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Our Reference: NA230835

17/01/2025

Figgis + Jefferson Tepa Pty Ltd
Suite 203, 70-76 Alexander St
CROWS NEST NSW 2065

Attention: Carlos Lau

Dear Carlos,

Re: 35-39 Carter Road, Brookvale – Flood Advice Letter

In response to Northern Beaches Council's Return of Application (Application No. DA2024/1808-PAN-498953, dated 02/01/2025), ACOR Consultants Pty Ltd (ACOR) has been engaged to provide a Flood Advice Letter for the proposed development on 35 – 39 Carter Road, Brookvale (subject site) in support of development application.

In the preparation of this letter, ACOR has relied upon certain data and information within the following documents:

- Flood Information Report (Comprehensive) prepared by Northern Beaches Council (dated 29/11/2023)
- Warringah Development Control Plan (WDCP) Clause E11 Flood Prone Land (2011)
- Warringah Local Environmental Plan (LEP) Clause 5.21 Flood Planning

The subject site is legally known as 15/12/DP5767 and 1/DP278077, located within E4 General Industrial.

Flood Characteristics

The subject site is not flood-affected during the 1% AEP event, and relevant flood characteristics are as follows:

- 1% AEP Level: Not flood affected
- 1% AEP with Climate Change Level: 15.36 m AHD
- Probable Maximum Flood (PMF) Level: 16.58 m AHD
- Flood Risk Precinct: Low
  - Not affected by Flood Planning Area as stated on Flood Information Report in Appendix A.
- Flood Planning Level (FPL): Not applicable

Flood Planning Requirements

According to Warringah DCP Clause E11, controls do not impose on “business & Industrial Use” within the Low Flood Risk Precinct.

MAP A: FLOOD RISK PRECINCTS

Figure 1: Flood Risk Precinct

		Low Flood Risk Precinct				
		Vulnerable & Critical Use	Residential Use	Business & Industrial Use	Recreational & Environmental Use	Subdivision & Civil Works
B	Building Components & Structural	B1 B2 B3				
C	Floor Levels	C2 C3				C5
D	Car Parking	D2 D7				
E	Emergency Response	E1 E2				E3

Figure 2: Flood Control Matrix

Northern Beaches Council’s Return of Application has requested a Flood Risk Assessment Report due to the reasoning the development is located on land

- Within a medium or high flood risk precinct, or
- The development is vulnerable and is located in low-risk precinct.

ACOR confirms the following:

- The site is outside medium or high flood risk precinct, and
- The site is located in a low-risk precinct but the development is not identified as vulnerable and critical.

As such, ACOR believes the site is not subject to the requirements of flood legislation/protection and a Flood Risk Assessment Report is not required.

Table 1: Land Use Groups

Vulnerable & Critical		
Child care centre	Home-based child care	Educational establishment
Hospital	Emergency services facility	Respite day care centre
Residential care facilities	Seniors housing	Group home
Tourist and visitor accommodation	Caravan park	Correctional centre
Electricity generating works	Public Utility Undertaking (SP2)	Telecommunications facility (SP2)

Figure 3: Land Use Groups

Conclusion

Based on available information, the proposed development has been assessed against the Warringah DCP Clause E11 and ACOR is of the view that there are no applicable flood planning requirements for the site.

Although the site is not flood-affected during a 1% AEP event and no FPL applicable to the site, an internal driveway crest has been set at RL 15.10 to protect the lower carpark up to the external 1% AEP flood level.

Additionally, the boundary levels along Carter Road smoothly matches into existing pavement levels. As such, the proposed development will not adversely affect flood behaviour in a way that results in detrimental increase in the potential flood affectation of other development or properties.

We trust the above complies with Northern Beaches Council's flood planning requirements upon the proposed development on 35 – 39 Carter Road, Brookvale. Please contact the undersigned if you require any further clarification.

Yours faithfully,
ACOR CONSULTANTS PTY LTD

Greogory Lyell
Civil Team Leader

CPEng, NER, APEC Engineer, IntPE (AUS)

Appendix A: Flood Information Report (Comprehensive)

FLOOD INFORMATION REPORT (COMPREHENSIVE)

Property: 35 Carter Road BROOKVALE NSW 2100
Lot DP: Lot 15 Sec 12 DP 5767
Issue Date: 29/11/2023
Flood Study Reference: Greendale Creek Flood Study, WMAWater (2023)

Flood Information[1]:

Map A - Flood Risk Precincts
Not affected by Flood Planning Area (Medium Flood Risk Precinct)

Map B - 1% AEP Flood & Key points
Not flood affected in 1% AEP flood event

Map C - 1% AEP Hydraulic Categorisation
Not flood affected in 1% AEP flood event

Map D - Probable Maximum Flood
PMF Maximum Water Level (PMF) [4]: 16.58 m AHD
PMF Maximum Depth from natural ground level: 0.76 m

