



# Flooding in the Hawkesbury Local Government Area

## Why does flooding occur?

Flooding occurs when the runoff generated by rainfall exceeds the capacity of the drainage system into which the runoff is flowing. The drainage system can be natural or artificial and includes streams, rivers, estuaries, lakes, dams, open or piped drainage channels.

Flood causing storm events in the Hawkesbury LGA are typically caused by:

- thunderstorms, affecting the smaller creeks and urban catchments, resulting in flood events rising in minutes to hours with a similar duration of inundation, or
- “east coast lows” affecting coastal rivers resulting in floods rising in hours and lasting hours or days

The magnitude of floods can vary from small, relatively common discharges up to the extremely rare probable maximum flood.<sup>i</sup>

## What are the different types of flooding?

There are two main types of flooding: mainstream flooding and local overland flooding.

- Mainstream flooding is inundation of normally dry land when water overflows the natural or artificial bank of a stream, river, estuary, lake or dam.
- Overland flooding is inundation of land as a result of local runoff. Both types of flooding can be “flash flooding” which may be sudden and unexpected, often caused by sudden local or nearby heavy rainfall<sup>ii</sup>. Council currently relies on mainstream flooding data to determine whether or not land or property is flood liable.

## How are flood heights recorded?

Floods heights are recorded with respect to Australian Height Datum (AHD). AHD is a vertical distance measured above a specific point located in Sydney. AHD is taken from mean sea level height. Because of a river or creek’s natural gradient and the varying levels of its downstream flowpath, the AHD height of peak floodwaters for the same flood event will vary throughout the catchment.

## What is the highest flood ever recorded in the Hawkesbury area?

The highest flood ever recorded was in June 1867 where a peak of 19.7m AHD at Windsor was reached. The probability of this flood occurring again is approximately 1 in 280 in any one year<sup>iii</sup>.

Only floods of more than 6.4m AHD at Windsor are recorded. The last flood to exceed this level was in February 1992 where a peak of 11m at Windsor was recorded. However a past flood does not predict the location or height of future floods. Of more importance is the future probability of flood waters inundating particular land in any given year and the expected height of such floods events.

## What does 1 in 100 year flood event mean?

The 1 in 100 year flood event level is a probability measure which means that there is a 1 in 100 or 1% chance in any one year of a flood occurring at that level. It does not mean that the land will flood only once every 100 years. On the contrary, there may be a number of 1 in 100 year floods in the same year. At Windsor the 1 in 100 year flood event level is 17.3m AHD. At North Richmond the 1 in 100 year flood event level is 17.5m AHD.

## What does the PMF event mean?

PMF stands for the Probable Maximum Flood. The frequency or chance of this flood occurring has been estimated to be 1 in 100,000 chance in any one year. At Windsor the PMF is estimated to be 26m AHD.

## Is my property flood affected and will that change?

Flooding levels are determined from rainfall intensity data, from previous floods and hydraulic modelling. The actual levels may vary over time. Contact Council to establish the flood level for your area.

You can view contour plans at Council giving a general idea of ground and flood levels. To accurately determine the level of your land, you will need a registered surveyor to prepare a survey plan to identify spot heights on your land.

## What is the flooding standard?

The generally accepted flooding standard applied in NSW is based on the 1 in 100 year or 1% flood frequency level. Higher floods than the 1 in 100 have occurred in the past and may occur in the future.

## Can I extend the house, fill, subdivide or do other development?

Generally, if your house was built on flood affected land before 30 June 1997 with Council approval, you may apply for extensions or alterations. You will need Council approval and in some cases you may have to raise the floor level of the extensions.

Hawkesbury City Council has a policy which applies to development on flood affected land. Applications are considered in accordance with this policy and the merits of each individual case. Council's professional staff are happy to discuss your proposal with you and determine whether it is achievable.

Do not believe unverified hearsay from other people. You should make your own written enquiries with Council and we can reply with written advice to your specific questions.

In some cases filling may be allowed, subject to strict conditions. However, if your property is too low, filling is not permitted.

## What are the implications of my property being flood liable?

Council seeks to provide development that provides for flood safety in the event of a flood. This is achieved by locating development above the 1 in 100 level where possible and providing safe evacuation routes for flood affected areas.

Flooding has the potential to endanger lives, cause property damage, economic losses and social disruption. However as a natural process it is also replenishes waterways and ecosystems (e.g. wetlands).

## What is Council doing to manage the flooding problem in the Hawkesbury area?

Council has flood related development controls in the Hawkesbury Local Environmental Plan 1989 and the Hawkesbury Development Control Plan 2002. Council has adopted a Flood Risk Management Study and Plan for the Hawkesbury River in accordance with the provisions of the Floodplain Development Manual: the management of flood liable land, April 2005.

The main purposes of the study and plan are to define the nature and extent of the flood problem and develop options to minimise the social, ecological and economic impacts of flooding. It is expected that public exhibition of the Study and Plan will occur in 2011.

## What can I do to be flood prepared?

You should make your own enquiries with insurance and other agencies about how flood liability may affect your property and investments. Make sure you are familiar with evacuation routes, listen to emergency announcements and follow the directions to evacuate (if required).

Visit the NSW State Emergency Service website at [www.ses.gov.au](http://www.ses.gov.au) for further information regarding flood preparation measures, in particular the NSW Flood Safe Guide.

## Will a Section 149 certificate advise me if my land is flood liable?

No. A planning certificate (s149) does not provide detailed information about your site. Instead, it provides known data about the policies that apply to the land.

## Who can I contact for more information?

Hawkesbury City Council

- General flooding and development enquiries  
Ph: (02) 4560 4444
- Floodplain Risk Management Study and Plan for the Hawkesbury River  
Ph: (02) 4560 4544

Department of Environment Climate Change and Water

- *Floodplain Development Manual: the management of flood liable land, April 2005*  
[www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

State Emergency Service

- Flood Emergencies and Evacuation  
Ph: 132 500 [www.ses.nsw.gov.au](http://www.ses.nsw.gov.au) or

Emergency Management NSW

- Ph: (02) 8247 5900  
[www.emergency.nsw.gov.au](http://www.emergency.nsw.gov.au)

<sup>1</sup> *Floodplain Development Manual: the management of flood liable land, April 2005, New South Wales Government, pg A-1.*

<sup>2</sup> *Floodplain Development Manual: the management of flood liable land, April 2005, New South Wales Government, p.gs. 20-23.*

<sup>3</sup> *Proposed Warragamba Flood Mitigation Dam Environmental Impact Statement, Vol. 1, July 1995, Sydney Water, Figure 5.2.*



This document contains important information. If you do not understand it, contact the Telephone Interpreter Service on 131 450.



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