

## 3.8 Flood Affected Lands

### 3.8.1 Purpose and objectives of this chapter

The purpose of this Chapter is to specify development controls for development occurring within land that is identified as flood prone or as potentially flood prone.

Note: Clause 5.21 of Goulburn Mulwaree Local Environmental Plan 2009 identifies considerations for the assessment of development on land identified within the flood planning area.

The objectives of this chapter are to:

- Provide specific flood planning controls for the identified area within the *Goulburn Floodplain Risk Management Study (GFRMS) 2021* and Plan.
- Provide additional flood related development controls to support those already included within the *Goulburn Mulwaree Local Environmental Plan 2009*.
- Introduce and implement the Flood Policy and apply its Flood Planning Constraint Categories (FPCC) and specific development controls for certain development on land identified within the Goulburn Floodplain Risk Management Study.
- Impose development controls for sensitive and hazardous development that occurs within the Probable Maximum Flood (PMF).
- Have an overall aim to minimise impacts from flooding for development occurring within flood prone land both within and outside of an adopted flood study or floodplain risk management study and plan.

This chapter prevails to the extent of any inconsistency with any other chapter in the *Goulburn Mulwaree Development Control Plan 2009*.

## **3.8.2 Application of this chapter**

### **3.8.2.1 Development Outside of Adopted Flood Study Areas**

Properties not yet identified in Council studies may still be flood affected. An assessment will be required to be submitted with any development application (see controls section below) for potentially flood prone land.

### **3.8.2.2 Controls for Development Outside of Adopted Flood Study Areas**

Developments that are identified as potentially flood affected are required to submit a Flood Assessment Report or a Flood Impact and Risk Assessment with a development application (DA)

The following factors identify sites which are potentially flood affected:

- Within 40m of a water course;
- Within 10m of a major drainage system;
- Within an overland flow path
- Within a drainage easement;
- Has a history of flooding.

The following is to be provided on a site which is potentially flood affected:

#### Flood Impact and Risk Assessment Report

A Flood Impact Risk Assessment Report must be prepared by a suitably qualified and experienced engineer recognised under the National Engineers Register (NER) in this field. The full name of the person who prepared the report, relevant qualifications and registration number are to be provided on the front page of the report. The assessment report provides information on existing flood risk for a catchment and is to be commensurate with the latest version of the NSW Floodplain Development Manual and must include the following information:

- (a) A description of the creek or drainage system that is relevant to the flood characteristics of the site, whether located on, adjacent to or remote from the development site;

(b) Flood levels must be defined for the PMF, 1%, 5%, 10% and 20% AEP events for the climate change pre-development scenario (all assumptions, calculations and modelling output tables must be provided). From this information the FPL and FPA is to be determined (note for areas outside an adopted Council Flood Study a freeboard of 0.5m is to be applied to the 1% AEP to determine the FPL);

(c) Flood velocities and vectors for the 1% AEP event for the climate change pre-development scenario (all assumptions, calculations and modelling output tables must be provided);

(d) Provisional Hazard categories based on depth and velocity as well as obvious other hazards such as evacuation difficulties as per the requirements of the 2005 NSW Floodplain Development Manual;

(e) Provisional Hydraulic categories based on depth and velocity as per the requirements of the latest version of the NSW Floodplain Development Manual; and

(f) Flood Planning Constraint Categories based on the definitions provided in the latest adopted version of the Goulburn Floodplain Risk Management Study and Plan or an adopted Floodplain Risk Management Study and plan more relevant to the site. Once determined the relevant FPCC controls in the Flood Policy matrix can be applied (albeit with a 0.5m freeboard for areas outside an adopted Council Flood Study Refer to Appendix J).

(g) Plans showing the results of (c) to (f) as well as the location of the proposed development.

*Please note for point:*

a) The modelling shall include climate change considerations as per Council's adopted Floodplain Risk Management Study predicted changes in rainfall.

b) The modelling shall include a 50% and 100% blockage analysis of all existing drainage structures that may affect the development site.

c) Localised flow effects shall be investigated and reported on where relevant.

d) The roughness coefficients used shall allow for fully vegetated stream conditions in order to account for potential revegetation of degraded areas without impact on flood levels.

e) In areas where local sub-catchment flooding, such as flows from drains, overland flow paths or similar, interact with overall catchment flooding from waterways and lakes a joint probability analysis of flood behaviour shall be undertaken.

### 3.8.2.3 Development on Land Identified as Flood Prone in the Goulburn Floodplain Risk Management Study and Plan

The Goulburn Floodplain Risk Management Study (the Study) and Plan 2021, investigates flood behaviour and impacts from the Wollondilly and Mulwaree Rivers and provides management measures to remedy flood risk to infrastructure and private development.

A Flood Policy was also prepared as part of the above Study, which forms the basis for the controls on land identified in this study, the Policy is contained within Appendix J. It sets out development controls for development within flood prone land, up to and including the Probable Maximum Flood (PMF). The Policy implements Flood Planning Constraint Categories (FPCC) which group similar types and scales of flood related constraints to support land use planning. The Policy implements four FPCCs from most constrained to least constrained. The FPCCs are as per Table 1 below.

