

Flood Risk Management Report

Client: Joel E Shanahan

Site: 12 Nailon Place, Mona Vale NSW 2103

Lot DP: Lot 1 DP 537520

Date: 07/07/2025

Report by: Spirit E Water Pty Ltd

ABN: 17 997 128 078

Written by: Harry Maher (BEng, BBus)

Document Control

Revision	Date	Title	Prepared	Approved
1	01/07/2025	Issue For DA - Flood Risk Management Report	HM	DR

Approved by: Daniel Rhodes (BEng, RPEQ 32420)

Executive Summary

This Flood Management Report for the development of No. 12 Nailon Pl, Mona Vale NSW has been provided to enable the developer to set the floor levels safely above the proposed 100yr ARI storm and to provide overland flow protection measures.

Introduction

The developer of 12 Nailon Place, Mona Vale, has proposed redeveloping the existing dwelling into a multi dwelling housing which includes three dwellings.

The site is located within a medium risk flood precinct (*McCarrs Creek, Mona Vale and Bayview Flood Study*), due to the vicinity of the property to flood levels, this report is essential in guiding design levels and overland flow paths.

The client and Northern Beaches Council staff attended a Pre-lodgement meeting (PLM2025/0067) on May 29 2025, which is further guiding the content in this report.

The PLM Notes provided the following requirements:

- The applicant is to prepare a Flood Management Report or Letter to demonstrate how the proposed development will comply with the flood related planning requirements listed above.
- Councils Guidelines for development on flood prone land are available on Council's website.
- In addition to the general requirements, the Flood Management Report or Letter should include, but not be limited to the following:
 - o C1 The 1% AEP Flood Planning Area is the 1% AEP Climate Change Flood Level with a freeboard added. A reduced freeboard will be considered on its merits for properties impacted by peak flood depths less than 0.3m.
 - o D5 Enclosed garages must be located at or above the 1%AEP Flood Level.
 - o E1 The development must provide a shelter-in-place refuge as flood-free evacuation above the Probable Maximum Flood level is not possible. A Flood Emergency Assessment is not required to be included in the Flood Management Report/Letter for the development.
 - o E3 It must be demonstrated that a shelter-in-place refuge in accordance with the requirements of the DCP will be available for any potential development arising from a Torrens title subdivision.

The PLM advice is based on the following Council Planning Controls:

- Section B3.11 Flood Prone Land - Pittwater 21 DCP
- Section B3.12 Climate Change - Pittwater 21 DCP
- Clause 5.21 Flood Planning - Pittwater LEP 2014
- Clause 5.22 Special Flood Considerations – Pittwater LEP 2014

Data Acquisition

The following data which has guided this reports' outcomes include:

- McCarrs Creek, Mona Vale and Bayview Flood Study
Source - Northern Beaches Council
- Survey
- NSW Floodplain Development Manual - the management of flood liable land
Source -
- Basic Flood Information Report - Issue Date 07/04/2025 (Appendix A)

Flood Risk Analysis

Due to the 1% AEP flood impacting the roadway within Nailon Place and the entire property being impacted consistently by the Probable Maximum Flood Extent (PMF), Council requires a flood risk assessment. The property is not suggested to be impacted by the 1% AEP extent. The roadway of Nailon Place is providing safe overland flow path during the 1% AEP event.

The following details outline the flood characteristics impacting the site:

Max 1% AEP Flood Level: 1.86m AHD
Max 1% AEP Flood Level with Climate Change: 2.40m AHD
Flood Planning Level including Climate Change: 2.70m AHD
Probable Maximum Flood Level (PMF): 3.16m AHD

Overland Flow

Overland flow is outlined to be carried within the roadway of 12 Nailon Place during the 1% AEP Flood. Hence, any major overland flow for the area will be carried within the roadway.

Any overland flow being experienced at the property rear will be mitigated by the development utilising a clear passage for floodwaters at the southern fence line, conveying any flows towards Mona Street.

Design Floor Levels

Using the **Medium Flood Risk Precinct**, the residential development requires C1, controls. Hence, the requirement is for the Max 1% AEP Flood Level with climate change, and a freeboard added of 0.3m.

Hence all habitable floor levels of the development will be a **minimum 2.70m AHD**.

Enclosed garage levels are required to be at or above the 1% AEP flood level with climate change, and are hence required to be a minimum of 2.40m AHD.

