

CHAPTER 3.3 FLOODPLAIN MANAGEMENT

1.0 INTRODUCTION

1.1 Objectives of this Chapter

- To minimise the risk to human life and damage to property by controlling development on flood prone land
- To apply a performance and merit based approach to all development decisions taking into account ecological, social, engineering safety and environmental considerations to ensure development is appropriate and sustainable
- To ensure that the development or use of floodplains waterways and riparian corridors does not adversely impact upon aesthetic, recreational and ecological values
- To ensure that all land uses and essential services are appropriately sited and designed in recognition of all potential floods
- To promote flood compatible building design that considers requirements for the development of flood prone land and does not adversely impact on adjoining properties
- To establish guidelines for the development of flood prone land that are consistent with the NSW Flood Policy and NSW Floodplain Development Manual (2005) and as updated by the associated Floodplain Risk Management Guides

1.2 Application

This plan has been prepared in accordance with Clause 74C of the Environmental Planning and Assessment Act, 1979 having regard to the provisions of the NSW Flood Policy and NSW Floodplain Development Manual (2005). In circumstances where there may be any inconsistency between the requirements contained in this Chapter and any other Chapter within this Development Control Plan, with regard to floodplain management, the provisions of this Chapter apply.

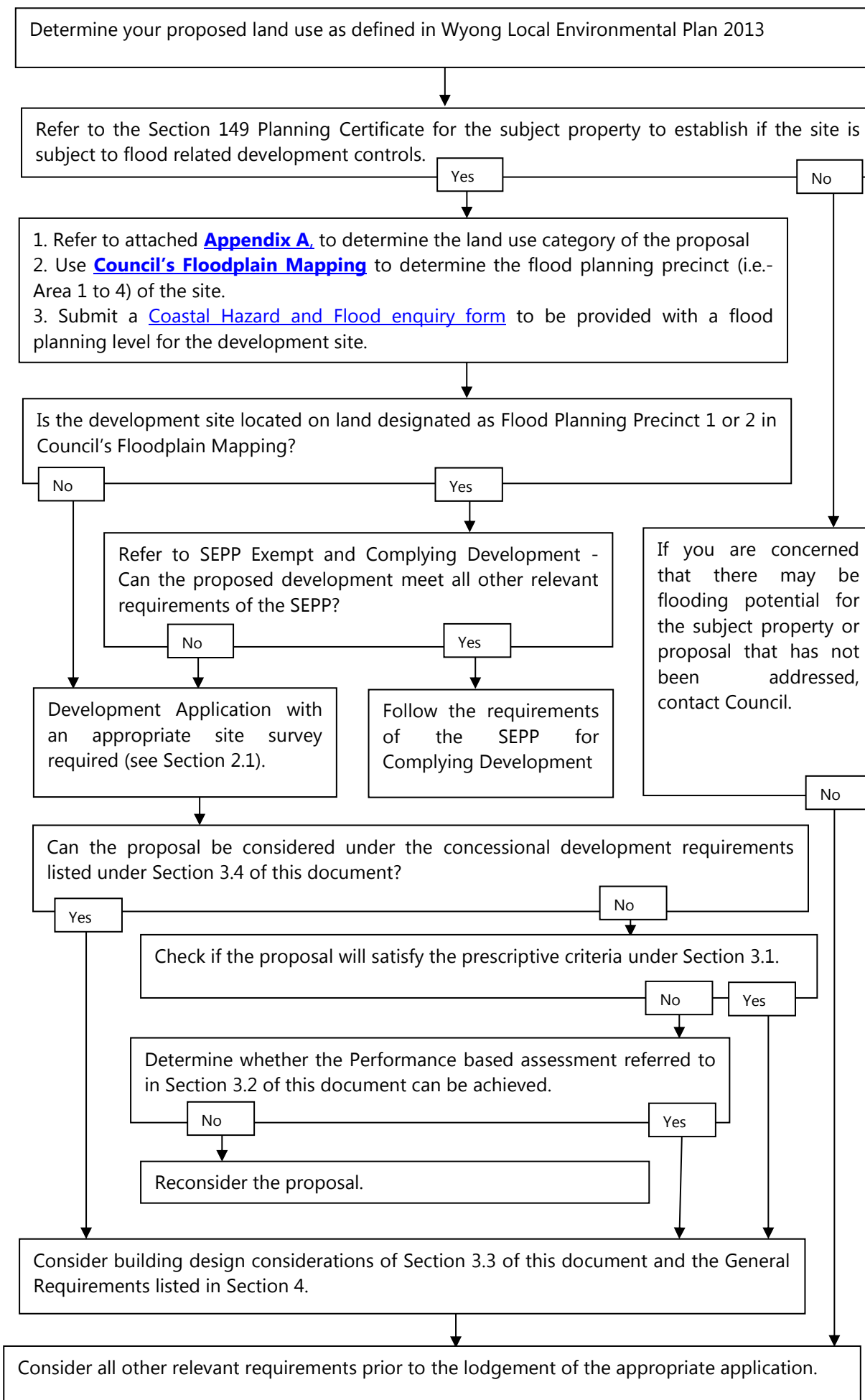
1.3 Relationship to other Chapters and Policies