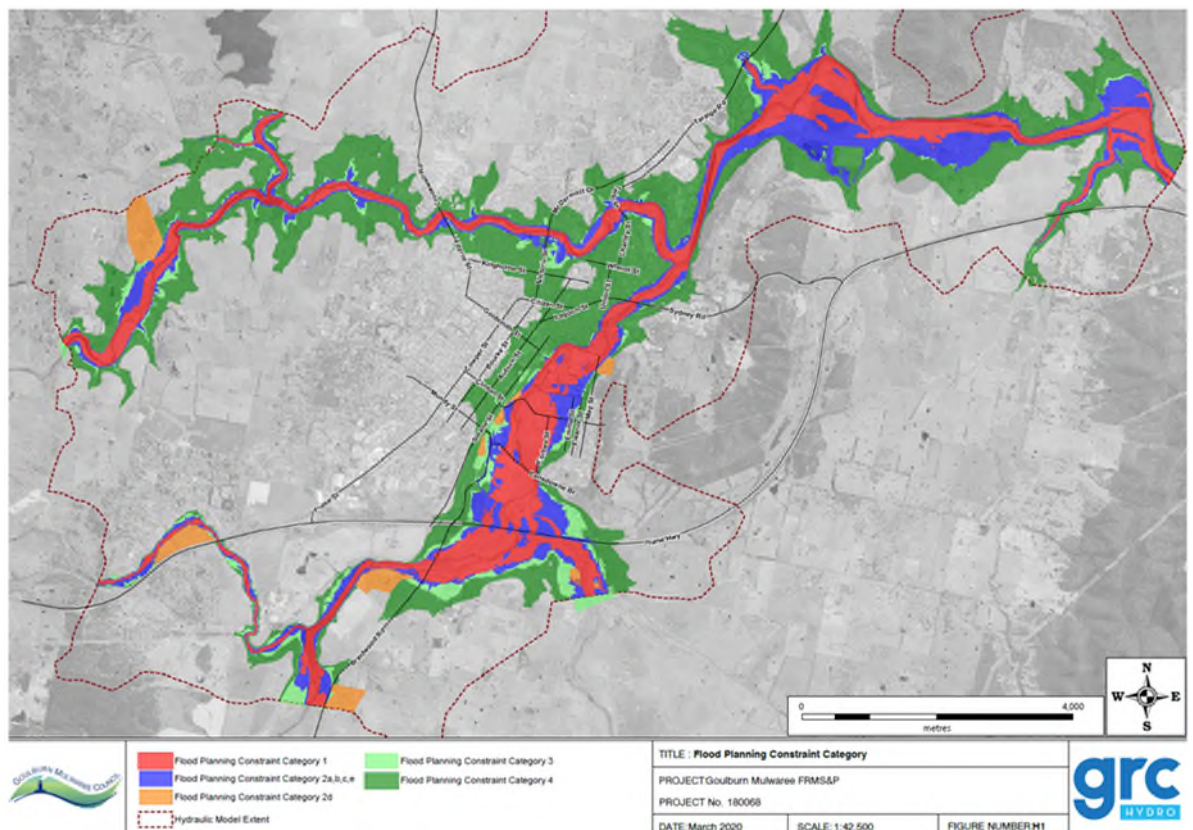
Category	Summary
FPCC1	FPCC1 identifies the most significantly constrained areas, with high hazard or significant flood flows present. Intensification of use in FPCC1 is generally very limited except where uses are compatible with flood function and hazard.
FPCC2	FPCC2 areas are the next least suitable for intensification of land use or development because of the effects of flooding on the land, and the consequences to any development and its users. In this document, FPCC2 is split into FPCC2 (Subcategory a,b,c,e) or FPCC2 (Subcategory d)
FPCC3	FPCC3 areas are suitable for most types of development. This is the area of the floodplain where more traditional flood-related development constraints, based on minimum floor and minimum fill levels, will apply.
FPCC4	FPCC4 is the area inundated by the PMF (extent of flood prone land), but outside FPCC1-3. Few flood-related development constraints would be applicable in this area for most development types. Constraints may apply to key community facilities and developments where there are significant consequences to the community if failed evacuations occur.

**Table 1. Identification of the four Flood Planning Constraint Categories (FPCC).**

The Flood Planning Area (FPA) forms the extent of FPCC3 above.

The Probable Maximum Flood (PMF) is bounded by the extent of FPCC3 and up to the extent of FPCC4.

Land outside FPCC4 is not identified as subject to flooding from the two rivers and therefore not subject to the application of the Flood Policy and flood planning controls in this section (see general controls in 3.8.2.2).



**Figure 1. Flood Planning Constraint Categories (FPCC).**

The extent of Flood Planning Constraint Categories (FPCC) in the Goulburn Flood Risk Management Study are shown in Figure 1.

The 1 in 100 or 1% Annual Exceedence Probability (AEP) plus a suitable freeboard has been used to derive the Flood Planning Area (FPA). For the Goulburn Floodplain Risk Management Study the freeboard recommended is 0.8m. For the remainder of the LGA 0.5m is to be applied pending further studies being undertaken.

Development is required to apply and meet the requirements of the Flood Policy as set out in Appendix J.

#### **3.8.2.4 Controls for development at or below the Flood Planning Area (FPA) and the Probable Maximum Flood (PMF) in the Goulburn Floodplain Risk Management Study and Plan**

Refer to controls in the Flood Planning Policy (Appendix J).

