Maitland DCP 2025

Appendix E:

Flooding Guidelines

maitland
CITY COUNCIL

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VERSION	DATE ADOPTED	CHANGES
1.0		New DCP Appendix

Introduction

The Flooding Guideline (this Guideline) is to be read in conjunction with Chapter 2: Environmental Considerations, Section 2.4: Flood and Floodplain Management of the Maitland DCP 2025. This Guideline provides supporting explanatory information relating to flood and floodplain management controls in the Maitland Local Government Area (LGA). This Guideline is structured as follows:

SECTIONS	DESCRIPTION
1. Definitions	Provides specific definitions that apply only to Section 2.4 Flood and Floodplain Management of the DCP.
2. Land Use Categories	Categorises the five Land Use Risk Categories which establish the sensitivity of each type of land use to flooding. The definitions of each land use are principally based on the MLEP 2011.
3. Flood Impact Assessment Technical Criteria	Specifies the criteria to be applied when undertaking a site-specific flood assessment.
4. Flood and Floodplain Management – Central Maitland and Lorn Exclusion Zone	Provides area-specific flooding controls for certain parts of Central Maitland and Lorn that are in variation to the flooding and cumulative fill controls provided under Section 2.4 Flood and Floodplain Management of Chapter 2: Environmental Considerations of the Maitland DCP 2025.

1. Definitions

This section provides specific definitions that apply to Chapter 2: Environmental Consideration, Section 2.4: Flood and Floodplain Management. These definitions are also included in the general Glossary.

Basement Car Parking - The car parking area generally below ground level 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.

Compensatory excavation means the excavation of material to offset the placement of fill, so that there is no net reduction in the flood storage capacity in a hydraulically linked part of the floodplain defined by a specified flood event. Note: this means that the area of compensatory excavation must be available to accommodate flood waters during a specified flood event and, for example, cannot therefore be prematurely filled with ground water or local overland flows.

Cumulative impact assessment refers to the practice of investigating the collective impacts, both positive and negative, that can result from a clustering of all foreseeable works within the floodplain. Note: An assessment of the cumulative impact of potential future development in the floodplain of the Hunter River is detailed in the Lower Hunter River Floodplain Cumulative Development & Impact Study & Plan (Stages 1, 2 and 3: 2021; 2023 & 2023).

Effective Warning Time - The time available after receiving advice of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to raise furniture, evacuate people, and transport their possessions.

Evacuation - 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 effective warning time, but also the suitability of the road network, available infrastructure, and the number of people that have to evacuate during floods.

Fill pad means a raised mound that is constructed from imported fill or material excavated from the development site, to accommodate a dwelling, rural building or agricultural activity (such as a stock refuge or storage of agricultural equipment) in a non-urban zone, to provide increased flood immunity for those uses.

Note: *A Fill pad is exclusive of any access driveway which must is assessed separately.*

Flood resilient construction - A combination of measures incorporated in the design and/or construction and alteration of individual buildings or structures subject to flooding, and the use of flood compatible materials for the reduction or elimination of flood damage.

Note: *Guidance as to appropriate construction measures and materials may be provided by Council and can also be found in documents such as "Reducing Vulnerability of Buildings to Flood Damage - Guidance on Building In Flood Prone Areas" (Department of Environment*

and Climate Change NSW, 2006) and "Flood Resilient Building Guidance for Queensland Homes" (The State of Queensland (Queensland Reconstruction Authority) February 2019).

Flood evacuation strategy - The proposed strategy for the evacuation of areas within 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, the Maitland City Local Flood Plan or by advice received from the State Emergency Services (SES).

Flood refuge area - An onsite refuge above the PMF that provides reasonable shelter for the likely occupants of the development commensurate with the period of time that refuge is likely to be required in floods up to the PMF, where sheltering in place is considered a suitable option by Council.

Note: *In general, it is not acceptable to rely on a refuge provided by or on other development sites. In all cases where an onsite refuge is provided, it is to be both intrinsically accessible to all people on the site, sheltered and an integrated part of the development (i.e. a second storey with internal stair access). The route to the refuge is to be fail safe, plainly evident and self-directing.*

flood storage areas are those parts of the **floodplain** that are important for the temporary storage of floodwaters during the passage of a flood. The loss of storage areas may increase the severity of flood impacts by reducing natural flood attenuation. These are indicated on the flood planning maps provided by Council's online mapping system.

floodway refers to land that is a pathway taken by major discharges of floodwaters, the partial obstruction of which would cause a significant redistribution of floodwaters, or a significant increase in flood levels. Floodways are often aligned with natural channels, are usually characterised by deep and relatively fast flowing water and have major damage potential. These are indicated on the flood planning maps provided by Council's online mapping system.