This chapter is to be read in conjunction with other relevant Sections of this Development Control Plan, including, but not limited to:

- Chapter 2.1 – Dwellings Houses and Ancillary Structures
- Chapter 2.3 – Dual Occupancy
- Chapter 2.4 – Multiple Dwelling Residential Development
- Part 4 – Subdivision
- Part 6 – Locality Specific Chapters (where relevant)

1.4 Using this Chapter

The flow chart that follows has been prepared to assist in the use of this document:



2.0 APPLICATION REQUIREMENTS

2.1 Required Information

Development Applications for land subject to flood related development controls are to include the following information

- a A survey plan indicating:
 - i the position of the existing building/s or proposed building/s;
 - ii the existing ground levels and features to Australian Height Datum around the perimeter of the site and contours of the site; and
 - iii the existing or proposed floor levels to Australian Height Datum.
- b Applications for earthworks, filling of land, infrastructure and subdivision are to be accompanied by a survey plan (with a minimum contour interval of 0.25m) showing relative levels to Australian Height Datum.
- c For large scale developments, or developments that in the opinion of Council are in critical situations, where an existing catchment based flood study is not available, a flood study prepared by a suitably qualified engineer using hydrologic and hydraulic dynamic one or two dimensional computer model may be required.

3.0 DEVELOPMENT PROVISIONS

3.1 Prescriptive Criteria

The Prescriptive Provisions shown within the following table indicate where flood related development controls:

- can be met through the implementation of provisions as indicated (yellow and numbered);
- are not required (shown in green)
- in the view of Council, cannot be met through the use of reasonable development controls and will require further justification to be supported - see Section 3.2 (shown in orange).

Proposed Land use	Precinct 1 FPL to PMF	Precinct 2 Below FPL	Precinct 3 Flood Storage and Flow Paths (up to 10% AEP)	Precinct 4 High Hazard (up to 50% AEP)
1 Single Dwelling Houses		1, 9	2, 5, 7	
2 Agriculture & Recreation		2	2, 5, 7	
3 Sheds / Garages / ancillary Residential		1	2, 5, 7	
4 Commercial and Industrial Uses		2, 6		
5 Medium to High Density Residential				
6 Critical or Sensitive Facilities	3			
7 Land Subdivision	4			
8 Tourist Development				
9 Caravan parks - short-term sites		6	5, 6	
10 Permissible Earthworks		8		



Flood related development controls do not apply



Flood related development controls apply (refer to numbered prescriptive criteria below)



If the proposal is to be pursued further, a performance based assessment is to be provided demonstrating that the proposed development is compatible with the flooding characteristics of the site (refer to Section 3.2 and Appendix C).

- 1 = (a) Assessment indicating that the proposal can meet the relevant requirements of the BCA.
(b) Consideration of the impacts of climate change.
- 2 = Joint report by a professional engineer who specialises in floodplain management and a professional engineer who specialises in civil engineering to certify that the development provides:
- Minimum Habitable Floor Levels = 1% AEP flood level plus 500mm freeboard (*Flood Planning Level*)
 - Minimum Non-Habitable Floor Levels = 5% AEP flood level
 - Minimum level requirements for electrical fittings, internal sewer fixtures, and external overflow gully risers apply as per Building Code of Australia
 - Minimum levels of open car parking spaces, carports and driveways = 5% AEP flood level
 - Mine subsidence allowance to be added to levels (a), (b), (c) & (d) above, if applicable.
 - Low flood hazard access and egress for pedestrians during a 1% AEP flood to an appropriate area of refuge located above the Flood Planning Level.
 - Low flood hazard emergency vehicle road access (Ambulance, SES, RFS) during a 1% AEP flood event.
 - All proposed structural components that can withstand the forces of floodwater including hydrostatic pressure, hydrodynamic pressure, impact of debris and buoyancy forces up to the flood planning level.
 - Building materials and surface finishes at or below the flood planning level are all capable of withstanding prolonged immersion in water.
 - Negligible flood affectation elsewhere in the floodplain for a full range of flood events up to the 1% AEP flood event, having regard to: a) loss of flood storage, b) changes in flood levels, flows and velocities upstream, downstream and adjacent to the site, c) cumulative impact of multiple development in the vicinity.
 - Consideration of the impacts of climate change.