Emergency Response

The property is affected by Flood Life Hazard of both H3 and H4.

E1 is required, where the following shelter in place conditions are required:

- a) The floor level is at or above the Probable Maximum Flood level; and
- b) The floor space provides at least 2m² per person
- c) It is intrinsically accessible to all people on the site, plainly evident, and self-directing.
- d) It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; torch with spare batteries; and a first aid kit

All of the requirements will be adhered to with the upper floor of the property, allowing for a safe emergency response.

Summary and Recommendations

This Flood Management Report demonstrates that the proposed redevelopment at 12 Nailon Place, Mona Vale, has been designed in accordance with the flood-related planning requirements outlined by Northern Beaches Council. The development appropriately addresses flood risk by setting all habitable floor levels above the Flood Planning Level of 2.70 m AHD and ensuring garages are constructed above the 1% AEP flood level with climate change (2.40 m AHD).

BASIC FLOOD INFORMATION REPORT

Property: 12 Nailon Place MONA VALE NSW 2103

Lot DP: Lot 1 DP 537520

Issue Date: 07/04/2025

Flood Study Reference: McCarrs Creek, Mona Vale and Bayview Flood Study 2017

Flood Information¹:

Map A - Flood Risk Precincts

Maximum Flood Planning Level (FPL) ^{2, 3, 4}: 2.36 m AHD

Map B - 1% AEP Flood

1% AEP Maximum Water Level ^{2, 3}: N/A m AHD

1% AEP Maximum Depth from natural ground level³: N/A m

1% AEP Maximum Velocity: N/A m/s

Map C - 1% AEP Hydraulic Categorisation

1% AEP Hydraulic Categorisation: N/A

Map D - Probable Maximum Flood (PMF)

PMF Maximum Water Level ⁴: 3.16 m AHD

PMF Maximum Depth from natural ground level: 1.37 m

PMF Maximum Velocity: 0.86 m/s

Map E - Flood Life Hazard Category in PMF

H4 – H3

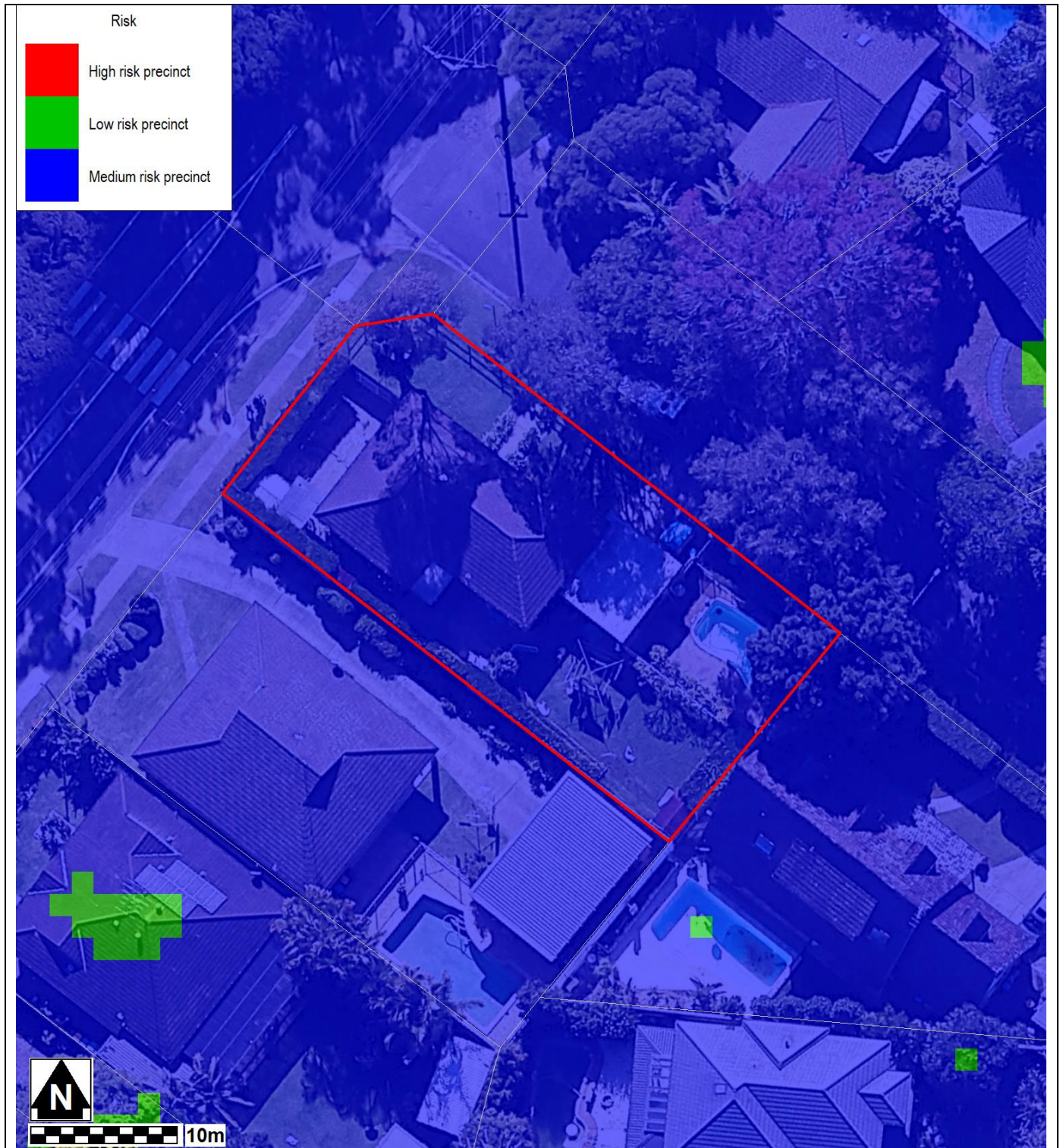
- (1) The provided flood information does not account for any local overland flow issues nor private stormwater drainage systems.
- (2) Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning Level may be in a different location to the maximum 1% AEP flood level.
- (3) Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.
- (4) Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or FPL.

