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## **RE: FLOOD MANAGEMENT REPORT – PROPOSED DEVELOPMENT 351 - 353 BARRENJOEY ROAD, NEWPORT**

### **1.0 INTRODUCTION**

Demlakian Consulting Engineers have been engaged to prepare a Flood Management Report for the proposed Shop Top Housing development at the above site as supporting documentation for the Development Application. The aim of this report is to demonstrate the compliance of the proposed development with the flood related development controls outlined with the Pittwater 21 DCP and the Flood Prone Land Design Standard as required by the Northern Beaches Council.

### **2.0 PROPOSED DEVELOPMENT AND CONTEXT**

The site comprises lots 64 and 65 located at 351 Barrenjoey Road, as well as lot 66 located at 353 Barrenjoey Road. The property currently consists of mixed-use buildings that are proposed to be demolished and replaced with a new three-storey mixed-use premises over two level of basement carpark.

The current site adjoins existing developments to the Northern and Western sides, with Barrenjoey Road being adjacent to the Eastern side and Robertson Road to the Southern side.

The site has a pronounced fall from west to east.

The objectives of this report are:

- Demonstrate that the proposed development meets the flood requirements of Clauses B3.11, 3.12 and 3.13 of the P21 DCP.
- Demonstrate that the proposed development meets the requirements of Clauses 7.3 and 7.4 of the PLEP 2014.
- Demonstrate that the particular items raised in the Specialist Flooding Advice in the Pre-lodgement Meeting Notes have been addressed.



### **3.0 REFERENCED DOCUMENTS**

The following documents have been referenced within this report:

- Architectural drawings prepared by Crawford Architects
- Pittwater 21 Development Control Plan 2014
- Pittwater Flood Prone Land Design Standard
- Pittwater Local Environmental Plan 2014
- Flood Information Reports provided by Council
- Storm Water Drainage Concept Drawings prepared by Demlakian Consulting Engineers.

### **4.0 FLOOD ANALYSIS INFORMATION**

Based on the Flood Information obtained from Council, the site is located within a low to medium Flood Risk Precinct. (Refer to the attached documents).

The site is adjoined by flood ways through Robertson and Barrenjoey Roads and flood storage areas. The Flood Information indicates that the site contains minimal flood storage. Due to the presence of existing site buildings, the flood ways do not extend onto the site.

The 1% AEP flood levels (including climate change and sea level rise) vary between RL5.19 in Barrenjoey Road and RL6.99 at the western end of the site in Robertson Road.

The PMF levels vary between RL6.00 in Barrenjoey Road and RL7.19 at the western end of the site in Robertson Road.

The site is subject to overland flow from the 31 and 33 Foamcrest Avenue located to the west of the site. From discussions with Council it is understood this flow is minor. Methods for redirecting this flow area discussed in this report.

### **5.0 FLOOD RISK ASSESSMENT REQUIREMENTS**

As the site is flood affected, the Northern Beaches Council require a flood management report that demonstrates the compliance of the proposed site with the necessary requirements and should be prepared in accordance with the Guidelines for Preparing a Flood Management Report.

#### **5.1 ASSESSMENT OF IMPACTS**

The remainder of this section outlines the specific details of the flood prone site and demonstrates its compliance with Council requirements. The following points, however, provide a brief summary of the land and its associated flooding:

#### **5.2 FLOOD RISK MATRIX ASSESSMENT**

In accordance with section B3.11 Flood Prone Land of the Pittwater 21 DCP, the following flood risk assessment details the compliance of the proposed development with the Northern Beaches Council requirements.



		High Flood Risk						
		Critical Uses	Vulnerable Uses	Subdivision	Residential	Business & Industrial	Recreational & Environmental	Concessional
<b>A</b>	<b>Flood effects caused by Development</b>	A1 A3 A4	A1 A3 A4	A1 A3	A1 A3	A1 A3	A2 A3	A2 A3
<b>B</b>	<b>Drainage Infrastructure &amp; Creek Works</b>	B1 B2	B1 B2	B1 B2	B1 B2	B1 B2	B1 B2	
<b>C</b>	<b>Building Components &amp; Structural</b>	C1 C2 C3	C1 C2 C3		C1 C2 C3	C1 C2 C3	C1 C2 C3	C1 C2 C3
<b>D</b>	<b>Storage of Goods</b>	D1 D2	D1 D2		D1 D2	D1 D2	D1 D2	D1 D2
<b>E</b>	<b>Flood Emergency Response</b>	E1 E2 E3	E1 E2 E3	E1 E4	E1 E2	E1 E2 E3	E1	E1
<b>F</b>	<b>Floor Levels</b>	F2 F3 F7	F2 F3 F7	F5	F1 F2 F3 F6 F8	F2 F2 F3 F6 F8 F10	F2	F2 F3 F6
<b>G</b>	<b>Car Parking</b>	G1 G4 G6 G7 G9 G10	G1 G4 G6 G7 G9 G10	G1	G1 G2 G3 G4 G5 G6 G7	G1 G2 G3 G4 G5 G6 G7	G1 G2 G3 G4 G5 G6 G7	G1 G2 G3 G4 G5 G6 G7
<b>H</b>	<b>Fencing</b>	H1	H1	H1	H1	H1	H1	H1
<b>I</b>	<b>Pools</b>	I1	I1	I1	I1	I1	I1	I1

Additionally, in order to cover the requirements of the Medium Flood Risk Matrix, items F9, F11 and G8 have also been considered.

**A. Flood Effects Caused by Development:**

*A1 – Jetty*

The proposed development does not include a jetty.

*A3 – The applicant shall include in their submission, calculations to illustrate that any fill or other structures that reduce the total flood storage are replaced by Compensatory Works.*

The Flood Information documents provided by Council indicate that the site does not contain flood storage in the 1% AEP event. The sites are covered by existing buildings that prevent existing flood storage.

**B. Drainage Structure & Street Works:**



*B1 – B1 Flood mitigation works or storm water devices that modify a major drainage system, storm water system, natural water course, floodway or flood behavior within or outside the development site may be permitted subject to demonstration through a Flood Management Report that they comply with the Flood Prone Land Design Standard found on Council's webpage.*

No works are proposed that modify and existing drainage system.

*B2 – A Section 88B notation under the Conveyancing Act 1919 may be required to be placed on the title describing the location and type of flood mitigation works with a requirement for their retention and maintenance.*

There is no flood mitigation works proposed. The site is exempt from requiring on-site detention.

#### C. Building Infrastructure & Creek Works:

*C1 – All buildings shall be designed and constructed as flood compatible buildings in accordance with Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas, Hawkesbury-Nepean Floodplain Management Steering Committee (2006).*

*C2 – All structures must be designed and constructed to ensure structural integrity up to the Flood Planning Level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. Structural certification shall be provided confirming the above. Where shelter-in-place refuge is to be provided the structural integrity is to be to the Probable Maximum Flood level.*

*C3 – All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level. All existing electrical equipment and power points located below the Flood Planning Level must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.*

All structural elements below the Flood Planning Level are to be constructed of reinforced concrete and/or reinforced concrete masonry and designed to withstand the forces of flood water, debris and buoyancy.

The electrical design shall ensure that all new electrical equipment and similar have suitable waterproofing or are located above the Flood Planning Level and that all existing electrical equipment, etc. shall have suitable devices cutting of electricity supply should flood waters are detected.

#### D. Storage of Goods:

*D1 – Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level unless adequately protected from floodwaters in accordance with industry standards.*

*D2 – Goods, materials or other products which may be highly susceptible to water damage are to be located/stored above the Flood Planning Level.*



The building levels have been set to prevent the ingress of storm water by ensuring that habitable levels are 0.5m above the Flood Planning Level. Accordingly, any goods stored on the habitable floors will be above the Flood Planning Level.

E. Flood Emergency Response:

*E1 – Development shall comply with Council's Flood Emergency Response Planning for Development in Pittwater Policy and the outcomes of any Flood Risk Emergency Assessment Report where it applies to the land.*

*E2 – New development must provide an appropriately sized area to safely shelter in place above the Probable Maximum Flood level and appropriate access to this area should be available from all areas within the development.*

All habitable floors of the building are 0.5m above the Flood Planning Level. Although the ground floor is below the Probable Maximum Flood Level, the first floor (having sufficient space to reside during a storm event) is well above the PMF and can be easily accessed from the ground floor via stairs.

As the flood characteristics affecting the site are shallow overland flows during a flood event, all stormwater will be quickly discharged off site through both the natural and implemented drainage paths on the property. Thus, the evacuation of the site during a storm event will not be a necessary action due to the sufficient residing space available within the dwelling, therefore relieving any reliance on emergency services.

*E3 – Adequate Warning Systems, Signage and Exits shall be installed to allow safe and orderly evacuation without reliance upon the SES or other authorised emergency services personnel.*

This will be incorporated into the construction documentation.

F. Floor Levels:

*F1 – New floor levels within the development shall be at or above, the Flood Planning Level. A reduced Flood Planning Level may be considered only where it is permitted in this Development Control Plan.*

*The structure must be flood proofed (wet or dry) to the Flood Planning Level. This control cannot be applied to critical or vulnerable uses.*

The residential parts of the building area located at First and Second Floor levels and therefore are well above the flood planning levels. With regard to the commercial lots at Ground level, the floors are located above the flood planning level, with the exception of portions, not exceeding 30 square metres, and within 5.0 metres from the street frontage, as permitted by the Flood Prone Land Design Standard and as suggested in the PLM minutes.

*F2 – All development structures must be designed and constructed so as not to impede the floodway or flood conveyance on the site, as well as ensuring no loss of flood storage in a 1% AEP Event. Where the dwelling is located over a flow path it must be elevated on suspended pier/pile footings such that the level of the underside of all*



*floors including balconies and decks within the flood affected area are at or above, or raised to the Flood Planning Level to allow clear passage of the floodwaters under the building. The development must comply with the Flood Prone Land Design Standard.*

The site contains existing buildings that prevent existing floodway or conveyance on the site or flood storage. Accordingly, the proposed development does not impact the flooding characteristics of the locality.

As discussed with council, there is some minor overland flow entering the site from 31 and 33 Foamcrest Avenue west of the site. The storm water concept drawings demonstrate provision of a channel at the western end of the site that directs this flow to Robertson Road, avoiding impact on the proposed development, and preventing blockage of the flows and impacts on adjoining properties.

As discussed with Council, calculations are not required for these minor flows, merely demonstration of the proposed flow path.

*F3 – Where the lowest floor has been elevated to allow the passage of flood waters, a restriction shall be imposed on the title of the land, pursuant to S88B of the Conveyancing Act confirming that the undercroft area is not to be enclosed.*

This item does not apply to this development.

*F4 – A one- off addition or alteration below the Flood Planning Level of less than 30 square metres or an increase of less than 10% of the ground floor area (whichever is the lesser) for residential development may be considered only where:*

*(a) It is an extension to an existing room*

*(b) the Flood Planning Level is incompatible with the floor levels of the existing room*

*This control will not be permitted if this provision has previously been utilised since the making of this Plan.*

*The structure must be flood proofed to the Flood Planning Level.*

This item does not apply to this development.

*F6 – Any existing floor level may be retained below the Flood Planning Level when undertaking a first-floor addition provided that:*

*(a) it is not located within a floodway;*

*(b) there is no increase to the building footprint below the Flood Planning Level;*

*(c) it is flood proofed to the Flood Planning Level.*

This item does not apply to this development.

*F8 – The minimum floor level of any first-floor additions shall be at or above the Probable Maximum Flood Level.*

All first-floor levels are above the PMF.



*F9 – Foyers – consideration may be given to a minimum floor level of a foyer being set at the 5% AEP flood level, provided it can be demonstrated that it complies with the Flood Prone Land Design Standard.*

This item does not apply to this proposal.

*F11 – A one-off addition or alteration below the Flood Planning Level of less than 100 square metres or an increase of less than 10% of the ground floor area (whichever is the lesser) for non-residential development may be considered only where the required floor level cannot be achieved for the following reason: (a) it would be incompatible with floor levels of the existing building This control will not be considered if the existing floor level of the additions/alterations are located within a high hydraulic hazard area. This control will not be permitted if this provision has previously been utilised since the making of this Plan. Any features of the additions or alterations on the floor level must be flood proofed to the Flood Planning Level.*

This item does not apply to this development.

#### G. Car Parking:

*G1 – Open carpark areas and carports shall not be located within a floodway.*

This item does not apply to this development.

*G2 – The lowest floor level of open carparks and carports (unroofed or with open sides) shall be constructed no lower than the natural ground levels.*

This item does not apply to this development.

*G3 – All enclosed car parks must be protected from inundation up to the relevant flood planning level. For example, basement carparks must be provided with a crest at the entrance, the crest of which is at the relevant Flood Planning Level. All access, ventilation and any other potential water entry points to any enclosed car parking shall be above the relevant Flood Planning Level. Council will not accept any options that rely on electrical, mechanical or manual exclusion of the floodwaters from entering the enclosed carpark*

The basement carpark entry has been designed to include a hump that extends to the flood planning level, and above the PMF and prevents ingress of flood water. The remainder of the parking garage is flood proofed by the building walls and upper levels.

*G5 – Enclosed Garages must be located at or above the 1% AEP level*

The basement carpark has been designed to prevent the ponding and flooding of water through retaining walls and a driveway hump that will extend to the height of a suitable freeboard.

*G6 – Carports must comply with the Flood Prone Land Design Standard*

The proposed development does not include a carport.



*G7 – Where a driveway is required to be raised it must be demonstrated that there is no loss to flood stage in the 1% AEP flood event and no impact on flood conveyance through the site*

The site does not currently contain flood storage due to the existing buildings. Accordingly, the driveway hump, which occurs entirely within the site, does not result in a loss of flood storage.

*G8 – Multi Dwelling Housing and Shop Top Housing residential carparking – consideration may be given to a minimum floor level for open or covered carparking being set at the 5% AEP flood level, provided it can be demonstrated that it complies with the Flood Prone Land Design Standard.*

This item does not apply to this development.

#### H. Fencing:

*H1 – Fencing, including pool fencing, shall be designed so as not to impede the flow of flood waters and not to increase flood affectation on surrounding land. Appropriate fencing must comply with the Flood Prone Land Design Standard in addition to other regulatory requirements of pool fencing.*

Fencing to the western boundary of the site will allow overland flow from 31 and 33 Foamcrest Avenue into the proposed diversion channel.

#### I. Pools:

*I1 – Pools located within the 1% AEP flood extent are to be in-ground, with coping flush with natural ground level. Where it is not possible to have pool coping flush with natural ground level, it must be demonstrated that the development will result in no net loss of flood storage and no impact on flood conveyance on or from the site. All electrical equipment associated with the pool (including pool pumps) is to be waterproofed and/or located at or above the Flood Planning Level. All chemicals associated with the pool are to be stored at or above the flood planning level.*

The proposed development does not include a pool.