- 3 = Joint report by a professional engineer who specialises in floodplain management and a professional engineer who specialises in civil engineering to certify that the development provides:
- Minimum floor levels = PMF level plus mine subsidence allowance, if applicable.
 - Low flood hazard access and egress for pedestrians during a PMF flood to an appropriate area of refuge located above the PMF.
 - Low flood hazard emergency vehicle road access (Ambulance, SES, RFS) during a PMF flood event.
 - Consideration of the impacts of climate change.
- 4 = Joint report by a professional engineer who specialises in floodplain management and a professional engineer who specialises in civil engineering to certify that the development provides:
- Minimum height of building footprints, open car parking areas, driveways and new public roads = 5% AEP flood level plus mine subsidence allowance, if applicable
 - Low flood hazard access and egress for pedestrians during a 1% AEP flood to an appropriate area of refuge located above the Flood Planning Level.
 - Low flood hazard emergency vehicle road access (Ambulance, SES, RFS) during a 1% AEP flood event.
 - Risk assessment of flood hazard during a PMF flood event; including consideration of changes to flood behaviour, and location of floodways, to ensure that the consequences of the increased flood hazard are acceptable and manageable.
 - Negligible flood affectation elsewhere in the floodplain for a full range of flood events up to the PME, having regard to: a) loss of flood storage, b) changes in flood levels, flows and velocities upstream, downstream and adjacent to the site, c) cumulative impact of multiple development in the vicinity.
 - Consideration of the impacts of climate change.
- 5 = No filling allowable apart from area of building footprint, open car parking areas and driveway
- 6 = Joint report by a professional engineer who specialises in floodplain management and a professional engineer who specialises in civil engineering to include:
- An Evacuation Plan demonstrating that permanent, failsafe, and maintenance free measures are incorporated in to the development to ensure the timely and safe evacuation of people from the development in a 1% AEP Flood event, without significant cost or risk added to emergency services personnel. Signage of the plan must be prominently displayed around the development.
- 7 = Maximum size of ancillary structure is 50m². Appropriate signage on a minimum of one prominent internal or external wall indicating flood hazard of the area. Sign to be a minimum size 600mm x 600mm.
- 8 = Report by a professional engineer who specialises in floodplain management to certify that the development provides: Negligible flood affectation elsewhere in the floodplain for a full range of flood events up to the 1% AEP flood event, having regard to: a) loss of flood storage, b) changes in flood levels, flows and velocities upstream, downstream and adjacent to the site, c) cumulative impact of multiple development in the vicinity.
- 9 = Where a proposal involves the use of the dwelling is for short term rental accommodation, an Evacuation Plan demonstrating the timely and safe evacuation of people from the development in a 1% AEP Flood event, without significant cost or risk added to emergency services personnel is to be provided. Signage of the plan must be prominently displayed around the development.
- Note: this provision also applies to any lawfully approved dwellings located on the floodplain where approval for use as short-term rental accommodation is considered appropriate.*

3.2 Performance Based Assessment

Council will consider development proposals that do not meet the prescriptive requirements of this DCP only if a report prepared by a suitably qualified engineering professional accompanies the application and addresses the following:

- a is compatible with the established flood hazard of the land. In areas where flood hazard has not been established through previous studies or reports, the flood hazard must be established in accordance with the Floodplain Development Manual.
- b will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties;
- c incorporates appropriate measures to manage risk to life and property from flood;
- d will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses;
- e is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.
- f is consistent with the principles of Ecologically Sustainable Development.
- g adequately considers the impact of climate change.
 - i It is to be noted that with regard to climate change, appropriate benchmarks based on the best available current information have been used in producing the flood risk management studies and plans that inform this document.
 - ii Some prescriptive requirements such as flood planning level requirements may be relaxed if Council can be satisfied that the projected life of the proposed development is for a relatively short-term and therefore does not warrant the imposition of controls that consider impacts beyond the cessation of the proposed development. This will only be considered for uses where the residual risk to the occupation of the development is considered to be low. This may include certain temporary or demountable structures but would not include residential developments.

Note 1: The information listed above can be used to justify minor variations to the prescriptive provisions. Appendix C provides further detail with regard to applying the Performance Criteria mentioned above and will need to be addresses in full for large scale proposals and/or significant variations.

