



Water Study Project

Gloucester and Avon Rivers Flood Study

Frequently Asked Questions – June 2015

The Gloucester and Avon Rivers Flood Study was prepared over a period of 18 months in accordance with the NSW Floodplain Development Manual and the State Flood Prone Land Policy by consultants BMT WBM Pty Ltd, based in Newcastle NSW.

The Flood Study was undertaken as part of the Gloucester Water Study Project – a suite of independent reports examining water management issues in the Gloucester Region that was established through the signing of a Cooperation Agreement with AGL Energy in September 2013.

What is a Flood Study?

A Flood Study is a comprehensive description of flood behaviour in a certain area. It involves developing computer models based on historical flood events to describe the extent, velocity and levels of floodwaters for a range of 'design' flood events of different severities, from a 1 in 5 year flood up to the worst case scenario or Probable Maximum Flood (PMF). A Flood Study does not look at ways to prevent or control flood damages e.g. building levees, raising houses built on floodplains etc. It does also not consider local overland flows during wet weather events, where the stormwater network reaches its capacity and causes localised inundation (i.e. storm surge).

What areas are included in the Study?

The Flood Study examines Flood Risk in the Gloucester, Avon and Barrington River catchments. The study area extends from just downstream of the confluence of the Barrington River and the Gloucester River (before the intersection of the Bowman River) to Rocky Crossing on the Barrington



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River, up to Higgins Crossing (Barrington West Road) on the Gloucester River and extending into the Upper Avon catchment to the State Forest.

Land Use Planning

What is flood prone land?

Flood prone land (or flood liable land) is defined as all land that is susceptible to flooding, which is the equivalent of the Probable Maximum Flood (PMF) extent. While the likelihood of a PMF flood is very rare, this definition is used in the NSW Floodplain Development Manual and is therefore applied across the State for floodplain risk management purposes.

What is the Flood Planning Level?

The Flood Planning Level is the level below which development controls are currently applied for flooding. This is currently defined as the 1 in 100 year flood, with an additional 0.5 metres of freeboard. All land that falls within this level is known as the Flood Planning Area. This is described in section 6.1 of the Gloucester Local Environmental Plan (LEP). Any property that falls within the Flood Planning Area is noted as being subject to flooding on their Planning (Section 149) Certificate. This does not mean that development is prohibited in this area.

Will council change the Flood Planning Level once the Flood Study is adopted?

As the 1 in 100 year Flood (or 1% Annual Exceedance Probability Flood) has not significantly changed as a result of the Flood Study, the Flood Planning Area will also not significantly change, (although there are minor variations in some areas). However, as the area that has been mapped for



Water Study Project

the Flood Study has been extended, there will be properties that will now be in the Flood Planning Area that were not previously.

Will there be any changes to flood prone land as a result of the Study?

A key recommendation from the Flood Study is that Council consider additional planning controls on flood prone land outside of the Flood Planning Area for certain types of future development.

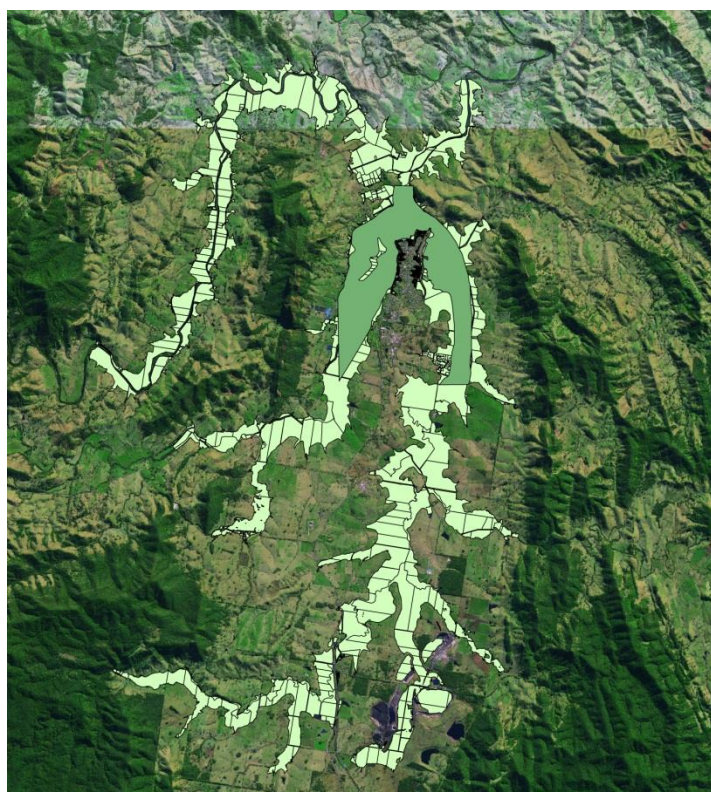
Floods larger than the 1% (1 in 100 year) flood can occur and it is important that these floods are also considered in planning. The large difference in level between the 1% flood and the PMF - almost 9 metres in some areas - means that there is a significant risk to life and property for large floods which must be considered. Certain type of development such as aged care facilities and evacuation centres need to consider risk from floods up to the PMF.