## 6.0 CONCLUSION

While the property is located within flood prone land of low to medium risk, the proposed development will not have any adverse effects on the flood levels, velocities and the surrounding properties

Proposed floor levels are either located above the flood planning level or comply with the requirements of the Flood Prone Land Design Standard.

Although the basement carpark and driveway are located below the natural ground level, this area has been designed to prevent the ponding and flooding of water through the implementation of retaining walls and a driveway hump that extend to a suitable freeboard.

As the height of all habitable floor levels of the proposed dwelling are above the 1% AEP and the Flood Planning levels, no evacuation will be necessary during the occurrence of this flood events that lead to flooding up to these levels. However, despite the level of the ground floor being lower than the probable maximum flood level, the first floor provides sufficient residing space during this flood event, therefore meaning that the evacuation of the property will not be necessary.

In accordance with the above, the proposed site complies with the flood requirements of the Northern Beaches Council Pittwater 21 DCP and Flood Prone Land Design Standard.

Yours faithfully,

David Wilcox  
B.E. (Hons I), FIEAust, CPEng, NER APEC Engineer IntPE (Aus) RPEQ  
Director  
**DEMLAKIAN CONSULTING ENGINEERS**

Encl. Figure 1 – Flood Planning Levels Rev B  
Flood Information – Lot 64 – 351 Barrenjoey Road  
Flood Information – Lot 65 – 351 Barrenjoey Road  
Flood Information – 353 Barrenjoey Road  
Pre-lodgement Meeting Notes  
Hydraulic Certification Form

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BARRIER WALLS TO ABOVE FLOOD PLANNING LEVEL + PMF

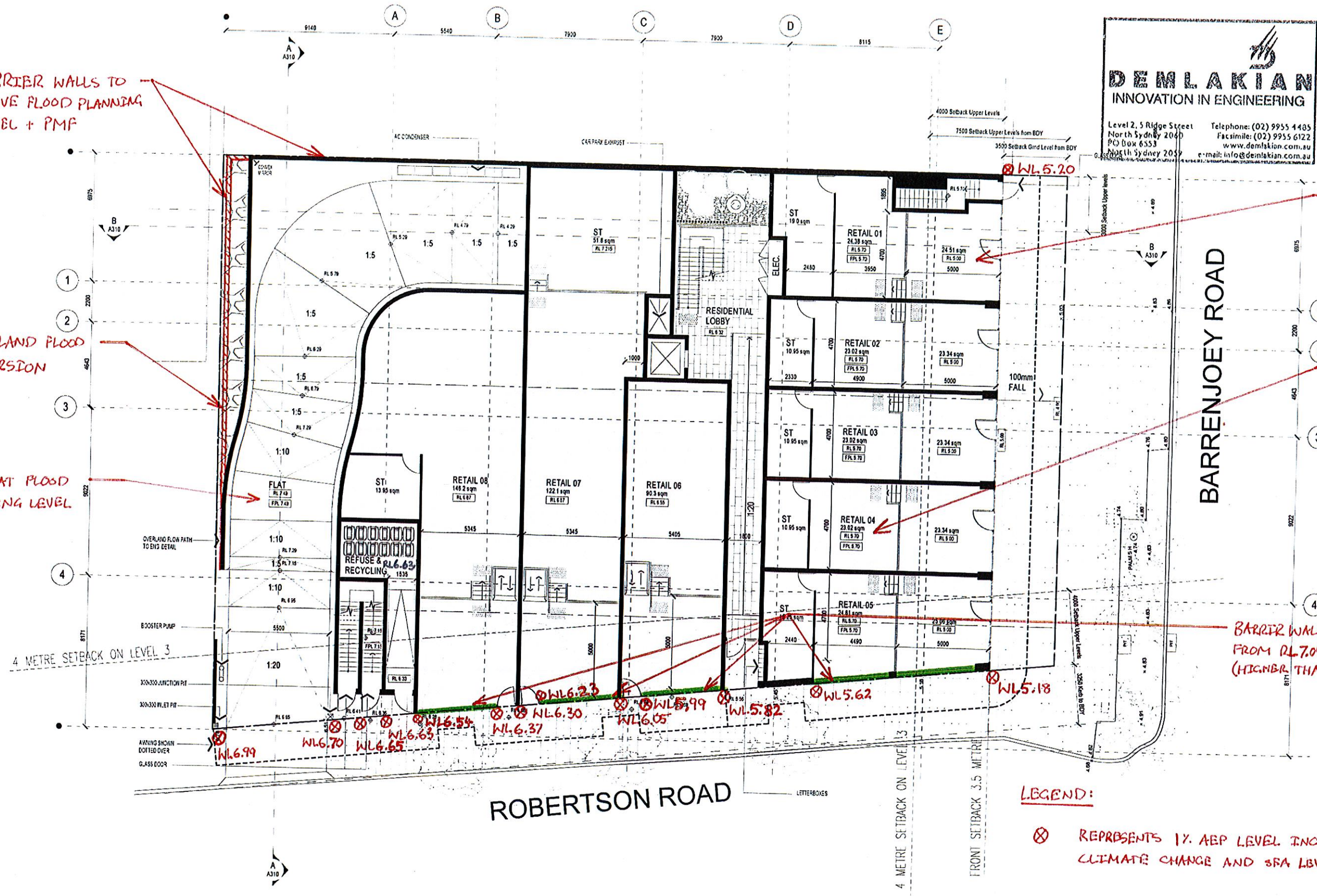
OVERLAND FLOOD DIVERSION

HUMP AT FLOOD PLANNING LEVEL

FRONT PART OF RETAIL LOCATED AT FOOTPATH LEVEL

REAR PART OF RETAIL AT OR ABOVE FLOOD PLANNING LEVEL

BARRIER WALL TO SLOPE FROM RL7.04 TO RL5.68 (HIGHER THAN FPL)



**LEGEND:**

- ⊗ REPRESENTS 1% AEP LEVEL INCLUDING CLIMATE CHANGE AND SEA LEVEL RISE.
- REPRESENTS FLOOD BARRIER WALL.

**FIGURE 1 - FLOOD PLANNING LEVELS REV B**

6/3/2020

ALL DIMENSIONS & LEVELS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. ALL BOUNDARIES & CONTIGUOUS SUBJECT TO SURVEY. ALL RIGHTS RESERVED. THIS DRAWING MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR IN ANY MANNER WITHOUT THE PERMISSION OF CRAWFORD ARCHITECTS PTY LTD.

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NO.	DATE	ISSUED TO	BY
01	20/03/20	ISSUED TO CONSULTANT	DA
02	22/03/20	ISSUED TO CLIENT	DA
03	27/03/20	ISSUED TO CONSULTANT	DA
04	18/04/20	ISSUED TO CLIENT	DA

CLIENT: DEVELOPMENT LINK  
PROJECT: MIXED USE DEVELOPMENT  
TITLE: GROUND FLOOR PLAN  
351-353 BARRENJOEY ROAD, NEWPORT NSW 2106  
LOT 66 & 66 SEC 5 DP 8248

SCALE: 1:100 @ A1



APPROVED: DA  
CHECKED: DA  
DATE: JUN 2019  
S: A1-5 DA

PROJECT NUMBER: 18057  
DRAWING NUMBER: A102

04

crawford architects



## FLOOD INFORMATION REQUEST – COMPREHENSIVE

**Property:** Lot 64, 351 Barrenjoey Rd, Newport

**Lot DP:** 64//1090224

**Issue Date:** 17/07/2019

**Flood Study Reference:** Draft Newport Flood Study 2019 and Pittwater Overland Flow Study 2013

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### **Flood Information for lot:**

#### **Flood Life Hazard Category – See Map A**

#### **1% AEP – See Flood Map B**

**1% AEP Maximum Water Level<sup>3</sup>:** 6.97 mAHD

**1% AEP Maximum Peak Depth from natural ground level<sup>3</sup>:** 0.28 m

**1% AEP Maximum Velocity:** 1.99 m/s

**1% AEP Provisional Flood Hazard:** Low **See Flood Map E**

**1% AEP Hydraulic Categorisation:** Flood Fringe **See Flood Map F**

#### **Flood Planning Area – See Flood Map C**

**Flood Planning Level (FPL) <sup>1, 2, 3 & 4</sup>:** See Table: Map C Flood Levels

#### **Probable Maximum Flood (PMF) – See Flood Map D**

**PMF Maximum Water Level<sup>2</sup>:** 7.24 m AHD

**PMF Maximum Depth from natural ground level:** 1.15 m

**PMF Maximum Velocity:** 3.03 m/s

**PMF Flood Hazard:** High **See Flood Map G**

**PMF Hydraulic Categorisation:** Floodway **See Flood Map H**

## **Flooding with Climate Change (See Flood Map I)**

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

**1% AEP Maximum Water Level with Climate change<sup>1&3</sup>: 6.50 m AHD**

**1% AEP Maximum Depth with Climate Change<sup>3</sup>: 0.32 m**

**1% AEP Maximum Velocity with Climate Change<sup>3</sup>: 2.08 m/s**

## **Flood Risk Precinct – See Map J**

## **Indicative Ground Surface Spot Heights – See Map K**

<sup>1</sup>The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.

<sup>2</sup>Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/flood planning levels across the site.

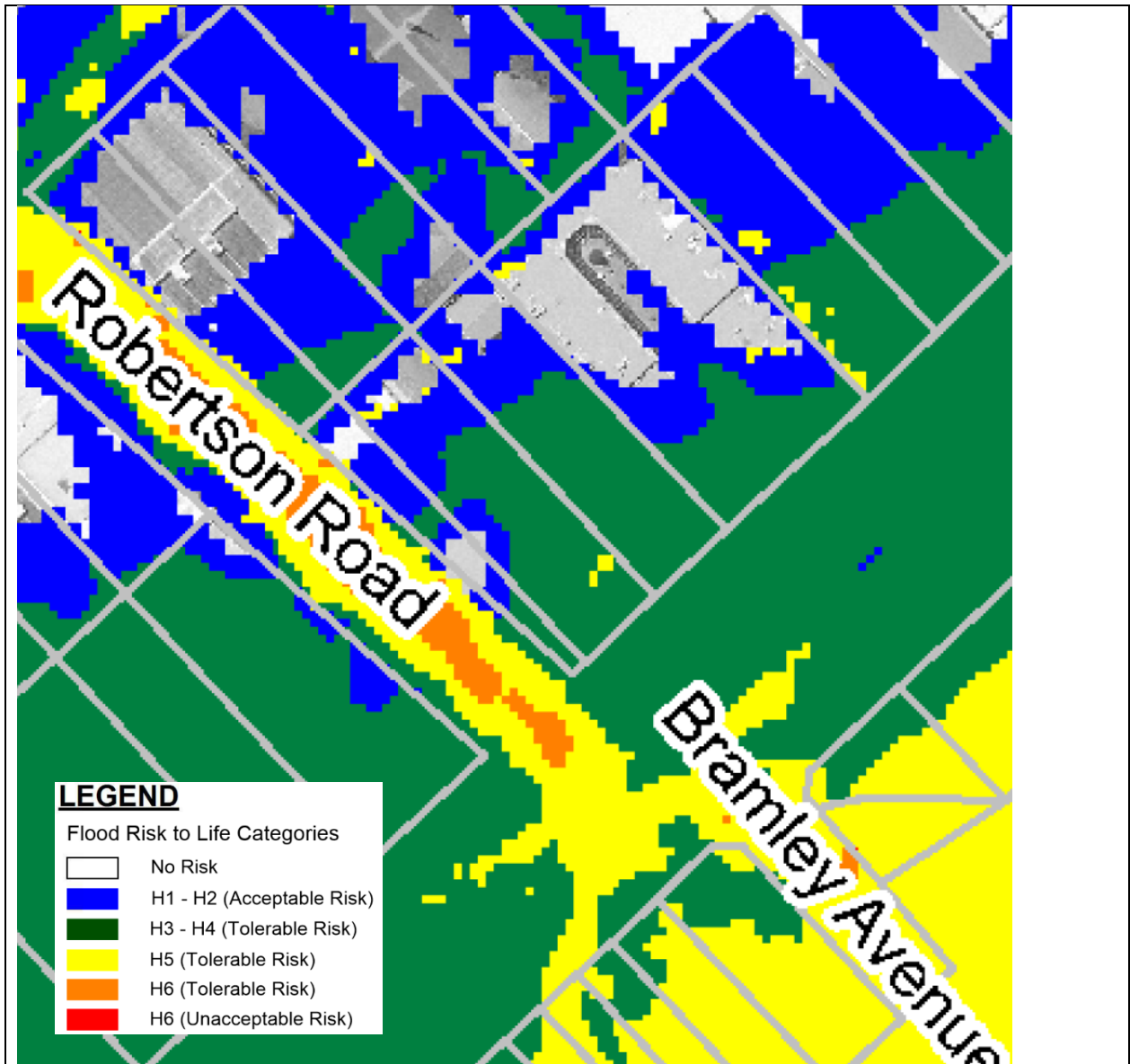
<sup>3</sup>Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

<sup>4</sup>Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or Flood Planning Level

