

Considering flooding in land use planning

Guideline

July 2021





Acknowledgement of country

The Department of Planning, Industry and Environment acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

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Considering flooding in land use planning – Guideline

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Pathways artwork by Nikita Ridgeway

Cover image: River Road, Emu Plains flooding, March 2021.
— Infrastructure NSW | Adam Hollingworth



Windsor, looking east March 2021.— Infrastructure NSW | Top Notch Video

Introduction

This guideline provides advice to councils on flood-related land use planning and the areas where flood-related development controls should apply.

This guideline helps NSW communities to be more resilient to flooding beyond the 1% Annual Exceedance Probability¹ (AEP). This involves considering the management of flood risk for the full range of flooding up to the Probable Maximum Flood (PMF) in land use planning. The guideline applies to both mainstream and overland flow flooding.

This guideline is consistent with the NSW Government's Flood Prone Land Policy (the policy), set out in the NSW Floodplain Development Manual (the manual) published in 2005, which supports the resilient development of flood-prone land. Flood-prone land, or the floodplain, is defined in the manual as the land susceptible to flooding by the PMF event. The policy recognises that flood-prone land may be able to support some types of development. It outlines that each local council is responsible for managing the flood risk to reduce the risk to life, property damage and other impacts in their local government area.

The manual outlines the flood risk management (FRM) process to help councils make informed decisions on managing flood risk to both existing and future development. The FRM process involves studies to understand flood behaviour and examine management options, and the development and implementation of FRM plans.

The manual sets out key issues relating to managing risk to existing and future occupants of flood-prone land that need consideration in land use planning. These include the:

- safety of people including evacuation considerations
- management of flood risk, to reduce flood damage to public and private property and infrastructure
- management of the impacts of development, including cumulative impacts of development
- application of development controls
- management of the impacts of development on emergency services.

All terms referenced in this guideline have the same meaning as those in the standard instrument prescribed by the Standard Instrument (Local Environmental Plans) Order 2006 (Standard Instrument) or the manual, unless otherwise defined at the end of this guideline.

¹ The 1% AEP flood is equivalent to the 100-year Annual Recurrence Interval (ARI) and has a 1% chance of happening every year.



Applying the guideline

Section 733 of the *Local Government Act 1993* provides councils with a limited protection from liability if they have followed the principles of the Floodplain Development Manual. As councils undertake or update studies under the FRM process or obtain additional flood information, this information could support councils with the implementation of this guideline.

Councils do not need to apply both flood planning categories outlined in this guideline in their land use planning documents. Councils are required to use the 'Flood Planning Area' (FPA) category and associated standard instrument clause but have discretion in the use of the 'Special Flood Considerations' (SFC) category in their land use planning documents.

Considering flooding in land use planning

The full range of flooding up to and including the PMF must be considered when undertaking strategic land use planning. This includes the preparation of:

- regional, metropolitan and district plans,
- local strategic planning statements,
- environmental planning instruments, and
- planning proposals.

Understanding how key flood constraints vary

The key constraints that result from flooding on land are:

- Flood function. Determining flood function involves identifying the location of floodways, flood storage areas, and flood fringe areas. Floodways and flood storage areas are sensitive to changes in flood behaviour due to activities such as filling or more intense development.
- Flood hazard. Floods are hazardous to people, and public and private infrastructure. The degree of flood hazard varies between locations in the floodplain and flood events of different scales.
- Extent and flooding behaviour. Understanding the extent of the full range of flood events and how flood function and flood hazard may change between events can enable the associated constraints on land to be considered in decision-making.
- Risk to life, such as in areas identified by council or state agencies under the FRM process or through emergency management planning processes.

Hunter Valley Flood Mitigation Scheme – John Spencer | DPIE

The Floodplain Development Manual and its guides provide guidance to assist councils in determining these flood constraints and how they vary on land within the floodplain.

Understanding these constraints allows DCP controls to be developed for the two categories outlined below, that are used in land use planning decision-making. The controls applied in these areas will vary with location, constraints and type of development.

Where flood-related development controls may be applied

There are two different categories where flood-related development controls may be applied/considered. These are:

- Flood Planning Areas (FPAs), and
- Special Flood Considerations (SFCs).

Councils will be required to include the mandatory standard instrument 'flood planning' provision without variation in their LEPs, and if they choose to adopt the optional standard instrument SFC provision, it must be adopted without variation but subject to any relevant direction in the standard instrument (cl 4(2), SI order).

Flood Planning Areas

Flood Planning Areas will be introduced through a mandatory 'flood planning' clause in the Standard Instrument.

FPA is the area of land at or below the flood planning level (FPL).

The **FPL** is a combination of the flood level from the defined flood event (DFE) and freeboard selected for flood risk management purposes.

Councils should define their FPAs and FPLs in their development control plans (DCPs) and outline if there are multiple FPAs/FPLs and where they apply. For example, a council may have a different FPAs for different catchments based on the flood risk identified through the FRM process. Council may also have different FPLs based on the land use type (for example, residential, industrial, commercial developments) these should be documented in their DCP. Council may have a range of development controls to suit the flood constraints and different types of development.

Councils can attach their adopted flood policies, flood studies and floodplain risk management studies and plans to their DCPs to ensure they are considered by the consent authority when determining a development application under section 4.15 of the *Environmental Planning and Assessment Act 1979*.

