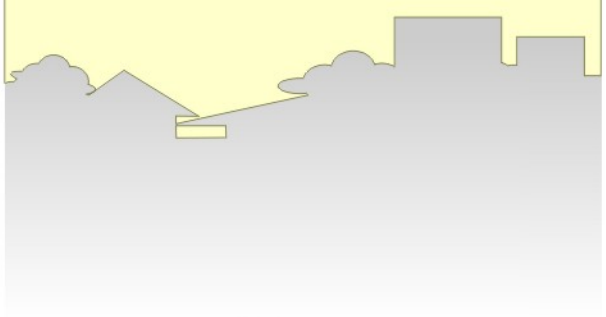
Part E

Flooding Requirements



Greater Taree
CITY COUNCIL

PART E FLOODING REQUIREMENTS

Contents

E1 Floodplain management

About this part:

This part provides the detailed guidelines for development on flood prone land or potentially flood prone land.

Applies to:

All development within the former Greater Taree Local Government Area.

Date adopted by Council:

21 February 2017

Effective date:

6 March 2017

Related Policy / Technical Manual:

NSW Floodplain Development Manual 2005

Flood Study Assessment Requirements in Appendix G of this DCP

Adopted Flood Study and Floodplain Risk Management Plans:

Plan Title	Description of geographical area covered	Date Adopted
Wingham Peninsula Floodplain Risk Management Plan	Wingham Peninsula near the confluence of the Cedar Party Creek with the Manning River	December 2000. Revised FRMP adopted March 2011
North Wingham Floodplain Risk Management Plan	Cedar Party Creek to Comboyne Road	March 2011
Lansdowne Floodplain Risk Management Plan	Lansdowne Village and adjacent rural and semi rural areas	May 2015
Manning River Flood Study	Manning River floodplain - downstream of Wingham	November 2016

Table 1 - List of adopted Floodplain Risk Management Plans

Objectives

- Alert the community to the extent and degree of hazard of flood prone land for all potential floods, including floods greater than the 100 year average recurrence interval (ARI) flood and to ensure essential services and land uses are planned in recognition of all potential floods;
- Advise the community of the approach that Council will take in considering applications for building, development, subdivision and other planning proposals on land affected by flooding in the former Greater Taree Local Government Area;
- Ensure that acceptable standards of safety to life and property are applied when Council considers proposals for development on flood prone land;
- Ensure that development that is approved in flood prone areas is structurally capable of withstanding the effects of flowing floodwaters including debris and buoyancy forces;
- Ensure that development is not permitted in flood prone areas where that development would result in unnecessary risk to life of occupants or rescuers or in unwarranted public costs;
- Ensure that development on flood prone land does not adversely affect flood behaviour;
- Ensure, whenever possible, that buildings and services required for evacuation and emergency needs are sited above the PMF level;
- Apply a merit-based approach to all decisions relating to flood affected development that take account of social, economic and ecological as well as flooding issues.

E2 Introduction

E2.1 Why is floodplain management required?

State legislation

In 1984, the State Government introduced the Flood Prone Land Policy applicable to New South Wales. The First Floodplain Development Manual was published in 1986, with Council preparing an Interim Flood Management Policy 1987 in response to the State Policy and the first Floodplain Development Manual.

Revised guidelines were released in 2001 and were embodied in the Floodplain Management Manual 2001. The 2001 manual was never gazetted and was subsequently used as a guideline document by local government. This document was subsequently again reviewed in 2005 and resulted in the publication of the Floodplain Development Manual 2005 (the Manual). The Manual was gazetted on the 6 May 2005.

The Manual continues to support the NSW Government's Flood Prone Land Policy. The Primary objective of the policy is:

> ***'to reduce the impact of flooding and flood liability on individual owners and occupiers of flood-prone property, and to reduce private and public losses resulting from floods, utilising ecologically positive methods wherever possible.'***

To achieve this objective, Council encourages a broad risk management hierarchy of:

- Avoidance of flood risk;
- Minimisation of flood risk using appropriate planning controls;
- Flood risk mitigation.

Avoidance and minimisation of flood risk are the options encouraged in all instances. This is managed primarily through land use planning and development control for implementation. Flood risk mitigation is the least preferred option, being reactive, costly and most likely to adversely affect the natural environment.

The flood plain management controls contained herein provide for a flexible merit based approach when dealing with planning, development and building matters on flood prone land, in order to support the principles of avoidance and minimisation whilst enabling appropriate development wherever suitable and practicable.

This approach is consistent with the State Government's Flood Prone Land Policy.

Floodplain Risk Management Plans (FRMP) provide modelled possible flood risk and behaviour, and may provide a strategy for the appropriate location of development, revised development controls, evacuation plans and community awareness information. FRMPs will continue to be prepared for various areas of the former Greater Taree Local Government Area. A list of the adopted FRMPs are shown in Table 1.

E2.2 How do I use this part?

