

Planning Matrix
(Summary of Building and Development Controls)
And
Nambucca Shire Council Flood Proofing Code
(construction requirements for developments below the Flood Planning Level (FPL))

Flood Hazard Classification*	Land Use Risk Category	Planning Controls						
		Floor Level	Building Materials	Structural Soundness	Flood Affection	Evacuation / Access	Flood Awareness	Management & Design
H1	Critical Uses & Facilities	3	2	2	2	2		
	Sensitive Uses & Facilities	1	2	2	2	2	2	1,2,3
	Subdivision and Filling							
	New Residential	1				3	2	
	New Commercial & Industrial	2				3	2	
	Redevelopment	1,2				3	2	
	Infill Development	1,2				3	2	
	Additions	4				3	2	
	Tourist and Visitor Accommodation and Caravan Parks	2				3	2	
H2 – H4	Critical Uses & Facilities							
	Sensitive Uses & Facilities	1	2	2	2	2	1,2	1,2,3
	Subdivision and Filling			3	2	1	2	4
	New Residential	1	1	1	2	1	2	3
	New Commercial & Industrial	2	1	1	2	3	1,2	1,2,3
	Redevelopment	1,2	1	1	2	3	1,2	1,2,3
	Infill Development	1,2	1	1	2	3	1,2	1,2,3
	Additions	4	1	1	2	3	1,2	1,2,3
	Tourist and Visitor Accommodation and Caravan Parks	2	1	1	2	3	1,2	1,2,3
H5 – H6	Critical Uses & Facilities							
	Sensitive Uses & Facilities							
	Subdivision and Filling							
	New Residential							
	New Commercial & Industrial							
	Redevelopment	1,2	1	1	1	3	1,2	1,2,3
	Infill Development	1,2	1	1	1	3	1,2	1,2,3
	Additions	4	1	1	1	3	1,2	1,2,3
	Tourist and Visitor Accommodation and Caravan Parks							

Key:

	Not Relevant
	Unsuitable Land Use

*Refer to Section 3.3 of the Nambucca Flood Risk Management Study (2017) for details on hazard categories. Hazard Classification defined on Figures 22 to 27 from the Nambucca Shire Floodplain Risk Management Study

CONTROLS:

Floor Level

1	All habitable floor levels to be equal to or greater than the FPL (1% AEP flood level plus 500mm freeboard).
2	Floor levels to be no lower than the FPL. Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, a lower floor level may be considered. In these circumstances, the floor level is to be as high as practical and when undertaking alterations and additions, no lower than the existing floor level.
3	All floor levels to be equal to or greater than the PMF level.
4	Floor levels to be as close to the design floor level as practical and no lower than the existing floor level when an addition to an existing building.

Building Materials

1	All structures to have flood compatible building materials below or at the FPL – see Nambucca Shire Council Flood Proofing Code.
2	All structures to be constructed of flood compatible materials below or at the PMF level – see Nambucca Shire Council Flood Proofing Code.

Structural Soundness

1	Engineer's Report to provide any structure subject to a flood up to and including the FPL can withstand the force of floodwater, debris and buoyancy.
2	Engineer's Report to prove any structure subject to a flood up to and including the PMF level should withstand the force of floodwater, debris and buoyancy.
3	Geotechnical Engineer's Report required to specify appropriate filling / earthworks and the means of retention of batters against scouring / erosion.

Flood Affection

1	Engineers report required to certify that the development will not increase flood effects elsewhere having regard to: (i) loss of flood storage; (ii) changes in flood levels, flows and velocities caused by alteration to flood flows and (iii) the cumulative impact of multiple similar developments in the floodplain.
2	The flood impact of the development to be considered in relation to the developments flood effects elsewhere, having regard to: (i) loss of flood storage; (ii) changes in flood levels and velocities caused by alterations to the flood conveyance; and (iii) the cumulative impact of multiple potential developments in the floodplain. An engineer's report may be required.

Evacuation / Access

1	Reliable access to flood free land for pedestrians and vehicles during a 1% AEP flood event.
2	Reliable access for pedestrians and vehicles required at or above the PMF level.
3	Consideration required regarding an appropriate flood evacuation strategy and pedestrian /

vehicular access route for both before and during a flood.

