Council Policy
PORT MACQUARIE-HASTINGS COUNCIL FLOOD POLICY

1. INTRODUCTION

New Flood Studies were undertaken. Councillors adopted the results of the new flood studies and changed the Flood Planning Levels that apply to development.

2. POLICY STATEMENT AND SCOPE

The policy contains Council’s floodplain management measures that are used to govern planning decisions in floodprone areas.

3. RESPONSIBILITIES AND AUTHORITIES

Natural Resources Section, Development Assessment Team.

4. REFERENCES

Refer to policy.

5. DEFINITIONS

Refer to policy.

6. PROCESS OWNER

Principal Waste & Environmental Engineer – Gordon Cameron.

7. AMENDMENTS

New flood results have been adopted. New Flood Planning Levels have been adopted.
Flood Policy
2018
Cover photograph
April 1963, Corner Bell Street and The Boulevarde - Dunbogan.
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1. ABOUT THIS POLICY

1.1 PURPOSE

The purpose of this Policy is to outline matters to be taken into consideration by Port Macquarie-Hastings Council when exercising its environmental assessment and planning functions in relation to Development in the Port Macquarie-Hastings Local Government Area.

The Policy addresses the new directions in Flood Risk management that are embodied in the NSW Government’s Flood Prone Land Policy and which are emphasised in the 2005 edition of the government’s Floodplain Development Manual. It also draws from the latest Flood modelling results documented in government funded Flood and Floodplain management studies that have been completed in the region, including:

- Hastings River Flood Study (2017)
- ‘Hastings River Floodplain Risk Management Study’ (February 2012)
- ‘Wrights Creek Flood Study’ (2007)
- ‘Camden Haven River & Lakes System Flood Study’ (April 2013)
- ‘Hastings River Flood Study’ (August 2006)
- ‘Lake Cathie Flood Study’ (1984)

1.2 OBJECTIVES

The primary objectives of this Policy in terms of achieving sound Flood management are to:

(i) To maintain the existing Flood regime and flow conveyance capacity;
(ii) to reduce the impact of Flooding and Flood liability on individual owners and occupiers of Flood prone property;
(iii) to reduce private and public losses resulting from Floods;
(iv) to increase public safety with respect to Flood events;
(v) to protect the operational capacity of emergency services and emergency response facilities during Flood events;
(vi) to increase public awareness of the potential for Flooding across the range of Flood events up to the Probable Maximum Flood level;
(vii) to inform the community of Council’s policy in relation to the use and Development of Flood Prone Land;
(viii) to ensure that planning and Development of essential services and land use makes appropriate provision for Flood related risk;
(ix) to utilise best engineering practice for determination of Flood conditions, impact and risk.
(x) to utilise ecologically positive methods of Flood protection wherever possible;
(xi) to ensure that any New Development or modifications to existing Development must, as far as practical, result in a reduction in the existing Flood Risk, and in no circumstances should the Flood Risk be made worse; and,
(xii) to deal equitably and consistently with all matters requiring Council approval on land affected by potential Floods, in accordance with the principles contained in the NSW Government’s *Floodplain Development Manual (2005)*;

1.3 WHERE DOES THE POLICY APPLY

This Policy applies to land affected by Flooding within the Port Macquarie-Hastings Council Local Government Area. It applies where the Development is on Flood Prone Land; that is, on land at or below the level of the Probable Maximum Flood. Notwithstanding, there will be instances, such as where the provision of Safe Access to Flood Refuges is required, where even though the Development is on Flood free land (i.e., above the PMF), the Policy must be applied.

1.4 RELATIONSHIP WITH OTHER PLANS

This Policy details the Development controls that have been determined as part of the process in completing a number of Council sponsored Floodplain Risk Management Studies. These Development controls should be read in conjunction with the Flood extent and hydraulic category mapping contained in the *Hastings River Floodplain Risk Management Study (2012)*, *Hastings River Flood Study (2017)* and in the *Camden Haven River & Lakes System Flood Study (2013)*, plus any additional approved Flood Studies prepared and consented to by Council for the Local Government Area (refer to Section 1.1).

The requirements of this Policy are additional to, and complimentary to, the provisions of the *Port Macquarie-Hastings Council Local Environmental Plan 2011* and *Port Macquarie-Hastings Development Control Plan 2011 & 2013*. Where there is an inconsistency between the Policy and another environmental planning instrument, the provisions of the environmental planning instrument must prevail.

This Policy should also be read in conjunction with the relevant provisions of the following:

- NSW Government’s *Flood Prone Lands Policy* and *Floodplain Development Manual (2005)*; and,
- The *Environmental Planning & Assessment Act 1979*, and regulations thereto.
2. DEFINITIONS AND ACRONYMS

For the purposes of this Policy, the definitions as prescribed in the NSW Government’s *Floodplain Development Manual* (2005), the *Port Macquarie-Hastings Local Environmental Plan 2011*, and the Standard Instrument (2006) must be adopted if not listed in Table 2.

Table 1: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AEP</td>
<td>Annual Exceedance Probability</td>
</tr>
<tr>
<td>AHD</td>
<td>Australian Height Datum</td>
</tr>
<tr>
<td>ARI</td>
<td>Average Recurrence Interval (years)</td>
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<tr>
<td>AR&amp;R</td>
<td>Australian Rainfall and Runoff</td>
</tr>
<tr>
<td>DCP</td>
<td>Development Control Plan</td>
</tr>
<tr>
<td>EP &amp; A Act</td>
<td>Environmental Planning and Assessment Act, 1979</td>
</tr>
<tr>
<td>EP &amp; A Regulation</td>
<td>Environmental Planning and Assessment Regulation, 2000</td>
</tr>
<tr>
<td>FPL</td>
<td>Flood Planning Level</td>
</tr>
<tr>
<td>GFPL</td>
<td>General Flood Planning Level</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>LEP</td>
<td>Local Environmental Plan</td>
</tr>
<tr>
<td>Local Policy</td>
<td>Local Flood Risk management policy</td>
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<tr>
<td>Management Committee</td>
<td>Floodplain Risk Management Committee</td>
</tr>
<tr>
<td>Management Plan</td>
<td>Floodplain Risk Management Plan (FRMP)</td>
</tr>
<tr>
<td>Management Study</td>
<td>Floodplain Risk Management Study (FRMS)</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>PMF</td>
<td>Probable Maximum Flood</td>
</tr>
<tr>
<td>NSW Policy</td>
<td>NSW Government’s Flood Prone Land Policy</td>
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<tr>
<td>SES</td>
<td>State Emergency Service</td>
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</tbody>
</table>
Table 2: Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Annual Exceedance Probability (AEP)</td>
<td>refers to the chance of a Flood of a given or larger size occurring in any one year, usually expressed as a percentage (e.g. 1% AEP = 1 in 100 year event).</td>
</tr>
<tr>
<td>Australian Height Datum (AHD)</td>
<td>is a national surface level datum corresponding approximately to mean sea level.</td>
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<tr>
<td>Boat Shed</td>
<td>refers to a building or other structure used for the storage and routine maintenance of a boat or boats and includes any skid used in connection with the building or other structure.</td>
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<tr>
<td>Boundary Adjustments</td>
<td>refers to realignment of a boundary between two or more lots of land without creating additional lots.</td>
</tr>
<tr>
<td>Community of Support</td>
<td>refers to a cluster of four (4) or more residential Dwellings located and interconnected by roads/driveways, all above the PMF, which would be in a position to supply support to each other or nearby Flood affected residents.</td>
</tr>
<tr>
<td>Climate Change Allowance</td>
<td>refers to an allowance of 900 mm for Sea Level Rise (2100) plus a 10% increase in rainfall intensity and volume for 2100.</td>
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<tr>
<td>Caravan Parks (Manufactured Home Estates)</td>
<td>refers to land on which caravans or other moveable Dwellings are installed, placed or parked. Development within the site includes offices, workshops, amenities, mobile homes, cabins, caravans (with and without rigid annexes), camp sites and the like.</td>
</tr>
<tr>
<td></td>
<td>A managers residence or similar permanent Dwelling structures (including manufactured homes, cabins) are to be considered Residential Development.</td>
</tr>
<tr>
<td>Car Parks and Carparking</td>
<td>refers to buildings, areas or places primarily used for the purpose of parking motor vehicles, including any manoeuvring space and access, whether operated for gain or not. Unless strictly stated, the buildings, areas or places used for parking motor vehicles applies equally to standalone carparking and also developments with carparking.</td>
</tr>
<tr>
<td>Commercial &amp; Industrial Development</td>
<td>Commercial Development refers to shops, offices, clubs, recreation facilities, motels, tourism accommodation and tourist Developments. Industrial Development refers to industrial related activities including factories, engineering workshops, warehouses and the like.</td>
</tr>
<tr>
<td>Critical Facilities</td>
<td>Includes buildings and services used for emergency purposes or reducing social disruption during or after a Flood where inundation or loss of function in an Extreme Flood would represent an unacceptable level of risk. It includes emergency services facilities (e.g. SES depots/offices, Police Stations, Fire Stations (including Rural Fire Service), Ambulance Stations, correctional facilities, hospitals, public halls (where used for a Flood Evacuation Centre), childcare centres and kindergartens, residential care facilities (e.g. intensive aged care, nursing homes), group homes, electrical generating works, sub stations, telephone exchanges, telecommunication repeaters, Flood Evacuation Centres and Flood Refuges, and critical service facility components (e.g. essential components of sewage treatment works, essential water</td>
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</table>
supply reservoirs). Critical Facilities also includes major roads and bridges within this document.

This is not intended to be an exhaustive list of critical infrastructure and Council may elect to define additional Development types as critical.

Development means:
(a) the use of land, and
(b) the Subdivision of land, and
(c) the erection of a building, and
(d) the carrying out of a work.

Dwelling means a room or suite of rooms occupied or used or so constructed or adapted as to be capable of being occupied or used as a separate domicile.

Effective Warning Time The time available after receiving advice of an impending Flood and before the floodwaters prevent appropriate Flood response actions being undertaken. The Effective Warning Time is typically used to move farm equipment, move stock, raise furniture, evacuate people and transport their possessions.