Note 2: The prescriptive controls have been developed to ensure that proposals that meet the requirements of the relevant Prescriptive Control Schedule will meet the objectives of this Plan. A performance based assessment is likely to involve the submission of independent studies and reports. It is recommended that you should discuss the level of detail required and the likelihood of achieving a successful outcome using a performance based assessment with Council staff using the pre-application process prior to making any decision to purchase and/or develop flood prone land

3.3 Building Design Considerations

In any case, building design, whether relying on the Prescriptive Controls or Performance Criteria, should not result in significant impacts upon the amenity of an area by way of:

- a overshadowing of adjoining properties that does not meet the requirements of the relevant development controls adopted by Council;
- b privacy impacts (e.g. by unsympathetic house-raising);
- c being incompatible with the streetscape or character of the locality. A request to raise the overall building height to beyond the prescribed building heights to achieve the appropriate minimum floor level will not be considered adequate. Building design is to be appropriate to the constraints of the site;
- d filling of land to permit the construction of a building that has not been specifically designed in consideration with conditions that may be experienced on the floodplain. Slab on ground construction is generally not considered appropriate on a floodplain.

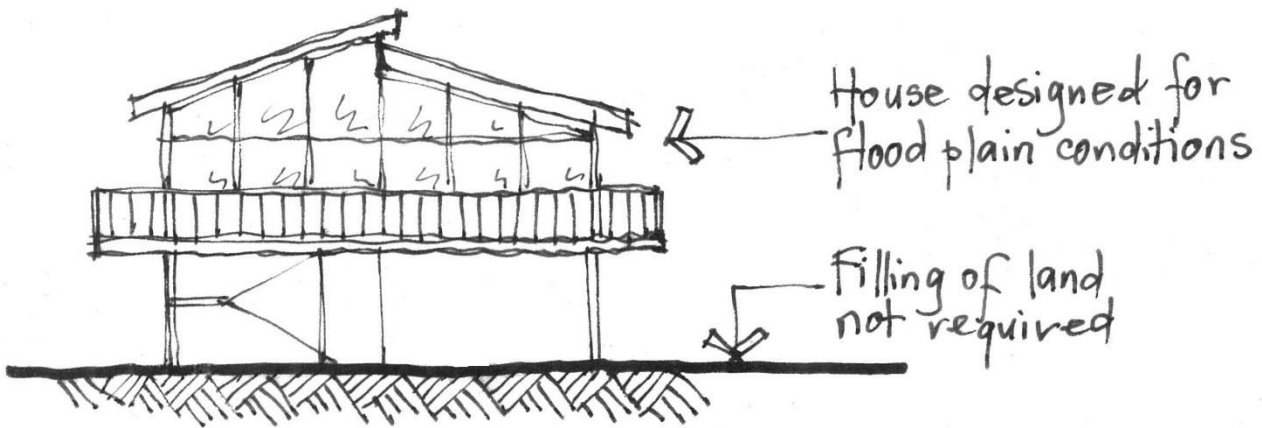


Figure 2 Floodplain development (where considered acceptable)



Figure 3 Inappropriate floodplain development

3.4 Concessional Development – Minor Additions

- a Council acknowledges that in some instances, relatively minor building additions will have a minimal impact on the floodplain and will not present an unmanageable risk to life. Council will give consideration for the following forms of development on suitable sites:
 - i single dwelling house additions of up to 40m² of habitable floor area at or above the same level as the existing adjoining approved floor level for habitable floor area. The allowance for additions shall be made no more than once for any given development. Proposals for dwelling additions that exceed 40m² of habitable floor area are to refer to the provisions for single dwellings under Section 3.1;
 - ii additions to Commercial and Industrial Uses of up to an additional 100 m² or 20% (whichever the less) of the Gross Floor Area of the existing building at no less than the same level as the existing adjoining approved floor level. The allowance for additions shall be made no more than once for any given development. Proposals for additions that exceed 100 m² or 20% (whichever the less) of the Gross Floor Area are to refer to the provisions for commercial and industrial uses under Section 3.1;
- b Any proposal to be considered as concessional development must:
 - i be supported with appropriate information at the development application stage that the proposed development can meet the requirements of the Building Code of Australia.

Note: The additional costs in achieving the requirements of the BCA for development below the flood planning level needs to be considered by the proponent prior to the submission of a Development Application.

- ii comply with Section 3.3– Building Design Considerations, Section 4 – General Requirements, and any other relevant provisions of DCP 2013.
- c As part of any consent issued pursuant to this Section Council may require:
 - i a restriction on use placed on the property title limiting the further development of the site ;
 - ii the existing development to be suitably upgraded to address the potential impacts of flooding.