Flood Awareness

- | | |
|---|--|
| 1 | S149 (2) Certificates to notify affectation by the 1% AEP flood. |
| 2 | S149 (2) Certificates to notify affectation by the PMF. |

Management & Design

- | | |
|---|---|
| 1 | Site Emergency Response Flood Plan required where floor levels are below the design floor level. |
| 2 | Applicant to demonstrate that there is an area where goods may be stored above the FPL during floods. |
| 3 | No external storage of materials below the FPL which may be potentially hazardous during floods. |
| 4 | Applicant to demonstrate the potential development as a consequence of a subdivision proposal can be undertaken in accordance the relevant DCP. |

NOTE:

On allotments that are covered by multiple risk categories including 'no mapped hazard' and hazard classifications 'H1-H5', non-habitable ancillary development that serves a permissible predominate use of the land in the matrix can be considered subject to merit based assessment and flood impact assessment that addresses control requirements:

Controls: Building Materials (1); Structural Soundness (1); Flood Affectation (1)

Land Use Categories:

The following additional definitions are applicable to the interpretation of the matrix:

Critical Uses and Facilities

Community facility which may provide an important contribution to the notification and/or evacuation of the community during flood events, including Hospitals and Residential Care facilities.

Sensitive Uses and Facilities

Educational establishments, heavy industry, liquid fuel depot, seniors housing except residential care facility, utility undertakings or public utility undertakings (including electricity 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 a flood event, telecommunications facility, waste or resource management facility, group home.

Anything not defined here or otherwise identified in the matrix should be considered in the sensitive uses and facilities category subject to council's agreement that the land use is more suitably placed in another category.

Redevelopment

Refers to rebuilding in an area. Eg as urban areas age, it may become necessary to demolish and reconstruct buildings on a relatively large scale. Redevelopment does not require either rezoning or major extensions to urban services. (Flood Plain Development Manual 2005).

Infill development

Refers to the development of vacant blocks of land that are generally surrounded by developed properties and is permissible under the current zoning of the land (Flood Plain Development Manual 2005).

New Development (Residential)

Refers to development of a completely different nature to that associated with the former landuse. Eg, the urban subdivision of an area previously used for rural purposes. New developments involve re-zoning and typically require major extensions of existing urban services such as roads, water supply, sewerage and electric power. (Flood Plain Development Manual 2005).

Nambucca Shire Council Flood Proofing Code

Construction standards for developments below the Flood Planning Level (FPL).

1 Electrical and Mechanical Materials

For buildings (or those parts thereof) constructed below the FPL the electrical and mechanical materials, equipment and installation is to conform to the following requirements.

1.1 Main Power Supply

Subject to the approval of Essential Energy the incoming main commercial service equipment, including all metering equipment should be located above the FPL. The building must be able to be easily disconnected from the main power supply. All circuits below the FPL should be connected to Residual Current Devices.

1.2 Wiring

All wiring, power outlets, switches, etc., must, to the maximum extent possible, be located above the FPL. All electrical wiring installed below the FPL should be suitable for continuous submergence in water and is to contain no fibrous components. Only submersible-type splices is to be used below the FPL. All conduits located below the FPL should be installed so that they will be self-draining if subject to flooding.

1.3 Equipment

All equipment installed below or partially below the FPL should be capable of disconnection by a single plug and socket assembly.

2 Heating and Air Conditioning Systems

Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the building above the FPL. When this is not feasible, every precaution is to be taken to minimise the damage caused by submersion according to the following guidelines.

2.1 Fuel

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.

2.2 Installation

The heating equipment and fuel storage tanks are to 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. All storage tanks are to be vented to an elevation of 600 millimetres above the FPL.

2.3 Ducting

All ductwork located below the FPL is to 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 watertight wall or floor below the FPL the ductwork is

to be protected by a closure assembly operated from above the FPL.

3 Building Materials

Construction materials are graded into four classes according to their resistance to flood waters. These grades are:

Most Suitable - the materials or products which are relatively unaffected by submersion and unmitigated flood exposure and are the best available for the particular application.

Second Preference - where the "most suitable" materials or products are unavailable or economic considerations prohibit their use; these materials or products are considered the next best choice to minimise the damage caused by flooding.