The following is a summary of the major steps you should address:

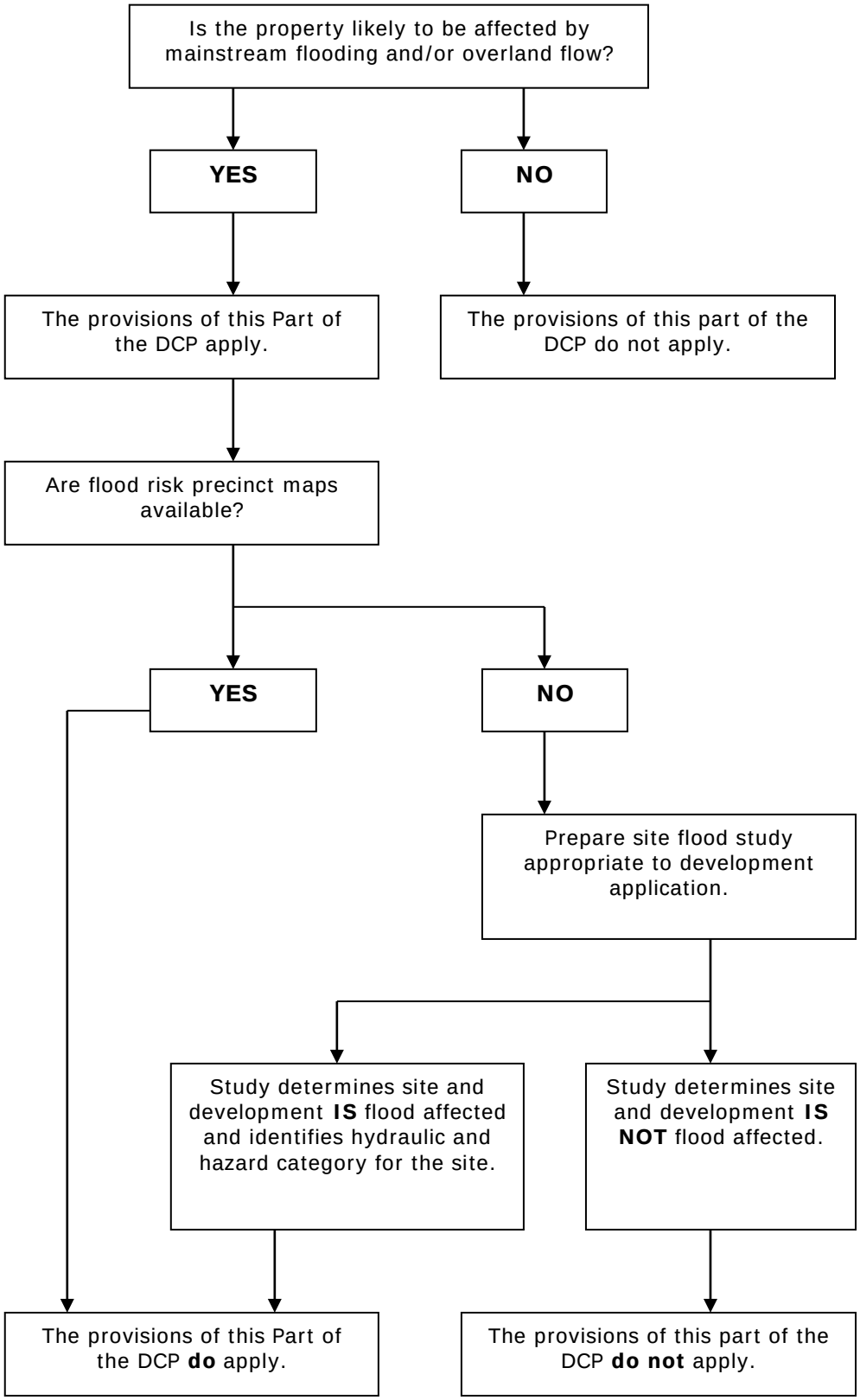
1. Check the proposal is permissible in the zoning of the land by reference to any applicable Environmental Planning Instrument.
2. Consider any other relevant planning controls of Council (e.g. controls in any other part of this DCP which governs for instance the size and setback of development).
3. Determine the floodplain (e.g. Manning River etc.) and flood risk precinct (hazard and hydraulic category) within which your site is situated. Enquire with Council regarding existing flood risk mapping, Floodplain Risk Management Plans, or whether a site-specific assessment may be warranted in your case (for example, if local overland flooding is a potential problem or flood risk mapping has not been undertaken in your catchment). A property may be located in more than one Precinct and the assessment must consider the controls for each Precinct where relative to where located on the site. The following flow diagram summarises this consideration process.
4. Determine the land use category relevant to your development proposal, by firstly confirming how it is defined by the relevant environmental planning instrument and secondly by ascertaining the land use category from Table 3.
5. Assess and document how the proposal will achieve the performance criteria for development and associated parking and fencing provided by this part.
6. Check if the proposal will satisfy the prescriptive criteria for different land use categories in different flood risk precincts, as specified in the Development Control Schedules in this document.

Applicants are to enquire with Council regarding existing **flood risk mapping.**

In areas outside those covered by Council's adopted flood studies, refer to **Appendix G** to determine if the subject site is potentially flood prone land.

The assistance of Council staff or an experienced floodplain engineer/consultant may be required at various steps in the process to ensure that the requirements of this part are fully and satisfactorily addressed.

How do I use this Part?



E2.3 Where does this part apply?