### **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.

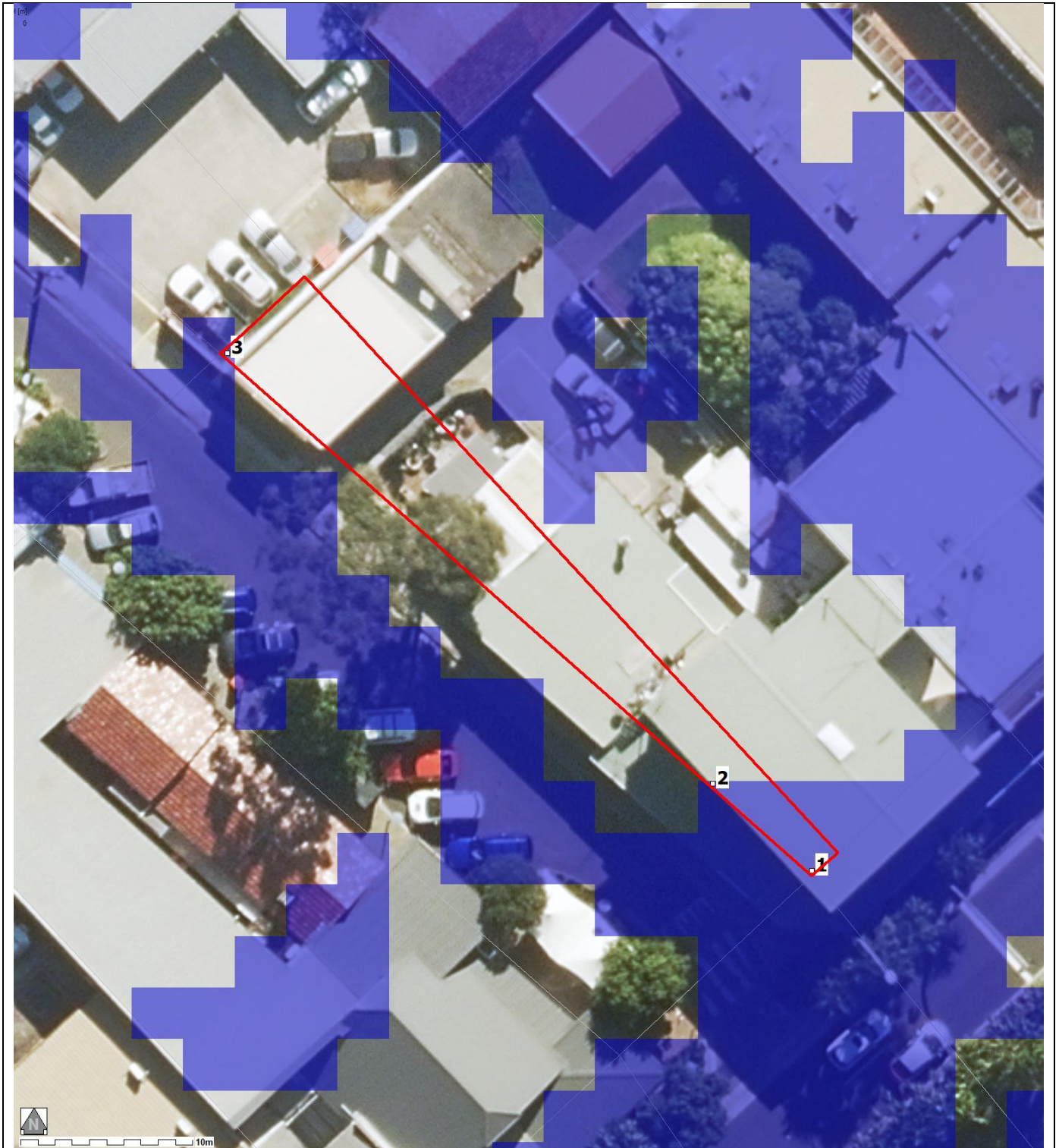
# FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY



Notes:

- Refer to 'Flood Emergency Response Planning for Development in Pittwater Policy for additional information on the Flood Life Hazard Categories and Pittwater 21 DCP Control B3.25.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

# FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) 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	5.11	0.25	5.14	0.28	1.01	5.64	6.00	1.15	1.63
2	N/A	N/A	5.17	0.17	1.71	5.67	6.00	0.99	2.85
3	6.94	0.21	6.97	0.24	1.72	7.47	7.19	0.46	2.74

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)

<b>ID</b>	<b>CC 1% AEP Max WL (m AHD)</b>	<b>CC1 % AEP Max Depth (m)</b>
<b>1</b>	5.17	0.32
<b>2</b>	5.20	0.20
<b>3</b>	6.99	0.27

A variable Flood Planning Level might apply - 0.5m above 1% AEP max water level (for Mainstream flooding) or 0.5m above the 1% AEP max water level flow path extent with depth greater than 0.3m and 0.3m above the 1% AEP max water level flow path with depth 0.3m and less (for overland flow)

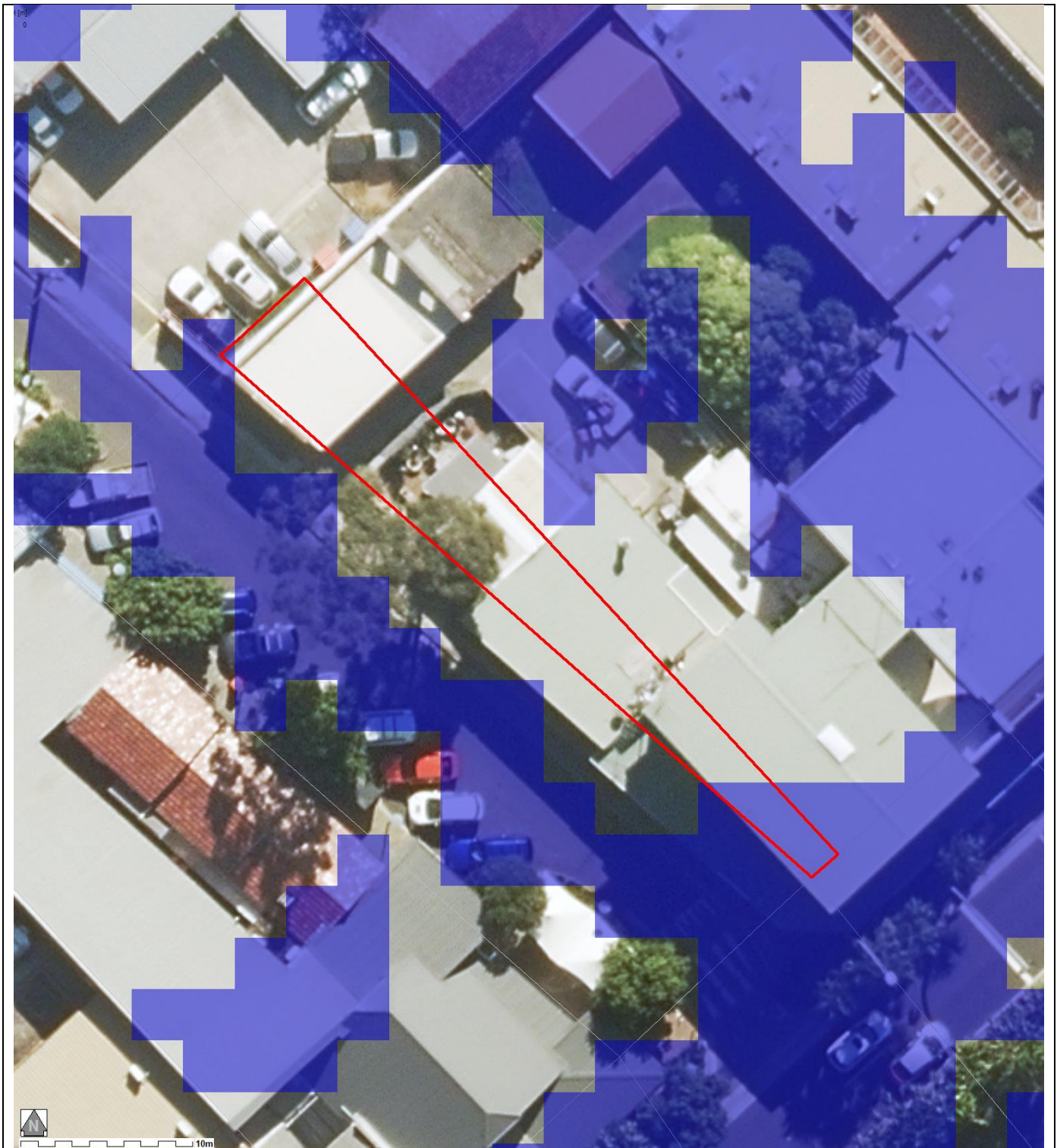
WL – Water Level

PMF – Probable Maximum Flood

N/A = no peak water level/depth/velocity available in flood event.



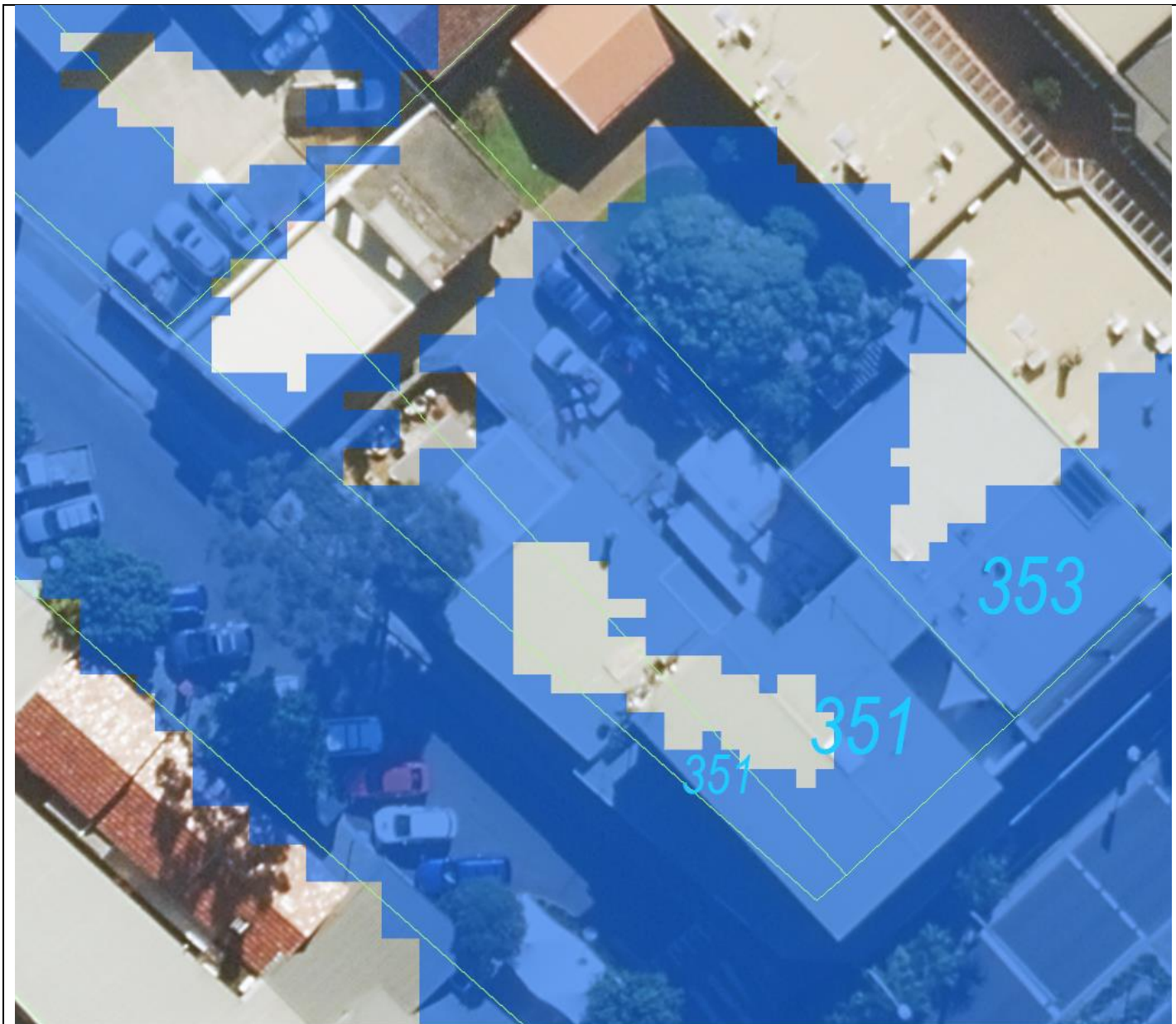
## FLOOD MAP B: FLOODING - 1% AEP EXTENT