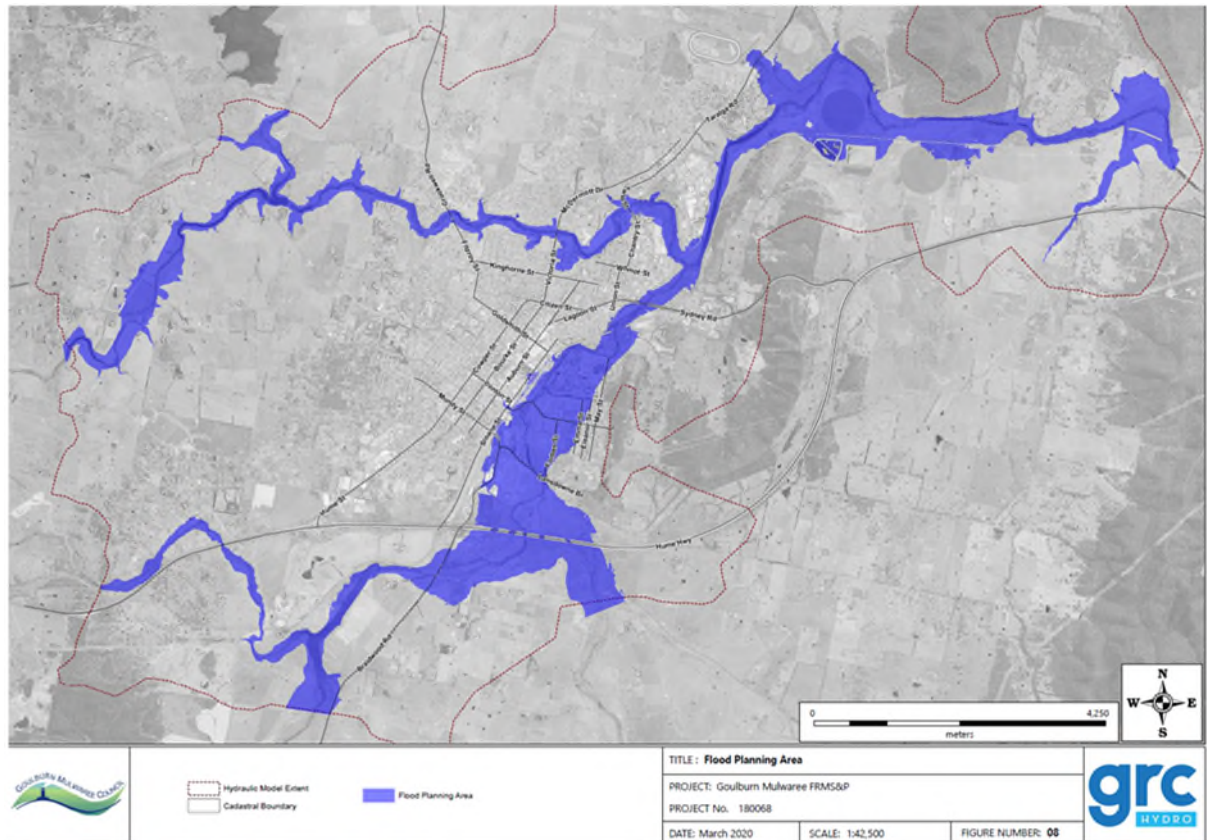
#### **3.8.2.5 Controls for development between the Flood Planning Area (FPA) and the probable Maximum Flood (PMF) in the Goulburn Floodplain Risk Management Study and Plan**

Refer to controls in the Flood Planning Policy (Appendix J).

### **3.8.3 Definitions**

This chapter is to be read in conjunction with the Draft Goulburn Floodplain Risk Management Study and Plan. Further definitions or background information may be found in that Study and Plan which is available on Council's web site.

***Flood Planning Area (FPA):*** the area of land that is below the Flood Planning Level and therefore subject to flood related development controls. This is shown in Figure 2 below in relation to the Goulburn Floodplain Risk Management Study and Plan:



**Figure 2. Flood Planning Area (FPA).**

**Flood Planning Level (FPL):** the floor level of development that incorporates a freeboard that is applied to the 1% AEP event.

**Flood Planning Constraint Categories (FPCC):** separated areas within the flood plain, categorised from most constrained to least constrained, that define specific development controls for particular development types.

**Freeboard:** a factor of safety expressed as the height above the FPL which is 0.8m in the Goulburn Floodplain Risk Management Study and Plan and an assumed 0.5m elsewhere.

**Flood Policy:** The Flood Policy Prepared by GRC Hydro in Appendix J.

**Local Government Area (LGA):** Goulburn Mulwaree local government area.

**Sensitive and hazardous development:** development that is defined in the Standard Instrument as Sensitive and hazardous development or in the Flood Policy (Appendix J).

Building	Site Address	Landmark Site	Heritage Site	Complementary Building	Comments
Terraces	310-312 Sloane Street	No	Yes	No	NT Recorded
St Claire Museum	318 Sloane Street	Yes	Yes	No	AHC/HC/NT Classified
RC Bishop's Residence and Presbytery	36 Verner Street	Yes	Yes	No	NT Classified/R AIA
St Peter and St Paul Cathedral	Corner Verner and Bourke Streets	Yes	Yes	No	NT Recorded/A HC

## 9.9 Appendix J Flood Policy

### Introduction

This draft flood policy defines planning controls to be applied to development on flood prone land within the Goulburn Mulwaree Local Government Area. The content of this document is outlined below:

- Section 9.9.1 – Objectives
- Section 9.9.2 – What are the Flood Planning Constraint Categories
- Section 9.9.3 – How to use this Document
- Section 9.9.4 – Definitions
- Section 9.9.5 – Land Use Categories
- Section 9.9.6 – Flood Planning Controls
- Section 9.9.7 – flood Compatible materials
- Section 9.9.8 – frequently Asked Questions
- Figure J1 – Flood Planning Constraint Category Maps



### 9.9.1 Objectives

This draft flood policy aims to minimise the impact of flooding on development situated on flood prone land within the Goulburn Mulwaree Local Government Area. The policy applies controls that consider both the type of development and the associated flood risk.