Applicants are to refer to Council's online mapping for identified flood prone land

This part applies to all land within the former Greater Taree Local Government Area affected by flooding and affected by or potentially affected by overland flow.

Controls normally apply where the development is on flood prone land, however there are instances, such as provision of safe access to flood affected areas for subdivisions, where even though the development is on flood free land, this Part still applies (known as evacuation constrained areas).

The extent of flood prone land is determined from flood studies. Council has adopted flood studies and associated mapping of flood prone land along the more intensively populated reaches of the Manning River and its tributaries.

In other areas which are yet to be mapped following flood studies, a proponent shall undertake a flood study where the proposed development is within potentially flood prone land as determined in Appendix G and this flood study shall be used to determine the extent of flood prone land and flood behaviour at the subject site.

E2.3.1 Flood extents and flood planning level

Council's online mapping indicates, as fully as possible given current available information, the extent of flood prone land (FPL3).

A range of flood planning levels (FPL) may apply depending on the type of land use and the part of the development in consideration. In principle, a higher FPL will apply to land uses considered more sensitive to flood hazards or which may be critical to emergency management operations or the recovery of the community after a flood event.

Different FPLs are also considered appropriate for different parts of development. For example, the non-habitable floor levels of a dwelling can be at a lower level relative to the habitable floor level.

The following table outlines the FPLs to be applied within the development controls outlined later in this section of the DCP.

Table 2 – Flood Planning Levels

Reference	**Description**
FPL1	5% AEP (20 Year ARI) flood level.
1% Flood Level	1% AEP (100 Year ARI) flood level. This level is useful for insurance purposes.
FPL2	2100 1% AEP (100 Year ARI) flood level.
FPL3	2100 1% AEP (100 Year ARI) flood level plus 0.5m Freeboard.
FPL4	Probable Maximum Flood (PMF) level.

Notes:

1. FPL1, FPL2 and FPL 4 have zero freeboard.
2. FPL3 is the height of the FPL2 (height of FPL2 needs to be obtained from Council) with a 0.5m freeboard.
3. The design flood levels and FPLs in Table 2 may be obtained from Council if available or otherwise will be required to be determined by the proponent in accordance with Appendix G. These levels will refer to Australian Height Datum (AHD).

FPL = Flood Planning Level (Flood planning levels selected for planning purposes derived from a combination of the adopted flood level as determined in floodplain management studies and incorporated in floodplain management plan)

AEP = Annual Exceedence Probability (The chance of a given or larger flood occurring in any one year)

ARI = Average Recurrence Interval (Long term average number of years between the occurrence of a particular flood event)

PMF = Probable Maximum Flood (The largest flood that could conceivably occur at a particular location).

E2.4 Initial subject assessment

Appendix G provides further information on **Flood Study Assessment Requirements.**

The extent of flood prone land is determined from flood studies. Council has adopted flood studies and associated mapping of flood prone land along the more intensively populated reaches of the rivers within the former Greater Taree Local Government Area.

In certain circumstances, and in relation to local overland flooding, definitive flood level data may not be available to enable determination of properties that should be covered by development controls. In such cases, as a first step, an initial subjective assessment should be made to determine the properties likely to be at risk. The methodology used to undertake this assessment should be documented and based upon historical information and reasonable assumptions given the catchment and channel size and terrain.

In areas outside those covered by Council's adopted flood studies, the proponent shall undertake the following process to determine if the subject site is potentially flood prone land, and if it is, undertake a Preliminary Flood Assessment to determine the extent of flood prone land at the subject site.

Local overland flooding

Overland flooding is a significant problem that needs to be considered along with mainstream flooding. Local overland flooding can be categorised as either local overland flows (typically including direct surface runoff, surcharges and overflows from low points in kerbs, or overflows from smaller pipes) or major drainage (typically involving the floodplains of original watercourses whether still natural or altered and/or may be associated with overflows from trunk drainage systems).

The principles of the Manual will be considered in the assessment of local overland flooding.

E2.4.1 Determining what is potentially flood prone land

In localities not covered by Council's adopted flood studies and associated mapping, land is considered to be potentially flood prone if:

- The subject land is adjacent to or under the influence of flood from any 3rd order or higher watercourse (refer below) and is either less than 20m above the normal water level of the watercourse (when measured perpendicular to the direction of flow), or less than 10m above the normal level of the watercourse where the catchment area is less than 100km^2; or
- The subject land is less than 5.0m above any adjacent 1st or 2nd order watercourse.

The Strahler System of Ordering Watercourses

- Watercourses are shown on NSW Land and Property Information's topographic maps as broken or continuous blue lines.
- Starting at the top of a catchment, any watercourse which has no other watercourses flowing into it is classed as a 1st order watercourse (1).
- Where two 1st order watercourses join, the watercourse becomes a 2nd order watercourse (2).
- If a 2nd order is joined by a 1st order watercourse, it remains a 2nd order watercourse.
- When two or more 2nd order watercourses join, they form a 3rd order watercourse (3).
- A 3rd order watercourse does not become a 4th order watercourse until it is joined by another 3rd order watercourse, and so on as illustrated on the following diagram.

