H&H Consulting Engineers Pty Ltd *(trading as Henry & Hymas)*

ABN 77 091 243 355
ACN 091 243 355

Address
Suite 2.01
828 Pacific Highway
Gordon
New South Wales 2072

Telephone
+61 2 9417 8400

Facsimile
+61 2 9417 8337

Email
email@hhconsult.com.au

Web
www.henryandhymas.com.au

henry&hymas

21ST December 2021

Our Ref: A21Q72-C2/NW

Woolworths Limited
C/- GAC Projects Australia
PO Box 461
BAULKHAM HILLS NSW 2153

Attention: Mr David Lin

Dear Sir,

RE: PROPOSED WOOLWORTHS ALTERATIONS AND ADDITIONS
WELLINGTON STREET, NARRABEEN, NSW
FLOOD PLANNING LETTER

The following letter has been prepared to discuss the alterations and addition works to the existing Woolworths Narrabeen development and its interaction with the local floodplain. The report has also been prepared to discuss how the existing site and the proposed works relate to the relevant provisions of Council's Planning Requirements for Development on Flood Prone Land. The existing Woolworths Narrabeen development is located between Wellington Street and Lagoon Street and has been in operation for decades in the Narrabeen Lagoon Floodplain.

To support internal store changes minor external works are proposed to the western building curtilage and carpark. These works consist of minor modifications to the existing carparking, existing building facade and existing trolley storage enclosure to provide a 'click and collect' servicing area. The modifications to the existing building as well as the external carparking areas are shown on the architectural drawings by MCHP dated 10.12.2021. It should be noted there are no modifications proposed to the existing egress path leading from the ground level to Lagoon Street.

A flood information request was requested from Council to gain an understanding of the local floodplain. Refer below for summary of flood levels provided by the flood information request are listed below:

- 5% AEP max water level: 2.67m AHD
- 1% AEP max water level: 3.03m AHD
- PMF max water level: 4.91m AHD
- Flood planning level of 3.53m AHD (1% AEP max water level)

A copy of the flood information request is included in Appendix 1 of this letter.

henry&hymas

Reviewing the proposed external alterations and additions works in relation to the information obtained from the flood information request and in the context of Northern Beaches Council's requirements for development on flood prone land, Henry & Hymas Engineers make the following comments:

- The existing development has a floor level RL2.62 which is below the 1% AEP water level of 3.03m AHD. Refer Flood Map B of Appendix 1. The current flood response strategy is understood to be evacuation from the development in the event of flooding via the existing egress route leading directly to Lagoon Street outside of the PMF extent. Due to operational constraints the proposed 'click and collect' floor area is proposed to be set at RL2.62. Refer Architectural drawings by MCHP dated 10.12.2021. Refer Flood Map C of Appendix 1.
- No significant increase in the building footprint is proposed, the existing trolley storage area which is proposed to be converted into a 'click and collect' service areas is largely in enclosed with dwarf brickwork wall and is part of the existing building structure. As such no significant adverse impact to flood extents, levels, velocities or hazard categories is expected for any storm events.
- No substantial level change is proposed to the existing carparking or building curtilage, as such no significant change in floodplain storage is expected.
- The works are minor in nature and do not impact the existing response strategy or evacuation route to Lagoon Street.
- Changes to the existing facade and shop front are limited to within 1m of the existing which is understood to be acceptable given the use and amenity to the development.

Based on the above Henry & Hymas conclude the proposed external alternation and addition works to the existing Woolworth Development are suitable given the flooding scenario, and given the existing development's response to flooding, are in accordance with Council's requirements for development on flood prone land.

We trust this satisfies your requirements in relation to flood planning, feel free to call me on (02) 9417 8400 to discuss further.

