



Flood Risk Review

Proposed Residence

ISSUED BY:	<i>Broadcrest Consulting Pty Ltd</i>	15 February 2022
TO:	<i>R & A Gillespie C/O: Blue Sky Building Design</i>	
APPLICATION NO.:	-	
ADDRESS:	<i>7 Sherry St, Mona Vale NSW</i>	
TO BE SUPPLIED TO:	<i>Northern Beaches Council</i>	
RE:	<i>Flood Risk Review of proposal & compliance to Former Pittwater 2014DCP B3.11 Flood Prone Land</i>	
BROADCREST REF:	<i>1682-FR-01</i>	

Broadcrest Consulting Pty Ltd have been engaged to provide the review of the proposed residence space at *7 Sherry St, Mona Vale NSW* (hereafter 'the site') with compliance to LGA flood controls and comment on the flood risk of the development. The review herein is based upon the following underlying documentation:

- Blue Sky Building Design Architectural Plans 'No. 2021014' Dated 20/12/2021
- Former Pittwater 2014DCP B3.11 Flood Prone Land, and
- NBC Flood Information Report Dated 21/12/2021

1. Flood Information

Latest flood information available is as detailed within the 21/21/2021 certificate as extracted from the McCarrs Crk, Mona Vale and Bayview Flood Study Review (2017). The flood information indicates that the lot is not impacted, nor adjacent to, the 1% AEP flood extents. H1 'Low Hazard' flood affection was identified within the eastern adjacent properties during the PMF (Probably Maximum Flood) event, therefore being classified as within a 'low risk precinct'. PMF ingress into the site is indicated to occur roughly 1m in the north-east and south-east corners of the site. PMF conditions are noted per Table 1.1.

Table 1.1 – Flood Affection of site (Per NBC Flood Cert. 2021)				
Flood Event	Max WSE (m, AHD)	Max. Depth (m)	Max Velocity (m/s)	Hydraulic Category
1% AEP	N/A	N/A	N/A	N/A
PMF	17.37	0.19	0.35	H1- Low Hazard

2. Flood Controls

Flood controls for the development are governed per Former Pittwater 2014DCP B3.11 *Flood Prone Land*. The control matrix for Low Flood Risk Precincts is presented below:

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				

Flood Depth (m)

 0.05 - 0.1	 0.5 - 1
 0.1 - 0.2	 1 - 2
 0.2 - 0.5	 > 2

d land use is residential, site-specific flood controls are n

As the proposed land use is residential, site-specific flood controls are not required per the 2014DCP.

3. Flood Effects

The proposed Ground Floor FFLs of the primary dwelling and secondary are 17.200m AHD and 17.800m AHD respectively. As no 1% AEP inundation is identified within the eastern neighbouring allotment with a surveyed FGL of 16.360m AHD, the information indicates the proposed dwelling FFLs will be above the typical 1%AEP +0.5m freeboard provision of <16.860m AHD.

During PMF conditions the secondary dwelling has +0.43m clearance from the PMF, with potential for minor inundation of the primary dwelling to a depth of 0.17m. Given the land-use case is not that of a critical-facility, the low probability risk exposure is considered consistent with residential provisions within the LGA DCP and NSW (2005) Floodplain Development Manual more generally.

3. Findings and Conclusion

The flood affectation has been identified for the 1%AEP and PMF from within the latest data. The development has been found to achieve compliance with DCP flood controls for the proposed configuration (as detailed in Architecturals dated 20/12/21) where standard NCC construction measures and configuration are undertaken. No modifications are recommended.

On behalf of Broadcrest Consulting,


Logan Starkey

Civil Engineer

B. Eng (Adv.) (Civil) (Hons.)

Appendix A: LGA FLOOD ADVICE LETTER

FLOOD INFORMATION REPORT - BASIC

Property: 7 Sherry Street MONA VALE NSW 2103

Lot DP: Lot 7 DP 217761

Issue Date: 21/12/2021

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

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}: N/A m AHD

1% AEP Flood – See Flood Map B

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

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

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level ⁴: 17.37 m AHD

PMF Maximum Depth from natural ground level: 0.19 m

PMF Maximum Velocity: 0.35 m/s

Flood Life Hazard Category – See Map E

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.