Note: Due to concerns for safety and the consequences of prolonging poor land use practices, concessional development or other site redevelopment will not be supported within High Hazard areas

4.0 GENERAL REQUIREMENTS

The following ancillary development issues are to be considered in the assessment of proposed development of flood prone land.

4.1 Requirements for Fencing

OBJECTIVES

- To ensure that fencing does not result in any significant obstruction to the free flow of floodwaters
- To ensure that fencing will remain safe during floods and not become moving debris that potentially threatens the security of structures or the safety of people

REQUIREMENTS

- a Fencing is to be constructed in such a manner that it will not modify the flow of floodwaters or cause damage to surrounding land.
- b Fencing construction is to withstand flood waters including debris loads.

4.2 Requirements for Car Parking

OBJECTIVES

- To minimise the damage to motor vehicles from flooding
- To ensure that motor vehicles do not become moving debris during floods, which threaten the integrity or blockage of structures or the safety of people, or damage other property
- To minimise risk to human life from the inundation of basement and other car park or driveway areas

REQUIREMENTS

- a The proposed car park should not increase the risk of vehicle damage by flooding inundation. Any car park is to allow for a maximum of 300mm still water flood water depth unless otherwise provided through a flood study.
- b The proposed garage/car park should not increase the likelihood of flooding on other developments, properties or infrastructure.
- c Open car parking - The minimum surface level of open space car parking subject to inundation should be designed having regard to vehicle stability in terms of depths and velocity during inundation by flood waters.

4.3 Requirements for Filling of Flood Prone Land

OBJECTIVE

- To ensure that any filling of land that is permitted as part of a development consent does not have a negative impact on the floodplain

REQUIREMENTS

- a Filling for any purpose (including the raising of a building platform in flood-prone areas) is not permitted in areas identified as Flood Planning Precinct 3 or Flood Planning Precinct 4, unless a Floodplain Risk Management Plan for the catchment has been adopted which allows filling to occur. In Flood Planning Precinct 2, filling will not be permitted unless a report from a suitably qualified engineer has been submitted and approved by Council that certifies that the development will not increase flood affectation elsewhere.
- b Filling of individual sites in isolation, without consideration of the cumulative effects is not permitted. 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. This analysis would form part of a flood study prepared by a suitable qualified professional.

4.4 Requirements for On-Site Sewer Management

OBJECTIVES

- To prevent the spread of pollution from on-site sewage management systems during periods of flood
- To assist in the ongoing operation of on-site sewage management systems during periods of flood

REQUIREMENTS

- a The treatment tank/holding device is to be located above the 1% AEP flood contour.
- b The land application area is to be above that 5% AEP flood contour except in Wyong Shire's drinking water catchment where systems are not to be located on land below the 1% AEP flood contour.
- c Refer to Chapter 3.8 – On Site Effluent Disposal in Non-Sewered areas for guidance with regard to this form of application.

4.5 Requirements for the Storage of Hazardous Substances

OBJECTIVE

- To prevent the potential spread of pollution from hazardous substances

REQUIREMENT

The storage of products which, in the opinion of Council, may be hazardous or pollute floodwaters, must be placed at a minimum of 500 mm above the height of the 1% AEP flood or placed within an area protected by bunds or levees such that no flood waters can enter the bunded area if the flood level rose to a level of 500 mm above the height of the 1% AEP flood.

APPENDIX A LAND USE CATEGORIES

The definitions listed below are extracted from the Wyong Local Environmental Plan 2013. Refer to Council's website to view Council's LEP and Land Use Matrix for further information.

- 1 **Single Dwellings Houses:** dwelling houses, exhibition homes *(Note: one dwelling per existing residential lot only)*
- 2 **Agriculture and Recreation:** agriculture, farm buildings, recreation area, stock and sales yard, environmental facility,
- 3 **Shed and Garages, ancillary residential development** *(Note: ancillary residential development includes swimming pools, cabanas, gazebos and similar structures)*
- 4 **Commercial and Industrial Uses:** amusement centre, animal boarding and training establishment, boat building and repair facilities, car parks, cemetery, charter and tourism boating facilities, commercial premises, community facilities, crematorium, depot, entertainment facility, freight transport facility, function centre, industries, health consulting rooms, health service facility (excluding patient transport facilities and hospitals), highway service centre, industrial retail outlet, industrial training facility, information and education facility, marinas, medical centre, mortuaries, passenger transport facilities, place of public worship, port facilities, public administration buildings (not occupied by emergency services organisations), recreation facilities(all), registered club, research station, restricted premises, rural industry (excluding stock and sales yards), service station, storage premises, sex services premises, toilet & amenities blocks, transport depot, truck depot, vehicle body repair workshop, vehicle repair station, veterinary hospital, warehouse or distribution centre, waste or resource management facility, wholesale supplies
- 5 **Medium to High Density Residential:** attached dwelling, boarding house, caravan parks (long term sites), dual occupancy, exhibition village, manufactured home estates, multi dwelling housing, residential flat buildings, rural workers dwelling, secondary dwelling, semi-detached dwelling, shop-top housing.
- 6 **Critical Infrastructure and Facilities:** airstrip, air transport facilities, electricity generating works, emergency service facility, helipad, hospital, public administration buildings (occupied by emergency services organisations), public utility undertaking, sewerage system, water supply system