The structural integrity of building must also be able to withstand these types of flood events if people are going to shelter in their homes during a flood if evacuation routes are cut.

Flood prone land is a valuable resource in the Gloucester Shire and unnecessarily strict development controls could potentially have negative economic and social impacts. Council is not attempting to prohibit future building on flood prone land, but ensure there is an acceptable balance between flood risk and sustainable development in the Region.

If Council adopts the Flood Study then proposed amendments to the Local Environmental Plan - including those relating to floodplain risk management – will go through a consultation process prior to being submitted to the Department of Planning and Environment.

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Comparison of existing Flood Planning Area and Flood liable land defined in the new Flood study

How many more properties fall within the Flood Planning Area as a result of the Study?

A total of 1299 lots fall within the new Flood Planning Area, compared to the 304 lots currently within the Flood Planning Area. This is a result of the extended study area of the Flood Study.

How will I know if my property is now considered to be in the Flood Planning Area?

A Planning (Section 149) Certificate provides information known to Council about a property. This includes whether a property is within a Flood Planning Area. A Section 149 Certificate can be provided to a property owner up on application (fees apply). They are also required when a property is sold. Council's flood mapping includes cadastral boundaries so that residents can identify if their property falls within the Flood Planning Area or is considered flood prone.



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How will the Flood Planning Level and flood prone land be applied to new development in comparison to existing development?

New development within the Flood Planning Area is already subject to existing development controls as described in Section 6.1 of the LEP and the Gloucester Shire Council Development Control Plan (DCP). If amendments to the LEP are made to incorporate additional development controls on flood prone land outside of the Flood Planning Area then Council may consider evacuation planning for future residential development and high density at risk facilities such as aged care facilities, child care centres, hospitals etc.

Mining and Infrastructure

Were the existing and proposed mining developments (coal and coal seam gas) taken into consideration as part of the modelling? Is there an impact downstream as a result of coal mines during a flood event?

Yes. The Stratford mine Extension Project, Rocky Hill mine and AGL Waukivory Pilot project, as described in the relevant Environmental Impact Statements (EIS) and Review of Environmental Factors (REF) were included as part of the model sensitivity testing to determine potential high level flood impacts.

The Stratford Mine and Extension Project has little available information on flooding impacts, however is outside of the floodplain and so would not expect to have a significant impact on the modelled watercourses. A detailed Flood Study has been undertaken for the Rocky Hill Mine and the Waukivory Pilot Project. An overestimation of flood events has been modelled for these projects, meaning that flood levels are likely to be lower than as described in the EIS. The flood barriers



Water Study Project

proposed in the Rocky Hill EIS when incorporated into the modelling show the same outcome as reported in the EIS. The sound barriers on the floodplain associated with the Waukivory Pilot were also found to be as described in the REF for the Waukivory Pilot Project.

Will Council consider Flood proofing e.g. a levee now that the Flood Study is finished?

No. While the Flood Study provides a comprehensive description of flood behaviour, it does not consider flood mitigation strategies. Flood management measures were assessed as part of the previous floodplain risk management study completed in 2004 however. Improved flood awareness through a public information program and an improved flood warning system were the only risk management measures that were considered viable at the time. A levee was assessed to have a poor economic return and could potentially make flooding in the CDB worse by trapping local storm runoff.

Insurance

Will home and building insurance premiums be affected by the new Flood Study?

Possibly. Insurers use multiple sources of information to determine flood risk for insurance purposes, including Council flood mapping, claims history, historical floods and terrain data to determine premiums. There is the possibility that some properties that are now designated as flood liable from revised flood mapping may not currently be considered flood liable by the Insurance Council of Australia, resulting in higher premiums, however as defined flood liable land closely matches the floodplain terrain in the Gloucester Region there are unlikely to be major changes. It is important to note that insurance premiums are not calculated based solely on the Flood Planning Area, but on



Water Study Project

increasing levels of risk. This means that a property that falls within the Flood Planning Area that is subject to inundation from a 1 in 20 year flood will not have the same insurance premium as a property that falls within the Flood Planning Area that is subject to inundation from a 1 in 100 year flood.

Is stormwater considered as part of the Study when looking at flooding impacts to properties?

Local overland flow, or stormwater, can cause significant damage during a wet weather event. Local runoff that would normally be drained by the stormwater network reaches capacity and overflows, often inundating yards, sheds and sometimes houses.

This type of inundation, while causing flooding, is not considered as part of this Flood Study. Since 2014, all home building, home contents, small business and strata insurance policies have adopted a common definition of “flood”:

“The covering of normally dry land by water that has escaped or been released from the normal confines of any lake, or any river, creek or other natural watercourse, whether or not altered or modified; or any reservoir, canal, or dam.”

A Local Overland Flow Study considers flood risk as a result of stormwater. This requires additional modelling inputs that Council does not have the capacity to undertake at this point in time.

Consultation

What community consultation was undertaken as part of the Study?