Notes

General

- All levels are based on Australian Height Datum (AHD) unless otherwise noted.
- This is currently the best available information on flooding; it may be subject to change in the future.
- Council recommends that you obtain a detailed survey of the above property and surrounds to AHD by a registered surveyor to determine any features that may influence the predicted extent or frequency of flooding. It is recommended you compare the flood level to the ground and floor levels to determine the level of risk the property may experience should flooding occur.
- Development approval is dependent on a range of issues, including compliance with all relevant provisions of Northern Beaches Council's Local Environmental Plans and Development Control Plans.
- Please note that the information contained within this letter is general advice only as a detail survey of the property as well as other information is not available. Council recommends that you engage a suitably experienced consultant to provide site specific flooding advice prior to making any decisions relating to the purchase or development of this property.
- The Flood Studies on which Council's flood information is based are available on Council's online [Flood Study Reports](#) webpage.
- If the FPL is higher than the PMF level, then the FPL should still be used as the FPL, as it includes freeboard which the PMF does not.
- If the property is affected by an Estuarine Planning Level (EPL) which is higher than the FPL, then the EPL should be used as the FPL.
- Areas affected by an EPL in the former Pittwater LGA are mapped on Council's online [Estuarine Hazard Map](#). Note that areas in the former Manly LGA affected by an EPL have been identified and will be soon added to this map.
- Council's drainage infrastructure is mapped on Council's [Stormwater Map](#). Note that locations are indicative only and may not be exactly as shown.

