not been seen in the area. Residents were satisfied once the criteria for mapping and the size and nature of flooding in the area were explained during the information sessions.

Councillor Howard asked how previous written submissions were addresses as resolved by the previous committee, and whether people at that time were satisfied with the outcome.

Council officers advised that a written response was provided by Council's consultants to any written submission during the exhibition process. No further feedback from those written responses were received. As noted residents that attended drop-in sessions during the exhibition were satisfied with the explanations provided at the time.

Councillor Howard sought clarification for the delay in adoption, noting that the report was complete in 2019, and the impact of new residents moving into the area on proposed outcomes.

Council officers noted that prioritisation of resourcing in a time of high demand on the Asset Planning team resulted in delays in taking the report to Council, however this was no being rectified. There are no changes proposed to flood mapping, risk modelling, property zoning, or development controls to flood affected properties. These details have already been adopted by Council as part of the Hawthorne Canal Flood Study and Dobroyd Canal Flood Study.

The representative from the Department of Planning noted that while the plan was not progressed to Council adoption in 2020 due to difficulty in resourcing, the study was very comprehensive and acknowledged Council officer comments that this is a highly built-up catchment and the impact to the study due to land use change and increase in impervious areas, which are among the main drivers of increasing flood risk, would not be significant.

The representative from the Department of Planning noted that the study was completed based on the ARR 1987 dataset, which has since been superseded by the ARR 2019 dataset published through The Bureau of Meteorology, hence there may be an opportunity to check in on the outcome by using the latest rainfall data.

Council officers noted that a comparison check was undertaken for another study currently underway in Johnstons Creek on the impact of using ARR 2019 compared to ARR 1987. The results of the comparison noted that the changes caused by the updated rainfall patterns were not significant to undertake a new rainfall

model. Given the minor nature of the changes and the design to maintain consistency in the assessment of flood mitigation impact assessment, Council has maintained the 1987 rainfall data in this study.

Councillor Howard noted that the report investigates a levy on Hawthorn Parade and the potential expansion of Dobroyd Parade and if this was still the proposed plan

Councillor Da Cruz wanted clarification that the levy was a physical levy and not a monetary levy.

Council officers confirmed that the levy was a physical levy rather than monetary contribution. The report reviews these two options due to resident considerations, however as both options result in a net worsening of flood impacts these were not recommended for further investigation.

Lois Gray noted that it would seem that the flood situation for most of affected properties does not change.

Council officers confirmed that since flooding in these two catchments is largely across minor tributaries rather than overflow of the creeks themselves, there weren't any substantive options to eliminate or reduce flooding across large sections of the catchment. As such the key options was about community awareness in conjunction with SES and property modification through DCP controls. This was supported by the representatives from Leichhardt-Ashfield SES and Marrickville SES.

Councillor Da Cruz asked if Council could comment on climate change and sea level rise.

Council officers advised that climate change was factored into both the Flood Study and the Flood Risk Management Study and Plan under guidelines issued by the Department of Planning. The guidelines recommend modelling 10%, 20% and 30% increases to the intensity of rainfall and modelling sea level rise as a water level condition on Council's outlets to the canal. These changes to the model parameters do not see significant variation to the flood depths modelled within the catchments.

Councillor Howard foreshadowed an amended recommendation which he wanted to raise for discussion. Conscious of population change, opportunity should be given to get renewed feedback from the current community about the policies that impact them and educate new residents about the potential impacts to their property.

DISCUSSION OF AMENDED RECOMMENDATION

Lois Gray suggested that the community consultation should not be to seek new resident views, but rather further inform residents about what it means to have an existing flood affected property, noting that the study recommendations of the study were unlikely to change and the DCP controls only relate to new builds or significant redevelopment.

James Ogg commented that education was one of the recommendations of the report itself, as a method of risk reduction through knowledge rather than constructed methods to reduce flood levels and that ongoing engagement with the community would continue to occur outside of the process developing and adopting the Flood Risk Management Study

Lois Gray asked if advice is given to people with the section 10.7 certificates for flood affected lots and controls that may be applicable and if this would assist new residents who may have just moved into the area.

James Ogg confirmed that the 10.7 planning certificates outlines planning and zoning controls, but does include a section stating whether the property is subject to development controls due to flooding. If the lot is identified as a Flood Affected Property under Council's Development Control Plan, this section advises potential residents to contact Council's Stormwater & Asset Planning team for further specific information. Consequently, any new property owners would have been notified through this process.

Councillor Da Cruz sought clarification of the impact of undertaking a new FRMS&P or if the committee should consult on the current document.

Council officers noted that though the Flood Management Process is an iterative process, the relative lack of change in the urban character and residential zoning of the affected areas means that any revised modelling would show limited impacts to flood hazard, flood depths, or damage estimates. Similarly a new study would not be expected see substantial changes to the value of the options assessed and recommended.

The adoption of the report provides legislative support for further investigation and design of identified options, inclusion within future works programs, inclusion within development control plans, financial support from the NSW Government, and guide ongoing community engagement and education. Further detailed design and assessment is required for each design option and further community would occur with each of those options during detailed design.

Alexander Bailey commented that the Ashfield and Leichardt SES would continue to work with Council to engage residents in the area around matters of flood hazard and flood safety.

Councillor Da Cruz wanted to clarify if ongoing SES education was dependent on the adoption of this plan and Council doing some of the work.

James Ogg responded that this plan did inform some of the measures taken by SES, such as route planning and hazard mapping, as well as any high-risk communities.

Councillor Howard advised that he understood the benefits of ongoing education related to the adoption of the report, and valued the work that the SES and Council were doing, however still had concern that the potential for significant population change within the catchment, with information not available online for the public to review.

It was further noted that the committee makes a recommendation to the Council and the elected Council make the final resolution in this respect.

Councillor Da Cruz proposed that the committee could consider the endorsement of the report and recommend a further report committing Council to develop an education strategy for presentation to the next committee meeting. This would also provide opportunity for ongoing feedback to the committee and Council once the document was adopted.

Councillor Howard moved to amend the recommendation to endorse the Study and plan, subject to a further report to Council about options for further community engagement prior to or following the adoption of the study.

COMMITTEE RECOMMENDATION

1. That the Flood Management Advisory Committee endorse the Final Draft Dobroyd Canal and Hawthorne Canal Flood Risk Management Study and Plan to Council for adoption.
2. That Council receive a report on options of further community engagement or notification on the study and plan, noting that new residents may wish to be informed of the recommendations of the study and plan.

For Motion: Unanimous

4. Items for the Committee – FMAC0727(1) – Item 2

Alexandra Canal Flood Risk Management Study & Plan and Johnsons Creek and Whites Creek Flood Risk Management Study & Plan – Review of initial mitigation proposals

James Ogg and representatives from Council's flood modelling consultant Stantec provided an update on progress of the Alexandra Canal Flood Risk Management Study and Plan and Johnsons Creek & Whites Creek Flood Risk Management Study and Plan.

Throughout the project there has been a technical working group involving representatives from Council, Stantec and DPE meeting fortnightly to keep the project progressing and maintaining ongoing feedback.

Both studies are partial catchment studies – the Alexandra Canal study area focuses only on areas north of the canal, and west of Barwon Park Road and the Johnsons Creek & Whites Creek study area focuses only on areas south of Parramatta Road. Leichhardt Flood Risk Management Study and Plan. The remaining areas are already covered by studies undertaken the City of Sydney and Inner West Council.

The Alexandra Canal catchment is generally industrial and commercial land with some residential areas in Tempe and near Sydney Park. Changes to the catchment since the Alexandra Canal Flood Study include the St Peters Interchange component of WestConnex and the Sydney Gateway project. The change to drainage patterns as a result of these projects does not significantly affect the flood risk for the wider area as both these projects are located in the lower region of the catchment and have had to demonstrate as part of their approval that there would be no worsening of flooding to the surrounding catchment.

The second study area is Johnsons Creek and Whites Creek, limited to the area south of Parramatta Road and west of King Street and Church Street Newtown. These catchments are largely residential, with limited areas of commercial and industrial buildings along major roads.

An assessment of model updates, including new building footprints and rainfall data sets was undertaken when the project commenced. The results showed minor water level reductions associated with the new rainfall data. However, in order maintain continuity between the previous Flood Study and the current Flood Risk Management Study the previous model was maintained, noting that this would also be a more conservative approach. The project is otherwise operating consistent with the revised guidelines of the NSW Government 2022 Flood Prone Land Package guidance.

Community consultation was undertaken from March to April of this year. Over 2700 letters were mailed to owners and occupiers in the one in one hundred year affected properties, with three in person information sessions, and an online survey/submission portal through the Your Say Inner West portal. The community engagement had five survey responses, five in person visitors across the three sessions and two interactive map responses. The have your say page had a bit better engagement with 650 views 501 and one of those that were unique, 7 hours of viewing and 49 flood study report downloads.

Stantec provided a brief outline of the flood planning controls review, hazard mapping and damages assessment taken to date, noting that these would be fully documented in the Draft Flood Risk Management Study to be presented to the committee later in the year. It was noted that the 20%AEP event (previously referred to as the 1-in-5-year event) contributes almost 50% of average annualised damage assessment. Consequently, Council and Stantec would be focusing on options that provided the greatest benefit in these smaller more frequent events.

A preliminary list of options has been prepared by Stantec, guided by site visits, flood model results, and workshops with internal Council teams as well as local stakeholder organisations including SES and City of Sydney.

Stantec presented to the committee fourteen mitigation options that it is believed would reduce or improve flood levels and flood impacts across these catchments, seeking comment from the committee, before undertaking further detailed modelling

Alexandra Canal

- Station Street - drainage upgrade to Tempe Reserve
- Bay Street - drainage upgrade

- Princess Highway drainage upgrade between Campbell Street and Barwon Park Road
- Talbot Street drainage upgrade to maintain regional evacuation route on Princes Highway

Johnstons Creek

- Bridge Road – pipe capacity upgrade and detention storage
- Camperdown Park – on-site stormwater detention storage
- Salisbury Road – review blockage capacity in inlet maintenance schedules
- Clarendon Street / Clarendon Lane – pipe capacity upgrade
- Trafalgar Street – pipe upgrade within rail corridor west of Stanmore Station
- Cardigan Street and Kingston Street – pipe upgrade and inlet capacity improvements
- Probert Street – improved inlet capacity into existing network
- Railway Avenue – pipe capacity upgrade
- Lennox Street – new stormwater pipeline along Lennox St connecting in further downstream

Whites Creek

- Drainage upgrade between Westbourne Street and Parramatta Road

The Flood Risk Management Study will also evaluate the suitability and capacity of six typical Emergency Management options

- Flood Prediction and Warning (noted that there were complexities with such systems in a flash flooding catchment)
- Review of Flood Planning & Information Availability
- Community Flood Awareness
- Education Programs
- Flood Signage & Markers
- Post Flood Data Gathering

Once detailed options are investigated a draft report and public exhibition will be undertaken followed by finalisation and completion of the study. The draft report will be presented to our technical working group and the committee and then the draft final report post comment will go on public exhibition. At the next Flood Advisory Committee meeting it is planned to have the draft report finished and the detailed options summary to present to the committee.

DISCUSSION

Councillor Da Cruz noted the response to the community consultation process and suggested that the method of community engagement, notification and communication was important and requested feedback as to how this could be improved moving forward.

Council officers noted that this was an ongoing point of discussion and will provide further feedback / plans at next Flood Advisory Committee prior to exhibition of the final Flood Risk Management Study and Plan

Clr Marghanita Da Cruz asked for clarification whether Weekly Park in Johnstons Creek was assessed for flood mitigation.

Representatives from Stantec and Council officers noted that the modelling did not show a significant depth of flooding affecting many properties, and options in this context are not typically included in a Flood Risk Management Study due to comparatively minor benefit.

Council officers noted investigations had been undertaken to this area in previous years to reduce frequency of flooding. However Council would commit to including a pipe upgrade option in this area as one of the options to undergo further benefit testing.

Councillor Howard sought clarification as to what was required of the committee regarding the Alexandra Canal and Whites Creek and Johnsons Creek mitigation proposed options presented.

Council officers confirmed that Council was seeking comments on the options identified, and any specific areas of concern that members of the Flood Advisory Committee wanted to raise as part of these studies.

COMMITTEE RECOMMENDATION

That the information slides be provided to the members of Flood Advisory Committee with any comments to be returned by 11 August 2023.

4. Items for the Committee – FMAC0727(1) – Item 3
Review of Committee Terms of Reference

Upon Council officer review, the Terms of Reference for the Inner West Flood Risk Management Advisory Committee is consistent those of similar bodies within neighbouring Councils in terms of structure, responsibilities, number of meetings and meeting procedure. However due to changes to organisational structures and responsibilities of State bodies the relevant stakeholders and representatives from State Government agencies will need to be reviewed.

Review deferred to next meeting.

Council officers to provide draft updates prior to next meeting.

5. General Business

Shad Wall had photos of historic flooding in Leichhardt to share with Council officers.

6. Meeting Closed 3:10pm – Clr Howard

Item No: FMACC0224(1) Item 1
Subject: REVIEW OF FLOOD MANAGEMENT ADVISORY COMMITTEE TERMS OF REFERENCE
Prepared By: James Ogg - Stormwater and Asset Planning Coordinator
Authorised By: Ryann Midei - Director Infrastructure

RECOMMENDATION

1. That the Flood Management Advisory Committee endorse the updated Terms of Reference (including new schedule)

STRATEGIC OBJECTIVE

This report supports the following strategic directions contained within Council's Community Strategic Plan:

- 5: Progressive, responsive and effective civic leadership

EXECUTIVE SUMMARY

This report reviews the purpose of the Flood Management Advisory Committee within NSW Legislation and Guidance Manuals. It reviews current membership, consistency with other Flood Management Committees, and consistency with similar committees of Inner West Council.

Following this review, an amended Terms of Reference has been developed using this new template and including amendments to membership, meeting schedule and code of conduct as detailed in the report.

BACKGROUND

At the meeting of Council held on 19 September 2023, Council resolved the following in part:

6. *That a review be undertaken of the Flood Management Advisory Committee, including consideration of meeting schedule, terms of reference and other governance measures and that this report be received by Council in or before December 2023.*

The Terms of Reference for the Inner West Council Flood Management Advisory Committee (FMAC) was adopted in August 2016 and was scheduled for review in July 2020. The FMAC did not meet between 2020 and 2022 due to the impacts of COVID-19, after which a review of the Committee Terms of Reference has been a standing item on the agendas. A copy of the current Terms of Reference dated August 2016 is provided in Attachment 1.

DISCUSSION

Review of the Flood Management Advisory Committee

Legislation & Governance

Flooding and the management of flood liable land within NSW is governed under the NSW Flood Prone Land Policy (the Policy). The primary objective of the Policy is to reduce the

impact of flooding and flood liability on communities and individual owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods.

The NSW Flood Risk Management Manual (the Manual) has been prepared by the NSW Department of Planning in accordance with the Policy to support its implementation.

Under the Policy and Manual the management of flood prone land is the responsibility of local councils, including the establishment of flood risk management (FRM) governance and consultation with the community through the establishment and management of committees.

A key part of strategic flood risk management is to have arrangements in place to oversee and enable contribution by agencies, key stakeholders and the community to studies and the development of FRM plans under the FRM process.

Councils may choose to assign this role to an existing committee of council, or a separate management committee may be formed. Typically, metro Councils have assigned this responsibility to a unique committee.

These committees are generally advisory in nature and do not have or exercise any formal powers of Council, but report through an established process to the Council or to an appropriate standing committee, which has the final decision-making authority.

While in many ways these committees share similarities with Council's Local Democracy Groups, the operation of the committee forms part of Council's legislated responsibilities under Section 733 the Local Government Act 1993.

While the Inner West Council Flood Management Advisory Committee is not directly legislated under the Local Government Act, Section 733 of Act outlines that a council that acts in accordance with the Manual relating to the management of flood liable land is taken to have acted in good faith in relation to advice given, or things done or not done, relating to the likelihood of flooding or the extent of flooding.

Membership

As outlined in the Manual, membership of the FMAC should include a balanced representation of stakeholders such as agencies, groups and individuals impacted by flood management within the affected area. Typically, membership is:

- elected members of council
- an appropriate number of representatives of the local community including local flood affected landholders, relevant industry bodies, and environmental groups)
- Representative(s) from the State Emergency Service (SES)
- Council staff from engineering, planning and environmental disciplines
- Officers from the Department of Planning and Environment
- Other key stakeholders, such as owners or managers of infrastructure or land that may influence or be impacted by flood behaviour such as Sydney Water and Transport for NSW

Committee members may be required to vote to determine the majority opinion on different issues. Because the FRM plan should be a local based process, Department of Planning officers, infrastructure owners and Council officers abstain from voting.

Under the current Terms of Reference, membership of the FMAC is made up of:

Voting Members:

- Up to three elected representatives of Inner West Council
- Up to eight community representatives – up to one from each catchment within Council
- Up to two NSW SES representatives

Non-Voting Advisory Members:

- Up to twelve members of Inner West Council staff from Engineering, Planning and Environment teams as required
- One representative from Sydney Water
- One representative from Roads and Maritime Services
- One representative from NSW Office of Environment & Heritage
- One representative from NSW Department of Planning and Environment
- One representative from Sydney Catchment Authority
- A representative from other Councils or Government Agencies impacted by a Flood study or Floodplain Risk Management Study and Plan being undertaken

Following recent changes within NSW agencies, including SES structures, the number of elected representatives appointed from Council, and overall benchmarking with neighbouring Councils, the following changes are recommended to the Terms of Reference:

Voting Members:

- Two elected representatives of Inner West Council
- Up to eight community representatives who reside or operate on flood prone land, have expertise in local flood management, represent local environmental groups, sporting groups, social groups, or chamber of commerce impacted by flooding
- One representative from the NSW SES Inner West Cluster

Non-Voting Advisory Members:

- Inner West Council Director Infrastructure
- Inner West Council Manager Engineering Services
- Inner West Council Coordinator Stormwater & Asset Planning
- Inner West Local Emergency Management Officer
- 1 representative nominated by Sydney Water
- 1 representative nominated by the NSW SES Metro Zone
- 1 representative from Transport for NSW Roads
- Up to 2 representatives from the NSW Department of Climate Change, Energy, the Environment and Water

Further invitees and observers can be invited to the committee meetings at the discretion of the Committee Facilitator, including

- Relevant officers from Inner West Council within Civil Works, Operations, Planning and Environment
- Representatives from the NSW SES Ashfield-Leichhardt Unit & NSW SES Marrickville Unit
- Representatives from other Councils or Government Agencies where they impacted by a Flood Study or Floodplain Risk Management Study and Plan being undertaken by Inner West Council

Following recent resignations of community members there are several vacancies that have not yet been filled. As these vacancies are currently within six months of the end of term of the current Council, it is recommended that these vacancies are filled following an expression of interest in the first term of the new Council.

Matters for Consideration

The NSW Flood Risk Management Manual (the Manual) outlines the roles and responsibilities of the FMAC. The FMAC assists Council in developing and implementing Flood Risk Management Plans by contributing ideas, professional expertise, experience, and local knowledge.

As outlined in the Manual, the principal objective of the FMAC is to oversee and assist Council in the development of Flood Studies and Flood Risk Management Plans, providing advice on priorities for implementation and facilitating important links to state agencies, key stakeholders and the community. Members of the committee contribute their knowledge of historical information, local problems, and possible solutions.

Once the committee has completed the prime task of developing an FRM plan and implementation strategy, and the council has adopted these, implementation falls back to Council as part of activities under the Flood Risk Management framework outlined in the Manual.

Noting the review of the Flood Risk Management Manual above, it is recommended that the following changes are made:

| Item | Current function | Proposed Amendment |
|------|--|---|
| 7 | To co-ordinate with catchment management boards, emergency management boards and other advisory bodies. | To facilitate coordination of flood management between local and state government agencies. |
| 8 | To actively coordinate, promote and implement Floodplain Risk Management Plans through local planning processes, works programs and education campaigns seeking cooperation and encouraging community participation. | To support and review the implementation of Floodplain Risk Management Plans within local planning processes, works programs and education campaigns and encouraging community participation. |

Meeting Schedule

A recommended schedule of meetings is not provided within the NSW Flood Risk Management Manual (the Manual). Meetings are typically held at critical points in the project stages during the development of Flood Studies and Flood Risk Management Plans.

To provide greater ongoing support and guidance to the development of Floodplain Risk Management Plans and the implementation of works programs and education campaigns resulting from the adopted studies, as well as provide ongoing community feedback from rain and flood events, it is recommended that a quarterly schedule be adopted.

The work plan of Flood Studies and Flood Risk Management Studies would be amended to have milestones line up with an adopted meeting schedule, however occasional extraordinary meetings may need to be called where an urgent response or a project critical milestone does not fall within the regular meeting schedule.

Terms of Reference Updates

The Inner West Council Governance team has been adopting new standard Terms of References for Councils committees, such as the Local Traffic Committee Terms of Reference adopted by Council on 13 February 2024.

An amended Terms of Reference has been developed using this new template and includes the above reviews into membership, meeting schedule and matters for consideration. The amended Terms of Reference document is provided in Attachment 2.

FINANCIAL IMPLICATIONS

There are no financial implications associated with the implementation of the proposed recommendations outlined in the report.

ATTACHMENTS

1. [↓](#) Current Terms of Reference
2. [↓](#) Proposed Terms of Reference
3. [↓](#) Floodplain Risk Management Advisory Committee Handbook



Inner West Council

Flood Management Advisory Committee
Terms of Reference

August 2016

| | |
|---|--|
| Title: | Flood Management Advisory Committee Terms of Reference |
| Date of Issue: | 31 August 2016 |
| Date of Adoption: | 23 August 2016 |
| Version: | Adopted |
| Contact Officer: | Director of Major Projects & Engineering |
| Main Legislative or Regulatory References: | Local Government Act NSW 1993; Local Government (General) Regulations NSW 2005; NSW Government's Flood Prone Land Policy and the Floodplain Development Manual (2005). |
| Amendment History: | - |
| Review Dates: | July 2020 |

1. ROLE

The Inner West Council Flood Management Advisory Committee is an advisory Committee established to assist Council in the preparation of floodplain management studies and plans for the Inner West local government area.

The Committee acts as both a focus and forum for the discussion of technical, social, economic and environmental matters, and for the distillation of possibly differing viewpoints on these matters into a management plan.

The Committee is established in accordance with the NSW Government's Flood Prone Land Policy and the Floodplain Development Manual (2005).

2. OBJECTIVE

The principal objective of the Flood Management Advisory Committee is to assist the Council in the preparation of Floodplain Risk Management Plans for the Inner West Council local government area which will:

- Reduce the impact of flooding and flood liability on the community.
- Reduce private and public losses resulting from flooding.
- Recognise floodprone land as a valuable resource which should not be necessarily sterilised.
- Take into account social, economic, ecological and cultural factors.

3. FUNCTIONS/SCOPE

The function and scope of the Committee will include but not be limited to the following:

- To assist Council in the development of Flood Studies and Floodplain Risk Management Studies and Plans for the Inner West Council local government area.
- To provide a link between Council and the local community.
- To assist in the collection of necessary information.
- To identify objectives and strategies related to the improvement of the management of the floodplain.
- To monitor and review the implementation of flood planning in the Inner West Council local government area.
- To provide input into known flood behaviour as part of the flood study.
- To co-ordinate with catchment management boards, emergency management boards and other advisory bodies.
- To actively coordinate, promote and implement Floodplain Risk Management Plans through local planning processes, works programs and education campaigns seeking cooperation and encouraging community participation.

The Committee does not consider specific development issues proposals/applications but focuses on broader management issues, Council policies and strategies affecting flood prone lands.

4. MEMBERSHIP AND APPOINTMENTS

4.1 Membership of the Committee

The Committee comprises representatives from the local community, elected representatives of Council, representatives of various NSW State Government departments / authorities / corporations, Council staff, and specialist consultants as engaged by Council.

Membership on the Committee is voluntary and by invitation from Inner West Council. Council recognises committee members as valuable partners in the management of the floodplain.

The number of voting and non-voting members is outlined below. Membership can be altered at any time by Council resolution.

| Voting Members | | |
|---|---------------|------------------------------|
| Representative | Number | Method of appointment |
| Elected representatives of Inner West Council | up to 3 | As per Terms of Reference |
| Community Representatives | up to 8 | As per Terms of Reference |
| NSW State Emergency Service | up to 2 | Nominated by SES |

| Non-voting Technical Advisory Members | | |
|--|---------------|--|
| Representative | Number | Method of appointment |
| Inner West Council | up to 12 | Relevant Engineering, Planning and Environment Staff |
| Sydney Water | 1 | Nominated by Sydney Water |
| Roads and Maritime Services | 1 | Nominated by RMS |
| NSW Office of Environment & Heritage | 1 | Nominated by OEHL |
| NSW Department of Planning and Environment | 1 | Nominated by DPI |
| Sydney Catchment Authority | 1 | Nominated by SCA |

Where other Councils or Government Agencies are impacted by a Flood study or Floodplain Risk Management Study and Plan being undertaken by Inner West Council, an officer from the relevant Council or Government Agencies shall be invited to be a Technical Advisory member of the committee.