- There have been extensive attempts by Council to consult with the Community throughout the preparation of the Flood Study:



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- Three community representatives were selected for the Floodplain Risk Management Committee after advertising in the Gloucester Advocate and have been actively involved in the development of the project.
- A Community Information Brochure and Questionnaire was sent via letter box drop to all residents in the Barrington, Gloucester and Stratford areas (approximately 3500 surveys) during the data collection stage.
- The draft report was on display for three weeks during November 2014, with a media release and display at the Gloucester Library
- A community information session was held during the public exhibition period, with individual invites sent to focus groups and survey respondents.
- Reports on the Flood Study have been given to the Gloucester Shire Council ordinary Council meetings
- Dedicated section of the Gloucester Water Study Project website for the Flood Study

There are significant local rainfall records, flood photos, flood markers and knowledge of historical floods in the Gloucester District. How was this used as part of the Study?

In July 2014, a Community Information Brochure and Questionnaire was sent via letter box drop to all properties in the Barrington, Gloucester and Stratford areas during the data collection stage of the project. The survey requested anecdotal information from residents that had experienced previous floods in the region, asking for their descriptions of floods, rainfall records, flood levels and photos and videos of floods. This information was requested to assist with the calibration of the models used to derive the design flood levels described in the report. Of the approximately 3000 surveys that were sent, 93 people responded.



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Historical photos provided from the Gloucester and District historical Society were also incorporated into the report.

What is the study about?

The main objective of the study is to characterise the flooding behaviour in the catchment describing in detail the potential flood inundation extents, peak water levels, depths and velocities across the floodplain for a range of flood magnitudes.

Detailed computer models are developed specifically for the catchment to simulate flood behaviour. Historical flood information such as rainfall records, peak water levels, flooded property details etc, are used to ensure the computer models are representative of the real catchment behaviour.

Flood maps across the catchment will be produced using the model results which will show the predicted extent of flooding.

The flood study results will be used to provide more effective flood planning in the catchment and will assist Councils in:

- Setting appropriate levels for future development control;
- Identifying potential works to reduce existing flooding; and
- Improving flood emergency response and recovery.



This project has been implemented through the Gloucester Water Study Project.

Want more information?

For further information about the Gloucester and Avon Rivers Flood Study, or to provide any information you feel is relevant to the study, please contact:

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We need your help!

Your information about previous flooding, including photographs and video, is highly valuable in understanding flooding behaviour and potential flood risk to residents.

You can help us by passing on information about flooding you may have experienced by completing the questionnaire enclosed with this brochure.

Please take a minute to fill in the questionnaire and return with any other information you feel relevant by 25th July 2014.

Gloucester and Avon Rivers Flood Study Community Information Brochure



Danden Street, June 2011 Flood Event



QUESTION 2

How long have you lived and/or worked in the area?

At current address: Years Months

In the general area: Years Months

QUESTION 3

Have you been affected by flooding in the past?

☐ Yes ☐ No

If 'yes', how have you been affected?

☐ Traffic was disrupted (please provide a description below if possible)

☐ My back/front yard was flooded (please provide a description below if possible)

☐ My house/business and its contents were flooded (please provide a description below if possible)

☐ Sewer or water was turned off at my property (please provide a description below if possible)

☐ Other (please provide a description below if possible)

Description:

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QUESTION 4

Can you provide specific details of how high floodwaters reached?

☐ Yes ☐ No

If 'yes', please give as much detail as possible (e.g., location, dates, times, description of water movement, depth of water, flood mark location, high water mark on building, level on flood depth indicator).

QUESTION 5

What do you think may have been the main source/cause of the flooding (e.g., creek banks overtopping, blockage of bridges)?

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QUESTION 6

Did you keep any rainfall records during any past storm events, or do you know someone locally that does?

☐ Yes ☐ No

If 'yes', can you please include a copy of the records or provide a description of the records below?

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QUESTION 7

Are you concerned that your property could be flooded in the future?

☐ Yes ☐ No

If 'yes', what makes you concerned?

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QUESTION 8

Do you have any other comments or information that you think would be useful for this investigation?

How were the local SES involved in the preparation of the Study?

The State Emergency Service have been involved in the preparation of the Flood Study through active participation in the Floodplain Risk Management Committee, including development of the project brief and provision of flood levels from recent flood events. This has ensured that the Flood Study provides the SES with relevant data that is used during a flood event for emergency response purposes. The Flood Study includes a summary assessment of the flood warning system in Gloucester, flood depths for major road inundation and a Classification of Communities, that helps the SES plan and implement flood response strategies.

How will the information derived from the Flood Study be made available to the Community?

The final report and flood mapping compendium is available online on the Gloucester Water Study Project website and is free to download. Hard copies of the report can be provided to residents on

Water Study Project

request. Once the report is adopted by Council and changes to the Local Environmental Plan are made to incorporate the revised flood mapping, the Flood Planning Area map and Flood Liable Land map will be available to view online on the NSW Legislation website, and the NSW Planning Portal website, which is an interactive map that allows users to search by property address.