Evacuation Centre are areas where Flood affected residents can assemble and receive assistance under the coordination of the SES. The locations of these areas and their intended function in a Flood emergency are to be determined by the SES and Council and identified in the Local Flood Plan for each stream system.

Extension refers to a modification to an existing structure where it provides for additional Habitable or non-Habitable floor space.

Extreme Flood is often used as an approximate estimate of the PMF based on a less rigorous analysis of Flood behaviour. For the purposes of this Policy the PMF and Extreme Flood are the same.

Fencing refers to a barrier, railing or other upright structure used on a property to mark a boundary, increase privacy or to control access.

Filling refers to the depositing of soil, rock or other similar extractive material obtained from the same or another site, but does not include the depositing of topsoil or feature rock imported to the site that is intended for use in garden landscaping, turf or garden bed establishment or top dressing of lawns and that does not significantly alter the shape, natural form or drainage of the land.

Flood refers to a relatively high stream flow that overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam. It is also the local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from superelevated sea levels and/or waves overtopping coastal defence (excluding tsunami).

Flood Control Exempt Development refers to Development such as in-ground domestic swimming pools, bus shelters, minor advertising signs, picnic shelters, and the like.

Flood Free Area is land above the height of a Probable Maximum Flood (PMF).
**Flood Fringe Area**
is the remaining area of Flood Prone Land after Floodway and Flood Storage Areas have been defined.

**Flood Immunity Level**
the level at which a road, access way or structure becomes inundated. For example, a road which becomes inundated during the 20 year ARI Flood event (but is Flood free for more frequent events) has a 20 year Flood Immunity Level.

**Flood Impact Assessment**
considers the potential for Development to result in a significant change to Flood characteristics including peak Flood level, flow velocity and Flood hazard.

**Flood Maps**
are the maps attached to Council’s Flood Studies as amended or extended from time to time as additional approved Flood data becomes available. Maps may also be held on Council’s GIS.

**Floodplain**
is the area of land which is subject to inundation by Floods up to and including the Probable Maximum Flood event (i.e. Flood Prone Land).

**Flood Plan (Local)**
is a sub-plan of a Disaster Plan that deals specifically with Flooding. They can exist at State Division and local levels. Local Flood Plans are prepared under the leadership of the State Emergency Service.

**Flood Planning Level (FPL)**
is the combination of Flood levels (derived from significant historical Flood events or Floods of specific AEPs) and Freeboards selected for Flood Planning purposes, as determined in Floodplain risk management studies.

**Flood Planning Area (FPA)**
represents the area of land below the FPL and subject to Flood related Development controls.

**Flood Prone Land**
is land susceptible to Flooding by the PMF event. Note that the term Flood Prone Land covers the whole Floodplain, not just that part below the FPL.

**Flood Proofing**
refers to a combination of measures such as Filling of a site to elevate the structure or the design, construction (and alteration) of buildings or structures with appropriate water resistant materials to reduce or eliminate Flood damage to the building or structure, and its contents, and the risk to occupants.

**Flood Refuges**
are publicly accessed buildings above the PMF where Flood displaced residents can assemble and receive shelter. They may include a community shelter, public hall, school or the like. A suitably cleared helicopter landing area must also be identified adjacent to the Flood Refuge (see also Evacuation Centres and Community of Support).

**Flood Risk**
is the potential danger to personal safety and potential damage to property resulting from Flooding. The degree of risk varies with circumstances across the full range of Floods.

**Flood Risk Assessment**
considers the risk for loss of life either for those within a particular Development during the onset of a Flood or those that may seek to access or vacate a Development. A Flood Risk Assessment considers emergency response management issues including the potential for evacuation in rare Floods up to the PMF.
Flood Storage Area

an area of the Floodplain that is important for reducing Flood severity by providing temporary detention/storage of floodwater during the passage of a Flood.

Flood Study

is a comprehensive technical investigation of flood behaviour that defines the variation over time of flood levels, extent and velocity for flood events of various severities, up to and including the PMF.

Floodway

is the area of a Floodplain where a significant discharge of floodwater occurs during Floods. Floodways are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of Flood flow, or a significant increase in Flood level.

Freeboard

is a factor of safety to provide reasonable certainty that the risk exposure selected is actually provided. Freeboard is incorporated into the FPL. The Freeboard may vary with different land uses, parts of the Floodplain or types of mitigation works.

Habitable (room)

means:

- in a residential situation a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom, workroom, study or the like.
- in an industrial or commercial situation an area used for offices or to store possessions susceptible to Flood damage.

Note: Council may use its discretion to determine whether a particular room is to be regarded as a Habitable room for the purposes of this definition by having regard to the nature of the design and/or layout of the room, its potential use and its situation in the building.

Infill Development

refers to Development of vacant land that is generally surrounded by developed properties. Infill Development generally refers to urbanised areas rather than rural or rural residential areas.

Mainstream Flooding

means, inundation of normally dry land when water overflows the banks of a river. It excludes consideration of minor tributaries and local drainage paths.

Measurable

means, in relation to effect on Flood behaviour, at least 0.01m (10mm) for Flood heights and at least 0.1m/sec for average channel and overbank velocities.

Minor Development

refers to non-Habitable Development such as above-ground domestic swimming pools, garden sheds, non-enclosed verandas and patios, decks, pergolas, carports, and the like.

Building Extensions may be considered Minor Development if the area of the Extension covers no more than 40m².

If separate Extensions are proposed for the building/Dwelling, the total area of all Extensions will be assessed to determine whether or not Minor Development provisions apply.

For building Extensions to be considered Minor Development, no additional rooms are to be included, only Extension of existing rooms.
Should any subsequent Extension be proposed under a separate application, Council will consider all previous Extensions approved under this clause.

**New Development**
refers to Development of a different nature to that of the existing use.

**Probable Maximum Flood (PMF)**
is a Flood calculated to be the maximum which is likely to occur at a particular location. The PMF defines the extent of Flood Prone Land, that is, the Floodplain.

**Redevelopment**
refers to rebuilding on the same footprint as previously or immediately adjacent to the previous Development site and generally involves replacement of a structure with something similar without a change of use or Extension of services.

**Replacement Dwelling (Existing Entitlement)**
refers to the replacement of an existing Dwelling within Flood prone areas (like for like replacement).

**Residential Development**
refers to residential Dwellings, including houses, duplexes, dual occupancies, flats, units, apartments, and tourist & visitor accommodation. Also includes associated out-buildings such as sheds or external garages.

For the purposes of this Policy, a standard residential Dwelling is considered as having no more than four (4) bedrooms.

**Riverine Processes**
refers to the effect of flowing water on the riverbank and surrounding landscape, and can include impacts such as river bank erosion, river bank slumping, meandering migration of the main stream bed and the like.

**Special Purpose Facilities**
applies to Development such as schools, marine rescue buildings, oyster sheds, Boat Sheds, jetties, pump stations, amenity blocks, change rooms, ancillary sports facilities and the like.

**Subdivisions**
refers to the division of land into two or more parts that, after the division, would be adapted for separate occupation, use or disposition.

Strata Subdivision, community title and Boundary Adjustment are also considered Subdivision.

**Safe Access (Safe Reliable Evacuation)**
refers to the safe velocity and depth relationships for pedestrians and vehicles as shown in Figure L1 of the NSW Governments Floodplain Management Manual 2005 and the Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria 2013.

For the purposes of this Policy, Safe Access (Safe Reliable Evacuation) is considered to be via vehicular means.
### 3. HOW TO USE THIS POLICY FOR DEVELOPMENT ASSESSMENT

#### 3.1 STEPS TO BE FOLLOWED FOR DEVELOPMENT ASSESSMENT

The following is a summary of the steps that should be followed in the assessment of Development proposals on or adjacent to the Floodplain. The process is also outlined in the flow chart presented overleaf as **Figure 1**.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Step 1 - Check Zoning</strong></td>
<td>Check that the Development proposal is permissible relative to the zoning of the land by reference to the <em>Port Macquarie-Hastings Local Environmental Plan 2011</em> and any other applicable environmental planning instrument.</td>
</tr>
<tr>
<td><strong>Step 2 - Is the site (or access to the site) in a Flood Planning Area?</strong></td>
<td>Establish whether the site of the proposed Development (or access to the Development) falls within the Flood Planning Area (FPA) as defined in mapping that accompanies Port Macquarie-Hastings LEP 2011. If critical infrastructure / services are proposed on the land, assess whether the land falls within the area between the FPA and the PMF extent.</td>
</tr>
<tr>
<td><strong>Step 3 - Read Policy</strong></td>
<td>Read this Policy and seek advice from Council officers as required.</td>
</tr>
<tr>
<td><strong>Step 4 - Consider other Planning Controls</strong></td>
<td>Consider any other relevant planning controls of Council; (e.g., controls specified within any other applicable section of the Development Control Plan), which govern for instance, the size and setback requirements for Development.</td>
</tr>
<tr>
<td><strong>Step 5 – Is land use compatible with Flood conditions?</strong></td>
<td>If the Development site or access to the site falls within the FPA, establish whether the proposed land use is appropriate relative to the Flood conditions. This should consider peak Flood level, depth, hazard and the location of the site or access to the site relative to Floodway, Flood storage and Flood Fringe Areas. This data is available from Council’s existing Flood studies (<em>refer</em> Section 1.1) and can be obtained from Council. Where no Flood study has been undertaken, the applicant will need to liaise with Council to determine whether Flood restrictions may apply or further studies are required.</td>
</tr>
<tr>
<td><strong>Step 6 – Is the site classified as Floodway, Flood storage or Flood fringe?</strong></td>
<td>Determine the hydraulic categorisation of the site and site access. This may be determined from existing Flood Studies and Floodplain Management Studies. Otherwise, a ‘preliminary’ hydraulic categorisation may be determined from first principles outlined in Appendix L of the <em>Floodplain Development Manual</em> and the DECC</td>
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</tbody>
</table>
Floodplain Risk Management Guideline titled ‘Floodway Definition’.