Additional observers can be invited to committee meetings by the Committee at the Committee's discretion.

4.2 Appointment of Chairperson and Deputy Chairpersons

Up to three elected representatives of Council may be members of the committee. The elected representatives of Council to serve on the committee shall be nominated by Council.

The Chairperson and Deputy Chairpersons of the Committee shall be nominated by Council from the nominated elected representatives unless determined otherwise by Council.

If neither the Chairperson nor the Deputy Chairpersons of the Committee is able or willing to preside at a meeting of the Committee, the Committee may elect a member of the Committee to be acting chairperson of the Committee for that meeting.

For the purposes of this charter the term “elected representatives” includes elected members of Council and, where there are no elected members of Council, persons that have been nominated by Council as members of Local Representation Advisory Committees.

4.3 Appointment of Community Representatives

Up to eight Community Representatives may be members of the committee, with a maximum of one member from each of the eight catchments.

Expressions of interest for Community Representatives will be called for at intervals as required. Advertising for expressions of interest will be on Council’s website and in a minimum of one local newspaper.

Expressions of interest must be in writing. Expressions of interest will be prioritised by relevant Council staff.

Recommendations for appointment to the Committee will be prioritised based on the following selection criteria:

- Residence or property ownership or business operator within Inner West LGA.
- Representation across all Council’s catchments.
- Knowledge of local catchment flooding issues.
- Commitment to represent the interests of the Inner West community concerning floodplain management issues.
- Ability to attend Committee meetings and public meetings within LGA as required.
- Ability to commit to a long term membership of the Committee.
- Preparedness to observe Council’s Code of Conduct.

Successful applicants will be notified in writing and appointments of Community Representatives to the Committee will be reported to Council by the committee.

Community Representatives membership may be determined for up to two terms of Council (or remainder thereof).

Community Representatives shall serve on the Committee in a voluntary capacity.

4.4 Casual Vacancies

Any member of the Committee may, by giving notice in writing addressed to the Committee, resign his/her office as a member.

Membership on the Committee shall cease if:

- A member resigns in writing to the Committee;
- If a member (or representative) is absent without notification of absence for three (3) consecutive Committee meetings; or
- Upon resolution of Council to remove a member from the Committee.

In the event that a casual vacancy is caused by the resignation of a member, the Committee Facilitator will advise the Committee at its next meeting that a vacancy has arisen, and will provide a report to the next available Council meeting concerning a prospective replacement having regard to the following:

- If the member was nominated as a representative of an organisation, then the organisation shall be invited to nominate a replacement representative.
- If the member was nominated as a Community representative, then the Committee Facilitator will review original expressions of interest received and ascertain if any of the individuals who previously nominated are prepared to be considered as a member of the Committee.
- If there are no previous or current nominations then an expression of interest will be called.
- Should a vacancy occur within six (6) months of the end of term of the current Council, the vacancy will not be filled until the first term of the new Council.

5. RESPONSIBILITIES OF MEMBERS

5.1 Code of Conduct

Each member of the Committee will be bound by Inner West Council's Code of Conduct.

Each member of the Committee will be supplied with a copy of Council's Code of Conduct, Charter and any related Policy applicable to the operation of the Committee.

The conduct of each Committee member will be consistent with the principles outlined in these documents.

5.2 Understanding and Contribution

Members of the Committee are expected to:

- Understand the relevant legislative and regulatory requirements appropriate to Inner West Council
- Contribute the time needed to study and understand the papers provided.
- Apply objectivity and good judgment.
- Express opinions frankly, ask questions that go to the fundamental core of issues.
- Members of the Committee are not permitted to speak to the media as a representative of the Committee unless approved by Council. General information with regard to purpose and objective of the Committee is available on Council's website

5.3 Conflict of Interest

Committee members must declare any conflicts of interest at the start of each meeting or before discussion of a relevant agenda item or topic. Details of any conflicts of interest should be appropriately minuted.

Where members or invitees at Committee meetings are deemed to have a real or perceived conflict of interest, it may be appropriate they be excused from Committee deliberations on the issue where the conflict of interest may exist. The final arbiter of such a decision is the Chair of the Committee.

5.4 Role of the Chairperson

The Chairperson is responsible for:

- Preparing the agenda for the meeting with the assistance of the Committee Facilitator;
- Determining the most effective way of dealing with the issues raised and making the necessary arrangements to achieve this;
- Allocating times to be devoted to agenda items and ensuring that these times are observed;
- Opening the meeting and following the agenda;
- Encouraging all members of the Committee to express their point of view;
- Summarising the progress of the discussion and degree of consensus reached at the end of each agenda items, and confirming this with the Minute taker before moving on;
- Closing the meeting and confirming the date, time and place of the next meeting; and
- Liaising and reporting to the Council.

5.5 Committee Facilitator

The designated Committee Facilitator is the Director of major Projects and Engineering or their nominee.

The Committee Facilitator is responsible for:

- Establishing the meeting agenda in conjunction with the Chairperson;
- Ensuring the agenda and minutes are published;
- Ensuring that relevant matters are brought before the Committee; and
- Ensuring that the input and decisions of the Committee are incorporated into Council activities.
- Booking venues;
- Assisting in the preparation and distribution of the agenda;
- Taking accurate minutes in the format determined by the Committee; and
- Distributing the minutes.

6. MEETINGS

6.1 Frequency

It is anticipated that the Committee will meet at least two times in a calendar year. More regular meetings will be called as business demands and if there are pressing issues to be put forward to the Committee.

The meetings of the Committee are to be called by the Chairperson.

The proposed date, time, location and business to be transacted at each meeting will be notified to all members of the Committee at least seven days prior to the meeting.

6.2 Quorum

The quorum for a meeting of the Committee will be 50% of the current voting members.

6.3 Meeting procedures

The following procedures shall apply during meetings:

- Meetings of the Committee shall be conducted under the Council’s Code of Conduct.
- The Chairperson may call a special meeting if, in the Chairperson’s opinion, there are matters of urgency that require attention.
- The Committee may invite people to attend meetings to observe, make representation or provide expert or technical advice.
- Provision shall be made on each agenda for General Business to be raised at each meeting.
- The agenda for the meetings shall be issued on the week preceding the Committee meeting.
- Council’s role is to note the Committees minutes and to consider recommendations made by the Committee. Such recommendations will be highlighted for the attention of Council.
- The minutes shall be drafted and distributed after each meeting to Committee members.

7. DELEGATION

The Committee is advisory in nature providing recommendations to Inner West Council. The Committee has not been delegated authority by Council. Any recommendations of the Committee must be ratified by resolution of Council and implemented by a member of Inner West Council staff with an appropriate delegation.

The Committee does not have any power to incur expenditure or to bind the Council to any decision upheld by the Committee.

8. SUB-COMMITTEES

The Committee may establish sub-committee(s) to work on particular matters in relation to its advisory role to the Council.

9. DISSOLUTION

The Committee may at any time be dissolved and disbanded by resolution of Council.

10. CHANGING OF THE TERMS OF REFERENCE

The Terms of Reference may only be amended by Council resolution.



Flood Management Advisory Committee Terms of Reference

V3

innerwest.govt.nz



Item 1

Attachment 2



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1 Introduction

Inner West Council (Council) established the Flood Management Advisory Committee ('Committee' or 'FMAC') on 23 August 2016 in accordance with the NSW Government Flood Prone Land Policy and the NSW Flood Risk Management Manual (The Manual).

These terms of reference set out the Committee's objectives, authority, composition and tenure, roles and responsibilities, reporting and administrative arrangements.

2 Objective

The objective of the Flood Management Advisory Committee is to assist the Council in the preparation of Floodplain Risk Management Plans for the Inner West Council local government area which will:

- Reduce the impact of flooding and flood liability on the community.
- Reduce private and public losses resulting from flooding.
- Recognise flood prone land as a valuable resource which should not be necessarily sterilised.
- Take into account social, economic, ecological and cultural factors.

The Committee acts as both a focus and forum for the discussion of technical, social, economic and environmental matters, and for the distillation of possibly differing viewpoints on these matters into ongoing management plans.

3 Function and Scope

The function and scope of the Committee will include but not be limited to the following:

- To assist Council in the development of Flood Studies and Floodplain Risk Management Studies and Plans for the Inner West Council local government area.
- To provide a link between Council and the local community.
- To identify objectives and strategies related to the improvement of the management of the floodplain.
- To monitor and review the implementation of flood planning in the Inner West Council local government area.
- To provide input into known flood behaviour as part of a flood study or flood risk management plan.
- To assist in the collection of information to support flood modelling and design.
- To facilitate coordination of flood management between local and state government agencies.
- To support and review the implementation of Floodplain Risk Management Plans within local planning processes, works programs and education campaigns and encouraging community participation.



The Committee does not consider specific development issues proposals/applications but focuses on broader management issues, Council policies and strategies affecting flood prone lands.

4 Delegation

The Committee is advisory in nature providing recommendations to Inner West Council. The Committee has not been delegated authority by Council. Any recommendations of the Committee must be ratified by resolution of Council and implemented by a member of Inner West Council staff with an appropriate delegation.

The Committee does not have any power to incur expenditure or to bind the Council to any decision upheld by the Committee.

5 Membership and Appointments

5.1 Membership of the Committee

Council recognizes its local community as a valuable partner in the management of the floodplain and the FMAC is a valued part of Council's local democracy.

The Committee comprises representatives from the local community with interest or expertise in flooding, elected representatives of Council, representatives of various NSW State Government departments / authorities / corporations, Council staff, and specialist consultants as engaged by Council.

Membership on the Committee is voluntary and by invitation from Inner West Council.

The Committee will consist of:

Members (voting)

- 2 Councillors nominated as per the terms of reference
- Up to 8 Local Community Representatives appointed as per the terms of reference
- 1 representative nominated by the NSW State Emergency Service Local Cluster

Technical Advisory Members (non-voting)

- 1 representative nominated by Sydney Water
- 1 representative nominated by the NSW SES Metro Zone
- 1 representative nominated by the NSW SES Ashfield-Leichhardt Unit
- 1 representative nominated by the NSW SES Marrickville Unit
- 1 representative from Transport for NSW Roads
- Up to 2 representatives from the NSW Department of Climate Change, Energy, the Environment and Water
- Inner West Council Coordinator Stormwater & Asset Planning
- Inner West Council Manager Engineering Services
- Inner West Council Director Infrastructure
- Inner West Local Emergency Management Officer



Invitees & Observers (non-voting)

- Relevant officers from Inner West Council within Civil Works, Operations, Planning and Environment
- Representatives from other Councils or Government Agencies where they impacted by a Flood Study or Floodplain Risk Management Study and Plan being undertaken by Inner West Council

Additional observers can be invited to committee meetings at the discretion of the Committee Facilitator. Membership can be altered at any time by Council resolution.

5.2 Appointment of Chairperson and Deputy Chairpersons

Up to two elected representatives of Council may be members of the committee. The elected representatives of Council to serve on the committee shall be nominated by Council.

For the purposes of this charter the term “elected representatives” includes elected members of Council and, where there are no elected members of Council, persons that have been nominated by Council as members of Local Representation Advisory Committees.

The Chairperson and Deputy Chairpersons of the Committee shall be nominated by Council from the nominated elected representatives unless determined otherwise by Council.

If neither the Chairperson nor the Deputy Chairpersons of the Committee is able or willing to preside at a meeting of the Committee, the Committee may elect a member of the Committee to be acting chairperson of the Committee for that meeting.

5.3 Appointment of Community Representatives

Up to eight Community Representatives may be members of the committee, selected from members of the community who reside or operate on flood prone land, have expertise in local flood management, or represent local sporting groups, social groups, environmental groups or chambers of commerce impacted by flooding.

Expressions of interest for Community Representatives will be called for at intervals as required. Advertising for expressions of interest will be on Council’s website.

Expressions of interest must be in writing. Expressions of interest will be prioritised by relevant Council staff.

Recommendations for appointment to the Committee will be prioritised based on the following selection criteria:

- Residence or property ownership or business operator within Inner West LGA.
- Representation across all Council’s catchments.
- Knowledge of local catchment flooding issues.
- Commitment to represent the interests of the Inner West community concerning floodplain management issues.



- Ability to attend Committee meetings and public meetings within LGA as required.
- Ability to commit to a long term membership of the Committee.
- Preparedness to observe Council's Model Code of Conduct.

Successful applicants will be notified in writing and appointments of Community Representatives to the Committee will be reported to Council by the committee.

Community Representatives membership may be determined for up to two terms of Council (or remainder thereof).

Community Representatives shall serve on the Committee in a voluntary capacity.

5.4 Casual Vacancies

Any member of the Committee may, by giving notice in writing addressed to the Committee, resign as a member.

Membership on the Committee shall cease if:

- A member resigns in writing to the Committee;
- If a member (or representative) is absent without notification of absence for three (3) consecutive Committee meetings; or
- Upon resolution of Council to remove a member from the Committee.

In the event that a casual vacancy is caused by the resignation of a member, the Committee Facilitator will advise the Committee at its next meeting that a vacancy has arisen, and will provide a report to the next available Council meeting concerning a prospective replacement having regard to the following:

- If the member was nominated as a representative of an organisation, then the organisation shall be invited to nominate a replacement representative.
- If the member was nominated as a Community representative, then the Committee Facilitator will review original expressions of interest received and ascertain if any of the individuals who previously nominated are prepared to be considered as a member of the Committee.
- If there are no previous or current nominations then an expression of interest will be called.
- Should a vacancy occur within six (6) months of the end of term of the current Council, the vacancy will not be filled until the first term of the new Council.



6 Responsibility of Members

6.1 Code of Conduct

Council's [Model Code of Conduct](#) applies to the Flood Management Advisory Committee Members (FMAC Members).

Failure by a Council Official or FMAC Member to comply with the standards of conduct prescribed under the Model Code of Conduct may constitute misconduct and could result in suspension or removal from the advisory committee or working group.

Failure by a member of staff to comply with Council's Model Code of Conduct may also give rise to disciplinary action.

Council has zero tolerance for aggressive, humiliating, bullying, intimidatory or violent behaviour towards Council Officials or FMAC Members.

Respect is one of our core values and Council Officials and FMAC members are required to:

1. Treat everyone equitably and fairly
2. Embrace diversity
3. Acknowledge and value the needs of FMAC Members
4. Actively listen, to understand each other's point of view
5. Value feedback and respond constructively

6.2 Understanding and Contribution

Members of the Committee are expected to:

- Understand the relevant legislative and regulatory requirements appropriate to Inner West Council
- Contribute the time needed to study and understand the papers provided.
- Apply objectivity and good judgment.
- Express opinions frankly, ask questions that go to the fundamental core of issues.
- Members of the Committee are not permitted to speak to the media as a representative of the Committee unless approved by Council. General information with regard to purpose and objective of the Committee is available on Council's website

6.3 Conflict of Interest

All FMAC members are required to disclose conflicts of interest in accordance with the [Conflict of Interest Policy](#). All FMAC Members are required to undertake an initial Disclosure of Interests upon commencement as a FMAC Member and annually thereafter. Any new Conflict of Interest that arises must be disclosed as soon as practicable and no more than one month post becoming aware of the new interest.

Refer Schedule 1 Disclosure of Interest.



6.4 Role of the Chairperson

The Chairperson is responsible for:

- Opening the meeting and following the agenda
- Allocating times to be devoted to agenda items and ensuring that these times are observed
- Encouraging all members of the Committee to express their point of view
- Determining the most effective way of dealing with the issues raised and making the necessary arrangements to achieve this
- Summarising the progress of the discussion and degree of consensus reached at the end of each agenda items, and confirming this with the Minute taker before moving on
- Closing the meeting and confirming the date, time and place of the next meeting
- Liaising and reporting to the Council.

6.5 Committee Facilitator

The designated Committee Facilitator is the Director - Infrastructure or their nominee.

The Committee Facilitator is responsible for:

- Establishing the meeting agenda in conjunction with the Chairperson
- Preparing and distributing the agenda
- Ensuring the agenda and minutes are published
- Ensuring that relevant matters are brought before the Committee
- Ensuring that the input and decisions of the Committee are incorporated into Council activities.
- Booking venues
- Taking accurate minutes in the format determined by the Committee; and
- Distributing the minutes

7 Meetings

7.1 Frequency

The Committee will meet a minimum of four times a year, at quarterly intervals. Special meetings of the committee may be called where required at critical points in the review and delivery of Flood Studies and Flood Risk Management Plans, or there are pressing issues to be put forward to the Committee.

Meetings will allow for hybrid attendance (face-to-face and online) to ensure that members have as many options available to take part in the Committee.

The meetings of the Committee are to be called by the Committee Facilitator. The proposed date, time, location and business to be transacted at each meeting will be notified to all members of the Committee at least seven days prior to the meeting.



7.2 Quorum

The quorum for a meeting of the Committee will be 50% of the current voting members.

7.3 Meeting procedures

The following procedures shall apply during meetings:

- Meetings of the Committee shall be conducted under the Council’s Model Code of Conduct.
- The Chairperson may call a special meeting if, in the Chairperson’s opinion, there are matters of urgency that require attention.
- The Committee may invite people to attend meetings to observe, make representation or provide expert or technical advice.
- Provision shall be made on each agenda for General Business to be raised at each meeting.
- The agenda for the meetings shall be issued on the week preceding the Committee meeting.
- Council’s role is to note the Committee’s Minutes and to consider recommendations made by the Committee. Such recommendations will be highlighted for the attention of Council.
- The minutes shall be drafted and distributed after each meeting to Committee members.

7.4 Meeting Conduct

Members shall respect the views and opinions of each other, allowing for one person to speak at a time and participate in the meeting with decorum. The Chairperson will facilitate the meeting to ensure the meeting keeps to the agenda allowing for all agenda items to be considered.

When the Chairperson rises or speaks during a meeting:

- Any FMAC Member then speaking or seeking to speak must cease speaking.
- Every FMAC Member present must be silent to enable the Chairperson to be heard without interruption.

A Council Official or FMAC Member commits an Act of Disorder if they:

- a. Contravenes the Flood Management Advisory Committee Terms of Reference
- b. assaults or threatens to assault Council Officials or a FMAC Member
- c. moves or attempts to move a recommendation that has an unlawful purpose or that deals with a matter that is outside the jurisdiction of the Flood Management Advisory Committee
- d. insults, or makes unfavourable personal remarks about, or imputes improper motives to any other Council official or FMAC Member
- e. or does anything that is inconsistent with maintaining order at the meeting or is likely to bring the Council or the Flood Management Advisory Committee into disrepute.



Where a FMAC Member commits an act of disorder the Chairperson reserves the right to expel any person from the meeting.

8 Sub-Committees & Working Groups

Sub-Committees or Working Groups may be established to support the Flood Management Advisory Committee and Council in the delivery of flood risk management projects.

Working Groups will contain relevant technical staff from Council, the Department of Planning and Environment, State Agencies, and selected consultants.

Sub-Committees and Working Groups will report to the Flood Management Advisory Committee on the progress of the matters assigned to them.

9 Breaches of this Terms of Reference

Breaches of Terms of Reference may result in an investigation of the alleged breach in line with relevant Council policies including the Model Code of Conduct.

Any alleged criminal offence or allegation of corrupt conduct will be referred to the relevant external agency.

10 Dissolution

The Committee may at any time be dissolved and disbanded by resolution of Council.

11 Administrative Changes

From time-to-time circumstances may change leading to the need for minor administrative changes to this document. Where an update does not materially alter this document, such a change may be made including branding, Council Officer titles or department changes and legislative name or title changes which are considered minor in nature and not required to be formally endorsed.



12 Version Control – Terms of Reference History

This Terms of Reference will be formally reviewed every three years from the date of adoption or as required.

Governance use only:

| | | | |
|-------------------------|---|---------------------------------------|-----------|
| Document | Flood Management Advisory Committee Terms of Reference | Uncontrolled Copy When Printed | |
| Custodian | Manager Engineering Services | Version # | Version 3 |
| Approved By | TBC | ECM Document # | xxxxxxx |
| Next Review Date | TBC | | |

| Amended by | Changes made | Date Adopted |
|---|--|--------------|
| Engineering Services | Amended Contact Officer | 29/9/2017 |
| Engineering Services Governance and Risk | Significant updates to the entire document as part of the required review into meeting schedule, membership and committee governance. Terms of reference amended to align with standard IWC governance procedures | TBC |



Schedule 1 – Conflict of Interest Disclosure Form

CONFLICT OF INTEREST DISCLOSURE FORM

| | |
|---|--|
| Information | A conflict of interest arises if it is likely that a person with a private or personal interest could be influenced in the performance of his or her public or professional duties by that interest, or that a reasonable person would believe that the person could be so influenced. Council’s Code of Conduct requires Council officials to declare potential Conflicts of Interest and take appropriate action to resolve these situations immediately. |
| Types of Interests | <p>1. Pecuniary Interest</p> <p>Is an interest that you have in a matter because of a reasonable likelihood or expectation of an appreciable financial gain or loss to you, or to another person with whom you are associated. This could include your partner, close relative and business associate. (Section 4 (4.1) Code of Conduct).</p> <p>2. Non-Pecuniary Interest</p> <p>Is a private or personal interest, which you have which may arise from a friendship, a family member, sporting, social, religious or cultural association. This may include money, interests of a financial nature or a non-financial benefit.</p> |
| How a Conflict of Interest would arise: | <ul style="list-style-type: none"> • Where you have a personal interest that would lead you to be influenced in the carrying out of your Council work or public duties. • Where you have a personal interest that could lead a reasonable person to think you could be influenced in the carrying out of your Council work or public duties. • Where you know of a family member, relative, friend, associate or anybody close to you has an interest that could lead you to be influenced or a reasonable person to think you could be influenced, in the carrying out of your Council work or public duties. |
| Identify, Declare and Manage Conflict of Interest? | <p>Where you have a non-pecuniary conflict of interest in a matter for the purposes of clause 5.2 of the Code of Conduct, you must disclose the relevant private interest you have in relation to the matter fully and in writing as soon as practicable after becoming aware of the non-pecuniary conflict of interest.</p> <p>How you manage a non-pecuniary conflict of interest will depend on whether or not it is significant, refer to Clause 5.6 to 5.9 of the Code of Conduct for guidance.</p> <p>If you determine that a non-pecuniary conflict of interests is less than significant and does not require further action, you must provide an explanation of why you consider that the conflict does not require further action in the circumstances.</p> <p>Where you have a significant non-pecuniary or pecuniary conflict of interest you must not participate in consideration of, or decision making in relation to, the matter in which you have the significant non-pecuniary or pecuniary conflict of interest.</p> |



| | |
|---|--|
| Employee's Details | <p>Name: Click or tap here to enter text.</p> <p>Position: Click or tap here to enter text.</p> <p>Directorate: Choose an item.</p> |
| Description of Conflict of Interest | <p>Click or tap here to enter text.</p> <p>Type of Conflict</p> <p><input type="checkbox"/> Pecuniary</p> <p><input type="checkbox"/> Non-Pecuniary – Significant</p> <p><input type="checkbox"/> Non-Pecuniary – Non-Significant</p> <p>Date Conflict Declared: Click or tap to enter a date.</p> <p><input type="checkbox"/> The details I have provided are correct to the best of my knowledge and the declaration is made in good faith.</p> <p>Signature of Employee: _____ Date: Click or tap to enter a date.</p> <p>Please submit this form to your Manager/Senior Manager/Director or General Manager</p> |
| Action taken to avoid any impact from the Conflict of Interest | <p>Click or tap here to enter text.</p> <p><input type="checkbox"/> Manager will monitor the employee's adherence to the action plan stated above.</p> <p>Manager's Name: Click or tap here to enter text.</p> <p>Signature of Manager/Snr Manager: _____ Date: Click or tap to enter a date.</p> <p>Signature of Director/GM: _____ Date: Click or tap to enter a date.</p> |
| Endorsement by Employee | <p><input type="checkbox"/> I note the proposed action, endorse it, and agree to abide by it. If the circumstances as set out in this declaration changes, I will resubmit a new declaration setting out the circumstances for approval.</p> <p>Signature of Employee: _____ Date: Click or tap to enter a date.</p> |
| Completed Forms | <p>Send completed forms to Governance@innerwest.nsw.gov.au</p> |



Flood Risk Management Committee Handbook

A guide for committee
members

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1. WELCOME

Enjoy being part of your flood risk management committee. Your input into the flood risk management process is valuable, and it is hoped that it will also be a rewarding personal experience.

This handbook has been prepared by the NSW Department of Planning, Industry and Environment (DPIE)¹ to provide committee members with a basic understanding of flood risk management in NSW.

The handbook explains some of the key areas of flood risk management, such as:

- what is flood risk and what is involved in managing flood risk (Section 2)
- the flood risk management framework, principles, aims and the various responsibilities (Section 3)
- some of the technical procedures (Section 4), and
- some of the key options in managing flood risk and how they are evaluated (Section 5).

The handbook can be used as a quick reference guide to the issues that may arise during committee meetings.

Should you have any questions about flood risk management, do not hesitate to ask the relevant Council staff, DPIE or other State Government representatives.

The NSW Government's Floodplain Development Manual and supporting publications provide advice to local councils on how to most effectively understand and manage their flood risk. These can be viewed and/or downloaded from

<https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-manual> and
<https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-guidelines>.