### 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: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

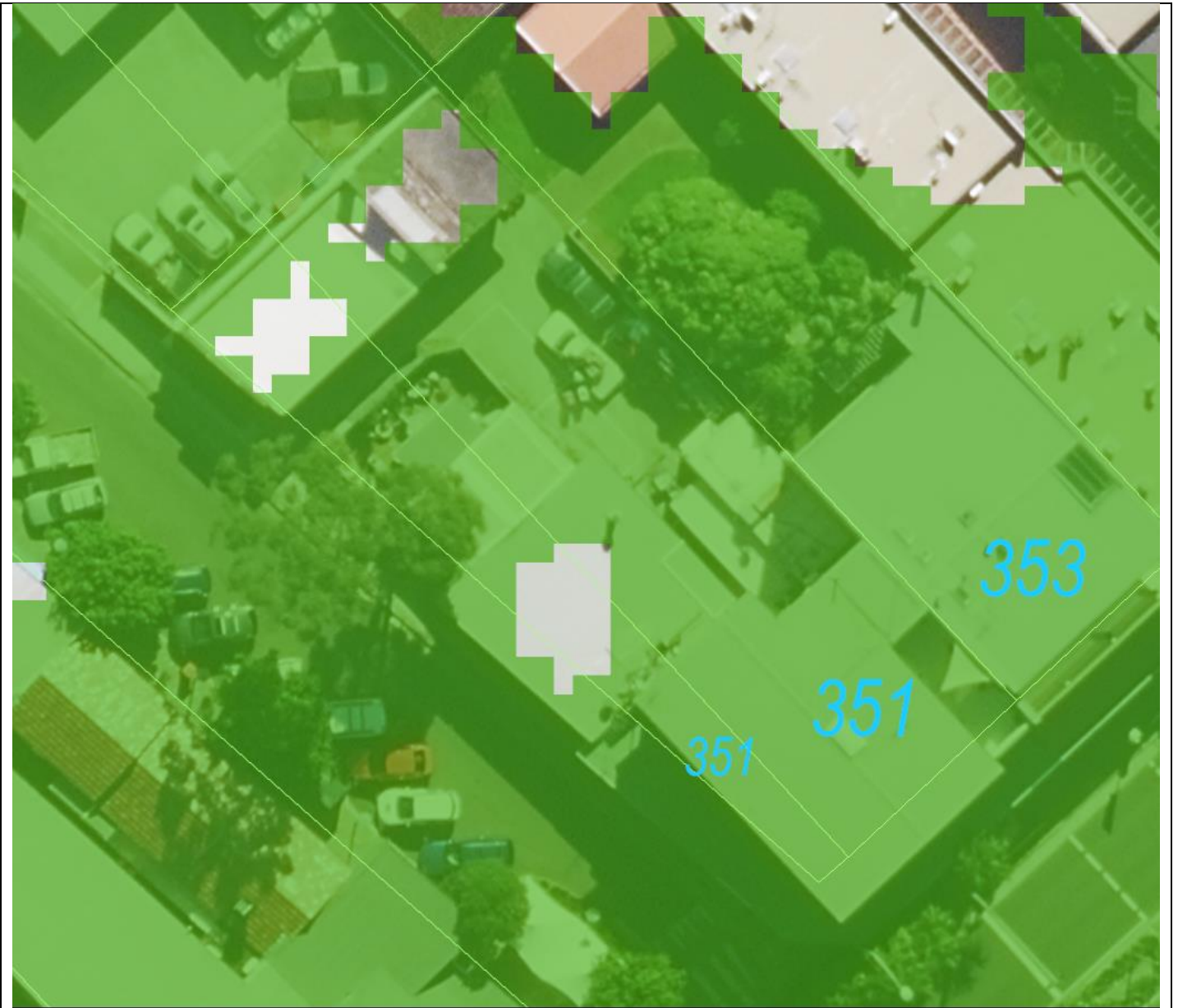
## FLOOD MAP C: FLOOD PLANNING AREA EXTENT



### Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

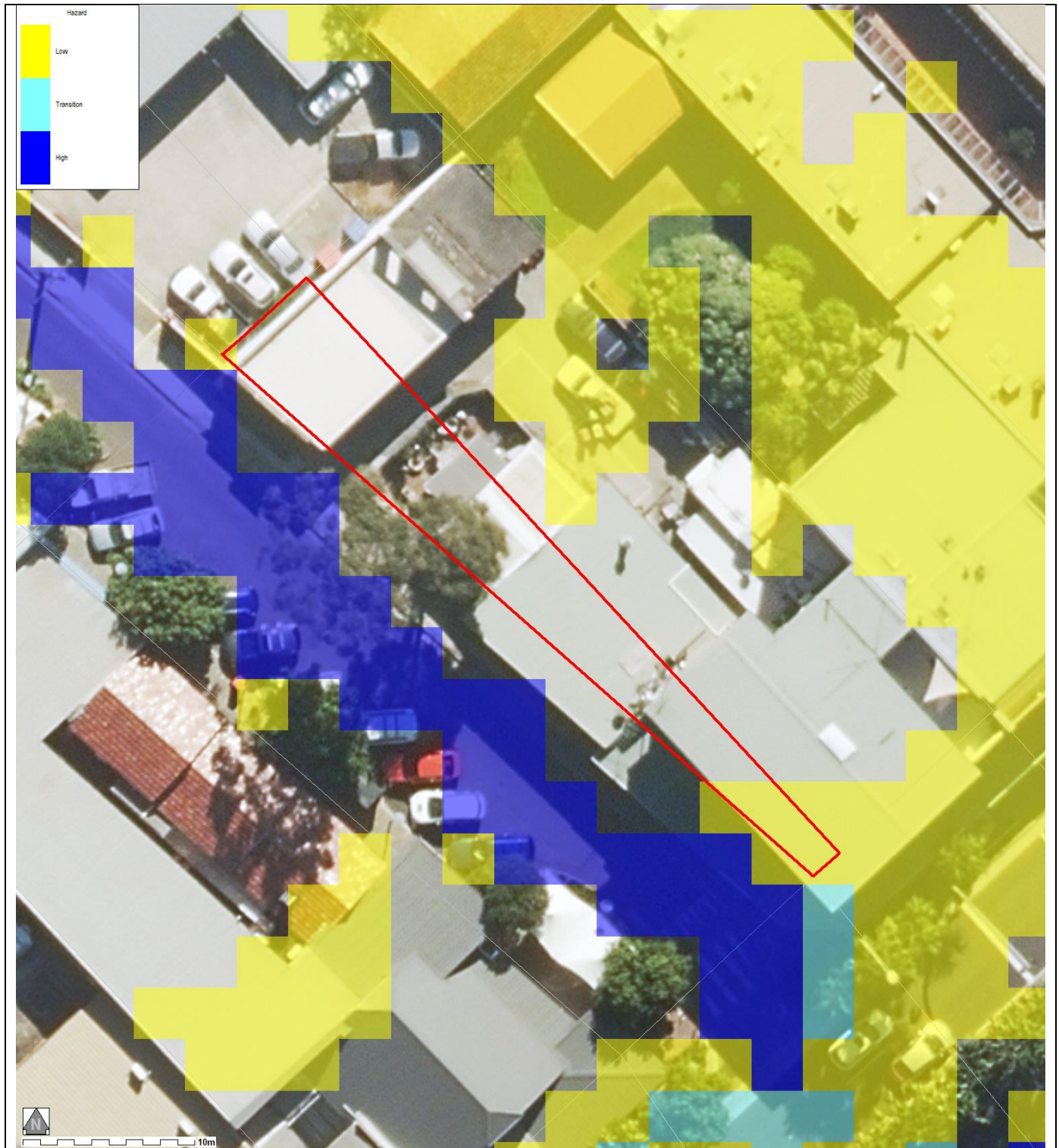
## FLOOD MAP D: PMF EXTENT MAP



### 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

# FLOOD MAP E: 1% AEP FLOOD HAZARD 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

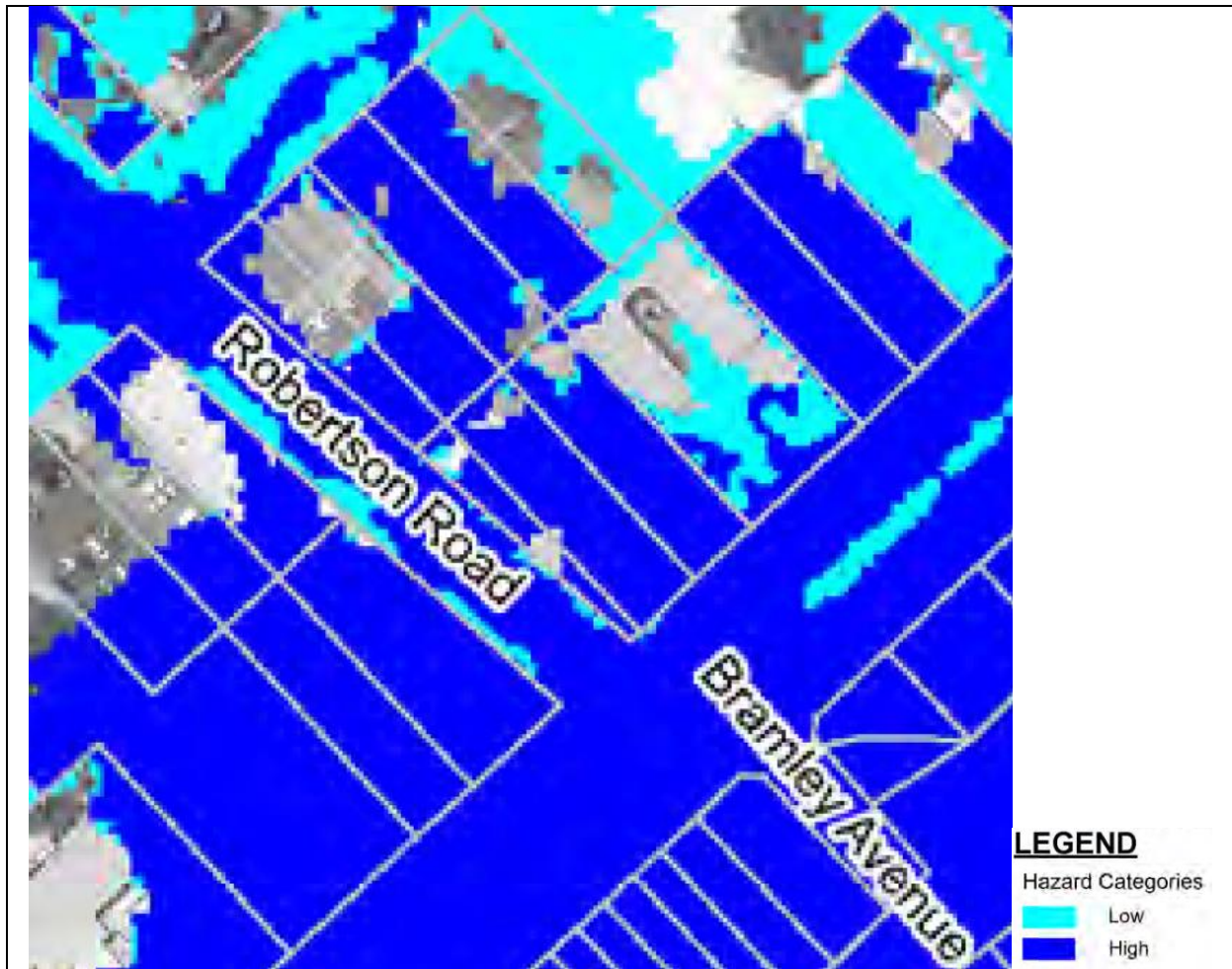
# FLOOD MAP F: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



## 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

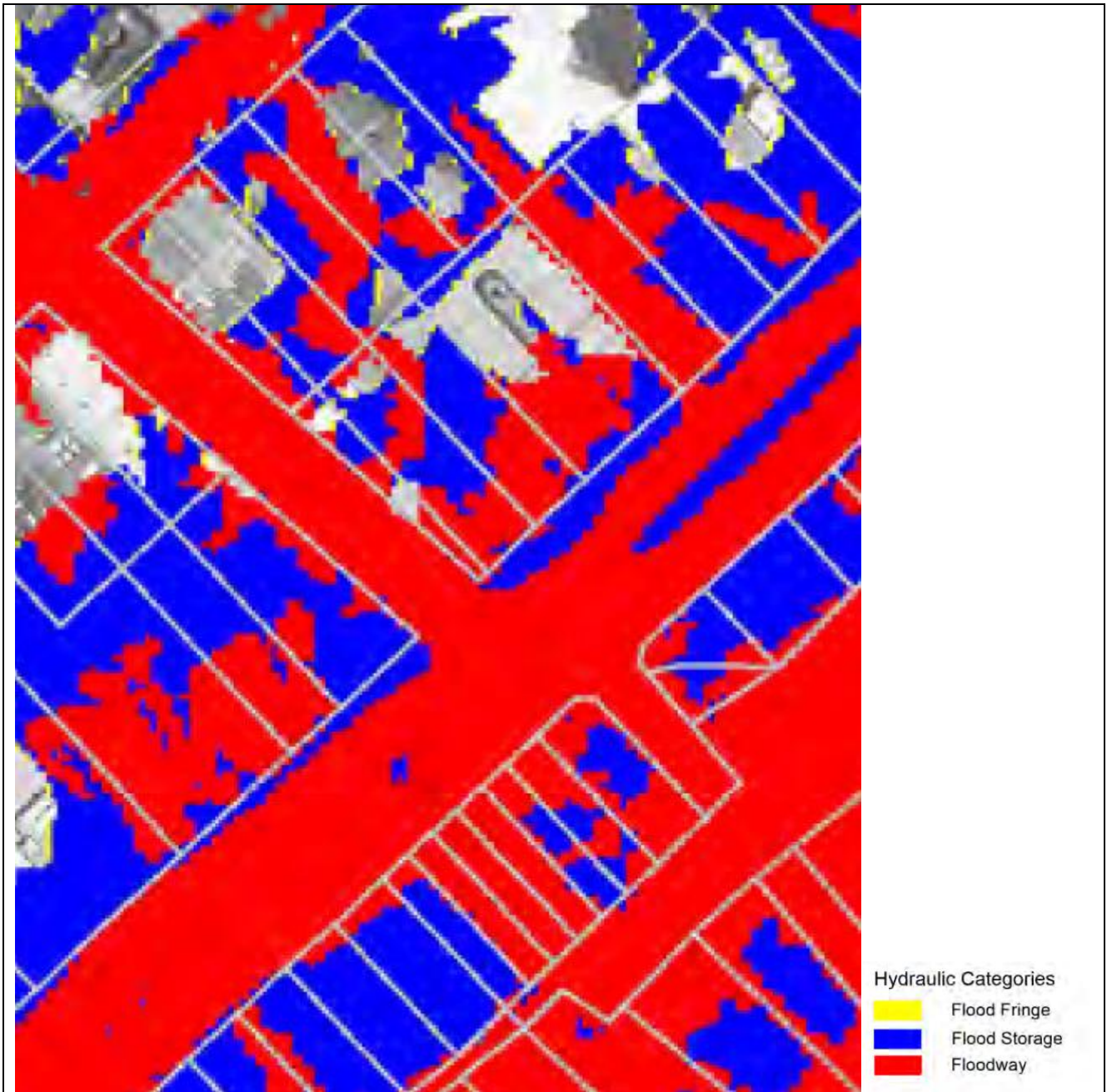
# FLOOD MAP G: PMF FLOOD HAZARD EXTENT MAP



## Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event
- 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

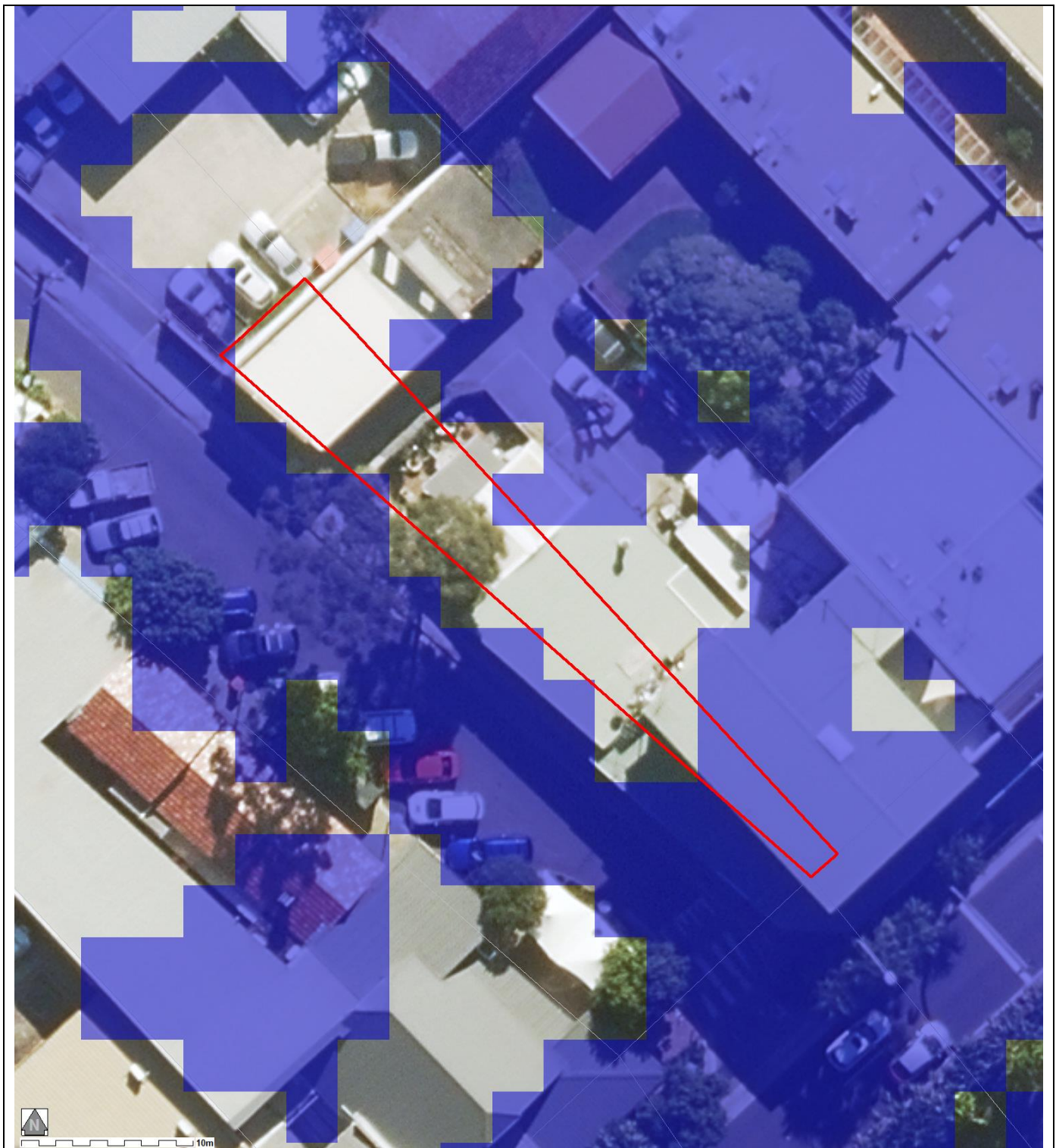
# FLOOD MAP H: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