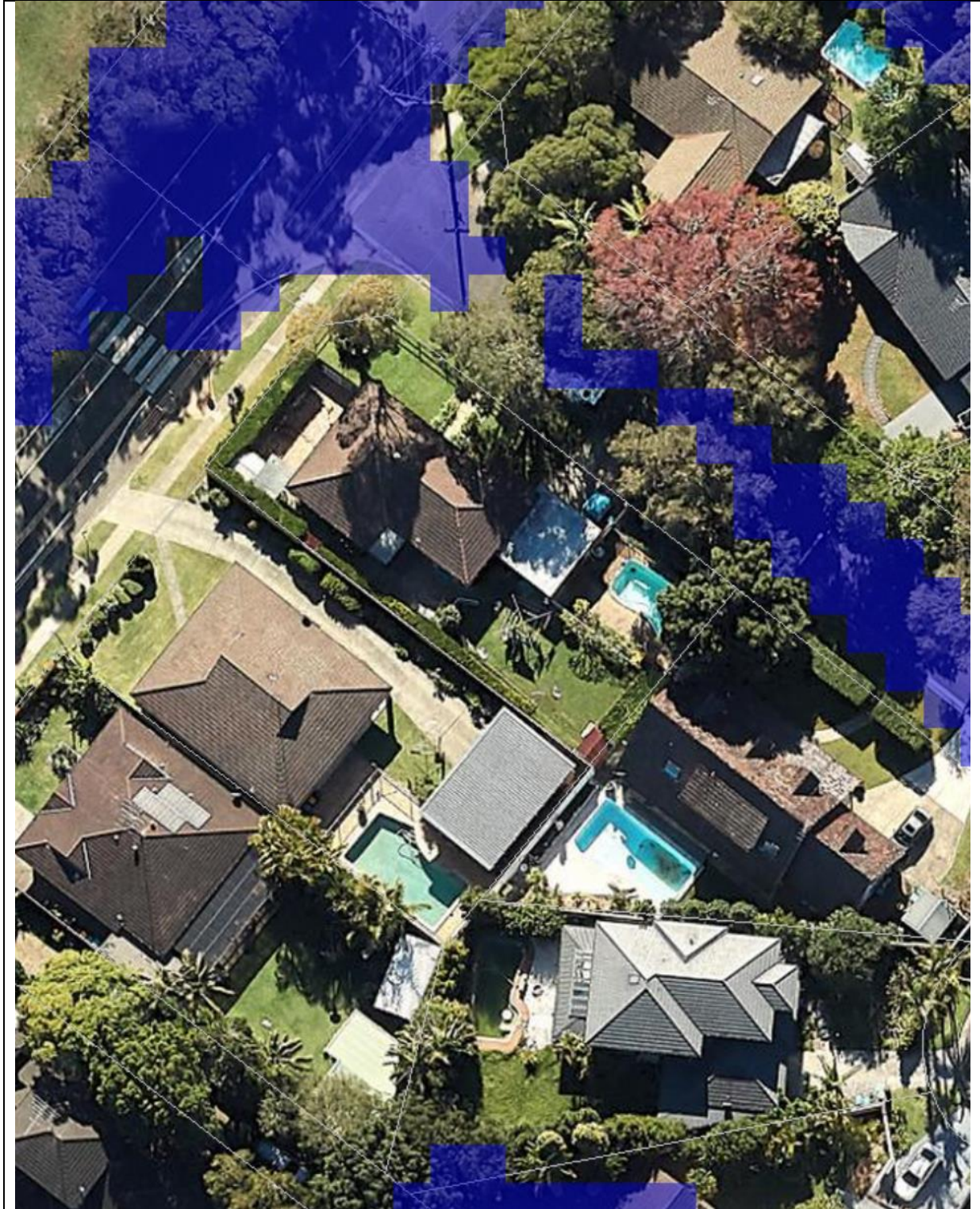
MAP A: FLOOD RISK PRECINCTS



Notes:

- **Low Flood Risk precinct** means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** means all flood prone land that is (a) within the 1% AEP Flood Planning Area; and (b) is not within the high flood risk precinct.
- **High Flood Risk precinct** means all flood prone land (a) within the 1% AEP Flood Planning Area; and (b) is either subject to a high hydraulic hazard, within the floodway or subject to significant evacuation difficulties (H5 or H6 Life Hazard Classification)
- The **Flood Planning Area** extent is equivalent to the Medium Flood Risk Precinct extent and includes the High Flood Risk Precinct within it. The mapped extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- None of these mapped extents include climate change.