Definitions and abbreviations used in this guide have the same meaning as those in the NSW Government's Floodplain Development Manual.

Note

¹ The Department of Planning Industry and Environment (DPIE) was formerly the Office of Environment and Heritage (OEH) up until 30 June 2019. References to DPIE documents may relate to documents labelled OEH.

2. MANAGING FLOOD RISK IN NSW

2.1 What is flooding and what causes it?

Flooding is a natural phenomenon that occurs when water covers land which would normally be dry. Floods generally come from catchment flooding due to prolonged or heavy rainfall (severe thunderstorms, tropical cyclones, monsoonal rains in the tropics and east coast lows) or coastal inundation or a combination of these. Catchment flooding may result in flooding from water leaving waterways (riverine flooding) or from water on the way to waterways (overland flooding). In coastal areas, flooding may also be influenced by water levels in the oceans, tides as well as the same rainfall events that result in flooding.

Floods vary greatly in size and frequency. Small floods may cause local nuisance flooding in an area each year, or more regularly. Larger floods causing significant community impacts may occur at the same location a few times in an average lifetime, or in some cases, not at all.

Studies under the Program generally look at larger floods. They will look at what happened in historical floods but also consider what may happen when floods larger than historical floods and outside the experience of the community occur. It is important to understand the potential impacts so that ways to manage these can be considered. Studies will also consider extreme floods to help understand the upper limit of potential impacts as this is important to understand in emergency management.

2.2 What is Flood Risk?

A flood event can create dangerous or damaging conditions on the floodplain. These hazardous conditions can exist whether or not there are people, infrastructure or assets in the floodplain.

It is the human interaction with a flood that results in a flood risk to the community. Flooding can affect the health and safety of individuals and communities living in the floodplain. It can also affect the built environment and other interests that support them.

Floods can be fatal, cause significant damage to public and private infrastructure and utilities, and have devastating impacts on communities that can require extended recovery time. They can cause considerable stress and concern in the community and on average, floods in New South Wales cause damage well in excess of \$150 million a year.

Flood risk involves a combination of both the likelihood that a flood event causes a consequence to the community and the scale of the consequences of that event when it occurs. This risk will vary with the frequency of exposure to this hazard, the severity of the hazard, and the vulnerability of the community and its supporting infrastructure to the hazard (Figure 1). For example, a frequent storm likely to flood an area but only results in minor consequences is of low risk, whereas a frequent storm likely to flood an area that results in significant consequences would be a high risk.

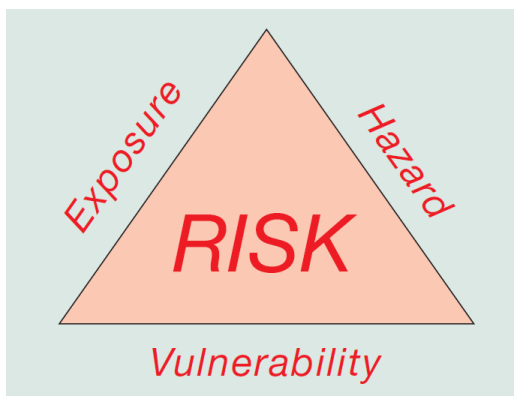


Figure 1 Risk Triangle

There are generally three types of risk to be managed in flooding. These are:

- Existing flood risk – risk associated with the existing development in the floodplain. This can be limited by mitigation actions
- Future flood risk – risk associated with the future development of the floodplain. This can be limited by considering flooding when deciding where and how to develop within the floodplain
- Continuing flood risk – the risk remaining in both existing and future development areas, after all practical and justifiable management measures such as works, land-use planning, and development controls are implemented.

2.3 What is Flood Risk Management?

Flood risk management (FRM) is the management of flood risk to both existing and future people and property in the floodplain.

Effective consideration of flood risk requires both an understanding of the impacts of floods and the ways that it can practically be managed at a local level.

Flood risk is managed in NSW through the development of a FRM framework and undertaking studies through the FRM process. These are discussed in Section 3.

For more information on the general benefits of undertaking FRM refer to videos developed by Gosford City Council, [Part A](#) (before FRM) and [Part C](#) (after FRM).

3. FLOOD RISK MANAGEMENT FRAMEWORK

3.1 Background

To address the community's concerns with flooding, the State Government released the Flood Prone Land Policy (the Policy) in 1984 with the primary objective of reducing the impact of flooding and flood liability on individual owners and occupiers, and to reduce private and public losses resulting from flooding. The Policy has since been updated but its primary objective remains the same.

To support delivery of the Policy, the State Government released the first NSW Government Floodplain Development Manual in 1986 which provides councils with advice on a recommended framework and approach to better understand and manage their flood risk.

The 1986 Manual and Policy have since been updated with the gazetted 2005 Floodplain Development Manual (the Manual) and incorporates the Policy. A suite of guidelines also support the implementation of the Policy and Manual.

Councils can apply for subsidised funding under the State Floodplain Management Program (the Program) managed by DPIE to develop and implement FRM plans to manage their flood risk in accordance with the Policy and Manual.

The Manual is currently being reviewed and updates are available from DPIE's representative on the committee. When complete, the updated Manual will be available on the relevant government website. Supporting publications are regularly reviewed and updated and made available through the relevant government web page. During the update of the Manual some of the information or diagrams provided in this document may be slightly different than in the Manual.

3.2 Responsibilities in Flood Risk Management

Managing flood risk to the community requires cooperation across all levels of government, and between the government and non-government sector. The National Strategy for Disaster Resilience outlines that flood resilience is a shared responsibility between government and the community.

FRM is complex, and therefore requires access to a range of different skills and disciplines, which reside in a variety of agencies and across government levels.

3.2.1 Government

In NSW, FRM is a partnership between all levels of government with local councils primarily responsible in their local government area (Table 1). Additional details on key local, state and federal government roles are provided below.

All councils are strongly encouraged to call on the local community and state government agencies to assist them with this responsibility. This is best achieved by the establishment of a management committee and technical working group (Section 3.3).

Table 1 Government Roles and Responsibilities

| Local Government | State Government | Federal Government |
|--|---|---|
| Flood risk management, land-use planning, development and infrastructure provision and maintenance | Leading, monitoring and maintaining legislative, policy and administrative framework for flood risk management. Supporting management of flood risk by councils. Supporting effective land-use planning, and development and building controls. | |
| | Technical and financial support to councils for studies and infrastructure under the management process | Financial support to councils under the management process (via the state government) |
| Supporting flood emergency management | Lead flood emergency management planning | |
| Local flood recovery | Leadership of regional and statewide disaster recovery and support for local disaster recovery | Support for disaster recovery |
| Providing information on flood risk to the community and to support local decision making | Information systems to support state government decision making | |
| Considering flood risk in decision making | Considering flood risk in decision making | Considering flood risk in decision making |
| | | Conservation of natural resources and environmental values of national significance. |
| Roles and Responsibilities Shared across all Government levels | | |
| Flood prediction and warning | | |
| Managing gauges and supporting infrastructure to inform flood warning | | |
| Funding coordination and management | | |
| Recovery after a flood | | |
| Research and training | | |
| National coordination and cooperation in best practice | | |

Local Government

The Policy outlines that the management of flood prone land is primarily the responsibility of local government. Managing flood risk at a local level involves understanding flood risk and supporting practical management options across the local government service area (LGA).

Local responsibilities include:

- FRM – establishing a local FRM framework and developing and implementing FRM plans to understand and manage flood risk
- providing information on flood risk to the community and government
- considering flood risk in land use planning decisions
- developing, operating, maintaining and asset management for FRM infrastructure
- leading the local emergency management committee and support for flood emergency management planning

- local flood recovery

Many decisions are made at a local government level. These may involve prioritising efforts to understand and manage flood risk across different catchments within the LGA, including catchments shared with other LGAs. These decisions may be informed by flood studies, management studies and management plans in different catchments within the LGA, including those derived from studies undertaken in partnership with other LGAs in the same catchment.

State Government

The State Government provides local councils with technical and financial assistance to undertake studies to understand their flood risk, examine options to manage this risk, and to decide on and implement plans to manage this risk through the Program managed by DPIE. Under the Program funding may be available for the preparation of the various studies, and the implementation of FRM plans including the construction of mitigation works.

Funding under the Program (State and sometimes Federal Government funding) is provided on a priority basis considering annual applications from local councils across NSW for all stages of the FRM process. The priorities are determined by the relevant Minister considering the advice of the State Floodplain Management Assessment Committee led by DPIE.

Local government usually contribute its share (generally 1/3rd) of funding through its budgetary processes. However, low financial capacity councils can access better funding ratios requiring lower local contribution for some projects. In some cases, a council may seek to raise a specific levy to support implementation of major works.

DPIE technical staff assist councils with managing their flood risk and developing and implementing FRM plans.

The NSW State Emergency Service (SES) also has a key role in emergency management of flooding including:

- establishing, maintaining local flood plans and activating these plans in response to a flood threat.
- educating the community on response to flood threats and advising them of how to respond to an imminent flood threat.

3.3 The Flood Risk Management Committee

The formation of a FRM Committee is a key step in the management process to develop and implement management plans.

3.3.1 The Role of the Committee

The Committee assists Council in developing and implementing a FRM plan by contributing ideas, professional expertise, experience, and local knowledge.

Community members contribute their knowledge of historical information, local problems, and possible solutions. They also channel input from the wider community.

While it is important that key aspects of the FRM process are addressed, members are encouraged to contribute widely to the Committee's deliberations to produce the best possible outcomes for managing the flood problem. This involves seeking solutions to the existing, future and continuing flood risk issues, not solely on addressing the past.

The Committee should operate as a team with the community's interests being foremost.

Committee members may be required to vote to determine the majority opinion on different issues. Because the FRM plan should be a local based process, State Government representatives abstain from voting.

It is crucial that the Committee actively directs the course of the studies to ensure studies represent the views of the Committee, not only those of the consultant and Council.

3.3.2 Membership of the Committee

The FRM committee may stand alone or the role of the committee may be given to a broader council committee which may already exist.

If flood risk is to be considered as part of a broader committee, both a technical working group (to facilitate agency input) and a community reference group (to support community input) should be established to ensure the community is included in the FRM process. FRM issues should also be a clear part of meeting agendas.

Committee (including technical working and community reference group) members are generally a mix of elected, community, and professional members, whose collective skills and interests are suited to addressing the flooding problem of a particular catchment.

Typically, membership is:

- elected members of council;
- council staff from engineering, planning and environmental disciplines;
- an appropriate number of representatives of the local community (for example, local flood affected landholders (residential and business), relevant industry bodies (e.g. the chamber of commerce), and environmental groups);
- officers from the DPIE; and
- representative(s) from the State Emergency Service (SES).

Depending on the nature of the flooding problem at hand, the Committee may choose to co-opt other individuals or agencies as required.

3.3.3 What is expected of Committee Members

The FRM process is neither short nor simple, nor is it the singular responsibility of council officers, consultants or government officers to have input to the process.

The FRM Committee must comprise members who are committed to and actively involved in the preparation and implementation of the FRM plan. It may take 2 to 5 years from the start of a flood study to the development of the FRM plan and the implementation of all recommendations may take much longer (typical lengths of time are shown in Table 2). Local community members who are enthusiastic and energetic are more likely to 'see the distance' to complete the FRM plan.

Committee members are expected to attend meetings at critical points in the project stages, on average this is every 3 months. Meetings are generally held at a convenient time for all committee members, most likely at night to accommodate work schedules. Committee members are expected to read and review the documents provided prior to meetings. This guide can be referred to in order to get an overview of the relevant stage in the project and a background on what may be discussed in the meetings.

In view of the length of time involved, the turnover of committee members, including both council staff and elected representatives, can be a problem. Whilst little can be done with respect to the potential turnover of council and government officers, the structure of the committee should be decided with consideration of its long-term viability and relationship with other committees in operation in the local area.

Table 2 Flood Risk Management Process Time Frames

| Stage | Typical timeframe | Typical steps |
|-----------------------------|-------------------|--|
| Flood Study | 1-1½ yrs. | Data collection. Engage consultant/s. Study very complex. |
| Flood Risk Management Study | 1-2 yrs. | Committee/consultant examines management options. Involves widespread community consultation. |
| Flood Risk Management Plan | ½ - 1 yrs. | Finalise options. Committee plans implementation. |
| Plan Implementation | 1-15 yrs. | Flood warning systems, development controls, rezoning, levee construction, voluntary purchase etc. |

3.3.4 The Role of the Consultant

In most cases, consultants will be engaged to prepare the necessary studies and reports in accordance with Council's study briefs. The Committee should contribute to the development of these briefs.

Consultants will undertake a range of investigations to enable Council to make management decisions with the Committee's assistance. The consultant will often be required to make presentations to the Committee to help with their deliberations.

Whilst it is expected the consultant will contribute initiative to the study, it is important that the Committee direct the consultant so that local issues are considered.

3.3.5 Community Involvement

If FRM is to be successful, it is important that the local community accepts the need for effective management practices, recognises that the finalised FRM plan has considered all factors of concern to the community, and that flood prone members of the community accept their individual responsibilities to reduce flood risk.

This requires the support of the community covered by the plan. Community involvement is a key component of the development of the plan through both membership of the Committee and through consultation at key points during studies. The Committee should represent the wider community and ensure that it acts in the interests of the whole community.

An important role of the management committee will be to assist in the presentation and resolution of conflicting desires and requirements on the part of various community groups and individuals. Public meetings, often spirited, are an important part of this process.

The community can be actively involved in the process by engaging in the community consultation activities and providing information on their local experiences with flooding.

The FRM plan will be a compromise involving trade-offs. Certain individuals may be disadvantaged, others advantaged, but the community will be better off.

3.4 The Flood Risk Management Framework

The FRM framework in NSW is outlined in Figure 2. It sets out a series of logical steps that if followed are likely to produce the best possible FRM outcomes for the community, allowing for variation in flood behaviour and impacts. Councils can provide local advice on the way in which they manage flood risk within their organisation. The keys steps in flood studies and FRM study and plan projects are described in Section 3.4.1 to 3.4.5.

FRM plans comprehensively consider flood risk and outline practical measures that can address the flood problems in the area covered by the plan. The area covered by a plan may be a town or locality or specific river catchment. The development of the FRM plan involves the application of a merit-based approach to management options that considers the variation in flood behaviour and impacts on the community rather than the application of a blanket rule.

For FRM to be successful, it is important that the local community accepts the need for effective FRM practices, recognises that the effective management plan has taken into account all factors of concern to the community, and that flood prone members of the community accept their individual responsibilities to reduce hazard. Community consultation and input is a major component of the development of the plan.

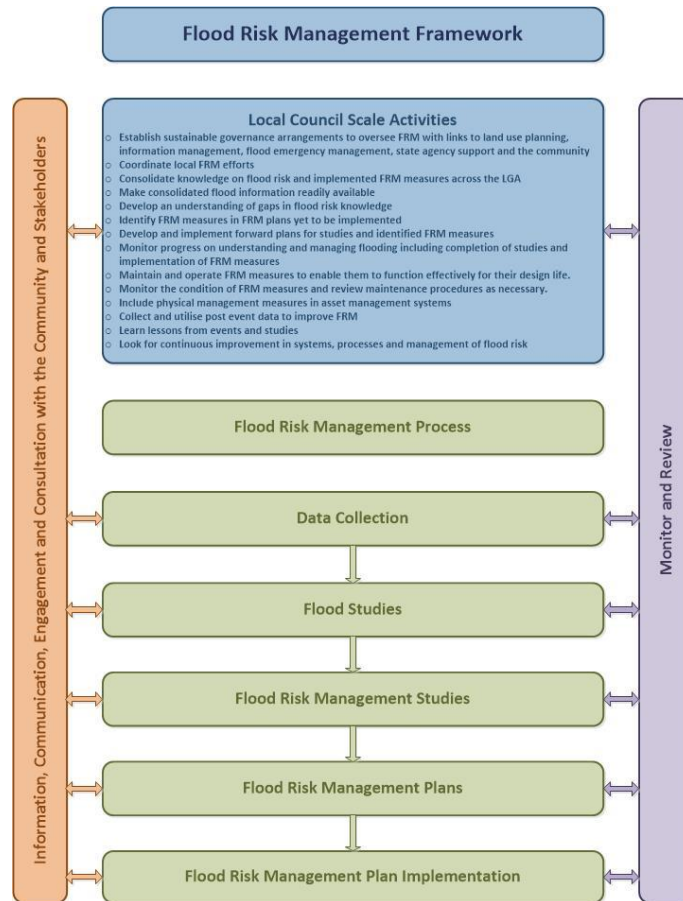


Figure 2 Flood Risk Management Framework

3.4.1 Flood Study

The flood study is generally the first stage of the FRM process as it involves defining flood behaviour and provides the main foundation of a robust management plan. It aims to improve the current understanding of the full range of flood behaviour and consequences.

Typically, a flood study considers the local flood history and available collected data, to develop flood models that are calibrated and verified, where possible, against significant historic flood events. These models are then used to determine the full range of potential flood behaviour and impacts. The community is to be consulted at key milestones throughout the development of the flood study.

Study outputs can include:

- a description of the historic floods,
- a description of existing flood mitigation measures,
- hydrologic and hydraulic models that are calibrated and validated considering historic flood events where possible,
- a description of the existing flood situation, and flood extent and level, depth, velocity information,
- the scale and variation in flood impacts, which can include the number of properties affected and the potential flood damages,
- breakdown of the floodplain considering:
 - variations in flood functions of flow conveyance and flood storage in the floodplain
 - variation in flood hazard (based on velocity and depth) across the floodplain
 - emergency response management limitations, including a breakdown of the floodplain to identify areas with different types and severities of response limitations
 - development of mapping to identify how flood related constraints on land vary across the floodplain for consideration in land use planning
- updated and consolidated information on flooding and its management, including the report, updated flood mapping, emergency management and land-use planning information, and community flood awareness information,
- an explanation of the degree of uncertainty in flood estimates.

The study, developed with Committee input, is provided to Council for consideration and adoption. Information in the study should be considered in FRM, land use planning activities and emergency management planning and associated decisions.

3.4.2 Flood Risk Management Study

The FRM study extends the flood study to increase understanding of the flood risk to the existing and future community and test management options. It provides a basis for developing the FRM plan.

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 options to be considered. Study outputs include:

- a description of existing flood mitigation measures
- the scale and variation in flood impacts, including the number and types of properties affected, and the potential flood damages
- An understanding of future development directions and consideration of the cumulative impacts of future development on flooding
- An assessment of FRM options to address risks to the existing and future community

- the outcomes of community consultation
- recommendations on options
- updated information and consolidated information on flooding and its management – this should include the report, flood mapping, information to assist with emergency management planning, land-use planning, and understanding the climate change impacts and the degree of uncertainty in flood estimates
- sufficient information on options to provide an understanding of their capabilities, limitations, interdependencies, costs and practical feasibility to inform implementation or further investigation.

Information in the study should be considered in FRM, land use planning activities and emergency management planning and associated decisions.

3.4.3 Flood Risk Management Plan

The FRM plan forms the basis of FRM in the study area into the future and details the final management options that have been agreed upon. It should be developed in consultation with the community and in consideration of relevant legislation, policies and guidance that may influence its implementation and the viability of the various management measures.

The plan generally involves a range of measures to manage existing, future and continuing risk, which will vary between different locations in the floodplain. It needs a prioritised implementation strategy, which outlines the commitment to implement, its staging and provides sufficient detail to facilitate implementation.

Management plans need to consider the cumulative impact of changes in the catchment on flooding behaviour due to both incremental development of the floodplain and a changing climate.

The plan developed by the committee is provided to the Council for consideration and adoption. Once a plan has been finalised and adopted by the council, it should be used to update and consolidate information on flooding and its management and communicate to relevant agencies and the community to update them on the flood risk.

3.4.4 Flood Risk Management Plan Implementation

The plan needs to be implemented to manage risk, and this implementation monitored. This requires commitment, coordination and communication within government and with the community.

The recommendations from the FRM plan would generally feed into the broader consideration and prioritisation of recommendation from FRM management plans from across the whole LGA. It should be reviewed every 5 years, if possible, or after a significant event has occurred.

Implementation of major mitigation works that significantly changes flood behaviour or the response of the community to a flood event can lead to a need to review the management study and plan to ensure that information is up to date and available to the community. It can also involve education of the community of how flood impacts or community response has changed.

Implementation is generally led by council and overseen by the Technical Working Group, led by the Council and involving relevant agencies.

3.4.5 Key Steps in Projects under the Process

Although there may be some variations, typically the major steps involved in producing these reports and who is involved in these steps are outlined in Table 3.

Table 3 Flood Study Key Steps Example

| Step | Council | DPIE | Consultant | FRM Committee | Council decision making Committee |
|---|---------|------|------------|---------------|-----------------------------------|
| All projects | | | | | |
| Application for funding | x | x | | | |
| Scoping | x | x | | x | |
| Prepare Brief | x | x | | | |
| Call for Proposals | x | | | | |
| Review Proposals | x | x | | | |
| Engage Consultant | x | | | | |
| Inception Meeting | x | x | x | | |
| Data collection and review | x | | x | x | |
| Model setup or review, calibration and validations | x | | x | x | |
| Design results and mapping | x | | x | x | |
| Draft flood study report | x | | x | x | |
| Final flood study report | | | x | | |
| Adoption of flood study | | | | | x |
| Update and consolidate information on flooding and its management | x | | | | x |
| Updated information available to the community | x | | | | x |
| Incorporation into decisions (FRM and land use planning) | x | | | | |
| Incorporation into Emergency Management planning | x | | | | x |

4. UNDERSTANDING FLOOD BEHAVIOUR

4.1 Introduction

Councils may use in-house or consultancy hydrology and hydraulics skills to provide information on flood behaviour. This information is used to:

- understand the impacts of floods on the community
- analyse mitigation and management options
- investigate, design, construct and maintain mitigation works
- facilitate informed decisions on treating flood risk
- consider constraints on land use planning to facilitate informed decisions for floodplain development
- improve flood predictions and warnings
- support updated emergency management planning
- provide information to the community on flood risk and emergency response.

4.2 Flood Modelling

Flood modelling allows the computation of complex mathematical equations and procedures to provide simulations of river and flood behaviour and are most commonly performed by computers. Computer models can be developed to represent the whole or part of the catchment. There are two main types of computer models used in flood studies; hydrologic models convert rainfall to flows and hydraulic models route flows across the catchment. More recently, direct rainfall models allow for rainfall to be directly input onto the hydraulic model (i.e. bypassing the hydrologic model). There are various benefits and limitations to these models, some of which are discussed in the following sections.

4.2.1 Hydrological Models

Hydrological models convert rainfall over catchments into flow(s), see Figure 3.

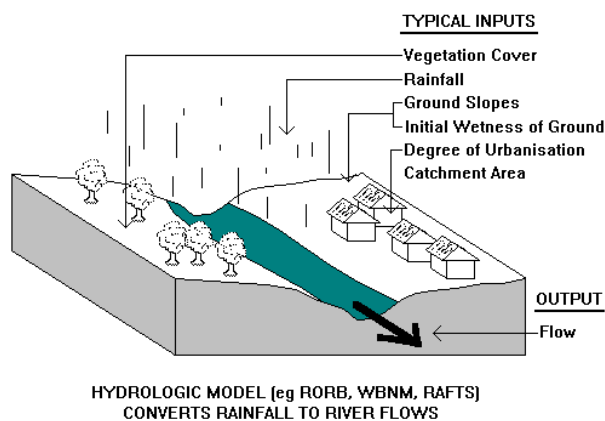


Figure 3 Hydrologic Computer Model

Typical examples of hydrologic model setups are shown in Figure 4.

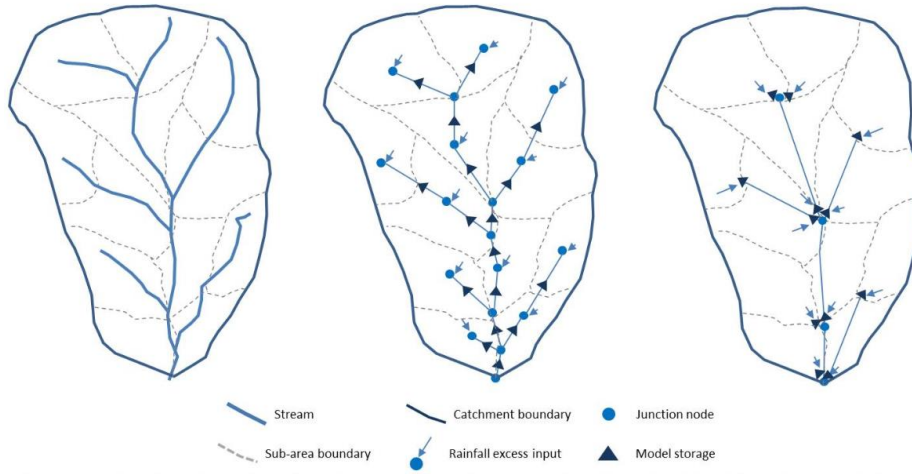


Figure 4 Examples of hydrologic runoff-routing models (ARR 2019)

The output from hydrologic models is normally in the form of flow hydrographs. As storm duration and patterns vary, hydrologic computer models run a range of different storm patterns for the same storm duration (see Figure 5) and compare representative patterns for different storm durations in selecting a design hydrograph(s) (see Figure 6) that are used in hydraulic modelling.