The policy considers the range of possible flood events that can occur, up to and including the Probable Maximum Flood, which is the largest flood event that could conceivably occur at a given location and which delineates the extent of flood prone land.

The overarching objectives of the plan are:

- To reduce the risk to life and damage to property caused by flooding through controlling development on land affected by potential floods.
- To incorporate the risk of flooding up to the Probable Maximum Flood in the planning and design of critical facilities and sensitive land uses.
- To prevent intensification of inappropriate land uses within areas of high flood risk.
- To permit certain types of development in portions of the floodplain with low to moderate flood risk, provided that suitable planning controls are applied that ensure the flood risk is managed.
- To ensure that ongoing development of the floodplain does not have a significant cumulative effect on flood storage or floodway, leading to increased flood risk.
- To address the risk of riverine flooding through appropriate flood planning controls. The current policy does not include areas of overland flow flooding. These areas may be included in the future when the relevant flood study and floodplain risk management study and plan has been completed.
- To provide a framework to manage the risk of flooding on future development, whilst acknowledging that flood prone land is a valuable asset which should not be unnecessarily sterilised.

### 9.9.2 What are the Flood Planning Constraint Categories

This flood policy implements the Flood Planning Constraint Category (FPCC) approach to flood planning as recommended in the 'Australian Disaster Resilience Guideline 7-5, Flood Information to Support Land-use planning'.

FPCCs group similar types and scales of flood-related constraints to support land-use planning. They have been developed for use across Australia to understand the flooding constraints of flood prone land. Flood investigations typically produce a large number of maps, each focusing on a particular event magnitude and/or element of the flood behaviour. FPCCs use these findings to produce a succinct set of information that breaks the floodplain down into areas with similar degrees of constraint.

Four FPCCs have been developed to separate areas of the floodplain from the most constrained (and therefore least suitable for intensification of land use or development—FPCC1), to the least constrained (and therefore more suitable for intensification of land use or development—FPCC4). Details of the four FPCCs are presented in Table 47. Areas situated outside of FPCC4 are not flood prone and flood planning controls do not apply to these areas.

Category	Summary
FPCC1	FPCC1 identifies the most significantly constrained areas, with high hazard or significant flood flows present. Intensification of use in FPCC1 is generally very limited except where uses are compatible with flood function and hazard.
FPCC2	FPCC2 areas are the next least suitable for intensification of land use or development because of the effects of flooding on the land, and the consequences to any development and its users. In this document, FPCC2 is split into FPCC2 (Subcategory a,b,c,e) or FPCC2 (Subcategory d)
FPCC3	FPCC3 areas are suitable for most types of development. This is the area of the floodplain where more traditional flood-related development constraints, based on minimum floor and minimum fill levels, will apply.
FPCC4	FPCC4 is the area inundated by the PMF (extent of flood prone land), but outside FPCC1-3. Few flood-related development constraints would be applicable in this area for most development types. Constraints may apply to key community facilities and developments where there are significant consequences to the community if failed evacuations occur.

**Table 47: Flood Planning Constraint Categories Overview**

### 9.9.3 How to use this Document

Flood planning controls depend on the type of development proposed, and what Flood Planning Constraint Category (or categories) are present at the site. The following procedure can be used to determine the controls for development:

1. Determine if the proposed development is situated on flood prone land. Council has flood information available for some locations within their Local Government Area. The FPCC map contained in Figure J1 of this document show the extent of available information.
2. For areas where no existing flood information is available, a flood assessment is required to be undertaken to determine the flood liability of the development site. If the development is not flood prone, flood planning controls do not apply.
3. Determine which Flood Planning Constraint Categories (FPCCs) are present at the development site. Some development sites may be situated in multiple FPCCs. There are four different FPCC and FPCC2 is split into FPCC2 (Subcategory a,b,c,e) or FPCC2 (Subcategory d).
4. Determine what category (or categories) of land use are proposed as part of the development. Land Use categories are presented in Table 49.
5. List the flood planning controls that apply to the development using the controls listed under Table 50. Some sites will also be located outside all FPCC and therefore have no flood planning controls that apply.

Council will then assess whether the development complies with each of the flood planning controls. The applicant is required to provide relevant information to Council as part of the Development Application, demonstrating compliance.

### 9.9.4 Definitions

Annual Exceedance Probability	The probability of an event being equalled or exceeded within a given year. The 1% AEP flood is approximately equal to 1 in 100 year Average
Flood Planning Constraint Categories	FPCCsgroup similar types and scales of flood-related constraints to support land-use planning activities.
FPCC1	FPCC1 identifies the most significantly constrained areas, with high hazard or significant flood flow. Intensification of use in FPCC1 is generally very limited except where uses are compatible with flood function and hazard.
FPCC2	FPCC2 areas are the next least suitable for intensification of land use or development because of the effects of flooding on the land, and the consequences to any development and its users. Note that FPCC2 is split into FPCC2 (Subcategory a,b,c,e) or FPCC2 (Subcategory d).
FPCC3	FPCC3 areas are suitable for most types of development. This is the area of the floodplain where more traditional flood-related development
FPCC4	FPCC4 is the area inundated by the PMF (extent of flood prone land), but outside FPCC1-3. Few flood-related development constraints would be applicable in this area for most development types. Constraints may apply to key community facilities and developments where there are significant consequences to the community if failed evacuations occur.
Mainstream Flooding	Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land, that is, the floodplain.
Freeboard	A factor of safety expressed as the height above the design flood level. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action; localised hydraulic behaviour and impacts that are specific event related, such as levee and embankment settlement; cumulative impacts of fill in floodplains and other effects such as changes in rainfall patterns as a result of climate change. Freeboard for the Flood Planning Level in areas of mainstream flooding has been determined to be 0.8 m at Goulburn. This value is based on the findings of a joint probability analysis as part of the Goulburn Floodplain Risk Management Study and Plan. For unstudied catchments outside the Goulburn Floodplain Risk Management Study and Plan's study area, a freeboard of 0.5 m shall be