MAP B: FLOODING - 1% AEP EXTENT

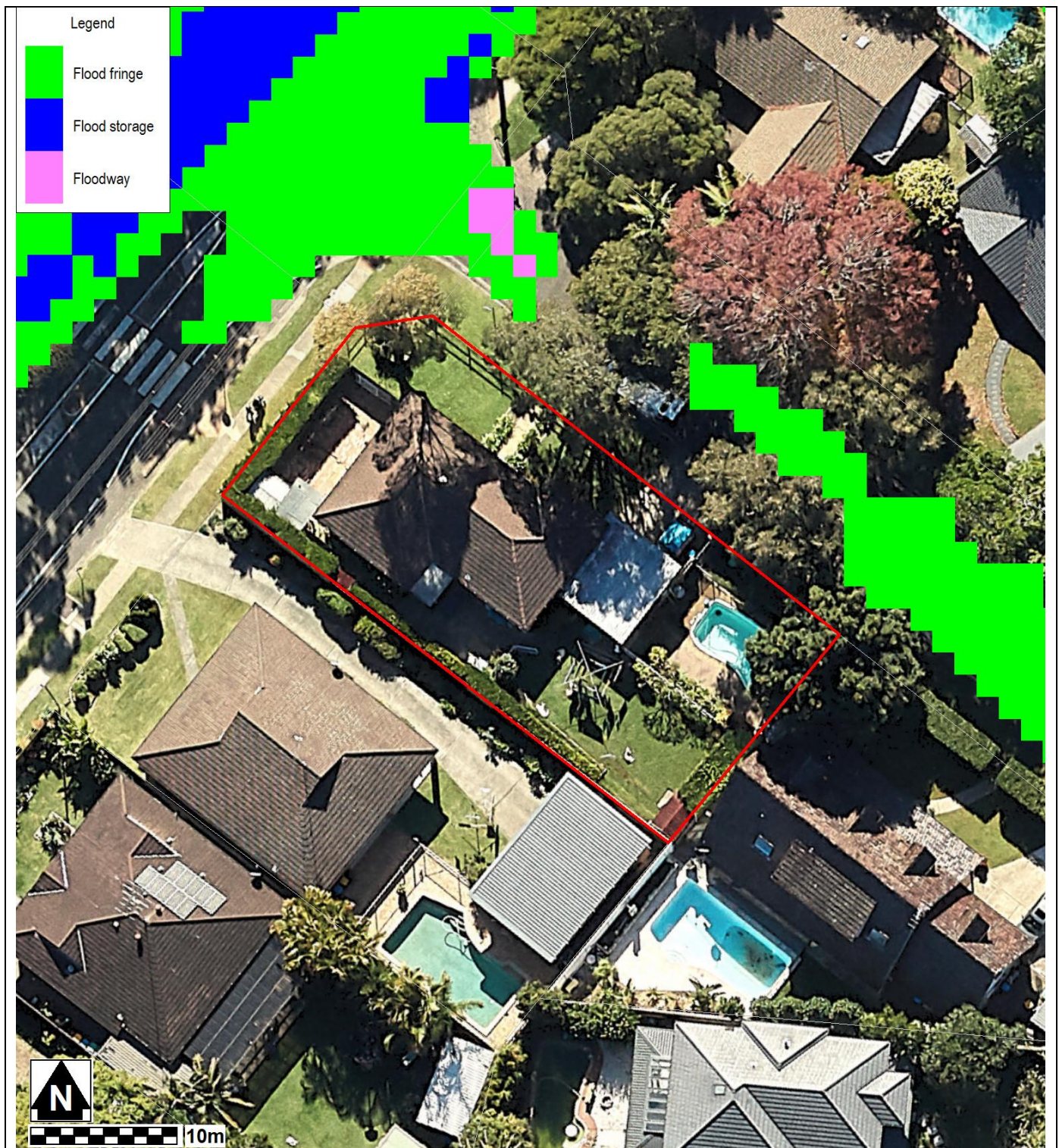


Notes:

- Extent represents the 1% Annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.

Cadastral Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: McCarrs Creek, Mona Vale and Bayview Flood Study 2017) and aerial photography (Source: NearMap 2014) are indicative only.

MAP C: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

- Extent represents the 1% Annual Exceedance Probability (AEP) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: McCarrs Creek, Mona Vale and Bayview Flood Study 2017) and aerial photography (Source: NearMap 2014) are indicative only.