Sensitive Uses and Facilities: child care centre, correctional centre, educational establishment, group homes, home based child care, hostel, respite day care centre, seniors housing
- 7 **Land Subdivision – Torrens Title** *(Note: Does not include Community and Strata Subdivision or Subdivision of approved residential development)*
- 8 **Tourist Development:** camping grounds, eco-tourist facilities, tourist and visitor accommodation *(Note: Does not include short-term rental accommodation)*
- 9 **Caravan parks – short term accommodation**
- 10 **Permissible Earthworks:** environmental protection works, flood mitigation works
- 11 **Not Listed – Merit Assessment:** forestry, home business, home occupation, home occupation (sex services), wharf or boating facility, signage, boat launching ramp, boat sheds, charter or tourism boating facilities, environmental facilities, jetties, mooring, mooring pens, water recreation structure, extractive industries, , open cut mines

APPENDIX B FLOOD COMPATIBLE MATERIALS

Component	Flood Compatible Material
Flooring and Sub-floor	<ul style="list-style-type: none"> ▪ Concrete slab-on-ground monolith construction ▪ Suspended reinforced concrete slab
Wall Structure	<ul style="list-style-type: none"> ▪ Solid brickwork, blockwork, reinforced, concrete or mass concrete
Wall and Ceiling Linings	<ul style="list-style-type: none"> ▪ Fibro-cement board ▪ Brick, face or glazed ▪ Clay tile glazed in waterproof mortar ▪ Concrete ▪ Concrete block ▪ Steel with waterproof applications ▪ Stone, natural solid or veneer, waterproof grout ▪ Glass blocks ▪ Glass ▪ Plastic sheeting or wall with waterproof adhesive
Roof Structure	<ul style="list-style-type: none"> ▪ Reinforced concrete construction ▪ Galvanised metal construction
Doors	<ul style="list-style-type: none"> ▪ Solid panel with water proof adhesives ▪ Flush door with marine ply filled with closed cell foam ▪ Painted metal construction ▪ Aluminium or galvanised steel frame
Insulation	<ul style="list-style-type: none"> ▪ Closed cell solid insulation ▪ Plastic/polystyrene boards
Windows	<ul style="list-style-type: none"> ▪ Aluminium frame with stainless steel rollers or similar corrosion and water resistant material.
Nails, Bolts, Hinges and Fittings	<ul style="list-style-type: none"> ▪ Brass, nylon or stainless steel ▪ Removable pin hinges ▪ Hot dipped galvanised steel wire nails or similar
Main Power Supply	<ul style="list-style-type: none"> ▪ Subject to the approval of the relevant authority the incoming main commercial power service equipment, including all metering equipment, shall be located above the designated flood level. Means shall be available to easily disconnect the dwelling from the main power supply.

Component	Flood Compatible Material
Wiring	<ul style="list-style-type: none"> ▪ All wiring, power outlets, switches, etc., should be located above the designated flood level. All electrical wiring installed below this level should be suitable for continuous underwater immersion and should contain no fibrous components. ▪ Earth leakage circuit-breakers (core balance relays) or Residual Current Devices (RCD) must be installed. ▪ Only submersible type splices should be used below maximum flood level. ▪ All conduits located below the relevant designated flood level should be so installed that they will be self-draining if subjected to flooding.
Electrical Equipment	<ul style="list-style-type: none"> ▪ All equipment installed below or partially below the designated flood level should be capable of disconnection by a single plug and socket assembly.
Heating and Air Conditioning Systems	<ul style="list-style-type: none"> ▪ Heating and air conditioning systems should be installed in areas and spaces of the house above the designated flood level.
Fuel storage for heating purposes	<ul style="list-style-type: none"> ▪ Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off. ▪ The heating equipment and related fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. The tanks should be vented to an elevation of 600 millimetres above the designated flood level.
Ducting for heating/cooling purposes	<ul style="list-style-type: none"> ▪ All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self-draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, a closure assembly operated from above relevant flood level should protect the ductwork.