Yours faithfully,

NICHOLAS WETZLAR
For, and on behalf of,
H & H Consulting Engineers Pty Ltd

henry&hymas

APPENDIX 1 - FLOOD INFORMATION REQUEST

FLOOD INFORMATION REPORT – COMPREHENSIVE

Property: 12 Lagoon Street NARRABEEN NSW 2101
Lot DP: Lot 2 DP 527582
Lot 4 DP 656541
Lot A DP 371672
Lot 1 DP 1078838
Issue Date: 01/11/2021
Flood Study Reference: Narrabeen Lagoon Flood Study 2013, BMT WBM

Flood Information for lot [1]:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) [2, 3, 4]: 3.53 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level [2, 3]: 3.03 mAHD

1% AEP Maximum Depth from natural ground level[3]: 1.55 m

1% AEP Maximum Velocity: 0.39 m/s

1% AEP Hydraulic Categorisation: N/A **See Flood Map D**

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level [4]: 4.92 m AHD

PMF Maximum Depth from natural ground level: 3.43 m

PMF Maximum Velocity: 0.49 m/s

PMF Hydraulic Categorisation: N/A **See Flood Map E**

Flooding with Climate Change (See Flood Map F)

The following is for the 30% Rainfall intensity increase and 0.9m Sea Level Rise Scenario:

1% AEP Maximum Water Level with Climate change [3]: 3.90 m AHD

1% AEP Maximum Depth with Climate Change[3]: 2.42 m

1% AEP Maximum Velocity with Climate Change[3]: m/s

Flood Life Hazard Category – See Map G

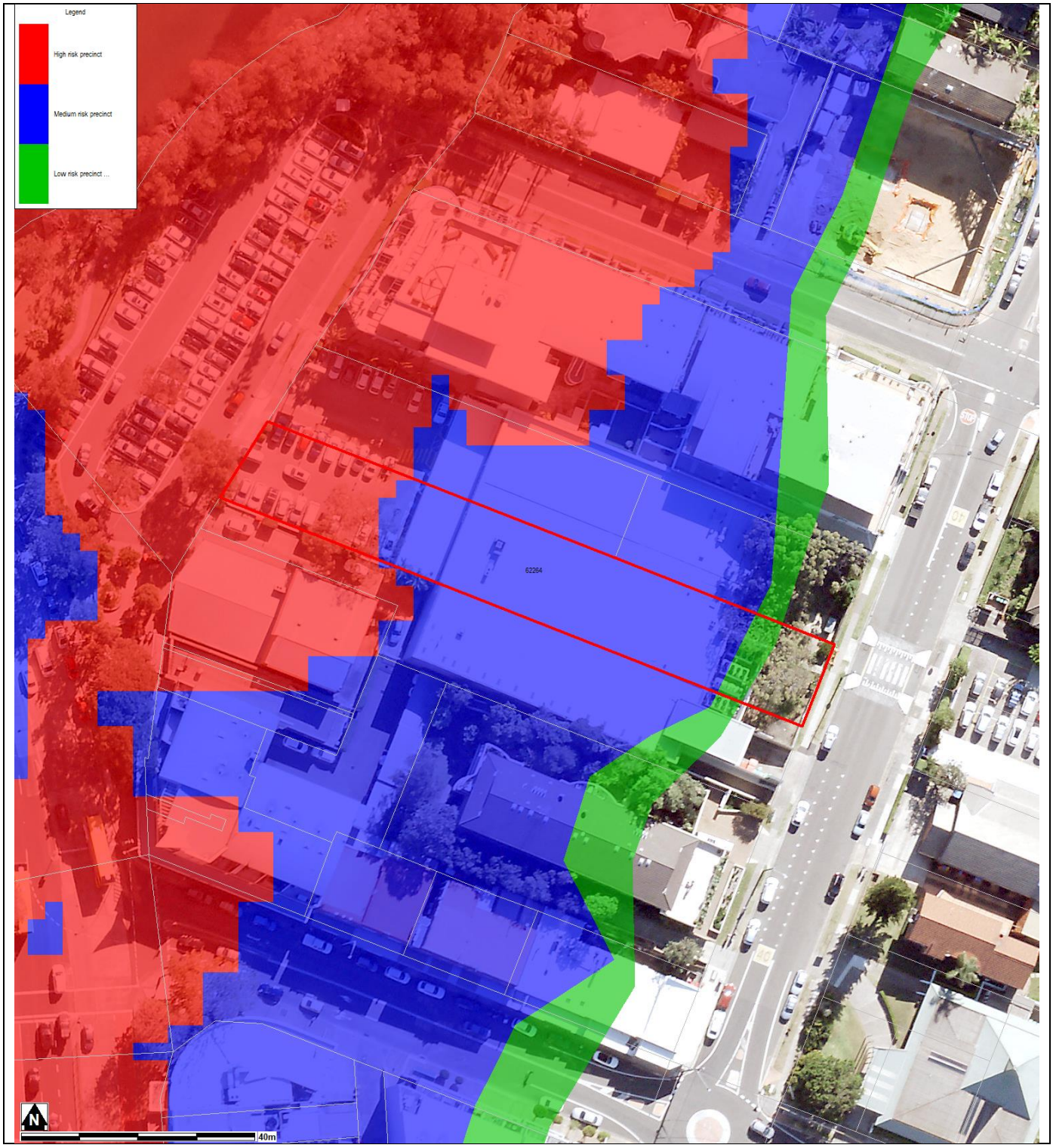
Indicative Ground Surface Spot Heights – See Map H