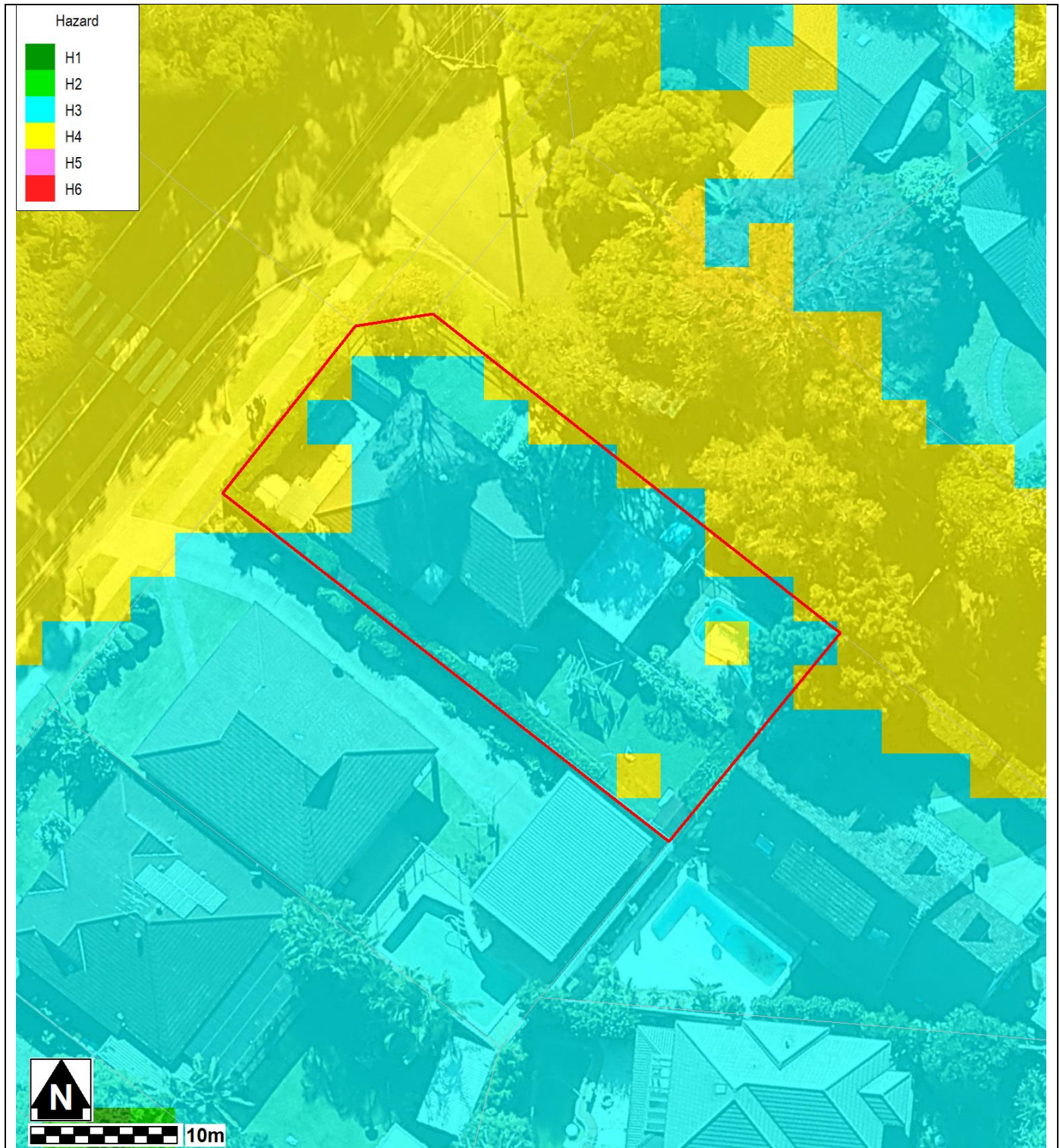
MAP D: PROBABLE MAXIMUM FLOOD EXTENT



Notes:

- Extent represents the Probable Maximum Flood (PMF) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: McCarrs Creek, Mona Vale and Bayview Flood Study 2017) and aerial photography (Source: NearMap 2014) are indicative only.

MAP E: FLOOD LIFE HAZARD CATEGORY IN PMF



Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: McCarrs Creek, Mona Vale and Bayview Flood Study 2017) and aerial photography (Source: NearMap 2014) are indicative only.

Preparation of a Flood Management Report

Introduction

These guidelines are intended to provide advice to applicants on how to determine what rules apply on flood prone land, and how to prepare a Flood Management Report. The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood related planning requirements.

Planning Requirements for Flood Prone Land

Development must comply with the requirements for developing flood prone land set out in the relevant Local Environment Plan (LEP) and Development Control Plan (DCP). There are separate LEPs and DCPs for each of the former Local Government Areas (LGAs), although preparation of a LGA-wide LEP and DCP is currently under way.