Habitable (room) - 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.

Industrial development means any development on land zoned E3 Productivity Support, E4 General Industrial or E5 Heavy Industrial.

LEP is the local environmental plan applying to the land. Note at the time that this DCP was prepared Maitland Local Environmental Plan 2011 applied to whole of the local government area.

Material impact means the potential environmental, financial or safety impact on a property that is external to the development site that is projected to occur as a consequence of flooding, after allowing for the tolerances in modelling capabilities, the pre-existing flood liability of the property and the sensitivity of the property and its use to flooding.

Medium density housing means all forms of residential accommodation other than dwelling houses.

Minor development means development, not otherwise defined, that is not located within floodway or flood storage areas, involves work that affects less than 20% of the 1% AEP floodplain within the boundaries of the development site and does not involve the net filling of land, or building a structure that increases the floor area of a building by more than 10% or 30m2 (whichever is the greater).

Non – Habitable - are spaces in a building that do not meet the definition of habitable and are not occupied frequently or for extended periods.

Non-urban zone is a RU1 Primary Production, RU2 Rural Landscape, R5 Large Lot Residential, C2 Environmental Conservation, C3 Environmental Management, or C4 Environmental Living as identified by the LEP.

Outbuilding - An unattached building or structure that includes a bird aviary, cubby house and other play equipment, cabana, garden shed and greenhouse and the like.

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 water depths increase.

2. Land Use Categories

This section categorises land use into five Land Use Risk Categories (Section 2.4 Flood and Floodplain Management) according to the sensitivity of each type of land use to flooding. The definitions of each land use are principally based on the LEP and are categorised as follows:

LAND USE CATEGORY	DEVELOPMENT (REFER TO LEP DICTIONARY)
Sensitive and Hazardous Development	boarding houses, caravan parks, correctional centres, early education and care facilities, eco-tourist facilities, educational establishments, emergency services facilities, group homes, hazardous industries, hazardous storage establishments, hospitals, hostels, information and education facilities, respite day care centres, seniors housing, sewerage systems, tourist and visitor accommodation, water supply systems.
Residential	health consulting rooms; home businesses; home industries; home occupation; hotel or motel accommodation; residential accommodation; serviced apartments; and other development within residential lots including but not limited to construction of garages, swimming pools, and the construction of an outbuilding with a floor area that exceeds 30 m^2, fencing and/or retaining walls
Commercial or Industrial	Business premises; office premises; retail premises or buildings or land used for industrial activity.
Recreation or Non-urban Uses	Agriculture; aquaculture; animal boarding or training establishments; extractive industry; recreation facility (indoor), recreation facility (outdoor); recreation facility (major); recreation areas and minor ancillary structures (e.g. toilet blocks or kiosks); and water recreation structure

LAND USE CATEGORY	DEVELOPMENT (REFER TO LEP DICTIONARY)
Concessional Development	Development that involves: a. An internal or external alteration to an existing dwelling, which does not change the floor area and/or footprint of the existing dwelling; b. An addition to existing residential premises of not more than 10% of the floor area of the existing building footprint or 30m^2, whichever is the lesser; c. An addition to existing premises other than those in b) of not more than 10% of the floor area of the existing building footprint; d. A change of use which does not increase flood risk having regard to property damage and personal safety; e. Subdivision which does not propose the creation of new allotments with potential for further development; f. The construction of an outbuilding with a floor area of no greater than 30m^2 ***Note**: for the purposes of b. and c., the floor area or area of existing building footprint is that which existed at the date that this DCP came into force.*

3. Flood Impact Assessment Technical Guidelines

This section specifies the criteria to be applied when undertaking a site-specific flood assessment. The assessment would determine the Flood Risk Precincts (Section 2.4 Flood and Floodplain Management) in order to apply appropriate controls within the DCP.

Definitions

Unless an alternative definition is provided by the Guideline (as below), reference should be made to the adoption of the definitions contained within the Flood Risk Management Manual published by the Department of Planning in 2023 and associated supporting guides, the applicable development control plan and local environmental plan. The following specific definitions apply to these Guidelines:

Change in flood conditions refers to the change in existing (i.e. pre-development) flood conditions associated with the development and should consider change in peak flood level and extent, flood depth, flood velocity, flood hazard, period of inundation and emergency management considerations (i.e. available warning time and evacuation).

Flood function means the flood related functions of floodways, flood storage and flood fringe within the floodplain. Flood function is equivalent to hydraulic categorisation.

Flood impact assessment (FIA) refers to a site-specific study prepared to assess the impacts on flood behaviour that are likely to occur as a consequence a particular development.