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

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

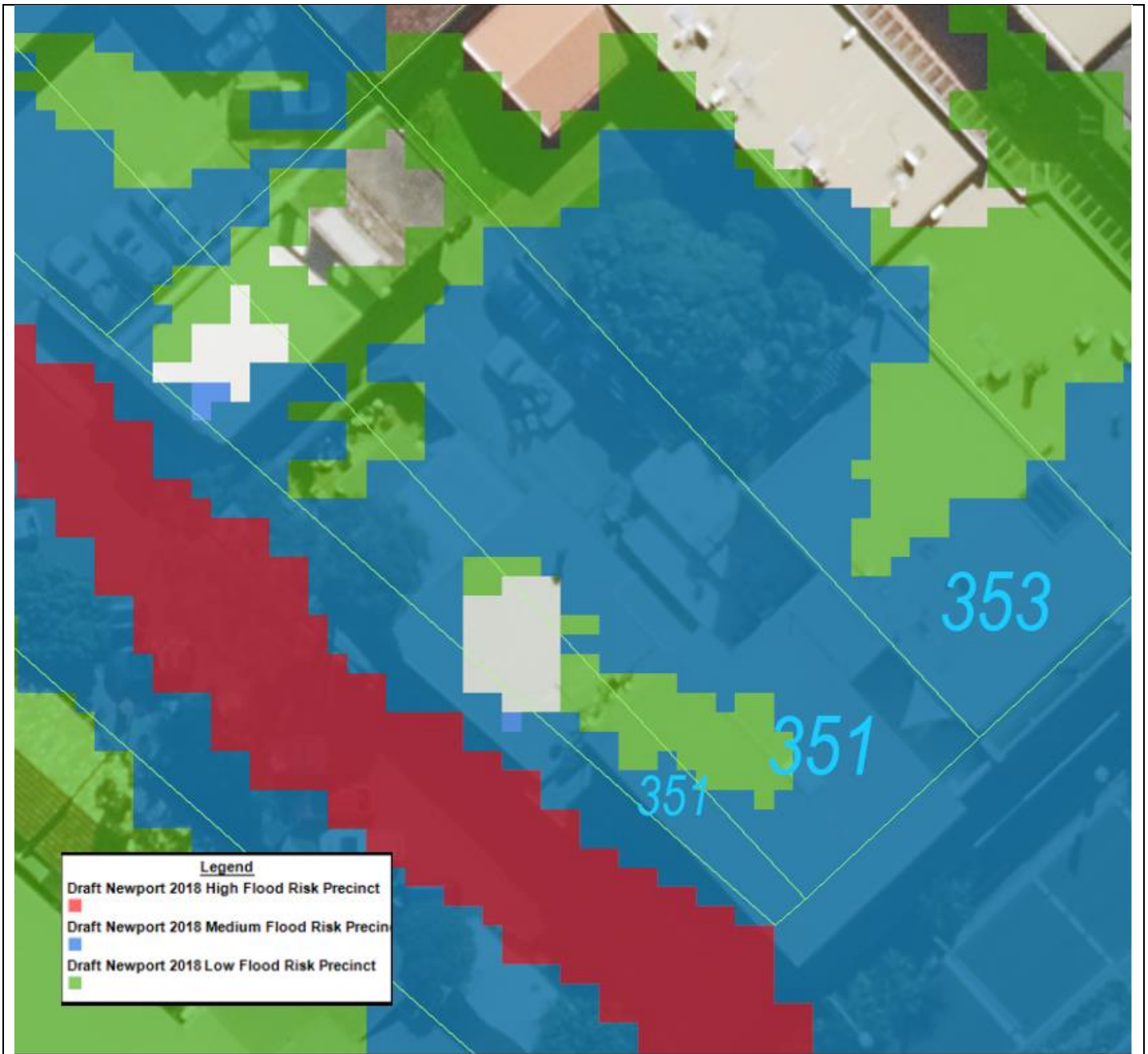


**Note:**

- 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only



# FLOOD MAP J: 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 and or H6 Life Hazard Classification).
- Does not include climate change

# MAP K: 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  $\pm 0.2\text{m}$  vertically and  $\pm 0.15\text{m}$  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.

# **GUIDELINES for Preparing a Flood Management Report**

## **Introduction**

These guidelines are intended to provide advice to applicants on preparing a Flood Management Report. The purpose of a Flood Management Report is to help applicants measure and manage the flood risk to life and property on their site.

## **When is a Flood Management Report required?**

A Flood Management Report must be submitted with any Development Application on flood prone land, for Council to consider the potential flood impacts and 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.

Note that the flood extents shown on the mapping are indicative only. It is recommended that flood levels are compared to registered ground survey to more accurately determine the flood extent.

There are some circumstances where a 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 Flood Planning Level 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 in a Flood Management Report?**

The aim of a Flood Management Report is to demonstrate how a proposed development will comply with the flood related 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.

## **Technical requirements of a Flood Management Report**

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

### **1. Description of development**

The description of development should identify:

- 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, ie, critical, vulnerable, subdivision, residential, business, industrial, recreational, environmental or concessional

### **2. Flood analysis**

The flood analysis should include:

- Predicted 1 in 100 year flood level
- Flood Planning Level (FPL)
- Probable Maximum Flood (PMF) level
- Flood Risk Precinct, ie High, Medium or Low
- Flood Life Hazard Category (in former Pittwater Council area only)
- Mapping of relevant extents
- Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the impact these have on the proposed development

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

### 3. Assessment of impacts

The assessment of impacts should address the various elements of the relevant LEP and DCP. A simple compliance table should be provided, similar to the table one below.

	Compliance		
	Not Applicable	Yes	No
A Flood effects caused by Development			
B Drainage Infrastructure & Creek Works			
C Building Components & Structural			
D Storage of Goods			
E Flood Emergency Response			
F Floor Levels			
G Car Parking			
H Fencing			
I Pools			

Further details of what is required for each of these categories can be found in the *Development Control Plan for Flood Prone Land*.

For any of these categories which are applicable, the assessment should demonstrate how the development complies, or if it doesn't, provide an explanation of why the development should still be considered.

#### Reporting requirements for a Flood Management Report

The Flood Management Report should include:

- a) Executive summary
- b) Location plan, at an appropriate scale, that includes geographical features, street names and identifies all waterways and Council stormwater pipes, pits and easements
- c) Plan of the proposed development site showing the extent of the predicted 100 year, any high hazard or floodway conditions and the PMF flood event
- d) Development recommendations and construction methodologies
- e) Calculation formulae (particularly for flood storage)
- f) Clear referencing using an accepted academic referencing system (eg. Harvard)
- g) Analysis of development against relevant State Environmental Planning Policies
- h) Analysis of development against relevant Local Environment Plan and Policies
- i) Conclusion detailing key points
- j) Standard Hydraulic Certification (Form A/A1)
- k) Qualifications of author
- l) Any flood advice provided by Council
- m) Any other details which may be relevant

#### NOTE: 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 Australian Institute of Engineers.

For further information please contact Stormwater and Floodplain Team on 1300 434 434 or via email at [floodplain@northernbeaches.nsw.gov.au](mailto:floodplain@northernbeaches.nsw.gov.au)

# Attachment A

## NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: \_\_\_\_\_

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, \_\_\_\_\_ on behalf of \_\_\_\_\_  
(Insert Name) (Trading or Business/ Company Name)

on this the \_\_\_\_\_ certify that I am engineer or a  
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least \$2 million.

### ***Flood Management Report Details:***

Report Title: .....

Report Date: .....

Author: .....

Author's Company/Organisation: .....

I: \_\_\_\_\_  
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

have followed Council's Guidelines for Preparing a Flood Management Report

have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature .....

Name .....



## FLOOD INFORMATION REQUEST – COMPREHENSIVE

**Property:** Lot 65, 351 Barrenjoey Rd, Newport

**Lot DP:** 65/5/6248

**Issue Date:** 17/07/2019

**Flood Study Reference:** Draft Newport Flood Study 2019 and Pittwater Overland Flow Study 2013

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### **Flood Information for lot:**

#### **Flood Life Hazard Category – See Map A**

#### **1% AEP – See Flood Map B**

**1% AEP Maximum Water Level<sup>3</sup>:** 6.96 mAHD

**1% AEP Maximum Peak Depth from natural ground level<sup>3</sup>:** 0.22 m

**1% AEP Maximum Velocity:** 0.72 m/s

**1% AEP Provisional Flood Hazard:** Low **See Flood Map E**

**1% AEP Hydraulic Categorisation:** Flood Storage **See Flood Map F**

#### **Flood Planning Area – See Flood Map C**

**Flood Planning Level (FPL) <sup>1, 2, 3 & 4</sup>:** See Table: Map C Flood Levels

#### **Probable Maximum Flood (PMF) – See Flood Map D**

**PMF Maximum Water Level<sup>2</sup>:** 7.30 m AHD

**PMF Maximum Depth from natural ground level:** 1.09 m

**PMF Maximum Velocity:** 1.43 m/s

**PMF Flood Hazard:** High **See Flood Map G**

**PMF Hydraulic Categorisation:** Floodway **See Flood Map H**

## **Flooding with Climate Change (See Flood Map I)**

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

**1% AEP Maximum Water Level with Climate change<sup>1&3</sup>: 6.99 m AHD**

**1% AEP Maximum Depth with Climate Change<sup>3</sup>: 0.26 m**

**1% AEP Maximum Velocity with Climate Change<sup>3</sup>: 0.81 m/s**

## **Flood Risk Precinct – See Map J**

## **Indicative Ground Surface Spot Heights – See Map K**

<sup>1</sup>The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.

<sup>2</sup>Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/flood planning levels across the site.

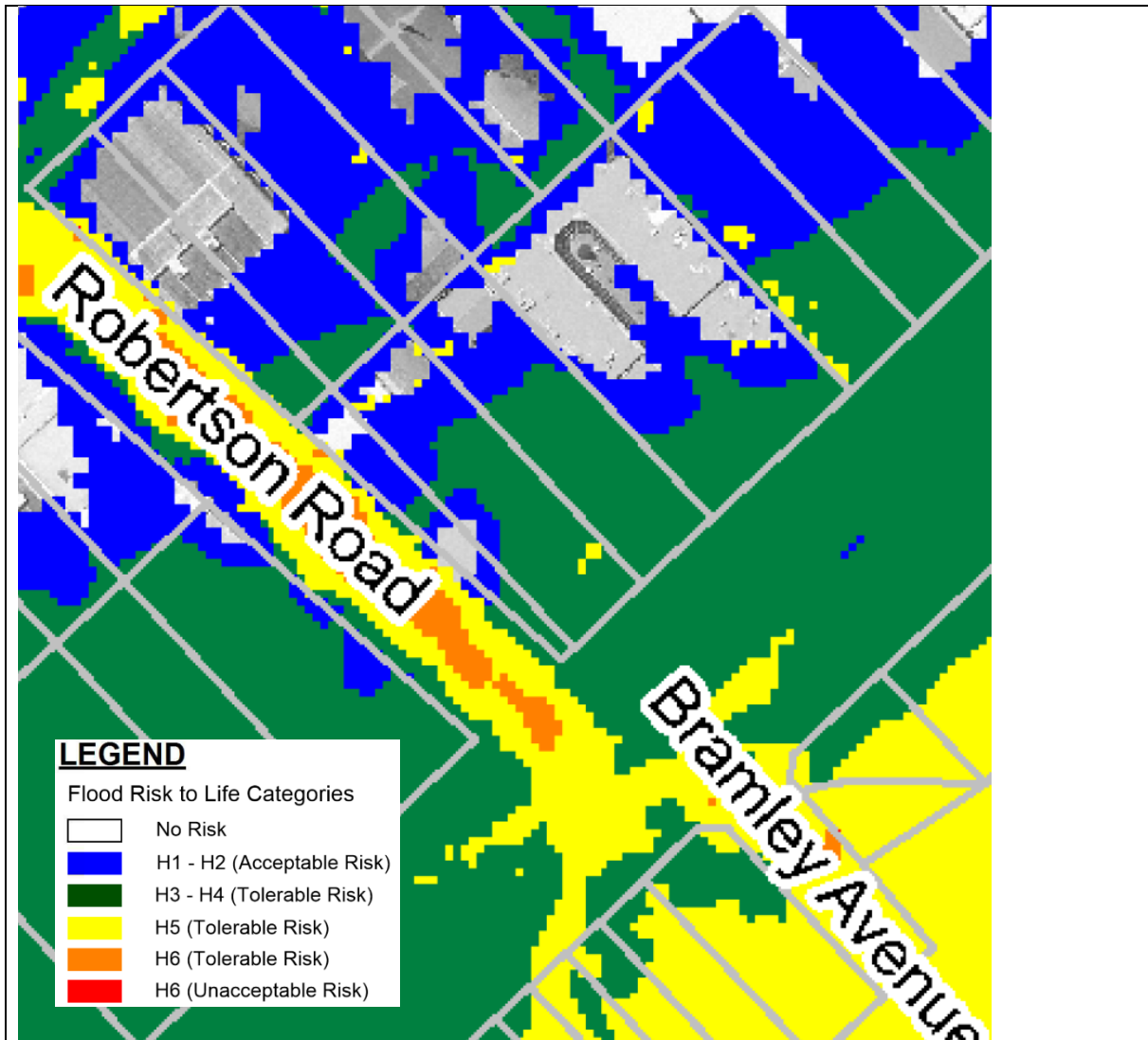
<sup>3</sup>Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

<sup>4</sup>Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or Flood Planning Level

### **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 LIFE HAZARD CATEGORY



Notes:

- Refer to 'Flood Emergency Response Planning for Development in Pittwater Policy for additional information on the Flood Life Hazard Categories and Pittwater 21 DCP Control B3.25.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.



# FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) 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 AHD)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	5.11	0.19	5.14	0.22	0.31	5.64	6.00	1.09	0.62
2	5.11	0.16	5.14	0.19	0.46	5.64	6.00	1.06	0.86
3	N/A	N/A	5.73	0.15	0.57	6.23	6.01	0.44	1.02
4	N/A	N/A	6.11	0.16	0.51	6.61	6.31	0.36	0.98
5	N/A	N/A	6.09	0.15	0.48	6.59	6.30	0.36	0.97
6	6.55	0.16	6.57	0.18	0.66	7.07	6.78	0.39	1.13
7	6.94	0.15	6.96	0.17	0.61	7.46	7.18	0.39	1.15

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)

<b>ID</b>	<b>CC 1% AEP Max WL (m AHD)</b>	<b>CC1 % AEP Max Depth (m)</b>
<b>1</b>	5.17	0.26
<b>2</b>	5.18	0.23
<b>3</b>	5.75	0.18
<b>4</b>	6.13	0.18
<b>5</b>	6.12	0.18
<b>6</b>	6.60	0.21
<b>7</b>	6.99	0.20

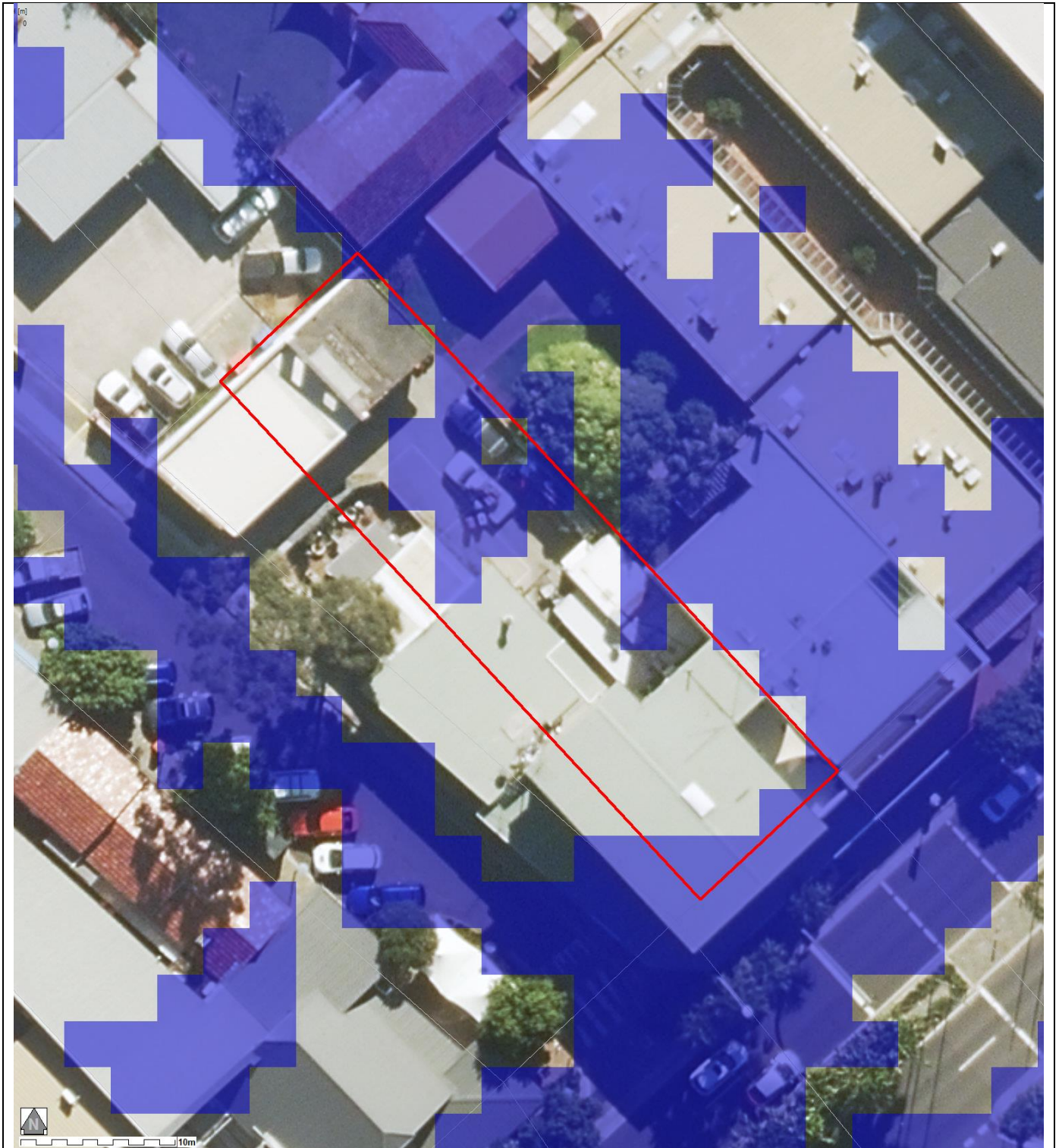
A variable Flood Planning Level might apply - 0.5m above 1% AEP max water level (for Mainstream flooding) or 0.5m above the 1% AEP max water level flow path extent with depth greater than 0.3m and 0.3m above the 1% AEP max water level flow path with depth 0.3m and less (for overland flow)

WL – Water Level

PMF – Probable Maximum Flood

N/A = no peak water level/depth/velocity available in flood event.

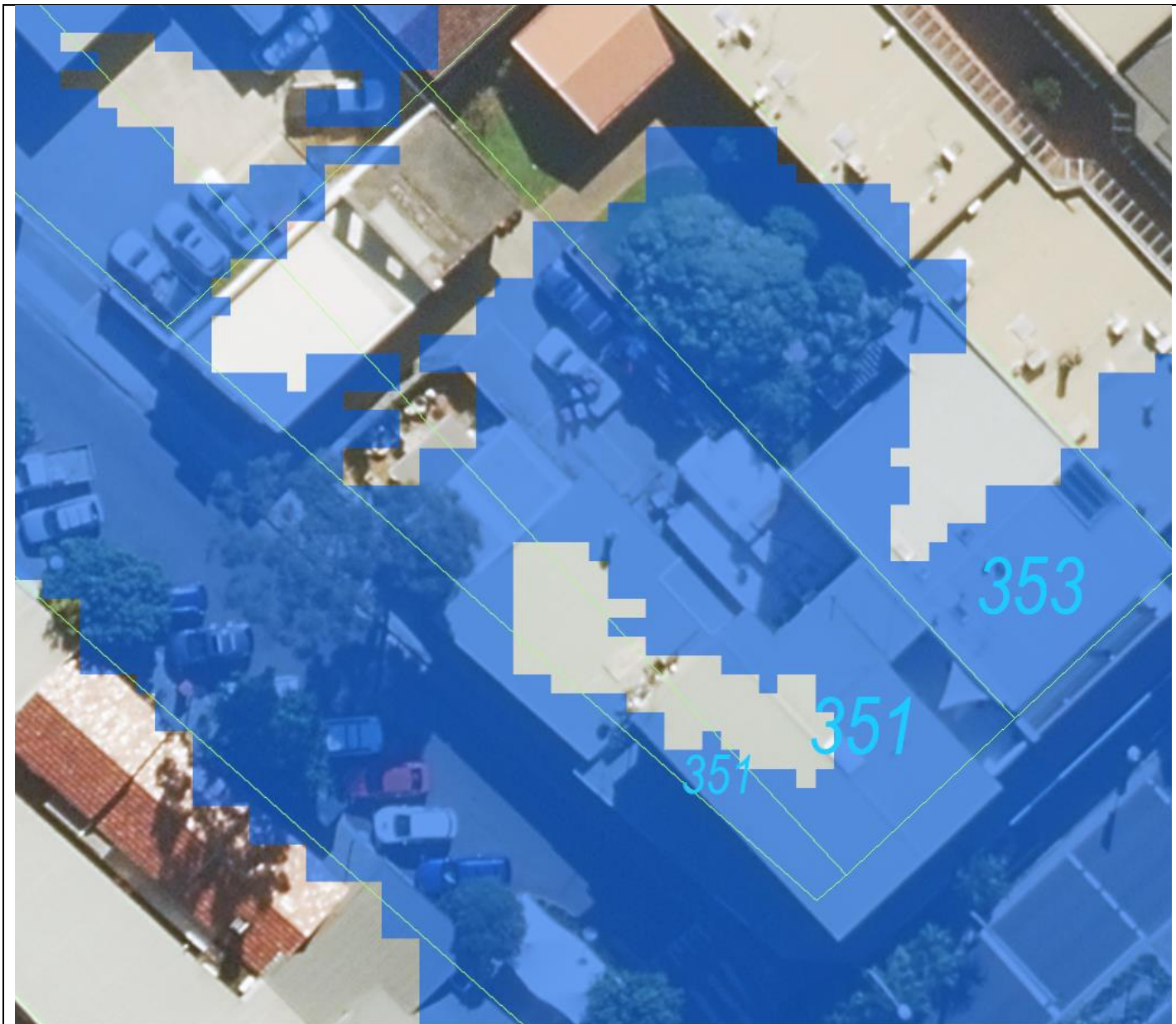
## FLOOD MAP B: FLOODING - 1% AEP EXTENT



### 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: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

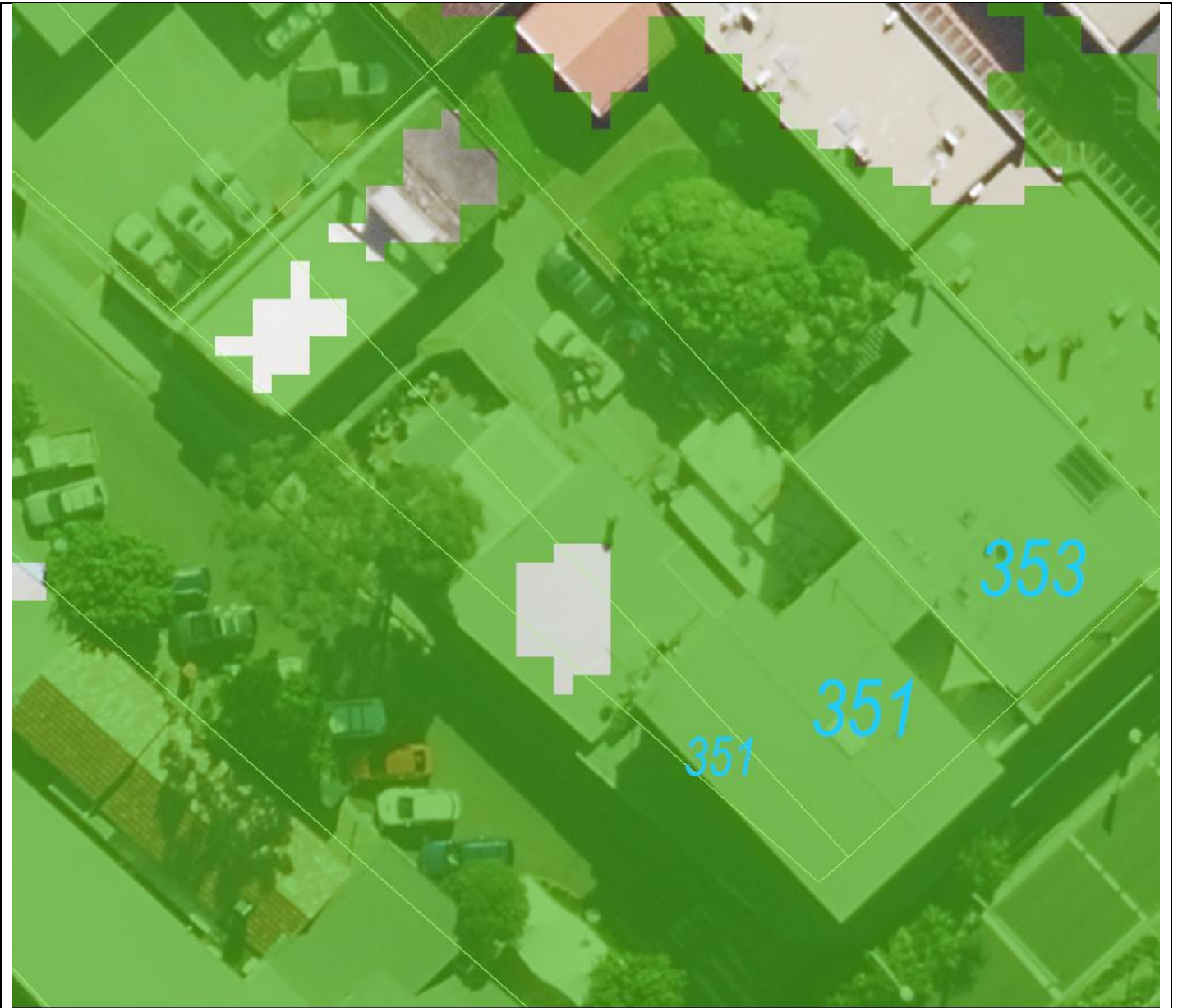
## FLOOD MAP C: FLOOD PLANNING AREA EXTENT



### Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

## FLOOD MAP D: PMF EXTENT MAP



### Notes:

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

# FLOOD MAP E: 1% AEP FLOOD HAZARD EXTENT MAP



## Notes:

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# FLOOD MAP F: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP

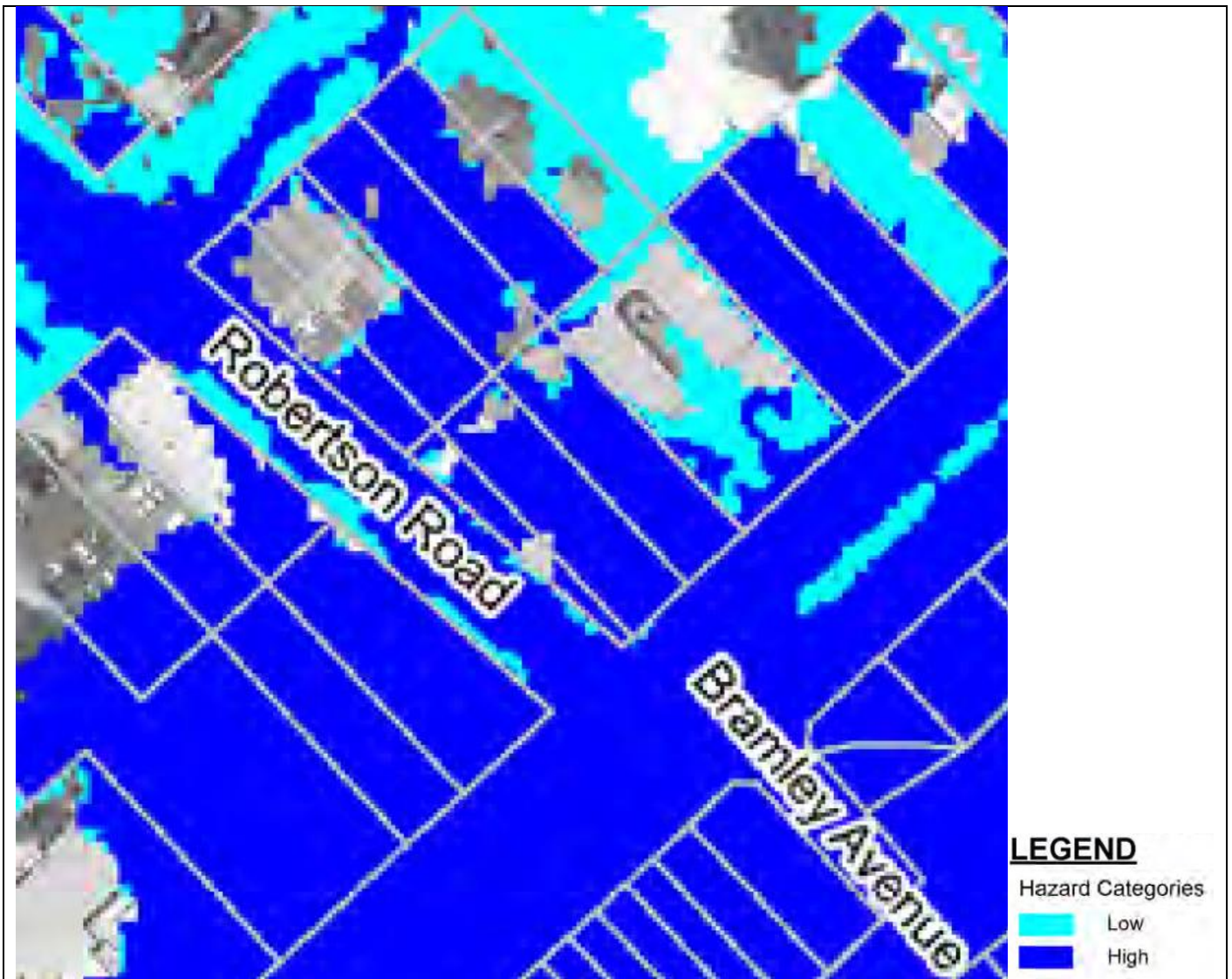


## Notes:

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- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only



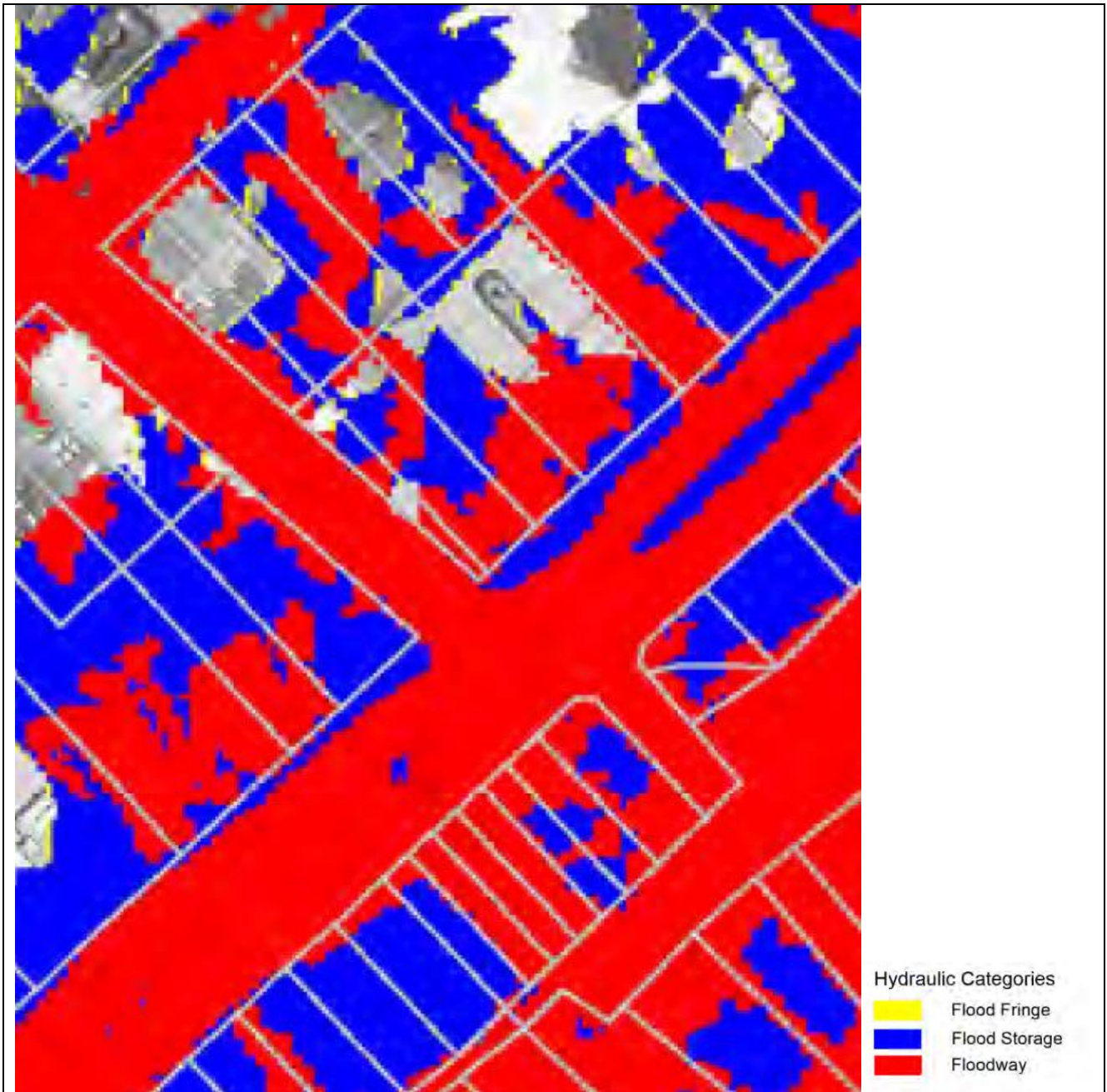
## FLOOD MAP G: PMF FLOOD HAZARD EXTENT MAP



### Notes:

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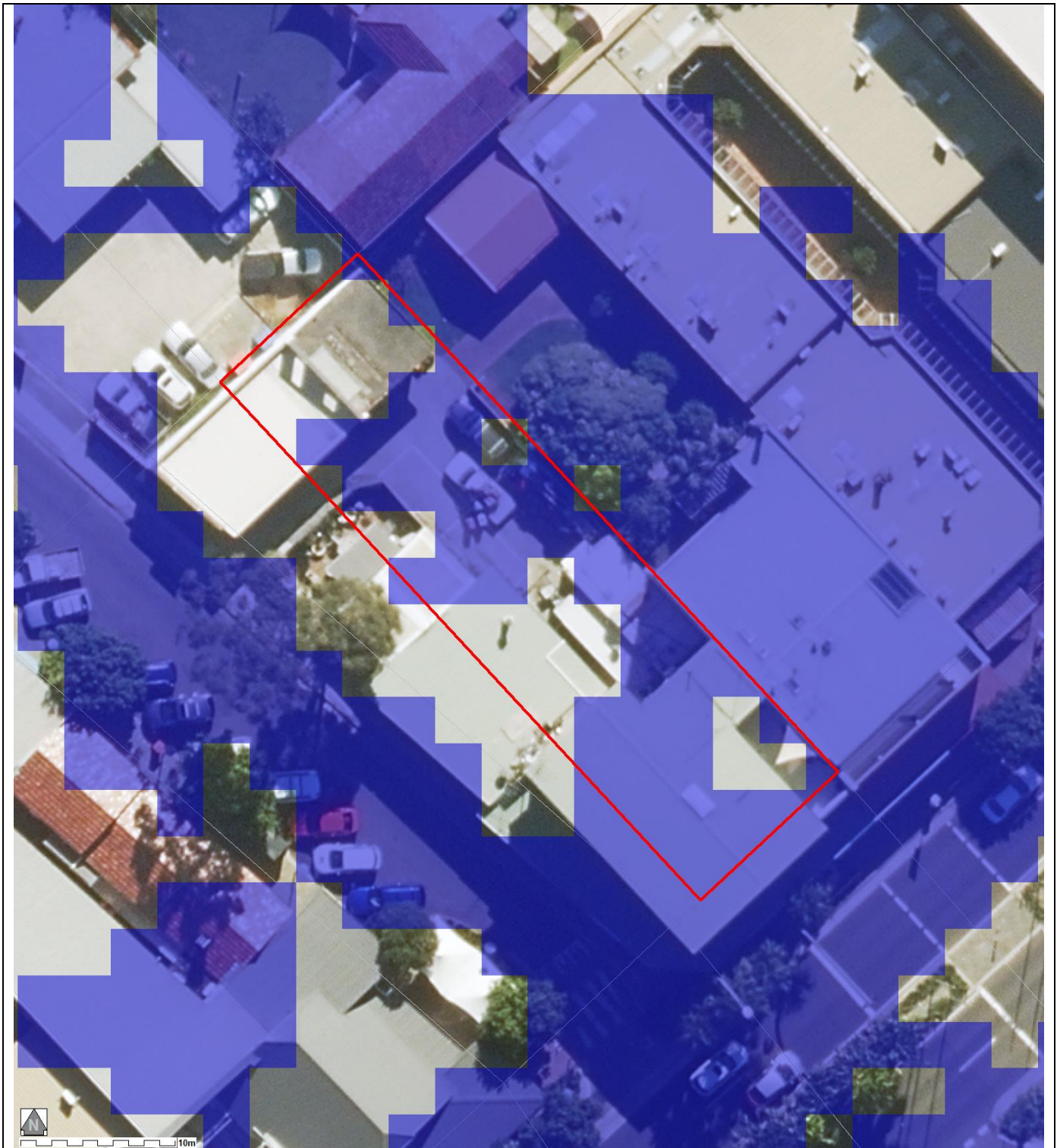
# FLOOD MAP H: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



## Notes:

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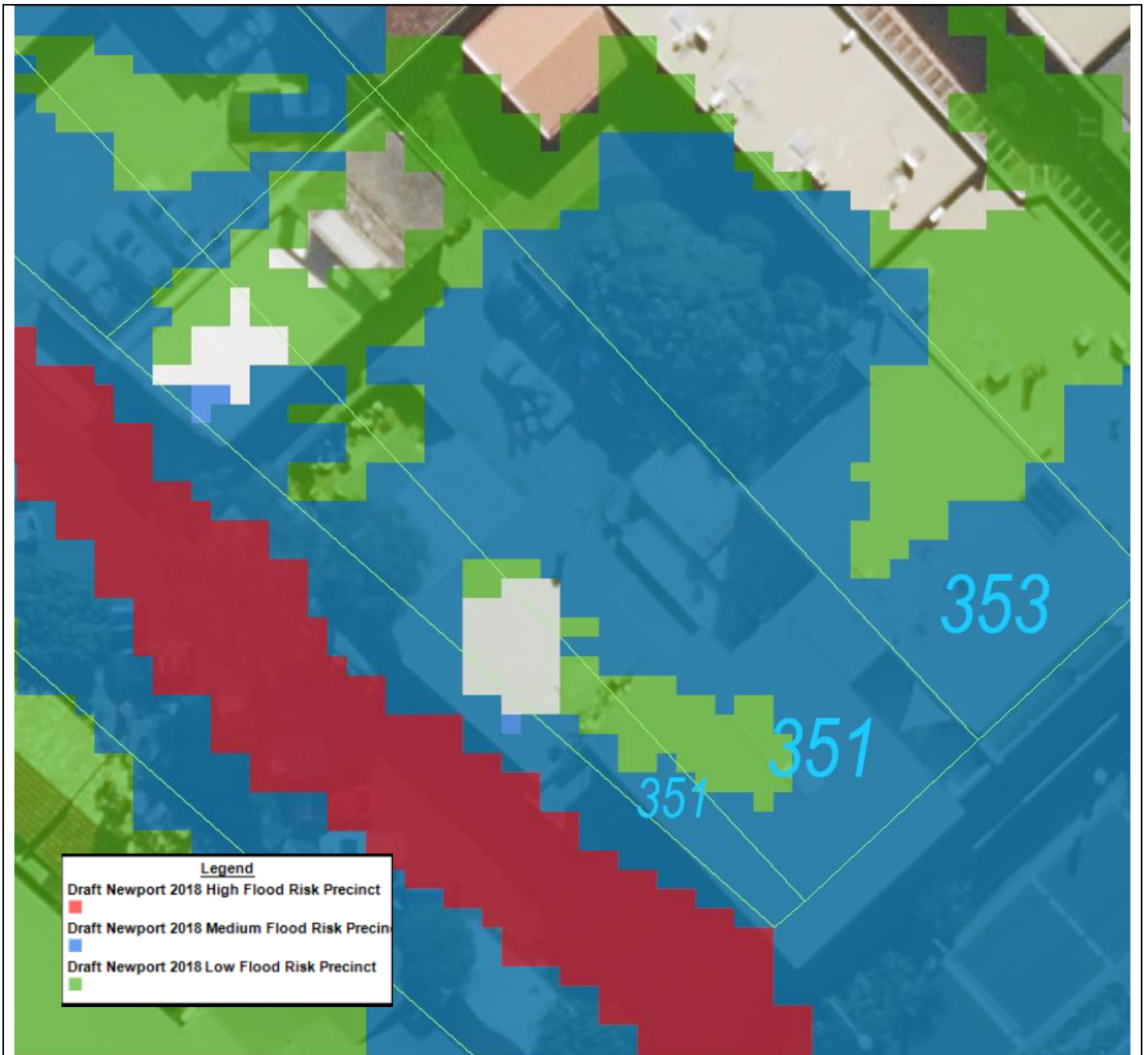
# FLOOD MAP I: FLOODING – 1% AEP EXTENT PLUS CLIMATE CHANGE



**Note:**

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- Flood events exceeding the 1% AEP can occur on this site.
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# FLOOD MAP J: FLOOD RISK PRECINCT MAP



## Notes:

- **Low Flood Risk precinct** means all flood prone land not identified within the High or Medium flood risk precincts.
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- Does not include climate change

# MAP K: INDICATIVE GROUND SURFACE SPOT HEIGHTS



## Notes:

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- Accuracy is generally within  $\pm 0.2\text{m}$  vertically and  $\pm 0.15\text{m}$  horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
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# **GUIDELINES for Preparing a Flood Management Report**

## **Introduction**

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## **When is a Flood Management Report required?**

A Flood Management Report must be submitted with any Development Application on flood prone land, for Council to consider the potential flood impacts and 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.