Map E - Flooding with Climate Change
1% AEP Maximum Water Level with Climate change [3]: 15.36 m AHD
1% AEP Maximum Depth with Climate Change[3]: 0.18 m

Map F - Flood Life Hazard Category in PMF

Map G - Indicative Ground Surface Spot Heights

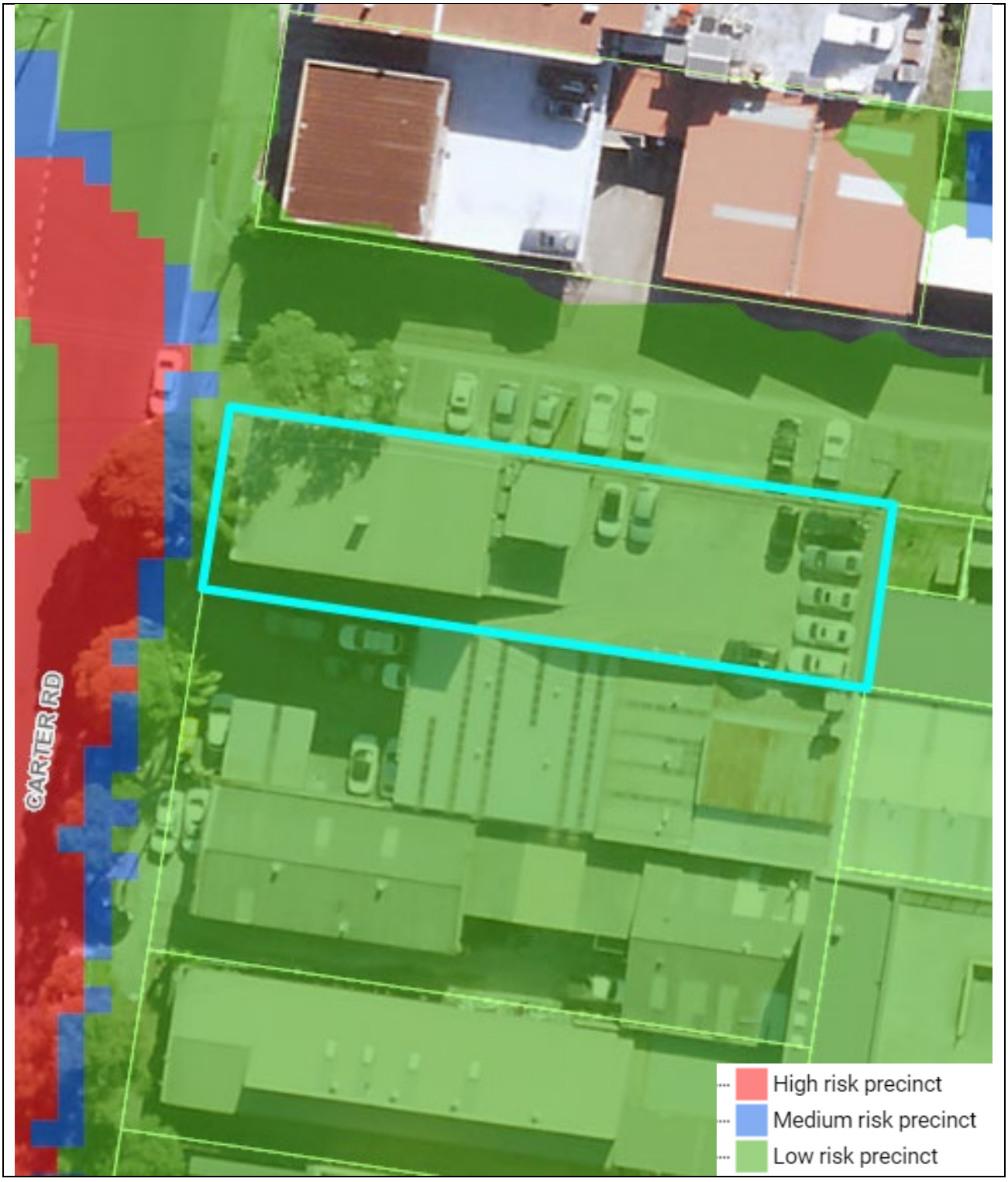
(1) The provided flood information does not account for any local overland flow issues nor private stormwater drainage systems.
(2) Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning 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.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:Greendale Creek Flood Study, WMAWater) and aerial photography (Source: NearMap 2014) are indicative only.

MAP B: 1% AEP EXTENT & KEY POINTS

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: Greendale Creek Flood Study, WMAWater) and aerial photography (Source Near Map 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	N/A	N/A	N/A	N/A	N/A	N/A	16.46	0.29	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	15.63	0.17	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	16.48	0.01	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	15.94	0.70	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	16.39	0.06	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	16.17	0.46	N/A

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	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	15.36	0.12
5	N/A	N/A
6	N/A	N/A

WL – Water Level
PMF – Probable Maximum Flood
N/A - No Peak Water Level/Depth/Velocity Available.