Flood impact and risk assessment (FIRA) refers to a study prepared to assess flood behaviour, constraints and risk, understand offsite flood impacts on property and the community resulting from the development, and flood risk to the development and its users. A FIA may form a component of a FIRA.

Floodway and flood storage areas, are parts of the Hunter River floodplain shown on the maps referred to as the Maitland DCP Flood Mapping.

Professional engineer means a professional engineer as in the Building Code of Australia who specialises in hydraulic engineering.

Note: *A professional engineer is defined as a person who is—*

a. if legislation is applicable—a registered professional engineer in the relevant discipline who has appropriate experience and competence in the relevant field, or

b. if legislation is not applicable—

i. registered in the relevant discipline on the National Engineering Register (NER) of the Institution of Engineers Australia (which trades as 'Engineers Australia'), or

ii. eligible to become registered on the Institution of Engineers Australia's NER and has appropriate experience and competence in the relevant field.

Site means the land the subject of the development application or any additional land within the floodplain that may be the subject of works required as a consequence of the approval of the development application.

Preparation of a Flood Impact Assessment

General

1. A site-specific Flood Impact Assessment (FIA) must be prepared by a professional engineer.
2. The FIA must be prepared in accordance with the relevant provisions of this Guideline.
3. Consideration should also be given to the Flood Impact and Risk Assessment Flood Risk Management Guideline LU01 (published by: Environment and Heritage Group, Department of Planning and Environment, in June 2023) or any superseding guideline.
4. A FIA assessment should form part of a broader FIRA, where Council requires broader floodplain risk management issues (such as emergency management) to be reviewed.
5. Consideration may also be given to the "Flood Impact and Risk Assessment Flood Risk Management Guideline LU01" (NSW Department of Planning and Environment, 2023) where guidance is required for matters not specifically addressed by this Guideline.

Type of Assessment

1. Unless otherwise agreed by Council a FIA is to be undertaken as a quantitative assessment using best practice computer modelling techniques.
2. Where it can be demonstrated that hydraulic computer modelling is not required, and that it is acceptable having regard to the circumstances of a particular development and the

availability of existing flood modelling information, Council may agree to the preparation of a qualitative approach to the preparation of FIA assessment.

Computer Model

1. Unless otherwise agreed by Council or if none is available for the site of the development proposal, a Council established TUFLOW hydraulic model is to be used to prepare a FIA.
2. A fee may be payable for the use of Councils TUFLOW model. Once engaged, the consultant must enter into a license agreement for the use of Council's flood model for the specific purpose of preparing the FIA for the proposed development only.
3. Where a Council flood model is not available, the FIA is to be prepared utilising a flood model prepared specifically for the proposed development. The model is to be based on the most recent available topographic data sets and be of a sufficient level of complexity to appropriately assess the change in flood conditions local to the site and surrounding properties. Model boundaries should be extended a suitable distance upstream and downstream of the site so as not to impact the modelled flood behaviour local to the site and allow the full extent of change in flood conditions to be understood.

Assessment

1. The 20% AEP and 1% AEP without consideration of climate change, and 1% AEP with consideration of climate change (refer to Point 3 below) and PMF flood events must be modelled to assess the impact on existing flood conditions of a proposed development to property, infrastructure and the environment.
2. The delineation of floodway areas or flood storage as determined by Council is to be adopted for assessment purposes. If not available, or Councils determines a review of these mapped flood function areas is warranted, the modelling is to define floodway areas or flood storage areas based on best practice.
3. The modelling results should present both current day flood conditions and flood conditions as predicted for the year 2100 based on Councils policy if applicable, otherwise best available climate change flood risk data. All assessments are to be based on flood conditions as predicted for the year 2100.
4. The modelling is to be sufficient to inform the assessment required by the DCP controls.

FIA Report

A FIA is to be documented in a report that is submitted with the development application, and must address the following:

1. Description of the Site (including existing stormwater drainage and local catchment characteristics) and details of the proposed development.
2. The architectural/engineering plans on which the assessment is based.
3. Supporting calculations and mapping.
4. The professional qualifications and experience of the author(s).
5. Flood affectation to the Site during the 20% AEP, 1% AEP, 1% AEP with consideration of climate change and PMF events under existing (i.e. predevelopment) conditions
6. Delineation of the flood function categorisation applicable to the Site

7. Flood affectation to the Site during the 20% AEP, 1% AEP, 1% AEP with consideration of climate change and PMF events under post-development conditions
8. Overview of the change in flood conditions for each modelled event associated with the proposed development
9. Discussion of adherence to applicable planning controls
10. Proposed mitigation measures to address any impacts or minimise risk to personal safety of occupants and the risk of property damage.