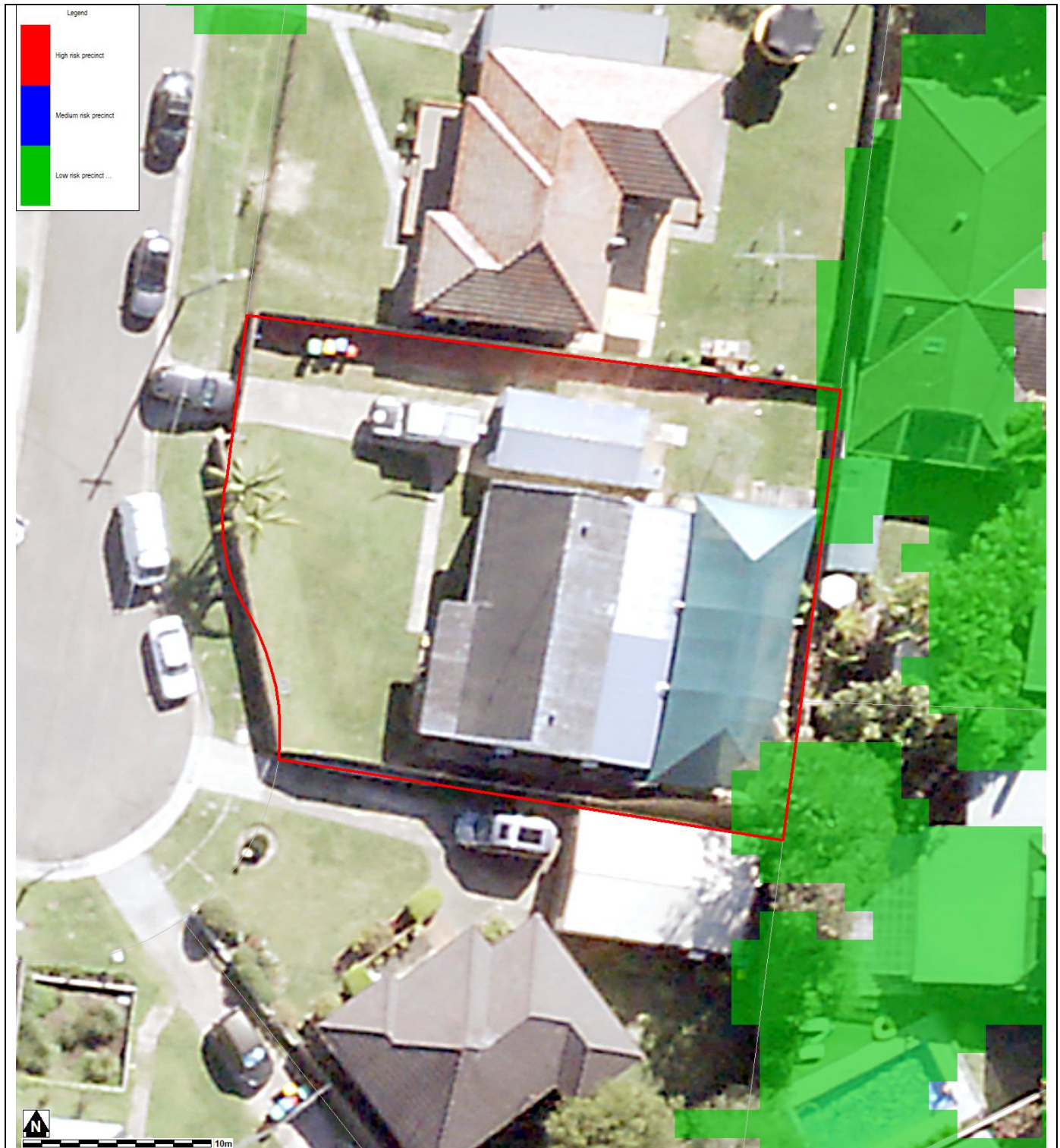
³ Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.

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.