At this stage applicants are encouraged to consider whether or not the advice of a Flood Consultant and/or Engineer specialising in Flood hydrology is required.

If the Development site/access falls within a designated Floodway, it is likely that Development will not be supported.

If the Development site/access falls within a designated Flood fringe or Flood Storage Area, then assessment of the Development proposal can proceed in accordance with the requirements of this Flood policy.

**Step 7 – Can the Development proposal be determined or are additional Flood related investigations required?**

The Development site should be assessed relative to the requirements of the Flood Policy to establish:

(i) whether a determination can be made based on the site data relative to the available Flood data (e.g., hydraulic category mapping, hazard mapping, peak Flood level and velocity data etc).

(ii) whether a Flood Impact Assessment is required, involving an assessment of the potential for adverse impacts on adjoining property measured in terms of increases in peak Flood level and/or flow velocity;

(iii) whether a Flood Risk Assessment is required to establish the risk to future occupants of the site, including consideration of evacuation potential; or,

(iv) whether both a Flood Impact Assessment and a Flood Risk Assessment are required.

**Step 8 – Determine the Application**

Assess the Development proposal and the outcomes from Steps 2 to 6 inclusive relative to the Flood Policy.

**Step 9 - Identify any Conditions**

Check with Council engineering and planning staff to establish any other requirements for a Development application.

Submit relevant Flood assessment/s with the Development application once satisfied all requirements of the Flood Policy have been met.
PORT MACQUARIE-HASTINGS COUNCIL FLOOD POLICY

Figure 1: Flowchart - Steps to be Followed for Development Assessment

STEP 1
CHECK ZONING (LEP) (Contact Council Planning Staff)

STEP 2
DETERMINE WHETHER THE PROPOSED DEVELOPMENT OR ACCESS TO THE DEVELOPMENT FALLS WITHIN THE FLOOD PLANNING AREA (Contact Council Flood Engineer)

STEP 3
READ FLOOD POLICY

STEP 4
CONSIDER OTHER PLANNING CONTROLS (DCP) (Contact Council Planning Staff)

STEP 5
ASSESS COMPATIBILITY OF LAND USE TO FLOOD CONDITIONS

STEP 6
HYDRAULIC CATEGORISATION

STEP 7
ADDITIONAL INVESTIGATIONS

STEP 8
DETERMINATION OF APPLICATION BASED ON APPLICATION OF STEPS 2 TO 7

STEP 9
IDENTIFY ANY OTHER CONDITIONS TO MEET AND SUBMIT ONCE FLOOD POLICY REQUIREMENTS HAVE BEEN MET

A. Determination can be made without further studies; or,
B. Flood Impact Assessment is required; or,
C. Flood Risk Assessment is required; or,
D. Both a Flood Impact Assessment and Flood Risk Assessment are required.

Based on the Flood Policy, identify whether (choose A, B, C or D):

Undertake studies as required

From Hydraulic Categorisation

(1) Where no flood study is available liaise with Council to determine acceptable means of addressing flood related requirements

(2) Where flood study and/or Floodplain Risk Management Study is available

Determine whether proposed land use is compatible

Where floodway, flood storage and flood fringe are defined

Engage suitably qualified flood consultants/ flood engineer

Undertake preliminary hydraulic categorisation based on Floodplain Development Manual

Where floodway, flood storage and flood fringe are not defined

(1) If floodway, likely that development will not be supported, although some limited specific concessions are permitted by this policy

(2) If flood storage/flood fringe, proceed in accordance with policy requirements
3.2 PROVISIONAL SITE CLASSIFICATION

The Floodplain can be divided into three hydraulic categories which reflect the different hydraulic function of different parts of the Floodplain. These are as follows:

- Flood Fringe,
- Flood Storage, and
- Floodway.

Hydraulic categories are based on the 100 year ARI event including the applicable climate change allowance.

The assessment of Development must consider the compatibility of the proposed land use with the hydraulic category of the land. If compatible, Development controls can be applied to ensure that Floodplain management objectives are maintained.

Information detailing the hydraulic categorization of the major Floodplains in the Port Macquarie-Hastings LGA is available from previously completed Flood studies and Floodplain risk management studies. Where unavailable, the hydraulic and hazard categorisation is to be based on the justification of an experienced Flood engineer. Council will not provide provisional site classifications, other than for areas classified as part of a Flood study or Floodplain management plan.

The following provides additional details for the three hydraulic categories identified above and the relevant Flood hazard categories that apply. Hydraulic categories are shown on mapping that accompanies Flood studies and Floodplain risk management studies prepared by Council and are generally available via a formal request to Council.

3.2.1 Hydraulic Categories

**Floodways**

Floodways are required for the conveyance of essential Flood flow and are to be retained in a condition capable of doing so. Development in Floodway areas is subject to a range of additional controls. It needs to be recognised that Floodways are not always indicative of high hazard areas. It is necessary to separately consider the range of factors that contribute to hazard categorisation.

For the purposes of this policy, Floodways are defined as those sections of the Floodplain:

- where a significant discharge of water occurs during Floods;
- which even if partially blocked, would cause a significant redistribution of Flood flow, or a significant increase in Flood levels;
- where most of the floodwaters carried by a particular flowpath are conveyed;
- where flow velocities may be relatively high compared to other areas of the Floodplain.

**Flood Storage**

Flood Storage Areas are those parts of the Floodplain that are important for the temporary storage of floodwater during the passage of a Flood. Filling or obstruction of these areas may cause an increase in Flood levels or changes to peak discharges downstream of these areas.

Filling of Flood Storage Areas may be considered, but it is incumbent on those that seek to fill Flood Storage Areas to undertake the necessary Flood investigations to establish
that adverse Flood impacts will not arise elsewhere in the Floodplain, and to ensure that the Development proposal (i.e., the Filling) is consistent with the requirements of this policy.

**Flood Fringe**

Flood Fringe refers to those areas not classified as Floodway or Flood Storage that are located within the 100 year ARI Flood extent. Within the Port Macquarie-Hastings LGA, Flood Fringe Areas have been identified as areas where the floodwater depth at the peak of the 100 year ARI Flood is less than 300 mm.

### 3.2.2 Hazard Categories

Flood hazard is a measure of the degree of difficulty that pedestrians, cars and other vehicles will have in traversing Flooded areas, and the likely damage to property and infrastructure. At low hazard, passenger cars and pedestrians (adults) are able to move out of a Flooded area. At high hazard, wading becomes unsafe, cars are immobilised and damage to light timber-framed houses would occur.

Flood hazard is categorised according to a combination of the flow velocity and the depth of floodwater. The categories are defined by lower and upper bound values for flow velocity and floodwater depth.

Spatial and temporal distributions of flow, velocity and water level determined from the computer modelling have been used to determine the Flood hazard in the major Floodplains of the Port Macquarie-Hastings LGA. Interpretation of this data indicates that for large events like the 100 year recurrence Flood, the majority of Flooded land would fall within the high hazard category defined in the 'Floodplain Development Manual' (2005).

Hence, for the purpose of understanding how the Flood hazard affects existing Development and areas of potential future Development, it is useful to further subdivide areas falling within the high hazard category, into High Hazard, Very High Hazard and Extreme Hazard.

Similarly, the low hazard category defined in the manual has been subdivided to create a Low Hazard and a Medium Hazard category.

A summary of the criteria adopted for each hazard category is listed in **Table 3**.

**Table 3: Adopted Hazard Categories for Floodplain Lands**

<table>
<thead>
<tr>
<th>HAZARD CATEGORY</th>
<th>CRITERIA</th>
<th>PRACTICAL APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Depth ( d &lt; 0.4 \text{ m} ) &amp; velocity ( v &lt; 0.5 \text{ m/s} )</td>
<td>Suitable for cars</td>
</tr>
<tr>
<td>Medium</td>
<td>exceeding Low criteria, and ( d \leq 0.8 \text{ m}, v \leq 2.0 \text{ m/s}, \text{and} v \times d \leq 0.5 )</td>
<td>Suitable for heavy vehicles and wading by able bodied adults</td>
</tr>
<tr>
<td>High</td>
<td>exceeding Medium criteria, and ( d \leq 1.8 \text{ m}, v \leq 2.0 \text{ m/s}, \text{and} v \times d \leq 1.5 )</td>
<td>Suitable for light construction, timber frame, brick veneer etc</td>
</tr>
<tr>
<td>Very High</td>
<td>exceeding High criteria, and ( 0.5 \text{ m/s} &lt; \text{velocity} &lt; 4 \text{ m/s} ) &amp; ( v \times d \leq 2.5 )</td>
<td>Suitable for heavy construction, steel frame, concrete etc</td>
</tr>
</tbody>
</table>
The criteria presented in Table 3 have been used to develop hazard mapping across the Floodplains of the Lower Hastings River, Lower Camden Haven River & Lakes System, and the Wrights Creek system in south-eastern Port Macquarie. The hazard mapping is contained in the respective Flood studies for these river and Floodplain systems. It can be inspected via consultation with Council.

3.2.3 Existing Hydraulic and Hazard Category Mapping

At the time of the current revision, hydraulic and hazard categories had been documented in the following reports for parts of the Port Macquarie Hastings Local Government Area:

- Hastings River Flood Study (2017)
- Hastings River Floodplain Risk Management Study (2012)
- Camden Haven River & Lakes System Flood Study (2013)
- Wrights Creek Flood Study (2007)
- Hastings River Flood Study (2006)

A range of other studies have been undertaken, or are in the process of being completed where hydraulic and hazard categorisation may be available or may be able to be determined through further analysis. These studies include:

- Beechwood Rural Residential Flood Study (August 2015)
- John Oxley Drive Precinct Site Flood Assessment (March 2013)
- Sancrox Employment Precinct Flooding Advice (2012)
- Area 14 Flood Assessment (October 2010)
- Beach Street, Bonny Hills Flood and Drainage Study (2008)
- Yippin Creek Flood Study (May 2005 and 2007)
- Area 13 ‘East’ Precinct at Thrumster – Flood Impact Study (May 2007)
- Thrumster (Area 13 Precinct) Flood Study (January 2007)
- Lake Cathie Flood Study (1984)

3.3 DEVELOPMENT TYPE

The following land use categories have been identified for the purpose of considering Flood related controls on potential Development (refer to Table 2 for definitions):

- Boundary Adjustments
- Caravan Parks, and Manufactured Home Estates
- Car Parks and Carparking
- Commercial and Industrial Development
- Critical Facilities
3.4 FLOOD PLANNING LEVELS

3.4.1 Background

Flood Planning Levels are the combination of Flood levels and Freeboard selected for Flood Planning purposes. These levels can be combined with topographic data to determine Flood Planning Areas.