Flood Area	Planning	The Flood Planning Area defines properties that are subject to flood related development controls. The use of FPCC does not rely on the Flood Planning Area but its definition has been included here for clarity.
Flood Level	Planning	The Flood Planning Level is a height used to set minimum floor levels for flood affected properties. It is based on a design flood event with freeboard added.

**Table 48: Definitions**

### 9.9.5 Land Use Categories

Flood planning controls will vary depending on the proposed land use category. There are 8 categories of land use, as set out in Table 49. The development types are based on the Goulburn Mulwaree Local Environment Plan 2009 land use categories.

Land Use	Development	
<i>Critical Uses and Facilities</i>	<ul style="list-style-type: none"> <li>• Emergency services including police, fire, rescue and ambulance</li> <li>• Medical facilities that provide a critical role</li> <li>• Community facilities that provide a critical role during a flood event, in to notifications or evacuation</li> <li>• Airstrips or air transport facilities that provide a critical role</li> <li>• Electricity generating works</li> </ul>	
<i>Sensitive Uses and Facilities</i>	<ul style="list-style-type: none"> <li>• Correctional centres</li> <li>• Centre-based child care facilities</li> <li>• Medical facilities that provide care outside normal working hours, including any facilities that provide for</li> <li>• Schools</li> <li>• Seniors housing</li> <li>• Group homes and other care facilities that house vulnerable groups</li> <li>• Respite day care centres</li> </ul>	
<i>Lot Subdivisions</i>	<ul style="list-style-type: none"> <li>• Subdivision of land, which involves the creation of new allotments, with potential for further development</li> </ul>	
<i>Residential Development</i>	<ul style="list-style-type: none"> <li>• Attached dwellings</li> <li>• Bed and breakfast accommodation</li> <li>• Boarding houses</li> <li>• Community facilities that include habitable space</li> <li>• Dual occupancies</li> <li>• Dwelling houses</li> <li>• Exhibition homes</li> <li>• Home based child care</li> </ul>	<ul style="list-style-type: none"> <li>• Home occupations</li> <li>• Home occupations (sex services)</li> <li>• Hostels</li> <li>• Multi dwelling housing</li> <li>• Residential flat buildings</li> <li>• Rural workers' dwellings</li> <li>• Semi-detached dwellings</li> <li>• Serviced apartments</li> <li>• Shop top housing</li> <li>• Tourist and visitor</li> </ul>

	<ul style="list-style-type: none"> <li>• Home industries</li> </ul>	accommodation
<i>Commercial and Industrial</i>	<ul style="list-style-type: none"> <li>• Air transport facilities</li> <li>• Airstrips</li> <li>• Amusement centres</li> <li>• Animal boarding or training establishments</li> <li>• Boat building and repair facilities</li> <li>• Business premises</li> <li>• Camping grounds</li> <li>• Cellar door premises</li> <li>• Charter and tourism boating facilities</li> <li>• Commercial premises</li> <li>• Community facilities</li> <li>• Crematoria</li> <li>• Entertainment facilities</li> <li>• Environmental protection works</li> <li>• Food and drink premises</li> <li>• Freight transport facilities</li> <li>• Function centres</li> <li>• Funeral homes</li> <li>• Garden Centres</li> <li>• Hardware and building</li> <li>• Highway service centres</li> <li>• Home industries</li> <li>• Industrial retail outlets</li> <li>• Industrial training facilities</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Kiosks</li> <li>• Light industries</li> <li>• Mortuaries</li> <li>• Neighbourhood shops</li> <li>• Passenger transport facilities</li> <li>• Places of public worship</li> <li>• Plant nurseries</li> <li>• Recreation Facility (indoor)</li> <li>• Registered clubs</li> <li>• Restricted premises</li> <li>• Roadside stalls</li> <li>• Rural industries</li> <li>• Self-storage units</li> <li>• Service stations</li> <li>• Sewerage systems</li> <li>• Storage premises</li> <li>• Tank-based aquaculture</li> <li>• Timber yards</li> <li>• Transport depots</li> <li>• Vehicle body repair workshops</li> <li>• Vehicle repair stations</li> <li>• Veterinary hospitals</li> <li>• Warehouse or distribution centres</li> <li>• Waste or resource management facilities</li> <li>• Water supply systems</li> <li>•</li> </ul>
<i>Commercial and Industrial (Cont.)</i>		
<i>Recreation and Non-urban</i>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Aquaculture</li> <li>• Boat sheds</li> <li>• Environmental facilities</li> <li>• Extractive Industries</li> <li>• Extensive Agriculture</li> <li>• Forestry</li> <li>• Open cut mining</li> <li>• Helipads</li> <li>• Intensive livestock agriculture</li> <li>• Intensive plant agriculture</li> </ul>	<ul style="list-style-type: none"> <li>• Jetties</li> <li>• Landscaping material supplies</li> <li>• Marinas</li> <li>• Moorings</li> <li>• Oyster Aquaculture</li> <li>• Pond-based aquaculture</li> <li>• Recreation facility (outdoor)</li> <li>• Swimming pools</li> <li>• Roads</li> <li>• Water recreation structures</li> <li>• Wharf or boating facilities</li> </ul>
<i>Sheds &amp; Outbuildings</i>	<ul style="list-style-type: none"> <li>• Sheds and outbuildings of up to 40 m<sup>2</sup> area.</li> <li>• Farm buildings that are not used to store vehicles and other equipment</li> </ul>	