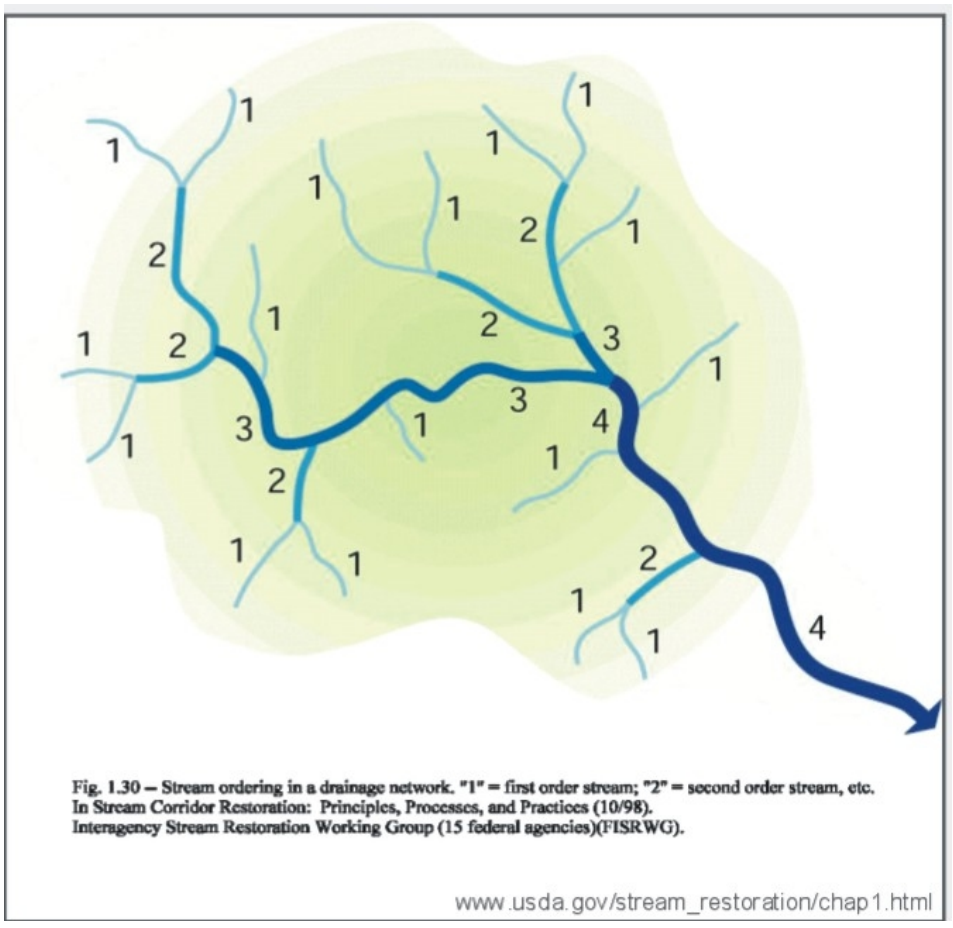


Fig. 1.30 – Stream ordering in a drainage network. "1" = first order stream; "2" = second order stream, etc.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
Interagency Stream Restoration Working Group (15 federal agencies)(FISRWG).

This Part does not apply if it can be shown that the subject site is not potentially flood prone.

If the above assessment (to be undertaken by a suitably qualified flooding engineer) determines that the subject site is potentially flood prone, a preliminary Flood Assessment as described in Appendix G shall be undertaken to determine if the site is flood prone.

E3 Submitting development applications

Performance criteria

1. The appropriate hydraulic category (floodway, flood storage, flood fringe), and hazard category (high/low) must be determined. A flood certificate containing this information may be obtained from Council. Alternatively, this information may be obtained from a suitably qualified person.
2. Applications must include information that addresses all relevant controls and the following matters as applicable.
3. Applications for concessional development (see Table 3) to an existing dwelling on flood prone land shall be accompanied by documentation from a registered surveyor confirming existing floor levels to AHD.
4. Development applications affected by this part shall be accompanied by a survey plan showing:
   - The position of the existing building(s) or proposed building(s);
   - The existing ground levels to AHD around the perimeter of the building and contours of the site; and
   - The existing or proposed floor levels to Australian Height Datum.
5. Applications for earthworks, filling of land and subdivision shall be accompanied by a survey plan with topographic levels to be an accuracy of 0.1m, structures and the like shall be to an accuracy of 0.01m, showing relative levels to Australian Height Datum.
6. For large scale developments, or developments in critical situations, particularly where an existing catchment based flood study is not available, a flood study using a fully dynamic one or two dimensional computer model and Floodplain Risk Management Plan may be required.
7. For smaller developments the existing flood study may be used if available and suitable (e.g. it contains sufficient detail), or otherwise, in other areas which are yet to be mapped following flood studies, a proponent shall undertake a flood study model where the proposed development is within potentially flood prone land as per the Initial Subjective Assessment identified in Part E2.4. The flood study shall be used to determine the extent of flood prone land and flood behaviour at the subject site (Where satisfactory to Council, verifiable anecdotal evidence may be used in support of an application for developments, e.g. rural dwellings).
8. 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.
9. Foundations need to be included in the structural analysis.

It should be noted that a private or site-specific flood plan for the proposed development is not an appropriate measure to rectify adverse impacts or to manage the consequences of inappropriate decisions.