Mapping has been prepared which shows the currently adopted Flood Planning Areas for the major waterways within the Port Macquarie-Hastings LGA, including the Hastings and Camden Haven Rivers, and Wrights Creek and the tributaries of Lake Cathie. Council is able to supply the FPL for properties located within the Flood Planning Area of these waterways.

3.4.2 Climate Change

Flood Planning Area mapping has been developed based on the results of Flood modelling for existing conditions, and where available, the impacts of climate change.

Scientific evidence indicates that peak Flood levels for events of a specified frequency will increase over time due to the impact of climate change. The climate change drivers that may affect peak Flood levels in the Port Macquarie-Hastings LGA are:

1. Sea Level Rise (SLR) – The previous NSW Government’s Sea Level Rise Policy Statement (2009) benchmarks indicate an increase in mean sea level of 0.4 m by 2050 and 0.9 m by 2100.
2. Changes to rainfall intensity.

Climate modelling suggests that rainfall intensity on the Mid North Coast of NSW may increase by up to 10% on present day levels over the next 60 years.

Therefore, Flood Planning Levels and Flood Planning Areas, are likely to change in the future as a function of the impact of climate change.

Notwithstanding, there is a range of existing Development that will have a serviceable life over the period in which climate change impacts will manifest. There will also be New Development that will have a serviceable life that will extend well into the climate change horizons where flood level impacts will occur. Therefore, this policy proposes a range of FPLs that can be applied to different types of Development as a function of its expected life.
3.4.3 Modelling Data

Given the likely impacts of climate change are only recently being defined, not all Council’s flood studies contain climate change modelling information. Council proposes to progressively complete climate change modelling for all major catchments over time.

The following describes the climate change modelling undertaken for various flood studies within the Port Macquarie-Hastings LGA:

- **Hastings River**: Climate change modelling has been undertaken under for the *Hastings River Flood Study (2017)* that includes the drivers listed in section 3.4.2,
- **Camden Haven River**: Climate change modelling has been undertaken for the *Camden Haven River and Lakes System Flood Study (2013)* that includes the drivers listed in section 3.4.2.
- **Wrights Creek**: Climate change modelling data (or estimates) was not undertaken for the *Wrights Creek Flood Study (2007)*.
- **Lake Cathie**: Climate change modelling data (or estimates) was not undertaken for the *Lake Cathie Flood Study (1984)*.

3.4.4 Flood Planning Level (FPL) Categories

Council has adopted a standard Freeboard of 500mm across the Port Macquarie-Hastings LGA.

Final climate change modelling has not been undertaken for the Wrights Creek or Lake Cathie catchments. For these and other catchments where climate change modelling does not exist the following ‘interim’ Climate Change Allowances must apply:

- **East (downstream)** of the Pacific highway - 400mm.
- **West (upstream)** of the Pacific highway - 100mm.

The Port Macquarie-Hastings LGA FPL’s are listed in **Table 4**.

**Table 4: Flood Planning Level (FPL) Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Proposed - FPL Category Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPL1</td>
<td>20 year ARI Flood level (No allowance for Climate Change, No Freeboard)</td>
</tr>
<tr>
<td>FPL2</td>
<td>100 year ARI Flood level + Climate Change Allowance (No Freeboard)</td>
</tr>
<tr>
<td>FPL3*</td>
<td>100 year ARI Flood level + Climate Change Allowance + 500mm Freeboard</td>
</tr>
<tr>
<td>FPL4</td>
<td>Probable Maximum Flood (PMF) as defined in Table 2</td>
</tr>
</tbody>
</table>

* Defines the Flood Planning Area (FPA) in the PMHC LEP.

Council will provide relevant levels for specific Developments upon request.

3.4.5 Adopted FPLs for Land Uses

Flood Planning Levels for various Land Use Categories must be as outlined in **Table 5**.
Note: Unless strictly stated, the FPL applies to each relevant component of a development including all ancillary components (i.e. for a Commercial/Industrial development involving the construction of a shed, storage yard and carparking the applicable FPL for each component will be based on the ‘Development Type’ heading below).

### Table 5: Flood Planning Levels for Land Use Categories

<table>
<thead>
<tr>
<th>DEVELOPMENT TYPE</th>
<th>FLOOD PLANNING LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boundary Adjustments</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Residential / Large Lot</td>
<td>Each lot must have a minimum area of 400m² at or above FPL2</td>
</tr>
<tr>
<td>▪ Residential or Commercial/Industrial</td>
<td></td>
</tr>
<tr>
<td>▪ Rural</td>
<td>Each lot must have a minimum area of 1000m² at or above FPL2</td>
</tr>
<tr>
<td><strong>Caravan Parks and Manufactured Home Estates</strong></td>
<td>FPL2</td>
</tr>
<tr>
<td>▪ Permanent Habitable structures including manufactured homes, managers residences or similar</td>
<td>FPL3</td>
</tr>
<tr>
<td>▪ Amenities Blocks, Visitors Carparking, Community Facilities, Caravan Sites/Camping Sites</td>
<td>FPL1</td>
</tr>
<tr>
<td><strong>Car Parks and Carparking</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Open Carparks</td>
<td>FPL1</td>
</tr>
<tr>
<td>▪ Basement and Underground Carparks</td>
<td>&gt; 1.2m AHD</td>
</tr>
<tr>
<td></td>
<td>Access ramps and all entry points (windows, etc) = FPL2</td>
</tr>
<tr>
<td><strong>Commercial &amp; Industrial</strong></td>
<td>FPL2 with 25% of the ground floor plan area to be at or above FPL3</td>
</tr>
<tr>
<td></td>
<td>Consideration will be given to a lower floor level in limited circumstances where mobility access standards are to be met and where compatibility with existing street frontages is required.</td>
</tr>
<tr>
<td></td>
<td>The absolute minimum floor level will be FPL1.</td>
</tr>
</tbody>
</table>
**Critical Facilities**

FPL4

Critical infrastructure must not be constructed on land below the level of the PMF.

Where existing Critical Facilities are located on the Floodplain, they are to be designed / retrofitted to be Flood free during the PMF.

---

### Minor Development

- **Building Extensions**
  - ≤40m², decks, non-enclosed patios, verandas, pergolas etc.
  - FPL1 or to match existing floor level, whichever is the highest level

- **Carports (unenclosed) and ‘other open’ structures**
  - >1.2m AHD

- **Garden Sheds, above-ground domestic swimming pools, etc**
  - FPL1

- **Other**
  - Assessed on a case by case basis

---

### Residential Development

- **Habitable Dwellings (and building Extensions >40m²)**
  - FPL3

- **Garages and Storage Sheds (enclosed)**
  - FPL1

- **Boat Sheds ≤60m²**
  - >1.2m AHD

- **Boat Sheds >60m²**
  - FPL1

---

### Rezoning of Land

- **Residential / Large Lot Residential or Commercial/Industrial**
  - Each lot must have a minimum area of 400m² at or above FPL2

- **Rural**
  - Each lot must have a minimum area of 1,000m² at or above FPL2

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### Special Purpose Facilities

- **Oyster sheds, Boat Sheds**
  - >1.2m AHD
### Public amenity blocks, change rooms, ancillary sports facilities
- FPL1 or as per Council discretion based on use.

### Other Special Purpose Facilities
- FPL3 or as per Council discretion based on use.

## Subdivisions

<table>
<thead>
<tr>
<th>Category</th>
<th>Development Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential and Rural Residential (land)</td>
<td>FPL2 lots, FPL2 roads</td>
</tr>
<tr>
<td>Rural (land)</td>
<td>FPL2 building envelopes/lots, FPL1 roads</td>
</tr>
<tr>
<td>Commercial &amp; Industrial (land)</td>
<td>FPL2 lots, FPL2 roads</td>
</tr>
</tbody>
</table>

Note: All development must comply with the requirements of AS3500 for plumbing, drainage and sewer aspects.

### 3.5 PRESCRIPTIVE CONTROLS

Prescriptive controls that apply to a particular Flood Risk include:

- Floor Level
- Flood Proofing
- Flood Impact on Other Properties
- Site Access and Flood Evacuation Requirements
4. DEVELOPMENT IN FLOOD FRINGE AREAS

The following section outlines the matters for consideration which apply to land categorised as Flood Fringe.

Flood Fringe Areas are generally locations which will have little effect on the downstream conveyance of floodwaters and in which Filling will result in no Measurable impact on peak Flood levels. It is important to note changes to local drainage need to be considered by the applicant. For the purposes of this policy local drainage issues must be considered separately.

4.1 BOUNDARY ADJUSTMENTS

(i) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

(ii) For an allotment that has land above FPL2, a Boundary Adjustment must not create any allotment without a functionally useful area of land at or above FPL2.

(iii) For rural land, the Boundary Adjustment must retain raised land or access to stock in times of Flood. Where land at or above FPL2 or PMF is available, such land must be partially retained on any allotment resulting from the Boundary Adjustment.

(iv) The Boundary Adjustment must not reduce the Flood immunity of existing vehicular or pedestrian Flood access to any allotment.

4.2 CARAVAN PARKS, AND MANUFACTURED HOME ESTATES

Caravan Parks & Manufactured Housing must be restricted to Low Hazard Flood areas.

(a) Floor Levels

Permanent Habitable structures must be at or above FPL3.

Land levels for permanent Habitable structures must be at or above FPL2.

Ancillary development including; Amenities Blocks, Visitors Carparking, Community Facilities, Caravan Sites/Camping Sites must be at or above FPL 1.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties

The NSW Floodplain Development Manual indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment.