4. Flood and Floodplain Management – Central Maitland and Lorn Exclusion Zone

This section of the Flooding Guidelines provides area-specific flooding controls for certain parts of Central Maitland and Lorn that are in variation to the flooding and cumulative fill controls provided under Section 2.4 Flood and Floodplain Management of Chapter 2: Environmental Considerations of the Maitland DCP 2025.

This is to ensure that flooding is managed within the low-lying flood islands within Central Maitland and Lorn have tailored flood-related controls that do not heavily restrict some forms of development within these areas, while simultaneously recognising the isolation of these areas within a 1 in 100-year flood event.

Relevant legislation and policy that may be read in conjunction with this section are listed below:

- *Environmental Planning and Assessment Act 1979*
- *Water Management Act 2000*
- *Clause 5.21 Flood Planning of Maitland Local Environmental Plan 2011*
- *NSW Flood Risk Management Manual*
- *Hunter River Floodplain Risk Management Study and Plan (2015)*
- *Wallis and Swamp-Fishery Creek Flood Study (2019)*
- *Paterson River Flood Study Vacy to Hinton (2017)*
- *Hunter River Branxton to Green Rocks flood study (2010)*
- *Lochinvar Flood Study (2019)*
- *Greta Flood Study (2019)*
- *Williamtown Salt Ash Flood Plain Risk Management Study (2017)*

Further information can be found at Flood planning at Council's website, Council's Mapping webpage, or the NSW Planning Portal Spatial Viewer.

4.1. Application

All Development Applications are to have regard to the general controls applicable to the proposed land use category and **flood risk precinct** (FRP), and cumulative impact specific controls. The procedure to determine which controls apply to proposed development involves the following steps:

Step 1: Determine whether the property is **flood liable land** and which FRPs apply to the land (refer to Council's online mapping, obtain a Flood Certificate from Council, or carry out flood modelling as required by Council). **A general map for reference is provided in Figure 1.**

Step 2: Identify the land use category of the development from Section 2 of Appendix E: Flooding Guidelines.

Step 3: Apply the relevant general controls outlined in the Central Maitland and Lorn Exclusion Zone Flood Planning Matrix (see below Table 4-2) and sub-sections 4.3.1-4.3.6, as applicable to the FRP and land use category.

4.2. Flood Risk Precincts (FRPs)

Flood liable land is categorised into the following three different levels of potential flood risk for the purposes of the DCP: High, Medium, and Low. Table 4-1 below provides the criteria that have been used for determining Flood Risk Precincts.

Table 4-1: Flood Risk Precincts (FRP)

FRP	DESCRIPTION	TECHNICAL DEFINITION
High	Land within the 1% AEP flood extent with a high hazard classification. There is a high potential for damage to property, risk to life or evacuation difficulty. **Note:** *Most development is restricted in this precinct. In this precinct there is a significant risk of flood damages without compliance with flood related building and planning controls.*	• Land classified as "H5 - H6" in the 1% AEP event, and • Any areas identified within a Floodplain Risk Management Study and Plan as subject to significant evacuation constraints.
Medium	Land below the 1% AEP flood (plus freeboard) that is not subject to high hazard classification and where they are no significant evacuation difficulties. *Note: In this precinct there would be significant risk of flood damage, however these potential risks of damage can be minimised by the application of appropriate development controls.*	*Land in the extent of the 1% AEP event plus freeboard that is not within a High Flood Risk Precinct*

FRP	DESCRIPTION	TECHNICAL DEFINITION
Low	All other land within the floodplain (i.e. within the extent of the probable maximum flood (PMF), that is not classified as a High or Medium Flood Risk Precinct. **Note:** *The Low Flood Risk Precinct is where the risk of damages is low for most land uses. The Low Flood Risk Category is that area above the 1% AEP flood, and most land uses would be permitted in this category. Development controls may apply to special land uses with critical functions or vulnerable occupants.*	*Land between the PMF and Medium Flood Risk Precinct.*