<p><i>Minor Additions</i></p>	<ul style="list-style-type: none"> <li>• An addition in habitable floor area to an existing development of not more than 40m<sup>2</sup> or 10% of existing floor area, whichever is greater. Only one addition can be categorised as a minor addition per property</li> </ul>
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**Table 49: Land use Categories**





### Structural Soundness

E1. Engineers report to certify that any structure can withstand the forces of floodwater, debris and buoyancy up to and including the FPL (1% AEP flood level plus 0.8 m freeboard).

E2. Engineers report to certify that any structure can withstand the forces of floodwater, debris and buoyancy up to and including the FPL (1% AEP flood level plus 0.8 m freeboard) or a PMF, whichever is greater.

### Parking and Driveway Access

F1. The minimum surface level of open car parking spaces or carports shall be as high as practical, but no lower than the 5% AEP flood or the level of the crest of the road at the location where the site has access. In the case of garages, the minimum surface level shall be as high as practical but no lower than the 5% AEP flood.

F2. The minimum surface level of open car parking spaces, carports or garages shall be as high as practical. The driveway providing access between the road and parking space shall be as high as practical and generally rising in the egress direction.

F3. Garages capable of accommodating more than three motor vehicles on land zoned for urban purposes, or enclosed car parking, must be protected from inundation by floods up to the FPL (1% AEP flood level plus 0.8 m freeboard).

F4. The level of the driveway providing access between the road and parking space shall be no lower than 0.3 m below the 1% AEP flood or such that the depth of inundation during a 1% AEP flood is not greater than either the depth at the road or the depth at the car parking space. A lesser standard may be accepted for single detached dwelling houses where it can be demonstrated that risk to human life would not be compromised.

F5. Enclosed car parking and car parking areas accommodating more than three vehicles (other than on Rural zoned land), with a floor level below the 5% AEP flood or more than 0.3 m below the 1% AEP flood level, shall have adequate warning systems, signage and exits. Restraints or vehicle barriers are to be provided to prevent floating vehicles leaving the site during a 1% AEP flood.

### Evacuation and Refuge

G1. Reliable access for pedestrians or vehicles required to a publicly accessible location above the PMF via a rising road.

G2. Reliable access for pedestrians or vehicles required during a 1% AEP flood to a publicly accessible location above the PMF.

G3. The development is to be consistent with any relevant flood evacuation strategy or similar plan.

G4. The evacuation requirements of the development are to be considered. An engineer's report will be required if circumstances are possible where the evacuation of persons might not be achieved within the effective warning time.

### Management and Design

H1. Applicant to demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this DCP.

H2. Site Emergency Response Flood Plan required where floor levels are below the FPL (1% AEP flood level plus 0.8 m freeboard), except for single dwelling-houses.

H3. Applicant to demonstrate that area is available to store goods above the FPL (1% AEP flood level plus 0.8 m freeboard).

H4. No storage of materials below the FPL (1% AEP flood level plus 0.8 m freeboard) which may cause pollution or be potentially hazardous during any flood.

H5. Finished land levels in new release areas shall be not less than the 1% AEP mainstream flood plus 0.5 m, unless justified by site specific assessment. A surveyor's certificate will be required upon completion certifying that the final levels are not less than the required level.

### Flood Impacts

J1. Provision of a report developed by an engineer who specialises in hydrology and floodplain modelling is required to certify that the development will not adversely affect flooding elsewhere. The report must show the:

1. Loss of storage in the floodplain. For sites located in areas of 1% AEP flood storage, assessment is to include consideration of the loss of storage resulting from cumulative development of the area.
2. Changes in flood levels and flow velocities caused by alteration of conveyance of flood waters. The capacity and conveyance of existing flowpaths shall be maintained.
3. Impacts of urbanisation on peak flood flows and volumes.

There is an exception to this requirement – no report is required for small developments such as a car port, in ground swimming pool or backyard shed less than 9 m<sup>2</sup>, that do not alter the existing ground level.

### 9.9.7 Flood Compatible Materials

For areas where flood planning controls require the use of flood compatible materials, the materials outlined in Table 51 shall be used. Materials not listed may be accepted by Council subject to certification of the suitability of the material of the manufacturer.