E3.1 How will applications be assessed?

Applicants are to enquire with Council regarding existing **hydraulic status and flood hazard.**

In processing development applications the Council will apply the principles outlined in the Floodplain Development Manual, and the provisions of this policy.

This process will involve:

- Determination of land use category of the development (Table 3).
- Determination of the hydraulic status of the site (i.e. flood fringe, flood storage or floodway).
- Determination of the flood hazard (i.e. high or low).
- Assessment of the proposal in determining whether the development meets the controls outlined in Part E4 and is compatible, conditional or should be disallowed.

The hydraulic status and flood hazard will be determined by a flood assessment and/or the Engineering Department, having regard to the Floodplain Development Manual, information provided in the application and, where relevant, information provided by the relevant Government Departments and the State Emergency Services *(SES)* which has been incorporated in an adopted Local Floodplain Risk Management Plan.

E3.2 Land use categories

Eight major land use categories have been adopted. The specific uses which may be included in each category are listed in Table 3.

Table 3 Land use categories

Critical Use Facilities	**Sensitive Uses and Facilities**	**Subdivision**	**Residential**
- Community facilities which may provide an important contribution to the notification or evacuation of the community during flood events. - Emergency services. - Hospitals.	- Assisted accommodation. - Educational establishments. - Hazardous or offensive storage establishment. - Correctional centre. - Liquid fuel depot. - Aged care housing. - Public utility undertakings or utility installations (including generating works) which are essential to evacuation during periods of flood or if affected would unreasonably affect the ability of the community to return to normal activities after flood events. - Telecommunication facilities. - Waste disposal facility.	- Subdivision of land which involves the creation of new allotments, with potential for further development.	- Backpackers accommodation. - Boarding houses. - Caravan park or camp grounds (long-term sites only). - Dual occupancy housing. - Dwelling. - Dwelling house. - Group homes. - Home industry. - Home business. - Public utility undertakings or utility installations (other than critical utilities). - Residential flat buildings. - Multi dwelling housing. - Habitable Rooms. - Non-Concessional Residential development being. (i) An addition or alteration to an existing dwelling of more than 10% or 30m^2 (whichever is the lesser) of the habitable floor area which existed at the date of commencement of this DCP. (ii) The construction of an outbuilding with a floor area > 20m^2.

Table 3 - (continued) Land use categories

Commercial or Industrial	**Tourist Related Development**	**Recreation or Non-urban Uses**	**Concessional Development**
- Animal boarding or training establishment. - Bulky goods premises. - Business premises. - Car Parking. - Child care centre. - Entertainment facility. - Health consulting rooms. - Hotel. - Industry. - Kiosks. - Liquid fuel depot. - Medical centre. - Neighbourhood shops. - Motel. - Nightclub. - Offensive industry. - Offices. - Place of public worship. - Recreation facility. - Registered Club. - Restaurant. - Service Station. - Sex services premises. - Shop. - Transport depot. - Tourist information centre. - Vehicle body repair workshop. - Vehicle repair station. - Vehicle sales or hire premises. - Veterinary hospital. - Warehouse or distribution centre. - Waste disposal or management facility. - Non-Concessional other development.	- Caravan park – short term sites only. - Tourist and visitor or accommodation or facility.	- Agriculture. - Aquaculture. - Extractive industry. - Marina. - Recreation areas and minor ancillary structures (e.g. toilet blocks or kiosks). - Swimming enclosure. - Tennis court (private). - Rural Fire Sheds. - Dwellings on Agricultural Properties. - Sheds.	(a) In the case of residential development: (i) An addition or alteration to an existing dwelling of not more than $30m^2$ (ii) The construction of an outbuilding with a maximum floor area of $20m^2$; or (b) In the case of other development: (i) An addition to existing premises of not more than 10% of the floor area which existed at the date of commencement of this DCP. (ii) A change of use which does not increase flood risk having regard to property damage and personal safety.

E4 Development controls

Explanation

The type and stringency of controls have been graded relative to the severity and frequency of potential floods, having regard to Table 3 - Land Use Categories.

Objectives

- Ensure the proponents of development and the community in general are fully aware of the potential flood hazard and consequent risk associated with the use and development of land within the floodplain;
- Require developments with high sensitivity to flood hazard (e.g. critical public utilities) to be sited and designed such that they are subject to no or minimal risk from flooding, up to and including the PMF, and have reliable access;
- Allow development with a lower sensitivity to the flood hazard to be located within the floodplain, subject to appropriate design and siting controls, provided that the potential consequences that could still arise from flooding remain acceptable having regard to the State Government's Flood Policy and the likely expectations of the community in general;
- Ensure appropriate development types are compatible with the Floodplain Development Manual Guidelines in highly sensitive and/or high hazard classified areas;
- Prevent any intensification of the use of floodways, flood storage areas or high hazard areas and wherever appropriate and possible, allow for their conversion to natural waterway corridors;
- Ensure that design and siting controls required to address the flood hazard do not result in unreasonable impacts upon the amenity or ecology of an area;
- Minimise the risk to life by ensuring the provision of appropriate access from areas affected by flooding up to extreme events;
- Minimise the damage to property, including motor vehicles, arising from flooding;
- Ensure that proposed development does not expose existing development to increased risks associated with flooding.