MAP C: 1% AEP FLOOD HYDRAULIC CATEGORY 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: Greendale Creek Flood Study, WMAWater) and aerial photography (Source: NearMap 2014) are indicative only

MAP D: PMF EXTENT MAP

Notes:

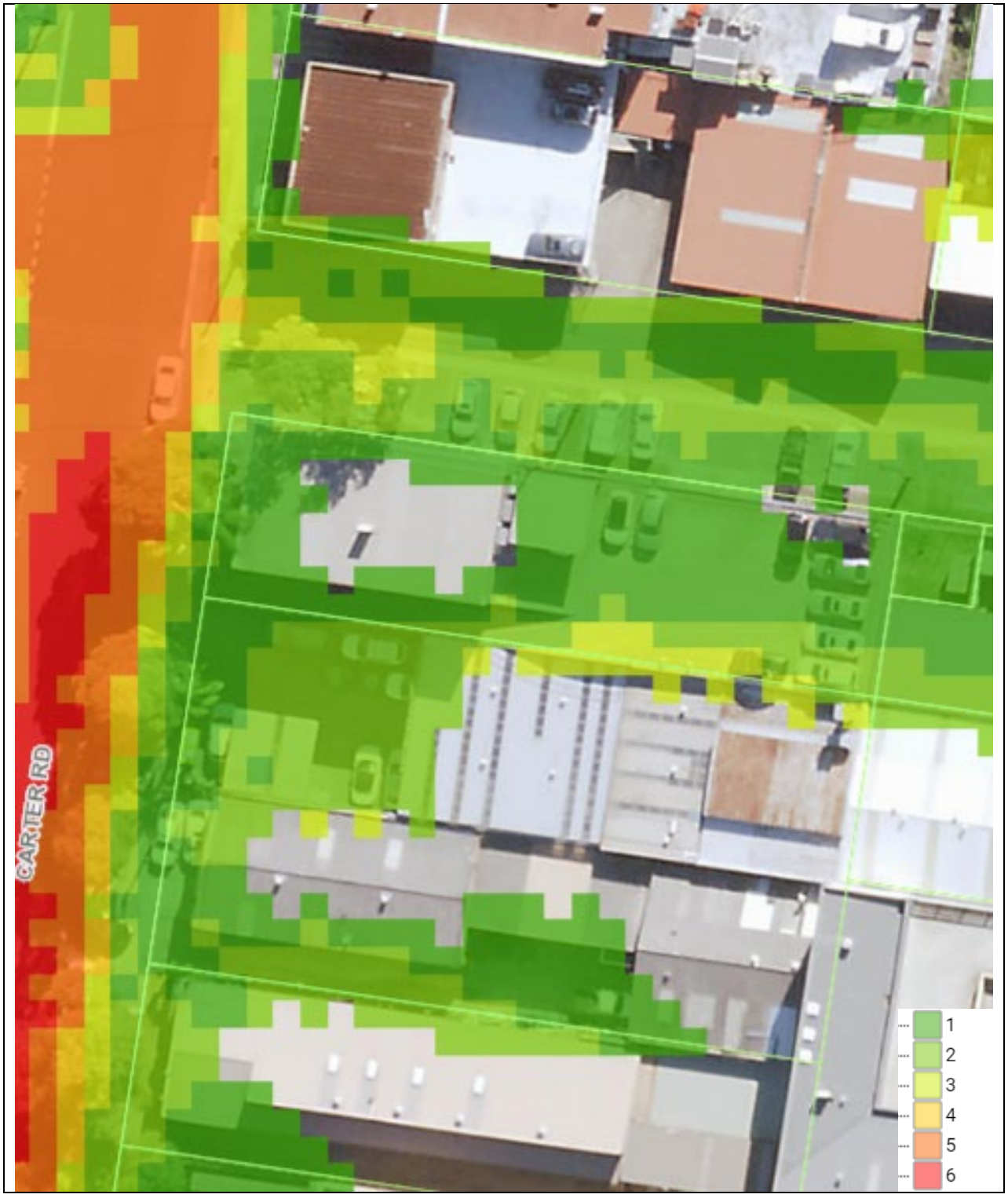
- Extent represents the Probable Maximum Flood (PMF) flood event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Greendale Creek Flood Study, WMAWater) and aerial photography (Source: NearMap 2014) are indicative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

MAP E: 1% AEP EXTENT PLUS CLIMATE CHANGE

Notes:

- 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: Greendale Creek Flood Study, WMAWater) and aerial photography (Source: NearMap 2014) are indicative only

MAP F: FLOOD LIFE HAZARD CATEGORY IN PMF



Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Greendale Creek Flood Study, WMAWater) and aerial photography (Source Near Map 2014) are indicative only.

MAP G: 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) – 5.21 Flood Planning	Manly DCP (2013) – 5.4.3 Flood Prone Land
Warringah LEP (2011) – 5.21 Flood Planning Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land
Pittwater LEP (2014) – 5.21 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 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			

- 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 .