Note: Materials not listed may be accepted by council subject to certification of the suitability of the material of the manufacturer to withstand immersion for up to 96 hours

APPENDIX C - DETAILED ASSESSMENT CRITERIA

a **Compatibility with established Flood Hazard / Flooding Impacts and Behaviour:**

- i impact of flooding and flood liability is to be managed ensuring the development does not divert floodwaters or interfere with flood storage or natural function of the waterway;
- ii flood behaviour (for example, flood depths reached, flood flow velocities, flood hazard, rate of rise of floodwater);
- iii duration of flooding for a full range of events;
- iv appropriate flood mitigation works;
- v freeboard;
- vi Council's duty of care – proposals to addressed or limit;
- vii depth and velocity of flood waters for relative flood event;

b **Impact on other land / Cumulative Effects of the Development:**

- i development should not detrimentally increase the potential flood affectation on other development or properties or infrastructure, either individually or in combination with the cumulative impact of development that is likely to occur in the same floodplain;
- ii cumulative effects of the development and precedents created for further cumulative development.

c **Manage Risk to Life:**

- i the proposed development should not result in any increased risk to human life;
- ii controls for risk to life for floods up to the Flood Planning Level;
- iii controls for risk to life for floods greater than the Flood Planning Level;
- iv existing floor levels of development in relation to the Flood Planning Level and floods greater than the Flood Planning level;
- v Council's duty of care – Proposals to address and limit;
- vi what level of flooding should apply to the development e.g. 1 in 20 year, etc;
- vii effective flood access and evacuation issues;
- viii flood readiness – Methods to ensure relative flood information is available to current and future occupants and visitors;
- ix where appropriate existing information does not exist, a site specific Flood Risk Assessment in support of the application addressing the requirements of the NSW Flood Policy and NSW Floodplain Development Manual 2005. These documents are available from the NSW Department of Environment, Climate Change and Water website. <http://www.environment.nsw.gov.au/floodplains/manual.html>.

d **Warning and Evacuation:**

- i available effective warning time and reliable access for the evacuation of an area potentially affected by floods;
- ii evacuation should be consistent with any relevant or flood evacuation strategy where in existence;
- iii depth and velocity of flood waters for relative flood event;
- iv Council's duty of care – proposals to addressed or limit;
- v what level of flooding should apply to the development e.g. 1 in 20 year, etc;
- vi effective flood access and evacuation issues;
- vii flood readiness – methods to ensure relative flood information is available to current and future occupants and visitors.

e **Environmental Impacts:**

- i will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.

f **The Cost:**

- i the additional economic and social costs that may arise from damage to property from flooding should not be greater than that which can reasonably be managed by the property owner and general community;
- ii land values and social equity – effect both negative and positive – e.g. development increasing land values, restrictions decreasing land values, etc;
- iii future development (specifically, the ability of the community and individuals to recover from flood events);
- iv economic factors both in regard to doing and not doing the development;
- v social issues;
- vi servicing the development safely in flood e.g. potable water, sewer, etc.

g **Ecological Sustainable Development:**

Proposed development must be consistent with ESD principles including but not limited to:

- i intergenerational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
- ii the precautionary approach - namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- iii biodiversity conservation - namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration;
- iv improved valuation, pricing and incentive mechanisms - namely, that environmental factors should be included in the valuation of assets and services.

Further information regarding ESD principals may be sourced from the Environmental Planning and Assessment Regulations 2000 Schedule 2 Part 6.

- v must be addressed;
- vi land availability;
- vii land values and social equity – both positive and negative;
- viii social issues;
- ix environmental issues;
- x cultural issues.

h Climate Change:

- i the proposal adequately considers the impact of climate change. It is to be noted that with regard to climate change appropriate benchmarks based on the best available current information have been used in producing the flood risk management studies and plans that inform this document.

i Emergency Services

- i development will not unduly increase dependency on emergency services.

APPENDIX D - GLOSSARY

Note: Generally, the terms used in this Chapter have the same meaning as those terms are defined within the Floodplain Development Manual and the Wyong Local Environmental Plan, 2013. Where a term is defined within the WLEP, 2013, it is not repeated here. The following additional terms are relevant to this Chapter:

Annual Exceedance Probability (AEP) means the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage.

Australian Height Datum (AHD) is a common national plan of level corresponding approximately to mean sea level.