The clauses specific to flooding in the LEPs and DCPs are as follows:

LEP Clauses	DCP Clauses
Manly LEP (2013) – 5.21 Flood Planning Manly LEP (2013) – 5.22 Special Flood Considerations	Manly DCP (2013) – 5.4.3 Flood Prone Land
Warringah LEP (2011) – 5.21 Flood Planning Warringah LEP (2011) – 5.22 Special Flood Considerations Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land
Pittwater LEP (2014) – 5.21 Flood Planning Pittwater LEP (2014) – 5.22 Special Flood Considerations	Pittwater 21 DCP (2014) – B3.11 Flood Prone Land Pittwater 21 DCP (2014) – B3.12 Climate Change

* The Warringah LEP (2000) is relevant only for the “deferred lands” which affects only a very small number of properties, mostly in the Oxford Falls area.

Development on flood prone land must also comply with Council's Water Management for Development Policy, and if it is in the Warriewood Release Area, with the Warriewood Valley Water Management Specification and Clause C6.1 of the Pittwater 21 DCP (2014). Guidelines for Flood Emergency Response Planning are available for addressing emergency response requirements in the DCP. These documents can be found on Council's website on the [Flooding page](#).

Note that if the property is affected by estuarine flooding or other coastal issues, these need to be addressed separately under the relevant DCP clauses.

When is a Flood Management Report required?

A Flood Management Report must be submitted with any Development Application on flood prone land (with exceptions noted below), for Council to consider the potential flood impacts and applicable controls. For Residential or Commercial development, it is required for development on land identified within the Medium or High Flood Risk Precinct. For Vulnerable or Critical development, it is required if it is within any Flood Risk Precinct.

There are some circumstances where a formal Flood Management Report undertaken by a professional engineer may not be required. However the relevant parts of the DCP and LEP would still need to be addressed, so as to demonstrate compliance. Examples where this may apply include:

- If all proposed works are located outside the relevant Flood Risk Precinct extent
- First floor addition only, where the existing ground floor level is above the FPL

- Internal works only, where habitable floor areas below the FPL are not being increased

Note that development on flood prone land will still be assessed for compliance with the relevant DCP and LEP, and may still be subject to flood related development controls.

What is the purpose of a Flood Management Report?

The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood planning requirements, particularly the development controls outlined in the relevant LEP and DCP clauses. The report must detail the design, measures and controls needed to achieve compliance, following the steps outlined below.

A Flood Management Report should reflect the size, type and location of the development, proportionate to the scope of the works proposed, and considering its relationship to surrounding development. The report should also assess the flood risk to life and property.

Preparation of a Flood Management Report

The technical requirements for a Flood Management Report include (where relevant):

1. Description of development
 - Outline of the proposed development, with plans if necessary for clarity
 - Use of the building, hours of operation, proposed traffic usage or movement
 - Type of use, eg vulnerable, critical, residential, business, industrial, subdivision, etc
2. Flood analysis
 - 1% AEP flood level
 - Flood Planning Level (FPL)
 - Probable Maximum Flood (PMF) level
 - Flood Risk Precinct, ie High, Medium or Low
 - Flood Life Hazard Category
 - Mapping of relevant extents
 - Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the relevance to the proposed development

If the property is affected by an Estuarine Planning Level (EPL) which is higher than the FPL, then the EPL should be used as the FPL. If the FPL is higher than the PMF level, then the FPL should still be used as the FPL, as it includes freeboard which the PMF does not.

3. Assessment of impacts
 - Summary of compliance for each category of the DCP, as per the table below.

	Compliance		
	N/A	Yes	No
A) Flood effects caused by Development			
B) Building Components & Structural Soundness			
C) Floor Levels			
D) Car parking			
E) Emergency Response			
F) Fencing			
G) Storage of Goods			

H) Pools			
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- Demonstration of how the development complies with any relevant flood planning requirements from the DCP, LEP, Water Management for Development Policy, and if it is in the Warriewood Valley Urban Land Release Area, with the Warriewood Valley Water Management Specification (2001)
- For any non-compliance, a justification for why the development should still be considered.
- Calculations of available flood storage if compensatory flood storage is proposed
- Plan of the proposed development site showing the predicted 1% AEP and PMF flood extents, as well as any high hazard or floodway affectation
- Development recommendations and construction methodologies
- Qualifications of author - Council requires that the Flood Management Report be prepared by a suitably qualified Engineer with experience in flood design / management who has, or is eligible for, membership to the Institution of Engineers Australia
- Any flood advice provided by Council
- Any other details which may be relevant

Further information and guidelines for development are available on Council's website at:

<https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/development-applications/guidelines-development-flood-prone-land>

Council's Flood Team may be contacted on 1300 434 434 or at floodplain@northernbeaches.nsw.gov.au .