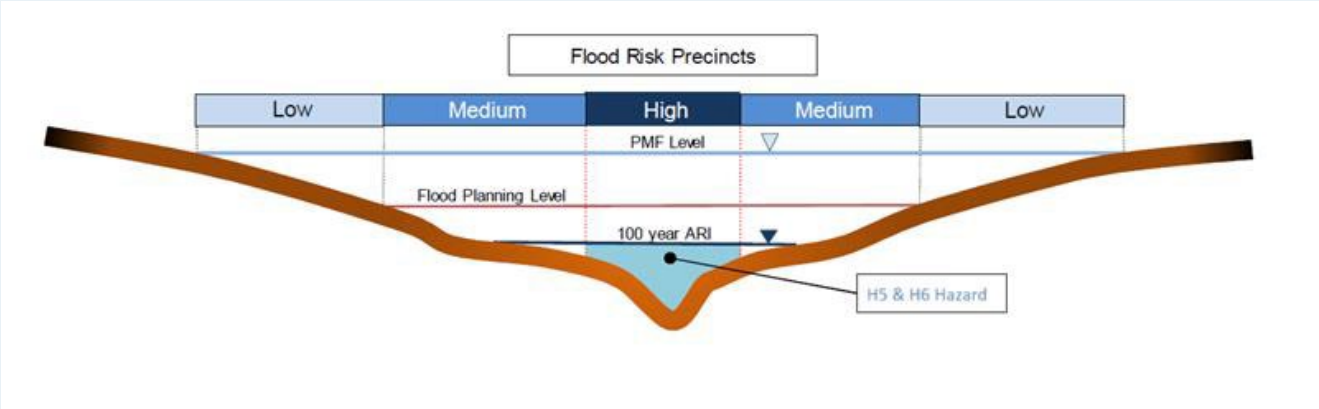

Figure 2-1: Flood Risk Precinct Classifications

Additional Guidance

1. Council's online mapping system on Council's website provides flood planning maps that identify the Flood Risk Precinct applying to properties where this information has been determined from flood studies and adopted by Council for this purpose. Flood storage, flood way, and flood fringe areas are provided as part of a Flood Certificate, which provides detailed information related to the flood matters affecting particular sites.
2. An application can be made to Council for a Flood Certificate to confirm available information about an individual property. The certificate will outline what Flood Risk Precincts or hydraulic catergorisations apply in addition to other key flood risk information or will specify whether Council does not have sufficient information to definitively advise on the flood risk applying to the property.
3. Where sufficient information is not available, but the potential for flood risk issues are evident based on available information, applicants may be required to undertake a site-specific flood assessment. These situations include where:
    a. Council has knowledge that the property has been previously affected by or impacted upon flooding or an overland flow path,
    b. A flood certificate, utilising Council's site-specific modelling, has indicated that the site may be flood affected,
    c. the property is on the low side of the road and/or the boundary levels are below the level of Council's kerb,
    d. the property is in a natural low point, gully or depression, or
    e. the property is adjacent to or contains a flow path, open channel, watercourse or drainage line.

The rest of this Guideline specifies the criteria to be applied when undertaking a site-specific flood assessment. The assessment would determine the Flood Risk Precincts in order to apply appropriate controls in addition to any further assessments required by the Maitland DCP 2025 and this Guideline.