[1] The flood information does not take into account 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.

General Notes:

- 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 website.

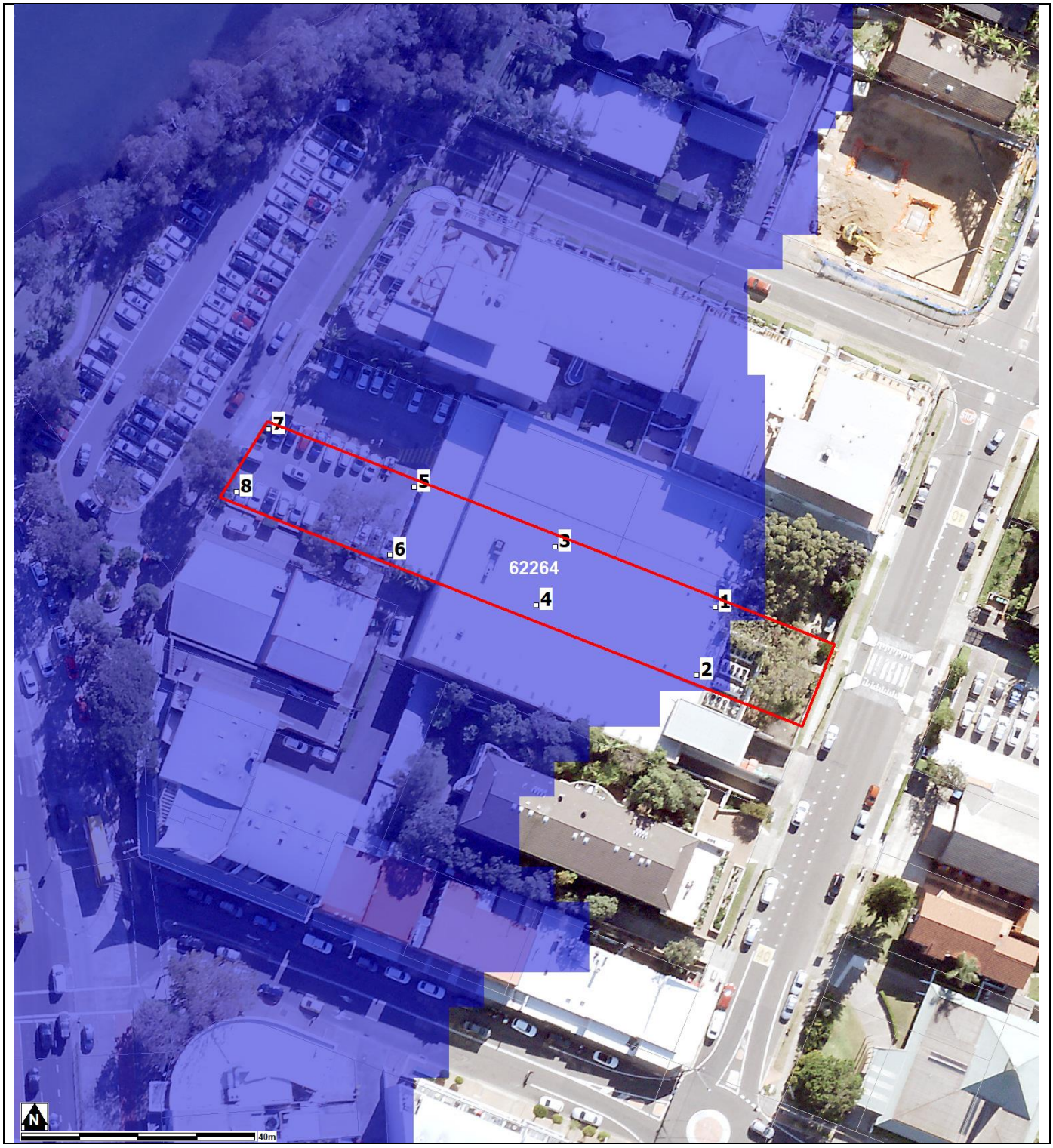
FLOOD MAP A: FLOOD RISK PRECINCT MAP



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.

FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only.

Flood Levels

ID	5% AEP Max WL (m AHD)	5% AEP Max Depth (m)	1% AEP Max WL (m AHD)	1% AEP Max Depth (m)	1% AEP Max Velocity (m/s)	Flood Planning Level (m)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	2.67	0.18	3.03	0.55	0.01	3.53	4.91	2.43	0.19
2	2.67	0.07	3.03	0.32	0.00	3.53	4.91	1.99	0.05
3	2.67	0.42	3.03	0.78	0.01	3.53	4.91	2.66	0.03
4	2.67	0.33	3.03	0.70	0.01	3.53	4.91	2.58	0.21
5	2.67	0.45	3.03	0.82	0.04	3.53	4.91	2.69	0.07
6	2.67	0.48	3.03	0.85	0.11	3.53	4.91	2.73	0.26
7	2.67	1.18	3.03	1.54	0.28	3.53	4.91	3.42	0.38
8	2.67	1.01	3.03	1.38	0.33	3.53	4.91	3.25	0.39

WL – Water Level
PMF – Probable Maximum Flood
N/A = no peak water level/depth/velocity available in flood event

Climate Change Flood Levels (30% Rainfall intensity and 0.9m Sea Level Rise)

ID	CC 1% AEP Max WL (m AHD)	CC1 % AEP Max Depth (m)
1	3.90	1.42
2	3.90	0.98
3	3.90	1.66
4	3.90	1.57
5	3.90	1.69
6	3.90	1.72
7	3.90	2.41
8	3.90	2.25

WL – Water Level
PMF – Probable Maximum Flood
N/A = no peak water level/depth/velocity available in flood event.

A variable Flood Planning Level might apply. Freeboard is generally 0.5m above the maximum 1% AEP water level. However for overland flow with a depth less than 0.3m and a VelocityxDepth product less than $0.3m^2/s$, a freeboard of 0.3m may be able to be justified.

FLOOD MAP B: FLOODING - 1% AEP EXTENT

Notes:

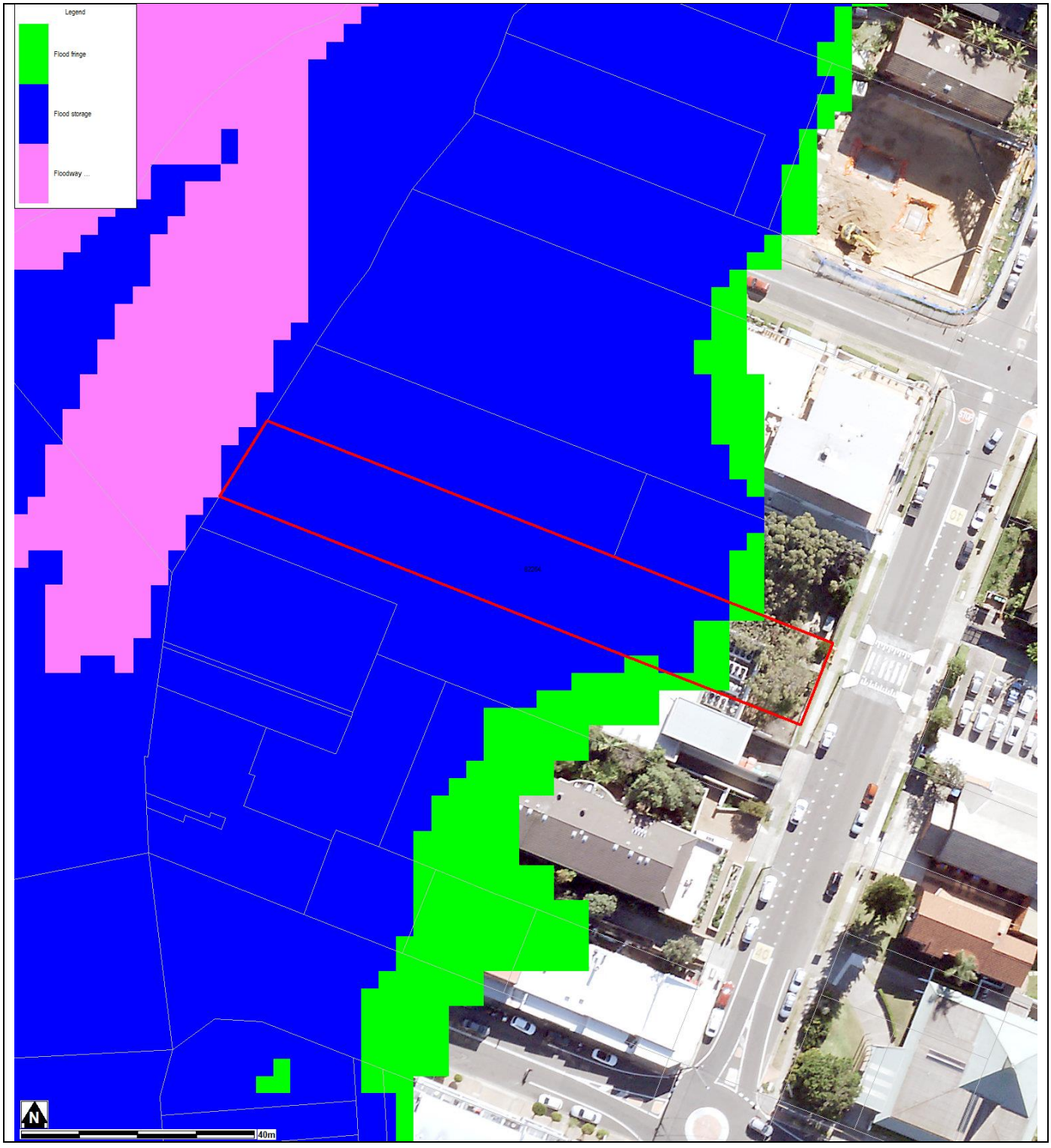
- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source Near Map 2014) are indicative only.

FLOOD MAP C: PMF EXTENT MAP

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: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