Note: local drainage matters still must be considered.

(d) Site Access and Flood Evacuation Requirements

Council will only support Development in Flood Fringe Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through Low Hazard conditions during the early warning period of a Flood is achievable.
A minimum 8 hours Effective Warning Time must be available to a particular site. The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in *Emergency Response Management Community Data Sheets*. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria* (2013).

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

### 4.3 CAR PARKS AND CARPARKING

Car Parks and Carparking are permissible in Flood Fringe Areas, subject to other Development related planning controls.

### 4.4 COMMERCIAL AND INDUSTRIAL DEVELOPMENT

**New Development, Infill Development and Redevelopment**

(a) **Floor Levels**

At least 25% of the ground floor level area for Commercial and Industrial Development must be at or above FPL3. The remaining 75% of the floor level area can be sited at or above FPL2.

Where multiple units are proposed as part of an industrial or commercial Development, at least 25% of the ground floor level of each unit must be at or above FPL3.

The application must demonstrate the feasibility of moving bulky or heavy items to the raised area.

(b) **Flood Proofing**

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) **Flood Impact on Other Properties**

The NSW *Floodplain Development Manual* indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment.
Nevertheless, local drainage matters still need to be considered.

(d) Site Access and Flood Evacuation Requirements

Council will only support Commercial/Industrial Developments in Flood Fringe where Effective Warning Time and reliable access is available for evacuation of staff and patrons. Developments will be required to demonstrate that evacuation through low hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in *Emergency Response Management Community Data Sheets*. These are available within the Hastings River Floodplain Risk Management Plan only.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013)*.

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

**Extensions**

In general, Extensions must proceed in accordance with the requirements outlined above for New Development. Notwithstanding, minor Extensions may be exempt from item (d) above. Council will assess possible exemptions on a case by case basis.

4.5 CRITICAL FACILITIES

Where possible, Critical Facilities must not be located in Flood prone areas (NB: the policy recognises that this is not possible in all circumstances).

(a) Floor Levels

The floor level of all Critical Facilities must be at or above FPL4.

Major infrastructure such as roads and bridges are to be constructed at or above FPL3.

(b) Flood Proofing

Flood Proofing must be provided for all parts of the building up to FPL4.

Preferably, this is to be achieved by Filling the portion of the site containing the critical infrastructure; however, alternative methods may also be considered.

(c) Flood Impact on Other Properties

The NSW Floodplain Development Manual indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment.
Nevertheless, local drainage matters still need to be considered.

(d) Site Access and Flood Evacuation Requirements

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

4.6 FILLING

Filling is permissible in Flood Fringe Areas, subject to other Development related planning controls.

4.7 FENCING

(i) Fences of a continuous design, such as paling fences, colourbond and continuous brick fences, are permissible in Flood Fringe Areas.

(ii) All open type Fencing (such as pool fence or post and rail fence) is considered appropriate in Flood Fringe Areas.

4.8 MINOR DEVELOPMENT

(a) Floor Levels

Floor levels for Minor Development must be in accordance with Table 5.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties

The NSW Floodplain Development Manual indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment.

Nevertheless, local drainage matters still need to be considered.

(d) Site Access and Flood Evacuation Requirements

No requirements.

4.9 RESIDENTIAL DEVELOPMENT

New Development, Infill Development and Redevelopment

(a) Floor Levels

The elevation of all Habitable floor levels must be at or above FPL3.

The minimum floor level elevation for garages, sheds and other structures ancillary to Residential Development, must be defined by FPL1.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.
(c) Flood Impact on Other Properties

The NSW Floodplain Development Manual indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment. Nevertheless, local drainage matters still need to be considered.

(d) Site Access and Flood Evacuation Requirements

Council will only support Residential Development in Flood Fringe Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through low hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in Emergency Response Management Community Data Sheets. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013).

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

Replacement Dwellings

In general, Replacement Dwellings must proceed in accordance with the requirements outlined above for New Development.

Extensions

In general, Extensions must proceed in accordance with the requirements outlined above for New Development. Notwithstanding, Extensions undertaken on single Dwelling and dual occupancy may be exempt from item (d) above. Council will assess possible exemptions on a case by case basis.

4.10 REZONING OF LAND

The following will apply to proposals for rezoning of Flood Fringe Areas:

(i) Rezoning applications will not be considered unless a Flood Study (including a Flood Impact Assessment and Flood Risk Assessment) has been undertaken or
investigations are completed to confirm potential impacts of the full range of Floods (including the PMF) on the future Development of the rezoned land are minimal (i.e. Development is of minor significance).

(ii) The applicant will also be required to prepare hydraulic and hazard category mapping for the proposed rezoning site, where this is not available from existing studies.

(iii) Council will not support the rezoning reliant upon evacuation through high hazard and Floodway or high hazard and Flood storage conditions.

(iv) Council may only support residential or commercial/industrial rezoning applications if the land is located at or above FPL2.

(v) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

4.11 SPECIAL PURPOSE FACILITIES

(a) Floor Levels
Generally for Special Purpose Facilities, floor levels must be at or above FPL3.
For oyster sheds the floor level must be at or above RL 1.2m AHD.
For public amenity blocks, change rooms and ancillary sports facilities the floor level must be at or above FPL 1.

(b) Flood Proofing
Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties
The NSW Floodplain Development Manual indicates that Development in Flood Fringe Areas will not result in any significant impact on the pattern of Flood flows and/or Flood levels. Hence, by definition, Development in Flood Fringe Areas will not result in an impact on adjoining properties. Accordingly, Development can proceed without the need for a Flood Impact Assessment.

Nevertheless, local drainage matters still need to be considered.

(d) Site Access and Flood Evacuation Requirements
Council will only support Special Purpose Facilities in Flood Fringe Areas where Effective Warning Time and reliable access is available for evacuation.
Developments will be required to demonstrate that evacuation through low hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in Emergency Response Management Community Data Sheets. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.
A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013)*.

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

### 4.12 SUBDIVISIONS

The Subdivision of land will be subject to the matters for consideration identified above for the relevant land use type (*i.e. residential or commercial/industrial*) (See Table 5). In addition, the following Flood related controls will apply to the Subdivision of land.

(a) **Road and Lot Levels**

Minimum road levels for Subdivisions must be at or above FPL2.

Lot levels for residential Subdivisions must be at or above FPL2.

Lot levels for commercial/industrial Subdivisions must be at or above FPL2.

Building envelope/Lot levels for Rural Subdivisions must be at or above FPL1

(b) **Site Access and Flood Evacuation Requirements**

Council may only support Subdivision applications in Flood Fringe Areas where Effective Warning Time and reliable access is available for evacuation.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1, and
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Developments that can demonstrate effective evacuation through Low Hazard conditions during the early warning period of a Flood may be supported. This will require applicants to demonstrate that sufficient advance warning of an oncoming Flood is available to allow effective evacuation.

A minimum 8 hours Effective Warning Time must be available to a particular site.

Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013)*.

The applicant is encouraged to liaise with Council to establish the level of investigation required to assess the Flood Risk at a particular property.

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.
5. DEVELOPMENT IN FLOOD STORAGE AREAS

The following section outlines the matters for consideration which apply to land categorised as Flood Storage

Flood Storage Areas are those parts of the Floodplain that are important for the temporary storage of floodwaters during the passage of a Flood. Development in Flood Storage Areas has the potential to adversely impact on Flooding at adjacent properties. Accordingly, Development in these areas is subject to certain controls on Filling and potential “blockage” of this land.

In addition, consideration is given to the Flood hazard posed to users of the proposed Development.

5.1 BOUNDARY ADJUSTMENTS

(i) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

(ii) For an allotment that has land at or above FPL2, a Boundary Adjustment must not create any allotment without a functionally useful area of land at or above FPL2.

(iii) For rural land, the Boundary Adjustment must retain raised land or access to stock in times of Flood. Where land at or above FPL2 or PMF is available, such land must be partially retained on any allotment resulting from the Boundary Adjustment.

(iv) The Boundary Adjustment must not reduce the Flood immunity of existing vehicular or pedestrian Flood access to any allotment.

5.2 CARAVAN PARKS, AND MANUFACTURED HOME ESTATES

Caravan Parks and Manufactured Housing must be restricted to Low Hazard Flood areas.

(a) Floor Levels

Permanent Habitable structures must be at or above FPL3.

Land levels for permanent Habitable structures must be at or above FPL2.

Ancillary development including; Amenities Blocks, Visitors Carparking, Community Facilities, Caravan Sites/Camping Sites must be at or above FPL 1.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties

Where Development will take place in a designated Flood Storage Area, the applicant is required to demonstrate that the impact on peak 100 year ARI Flood levels is less than 10mm. Where practical, excavation and other works may be proposed to address this requirement.

Any Development must also ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties.
It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

Council will only support Development in Flood Storage Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through Low Hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in Emergency Response Management Community Data Sheets. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013).

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

5.3 CAR PARKS AND CARPARKING

(i) Car parks will be supported in Flood Storage Areas provided the applicant can demonstrate the potential damage to motor vehicles from Flooding is minimised.

(ii) Proposals for car parks must ensure that motor vehicles do not become moving debris during Floods, which threaten the integrity of structures or the safety of people, or damage other property. Stability of vehicles must be assessed in accordance with Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013).

(iii) Proposals for basement car parks must ensure risk to human life from the inundation of basement and other Car Park or driveway areas is minimised.

5.4 COMMERCIAL AND INDUSTRIAL DEVELOPMENT

New Development, Infill Development and Redevelopment

(a) Floor Levels

At least 25% of the ground floor level area for Commercial and Industrial Development must be at or above FPL3. The remaining 75% of the floor level area can be sited at or above FPL2.
Where multiple units are proposed as part of an industrial or commercial Development, at least 25% of the ground floor level of each unit must be at or above FPL3.

The application must demonstrate the feasibility of moving bulky or heavy items to the raised area.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties

Where Development will take place in a designated Flood Storage Area, the applicant is required to demonstrate that the impact on peak 100 year ARI Flood levels is less than 10mm, and on peak 100 year ARI Flood velocities is less than 0.1m/sec, at the property boundary. Where practical, excavation and other works may be proposed to address this requirement, although this is unlikely in an urban environment.