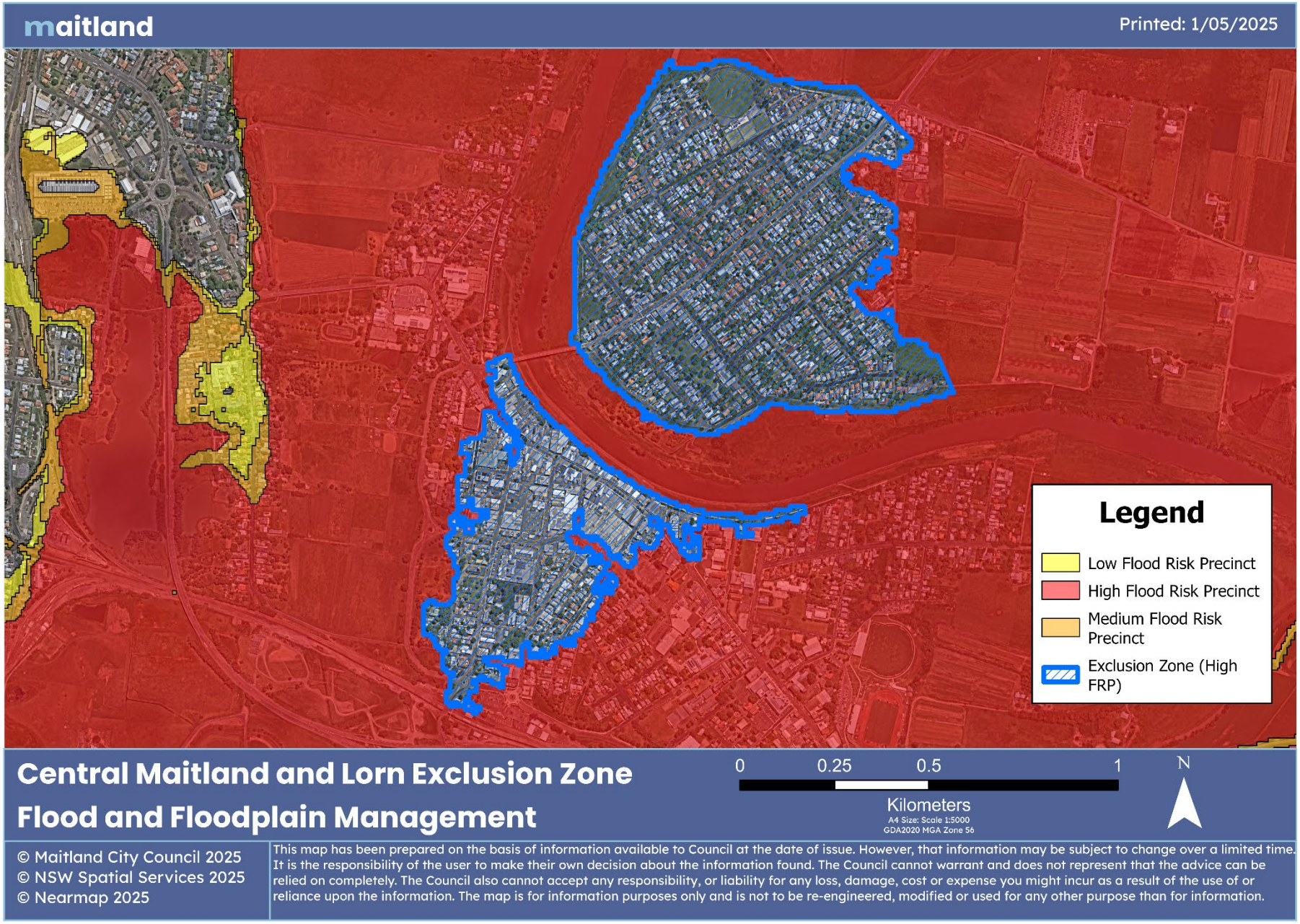

Figure 1: Central Maitland and Lorn Exclusion Zone Reference Map

Objectives

O.1 To minimise risk to life and damage to property by controlling development on flood prone land.

O.2 To ensure the impacts of the full range of potential floods up to and including the Potential Maximum Flood (PMF) are considered when assessing development, having regard to the sensitivity of different land uses to flooding.

O.3 To ensure that development does not have an unacceptable impact on flood behaviour, people's safety, surrounding properties and structures, and the natural environment.

O.4 To provide detailed controls that if satisfied would address the considerations required by clause 5.21 of the MLEP 2011.

4.3. General Flood Risk Management Prescriptive Controls

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.1 • O.1 • O.2 • O.3 • O.4	The Flood Planning Matrix provided in Table 4-2 specifies what general flood risk management Prescriptive Controls (PC) are to be applied to development in each FRP. These are in addition to the Acceptable Solutions (AS) in each section. **Note:** The Prescriptive Controls of Section 4.3.1 - 4.3.6 follow Table 4-2.
PC.2 • O.1 • O.2 • O.3 • O.4	The Acceptable Solutions (AS) listed in Sections 4.3.1 - 4.3.6 are applied irrespective of the land use category provided under Table 4-2.

Table 4-2: Central Maitland and Lorn Exclusion Zone Flood Planning Matrix - Prescriptive Controls					
	Land Use Categories				
Development Type (as defined in Section 2: Land Use Categories)	Sensitive & Hazardous Development	Residential	Commercial & Industrial	Recreation & Non-Urban	Concessional Development
Applicable Section					
4.3.1 Floor Levels	PC.3,4	PC.2,4,6,7	PC.2,6,7	PC.1	PC.5,6,7
4.3.2 Flood Resilient Construction	PC.2	PC.1	PC.1	PC.1	PC.1
4.3.3 Structural Soundness	PC.3	PC.1 or 2	PC.1	PC.1	PC.1
4.3.4 Car Parking and Driveway Access	PC.1,3,4,5,6	PC.1,2,4,5,6	PC.1,2,4,5,6	PC.4,5,6	PC.4,5,6
4.3.5 Emergency Management	PC.1,3,4,5,6,	PC.1,4,5,6	PC.1,4,5	PC.3,4,5,6	PC.1,4,5
4.3.6 Management and Design	PC.2,3	PC.1	PC.3	PC.3	PC.3
	.... = Significantly constrained land				

Notes:

a. **Significantly Constrained Land:** Where development types are likely to be incompatible with the hazards existing within the nominated part of the floodplain without substantial mitigation measures. Generally, these development types are not supported by Council, unless the design of the development together with the mitigation measures can address any potential unacceptable amenity or environmental impacts. It may also require a reduction in the anticipated development intensity for the land.