Key terms

Habitable room in a residential situation is a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom. In an industrial or commercial situation it is an area used for offices or to store valuable possessions susceptible to flood damage.

Reliable access/egress means the ability for people to safely evacuate an area subject to imminent flooding within effective warning time having regard to the depth and velocity of flood waters and the suitability of evacuation route.

Performance criteria

General

1. The relevant environmental planning instruments (generally the Local Environmental Plan) identify development permissible with consent in various zones in the LGA. Notwithstanding, constraints specific to individual sites may preclude Council granting consent for certain forms of development on all or part of a site.
2. Filling of the site, where acceptable to Council, may change the hydraulic and hazard classification considered to determine the controls applied in the circumstances of individual applications.
3. The proposed development should not result in any increased risk to human life.
4. The proposal should only be permitted where effective warning time and reliable access is available for evacuation from an area potentially affected by floods to an area free of risk from flooding. Evacuation should be consistent with any relevant flood evacuation strategy where in existence.
5. Development should not detrimentally increase the potential flood effects on other development or properties either individually or in combination with the cumulative impact of development that is likely to occur in the same floodplain.
6. Motor vehicles must be able to be relocated, to an area with substantially less risk from flooding, within effective warning time.
7. Procedures would be in place, if necessary, (such as warning systems, signage or evacuation drills) so that people are aware of the need to evacuate and relocate motor vehicles during a flood and are capable of identifying the appropriate evacuation route.
8. Refer to Part E4.8 of this part for concessional development, such as for house raising proposals.

E4.1 Critical Uses and Facilities

Critical uses and facilities are unsuitable on any part of flood prone land affected by flooding up to FPL4.

E4.2 Sensitive Uses and Facilities

Hydraulic/Hazard Category

- No development is to occur in or over a floodway or flood storage area, or a high hazard area, generated by flooding up to FPL4.

Floor Levels

- Habitable floor levels to be no lower than FPL4.
- Non-habitable floor levels to be no lower than FPL3 unless justified by a site specific assessment.

Building Components and Method

- All structures to have flood compatible building components below FPL4.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL4. An engineer's report will be required.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

- The minimum surface level of open car parking spaces or carports shall be as high as practical, and not below FPL1.
- Garages or enclosed car parking must be protected from inundation by flood waters up to FPL2.
- Where 20 or more vehicles are potentially at risk, protection shall be provided to FPL3.
- Where the level of the driveway providing access between the road and parking space is lower than 0.3m below FPL2, the following condition must be satisfied - when the flood levels reach FPL2, the depth of inundation on the driveway shall not exceed:
    - The depth at the road; or
    - The depth at the car parking space.

Evacuation

- Reliable access for pedestrians or vehicles is required from the building, commencing at a minimum level equal to the lowest habitable floor level to a refuge area above FPL4. In the case of alterations or additions to an existing development, this may require retro-fitting the existing structures if required to support a refuge area above FPL4.
- Adequate Flood Warning Systems, Signage and Exits are to be made available to allow safe and orderly evacuation without increased reliance upon the SES or other authorised emergency services personnel.

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL4.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL4.

E4.3 Subdivision

Hydraulic Hazard Category

- No subdivision is to occur on land wholly inundated by flooding up to FPL2 event, unless it is demonstrated that the risk of flooding can be effectively and appropriately mitigated without impacting the adjacent floodplain.
- Subdivision proposed in residential zones where partly inundated by flooding up to FPL2 may be considered where it can be demonstrated that all resultant lots are able to provide adequate flood free land suitable for future development and effluent disposal (if applicable) Mounds are not considered suitable for this type of subdivision.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

E4.4 Residential

For additional specific controls for dwellings in rural areas see Part E5.1

Hydraulic Hazard Category

- No development is to occur in or over a floodway area, or a high hazard area, generated by flooding up to FPL2, unless justified by a site specific assessment.

Floor Levels

- Non-habitable floor levels are to be equal to or greater than FPL3 where possible, or otherwise no lower than FPL1 unless justified by a site specific assessment.
- Habitable floor levels are to be no lower than FPL3. In circumstances where construction of a building at FPL3 is likely to have an adverse impact on the adjoining property or the visual amenity of the location, a variation may be sought.
- Where the lowest habitable floor area is elevated more than 1.5m above finished ground level, a restriction is to be placed on the title of the land, pursuant to Section 88B of the Conveyancing Act, confirming that the undercover area is not to be enclosed.

Where adverse impacts on adjoining properties are likely, variations may be sought to reduce floor levels no lower than the 1% AEP flood level plus 0.5m freeboard.

Building Components and Method

- All structures to have flood compatible building components below FPL3.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

- The minimum surface level of open car parking spaces or carports shall be as high as practical, and not below FPL1.
- Garages or enclosed car parking must be protected from inundation by flood waters up to FPL2.
- Where the level of the driveway providing access between the road and parking space is lower than 0.3m below FPL2, the following condition must be satisfied - when the flood levels reach FPL2, the depth of inundation on the driveway shall not exceed:
    - The depth at the road; or
    - The depth at the car parking space.