Any Development must ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

Council will only support Commercial/Industrial Development in Flood Storage Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through low hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in *Emergency Response Management Community Data Sheets*. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013)*.

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

Extensions

In general, Extensions must proceed in accordance with the requirements outlined above for New Development. Notwithstanding, minor Extensions may be exempt from item (d) above. Council will assess possible exemptions on a case by case basis.
If the area of the Extension covers no more than 40m² (at ground floor level), or no more than 20% of the existing floor area, it may be considered under Section 5.8, Minor Development.

5.5 CRITICAL FACILITIES

Where possible, Critical Facilities must not be located in Flood prone areas (NB: the policy recognises that this is not possible in all circumstances).

(a) Floor Levels

The floor level of all critical infrastructure must be at or above FPL4.

Major infrastructure such as roads and bridges are to be constructed at or above FPL3.

(b) Flood Proofing

Flood Proofing must be provided for all parts of the building up to FPL4.

Preferably, this is to be achieved by Filling the portion of the site containing the critical infrastructure; however, alternative methods may also be considered.

(c) Flood Impact on Other Properties

All Development must ensure Flood flows and/or Flood levels will not be detrimentally affected with respect to Flood Risk to neighbouring properties.

Any Development must ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

5.6 FILLING

Where Filling will take place in a Flood Storage Area, the applicant is required to demonstrate that the impact on peak 100 year ARI Flood levels is less than 10mm, and on peak 100 year ARI Flood velocities is less than 0.1m/sec, at the property boundary.

Filling of land below FPL2 will not be supported unless it can be demonstrated that:

- there will be no detrimental impact on Flood behaviour upon adjoining properties
- the cumulative impact of similar Development in the area would have no detrimental impact of Flood behaviour anywhere in the Floodplain
- there will be no detrimental impact on local drainage patterns.

It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

Filling on rural zoned land within a Flood Storage Area may be permissible without the need for a Flood Impact Assessment, subject to the following:
- The fill footprint area is the lesser of either 20% of the total site area or 500m² measured at the top-of-batter;

- A minimum distance of 20 metres is maintained between the fill platform and the upstream and lateral property boundaries, measured at the bottom-of-batter.

5.7 FENCING

(i) Fences of a continuous design, such as paling fences, colourbond and continuous brick fences, may be permissible in Flood Storage Areas.

(ii) All continuous Fencing must allow a gap of at least 100mm from the ground to the base of the fence, or a similar opening subject to Council approval.

(iii) All open type Fencing (such as pool fence or post and rail fence) is considered appropriate in Flood Storage Areas.

5.8 MINOR DEVELOPMENT

(a) Floor Levels

Floor levels for Minor Development must be in accordance with Table 5.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.

(c) Flood Impact on Other Properties

All Development must ensure Flood flows and/or Flood levels will not be detrimentally affected with respect to Flood Risk to neighbouring properties.

Any Development must ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment Report is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

No requirements.

5.9 RESIDENTIAL DEVELOPMENT

New Development, Infill Development and Redevelopment

Development must be restricted to a single Dwelling in Flood Storage Areas.

(a) Floor Levels

The elevation of all Habitable floor levels must be at or above FPL3.

The minimum floor level elevation for garages, sheds and other structures ancillary to Residential Development, must be defined by FPL1.

(b) Flood Proofing

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.
(c) Flood Impact on Other Properties

Where Development will take place in a designated Flood Storage Area, the applicant is required to demonstrate that the impact on peak 100 year ARI Flood levels is less than 10mm, and on peak 100 year ARI Flood velocities is less than 0.1m/sec, at the property boundary. Where practical, excavation and other works may be proposed to address this requirement, although this is unlikely in an urban environment.

Any Development must also ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

Council will only support Residential Development in Flood Storage Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through low hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site.

The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in Emergency Response Management Community Data Sheets. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013).

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

Replacement Dwellings

Replacement Dwellings will be considered on a ‘like for like’ basis provided:

(i) Legal evidence of the Dwellings existence/approval can be provided to Council;
(ii) Evidence is submitted with applications to demonstrate the occupation/use of the Dwelling immediately prior to loss of the Dwelling;
(iii) The Replacement Dwelling can meet current Flood Planning requirements. This may require the Dwelling to be relocated within the property to a less hazardous area;

(iv) The application for a Replacement Dwelling is made to Council within 12 months of the loss of the original Dwelling.

**Extensions**

In general, Extensions must proceed in accordance with the requirements outlined above for New Development. Notwithstanding, minor Extensions undertaken on single Dwelling and dual occupancy may be exempt from item (d) above. Council will assess possible exemptions on a case by case basis.

### 5.10 REZONING OF LAND

The following will apply to rezoning applications of Flood Storage Areas:

(i) Rezoning applications will not be considered unless a Flood Study (including a Flood Impact Assessment and Flood Risk Assessment) has been undertaken or investigations are completed to confirm potential impacts of the full range of Floods (*including the PMF*) on the future Development of the rezoned land are minimal (*ie Development is of minor significance*).

(ii) The applicant will also be required to prepare hydraulic and hazard category mapping for the proposed rezoning site, where this is not available from existing studies.

(iii) Council will not support the rezoning of land for all sites provisionally classified as High Hazard in accordance with the *Floodplain Development Manual (2005)*, unless it can be shown that works proposed as part of the rezoning (which are acceptable to Council) will reduce the hazard categorization of the land, while at the same time not adversely impacting Flood characteristics for adjacent or nearby properties. A Flood Impact Assessment is to be prepared in accordance with the requirements of Section 8.2.

(iv) Council will not support rezoning applications reliant upon evacuation through *high hazard and Floodway* or *high hazard and Flood storage* conditions.

(v) Council may only support residential or commercial/industrial rezoning applications if the land is located at or above FPL2.

(vi) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

### 5.11 SPECIAL PURPOSE FACILITIES

**Floor Levels**

Generally for Special Purpose Facilities, floor levels must be at or above FPL3.

For oyster sheds the floor level must be at or above RL 1.2m AHD.

For public amenity blocks, change rooms and ancillary sports facilities the floor level must be at or above FPL 1.

**Flood Proofing**

Flood Proofing must be provided to all aspects of the proposed Development up to FPL3.
(c) Flood Impact on Other Properties

All Development must ensure Flood flows and/or Flood levels will not be detrimentally affected with respect to Flood Risk to neighbouring properties.

Any Development must ensure that existing overland flow paths are not impeded. Additional drainage infrastructure may be required to achieve this objective.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

(d) Site Access and Flood Evacuation Requirements

Council will only support Special Purpose Facilities in Flood Storage Areas where Effective Warning Time and reliable access is available for evacuation. Developments will be required to demonstrate that evacuation through Low Hazard conditions during the early warning period of a Flood is achievable.

A minimum 8 hours Effective Warning Time must be available to a particular site. The applicant is encouraged to liaise with Council to establish whether a Flood Risk Assessment is required for the proposed Development.

Where available, the Flood Risk Assessment must consider evacuation times documented in Emergency Response Management Community Data Sheets. These are typically available in completed Floodplain Risk Management Study Reports.

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements as an absolute minimum:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1.
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

Evacuation must be assessed for stability in accordance with Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria (2013).

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.

5.12 SUBDIVISIONS

The Subdivision of land will be subject to the matters for consideration identified above for the relevant land use type (i.e. residential or commercial/industrial) (See Table 5). In addition, the following Flood related controls will apply to the Subdivision of land.

(a) Road and Lot Levels

Minimum road levels for new Subdivisions are to be at or above FPL2.
Lot levels for residential Subdivisions are to be at or above FPL2.
Lot levels for commercial/industrial Subdivisions are to be at or above FPL2.
(b) Flood Impact on Other Properties

A Flood Impact Assessment is required to verify that the Subdivision does not result in adverse Flood impacts to properties located off-site.

Council will only support Subdivisions, provided the applicant can demonstrate to Council’s satisfaction the requirements of Appendix L of the *Floodplain Development Manual* 2005 have been met. Such applications should include a Flood Impact Assessment prepared in accordance with Section 8.2.

Furthermore, assessment of several different ARI Flood events may be required to verify that the impact of Flooding is not increased for Floods other than the 100 year ARI Flood event.

Where required, appropriate compensatory works must be incorporated into the Subdivision and then tested with the Flood model.

(c) Site Access and Flood Evacuation Requirements

Council may only support Subdivision applications in Flood Storage Areas where Effective Warning Time and reliable access is available for evacuation.

Developments that can demonstrate effective evacuation through Low Hazard conditions during the early warning period of a Flood may be supported. This will require applicants to demonstrate that sufficient advance warning of an oncoming Flood is available to allow effective evacuation.

A minimum 8 hours Effective Warning Time must be available to a particular site. Evacuation must be assessed for stability in accordance with *Australian Rainfall and Runoff (AR&R) Book 9, Chapter 6 - Safety Design Criteria* (2013).

Safe Reliable Evacuation must be provided from the site to land above the PMF, preferably to an approved Flood Evacuation Centre.

A Safe Reliable Evacuation route must conform with the following requirements:

- The Flood Immunity Level for a Safe Reliable Evacuation route, including any proposed access road must be no lower than FPL1, and
- The Safe Reliable Evacuation route must grade upwards towards land above the PMF.

The applicant is encouraged to liaise with Council to establish the level of investigation required to assess the Flood Risk at a particular property.

Evacuation plans must be independent and not rely on others (SES) to ensure safe and reliable evacuation.
6. DEVELOPMENT IN FLOODWAYS

In general, Development within a Floodway will not be supported by Council for the following reasons:

- the high potential to redirect flows and impact others;
- the high potential danger to personal safety; and,
- significant financial losses due to the damage potential.

Notwithstanding, there may be circumstances in which certain types of limited or Minor Development could proceed, subject to a range of considerations. These considerations are in addition to the relevant requirements outlined in Section 5.

6.1 BOUNDARY ADJUSTMENTS

(i) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

(ii) For an allotment that has land at or above FPL2, a Boundary Adjustment must not create any allotment without a functionally useful area of land at or above FPL2.