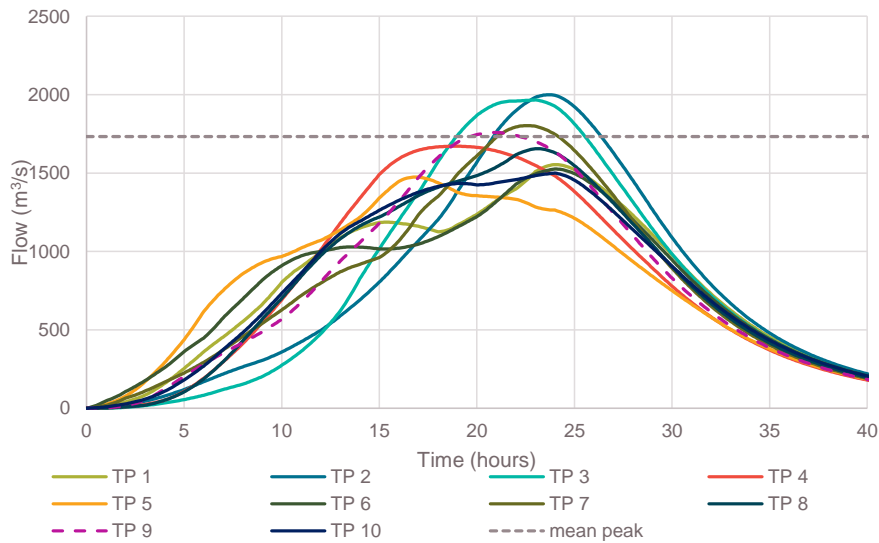


Figure 5 Sample of variations in Flow Hydrograph for different storm patterns (DPIE 2019)

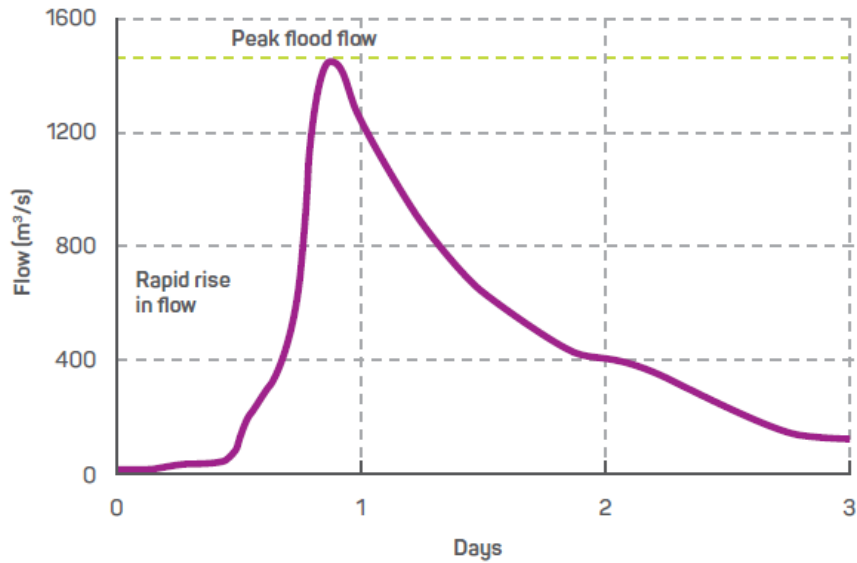
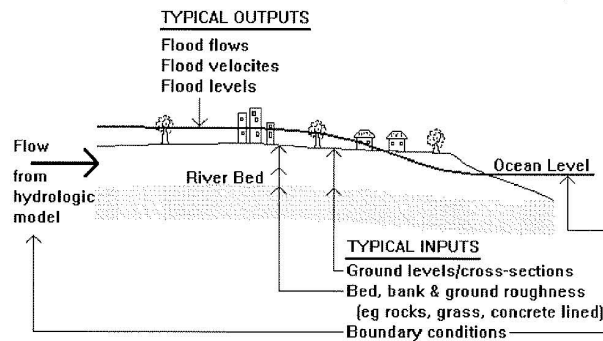


Figure 6 Sample Selected Design Flow Hydrograph (AIDR 2017a)

4.2.2 Hydraulic Models

Hydraulic models take the flow produced from hydrologic models and produce outputs such as flood levels, depths and velocities (see Figure 7).



Hydraulic Model (eg HEC-RAS, MIKEFLOOD, TUFLOW, SOBEK)
Converts River Flows to River Levels

Figure 7 Hydraulic Computer Model

1D Hydraulic Model Examples

Hydraulic models can be 1D (see Figure 8 and Figure 9) to allow analysis of flooding in a channel, for example a river.

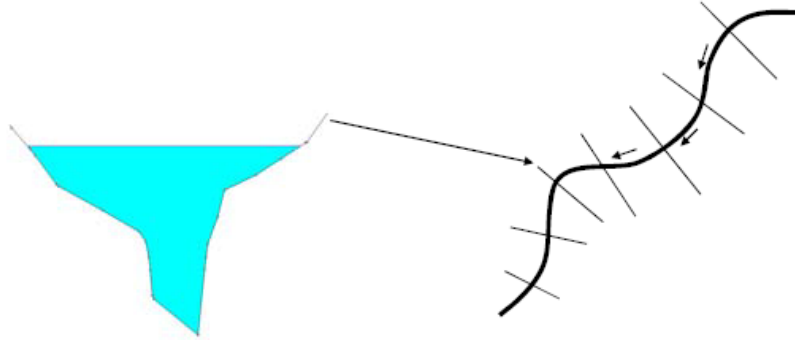


Figure 8 1D hydraulic model typical cross-section

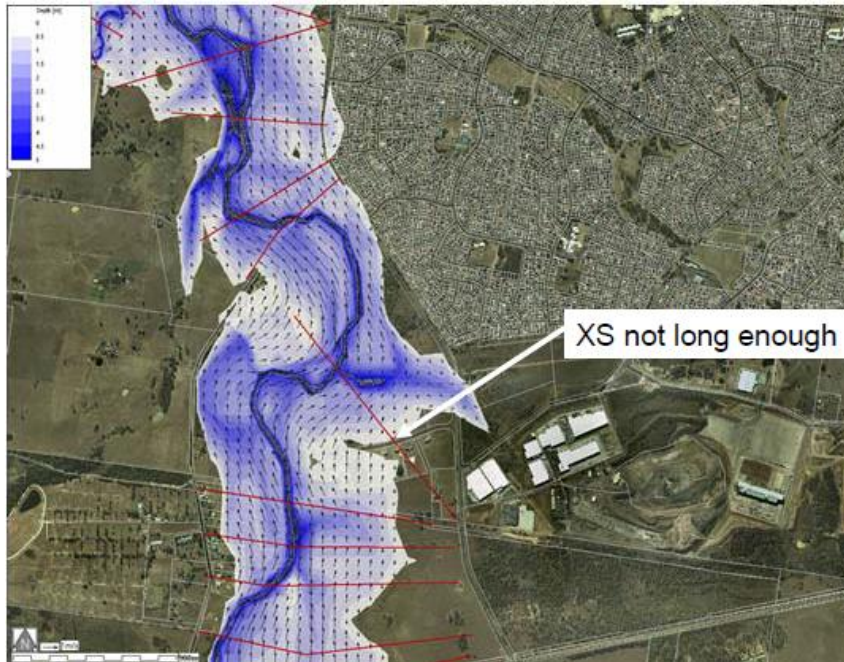


Figure 9 Example 1D hydraulic model results

2D Hydraulic Model Examples

Hydraulic models can be a 2D grid or mesh (see Figure 10) to analyse flooding from channels that extends into the floodplain and overland flows from catchment flooding.

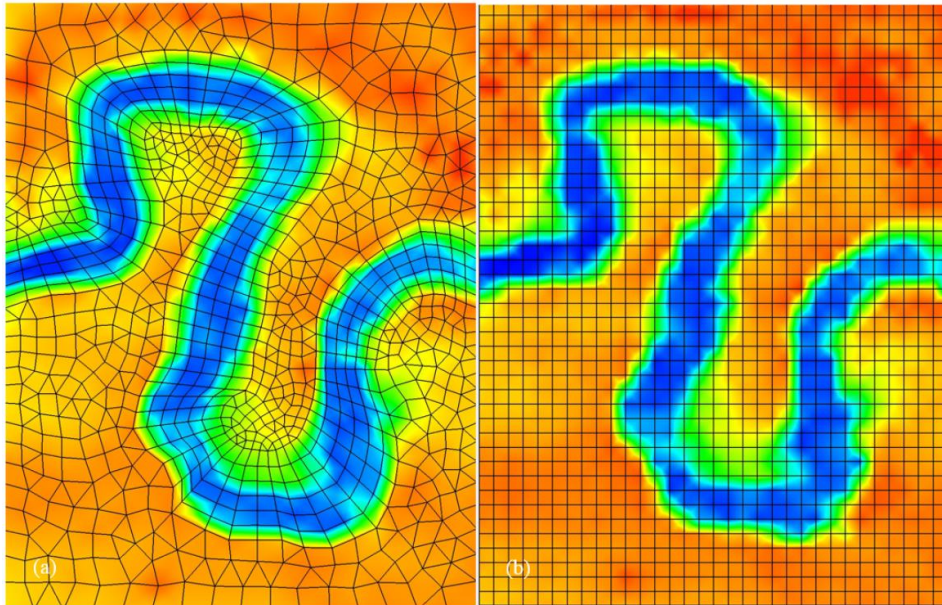


Figure 10 2D hydraulic model examples (a) is a flexible mesh (b) is a grid (ARR 2019)

1D/2D Hydraulic Model Examples

Hydraulic models can be a combination of 1D and 2D to allow the combination of riverine and overland flows to be modelled at the same time (Figure 11 and Figure 12).

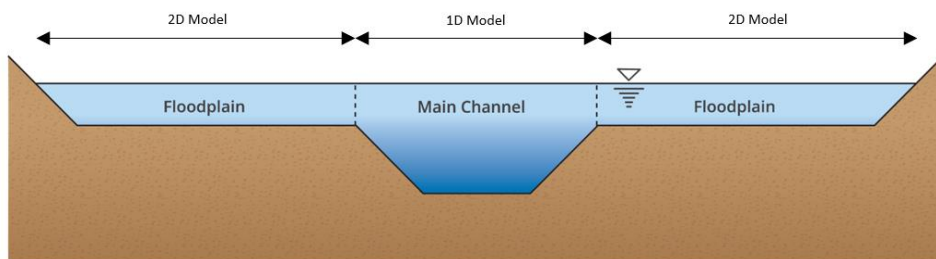


Figure 11 Cross-section of 1D/2D interface



Figure 12 1D/2D Hydraulic Model results showing flow patterns

The output from hydraulic models comes in a number of forms e.g. stage hydrographs, flood profiles, flood contours (Figure 13).

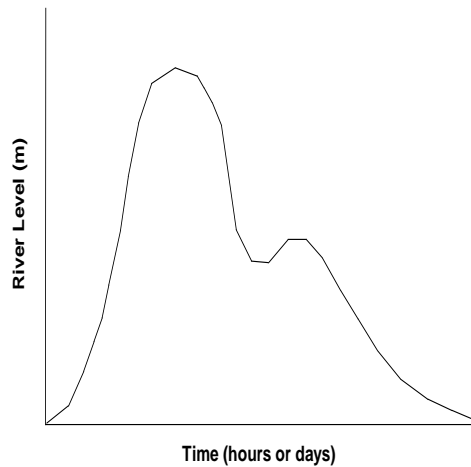


Figure 13 Sample Stage Hydrograph at a Particular Site

The output at different locations can then be used to produce flood profiles or contours along the river showing the maximum water level, depth and velocity at each location for either an actual or design flood (Figure 14 and Figure 15).

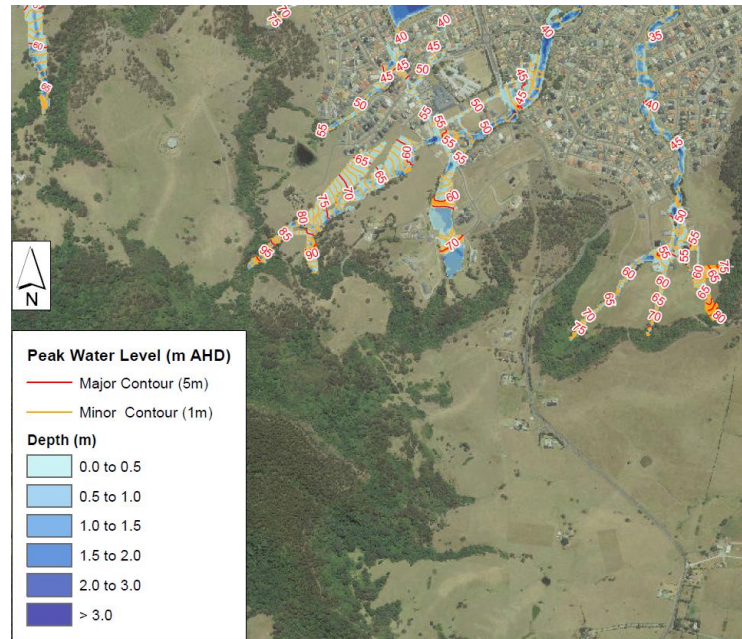


Figure 14 Flood Depths and Flood Level Contours (WMAwater 2017)

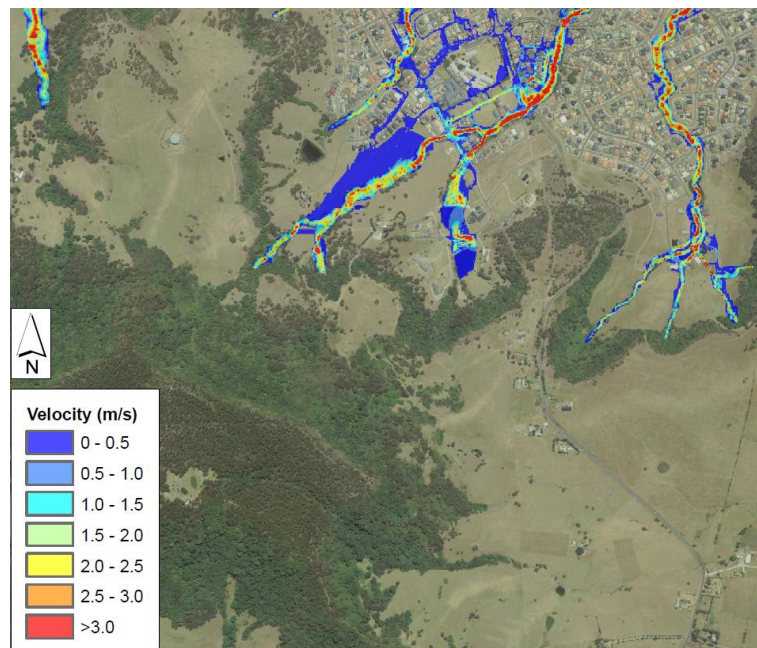


Figure 15 Flood Velocities (WMAwater 2017)

4.2.3 Direct Rainfall Models

Direct rainfall models, known as “rainfall on the grid” take rainfall directly onto the hydraulic model (Figure 16) to generate flow and produce outputs such as flood levels, depths (Figure 14) and velocities (Figure 15).

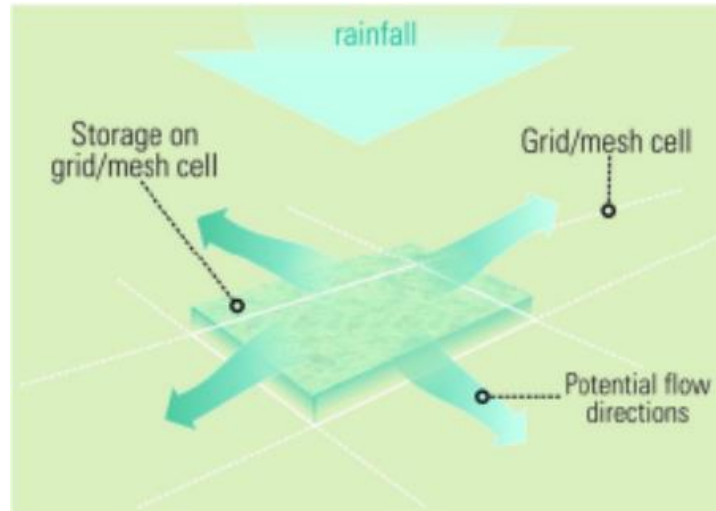


Figure 16 Conceptualisation of Direct Rainfall

4.2.4 Modelling Process

Modelling usually follows the process below, including:

- Calibration – Local historical data recorded during an actual flood event is used in the models to calculate river flows and levels and compare these to recorded levels. These are then compared with the recorded river flows, levels and extents for that flood event. It is normal to have to adjust some of the catchment characteristics to get a match between actual and modelled flows and levels.
- Validation – After calibration of the model is achieved, a check of the ability of the model to predict flood behaviour is carried out. Here the models are run for perhaps 2 or 3 other known flood events to ensure that the model results compare with the recorded flood levels from those events within an acceptable degree of accuracy.
- Design Modelling – After the models demonstrate they can satisfactorily represent actual flood events via calibration and validation, design rainfall data are used to enable the models to produce design flood flows and levels, depths and velocities along the river or floodplain. This is used as a baseline for looking at management options in the management study phase.
- Models are then used to develop the information required from design floods which can vary between studies. This information is then used to derive information to assist in future flood risk management, emergency management and land use planning.

In the FRM study phase, the model is run to assess:

- Development impacts – the effect that development has on flood behaviour and impacts can be assessed.
- Management options – to examine the effect flood mitigation works can have flood behaviour and impacts.

4.2.5 Accuracy of Computer Modelling

Even with powerful computers and programs, flood modelling still needs to be based on a number of assumptions. Accordingly, it would be unrealistic to believe that modelling can exactly replicate the river behaviour at every location.

However, with experienced operators, using proven modelling software to develop the models, reliable estimation of flood behaviour can be provided. This reliability is improved by the calibration and validation of model results (discussed above) with the information available in historical floods and the communities experience of these floods.

It is important to remember that the calibration and validation process demonstrates that the models can satisfactorily predict flood levels within acceptable limits of accuracy. Models can also predict the impact of floodplain changes such as development or mitigation works.

4.3 Design Floods

4.3.1 What Are Design Floods?

To fully appreciate the flood hazard, it is desirable to have a consistent procedure to assess how often floods will reach different levels. The concept of design flood levels achieves this. For example, a 1% AEP (annual exceedance probability) design flood level has a 1% (or 1 in 100) chance of being reached or exceeded in any one year. Historically, this flood was referred to as the 100 year ARI (Average Recurrence Interval) flood as it can be expected to occur, on average, once every 100 years over a very long period, say 10,000 years. Common design floods used in flood risk management shown in Table 4.

Table 4 Common design floods used in flood risk management

| | |
|----------|--------------|
| PMF | PMF |
| 0.2% AEP | 500 year ARI |
| 0.5% AEP | 200 year ARI |
| 1% AEP | 100 year ARI |
| 2% AEP | 50 year ARI |
| 5% AEP | 20 year ARI |
| 10% AEP | 10 year ARI |
| 20% AEP | 5 year ARI |

Although a 10% AEP flood is likely to occur once every 10 years on average, it is important to note that there is nothing preventing two 10% floods (or even 1% floods) from occurring only weeks or months apart. This is similar to a lottery where the odds suggest you have a chance of winning a prize say once every 50 tickets you buy, but there is nothing stopping you winning a prize twice in a row or purchasing 200 tickets without a win. Figure 17 shows how likely you are to experience a given size flood at a location in an average person's life time.

| Annual exceedance probability (%) | Approximate Average recurrence interval (years) | Probability of experiencing a given-sized flood in an 80-year period | |
|-----------------------------------|---|--|--------------------|
| | | At least once (%) | At least twice (%) |
| 20 | 5 | 100 | 100 |
| 10 | 10 | 99.9 | 99.8 |
| 5 | 20 | 98.4 | 91.4 |
| 2 | 50 | 80.1 | 47.7 |
| 1 | 100 | 55.3 | 19.1 |
| 0.5 | 200 | 33.0 | 6.11 |
| 0.2 | 500 | 14.8 | 1.14 |
| 0.1 | 1,000 | 7.69 | 0.30 |
| 0.01 | 10,000 | 0.80 | 0.003 |

Figure 17 Probability of experiencing a given-sized flood one or more times in 80 years (AIDR 2017a)

4.3.2 Estimating Design Flood Levels

There are three accepted methods of estimating design flood levels:

- Physical Modelling: A scale model of the catchment is built, flooded, and water levels measured. Whilst they have some benefits, physical models are expensive and, as they occupy large amounts of space, are normally dismantled after use making unplanned subsequent studies costly. These are rarely undertaken today.
- Computer Modelling: This is the most common method (see Section 4.2 for explanation). It is used in conjunction with other techniques, such as flood frequency analysis, to determine design flood levels.
- Flood Frequency Analysis (FFA): This method involves performing a statistical analysis on known historic flood flows to draw a graph of flood flows against probability of occurrence, see Figure 18. Generally, creek and river flows are not measured directly. They are estimated from water levels using rating curves that relate water level to estimated flow based upon gauge measurements and hydraulic analysis, see Figure 19. FFA is often used as a check of the computer modelling results at sites where a sufficient length of record exists. FFA is site specific and can only be applied at the gauge location.

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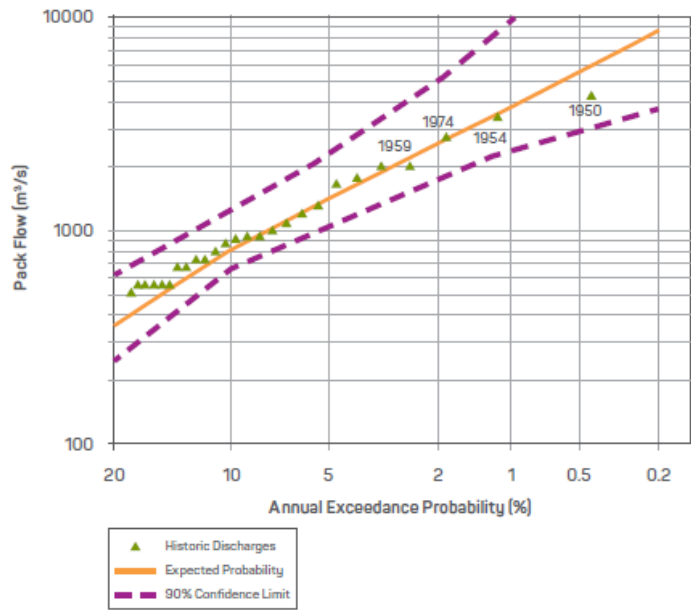


Figure 18 Sample frequency distribution for a stream gauging station (AIDR 2017a)

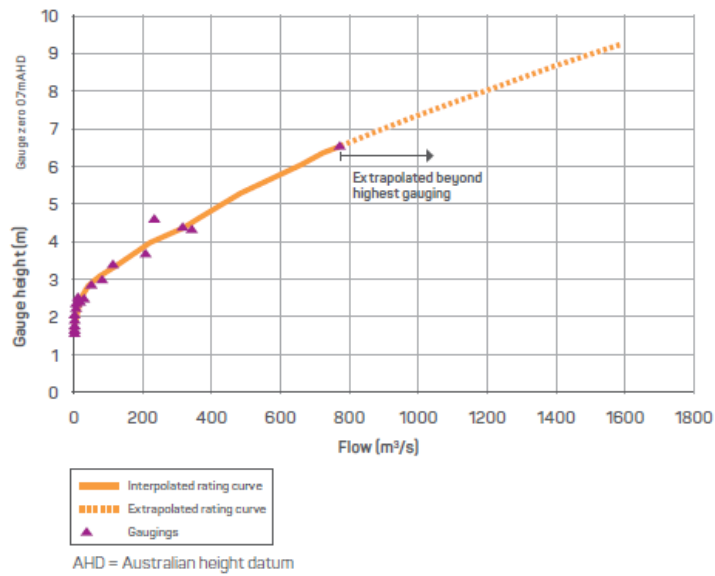


Figure 19 Example rating curve for a stream gauging station (AIDR 2017a)

4.3.3 Defined flood event or planning flood

The defined flood event (DFE) or planning flood is a large flood that is selected and used to determine where to apply minimum development standards, see Figure 20.

Selection of a DFE should consider the full range of flood events and take into account standards and guidance from government and industry. It can reflect what government and the local community may accept as a general standard that allows for a reasonable compromise between living on the floodplain and accepting the consequences of this choice. DFEs are the key floods used to derive information to inform management and land-use planning.

In NSW the 1% AEP flood is often used to define the DFE, a freeboard is then added to the DFE to determine the Flood Planning Level (FPL) (see Section 4.4.2) in which general development controls are applied to new standard residential and commercial development to limit growth in risk.

DFEs are initially determined in flood studies and may be refined in management studies, they are then incorporated in management plans.