To be Avoided - as for "second preference" but considered to be more liable to damage under flood conditions

Not Permitted - the materials or products listed here are seriously affected by flood waters and in general have to be replaced if submerged Buildings should be constructed using the "most suitable" materials as far as practical – see

Buildings should be constructed using the “most suitable” materials as far as practical – see Table – Flood Compatible Building Materials. Second and third preference materials will only be considered where staff consider circumstances allow. Other materials may be considered where Council is provided with suitable product specifications from the manufacturer which indicates the materials are flood compatible.

Table – Flood Compatible Building Materials

Component	Order of Preference			
	Most suitable	Second Preference	Third Preference (to be avoided)	Not Permitted
Flooring and sub-floor Structure	Concrete slab-on-ground monolithic construction. <u>Note:</u> Clay filling is not Permitted beneath slabon-ground construction, which could be inundated. Suspension reinforced concrete slab.	Timber floor (T&G boarding, marine plywood) full epoxy sealed, on joints.	Timber floor (T&G)boarding, marine plywood) with ends only epoxy sealed on joints and provision of side clearance for board swelling.	Timber floor close to ground with surrounding base. Timber flooring with ceilings or soffit linings. Timber flooring with seal on top only.
Floor Covering	Clay tile. Concrete, precast or in situ. Concrete tiles. Epoxy, formed-in-place. Mastic flooring formed-in-place. Rubber sheets with chemical-set adhesives. Silicone floors formed-inplace. Vinyl sheets with chemical- set adhesive.	Cement/bituminous formed-in-place. Cement/latex formed-in place. Rubber tiles, with chemical-set adhesive. Terrazzo. Vinyl tile with chemicalset adhesive. Vinyl- tiles asphaltic adhesives. Loose rugs. Ceramic tiles with acid and alkali-resistant grout.	Asphalt tiles with asphaltic adhesive. Loose fit nylon or acrylic carpet with closed cell rubber underlay.	Asphalt tiles (A). Carpeting, glue-down type or fixed with smooth-edge or jute felts. Ceramic tiles (A). Chipboard (particleboard). Cork. Linoleum. PVA emulsion cement. Rubber sheets or tiles (A). Vinyl sheets or tiles (A). Vinyl sheets or tiles coated on cork or wood backings fibre matting (sea-grass matting).

Wall Structure (up to the FPL).	Solid brickwork, blockwork, reinforced, concrete or mass concrete.	Two skins of brickwork or blockwork with inspection openings.	Brick or blockwork veneer construction with inspection openings.	Inaccessible cavities. Large window openings.
Roofing Structure (for situations where FPL is above the ceiling).	Reinforced concrete construction. Galvanised metal construction	Timber trusses with galvanised fittings	Traditional timber roof construction.	Inaccessible flat roof construction. Ungalvanised steelwork eg. lintels, arch bay tie rods, beams etc. Unsecured roof tiles.
Doors	Solid panel with water proof adhesives. Flush door with marine ply filled with closed cell foam. Painted metal construction. Aluminium or galvanised steel frame.	Flush panel or single panel with marine plywood and water proof adhesive. T&G lined door, framed ledged and braced. Painted steel. Timber frame fully epoxy sealed before assembly.	Fly-wire doors. Standard timber frame.	Hollow core ply with PVA adhesive and honeycomb paper core.
Wall and Ceiling linings	Villaboard- Brick, face or glazed in waterproof mortar. Concrete. Concrete block. Steel with waterproof applications. Stone, natural solid or veneer, waterproof grout. Glass blocks. Glass. Plastic sheeting or walls with waterproof adhesive.	Brick, common. Plastic wall tiles. Metals, non-ferrous. Rubber mouldings & trim. Wood, solid or exterior grade plywood fully sealed.	Chipboard exterior grade. Hardboard exterior grade. Wood, solid (boards or trim) with allowance for swelling. Wood, plywood exterior grades. Fibrous plaster board.	Chipboard. Fibreboard panels. Minerar fibreboard. Paperboard. Plasterboard, gypsum plaster. Wall coverings (paper, burlap cloth types). Wood, standard plywood strawboard.
Insulation	Foam or closed cell types.	Reflective insulation.	Bat or blanket types.	Open cell fibre types.
Windows	Aluminium frame with stainless steel or brass rollers.	Epoxy sealed timber waterproof glues with stainless steel or brass fittings. Galvanised or painted steel.		Timber with PVA glues mild steel fittings.
Fixing etc (nails, bolts, hinges and fittings)	Brass, nylon or stainless steel. Removable pin hinges.		Mild steel.	