Component	Flood Compatible Material
Flooring and sub-floor	<ul style="list-style-type: none"> <li>Concrete slab-on-ground monolith construction</li> <li>Suspended reinforced concrete slab</li> </ul>
Floor Covering	<ul style="list-style-type: none"> <li>clay tiles</li> <li>concrete, precast or in situ concrete tiles</li> <li>epoxy, formed-in-place</li> <li>mastic flooring, formed-in-place</li> <li>rubber sheets or tiles with chemical set adhesives</li> <li>silicone floors formed-in-place</li> <li>vinyl sheets or tiles with chemical-set adhesive</li> <li>ceramic tiles, fixed with mortar or chemical-set adhesive</li> <li>asphalt tiles, fixed with water resistant adhesive</li> </ul>
Wall Structure	<ul style="list-style-type: none"> <li>Solid brickwork, blockwork, reinforced concrete or mass concrete</li> </ul>
Wall and Ceiling Linings	<ul style="list-style-type: none"> <li>Fibro-cement board</li> <li>Brick, face or glazed</li> <li>Clay tile glazed in waterproof mortar</li> <li>Concrete</li> <li>Concrete block</li> <li>Steel with waterproof applications</li> <li>Stone, natural solid or veneer, waterproof grout</li> <li>Glass blocks</li> <li>Glass</li> <li>Plastic sheeting or wall with waterproof adhesive</li> </ul>
Roof Structure	<ul style="list-style-type: none"> <li>Reinforced concrete construction</li> <li>Galvanised metal construction</li> </ul>
Insulation	<ul style="list-style-type: none"> <li>Closed cell solid insulation</li> <li>Plastic/polystyrene boards</li> </ul>
Doors	<ul style="list-style-type: none"> <li>Solid panel with water proof adhesives</li> <li>Flush door with marine ply filled with closed cell foam</li> <li>Painted metal construction</li> <li>Aluminium or galvanised steel frame</li> </ul>

Windows	<ul style="list-style-type: none"> <li>Aluminium frame with stainless steel rollers or similar corrosion and water-resistant material.</li> </ul>
Nails, Bolts, Hinges and Fittings	<ul style="list-style-type: none"> <li>Brass, nylon or stainless steel</li> <li>Removable pin hinges</li> <li>Hot dipped galvanised steel wire nails or similar</li> </ul>
Main Power Supply	<ul style="list-style-type: none"> <li>Subject to the approval of the relevant authority the incoming main commercial power service equipment, including all metering equipment, shall be located above the designated flood planning level. Means shall be available to easily disconnect the dwelling from the main power supply.</li> </ul>
Wiring	<ul style="list-style-type: none"> <li>All wiring, power outlets, switches, etc., shall be located above the designated flood planning level. All electrical wiring installed below this level shall be suitable for continuous underwater immersion and shall contain no fibrous components. This will not be applicable for below-ground car parks where the car park complies with flood planning level requirements.</li> <li>Earth leakage circuit-breakers (core balance relays) or Residual Current (RCD) must be installed.</li> <li>Only submersible type splices shall be used below maximum flood level.</li> <li>All conduits located below the relevant designated flood level must be so installed that they will be self-draining if subjected to flooding.</li> </ul>
Electrical Equipment	<ul style="list-style-type: none"> <li>All equipment installed below or partially below the designated flood planning level shall be capable of disconnection by a single plug and socket assembly.</li> </ul>
Heating and Air Conditioning Systems	<ul style="list-style-type: none"> <li>Heating and air conditioning systems shall be installed in areas and spaces of the house above the designated flood planning level</li> </ul>
Fuel storage for heating purposes	<ul style="list-style-type: none"> <li>Heating systems using gas or oil as a fuel shall have a manually operated valve located in the fuel supply line to enable fuel cut-off.</li> <li>The heating equipment and related fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. The tanks should be vented above the flood planning level.</li> </ul>
Ducting for heating/cooling purposes	<ul style="list-style-type: none"> <li>All ductwork located below the relevant flood level shall be provided with openings for drainage and cleaning. Self-draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, a closure assembly operated from above relevant flood level shall protect the ductwork.</li> </ul>
Fencing	<ul style="list-style-type: none"> <li>Fencing must be designed to minimise flow obstruction and ensure that fencing does not become unsafe during flood. Fence design must ensure that the integrity of the fence structure is maintained during flood and that flood behaviour is not adversely affected.</li> </ul>

## 9.9.8 Frequently Asked Questions

The following section is not part of the draft DCP section and has been provided to assist Council in community awareness of the FRMS&P and planning changes.

Q: What is Council's role in managing flooding in Goulburn?

A: Goulburn Mulwaree Council has a responsibility to manage flood risk with its Local Government Area (LGA) as per the requirements of the NSW Flood Prone Land Policy and NSW Floodplain Development Manual (2005). This means that Council undertakes studies to understand the range of flood events that can occur, with technical and financial assistance from the NSW government. Council can then develop a Floodplain Risk Management Plan for flood-affected areas, which aims to reduce or otherwise manage flood risk in the long term. This Plan could include flood management measures ranging from large-scale civil works, such as the construction of levees, to non-works interventions, such as planning controls for new developments.

Q: *Why is Council proposing different planning controls for different areas of Goulburn, based on their flood risk?*

A: Flood planning controls are used by Council to ensure that new development does not increase flood risk. For example, flood risk to new buildings is managed by requiring that floor levels are set at or above the Flood Planning Level, or that new buildings are not constructed in hazardous flood areas. In accordance with national guidance on flood planning, Council is proposing to use different planning controls in areas with high flood risk, compared to areas with low risk. Examples of how this applies in practice are:

- Hospitals, aged care and emergency services can only be built in areas above the Probable Maximum Flood (the largest possible flood that can occur)
- Houses can be built in areas with low flood risk but will need to have a floor level at or above the Flood Planning Level. Houses would not be able to be built in areas that are considered too dangerous from a flood risk perspective.
- Subdivisions can be made on flood-prone land provided that new houses as a result of the subdivision can be built to ensure safety and that access and evacuation is considered in the design.

By using these different areas, Council aims to allow development of the floodplain while ensuring flood risk does not increase. This means preventing most types of development

in low-lying areas with hazardous flow, while allowing for some development on the fringes of the floodplain.