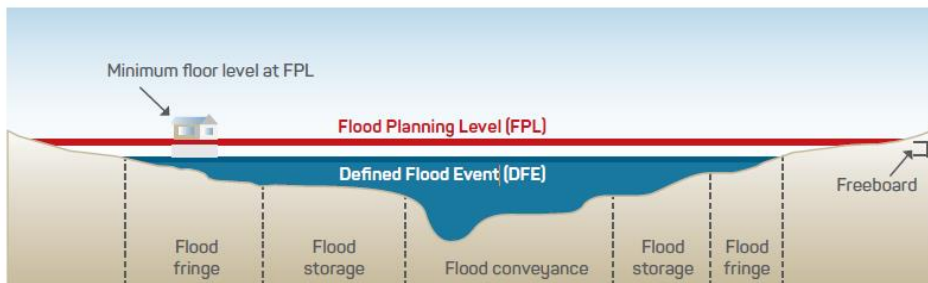


Figure 20 Defined flood event and other key terms (AIDR 2017a)

4.3.4 Probable Maximum Flood

The probable maximum flood (PMF) as defined in the Floodplain Development Manual provides the upper limit of flooding to inform flood risk management for communities. Estimation of the PMF provides a basis for understanding the extent of the floodplain and the upper scale of the flood problem faced by communities.

Depending on a number of factors, the PMF or an equivalent extreme flood can range from less than 1 metre to more than 10 metres higher than the 1% AEP flood levels (Figure 21). The PMF is likely to be higher than levels considered for minimum floor levels or for the crest of a levee.

It is a key event to consider in emergency management and should be considered with regard to the location of resources critical during floods such as evacuation centres and hospitals with an emergency response function, disaster management centres and those whose occupants may be placed at more risk in evacuation (i.e. critical care patients in hospitals).

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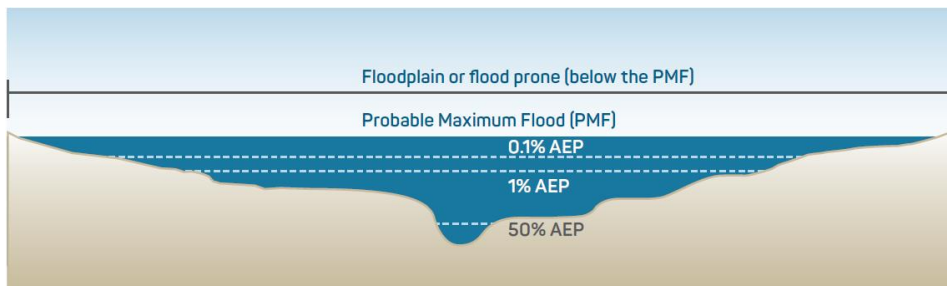


Figure 21 Floodplain and probable maximum flood (PMF) (AIDR 2017a)

4.3.5 Consideration of Climate Change

Consideration of climate change in flood studies is important as it can lead to altered flood behaviour and increased community exposure to flood risks and impacts. Climate change is expected to have adverse impacts upon sea levels (relevant in the lower portion of coastal waterways) and flood producing rainfall events (relevant across NSW).

Depending on the local flood situation both can have significant impacts on flood behaviour that is assessed as part of the studies.

Guidance on how to assess climate change impacts on flood behaviour and its impacts on the community is available within NSW Government FRM Guidance.

4.4 Categorisation of the Floodplain

The area flooded during a flood event (or events) can be further categorised based on different criteria depending on what information is required. These include the flood planning area, flood function (also call hydraulic categorisation), flood hazard, flood emergency response classifications and flood planning constraint categorisation. The categorisation of the flood behaviour in these ways can better inform processes such as land use planning and emergency planning, discussed in the sections below.

4.4.1 The Floodplain or Flood Prone Land

The floodplain or flood prone land is the area that is inundated by the PMF. Land above the PMF level may sometimes be referred to as flood-free although it should be remembered that some land above the PMF level could still experience local drainage problems or water flow across the ground or may be indirectly affected by flooding due to loss of services or power from facilities that are inundated.

4.4.2 Flood Planning Areas (FPAs) and the Flood Planning Levels (FPLs)

Flood planning areas are a type of flood planning constraint category. They are areas where councils apply flood planning controls for all types of development. The FPA is generally determined based on the areas inundated by the DFE or planning flood and includes a freeboard and therefore below the flood planning level (FPL) (Figure 20). Freeboards can vary depending on the type of flooding and the certainty of the modelling process, typical freeboards for riverine flooding are generally 0.5m and for overland flow flooding are generally 0.3m.

FPA should be based on an understanding of flood behaviour and the associated hazards and risks. Choosing an FPL is a matter of assessing and balancing the social, environmental and economic consequences of adopting that FPL.

4.4.3 Flood Function (Hydraulic Categorisation)

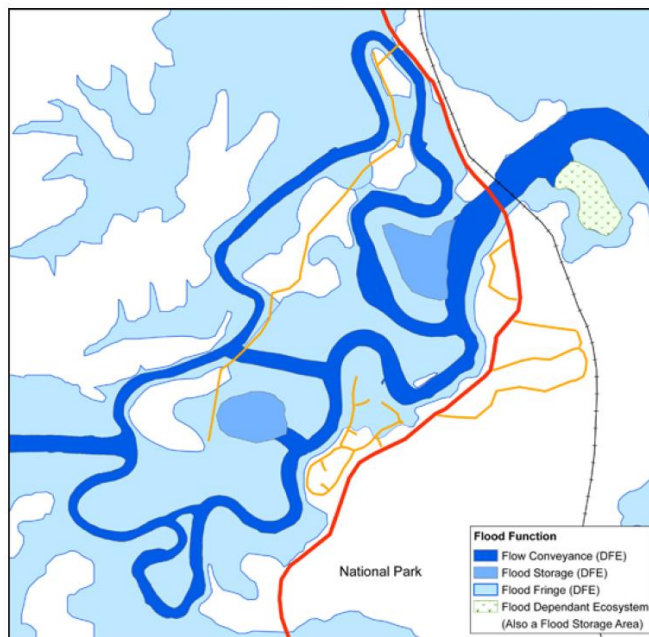
The determination of flood function (hydraulic categorisation) of flood prone land is an essential element of flood studies and management studies as it assists in determining appropriate flood risk management strategies for both existing and future development.

To identify areas that perform an essential flood function it is necessary to divide the floodplain into areas that reflect different flood functions or hydraulic categories. These are:

- Floodway - areas where a significant volume of water flows during flood and are often aligned with obvious natural channels. They are areas which, if only partially blocked, would cause a significant increase in flood levels and/or a significant redistribution of flood flow.
- Flood Storage - areas are those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood.
- Flood Fringe - is the remaining area of land affected by flooding, after the floodway and flood storage have been derived.

The extent of flooding and floodways and flood storage areas will generally increase as the scale of flood increases. They are usually mapped for a minimum of the DFE (see Figure 20 and Figure 22), plus a smaller and larger event, and the PMF. This enables an understanding of how the flood function varies to be considered in management decisions.

Floodways and flood storage areas would have additional development controls that aim to support the flood function of the floodplain.



DFE = defined flood event

Figure 22 Breakdown of the DFE flood into flood functions (AIDR 2017a)

4.4.4 Flood Hazard

The extent of flooding in an event can be categorised based on the varying degree of hazard that flood poses to the land.

Hazard vulnerability curves (Figure 23) classify hazard based on the consequences of the flood hazard on people, vehicles and buildings. This information can be used to highlight where the flood is hazardous to these different elements (Figure 24).

This provides important information for FRM, emergency management planning and land use planning

Hazard Categories

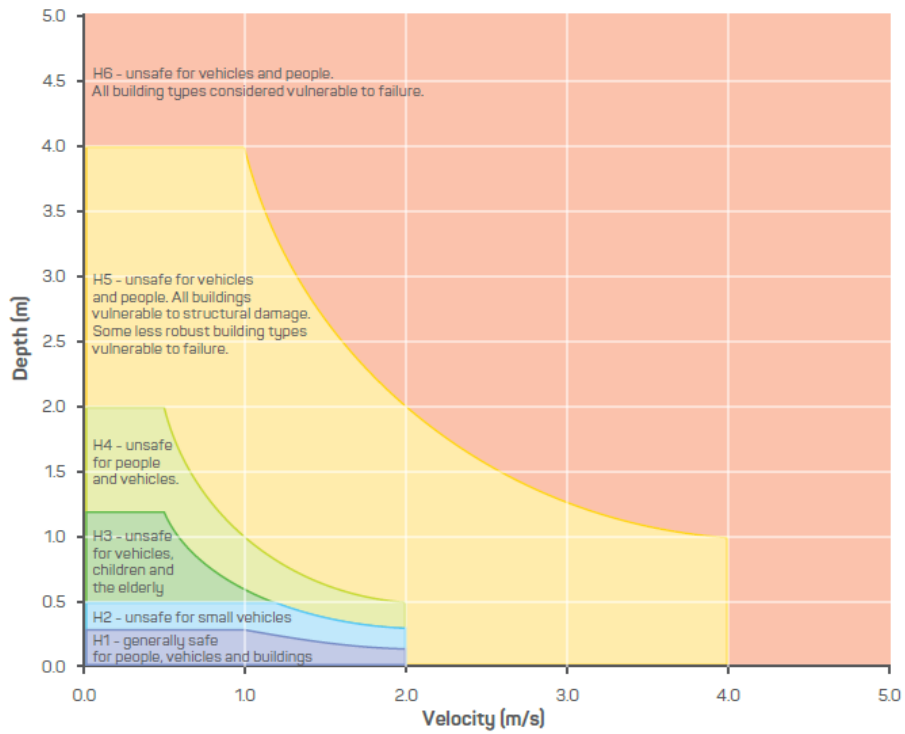


Figure 23 General flood hazard vulnerability curves

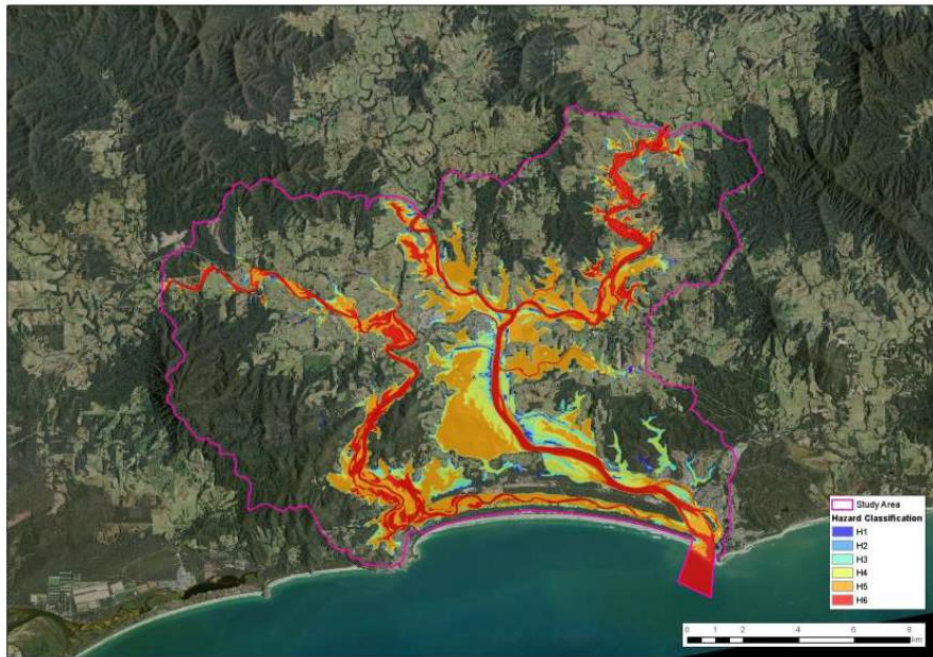


Figure 24 Example breakdown of the floodplain into hazard categories (AIDR 2017b)

4.4.5 Flood Emergency Response Classification

Flooding can isolate parts of the landscape and cut-off evacuation routes to flood-free land or locations where community facilities are available to support evacuated residents in a flood event. This can result in a dangerous situation, because people may see the need to cross floodwaters to access services, employment or family members. Any situation that increases people’s need to cross floodwaters increases the likelihood of an injury or fatality.

The floodplain can be classified in relation to isolation and access considerations in a way that informs emergency response management (Figure 25). This classification provides the basis for understanding the nature, seriousness and scale of isolation problems.

It provides important information for emergency management planning, FRM and land use planning

Further information can be found in the [Guide on Flood Emergency Response Planning Classification of Communities](#).

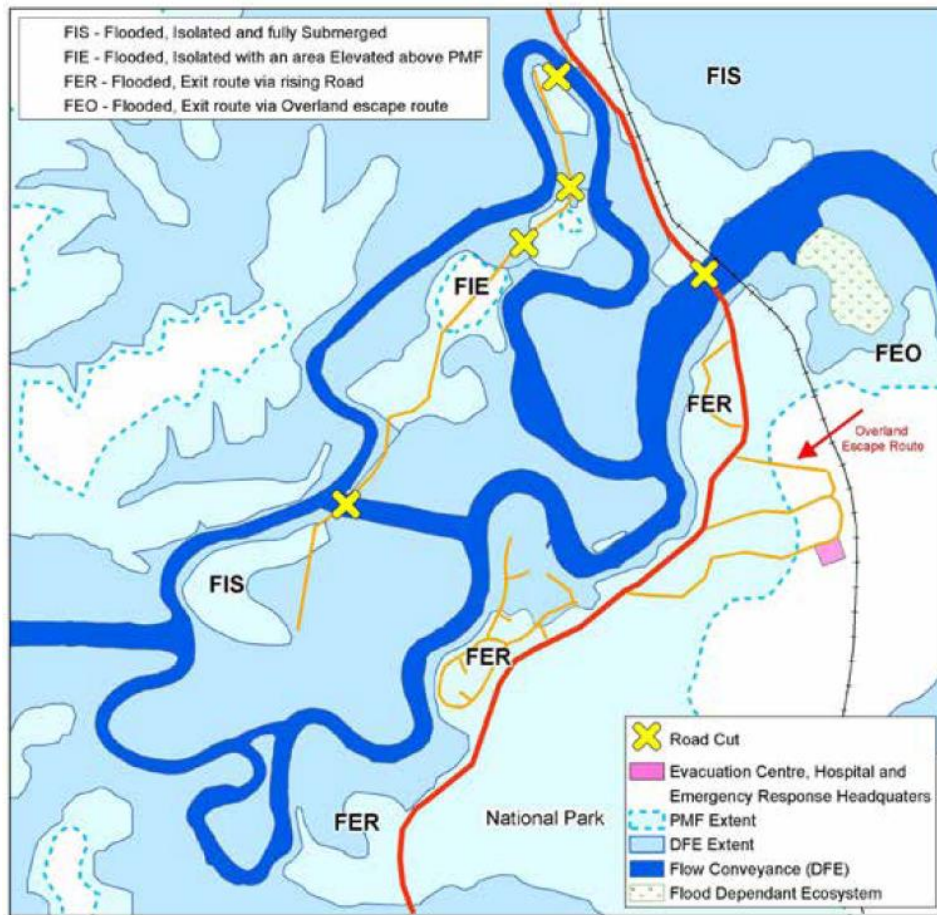


Figure 25 Example of flood emergency response classification of the floodplain (AIDR 2017c)

4.4.6 Flood Planning Constraint Categories

Flood studies typically produce many maps, each focusing on a particular design event and element of flood behaviour. Collectively, they provide a very detailed description of flood behaviour and the issues that are important in different areas of the floodplain.

Combining all elements of flood behaviour can produce a succinct set of information that breaks the floodplain down into areas with similar degrees of constraint – Flood Planning Constraint Categories (FPCC). FPCCs can better inform and support land-use planning activities by identifying where flood-related constraints can be treated similarly.

Deriving flood planning constraint categories involves using information derived from modelling including varied flood function (see section 4.4.3), flood hazard (section 4.4.4), flood emergency response classification (section 4.4.5) and considering the range of flood events. An example of FPCCs is shown in Figure 26, for further detail of the mapping components used to develop this example refer to [Australian Disaster Resilience Guideline 7-5 Flood Information to Support Land-use Planning \(AIDR 2017\)](#), Appendix A.

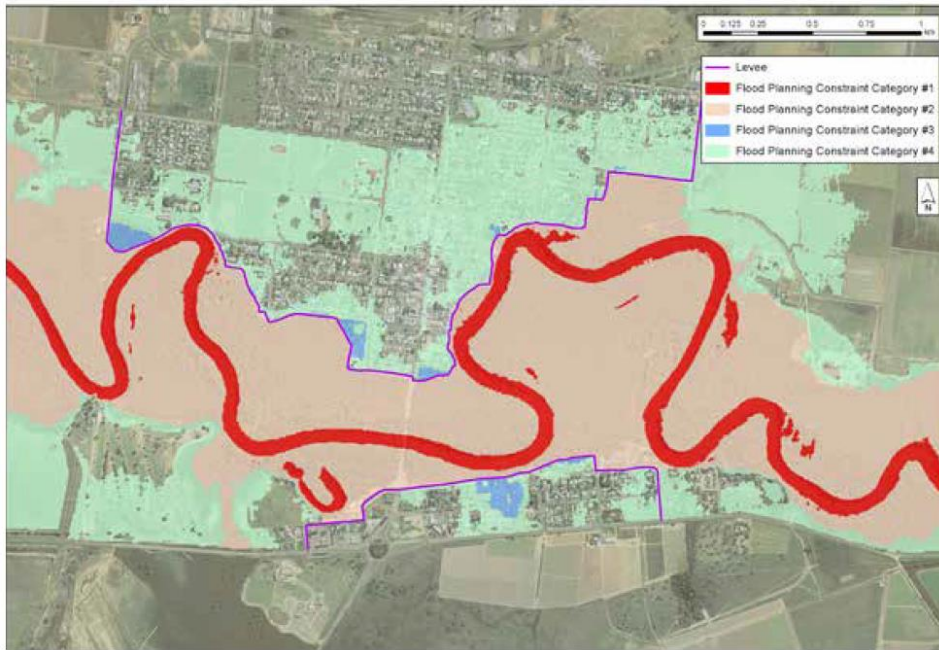


Figure 26 Example flood planning constraint categories (AIDR 2017c)

FPCCs can come in different forms. For example, Table 5 shows four FPCCs that have been developed to separate areas of the floodplain from the most constrained and least suitable for intensification of land use or development (FPCC1) to the least constrained and more suitable for intensification of land use or development (FPCC4). Other examples of FPCCs include flood risk precincts where the floodplain is broken down into areas of low, medium and high risk and the breakdown of the floodplain into floodway areas, the flood planning area and the flood risk management area.

Table 5 Flood Planning Constraint Categories – Implications and Key Considerations

| FPCC | Level of constraints |
|------|---|
| 1 | Severe limitations on usage due to impacts on flood behaviour and hazard |
| 2 | Significant controls on development due to emergency response limitations, flood behaviour in rare events and the level of flood hazard |
| 3 | Standard land-use and development controls aimed at reducing damage and the exposure of the development to flooding in the DFE are likely to be suitable. Consider the need for additional conditions for emergency response facilities, key community infrastructure and vulnerable users. |
| 4 | Consider the need for conditions for emergency response facilities, key community infrastructure and land uses with vulnerable users. |

5. MANAGEMENT MEASURES

5.1 Types of Measures

There are various ways of managing floodplains to reduce flood losses which include:

- modifying the response of the population at risk
- imposing controls on property and infrastructure development
- modifying the behaviour of the flood itself

The first two measures can be referred to as non-structural options or measures (Table 6). The third measure is often referred to as a structural option (those measures which modify flood behaviour by reducing flood levels or excluding floodwaters from areas at risk).

Table 6 Types of Modification Measures

| Property Modification Measures | Response Modification Measures | Flood Modification Measures |
|-----------------------------------|--------------------------------|-----------------------------|
| Zoning | Community Awareness | Flood Control Dams |
| Voluntary Purchase | Community Readiness | Retarding Basins |
| Voluntary House Raising | Flood Prediction and Warning | Levees |
| Building and Development Controls | Local Flood Plans | Bypass Floodways |
| Flood Proofing Buildings | Evacuation Arrangements | Channel Improvements |
| Flood Access | Recovery Plans | Flood Gates |

A FRM study will examine a wide range of management options for selection in the management plan and may include measures which:

- change the community's response to the next flood event;
- change the impact of floodwaters on development;
- change where the floodwaters go; and
- change the way we currently plan for future development and apply controls to current development.

5.2 Evaluation of Measures

The implementation of management measures is likely to have economic, social and environmental implications. The benefits of each measure need to be weighed up against their costs to justify their implementation.

When examining management options, the focus of looking at benefits and costs should be on aspects that will change due to the management option and effort should not be wasted on aspects that do not change.

Management option, especially structural options, need to consider whether the option impacts on the environment. For example, the construction of levees and floodgates may impact on wetlands which require tidal flows for efficient operation. Whilst such an examination should be sufficiently thorough to determine whether the option is environmentally viable, it does not extend to undertaking an environmental impact assessment. These more detailed assessments which will if needed be undertaken as part of detailed investigation and design before construction commencing. Where possible,

opportunities for enhancement of the environment via the implementation of FRM measures should also be investigated and promoted.

While it is possible to identify tangible costs e.g. the financial costs of implementing structural works or development controls, it is not practical to ascribe a monetary value to intangible costs e.g. social dislocation caused by flooding. This does not mean, however, that intangible costs are any less important in considering whether management options are justifiable. They are generally examined in a qualitative way so that this can inform decisions.

When examining management measures and development proposals, it is very important that consideration be given to the impact of the development or measure on flood behaviour as well as the impact of flooding on the measure or development.

5.3 Flood Damage

The assessment of damages can help focus FRM efforts by providing important information on the severity and location of impacts. Any reduction in impacts resulting from the implementation of mitigation measures provides advice on their relative cost-efficiency through cost-benefit analyses including qualitative assessments of benefits and costs where relevant.

The severity of consequences of flooding on the community can be assessed based upon the frequency and scale of tangible and intangible impacts.

5.3.1 Types of Damage

Flood damages are traditionally divided into tangible and intangible damages. Tangible damages are also sub-divided into direct and indirect damages (Figure 27).

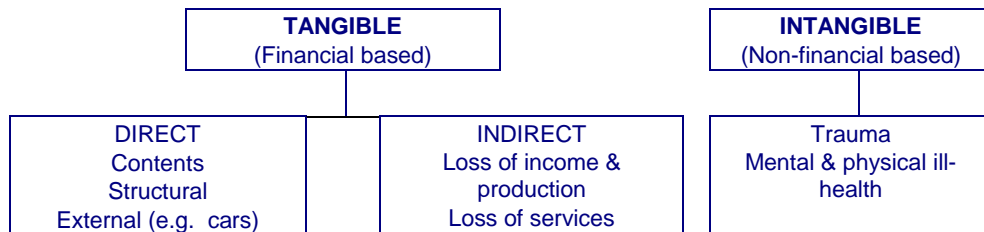


Figure 27 Types of Damage

5.3.2 Stage – Damage Curves

Direct damages are normally calculated using stage-damage curves. These curves show the damages that can be expected to occur for a range of depth of water over the floor. A sample stage-damage curve is shown in Figure 28.

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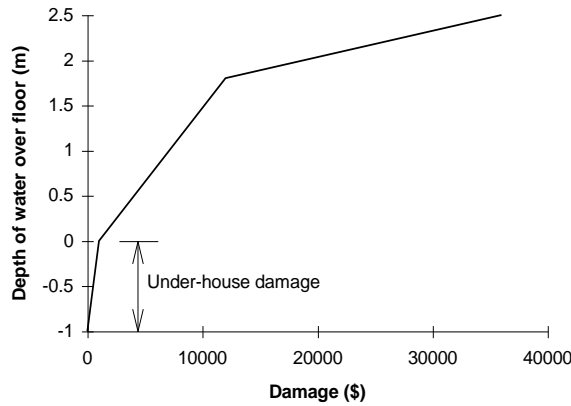


Figure 28 Sample Stage-Damage Curve

5.3.3 Average Annual Damage

The average annual damage (AAD) is the total damage caused by all floods over a long period of time divided by the number of years in that period. It represents the amount of damage that can be expected to occur every year on average. A sample curve relating damages to various design floods is shown in Figure 29. Such curves can be used to calculate the area under the curve to give AAD.

Examining the change in AAD is a convenient way to compare the economic benefits of various proposed mitigation measures.