Evacuation

- A Site Flood Emergency Response Plan is required when elements of the development, including vehicular and pedestrian access are below FPL3. The Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behaviour up to FPL2 expected to be experienced at the site. The plan should consider the following specific actions:
    - Preparing for a flood;
    - Responding when a flood is likely;
    - Responding during a flood; and
    - Recovery after a flood.

  The flood plan should be consistent with the relevant *NSW SES FloodSafe Guide*.

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL3.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL3.

E4.5 Commercial and Industrial

Where adverse impacts on adjoining properties are likely, variations may be sought to reduce floor levels no lower than the 1% AEP flood level plus 0.5m freeboard.

Hydraulic Hazard Category

- No development is to occur in or over a floodway area, or a high hazard area, generated by flooding up to FPL2, unless justified by a site specific assessment.

Floor Levels

- Non-habitable floor levels are to be equal to or greater than FPL3 where possible, or otherwise no lower than FPL1 unless justified by a site specific assessment.
- Habitable floor levels are to be no lower than FPL3. In circumstances where construction of a building at FPL3 is likely to have an adverse impact on the adjoining property or the visual amenity of the location, a variation may be sought.
- Where the lowest habitable floor area is elevated more than 1.5m above finished ground level a restriction is to be placed on the title of the land, pursuant to Section 88B of the Conveyancing Act, confirming that the undercover area is not to be enclosed.

Building Components and Method

- All structures to have flood compatible building components below FPL3.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

- The minimum surface level of open car parking spaces or carports shall be as high as practical, and not below FPL1.
- Garages or enclosed car parking must be protected from inundation by flood waters up to FPL2.
- Where 20 or more vehicles are potentially at risk, protection shall be provided to FPL3.
- Where the level of the driveway providing access between the road and parking space is lower than 0.3m below FPL2, the following condition must be satisfied - when the flood levels reach FPL2, the depth of inundation on the driveway shall not exceed:
    - The depth at the road; or
    - The depth at the car parking space.

Evacuation

- A Site Flood Emergency Response Plan is required when elements of the development, including vehicular and pedestrian access are below FPL3. The Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behaviour up to FPL2 expected to be experienced at the site. The plan should consider the following specific actions:
    - Preparing for a flood;
    - Responding when a flood is likely;
    - Responding during a flood; and
    - Recovery after a flood.

  The flood plan should be consistent with the relevant NSW SES FloodSafe Guide.

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL3.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL3.

E4.6 Tourist Related Development

Where adverse impacts on adjoining properties are likely, variations may be sought to reduce floor levels no lower than the 1% AEP flood level plus 0.5m freeboard.

Hydraulic Hazard Category

- No development is to occur in or over a floodway area, or a high hazard area, generated by flooding up to FPL2, unless justified by a site specific assessment.

Floor Levels

- Habitable floor levels are to be no lower than FPL3. In circumstances where construction of a building at FPL3 is likely to have an adverse impact on the adjoining property or the visual amenity of the location, a variation may be sought.

Building Components and Method

- All structures are to have flood compatible building components below FPL3.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

- The minimum surface level of open car parking spaces or carports shall be as high as practical, and not below FPL1.
- Garages or enclosed car parking must be protected from inundation by flood waters up to FPL2.
- Where the level of the driveway providing access between the road and parking space is lower than 0.3m below FPL2, the following condition must be satisfied - when the flood levels reach FPL2, the depth of inundation on the driveway shall not exceed:
    - The depth at the road; or
    - The depth at the car parking space.

Evacuation

- A Site Flood Emergency Response Plan is required when elements of the development, including vehicular and pedestrian access are below FPL3. The Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behaviour up to FPL2 expected to be experienced at the site. The plan should consider the following specific actions:
    - Preparing for a flood;
    - Responding when a flood is likely;
    - Responding during a flood; and
    - Recovery after a flood.

The flood plan should be consistent with the relevant *NSW SES FloodSafe Guide*.

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL3.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL3.

E4.7 Recreation or Non-Urban Uses

Hydraulic Hazard Category

- No development is to occur in or over a floodway area, or a high hazard area, generated by flooding up to FPL2, unless justified by a site specific assessment.

Floor Levels

- All floor levels to be no lower than FPL1.

Building Components and Method

- All structures to have flood compatible building components below FPL3.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

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

Evacuation

- A Site Flood Emergency Response Plan is required when elements of the development, including vehicular and pedestrian access are below FPL3. The Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behaviour up to FPL4 expected to be experienced at the site. The plan should consider the following specific actions:
    - Preparing for a flood;
    - Responding when a flood is likely;
    - Responding during a flood; and
    - Recovery after a flood.

  The flood plan should be consistent with the relevant *NSW SES FloodSafe Guide*.

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL3.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL3.

E4.8 Concessional Development

Hydraulic Hazard Category

- No development is to occur in or over a floodway area, or a high hazard area, generated by flooding up to FPL2, unless justified by a site specific assessment.

Floor Levels

- Habitable floor level to be no lower than FPL3. Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level is to be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.
- Non-habitable floor levels to be equal to or greater than FPL3 where possible, or otherwise no lower than FPL1 unless justified by a site specific assessment.
- A restriction is to be placed on the title of the land, pursuant to Section 88B of the Conveyancing Act, where the lowest habitable floor area is elevated more than 1.5m above finished ground level, confirming that the undercover area is not to be enclosed.