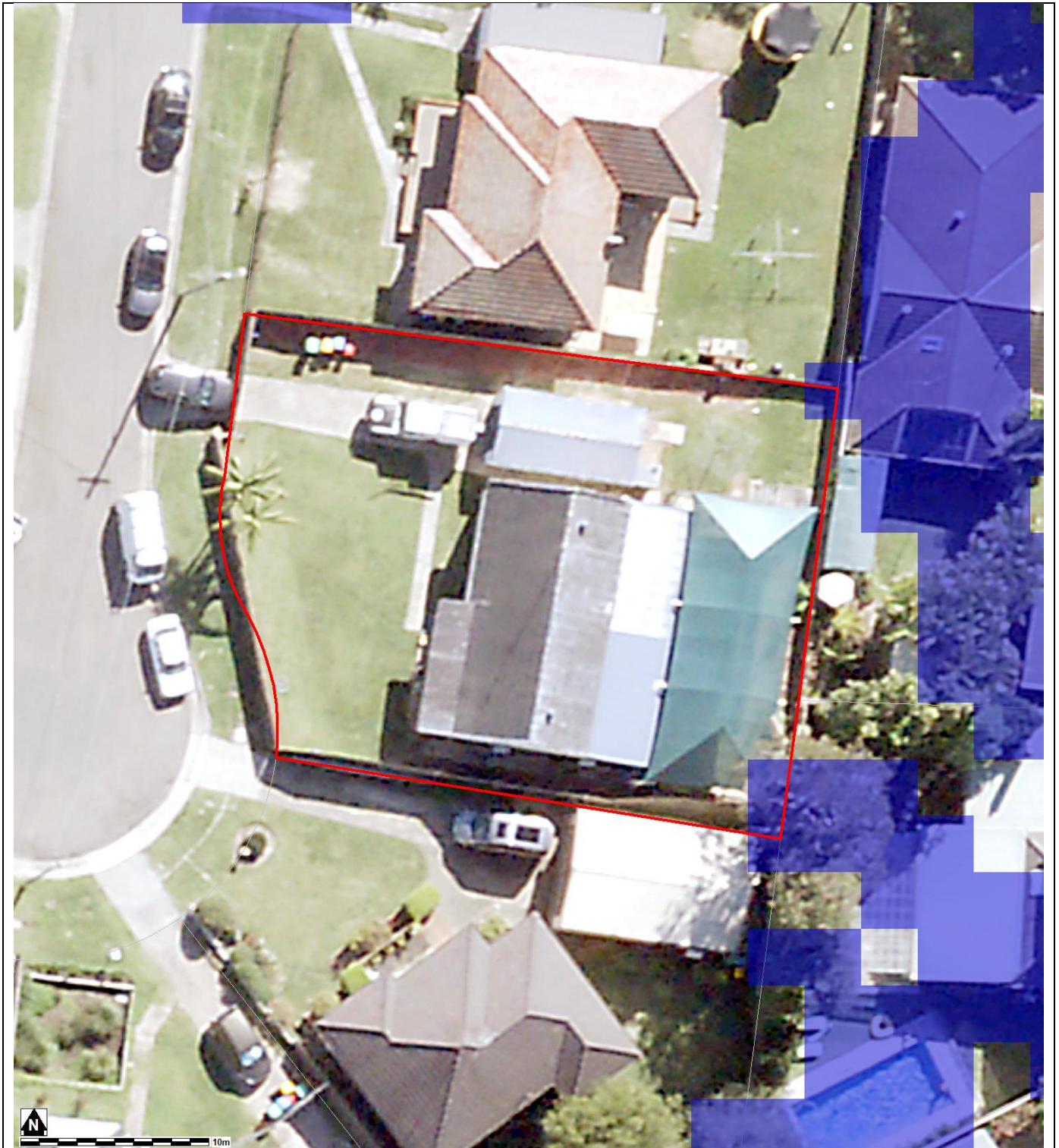
FLOOD MAP B: FLOODING - 1% AEP EXTENT



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:) and aerial photography (Source: NearMap 2014) are indicative only.

FLOOD MAP C: 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:) 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:) and aerial photography (Source: NearMap 2014) are indicative only.

FLOOD MAP E: FLOOD LIFE HAZARD CATEGORY



Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) 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) – 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 .