(iii) For rural land, the Boundary Adjustment must retain raised land or access for stock in times of Flood. Where land at or above FPL2 or PMF is available, such land must be partially retained on any allotment resulting from the Boundary Adjustment.

(iv) The Boundary Adjustment must not reduce the Flood immunity of existing vehicular or pedestrian Flood access to any allotment.

6.2 CARAVAN PARKS, AND MANUFACTURED HOME ESTATES

Caravan Parks and manufactured home estates will not be supported within areas designated as Floodway.

6.3 CAR PARKS AND CARPARKING

Car Parks and Carparking will generally not be supported within areas designated as Floodway.

Council may, however, consider temporary carparks constructed with a gravel surface or suitably established grassed surfaces at the existing ground level, for the purposes of temporary carparking associated with local events or functions that are temporary in nature. The car parking area must not be filled, sealed or comprise any permanent infrastructure such as kerb and gutter. Generally disturbance to the ground surface is to be minimal. Appropriate signage is to be installed to warn the public of potential Flood Risk associated with using the Car Park.

6.4 COMMERCIAL AND INDUSTRIAL DEVELOPMENT

New commercial and industrial Development is generally not supported within areas designated as Floodway.

Council may consider Development proposals relating to Infill Development, Redevelopment, or Extensions within a Floodway. Such proposals are to be accompanied by a Flood Impact Assessment and Flood Risk Assessment. The
applicant is encouraged to liaise with Council to establish the level of detail required for the assessments.

Infill Development

The following controls must apply to Infill Development in Floodway areas:

(i) The building(s) must be located to avoid any additional blockage of the lateral extent of the Floodway. In this regard, the “shadow” of upstream development (building only - not fences or retaining walls) must be utilised when locating the proposed Dwelling.

(ii) Floor levels must be in accordance with Table 5.

Redevelopment

Council may consider granting permission to Redevelopment within Floodways if the Development cannot feasibly be located elsewhere. In this regard, the “shadow” of upstream development (building only - not fences or retaining walls) must be utilised when locating the proposed Dwelling.

Extensions

Extensions to existing building within a Floodway are permissible, however, they must observe the following:

- Extensions are to be no greater than 20m² (at ground floor level), in area.
- The principles of shadow Development outlined for Infill Development. That is, any Extensions must avoid increasing the blocked area of the Floodway.
- Floor levels must be in accordance with Table 5.

6.5 CRITICAL FACILITIES

Critical Facilities are not considered appropriate within areas designated as Floodway.

6.6 FILLING

Filling of land within Floodways will not be supported unless compensatory works are undertaken. Where fill and or associated compensatory works are proposed, the Development application must be accompanied by a Flood Impact Assessment, which demonstrates that the impact is less than 10mm on peak Flood levels, and less than 0.1m/sec on Flood velocities, over the full range of Floods up to the 200 year ARI, within/at the property boundary.

Furthermore, the Flood Impact Assessment must demonstrate that there will be no Measurable adverse affects to drainage or surface runoff of adjoining properties.

6.7 FENCING

(i) Fences of a continuous design, such as paling fences, colourbond and continuous brick fences, are not permissible in Floodway areas.

(ii) Open type Fencing (minimum openings of 100mm) is considered appropriate in Floodway areas.

6.8 MINOR DEVELOPMENT

Minor Development is generally not supported within areas designated as Floodway.
Council may consider granting permission to Minor Development within a designated Floodway provided the requirements outlined in Section 5.8 can be met.

Council will review each Development on a case by case basis to establish the level of investigation required to assess the impact of Flooding on other properties. It is recommended that the applicant liaise with Council to establish whether a Flood Impact Assessment is required for the proposed Development.

The following requirements must also be met for Council to consider Development in a Floodway:

- the Development must be able to be shown to have been located so that it will not restrict/block the flow of floodwaters.
- generally the floor level must be at or above FPL1, however where the Development can demonstrate to Council’s satisfaction the need for a lower operational level, the floor levels must be no less than 1.2m AHD.

6.9 RESIDENTIAL DEVELOPMENT

New Residential Development is generally not supported within areas designated as Floodway.

Council may consider Development proposals relating to Infill Development, Redevelopment, Replacement Dwellings or Extensions within a Floodway. Such proposals are to be accompanied by a Flood Impact Assessment and Flood Risk Assessment. The applicant is encouraged to liaise with Council to establish the level of detail required for the assessments.

Any Development proposals relating to Infill Development, Redevelopment, Replacement Dwellings or Extensions within a Floodway are to be accompanied by a Flood Impact Assessment and Flood Risk Assessment. The applicant is encouraged to liaise with Council to establish the level of detail required for the assessments.

Infill Development

The following controls must apply to Infill Development in Floodway areas:

(i) The building(s) must be located to avoid any additional blockage of the lateral extent of the Floodway. In this regard, the “shadow” of upstream development (building only - not fences or retaining walls) must be utilised when locating the proposed Dwelling.

(ii) Floor levels must be in accordance with Table 5.

Redevelopment

Council may consider granting permission to Redevelopment within Floodways if the Development cannot be feasibly located elsewhere. In this regard, the “shadow” of upstream development (building only - not fences or retaining walls) must be utilised when locating the proposed Dwelling.

Replacement Dwellings

Replacement Dwellings will be considered on a ‘like for like’ basis provided the following:

(i) Evidence of the Dwellings existence/approval can be provided to Council;

(ii) Evidence is submitted with applications to demonstrate the occupation of the Dwelling immediately prior to loss of the Dwelling;
(iii) The Replacement Dwelling can meet current Flood Planning requirements. This may require the Dwelling to be relocated within the property to a less hazardous area;

(iv) The application for a Replacement Dwelling is made to Council within 12 months of the loss of the original Dwelling.

**Extensions**
Extensions to existing Dwellings within a Floodway are permissible, however they must adhere to the following:

- Extensions are to be no greater than 20m² (for the ground floor area). Variations to this for rural residential may be considered on a case by case basis.
- The “shadow” of upstream development (building only - not fences or retaining walls) must be utilised when locating the proposed Dwelling. Extensions must avoid increasing the blocked area of the Floodway.
- Floor levels must be in accordance with Table 5.

### 6.10 REZONING OF LAND

Rezoning of land within areas designated as Floodway is not supported by Council (unless rezoned to Environmental or other zoning as agreed to by Council).

### 6.11 SPECIAL PURPOSE FACILITIES

Special Purpose Facilities are generally not supported within areas designated as Floodway.

Special Purpose Facilities that may be considered in Floodway are structures that cannot be feasibly located elsewhere, such as public toilet blocks and marine related structures such as oyster sheds, Boat Sheds or jetties.

The following requirements must be met for Council to consider Development in a Floodway:

- the Development must be able to be shown to have been sited so that it will not restrict/block the flow of floodwaters.
- generally the floor level must be at or above FPL1, however where the Development can demonstrate the need for a lower operational level, the floor levels must be no less than 1.2m AHD.
- a storage area equal to 25% of the total structure area must be provided at or above FPL2 for the storage of fuel and oils etc.

### 6.12 SUBDIVISIONS

Generally Subdivision of land is not supported within areas designated as Floodway.

Council may consider Subdivision of land partially within Floodway provided the following can be achieved:

(i) As far as practical each lot must have a minimum area of 400m² (residential/large lot residential/urban) or 1,000m² (rural) at or above FPL2.

For an allotment that has land at or above FPL2, a Subdivision must not create any allotment without a functionally useful area of land at or above FPL2.
For rural land, the Subdivision must retain raised land or access to stock in times of Flood. Where land at or above FPL2 or PMF is available, such land must be partially retained on any allotment resulting from the Subdivision.

(ii) The Subdivision must not reduce the Flood immunity of existing vehicular or pedestrian Flood access to any allotment.

(iii) Requirements as listed in Section 5.12 are applicable where Subdivision is considered within Floodway.
7. SPECIFIC PRECINCT CONTROLS

7.1 HIBBARD SOUTH DEVELOPMENT PRECINCT
Subdivision and Residential Developments may be supported in the Hibbard South area where they are confined to Flood Storage and Flood Fringe areas, and provided:

- the land is suitably zoned for such Development;
- the development is in accordance with the Hibbard South Development Precinct investigation documented in Chapter 11 of the Hastings River Floodplain Risk Management Study (2012),
- the development must consider both mainstream flooding of the Hastings River as well as the local catchment runoff,
- the land is not within the 100 year ARI Flood Storage area for the local catchment draining to the wetland area as shown on Figure 2,
- the land is filled to at least the 100 year ARI Flood level from the Hastings River including applicable climate change allowance, without causing any adverse effects on adjacent properties or local drainage patterns.

7.2 HIBBARD (WEST) PRECINCT FLOODWAY STUDY AREA
Council has plans to commission a Hibbard Precinct Floodway Refinement Study to investigate potential options for the management of the designated floodway between Fernbank Creek and Hibbard, including potential options to modify the current floodway to accommodate existing development, while at the same time maintaining flow conveyance.

Future development approvals west of Boundary Street in the Hibbard (West) Precinct must be in accordance with the following:

- No filling of land is permitted west of Boundary Street until the Hibbard Precinct Floodway Refinement Study has been undertaken. Refer to Ordinary Council Meeting 17 February 2010, Item 06.1).
- Development (excluding filling) must be limited to areas outside the provisional Floodway area as shown on Figure 3; and
- All development within the Hibbard (West) Precinct must be accompanied by a Flood Risk Assessment and Flood Impact Assessment.

7.3 DUNBOGAN, NORTH HAVEN, SETTLEMENT POINT, SHORELINE DRIVE AND NORTH SHORE PRECINCTS
While much of these areas are High to Very High Hazard, there exists a limited number of residential lots that were created before accurate Flood information was available. As such, it is Council's position that Infill Development within the Flood Planning Area is permissible subject to relevant Flood Planning controls, without the need for a Flood Impact Assessment or a Flood Risk Assessment.