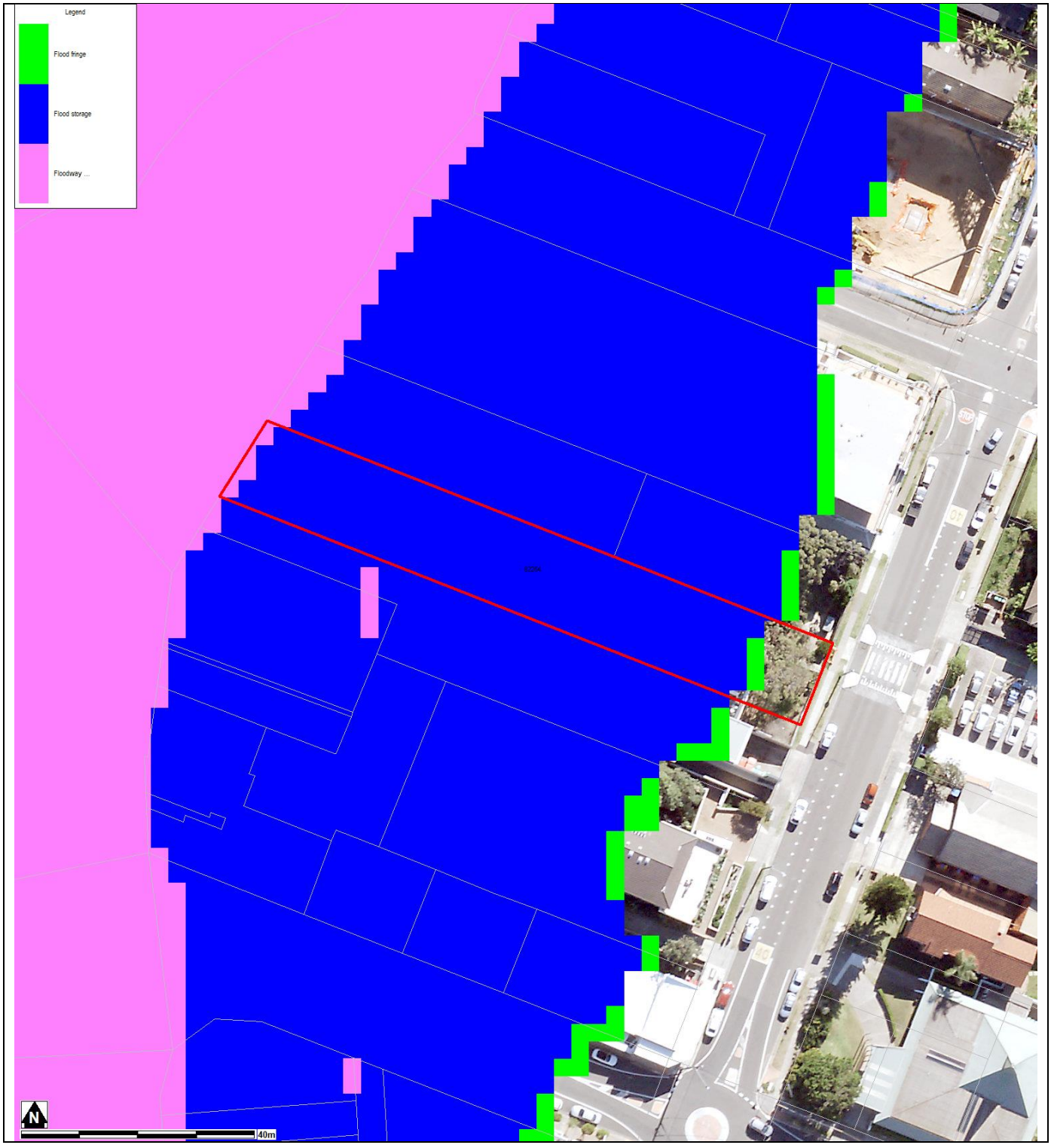
FLOOD MAP D: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



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: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP E: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