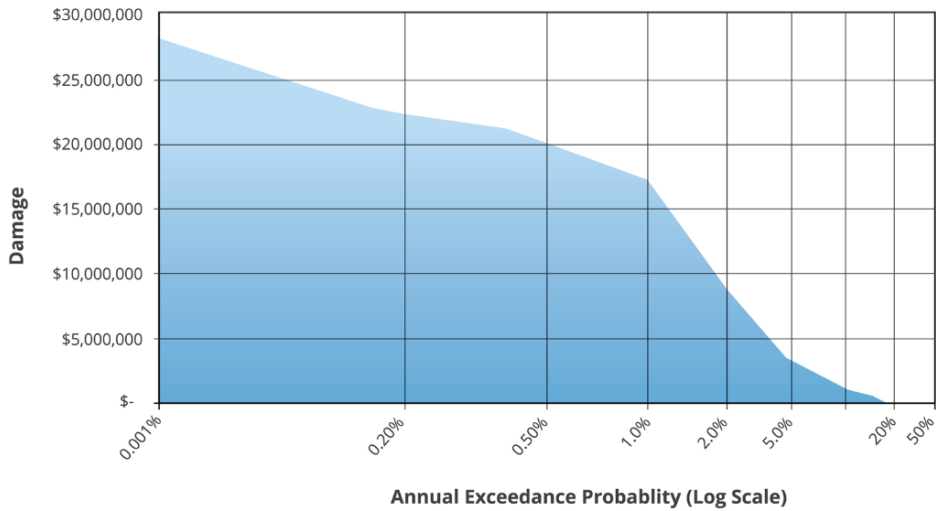


Figure 29 A Sample of a flood damage curve for a range of AEP events (ARR 2019)

5.3.4 Benefit/Cost Ratio

A convenient method of assessing the economic viability of proposed mitigation measures is the benefit/cost ratio. Here the net present worth of the benefits associated with the measure (e.g. the reduced AAD) (Figure 30) is divided by the cost of the measure (e.g. construction cost, on-going maintenance costs and financing costs). If the B/C ratio is greater than 1 this implies the works have more tangible benefits than cost, and vice versa for a B/C ratio less than 1. However, works with a lower B/C ratio may still be viable when social, environmental and similar benefits and costs considerations are also considered.

The level of economic appraisal of an option varies with cost, impacts etc. Economic appraisal can be an iterative approach with cursory analysis needed in the initial phases of a study to detailed analysis for final decisions.

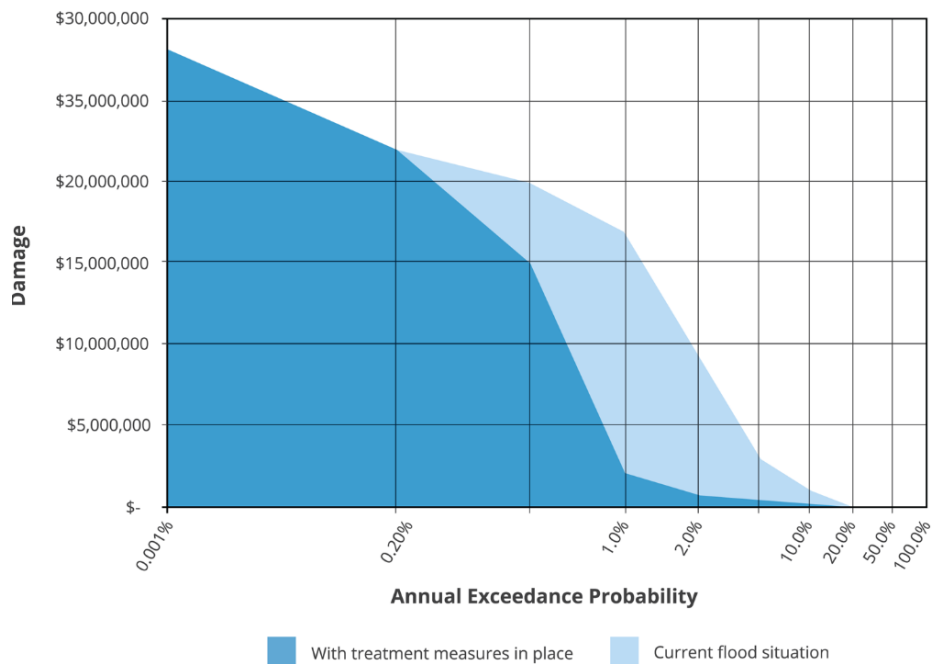


Figure 30 Sample Damage Curve with and without treatment options (ARR 2019)

6. REFERENCES

This handbook only provides basic information on flood risk management issues. The following publications and videos can assist in obtaining more comprehensive information.

AIDR 2017a, 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>

AIDR 2017b, Australian Disaster Resilience Guideline 7-3 Flood Hazard, <https://knowledge.aidr.org.au/media/3518/adr-guideline-7-3.pdf>

AIDR 2017c, Australian Disaster Resilience Guideline 7-5 Flood Information to Support Land-use Planning, <https://knowledge.aidr.org.au/media/3519/adr-guideline-7-5.pdf>

ARR 2019, Australian Rainfall and Runoff: A Guide to Flood Estimation, Geoscience Australia, <http://arr.ga.gov.au/arr-guideline>

Managing Flood Risk (Video Series) Gosford City Council (2013), https://www.youtube.com/playlist?list=PLjDlzhwADz3YsX_Wb-B9JUSeI9PEiX0-Y

NSW Government (2005), *Floodplain Development Manual*, Department of Infrastructure Planning and Natural Resources, DIPNR 05_020, <https://www.environment.nsw.gov.au/research-and-publications/publications-search/floodplain-development-manual>

NSW Department of Planning Industry and Environment (DPIE), Floodplain Risk Management Guidelines, <https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-guidelines>

NSW Department of Planning Industry and Environment (DPIE), Floodplain Risk Management Guidelines, *Incorporating 2016 Australian Rainfall and Runoff in studies*, 2019, <https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-guidelines>

Shellharbour City Council, *Macquarie Rivulet Flood Study*, WMAwater, 2017

Note

¹ The Department of Planning Industry and Environment (DPIE) was formerly the Office of Environment and Heritage (OEH) up until 30 June 2019. References to DPIE documents may relate to documents labelled OEH.

Item No: FMACC0224(1) Item 2
Subject: FUTURE FLOOD EDUCATION
Prepared By: James Ogg - Stormwater and Asset Planning Coordinator
Authorised By: Ryann Midei - Director Infrastructure

RECOMMENDATION

1. That the Flood Management Advisory Committee support the schedule of actions to be taken to facilitate flood education within Inner West Council.

STRATEGIC OBJECTIVE

This report supports the following strategic directions contained within Council's Community Strategic Plan:

- 1: An ecologically sustainable Inner West
- 5: Progressive, responsive and effective civic leadership

EXECUTIVE SUMMARY

Community engagement is identified in the NSW Flood Risk Management Manual as an integral part of the flood risk management process, as it raises awareness and can provide base information for further community flood awareness activities.

The NSW State Emergency Service (SES) acts as the lead agency under the Emergency Management framework for flooding and flood management, including ongoing community awareness and education, informing the community on how to prepare for and act in response to a flood threat, and assisting with the issuance of flood warnings.

Under this framework, Council partners with NSW SES to support and facilitate such activities.

Council officers have reviewed the type of information currently available to residents and have investigated potential opportunities to improve awareness in the community via two main objectives – improving accessibility to information and increasing public engagement.

From this review, a proposed shortlist of actions and activities has been prepared, with short (within 1 year), medium (1-3 years) and long (3 years +) term timeframes as outlined below.

| Action | Timeframe | Comments |
|--------------------------------|--------------|---|
| Planning Certificate Clarity | Short | Actions already undertaken in December 2023 |
| Community Information Sessions | Short | Information Sessions to be undertaken in mid-2024 with exhibition of Alexandra Canal FRMSP & Johnstons Creek and Whites Creek FRMSP |
| Information Hub | Short–Medium | Overall website review being undertaken in 2024 |
| Signage | Medium | |
| Online Mapping | Medium-Long | |
| Community Events | Medium | To be undertaken as required in support of other actions |

BACKGROUND

At the Council Meeting held on 12 September 2023, Council resolved the following:

3. *That a future flood education strategy for the wider local government area be developed and presented to the Flood Management Advisory Committee.*

This followed the adoption of the Hawthorne Canal & Dobroyd Canal Flood Risk Management Study & Plan, which included a Community Education Program as a High Priority measure for flood management in that catchment.

In this regard, the 2022 NSW Flood Inquiry notes the importance of community engagement and public education in the creation of more resilient communities and improved flood risk management at all levels of the community.

Specifically, Inner West Council is bounded by three primary water bodies – Parramatta River to the north, Cooks River to the South and Sydney Harbour to the east – and contains five tributary creek systems – Dobroyd Canal, Hawthorne Canal, Whites Creek, Johnstons Creek and Alexandra Canal – with further localised catchment flow paths draining to these areas.

Consequently, flooding within Inner West Council is generally considered flash flooding – which is sudden and unexpected and the result of sudden local or nearby heavy rainfall. Within Inner West Council a flood event will typically occur within 1 to 2 hours of the onset of rain. These timeframes reinforce the importance of community awareness and readiness in responding to such rapid onset of flooding.

DISCUSSION

As outlined in the NSW Flood Risk Management Manual, community engagement to promote flood awareness is an integral part of the flood risk management process. This process raises awareness and can provide base information for further community flood awareness activities.

The NSW SES under the Emergency Management framework acts as the lead agency for flooding and flood management, including ongoing community awareness and education, informing the community on how to prepare for and act in response a flood threat, and assisting with the provision of flood warnings.

Under this framework, Council partners with NSW SES to support and facilitate such activities.

The Community Engagement for Disaster Resilience Handbook (AIDR 2020), published by the Australian Government Department of Home Affairs and the Australian Institute for Disaster Resilience outlines a number of methods of engaging with the local community to provide information, options, solutions or services for a given situation. This includes meetings,

presentations, information sessions, fact sheets/brochures/newsletters, and online videos or information portals.

Current Information

NSW SES operates two units within Inner West Council located in Marrickville and Haberfield/Leichhardt, supported by further operational services within the Metro Zone. These branches inform residents of general flood risk, flood safety, and provide information to support residents in developing home emergency plans through their website - <https://www.ses.nsw.gov.au/flood-awareness-nsw/> - and Unit Open Days.

Within Council operations, information about flooding is currently available to the public via Council’s website - <https://www.innerwest.nsw.gov.au/live/environment-and-sustainability/in-your-neighbourhood/rivers-and-waterways/flooding>.

This page provides a background on the nature of flooding within Inner West Council and provides links to completed flood studies, including maps of flood impact, for residents to download.

Further information about emergency preparedness & support is also available under the Community Well Being section of Council’s website - <https://www.innerwest.nsw.gov.au/live/community-well-being/safety-and-well-being/emergency-management-be-prepared>.

For individual property owners, information about specific flood levels in relation to a property can be obtained through a Flood Certificate, issued by Council on application, which provides a localised map of flooding patterns and spot levels in the vicinity of a specific property. A sample certificate is provided in Attachment 1.

Potential future property owners are informed of the potential for flood impact to a property through Section 9 of a Planning Certificate that can be obtained from Council.

Future Actions

The NSW Government published its response to the 2022 Flood Enquiry in August 2022. It supports the delivery of evidence based; targeted education campaigns aimed at building disaster resilience and will consider opportunities to improve access to information on individual and community risk exposure, noting that further work was required on the implementation of a schools-based education program and central data hub.

As noted above, the NSW SES has been tasked with delivering a central data-hub and partnering with NSW Department of Education to deliver the schools-based education program.

Council provides a largely support and facilitation role in providing information and education to the wider community. In this regard, officers have reviewed potential opportunities in the community, addressed below via two main objectives – improving accessibility of information and increasing public engagement.

These opportunities would be further developed following engagement with Council’s internal stakeholders including Customer Service, Community Engagement, Strategic Planning, IT and Events.

Improving Access to Information

- Greater Clarity on Planning Certificates

The Planning Certificates currently issued under Section 10.7 Environmental Planning and Assessment Act 1979 include a section related to the impact of Flood Related Development Controls.

This certificate is a legislative requirement and is primarily focused on the impact of development controls on property; however, changes were made in December 2023 to the certificate text so that they now outline the reason for the development controls, and where they may obtain further information.

For properties located within the Flood Planning Area, the following text is provided:

- The property is located within the Flood Planning Area, as determined through Inner West Council's adopted Flood Studies, and is identified as a Flood Affected Property under Council's Development Control Plan.
- Clause 5.21 – Flood Planning of the Inner West Local Environment Plan 2022 applies to all development.
- Further information on flooding, including copies of Council's adopted Flood Studies, can be found on Council's Flooding webpage at <https://www.innerwest.nsw.gov.au/live/environment-and-sustainability/in-your-neighbourhood/rivers-and-waterways/flooding>.
- If you wish to obtain specific information about flood levels in the vicinity of the property you may choose to apply for a Flood Certificate. Please see <https://www.innerwest.nsw.gov.au/live/environment-and-sustainability/in-your-neighbourhood/flood-certificate> for further information.
- For further information, please contact Council's Stormwater and Asset Planning Team.

- Online Digital Mapping

Digital Mapping tools are being increasingly used by Councils to provide maps that are more easily navigated and read and can be extended to provide information specific to a property. Three examples are provided in the table below.

| | | |
|-----------------------------|------|---|
| Northern Beaches Council | | https://nb-icongis.azurewebsites.net/planningmap.html?l=NBC%20Flood%20Hazard%20Map |
| City Parramatta | of | https://www.cityofparramatta.nsw.gov.au/environment/floodsmart-parramatta/know-your-flood-risk |
| Brisbane Council | City | https://fam.brisbane.qld.gov.au/ |

The flood studies completed by Inner West Council to date provide sufficient data files to support a similar mapping tool, however Council does not currently have an online mapping suite. Engineers will work with Council's IT and GIS departments in 2024 to review opportunities for enhanced online mapping.

- Develop a Flood Information Hub

The Flooding page on the Inner West Council website is currently focused on outlining the type of flooding, completed studies, and providing links to existing documents. Links to preparedness documents and other support agencies are currently located in a separate section of the Inner West Council website.

Minor changes were made in January to provide a greater link between these two pages, however further comprehensive updates could be made to provide a central

information hub including links to other services like NSW SES and the Bureau of Meteorology, to help prepare for emergencies and manage risks at home.

- **Public Signage**

Flood warning signage can be an effective tool to remind or inform residents of the potential exposure of an area to floodwater and the associated risks of entering these areas during a flood.

These signs may vary between general depth gauges at areas of deep water or high traffic routes to confirm the flooding depth and minimise the number of people choosing to drive through flood waters, and general information signage explain that can outline flood history in a particular precinct.

Depth gauges could be installed in the short to medium term in areas of high interest under the direction and supervision of the Local Emergency Management Committee.

Precinct based signage would require a longer timeline, including consultation with stakeholders from Council’s Public Domain, Economic Development, and Placemaking teams.

Increasing Public Engagement

- **Public Community Information Sessions**

Drop-in information sessions provide an opportunity for residents to obtain general flood information for the local area. Residents have attended drop-in information sessions during the community engagement and exhibition phases of Flood Risk Management Plan projects, sometimes only to obtain further information about flood levels near their property.

The Alexandra Canal Flood Risk Management Plan and Johnstons Creek and Whites Creek Flood Risk Management Plan are expected to be exhibited mid-2024 and will include drop-in information sessions.

While these sessions will be primarily focused on the catchment areas, Council officers will also be available to discuss general flood enquiries to residents in other areas.

A review of attendance at these sessions will help determine whether there is value in extending these targeted sessions to general information sessions for other catchments.

Timeline of Activities

From the above discussion, a proposed shortlist and timeline of actions and activities has been prepared, with short (within 1 year), medium (1-3 years) and long (3 years +) term timeframes as outlined below.

| Action | Timeframe | Comments |
|----------------------------------|------------------|---|
| Clarity on Planning Certificates | Short | Actions already undertaken in December 2023 |
| Community Information Sessions | Short | Information Sessions to be undertaken in mid-2024 with exhibition of Alexandra Canal FRMSP & Johnstons Creek and Whites Creek FRMSP |
| Information Hub | Short – Medium | Overall website review being undertaken in 2024 |
| Signage | Medium | |
| Online Mapping | Medium - Long | |

FINANCIAL IMPLICATIONS

There are no direct financial implications associated with the implementation of the proposed recommendations outlined in the report.

ATTACHMENTS

1. [↓](#) Sample Flood Certificate



18 October 2023

FLOOD CERTIFICATE
26 Ferris Street ANNANDALE NSW 2038
ENCF/2023/0098

I am pleased to advise that the Flood Certificate for the above address has been prepared and is attached.

The information contained in the certificate is derived from the Leichhardt Flood Study (Cardno, Nov 2017).

The information is provided in good faith and in accordance with the provisions of s.733 of the Local Government Act.

Yours faithfully

James Ogg
COORDINATOR – STORMWATER & ASSET PLANNING



Applicant Name:
Property Address: 26 Ferris Street ANNANDALE
NSW 2038

Certificate No:
Date: 18-Oct-2023

About this Certificate

This certificate provides flooding information for the area in the vicinity of the above property. This information can be used to assist in understanding the extent of flooding affecting this property and can be used to assist in preparation of a Flood Risk Management Report to support a development application. It is recommended that the information in this report be interpreted by a suitably qualified professional.

This report includes two pages; this cover page with an explanation of the information provided, and the second page is a figure providing information on the flooding behaviour in the area. The figure includes peak water levels, depths and flow rates for the 100 year ARI and peak water levels for the Probable Maximum Flood event.

The flood levels provided are based on available information including numerical modelling results from flood studies prepared for Council. All flood levels and depths are provided to the nearest 0.05 metres.

Definitions

The following provides a brief definition of some of the key terms utilised in this report:

| | |
|-----------------------------------|---|
| Average Recurrence Interval (ARI) | The long-term average number of years between the occurrences of a flood as big as or larger than the selected event. The 100 year ARI flood event can be expressed as having a 1% chance of occurrence in any given year or as the flood that could occur once every 100 years. |
| Probable Maximum Flood (PMF) | The PMF is the largest flood that could conceivably occur at a particular location. This event is used to determine what might occur in events larger than a 100 year ARI. |
| 100 year ARI Flow Path/Extent | The area of land expected to be inundated by either a flow path or mainstream flooding during a 100 year ARI flood event. The extents are limited to the areas where depths of flow are greater than 150mm. |
| 100 year ARI High Hazard | Areas within the 100 year ARI flood extents where the depth and/or velocity of flow is likely to represent a possible danger to personal safety; evacuation by trucks is difficult; able-bodied adults would have difficulty wading to safety; and/or potential for structural damage to buildings. |
| Flood Planning Level (FPL) | The Flood Planning Level is calculated by adding freeboard onto the 100 year ARI flood level in accordance with Council's DCP. |
| Freeboard | The freeboard is incorporated into the Flood Planning Level to provide a factor of safety to the flood levels. It accounts for a number of factors, including wave action, localised obstructions to flows, and model uncertainty. |
| Australian Height Datum (AHD) | A common national surface level datum approximately corresponding to mean sea level. |

Notes

The ground levels shown on the attached figure are based on aerial survey data. The ground levels should be verified by a suitably qualified surveyor.

The location of stormwater pits and pipes on the attached figure are indicative only. The location and dimensions of pipelines should be verified by a suitably qualified surveyor.

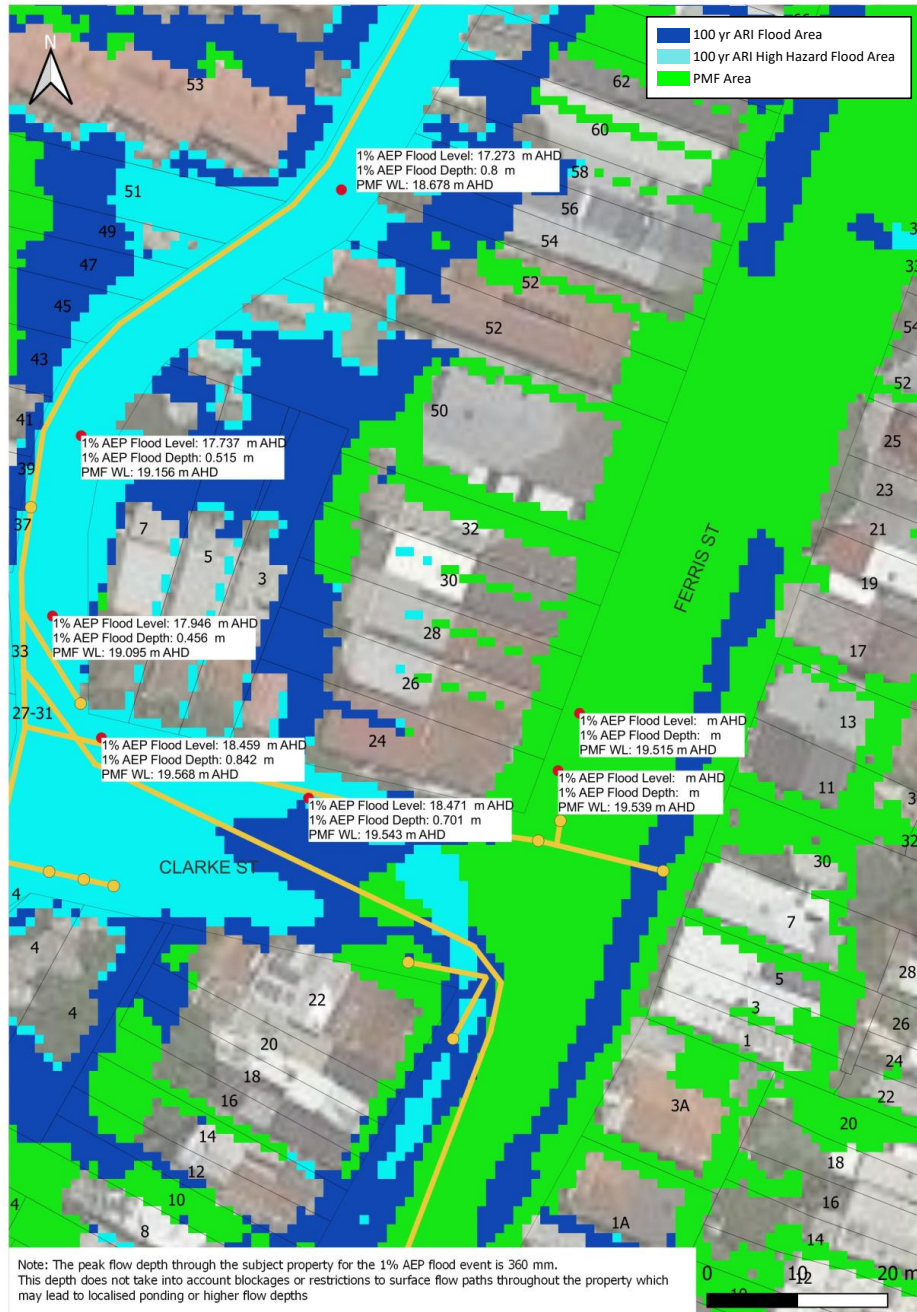
The water depths shown are provided at the location shown and are indicative only. They do not necessarily represent the maximum depth in the area. For example, where a point is located on the centreline of a road, the depths will be higher within the road gutter.

The information is provided in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

Flood Certificate

Applicant Name:
Property Address: 26 Ferris Street ANNANDALE
NSW 2038

Certificate No:
Date: 18-Oct-2023



The information provided is in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

Item No: FMACC0224(1) Item 3
Subject: INNER WEST LOCAL FLOOD PLAN
Prepared By: James Ogg - Stormwater and Asset Planning Coordinator
Authorised By: Ryann Midei - Director Infrastructure

RECOMMENDATION

- 1. That the Flood Management Advisory Committee endorse the amended Inner West Council Flood Emergency Sub Plan**

STRATEGIC OBJECTIVE

This report supports the following strategic directions contained within Council’s Community Strategic Plan:

- 2: Liveable, connected neighbourhoods and transport

BACKGROUND

The Inner West Council Flood Emergency Sub Plan is a sub plan of the Inner West Council Local Emergency Management Plan (EMPLAN). It has been prepared in accordance with the provisions of the **State Emergency Service Act 1989 (NSW)** and is endorsed by the Local Emergency Management Committee in accordance with the provisions of the **State Emergency and Rescue Management Act 1989 (NSW)**.

The Flood Emergency Sub Plan has been prepared by NSW State Emergency Service (SES) as the lead combat agency for flooding under the Inner West Council Local Emergency Management Plan (EMPLAN) and sets out the multi-agency arrangements for the emergency management of flooding in the Inner West Council Local Government Area (LGA).

It outlines measures and strategies to prepare and respond to flooding. Under the Sub Plan NSW SES is responsible for

- Development of Flood Intelligence Systems & Warning Systems
- Maintaining a flexible volunteer workforce to support community resilience
- Working with individuals, communities, businesses and government agencies to build flood resilience
- Flood response operations
- Incident Control Centres
- Logistics Control
- Issuing of information and warnings during a flood event

These actions are supported by the officers and resources of Inner West Council.

The current Sub Plan has been adopted by Inner West Council and the Local Emergency Management Committee since December 2021.

The current changes proposed in the most recent version of are administrative changes relating to changes to Flood Warnings in accordance with the Australian Warning System (AWS) to provide a nationally consistent approach to warnings, and administrative changes regarding the renaming of State Government departments.

The amended Sub Plan has been reviewed and endorsed by the Local Emergency Management Committee at its meeting on 9 November 2023 and is now being presented to the Flood Management Advisory Committee for endorsement.

FINANCIAL IMPLICATIONS

There are no financial implications associated with the implementation of the proposed recommendations outlined in the report.