This must only apply for a standard residential Dwelling (including replacement Dwelling and Redevelopment)

Council may require a Flood Impact Assessment for any filling of land greater than 300mm in depth.
Council will not support Developments comprising dual occupancies, units, Subdivision, tourist and visitor accommodation.

Council may support Bed & Breakfast Developments in line with the PMHC LEP 2011 requirements (i.e. no greater than four (4) bedrooms and with an on-site manager), provided the New Development can meet current Flood Planning requirements.

Council will not support rezoning of these areas unless rezoned to an Environmental zone (ie. E2, E3 or E4) or other suitable zoning as agreed to by Council.

7.4 HASTINGS RIVER DRIVE AND HIBBARD (EAST) PRECINCT

While much of the areas identified below are now located within land categorised as Flood Storage or Flood Fringe, detailed flood information is known and the flood characteristics of the precincts are known. As such, it is Council’s position that Infill Development within the Flood Planning Area for each precinct is permissible subject to relevant Flood Planning controls, without the need for a Flood Impact Assessment or a Flood Risk Assessment.

Council will use its discretion to determine whether a particular Development is to be assessed under the special provisions of this chapter by having regard to the nature of the Development, the design of the Development and/or the time at which the Development is proposed.

Future development approvals in this Precinct must be in accordance with the following:

- Filling of land is permitted without the need for a detailed Flood Impact Assessment.
- The land is to be filled to at least the 100 year ARI flood level from the Hastings River including applicable climate change allowance.
- Residential Development is permitted without the need for a detailed Flood Impact Assessment or Flood Risk Assessment.
- Subdivisions or additional occupancies will require a detailed Flood Impact Assessment.

7.5 THE PORT MACQUARIE CANALS, PORT MACQUARIE CBD, SETTLEMENT CITY COMMERCIAL, WAUCHOPE CBD PRECINCTS

While much of the areas identified below are now located within land categorised as Flood Storage or Flood Fringe, detailed flood information is known and the flood characteristics of the precincts are known. As such, it is Council’s position that Infill Development within the Flood Planning Area for each precinct is permissible subject to relevant Flood Planning controls, without the need for a Flood Impact Assessment or a Flood Risk Assessment.

Council will use its discretion to determine whether a particular Development is to be assessed under the special provisions of this chapter by having regard to the nature of the Development, the design of the Development and/or the time at which the Development is proposed.

Future development approvals in these area must be in accordance with the following:

- Filling of land is permitted without the need for a detailed Flood Impact Assessment.
- the land is to be filled to at least the 100 year ARI Flood level from the Hastings River including applicable climate change allowance.
- Residential Development including subdivision is permitted without the need for a detailed Flood Impact Assessment or Flood Risk Assessment.
Figure 2: Hibbard South - local Flood Storage
Figure 3: Hibbard (West) Precinct Floodway Study Area.
8. SUPPORTING FLOODING DOCUMENTATION TO BE SUBMITTED WITH AN APPLICATION

8.1 SURVEY PLANS

Development applications subjected to the provisions of this policy must be accompanied by a survey plan showing:

- the position of the existing building/s and proposed building/s;
- the existing ground levels to Australian Height Datum (AHD) around the perimeter of the building and contours of the site, and
- the existing and proposed floor levels relative to Australian Height Datum.

Applications for earthworks, Filling of land and Subdivision must be accompanied by a survey plan (with a contour interval of 0.25m) showing relative levels to Australian Height Datum.

Applications without this minimum basic information may be rejected.

8.2 FLOOD STUDY

A Flood Study is a comprehensive technical investigation of flood behaviour and defines flood events of various severities up to and including the PMF.

Where a Flood Study is required, it must address the issues outlined in Appendix F of the NSW Floodplain Development Manual (2005).

A Flood Study will typically include:

- Hydrologic Analysis
- Climate Change Analysis
- Model Calibration, Validation & Sensitivity Testing
- Design Flood Modelling
- Flood Mapping

When preparing a Flood Study, consideration should be given to the requirements of Australian Rainfall and Runoff, 2016 (AR&R, 2016)

Flood Study modelling shall utilise software and a model configuration that is suitable to achieve the required outcomes of the study.

A Flood Study must be prepared by a consultant that meets the requirements of Section 8.4.
8.3 FLOOD IMPACT ASSESSMENT

Where a Flood Impact Assessment is required, it must address the issues outlined in Appendix L of the NSW Floodplain Development Manual (2005).

A Flood Impact Assessment will typically include:

- Determination of Hydraulic Categories
- Determination of Hazard Categories
- Flood levels
- Flood depth and velocity
- Type of Development
- Consideration of the full range of flooding up to the PMF

**Large Scale Developments**

For the purpose of this Policy, Large Scale Developments are defined as:

- Rezonings to more intensive Development,
- Subdivisions greater than two lots,
- Residential Developments comprising more than two Dwellings, and the like.

For large scale Developments, or Developments in critical locations, particularly where an existing catchment based Flood study is not available, it may be necessary to prepare a Flood study based on the results of a fully dynamic one or two dimensional computer model.

Alternatively, where a Flood study already exists for the site, it will be necessary to use the hydraulic model developed for that Flood study to assess the Development proposal.

In either case, the assessment must:

- quantify the potential impact of the Development proposal on Flood behaviour elsewhere in the Floodplain and particularly across adjoining land/properties; and
- determine the potential impact of Flooding on the Development proposal and the future users of the Development,
- determine the cumulative impacts resulting from the Development.

The following information must be submitted in plan form for the pre-Development and post-Development scenarios:

- Flood profiles for the full range of Flood events at complete or total Development stage including all structures, Filling and works;
- water surface contours;
- velocity vectors;
- velocity x depth product contours; and
- delineation of Flood Risk precincts.

Alternatively, the Flood Impact Assessment can include mapping of Flood level, velocity and hazard difference mapping that shows the increase in each of these Flood...
characteristics due to the proposed Development. These increases are to be considered and commented on in the context of the NSW Government's Flood Prone Land Policy.

Applicants should check with Council Officers to confirm the need for a specialist Flood study.

All electronic data (input and output modelling files) is to be provided to Council upon completion of the study. The data must be provided in a format which is compatible with WaterRIDE or as directed by Council's GIS staff.

Small Scale Developments

For the purpose of this Policy, Small Scale Developments are defined as single Dwellings/buildings, dual occupancies, Extensions, and the like.

For smaller Developments consideration may be given to the use of an existing Flood study if available and suitable (e.g., it contains sufficient local detail), or if not suitable a Flood study is to be prepared.

Where the controls for a particular Development proposal require an assessment of structural soundness during potential Floods, the following impacts must be addressed:

- hydrostatic pressure,
- hydrodynamic pressure,
- impact of debris, and
- buoyancy forces.

A Flood Impact Assessment is to be prepared by a consultant that meets the requirements of Section 8.4.

8.4 FLOOD RISK ASSESSMENT

Where a Flood Risk Assessment is required, it must address the issues outlined in Appendix N of the NSW Floodplain Development Manual (2005).

A Flood Risk Assessment is to consider the risk for loss of life, either for those within a particular Development during the onset of a Flood, or those that may seek to access or vacate a Development. A Flood Risk Assessment considers emergency response management issues including the potential for evacuation in rare Floods up to the PMF. The assessment must demonstrate that the full range of risks associated with Flooding at the site have been considered and suitable measures proposed to adequately mitigate the risk.

A Flood Risk Assessment will typically include:

- Effective Warning Time
- Flood readiness
- Rate of rise of floodwaters
- Duration of Flooding
- Evacuation Issues
- Effective Flood access
- Type of Development
When preparing a Flood Risk Assessment, consideration should be given to the requirements of the following documents:

- Flood Emergency Response Planning Classification of Communities (2007)

A Flood Risk Assessment must be prepared by a consultant that meets the requirements of Section 8.4.

8.5 CONSULTANT REQUIREMENTS

Flood Impact Assessments and Flood Risk Assessments (and any other Flood studies or reports as required by Council) are to be prepared by a suitably qualified hydrologic/hydraulic engineer with a demonstrated experience in Flood assessment and management of land Development proposals.

Where the assessment requires preparation of a Flood study, Flood modelling within areas outside of previously completed Flood studies, or Flood modelling to quantitatively determine Flood impacts, the consultant must be suitably experienced in such modelling.
9. FLOOD PROOFING MEASURES

The following Flood Proofing measures are required for all Developments within the Floodplain.

a) No permanent structures (i.e. buildings, roads, major infrastructure) must be constructed below RL 1.2m AHD.

b) All new works below FPL3 must be constructed from Flood compatible materials listed in *Australian Building Codes Board (ABCB): Construction of Buildings in Flood Hazard Areas*. Reference should be made to this document for design of structures in Flood hazard areas.

c) All new works must, prior to occupation, be certified by a qualified and professional civil or structural engineer that the structures can withstand the forces of floodwaters, buoyancy and debris loadings up to:
   a. Height of FPL3, and
   b. Three (3) times the flow velocity of the 1% AEP event (including the climate change allowance).

d) Filling within the Floodplain must be engineered fill, suitably compacted to prevent any erosion or scouring during a Flood event. Fill must be compacted to a minimum of 95% Standard Maximum Dry Density (SMDD), or higher compaction if specified for foundation conditions or other structural purposes. If considered appropriate, Council may require the developer to provide compaction testing of fill, undertaken by a suitably qualified geotechnical engineer.

e) The development must allow flood waters in excess of the 20 year event to pass beneath or through the building. The ground floor level may be enclosed for security purposes with slats or lattice material provided the porosity of each wall/side is no less than 50%.

f) Electrical meter boxes must be placed at a level which is at or above the 100 year flood level including the applicable climate change allowance. The positioning of meter boxes must comply with the requirements of the relevant electricity authority.

g) Rainwater tank(s) are to be securely fastened so that they do not become floating debris in a flood event up to and including the 100 year flood including the applicable climate change allowance. Fastening details are to be provided by a suitably qualified engineer and must be submitted with the application for the Construction Certificate.

Consideration should also be given to the provisions of the following documents prepared by the Hawkesbury-Nepean Floodplain Management Steering Committee (2007):


End Port Macquarie-Hastings Council Flood Policy