Average Recurrence Interval (ARI) means the long-term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event may occur on average once every 20 years.

basement car parking means the car parking area generally below ground level or above natural ground level but enclosed by bunding, where inundation of the surrounding areas may raise water levels above the entry level to the basement, resulting in inundation. Basement car parks are areas where the means of drainage of accumulated water in the car park has an outflow discharge capacity significantly less than the potential inflow capacity.

caravan parks

- **long-term site** means a dwelling site that is specified in the approval for a caravan park as being a long-term site.
- **short-term site** means a dwelling site on which a moveable dwelling that is ordinarily used for holiday purposes may be installed and that is specified in the approval for a caravan park as being a short-term site.

carport is a structure used to house motor vehicles, which has a minimum of two sides "open" and not less than one third of its perimeter "open".

defined flood level - referred to in the Building Code of Australia, is taken to be equivalent to being equivalent to flood planning level for residential development.

development site – for the purposes of this document the area of land where works or structures will be located following the completion of the development.

effective warning time is 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 raise furniture, evacuate people and transport their possessions.

evacuation is the transfer of people and or stock from areas where flooding is likely, either close to, or during a flood event. It is affected not only by warning time available, but also the suitability of the road network, available infrastructure, and the number of people that have to evacuate during floods.

extreme flood means an estimate of the probable maximum flood (PMF), which is the largest flood that could conceivably occur at a particular location, generally estimated from the probable maximum precipitation (PMP). Generally it is not physically or economically possible to provide complete protection against this event.

flood is a relatively high stream flow that overtops the natural or artificial banks in any part of a stream, channel, river, estuary, lake or dam, and/or local overland flooding associated with major drainage as defined by the NSW Floodplain Development Manual (FDM) before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

flood compatible materials include those materials used in building which are resistant to damage when inundated. A list of flood compatible materials is attached.

flood evacuation strategy means the proposed strategy for the evacuation of areas with effective warning time during periods of flood as specified within any policy of Council, the floodplain risk management plan (FRMP), the relevant state government disaster plan, by advices received from the State Emergency Services (SES) or as determined in the assessment of individual proposals.

floodplain means the area of land which is subject to inundation by floods up to and including the probable maximum flood (PMF) event.

Floodplain Development Manual (FDM) refers to the document dated April 2005, published by the New South Wales Government and entitled 'Floodplain Development Manual: the management of flood liable land'.

flood planning area the area of land below the FPL and thus subject to flood related development controls.

Flood Planning Level (FPL) are the combinations of flood levels and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans.

Flood Planning Precinct (FPP) – mapped areas of flood prone land that have been established considering the overall impact of flooding. In assessing the flood environment, elements such as known flood behaviour, evacuation issues and site access are used.

Floodplain Risk Management Plan (FRMP) means a plan prepared for one or more floodplains in accordance with the requirements of the FDM or its predecessor.

Floodplain Risk Management Study (FRMS) means a study prepared for one or more floodplains in accordance with the requirements of the FDM or its predecessor.

flood storage means those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood.

floodway means those areas, often aligned with obvious naturally defined channels, where a significant discharge of water occurs during floods. They are also areas where, if only partially blocked, will cause a significant redistribution of flood flow or significant increase in flood levels, which may impact on other properties.

freeboard is a factor of safety expressed as the height above the design flood level. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action; localised hydraulic behaviour and impacts that are specific event related, such as levee and embankment settlement; cumulative impacts of fill in floodplains and other effects such as changes in rainfall patterns as a result of climate change.

garage (private) – a building or part of a building used to park or keep a motor vehicle and that is not defined as a carport or car park.

habitable floor area means:

- in a residential situation: a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom;
- in an industrial or commercial situation: an area used for offices or to store valuable possessions susceptible to flood damage in the event of a flood.

hazardous materials are solids, liquids, or gases that can harm people, other living organisms, property, or the environment. These may include materials that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, bio-hazardous, toxic, pathogenic, or allergenic. Also included are physical conditions such as compressed gases and liquids or hot materials, including all goods containing such materials or chemicals, or may have other characteristics that render them hazardous in specific circumstances.

large scale development is (for the purposes of this document) a proposal that involves site disturbance 2500m² of land or greater.

local overland flooding means inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.

Probable Maximum Flood (PMF) is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation.

Probable Maximum Precipitation (PMP) is the greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends (World Meteorological Organisation, 1986). It is the primary input to the estimation of the probable maximum flood.

reliable access during a flood 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, the suitability of the evacuation route, and without a need to travel through areas where flood hazard increases.

Section 149 Planning Certificate provides information, including the statutory planning controls that apply to a parcel of land on the date the certificate is issued.

shed – for the purpose of this chapter includes machinery sheds, garden and storage sheds but does not include a garage or car park.

suitably qualified engineer is an engineer who is included in the National Professional Engineers Register, administered by the Institution of Engineers Australia.

survey plan is a plan prepared by a registered surveyor which shows the information required for the assessment of an application in accordance with the provisions of this Policy