ATTACHMENTS

1. [↓](#) Inner West Flood Emergency Sub Plan



INNER WEST COUNCIL FLOOD EMERGENCY SUB PLAN

A Sub Plan of the Local Emergency Management Plan (EMPLAN)

Volume 1 of the Inner West Council Flood Emergency Sub Plan

Endorsed by the Inner West Council

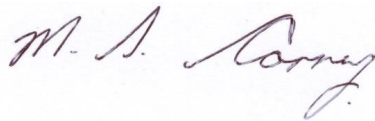
Local Emergency Management Committee

October 2023

AUTHORISATION

The Inner West Council Flood Emergency Sub Plan is a sub plan of the Inner West Council Local Emergency Management Plan (EMPLAN). It has been prepared in accordance with the provisions of the **State Emergency Service Act 1989 (NSW)** and is endorsed by the Local Emergency Management Committee in accordance with the provisions of the **State Emergency and Rescue Management Act 1989 (NSW)**.

Authorised



Signature:

NSW SES Local Commander

Print Name: Michael Carney

Date: 18/10/2023

Endorsed

Signature:

Chair, Local Emergency Management Committee

Print Name:

Date:

**PREVIOUSLY ENDORSED VERSION PRIOR TO LGA
AMALGAMATION**

The below table lists all previously endorsed versions of this plan.

| | | |
|-----|---------------------------------------|--------------|
| 2.0 | Marrickville Local Flood Plan | July 2015 |
| 1.0 | Marrickville Flood emergency Sub Plan | January 2003 |

PREVIOUSLY ENDORSED VERSION HISTORY

| Version Number | Description | Date |
|----------------|-----------------------------|----------|
| 1.0 | Inner West Local Flood Plan | Dec 2021 |

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to Community Planning and Engagement

NSW State Emergency Service
PO Box 6126, Wollongong NSW 2500
nswses.communityplanning@ses.nsw.gov.au

Amendments in the list below have been entered in this plan.

| Amendment Number | Description | Updated by | Date |
|------------------|---|--------------|------------|
| 01 | Update of wording to section 5.4.1, 5.12 and 5.13 relating to flood warnings, to reflect the change to the Australian Warning System | Donna McKeon | 22.11.2022 |
| 02 | Update of wording from 'BoM' to 'Bureau' | Donna McKeon | 22.11.2022 |
| 03 | Update to section 1.8.1b to include commitment of exercising plan every five years and within two years of the plan being reviewed | Donna McKeon | 22.11.2022 |
| 04 | Update of wording from 'DPIE' to 'DPE' Update of wording from Department of Planning, Industry and Environment to Department of Planning and Environment (5.14.2 under Action) | Donna McKeon | 22.11.2022 |
| 05 | Update to section 5.10.1.b, c,d, from State Rescue Board Land Rescue Policy to State Rescue Board NSW State Rescue Policy | Donna McKeon | 22.11.2022 |
| 06 | Deleted My Road Info from section 5.4.1.h | Donna McKeon | 22.11.2022 |
| 07 | Under Section 6 – Recovery Operations – updated 6.2.2 © reference from Resillience NSW to NSW Reconstruction Authority | Donna Mckeon | 17/7/2023 |

DISTRIBUTION LIST

Available for general use and distribution on the following websites - www.emergency.nsw.gov.au or www.ses.nsw.gov.au

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1 OUTLINE AND SCOPE

1.1 PURPOSE

- 1.1.1 The purpose of this plan is to set out the multi-agency arrangements for the emergency management of flooding in the Inner West Council Local Government Area (LGA).

1.2 AUTHORITY

- 1.2.1 This plan is written and issued under the authority of the *State Emergency and Rescue Management Act 1989* (NSW) ('SERM Act'), the *State Emergency Service Act 1989* (NSW) ('SES Act') and the NSW State Emergency Management Plan (EMPLAN).
- 1.2.2 This plan is a sub plan to the Inner West Council Local Emergency Management Plan (EMPLAN) and is endorsed by the Inner West Council Emergency Management Committee (LEMC).

1.3 ACTIVATION

- 1.3.1 This plan does not require activation. The arrangements set out in this plan are always active.
- 1.3.2 The Inner West Council Emergency Management Plan (EMPLAN) is active at all times in anticipation of the need to coordinate support and resources requested by combat agencies, including the NSW State Emergency Service (NSW SES).

1.4 SCOPE

- 1.4.1 The area covered by this plan is the Inner West Council LGA. The Inner West Council LGA and its principal towns, villages, rivers and creeks are shown in Appendix A.
- 1.4.2 The Council area is in the NSW SES Metro Zone and for emergency management purposes, is part of the Sydney Metro Emergency Management Region.
- 1.4.3 The plan sets out the Inner West Council level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Inner West Council LGA.
- 1.4.4 In this plan a flood is defined as a relatively high water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves (including tsunami) overtopping coastline defences.
- 1.4.5 This plan outlines the local level arrangements for the management of downstream consequences of flooding due to dam failure.

1.5 GOALS

- 1.5.1 The primary goals for flood emergency management in NSW are:

- a. Protection and preservation of life.
- b. Establishment and operation of flood warning systems.
- c. Issuing of community information and community warnings.
- d. Coordination of evacuation and welfare of affected communities.
- e. Protection of critical infrastructure and community assets essential to community survival during an emergency incident.
- f. Protection of residential property.
- g. Protection of assets and infrastructure that support individual and community financial sustainability and aid assisting a community to recover from an incident; and
- h. Protection of the environment and conservation values considering the cultural, biodiversity and social values of the environment.

1.6 KEY PRINCIPLES

- 1.6.1 The protection and preservation of human life (including the lives of responders and the community) is the highest priority.
- 1.6.2 Evacuation is the primary response strategy for people impacted by flooding.

1.7 ROLES AND RESPONSIBILITIES

- 1.7.1 General responsibilities of emergency service organisations and functional areas are set out in the NSW State EMPLAN and NSW State Flood Sub Plan.
- 1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within Inner West Council are detailed within this plan, Appendix B and Appendix C.
- 1.7.3 Any agency with agreed responsibilities in this plan that are temporarily, or no longer able to fulfil their responsibilities must as soon as possible notify the:
 - a. NSW SES Incident Controller (for local or zone level responsibilities during response operations).
 - b. NSW SES Zone Duty Commander (for regional level responsibilities outside of response operations).

1.8 PLAN MAINTENANCE AND REVIEW

- 1.8.1 The NSW SES will maintain the currency of this plan by:
 - a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities.
 - b. Conduct a minimum of one exercise every five years or within two years of the plan being reviewed.
 - c. Reviewing the contents of the plan:
 - When there are changes which alter agreed plan arrangements.

- When changes to land use strategic plans and policies increase the population at risk.
 - After a flood including from after action reviews, reports, or inquiries; and
 - As determined by the NSW SES Commissioner.
- d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

1.9 SUPPLEMENTARY DOCUMENTS

- 1.9.1 Supplementary material published in previous versions of the Local Flood Plan is now maintained on the NSW SES website at:
<https://www.ses.nsw.gov.au/about-us/flood-storm-and-tsunami-plans/>
including:
- a. Flood Plan Glossary.
 - b. NSW SES Dam Failure Notification Flowchart.
 - c. NSW SES Resupply Flowchart.

2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

2.1 THE FLOOD THREAT

- 2.1.1 The NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Inner West Council LGA.
- 2.1.2 Declared dams in or upstream of the Inner West Local Government Area.

| Dam Name | Owner |
|-----------------------------------|--------------------|
| Marrickville Oval Retarding Basin | Inner West Council |

3 PREVENTION/ MITIGATION

3.1 INTRODUCTION

- 3.1.1 The Floodplain Development Manual outlines the NSW Government’s Flood Prone Lands Policy which details the framework for managing flood prone land in New South Wales. Incorporation of floodplain risk management into land use planning is one of the key means to limit the exposure to flood risks to our communities and help build long term resilience to future flood events.

3.2 LAND USE PLANNING

- 3.2.1 **Strategy:** Work with landuse planning and consent authorities to advocate that the risks arising from floods are considered so as to prevent the creation of intolerable impacts of these hazards on the community.

Actions:

- a. NSW SES will provide strategic input about land use planning matters which have or will create significant flood risk.
- b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk.

3.3 FLOODPLAIN RISK MANAGEMENT

3.3.1 **Strategy:** NSW SES advocates for the recognition of emergency management considerations through participation in the floodplain risk management program.

Actions:

- a. NSW SES will provide coordinated and consistent emergency management advice to councils and other agencies in relation to the management of land that is subject to flooding or coastal inundation; and
- b. NSW SES will provide advice, support and technical resources for NSW SES representatives to contribute effectively to local Floodplain Management Committees.

4 PREPARATION

4.1 INTRODUCTION

4.1.1 Preparation includes arrangements or plans to deal with an emergency or the effects of an emergency.

4.2 FLOOD EMERGENCY PLANNING

4.2.1 **Strategy:** NSW SES develop, review and maintain Flood Emergency Sub Plans

Actions:

- a. Develop and review this NSW SES Local Flood Plan as required. Local Flood Plans outline the specific arrangements for management of flood events within an LGA, and may include cross boundary arrangements; and
- b. Review plans as per [Section 1.8](#).

4.2.2 Local EMPLAN Consequence Management Guides (CMG) for flood are not required for communities covered by NSW SES Local Flood Plans.

4.3 FLOOD INTELLIGENCE SYSTEMS

4.3.1 **Strategy:** NSW SES develop and maintain a flood intelligence system to identify flood behaviour, its impact on the community and required response actions.

Actions:

- a. Gather and assess flood information for the full range of flood types and severities.
- b. Collect, collate, and assess information on the characteristics of communities at risk and the potential effects of flooding on communities at risk; and
- c. Share flood intelligence information with supporting agencies.

4.4 DEVELOPMENT OF WARNING SYSTEMS

4.4.1 **Strategy:** Develop, maintain and prepare systems for the provision of flood warnings and associated warning services.

Actions:

- a. All levels of government work in partnership to develop and maintain flood warning infrastructure.
- b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9).
- c. The NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW Flood Warning Consultative Committee.
- d. Dam Owners will provide Dam Failure Warning Systems (where required) and consult NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Emergency Plans.
- e. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.
- f. NSW SES develops and maintains warning and flood information products by:
 - Utilising flood intelligence data.
 - Developing pre-written warning and flood information products.
 - Continuously reviewing warning and flood information products; and
 - Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW Flood Warning Consultative Committee; and maintain Operational Readiness.

4.5 BRIEFING, TRAINING AND EXERCISING

4.5.1 **Strategy:** Ensure NSW SES, supporting agencies, functional areas and the community are prepared and familiar with the strategies and arrangements within the Flood Emergency Sub Plan and supporting documents.

Actions:

- a. NSW SES will consult stakeholders throughout the development of plans.
- b. NSW SES will inform stakeholders of content changes after revisions.
- c. NSW SES will ensure their facilities and resources are maintained and operationally ready.
- d. NSW SES will train personnel for their expected flood operation roles; and
- e. NSW SES will regularly brief stakeholders on the exercise arrangements contained in the NSW Flood Emergency Sub Plan.

4.6 COMMUNITY RESILIENCE TO FLOODING

4.6.1 **Strategy:** NSW SES provides and maintains a flexible volunteer workforce to support community resilience.

Actions:

- a. Ensure ongoing recruitment and training of a diverse range of volunteers.
- b. Ensure pre-planning to facilitate the management of spontaneous volunteers and community members during a flood.

4.6.2 **Strategy:** NSW SES works with individuals, communities, businesses and government agencies to build flood resilience.

Actions:

- a. Work with communities to understand and manage the risks associated with floods, including providing business continuity guidance (NSW SES Business FloodSafe), family preparedness (NSW SES Home FloodSafe) and other engagement strategies.
- b. NSW SES will collate, assess and disseminate flood information to the community.
- c. Collaborate with individuals, businesses, government agencies and communities when developing flood intelligence, preparedness and response information.
- d. Plan for floods collaboratively with communities through community and stakeholder participation and engagement.

5 RESPONSE

5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

- a. On receipt of a Bureau of Meteorology (Bureau) Severe Weather Warning or Thunderstorm Warning that includes heavy rain or storm surge; or
- b. On the receipt of a Bureau Flood Watch or Flood Warning; or
- c. On receipt of warnings for flash flood; or
- d. On receipt of a dam failure alert; or
- e. When other evidence leads to an expectation of flooding.

5.2 INCIDENT MANAGEMENT ARRANGEMENTS

5.2.1 **Strategy:** Maintain effective control of flood operations across New South Wales.

Actions:

- a. The NSW SES uses the Australasian Inter-service Incident Management System (AIIMS) to manage the flood response.
- b. Control of flood response will be at the lowest effective level and may be scaled to suit the incident.

- c. The NSW SES State Duty Commander will appoint Incident Controllers and establish Incident Control Centres (see NSW SES facilities on map in Appendix A).
- d. The Incident Controller, in consultation with participating supporting emergency services and Functional Areas will determine the appropriate breakdown of an incident area into Divisions and/or Sectors in accordance with the principles of AIIMS as well as the predefined Divisions and Sectors outlined within the NSW SES Intelligence System

5.2.2 **Strategy:** Maintain Incident Control Centre(s).

Actions:

- a. NSW SES will operate Incident Control Centre(s) as required.
- b. The NSW SES Incident Control Centre(s) will:
 - Control resources from NSW SES and coordinate resources of supporting emergency services and functional areas.
 - Manage Request for Assistance (RFA) tasking and ensure they are actioned in a timely manner.
 - Undertake response planning and determine future resourcing requirements; and
 - Coordinate information flow, including warnings, public information and social media.

5.2.3 **Strategy:** Provide effective liaison between the NSW SES and supporting agencies or functional areas in accordance with Local EMPLAN.

Actions:

- a. Supporting emergency services and Functional Areas should provide Liaison Officers to NSW SES Incident Control Centre(s) and/or Emergency Operation Centres as required; and
- b. NSW SES will provide Liaison Officer(s) to Emergency Operations Centres as required.

5.2.4 **Strategy:** Coordinate resources and logistics support to ensure operational effectiveness.

Actions:

- a. The NSW SES Incident Controller will notify agencies of potential access issues between locations, for the consideration of pre-deploying of resources.
- b. The NSW SES may request resources and logistics support directly from a supporting emergency service or Functional Area.
- c. Wherever possible, supporting organisations are to provide their own logistic support in consultation with NSW SES where appropriate.
- d. The NSW SES Incident Controller will control air support operations and may utilise supporting agencies in the management of aircraft.

5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE

5.3.1 **Strategy:** Ensure flood information is effectively communicated and collected during a flood.

Actions:

- a. Information relating to the consequences of flooding, response strategies, situational awareness and operational updates will be distributed by NSW SES to supporting emergency services and Functional Areas listed under this Plan.
- b. All supporting emergency services and Functional Areas and Council will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established.
- c. The NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information; and
- d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.

5.3.2 **Strategy:** Ensure flood intelligence is incorporated into operational decision-making.

Action: The NSW SES will use flood intelligence and official forecasts and warnings, to undertake an assessment of the predicted impact of a flood and to inform operational decision-making.

5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY

5.4.1 **Strategy:** Timely and effective warnings are distributed to the community.

Actions:

- a. The Bureau issues public weather and flood warning products before and during a flood. These may include:
 - Severe Thunderstorm Warnings with reference to heavy rainfall
 - Regional Severe Thunderstorm Warnings with reference to heavy rainfall
 - Detailed Severe Thunderstorm Warnings (for Sydney / Newcastle / Wollongong) with reference to heavy rainfall,
 - Severe Weather Warnings with reference to heavy rainfall and/or storm surge,
 - Flood Watches, and
 - Flood Warnings.
- b. Dam Owners will utilise Dam Emergency Plan to provide warnings and information to NSW SES and communities (where appropriate).
- c. NSW SES Incident Controllers will issue the following NSW SES Flood Warnings aligning to the Australian Warning System:

- Advice;
 - Watch and Act; and
 - Emergency Warning.
- d. NSW SES liaises with the Bureau of Meteorology to discuss the development of flood warnings as required.
- e. NSW SES provides alerts and deliver flood information to affected communities using a combination of the following methods:
- Mobile and fixed public address systems.
 - Two-way radio.
 - Emergency Alert (SMS and voice message alerting system).
 - Telecommunications (including Auto dial systems).
 - Facsimile
 - Standard Emergency Warning Signal.
 - Doorknocking.
 - Mobile and fixed sirens.
 - Variable message signs.
 - Community notices in identified hubs.
 - Distribution through established community liaison networks, partnerships and relationships; and
 - NSW SES social media and website.
- f. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.
- g. Road closure information will be provided to the community through the following agencies/methods:
- Transport for NSW ‘Live Traffic’ website: www.livetraffic.com or ‘Transport InfoLine’: 131 500. VMS messaging on roadways may also be used to advise motorists.
- h. The Public Information and Inquiry Centre will be established by the NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.
- i. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

5.5 PROTECTION OF PROPERTY

5.5.1 **Strategy:** Coordinate the protection of property from destruction or damage arising from floods.

Action: NSW SES, supporting agencies, and community volunteers will assist the community (where resources are available, feasible and safe to do so) in:

- a. The protection of properties through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings; and
- b. The raising or moving of household furniture and commercial stock/equipment.

5.6 ROAD AND TRAFFIC CONTROL

5.6.1 **Strategy:** Coordinate the closing and re-opening of flood affected roads.

Actions:

- a. Inner West Council will coordinate the closure and reopening of council managed roads once inspections have been carried out by the relevant authority.
- b. Transport for NSW will coordinate the closure and reopening of the state road network.
- c. The NSW Police Force may close and re-open roads but will normally only do so (if the Inner West Council or Transport for NSW have not already acted and if public safety requires such action;
- d. NSW SES will assist with erecting road closure signs and barriers when time and resources permit.

5.6.2 **Strategy:** Coordinate traffic control measures in flood affected areas.

- a. The NSW SES Incident Controller may direct the imposition of traffic control measures into flood affected areas in accordance with the provisions of the *State Emergency Service Act, 1989* and the *State Emergency Rescue Management Act, 1989*.
- b. The NSW SES Incident Controller may request the Local Emergency Operations Controller provide suitable personnel to assist with traffic coordination.

5.7 PROTECTION OF ESSENTIAL SERVICES

5.7.1 **Strategy:** Minimise disruption to the community by ensuring protection of infrastructure and supply of essential energy and utility services.

Actions:

- a. Transport Services Functional Area will keep the NSW SES informed of the status of transport network infrastructure.
- b. The Energy and Utility Services Functional Area is to coordinate the assessment and restoration of essential energy and utility services (not including telecommunications).
- c. The Telecommunications Services Functional Area is to coordinate the assessment and restoration of telecommunications and the Public Safety Network
- d. The Engineering Services Functional Area is to coordinate the assessment and restoration of critical public buildings for example hospitals; and

- e. Functional Areas and Council will keep the NSW SES informed of the status of utilities and infrastructure.

5.8 EVACUATION

5.8.1 Evacuation is the NSW SES’s primary response strategy for managing the population at risk of flooding.

5.8.2 **Strategy:** Conduct planning to ensure all evacuation constraints are considered.

Actions:

- a. Evacuations will take place when there is a risk to public safety. Circumstances may include:
 - Evacuation of people when their homes or businesses are likely to flood.
 - Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access; and
 - Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable; and
 - b. The NSW SES will consider the following in evacuation decisions:
 - Duration of evacuation.
 - Characteristics of the community.
 - Numbers requiring evacuation.
 - Availability of evacuation routes and transport.
 - Time available for evacuation.
 - Evacuee management requirements; and
 - Resources and delivery of evacuation information.
 - c. NSW SES Incident Controllers, and flood planners will carefully consider the risks involved in conducting evacuations.
 - d. All evacuation decisions will be made as per the current NSW SES policies and procedures, and consistent with the NSW Evacuation Management Guidelines.
 - e. Potential Evacuation Centres are located in Local EMPLAN; and
 - f. The NSW Police Force will coordinate the provision of overall security for evacuated areas.
- 5.8.3 **Strategy:** Evacuate people pre-emptively from dangerous or potentially dangerous places and or locations created by the flood hazard to safe locations away from the hazard.
- a. NSW SES will control and coordinate the evacuation of affected communities.
 - b. The NSW SES Incident Controller will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.
 - c. The NSW SES Incident Controller will order any necessary evacuations and provide information to the community about when and how to evacuate.

- d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans.
- e. Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with the NSW SES and Welfare Services.
- f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with the NSW SES and Welfare Services, if not already closed.
- g. Caravan Park proprietors will inform the NSW SES Incident Controller when caravan park evacuations have been completed.
- h. People who are reluctant or refuse to comply with any Emergency Warning will be referred to the NSW Police Force.

5.9 EVACUEE MANAGEMENT AND WELFARE

- 5.9.1 Research and experience in flood operations shows that most evacuees go to family, friends and commercial accommodation outside the impact area.
- 5.9.2 **Strategy:** Maintain the welfare of communities and individuals affected by the impact of a flood.

Actions:

- a. NSW SES will provide initial welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as possible. In these cases, the NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required.
- b. Welfare Services Functional Area will manage evacuation centres for affected residents and travellers in accordance with the Welfare Services Functional Area Supporting Plan.
- c. Schools Administration (Government and Private) will manage the safety of students directly affected by flooding and will work with the NSW SES in the temporary closure of schools and will coordinate with NSW SES Transport and Welfare Services in the management of school evacuees.
- d. Disaster Victim Registration will be controlled and coordinated by the NSW Police Force with the assistance of NSW SES and Welfare Services Functional Area.
- e. NSW SES will provide details of all residents assisted in evacuations to the Welfare Services Functional Area as early as possible.
- f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities; and
- g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by the NSW SES and SEOCON in consultation with members of the State Emergency Management Committee.

5.9.3 **Strategy:** Coordinate available and accessible health services for flood affected communities.

Action: The provision of environmental health advice, assessment of public health risks and coordination of immediate mental health support will be provided by Health Services Functional Area.

5.9.4 **Strategy:** Coordinate maintenance of food supplies for flood affected communities.

Actions: All matters relating to the primary production, manufacturing, processing and handling of all food from primary industries to retail, inclusive of all restaurants, food services and catering businesses should be referred to the NSW Food Authority through the Agriculture and Animal Services Functional Area.

5.9.5 **Strategy:** Maintain the welfare of animals impacted by a flood.

Actions:

- a. Agriculture and Animal Services Functional Area will coordinate the welfare of livestock, pets, companion animals and wildlife including support to primary producers, animal holding establishments and community members; and
- b. Agriculture and Animal Services Functional Area role will coordinate the evacuation, emergency care of animals and assessment, humane destruction and disposal of affected animals, and supply of emergency fodder, water and aerial support where necessary.

5.10 FLOOD RESCUE

5.10.1 **Strategy:** Control and coordinate flood rescue of people and domestic animals.

Actions:

- a. NSW SES will perform flood rescue, where training and equipment is suitable and where a risk assessment has indicated that the risk to rescuers is acceptable.
- b. Flood rescue operations will be conducted in accordance with the State Rescue Board NSW State Rescue Policy which sets out the framework, governance, responsibilities and requirements for the management and conduct of flood rescue in NSW.
- c. NSW SES may request other supporting emergency services to undertake flood rescues on behalf of the NSW SES. Agencies must be authorised/accredited to undertake flood rescue operations in accordance with State Rescue Board requirements, as prescribed by NSW SES. Supporting emergency services must supply information regarding rescues performed to the NSW SES. Notification arrangements with NSW Police Force are outlined in the State Rescue Board NSW State Rescue Policy; and
- d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board NSW State Rescue Policy (and may include Large Animal Rescue of family horses and cows at a residence or property). The rescue of livestock (which includes commercial animals found on farming and breeding

enterprises) will be coordinated through Animal and Agriculture Services Functional Area.

5.11 RESUPPLY

5.11.1 **Strategy:** Coordinate resupply to towns and villages isolated by flooding to minimise disruption to the community.

Actions:

- a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.
- b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.
- c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.
- d. NSW SES will endeavour to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables.
- e. NSW SES will assist hospitals with resupply of linen and other consumables where able.
- f. NSW SES may request resupply assistance from supporting agencies.

5.12 RETURN

5.12.1 **Strategy:** Coordinate the safe return of communities to flood affected areas when the immediate danger to life and property has passed.

Actions:

- a. NSW SES Incident Controller will determine when it is safe to progressively return in consultation with the relevant Emergency Operations Controller and supporting agencies, considering the impact on the following:
 - Access and egress
 - Communications
 - Power supply
 - Gas supply
 - Infrastructure damage
 - Hazardous materials; and
 - Public health risks (including sewerage)
- b. NSW SES Incident Controller will specify the level of access to affected communities as the following:
 - Not suitable for access.
 - Limited access by emergency services and response agencies.
 - Limited access by residents and/or business operators; or

- Full access
- c. NSW SES Incident Controller will issue an Advice Warning advising 'Reduced Threat: Return with Caution' message when the immediate danger to life and property has passed for areas assessed as safe; and
- d. The NSW SES will facilitate the return of evacuees to their homes.

5.13 END OF RESPONSE OPERATIONS

5.13.1 **Strategy:** Conclude response operations.