*Q: Will new flooding mapping increase my home insurance?*

A: Council does not have a say in insurance prices, however, in general, the location of flood-labile land in Goulburn has been well-established for a number of years and new mapping is unlikely to affect insurance prices. Insurance companies estimate the risk of flooding using a range of sources. This could include information presented as part of the Flood Study completed in 2016, which have not changed significantly as part of the current study. Insurance companies and the Insurance Council of Australia can provide more information on this matter.

*Q: Will new flooding mapping affect my property value?*

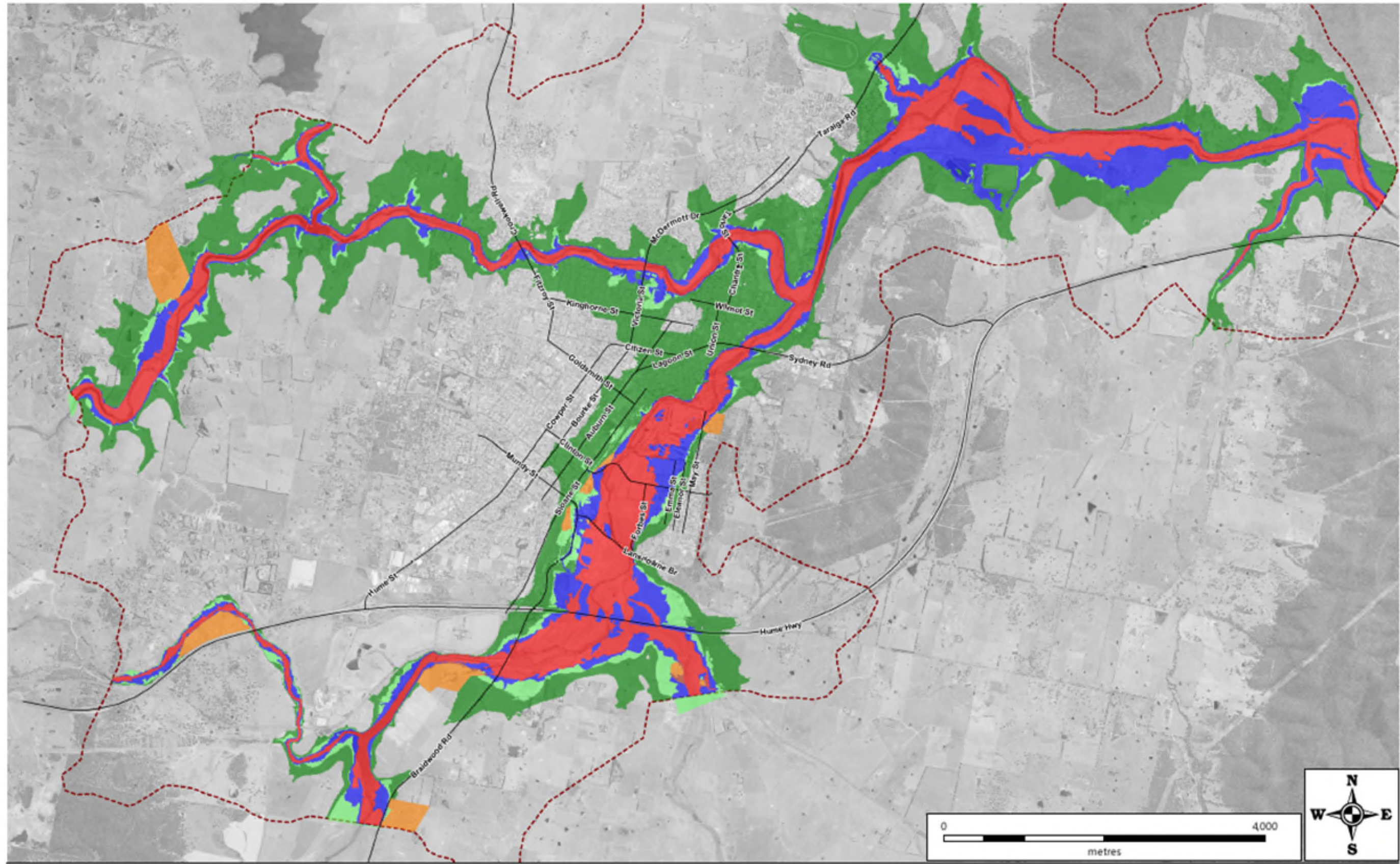
A: It is possible that flood risk is a factor in valuing a property. Mapping of flood-labile land in Goulburn has been publicly available as part of the Flood Study completed in 2016, and for this reason, flood mapping in this study is unlikely to affect property prices.

*Q: Why do Council's flood extent maps extend beyond any recorded flood event?*

A: In mapping flood-labile areas, Council is obliged to consider the full range of possible floods that can occur. This includes small floods that happen every few years on average, but also very rare floods that may occur once or less in a person's lifetime. The state government's definition of flood liable land is all land affected in a Probable Maximum Flood, which is an extremely rare event. Use of this extreme flood event means that many properties in Goulburn will lie on what is technically flood-labile land despite not necessarily experiencing flooding in the last two hundred years.

### **9.9.9 Figure J.1 – Flood Planning Constraints Category Maps**

Please see page below



- |   |  |
|---|--|
|  Flood Planning Constraint Category 1        |  Flood Planning Constraint Category 3 |
|  Flood Planning Constraint Category 2a,b,c,e |  Flood Planning Constraint Category 4 |
|  Flood Planning Constraint Category 2d       |  |
|  Hydraulic Model Extent                      |  |

TITLE : Flood Planning Constraint Category		
PROJECT:Goulburn Mulwaree FRMS&P		
PROJECT No. 180068		
DATE:March 2020	SCALE:1:42,500	FIGURE NUMBER:H1