b. **Filling:** Proposed filling of a site that is partially affected by flooding, where supported by Council, may change the flood risk precinct, and the associated development controls that apply to development on the site. In this case, proposed filling must form part of the same DA for other development.

c. **Multiple FRPs**: Development controls relate to the FRP identified for the land upon which development is proposed. Where the land has two or more FRPs the relevant sets of controls apply to each risk precinct, however for practical purposes the stricter controls would normally apply across the whole development.

d. **Fencing:** Refer to Chapters 3, 6, 7, 8, and 9 of the DCP for planning considerations involving only the erection of a fence. Any fencing that forms part of a proposed development is subject to the relevant flood effect and structural soundness considerations of the relevant category.

e. **Freeboard:** Where required the following **freeboard** heights apply:
    a. Areas subject to riverine flooding: 500mm
    b. Areas subject to only overland flow flooding: 300mm

f. **Residential "Concessional Development":** Except for group homes and seniors living, no controls apply to residential accommodation types of concessional development in the Low Flood Risk Precinct, including areas subject to riverine flooding.

g. **Concessional Development** is development that involves:

    a. An internal or external alteration to an existing dwelling, which does not change the floor area and/or footprint of the existing dwelling;

    b. An addition to existing residential premises of not more than 10% of the floor area of the existing building footprint or 30m2, whichever is the lesser;

    c. An addition to existing premises other than those in b) of not more than 10% of the floor area of the existing building footprint;

    d. A change of use which does not increase flood risk having regard to property damage and personal safety;

    e. Subdivision which does not propose the creation of new allotments with potential for further development;

    f. The construction of an outbuilding with a floor area of no greater than $30m^2$

    Note: for the purposes of b. and c., the floor area or area of existing building footprint is that which existed at the date that this DCP came into force.

h. Refer to Section 2 of this Guideline to determine the Land Use Category for the proposed development for the purposes of applying the controls in Table 4-2.

i. Where a mixed-use development is proposed, the DCP controls within this matrix and section are applied based on the Land Use Category for each component. Where components of a mixed-use development overlap (e.g. car parking), the Land Use Category with the more onerous controls are to be applied.

4.3.1. Floor Levels

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.1 • O.1 • O.3 • O.4	All floor levels are to be equal to or greater than the 5% **Annual Exceedance Probability** (AEP) flood level.
PC.2 • O.1 • O.3 • O.4	Habitable floor levels are to be equal to or greater than the 1% AEP flood level plus **freeboard**.
PC.3 • O.1 • O.3 • O.4	Habitable floor levels are to be no lower than the PMF level.
PC.4 • O.1 • O.3 • O.4	Non-habitable floor levels are to be no lower than the 5% AEP level.
PC.5 • O.1 • O.3 • O.4	Floor levels are to be equal to, or greater than, the level of the 1% AEP flood level plus **freeboard**. 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.
PC.6 • O.1 • O.3 • O.4	Where floor levels are to be raised to address flood risk considerations, open undercroft areas must be acceptably designed to be integrated into the architecture of the development and to avoid the accumulation of rubbish and the potential to harbour vermin.
PC.7 • O.1 • O.3 • O.4	Where a building is elevated to reduce flood hazard, subject to an assessment as to acceptability on amenity, the undercroft area is to remain open to permit the free flow of water under the building, with a minimum clearance of 1.5m between the undercroft and suspended floor. A restriction will be placed on the title of the land, pursuant to Section 88B of the Conveyancing Act, where the lowest floor is elevated more than 1.5m above finished ground level, confirming that the undercroft area will not be enclosed or used as habitable floor area.

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
	Note: Any blockage of the undercroft area is the responsibility of the owner of the building, and not Council's.
AS.2 • O.3	Where the development is required to elevate floors, the development should remain acceptable with regards to its appearance and accessibility from the public domain and the amenity of the occupants on the site and surrounding properties.

4.3.2. Flood Resilient Construction

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
AS.1 • O.1 • O.2 • O.3 • O.4	All structures are to have **flood resilient construction** below the prescribed floor flood planning level.
PC.1 • O.1 • O.2 • O.3 • O.4	All structures are to have **flood resilient construction** below the 1% AEP flood level plus freeboard.
PC.2 • O.1 • O.2 • O.3 • O.4	All structures are to have **flood resilient construction** below the PMF level.

4.3.3. Structural Soundness

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.1 • O.2 • O.4	All structures are to be designed to remain structurally sound up to the prescribed minimum flood planning level.
PC.2 • O.1 • O.2 • O.4	If the development proposes to contain a refuge area, all structures are to be designed to remain structurally sound in a PMF event.