Actions:

- a. Response operations will conclude when:
 - The physical impact of the flood has ceased.
 - All requests for assistance related to the flood have been completed;
 - The need for warning and evacuation no longer exists.
 - There is no further likelihood of rescuing people.
 - Resupply is no longer required (resupply operations may occur concurrently with the recovery phase).
 - Response to fire and hazardous material incidents have concluded (not including subsequent clean-up of contaminated sites); and
 - All affected areas have had an 'Reduced Threat: Return with Caution' issued.

5.14 POST IMPACT ACTIONS

5.14.1 **Strategy:** Learnings from the event are used to inform recovery and future events.

Actions:

- a. NSW SES will continue to engage with communities after significant floods through convening one or more community forums, workshops or other opportunities to provide communities a chance to provide feedback, address any concerns and provide input into the recovery process. These will typically include other agencies such as the Bureau of Meteorology, Welfare Services and Inner West Council representatives.
- b. NSW SES will ensure that damage assessment information is provided to the relevant Emergency Operations Controller to inform the recovery impact assessment.
- c. NSW SES will conduct After Action Reviews, wherever possible, within three weeks of the end of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.
- d. NSW SES will undertake/coordinate a comprehensive review of intelligence and plans following significant flood events.

5.14.2 **Strategy:** Participate in post flood data collection analysis.

Actions: NSW SES will work with the NSW Department of Planning and Environment (DPE) and Inner West Council Council(s) on post flood data collection analysis including review of flood intelligence where necessary.

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

6.1.1 Recovery is the process of returning an affected community to its proper level of functioning after an emergency. It will generally commence simultaneously with the Response phase.

6.1.2 Recovery operations will be initiated and conducted as outlined in the NSW State EMPLAN and as further detailed in the NSW Recovery Supporting Plan.

6.2 NSW SES RECOVERY ROLE

6.2.1 **Strategy:** NSW SES will support recovery operations and established Recovery Committees.

6.2.2 **Actions:**

- a. NSW SES will provide representation to Recovery Committees as required and may have an ongoing role in the Recovery phase.
- b. NSW SES roles on Recovery Committees may include providing information about any continuing response, guidance on mitigation strategies and general advice and assistance to the committee as a subject matter specialist and or expert.
- c. NSW SES will provide information to NSW Reconstruction Authority to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements.
- d. The NSW SES, in conjunction with a Recovery Committee, will provide a service to support the information needs of a community immediately following a flood; and
- e. NSW SES and where required supporting agencies will assist with clean-up operations after floods, where possible when resources and personnel permit.

7 ABBREVIATIONS

For a full list of abbreviations refer to the NSW State Flood Plan – Abbreviations

8 GLOSSARY

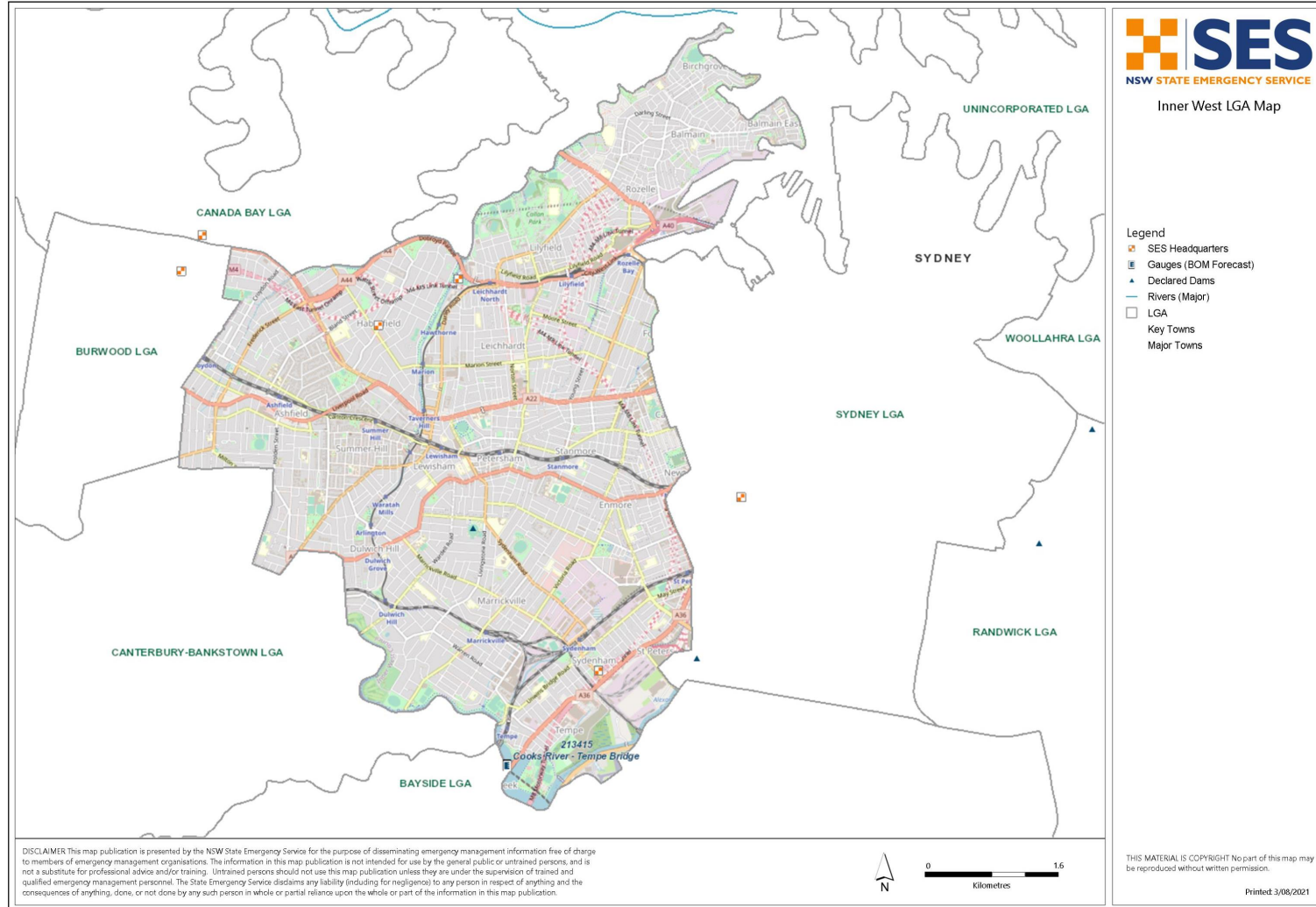
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

Readers should refer to EMPLAN Annex 9 – Definitions.

Refer to the NSW State Flood Plan for a complete glossary of terminology used throughout this plan and within NSW SES Flood Plans.

For a full list of definitions refer to the Supporting Document - State Flood Plan Glossary
<https://www.ses.nsw.gov.au/media/2650/glossary.pdf>

Appendix A – Map of Inner West Council Area



Appendix B – Roles and Responsibilities

| AGENCY | RESPONSIBILITIES |
|-----------------------------|--|
| NSW State Emergency Service | The NSW SES is the designated Combat Agency for floods, storms and tsunami and controls response operations. NSW SES roles and responsibilities in relation to floods are detailed within the New South Wales State Flood Plan . |

| AGENCY | RESPONSIBILITIES |
|---|--|
| Agriculture and Animal Services Functional Area | <p>The roles and responsibilities for Agriculture and Animal Services are outlined in the Agriculture and Animal Services Supporting Plan</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> • Disseminate briefing information to participating agriculture and animal services and related stakeholders. • When activated the Agriculture and Animal Services will coordinate the provision of required services which may include: <ul style="list-style-type: none"> – Coordinate response for animal welfare including pets, livestock and wildlife. – Supply and delivery of emergency fodder. – Emergency water replacement in certain circumstances; and – Financial, welfare and damage assessment assistance to flood affected primary producers. • Support recovery arrangements including: <ul style="list-style-type: none"> – Administer transport subsidies to primary producers. |
| Australian Government Bureau of Meteorology | The roles and responsibilities of the Australian Government Bureau of Meteorology are outlined in the NSW State Flood Plan. |
| Inner West Council | <p>Preparedness</p> <ul style="list-style-type: none"> • Establish and maintain floodplain and coastal risk management committees and ensure that key agencies are represented. • Develop and implement floodplain risk management plans in accordance with the NSW Government’s Flood Prone Land Policy and the Floodplain Development Manual. • Provide levee studies, flood studies and floodplain management studies to the NSW SES. • Maintain Dam Safety Emergency Plans for the Inner West Council dams and provide copies to the NSW SES. |

| AGENCY | RESPONSIBILITIES |
|--------|---|
| | <ul style="list-style-type: none"> • Provide information on the consequences of dam failure to the NSW SES for incorporation into planning and flood intelligence. • Coordinate the development of warning services for catchments prone to flash flooding (small catchments), where appropriate; • Maintain council-owned flood warning networks and flood mitigation works. • Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub-Plans. • Maintain a plant and equipment resource list for the council area. • Contribute to community engagement activities. <p>Response</p> <ul style="list-style-type: none"> • Subject to the availability of council resources, assist the NSW SES with flood operations including: <ul style="list-style-type: none"> – Traffic management on council managed roads. – Provision of assistance to the NSW SES (plant, equipment and personnel where able and requested). – Property protection tasks including sandbagging. – Assist with the removal of caravans from caravan parks – Warning and/or evacuation of residents and other people in flood liable areas. – Provision of back-up radio communications – Resupply of isolated properties; and – Technical advice on the impacts of flooding. – Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise the NSW SES, the NSW Police Force and people who contact the council for road information. – Assist the NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flood mitigation works including critical structures such as detention basins and levees and advise the NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • Provide advice to the NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply. |

| AGENCY | RESPONSIBILITIES |
|--|---|
| | <ul style="list-style-type: none"> • Advise the Environmental Protection Authority of any sewerage overflow caused by flooding. • Work with the NSW SES and DPE to collect flood related data during and after flood events. <p>Recovery</p> <ul style="list-style-type: none"> • Provide for the management of health hazards associated with flooding including removing debris and waste. • Ensure premises are fit and safe for reoccupation and assess any need for demolition. • Provide services, assistance and advice to State Government in accordance with the State Recovery Plan. |
| Childcare Centres and Preschools | <ul style="list-style-type: none"> • When notified of possible flooding or isolation, childcare centres and preschools should: <ul style="list-style-type: none"> – Liaise with the NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures; and – Assist with coordinating the evacuation of preschools and childcare centres. |
| Dams Safety NSW | The roles and responsibilities of the Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the NSW State Flood Plan. |
| Department of Defence | Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448). |
| Department of Industry | The roles and responsibilities for the Department of Industry (Crown Lands and Water Division) are outlined in the NSW State Flood Plan. |
| Energy and Utilities Services Functional Area | <p>The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN).</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> • Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available. • Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to: <ul style="list-style-type: none"> – Provide advice to the NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection. – Advise the NSW SES of any hazards from utility services during flooding and coastal erosion/inundation. |

| AGENCY | RESPONSIBILITIES |
|--|---|
| | <ul style="list-style-type: none"> – Advise the public with regard to electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply. – Clear or make safe any hazard caused by power lines or electricity distribution equipment. – Reconnect customers’ electrical/ gas/ water/wastewater installations, when certified safe to do so and as conditions allow. – Assist the NSW SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence. |
| Engineering Services Functional Area | The roles and responsibilities for Engineering Services are outlined in the Engineering Services Supporting Plan . |
| Environmental Services Functional Area | The roles and responsibilities for Environmental Services are outlined in the Environmental Services (ENVIROPLAN) Supporting Plan . |
| Floodplain Management Australia | The roles and responsibilities of Floodplain Management Australia are outlined in the New South Wales State Flood Plan . |
| Fire and Rescue NSW (as per NSW State Flood Plan) | <p>Preparedness</p> <ul style="list-style-type: none"> • Identify and notify the NSW SES of any locations at risk of fire (within Fire Districts) or hazardous materials that pose a significant threat to surrounding populations due to the impact of a flood for incorporation into NSW SES flood intelligence and planning; and <p>Response</p> <ul style="list-style-type: none"> • Meet the agreed arrangements described in the NSW SES and Fire and Rescue NSW Mutual Aid Agreement. • Provide Incident Management personnel and Liaison Officers to the NSW SES where required. • When requested by NSW SES, provide support to the NSW SES in response to flood emergencies across the State. • Assist the NSW SES with the warning and/or evacuation of at-risk communities. • Assist the NSW SES with the monitoring/reconnaissance of flood prone areas. • Provision of Land Based and In Water Flood Rescue Operators as required. • Provision of appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Conduct Hazmat operations including asbestos risks, arising from flood emergencies in coordination with the SES Incident Controller. • Decontamination of Flood Rescue Operators as required. |

| AGENCY | RESPONSIBILITIES |
|--|---|
| | <ul style="list-style-type: none"> • Assist the NSW SES with the resupply of isolated communities and/or properties. • Assist the NSW SES with property protection tasks including sandbagging. • Provide resources for pumping flood water out of buildings and from low-lying areas. • Assist with clean-up operations, including the hosing out of flood affected properties. • Provide trained staff to support a joint intelligence unit, if established by NSW SES, including Remotely Piloted Aircraft System (RPAS) pilots to assist with field observations. • Assist the NSW SES to undertake damage assessment including structural collapse risks. • Coordinate the pre-deployment of fire resources to communities within NSW Fire Districts if access is expected to be lost, in consultation with the NSW SES; and • Coordinate the deployment of the FRNSW High trans Pump to locations in consultation with NSW SES. <p>Recovery</p> <ul style="list-style-type: none"> • Participate in After Action Reviews as required. |
| Health Services Functional Area | <p>The roles and responsibilities for Health Services Functional Area are outlined in the Health Services (HEALTHPLAN) Supporting Plan.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> • Ensure that appropriate business continuity plans are developed for essential health infrastructure and are activated during floods. |
| Local Emergency Operations Controller (LEOCON) | <ul style="list-style-type: none"> • Monitor flood operations. • If requested, coordinate support for the NSW SES Incident Controller. |
| Local Emergency Management Officer (LEMO) | <ul style="list-style-type: none"> • If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations. |
| Manly Hydraulics Laboratory (MHL) | <p>The roles and responsibilities of Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.</p> |
| Marine Rescue NSW (as per NSW State Flood Plan) | <p>Response</p> <ul style="list-style-type: none"> • When requested by NSW SES, assist in flood operations when training and equipment are available and suitable including assistance with: <ul style="list-style-type: none"> – Warning and/or evacuation of at-risk communities. – Providing communications personnel. |

| AGENCY | RESPONSIBILITIES |
|---|---|
| | <ul style="list-style-type: none"> – Property protection tasks including sandbagging; and – Flood rescue operations. |
| NSW Ambulance | The roles and responsibilities for NSW Ambulance are outlined in the Health Services (HEALTHPLAN) Supporting Plan . |
| NSW Department of Education | <p>Preparedness</p> <ul style="list-style-type: none"> • Liaise with the NSW SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures (or where required, for students to be moved to a suitable location until normal school closing time); • Ensure that evacuation plans for flood liable schools have arrangements for flooding; and • Assist NSW SES with community engagement and capacity building programs. <p>Response</p> <ul style="list-style-type: none"> • Assist with the coordination of the evacuation of schools and the immediate welfare of students until returned to the appropriate carer. • Pass information to school bus drivers/companies and/or school principals on expected or actual impacts of flooding; and • Provide space in schools for evacuation centres where necessary. |
| NSW Department of Industry, Planning and Environment (as per NSW State Flood Plan) | <p>Prevention</p> <ul style="list-style-type: none"> • Oversee the delivery of the NSW Flood Prone Land Policy including financial support through the Floodplain Management Program. Provide technical advice to councils and state agencies including assistance with the identification of risks, the preparation and implementation of Floodplain Risk Management Plans and associated mitigation and management actions and understanding flood mitigation schemes including levees. • Work with the NSW SES on the Flood Data Access Program to improve the provision of flood information through the NSW Flood Data Portal. <p>Preparedness</p> <ul style="list-style-type: none"> • Assist the NSW SES in the exercising of Flood Sub Plans. • Management of the state government’s water level gauges for the flood warning network in tidal areas in NSW (Manly Hydraulic Laboratory operates this system as a service provider on behalf of DPE.). • Advise NSW SES about conditions which may lead to coastal inundation or retarded river drainage near the coast. |

| AGENCY | RESPONSIBILITIES |
|---|--|
| | <p>Response</p> <ul style="list-style-type: none"> • Provide related advice on flood risks to the NSW SES on request; and • Work with the relevant local council and NSW SES to collect flood related data during and after flood events. <p>Recovery</p> <p>Support recovery committees as required.</p> |
| NSW Food Authority | The roles and responsibilities for NSW Food Authority are outlined in the Food Industry Emergency Sub Plan. |
| NSW National Parks and Wildlife Services (as per NSW State Flood Plan) | <p>Preparedness</p> <ul style="list-style-type: none"> • Assist the NSW SES with identification of road infrastructure in National Parks at risk of flooding. <p>Response</p> <ul style="list-style-type: none"> • Close and reopen National Parks and Wildlife Service roads when affected by flood waters and advise the NSW SES of its status. • Facilitate the safe reliable access by emergency resources on National Parks and Wildlife Service managed roads. • Assist the NSW SES with the communication of warnings and information provision to the public through variable message signs and other appropriate means; and <p>Close and direct people to leave camping grounds at risk of flooding in National Parks and Wildlife Service managed areas.</p> |
| NSW Police Force (as per NSW State Flood Plan) | <p>Preparedness</p> <ul style="list-style-type: none"> • Participate in NSW SES briefings, training and exercises as required. <p>Response</p> <ul style="list-style-type: none"> • Provide a Liaison Officer to the NSW SES Operation Centre if required. • When requested by NSW SES, in flood operations when training and equipment are available and suitable. <ul style="list-style-type: none"> – Assist with warning and/or evacuation of at-risk communities. – Assist with monitoring / reconnaissance of flood prone areas. – Assist with flood rescue operations. • Conduct road and traffic control operations in conjunction with council and/or Transport NSW. • Coordinate searches for missing people within flood affected areas. • Coordinate security of supply lines evacuated and damaged areas. • Manage Disaster Victim Registration; and |

| AGENCY | RESPONSIBILITIES |
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| | <ul style="list-style-type: none"> • Operate the Public Information and Inquiry Centre, if requested or otherwise needed during flood events. <p>Recovery</p> <ul style="list-style-type: none"> • Participate in After Action Reviews as required. |
| NSW Rural Fire Service (as per NSW State Flood Plan) | <p>Preparedness</p> <ul style="list-style-type: none"> • Participate in NSW SES briefings, training and exercises as required; and • Meet the agreed arrangements described in the NSW SES/NSW RFS Memorandum of Understanding. <p>Response</p> <ul style="list-style-type: none"> • Provide a Liaison Officer to the NSW SES Operation Centre or Emergency Operations Centre as required. • Provide Incident Management Personnel when requested. • Provide trained staff to support a joint intelligence unit, if established by NSW SES. • Provide aviation support, management and advice as requested through the State Air Desk. • Provide speciality aircraft and appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Assist with Damage Assessments; and • Provide Strike Teams during flood operations when requested by NSW SES. This may include assistance with: <ul style="list-style-type: none"> – Warning and/or evacuation of at-risk communities. – Monitoring / reconnaissance of flood prone areas. – Property protection tasks including sandbagging. – Pumping flood water out of buildings and from low-lying areas. – Back-up radio communications. – Clean-up operations, including the hosing out of flood affected properties. – Deploying resources to communities within Rural Fire Districts where access is expected to be lost in consultation with the NSW SES. – The resupply of isolated communities and/or properties; and – Decontamination of NSW SES Flood Rescue Operators as required. <p>Recovery</p> <ul style="list-style-type: none"> • Participate in After Action Reviews as required. |

| AGENCY | RESPONSIBILITIES |
|---|---|
| <p>NSW Volunteer Rescue Association (as per NSW State Flood Plan)</p> | <p>Response</p> <ul style="list-style-type: none"> • Where requested by the NSW SES, assist in flood operations when training and equipment are available and suitable, including assistance with: <ul style="list-style-type: none"> – The warning and/or evacuation of at-risk communities. – Flood rescue operations. – Monitoring / reconnaissance of flood prone areas. – Resupply of isolated communities and/or properties; and – Property protection tasks including sandbagging. |
| <p>Owners of Declared Dams within or upstream of the LGA (as per NSW State Flood Plan)</p> | <p>Preparedness</p> <ul style="list-style-type: none"> • Assist the NSW SES with community engagement programs. • Provide NSW SES with information necessary for response planning and warning distribution. • Assist the NSW SES identify correlations between water level and/or discharges at the dam for use in flood response operations (warning and evacuation); and • Consult with the NSW SES State Headquarters in the development of Dam Emergency Plans, including the development of dam failure alerts, in accordance with the Dam Safety NSW Guidelines. <p>Response</p> <ul style="list-style-type: none"> • Where water level monitoring or other instrumentation allows, provide NSW SES with flood advices as per pre-agreed thresholds for use in downstream flood response operations (warnings). • Notify NSW SES of potential or actual dam failures in accordance with the Dam Emergency Plan and Dam Safety NSW Guidelines. • Close at-risk camping grounds / recreational areas within their managed areas. • In the case of declared dams whose risks are intolerable, assist the NSW SES in planning to warn and evacuate people at risk of dam failure and maintain and operate any special Dam Failure Warning Systems and/or automatic telemetered monitoring devices to assist with early detection of incidents which are installed until such time that the risks have been lowered to an acceptable level; and <p>Owners of gated dams:</p> <ul style="list-style-type: none"> • Provide all available information to the Bureau and the NSW SES on storage levels and actual and prospective water releases and their likely impacts on downstream river levels. |

| AGENCY | RESPONSIBILITIES |
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| | <ul style="list-style-type: none"> Advise the downstream community of prospective and actual water releases, except in those circumstances where the Bureau would issue flood warnings; and Where possible actively work with NSW SES and the Bureau to reduce the impacts of flooding on communities through management of water releases within identified safe parameters and within statutory licencing provisions under the <i>Water Management Act 2000</i> and <i>Water NSW Act 2014</i>. |
| Public Information Services Functional Area | <p>The roles and responsibilities for Public Information Services are outlined in the Public Information Services Supporting Plan.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> On receipt of advice from NSW SES of any weather event likely to result in significant multi agency operational activity, the Public Information Functional Area Coordinator PIFAC determines if a daily multi-agency teleconference is required to ensure that the information needs of each agency are being met and to address any issues. These teleconferences continue through the response phase into the recovery phase. |
| NSW Reconstruction Authority | The roles and responsibilities of NSW Reconstruction Authority are outlined in the NSW State Flood Plan . |
| SEOCON/SEOC | The roles and responsibilities of the SEOCON/SEOC are outlined in the New South Wales State Flood Plan . |
| Surf Life Saving NSW (as per NSW State Flood Plan) | <p>Preparedness</p> <ul style="list-style-type: none"> Contribute to NSW SES reviews into plans, policies and procedures as required; and Participate in NSW SES briefings, training and exercises as required. <p>Response</p> <ul style="list-style-type: none"> Assist the NSW SES with the warning and/or evacuation of at-risk communities. Provide accommodation in Surf Life Saving facilities for evacuation centres where required; and Assist the NSW SES with flood rescue operations, where training and equipment are suitable. |
| Telecommunications Services Functional Area | The roles and responsibilities for Telecommunications Services are outlined in the Telecommunications Services (TELCOPLAN) Supporting Plan . |
| Transport for NSW | <ul style="list-style-type: none"> Transport for NSW coordinates information on road conditions for emergency services access. |

| AGENCY | RESPONSIBILITIES |
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| | <ul style="list-style-type: none"> • Transport for NSW coordinates the management of the road network across all modes of transport. • Transport for NSW in conjunction will assist the NSW SES with the evacuation of at-risk communities by maintaining access and egress routes. • Assist the NSW SES with the communication of flood warnings and information provision to the public through Live Traffic and Social Media according to the VMS protocols and procedures. • Assist the NSW SES with identification of road infrastructure at risk of flooding. |
| Transport Services Functional Area | <p>The roles and responsibilities for Transport Services are outlined in the Transport Services Supporting Plan.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> • Participate in risk management studies. • Assist the NSW SES to identify transport infrastructure at risk of flood damage for incorporation into planning and intelligence; and • Coordinate the provision of traffic and transport operations as consistent with the roles of Transport organisations. |
| Water NSW | <p>The roles and responsibilities for Water NSW are outlined in the New South Wales State Flood Plan.</p> |
| Welfare Services Functional Area | <p>The roles and responsibilities for Welfare Services are outlined in the Welfare Services Functional Area Supporting Plan.</p> |

Appendix C – Community Specific Roles and Responsibilities (examples only)

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| <p>Community Members</p> | <p>Preparedness</p> <ul style="list-style-type: none"> • Understand the potential risk and impact of flooding. • Prepare homes and property to reduce the impact of flooding. • Understand warnings and other triggers for action and the safest actions to take in a flood. • Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours. • Have an emergency kit; and • Be involved in local emergency planning processes. <p>Recovery</p> <ul style="list-style-type: none"> • Assist with community clean-up if required and able to do so. Participate in After Action Reviews if required. |
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