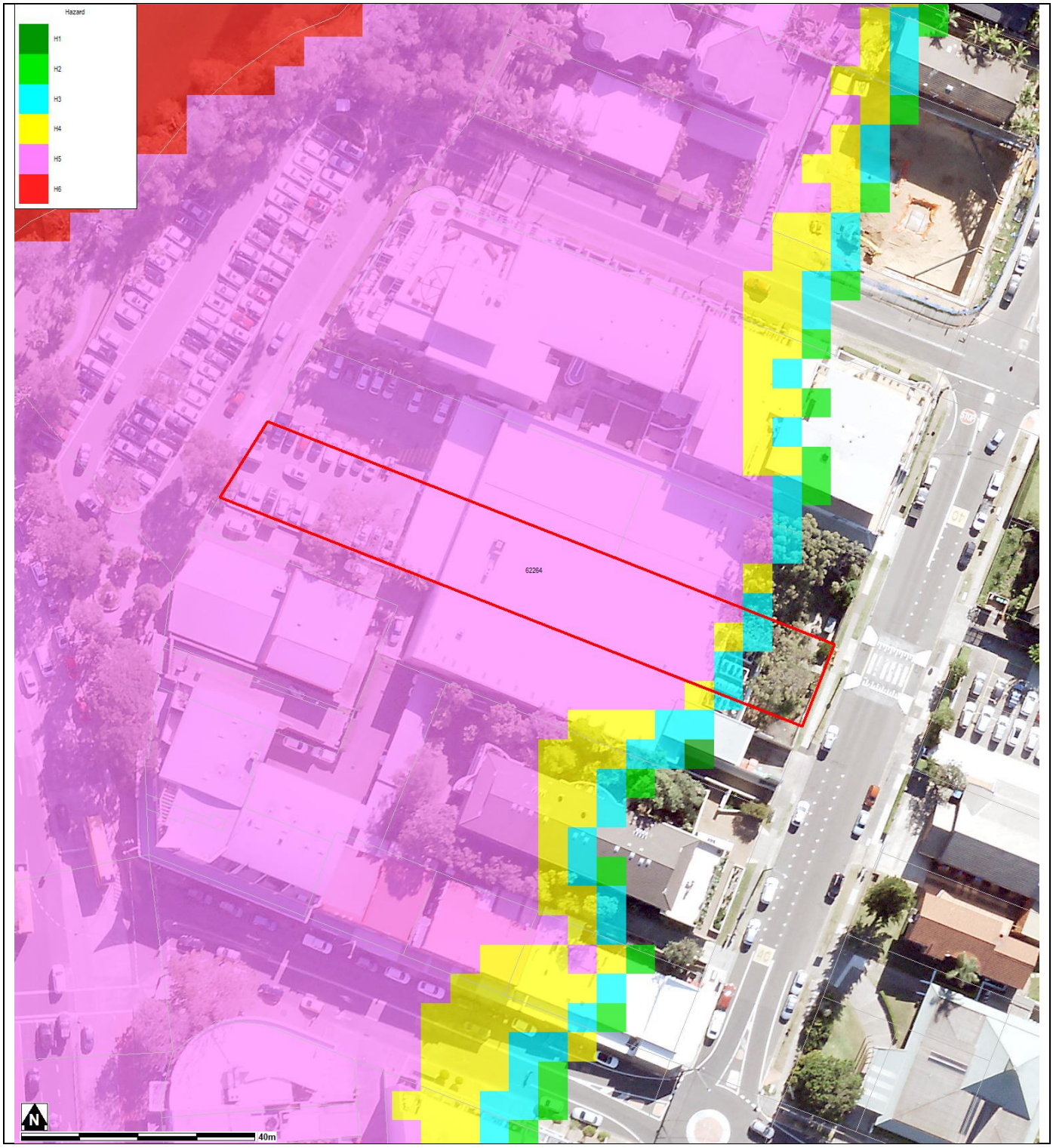
- Extent represents the Probable Maximum Flood (PMF) event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP F: FLOODING – 1% AEP EXTENT PLUS CLIMATE CHANGE

Note:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event including 30% rainfall intensity and 0.9m Sea Level Rise climate change scenario
- Flood events exceeding the 1% AEP can occur on this site.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP G: FLOOD LIFE HAZARD CATEGORY



Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Narrabeen Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source Near Map 2014) are indicative only.

MAP H: INDICATIVE GROUND SURFACE SPOT HEIGHTS

Notes:

- The surface spot heights shown on this map were derived from Airborne Laser Survey and are indicative only.
- Accuracy is generally within ± 0.2m vertically and ± 0.15m horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

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) – 6.3 Flood Planning	Manly DCP (2013) – 5.4.3 Flood Prone Land
Warringah LEP (2011) – 6.3 Flood Planning Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land
Pittwater LEP (2014) – 7.3 Flood Planning Pittwater LEP (2014) – 7.4 Flood Risk Management	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. 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 floor level is above the Probable Maximum Flood level
- 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			

- 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 .