Building Components and Method

- All structures to have flood compatible building components below FPL3.

Structural Soundness

- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report may be required.

Flood Effects

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to:
    - Loss of flood storage.
    - Changes in flood levels, flows and velocities caused by alterations to the flood conveyance.
    - The cumulative impact of multiple potential developments in the floodplain.

Car Parking and Driveway Access

- Driveway and parking space levels to be no lower than the design floor level or ground level. Where this is not practical, a lower level may be considered. In these circumstances, the level is to be as high as practical, and, when undertaking alterations or additions no lower than the existing level.

Evacuation

- A Site Flood Emergency Response Plan is required when elements of the development, including vehicular and pedestrian access are below FPL3. The Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behaviour up to FPL2 expected to be experienced at the site. The plan should consider the following specific actions:
    - Preparing for a flood;
    - Responding when a flood is likely;
    - Responding during a flood; and
    - Recovery after a flood.

  The flood plan should be consistent with the relevant *NSW SES FloodSafe Guide.*

Management and Design

- Applicant to demonstrate that area is available to store goods above FPL3.
- Materials which may cause pollution or are potentially hazardous during any flood must not be stored externally below FPL3.

E5 Other Development

E5.1 Dwellings in rural areas

This section is to be read in conjunction with Part E4.4

Objectives

- To ensure that new dwellings approved in the floodplain in rural agricultural and large lot residential are structurally sound for relevant flood conditions;
- To ensure that the dwelling, the residents, farm equipment and stock are protected during floods.

Development Controls

Applicants are to enquire with Council regarding existing **hydraulic status and flood hazard.**

Development not on a mound

1. Dwellings must be certified structurally sound and constructed on certified structural footings to resist the forces of flood. These forces include the impact of standing water on foundations, flowing water, debris loading and buoyancy.
2. Suitable provision for the storage of farm equipment and stock as required in the event of a flood occurrence.
3. The habitable floor level is to be no lower than FPL3.

Development on a mound.

1. If the dwelling house is to be constructed on a certified mound, the mound is to be constructed at the site of the proposed dwelling and extend a minimum three (3) metres beyond the dwelling. This extra width provides for the storage of vehicles, farm equipment and some stock during a flood.
2. The mound is to be designed by an engineer who is to certify that the mound will be stable during flood conditions, will withstand the forces of flowing and standing water up to FPL2, as well as debris loading and buoyancy forces.
3. The level of the mound is to be 300mm above FPL2, and the floor level of the dwelling is to be no lower than FPL3.

E5.2 Ancillary structures in rural areas

Objectives

- To ensure that ancillary structures approved in the floodplain in rural agricultural and large lot residential are structurally sound for relevant flood conditions.

Development Controls

Applicants are to enquire with Council regarding any proposed amenities. Floor levels may be affected.

1. Non-habitable structures with the purpose of storing vehicles must comply with the Development Controls in Part E4 for Floor Levels and Access.
2. Storage sheds may be considered at a floor level below FPL1 with appropriate justification.

3. Other ancillary structures below appropriate FPL's may be considered with appropriate justification.
4. All structures below FPL3 will require flood compatible building components and the applicant to demonstrate that the new structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.

E5.3 Replacement dwellings

Objectives

- To ensure that replacement dwellings approved in the floodplain are structurally sound for relevant flood conditions;
- To ensure that the dwelling, residents and emergency services personnel are not placed at unacceptable risk during floods.

Development Controls

1. Replacement of an existing dwelling in a flood prone area, irrespective of the hydraulic category, will be assessed as a new dwelling. Habitable floor levels to be no lower than FPL3.
2. All structures below FPL3 will require flood compatible building components and the applicant to demonstrate that the new structure can withstand the forces of floodwater, debris and buoyancy up to and including FPL3. An engineer's report must be provided.
3. Concession may be considered in regard to Car Parking and Driveway Access with appropriate justification.

E5.4 Earthworks and filling

Objectives

- To ensure that proposed filling does not exacerbate flooding on other properties.

Development Controls

1. Filling on flood controlled land is not permitted unless a report from a suitably qualified engineer is submitted to Council that certifies that the development will not increase flood affectation elsewhere.
2. Filling of floodway areas is not permitted.
3. Filling of individual sites in isolation, without consideration of the cumulative effects is not permitted. A case by case decision making approach cannot take into account the cumulative impact of flooding behaviour, and associated risks, caused by individual developments. Any proposal to fill a site must be accompanied by an analysis of the effect on flood levels of similar filling of developable sites in the area.
4. This analysis would form part of a flood study prepared in accordance with Council's requirements as outlined in Appendix G of the DCP.

E5.5 Fencing

Objectives

- To ensure that fencing does not result in the undesirable obstruction of the free flow of floodwaters;
- To ensure that fencing does not become unsafe during floods and potentially becomes moving debris which threatens the integrity of structures or the safety of people.

Development Controls

1. Fencing within a floodway or high hazard flood risk area will not be permissible except for security / permeable / open type / safety fences of a type approved by Council.
2. Council will require a development application for all new solid (non-porous) and continuous fences above 0.6m high, in the high hazard flood risk areas.