The **DFE** is selected by council for floodplain risk management purposes for an area/catchment, generally through the FRM process outlined in the manual. DFEs form the basis for determining the level of exposure to flooding and associated risks to life and property damage. The manual identifies the 1% AEP flood event, or an equivalent historic flood, as an appropriate starting point for determining the DFE for development controls, including for residential development. The manual allows the selection of a rarer DFE to address broad scale flood impacts in consideration of the social, economic, environmental and cultural consequences associated with floods of different probabilities.

The typical freeboard for residential development due to flooding from waterways, such as rivers or creeks, is 0.5m. A lower freeboard or an alternative approach to freeboard may be used where the consequences to people and property of low probability flood events are assessed as minor through the FRM process.

Where councils propose alternative FPLs, they are required to demonstrate and document – in a flood study and/or floodplain risk management study – the merits of this approach, based on a risk management approach that is consistent with the FRM process and the principles of the manual.



Governor Phillip Park in flood, March 2021 — Infrastructure NSW | Top Notch Video

Special Flood Considerations

Special flood considerations (SFC) are particular flood risk considerations that a consent authority must be satisfied with before granting consent to certain types of development that have been identified by councils and the state government as having a higher risk to life and warranting the consideration of the impacts of rarer flood events on land located outside the FPA. These types of development require special flood considerations relating to the management of risk to life and the risk of hazardous industry/hazardous storage establishments to the community and the environment in the event of a flood.

SFCs also apply to land that, in the event of a flood, may cause a particular risk to life and require the evacuation of people or other safety considerations.

These special flood considerations include that the development:

1. will not affect the safe occupation of and efficient evacuation of people in the event of a flood, and
2. incorporates appropriate measures to manage risk to life from flood, and
3. will not adversely affect the environment in the event of a flood.

SFCs will be introduced through an optional clause in the Standard Instrument. This is an optional provision of the Standard Instrument and councils will have the discretion whether to adopt the clause in a LEP that adopts the Standard Instrument and apply the SFCs in their LGA, provided they have appropriate information and justification to support the flood related development controls. Studies under the FRM process, as well as emergency management planning processes and relevant strategies and plans developed by NSW Government may provide information and support justification for the adoption of the clause.

If councils choose to adopt the optional SFC clause in their LEPs, it is suggested that councils also include the relevant SFCs in its DCP.

These controls generally relate to:

- Sensitive uses that require ongoing functionality during and after a flood event such as hospitals with emergency facilities and emergency services facilities.
- Sensitive uses that require high levels of assistance with evacuation, such as seniors housing, group homes, boarding houses, hostels, caravan parks, educational establishments, centre-based childcare facilities and hospitals.
- Hazardous industries or hazardous storage establishments that require containment of materials in the event of a flood.

- Development that is not identified as sensitive and hazardous development (refer to definitions) that requires risk to life or other safety consideration such as:
 - areas of low probability flood events that have the potential for high consequences. (for example, where new floodways develop in low probability floods)
 - areas covered by an adopted council policy or plan
 - where development controls are needed to address risk to life or other safety considerations identified in studies under the FRM process or through the emergency management planning process.
 - Areas that warrant development controls to address risk to life considerations such as:
 - areas with evacuation limitations
 - where increases in dwelling densities would have a significant impact on the ability of the existing community to evacuate
- using existing evacuation routes within the available warning time
 - where vertical evacuation for short duration flooding is required such as where the rate of rise of floodwater prohibits safe evacuation from the land
 - behind flood levees which may have warning and/or evacuation limitations.
 - impacted by either high hazard or/and H4 to H6 hazard vulnerability thresholds in the PMF as defined in the manual or its supporting guides, and unable to safely evacuate
 - where subdivision layouts and connections to local or regional evacuation routes need to be consistent with the Hawkesbury Nepean Designing Safer Subdivisions Guide
 - areas indirectly affected by flooding where development may have for example outages of utility services
 - areas isolated by floodwaters and/or terrain (such as high flood island or trapped perimeter).

Maps

All areas where flood-related development controls apply should be mapped, with maps made publicly available. This could entail being published in development control plans, other relevant environmental planning instruments or on a council website.

However, in areas where mapping is not available, risk-based flood controls can still apply to other flood-prone land, in accordance with the manual.

Isolated rural property in the Hawkesbury, March 2021 — Infrastructure NSW | Adam Hollingworth



Further Information

Please contact the relevant regional offices of the Department of Planning, Industry and Environment.
www.planning.nsw.gov.au

Definitions

Defined flood event (DFE)

is the flood event selected as a general standard for the management of flooding to development.

Flood Behaviour

refers to the characteristics of flood waters interacting with the landscape. These characteristics include the location, depth, velocity, timing, volume, and period of inundation related to flood water.

Flood planning level (FPL)

is the combination of the flood level from the defined flood event and freeboard selected for flood risk management purposes.

Sensitive and Hazardous development may include:

- boarding houses,
- caravan parks,
- correctional centres,
- early education and care facilities,
- eco-tourist facilities,
- educational establishments,
- emergency services facilities,
- information and education facilities,
- group homes,
- hazardous industries,
- hazardous storage establishments,
- hospitals,
- hostels,
- respite day care centres,
- seniors housing,
- sewerage system,
- tourist and visitor accommodation,
- water supply system.



Warrego flooding between Fords Bridge and Engonnia – Melissa Hams | DPIE



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