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.3 • O.1 • O.2 • O.4	All structures are to be designed to remain structurally sound in a PMF event.

Note: In most circumstances certification of structural soundness by a structural engineer informed by appropriate flooding information can be provided at construction certificate stage. However, where proposals involve alterations and additions or relate to atypical designs, Council may require certification at the development application stage.

4.3.4. Car Parking and Driveway Access

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.1 • O.1 • O.3 • O.4	The minimum surface level of open car parking spaces or carports is to be no lower than the 1% AEP flood or the level of the crest of the road at the location where the site has access to the road.
PC.2 • O.1 • O.3 • O.4	Garages are to have a minimum **finished floor level** (FFL) no lower than the 1% AEP flood plus 200mm **freeboard**.
PC.3 • O.3 • O.4	Except for dwelling houses, secondary dwellings, dual occupancies, semi-detached dwellings, and attached dwellings, the level of the driveway providing access between the road and parking space must be either: a. no lower than 300mm below the 1% AEP flood, or b. such that the depth of inundation during a 1% AEP flood is not greater than either the depth at the road or the depth at the car parking space.
PC.4 • O.1 • O.3 • O.4	Basement garages and car parking areas with a floor level below the 5% AEP flood or more than 300mm below the 1% AEP flood level are to have adequate warning systems, signage and exits, in accordance with the NSW Flood Risk Management Guideline EM01. Warning systems are to include both audible and visual alarms and a continuously rising pedestrian route is to be provided between all parts of a basement car park and an exit.
PC.5 • O.1 • O.3 • O.4	Restraints or vehicle barriers are to be provided to prevent floating vehicles leaving a site during a 1% AEP flood, other than for single dwelling houses, secondary dwelling, dual occupancies, semi-detached dwellings, and attached dwellings.

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.6 • O.1 • O.3 • O.4	Basement car parking levels are to be protected from inundation by a 1% AEP flood (plus 200mm). Where required, the crest of the driveway providing access between the road and basement garages will need to be a minimum of 200mm above the level of the 1% AEP flood.
AS.1 • O.1 • O.3 • O.4	Measures should be provided to warn people not to drive out of car parking areas in flood events where this would be dangerous, or to otherwise provide guidance and facilities to be able to safely exit the carpark.

4.3.5. Emergency Management

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
AS.1 • O.1 • O.2 • O.3 • O.4	The development should be designed and be able to be managed to ensure that during a flood emergency all occupants are capable of reaching safe refuge.
PC.1 • O.2 • O.3 • O.4	Reliable access for pedestrians or vehicles is to be provided from a minimum level equal to the lowest habitable floor level to an area of refuge above the PMF level. This should involve evacuation to an area outside of the PMF extent, except for areas where Shelter In Place (SIP) has been identified as a suitable option.
PC.2 • O.2 • O.3 • O.4	Reliable access for vehicles is to be provided to allow safe and orderly evacuation without increased reliance upon the SES or other authorised emergency services personnel.
PC.3 • O.2 • O.3 • O.4	Adequate flood warning systems, signage and exits are to be available locally and provided on site where required by Council to allow safe and orderly evacuation without increased reliance upon the NSW SES or other authorised emergency services personnel.
PC.4 • O.1 • O.2 • O.3 • O.4	Development is to allow for the implementation of emergency management measures consistent with any applicable Flood Evacuation Strategy.

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
PC.5 • O.1 • O.2 • O.3 • O.4	An engineer's report is to be provided to certify that an area for refuge on site is available in circumstances where SIP is identified as a suitable option.
PC.7 • O.1 • O.2 • O.3 • O.4	A site flood emergency response plan (FERP) is to be prepared. **Note:** A FERP should form part of a broader flood impact and risk assessment (FIRA) where that is also required.

4.3.6. Management and Design

PRESCRIPTIVE CONTROLS AND ACCEPTABLE SOLUTIONS	
AS.1 • O.2 • O.3 • O.4	The development should be designed and managed to ensure that it does not cause unacceptable levels of pollution and valuable goods are capable of being protected during a flood event.
PC.1 • O.1 • O.4	A dedicated storage area within the dwelling of a minimum of $8m^3$ is to be provided to store goods above the 1% AEP flood level plus freeboard. This storage area is to be identified on site plans submitted with a development application.
PC.2 • O.1 • O.4	Applicants are to demonstrate that an area is available to store goods above the PMF level.
PC.3 • O.1 • O.3 • O.4	No storage of materials which may cause pollution or be potentially hazardous during any flood event is permitted below the 1% AEP plus freeboard.


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