Note that the flood extents shown on the mapping are indicative only. It is recommended that flood levels are compared to registered ground survey to more accurately determine the flood extent.

There are some circumstances where a 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 Flood Planning Level 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 in a Flood Management Report?**

The aim of a Flood Management Report is to demonstrate how a proposed development will comply with the flood related 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.

## **Technical requirements of a Flood Management Report**

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

### **1. Description of development**

The description of development should identify:

- 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, ie, critical, vulnerable, subdivision, residential, business, industrial, recreational, environmental or concessional

### **2. Flood analysis**

The flood analysis should include:

- Predicted 1 in 100 year flood level
- Flood Planning Level (FPL)
- Probable Maximum Flood (PMF) level
- Flood Risk Precinct, ie High, Medium or Low
- Flood Life Hazard Category (in former Pittwater Council area only)
- Mapping of relevant extents
- Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the impact these have on the proposed development

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

### 3. Assessment of impacts

The assessment of impacts should address the various elements of the relevant LEP and DCP. A simple compliance table should be provided, similar to the table one below.

	Compliance		
	Not Applicable	Yes	No
A Flood effects caused by Development			
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C Building Components & Structural			
D Storage of Goods			
E Flood Emergency Response			
F Floor Levels			
G Car Parking			
H Fencing			
I Pools			

Further details of what is required for each of these categories can be found in the *Development Control Plan for Flood Prone Land*.

For any of these categories which are applicable, the assessment should demonstrate how the development complies, or if it doesn't, provide an explanation of why the development should still be considered.

#### Reporting requirements for a Flood Management Report

The Flood Management Report should include:

- a) Executive summary
- b) Location plan, at an appropriate scale, that includes geographical features, street names and identifies all waterways and Council stormwater pipes, pits and easements
- c) Plan of the proposed development site showing the extent of the predicted 100 year, any high hazard or floodway conditions and the PMF flood event
- d) Development recommendations and construction methodologies
- e) Calculation formulae (particularly for flood storage)
- f) Clear referencing using an accepted academic referencing system (eg. Harvard)
- g) Analysis of development against relevant State Environmental Planning Policies
- h) Analysis of development against relevant Local Environment Plan and Policies
- i) Conclusion detailing key points
- j) Standard Hydraulic Certification (Form A/A1)
- k) Qualifications of author
- l) Any flood advice provided by Council
- m) Any other details which may be relevant

#### NOTE: 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 Australian Institute of Engineers.

For further information please contact Stormwater and Floodplain Team on 1300 434 434 or via email at [floodplain@northernbeaches.nsw.gov.au](mailto:floodplain@northernbeaches.nsw.gov.au)

# Attachment A

## NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: \_\_\_\_\_

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, \_\_\_\_\_ on behalf of \_\_\_\_\_  
(Insert Name) (Trading or Business/ Company Name)

on this the \_\_\_\_\_ certify that I am engineer or a  
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least \$2 million.

### ***Flood Management Report Details:***

Report Title: .....

Report Date: .....

Author: .....

Author's Company/Organisation: .....

I: \_\_\_\_\_  
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

have followed Council's Guidelines for Preparing a Flood Management Report

have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature .....

Name .....





## FLOOD INFORMATION REQUEST – COMPREHENSIVE

**Property:** 353 Barrenjoey Rd, Newport

**Lot DP:** 66/5/6248

**Issue Date:** 22/07/2019

**Flood Study Reference:** Draft Newport Flood Study 2019 and Pittwater Overland Flow Study 2013

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### **Flood Information for lot:**

**Flood Life Hazard Category – See Map A**

**1% AEP – See Flood Map B**

**1% AEP Maximum Water Level<sup>3</sup>:** 6.99 mAHD

**1% AEP Maximum Peak Depth from natural ground level<sup>3</sup>:** 0.41 m

**1% AEP Maximum Velocity:** 0.82 m/s

**1% AEP Provisional Flood Hazard:** Low **See Flood Map E**

**1% AEP Hydraulic Categorisation:** Flood Storage **See Flood Map F**

**Flood Planning Area – See Flood Map C**

**Flood Planning Level (FPL) <sup>1, 2, 3 & 4</sup>:** See Table: Map C Flood Levels

**Probable Maximum Flood (PMF) – See Flood Map D**

**PMF Maximum Water Level<sup>2</sup>:** 7.22 m AHD

**PMF Maximum Depth from natural ground level:** 1.20 m

**PMF Maximum Velocity:** 1.25 m/s

**PMF Flood Hazard:** High **See Flood Map G**

**PMF Hydraulic Categorisation:** Floodway **See Flood Map H**

## **Flooding with Climate Change (See Flood Map I)**

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

**1% AEP Maximum Water Level with Climate change<sup>1&3</sup>: 7.02 m AHD**

**1% AEP Maximum Depth with Climate Change<sup>3</sup>: 0.44 m**

**1% AEP Maximum Velocity with Climate Change<sup>3</sup>: 0.88 m/s**

## **Flood Risk Precinct – See Map J**

## **Indicative Ground Surface Spot Heights – See Map K**

<sup>1</sup>The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.

<sup>2</sup>Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/flood planning levels across the site.

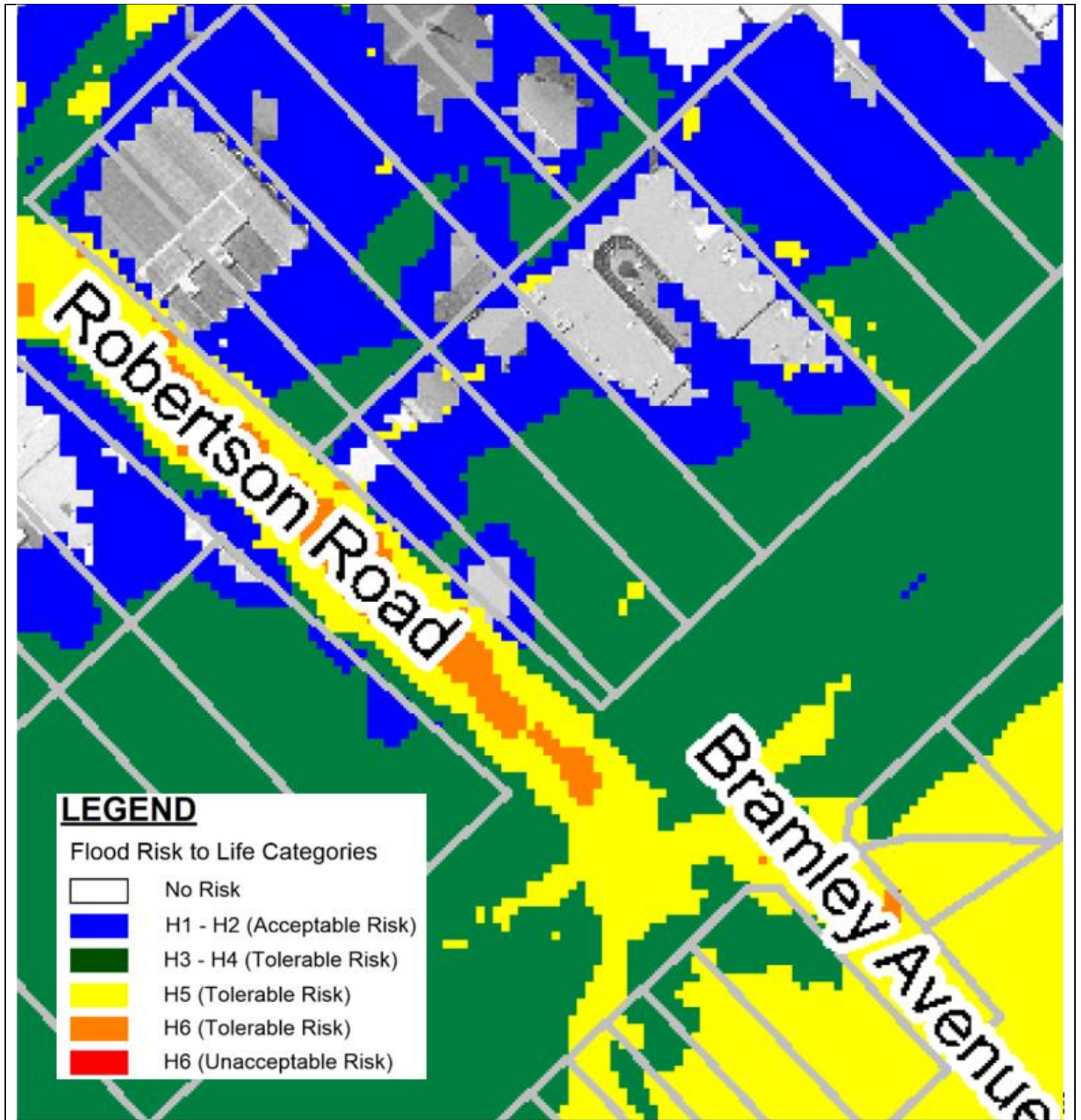
<sup>3</sup>Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

<sup>4</sup>Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or Flood Planning Level

### **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.

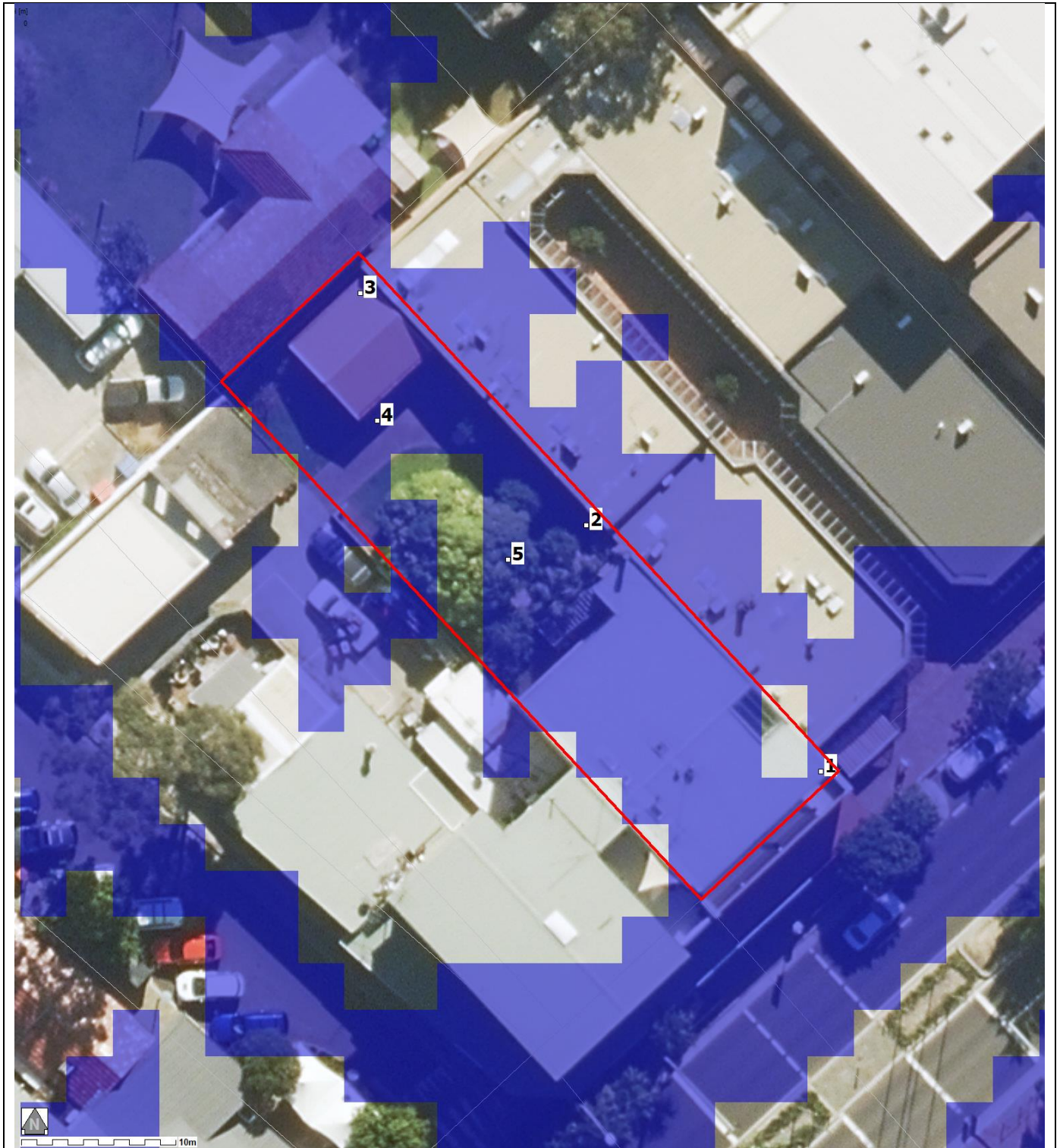
# FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY



Notes:

- Refer to 'Flood Emergency Response Planning for Development in Pittwater Policy for additional information on the Flood Life Hazard Categories and Pittwater 21 DCP Control B3.25.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

# FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) 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 (mAHD)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	N/A	N/A	5.15	0.16	0.43	5.65	6.01	1.01	0.79
2	5.90	0.16	5.92	0.18	0.66	6.42	6.12	0.38	1.07
3	6.84	0.39	6.86	0.41	0.67	7.36	7.09	0.64	1.13
4	6.59	0.17	6.61	0.19	0.72	7.11	6.81	0.39	1.20
5	N/A	N/A	5.99	0.16	0.67	6.49	6.18	0.36	1.11

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)

<b>ID</b>	<b>CC 1% AEP Max WL (m AHD)</b>	<b>CC1 % AEP Max Depth (m)</b>
<b>1</b>	5.19	0.19
<b>2</b>	5.95	0.21
<b>3</b>	6.90	0.44
<b>4</b>	6.64	0.21
<b>5</b>	6.01	0.18

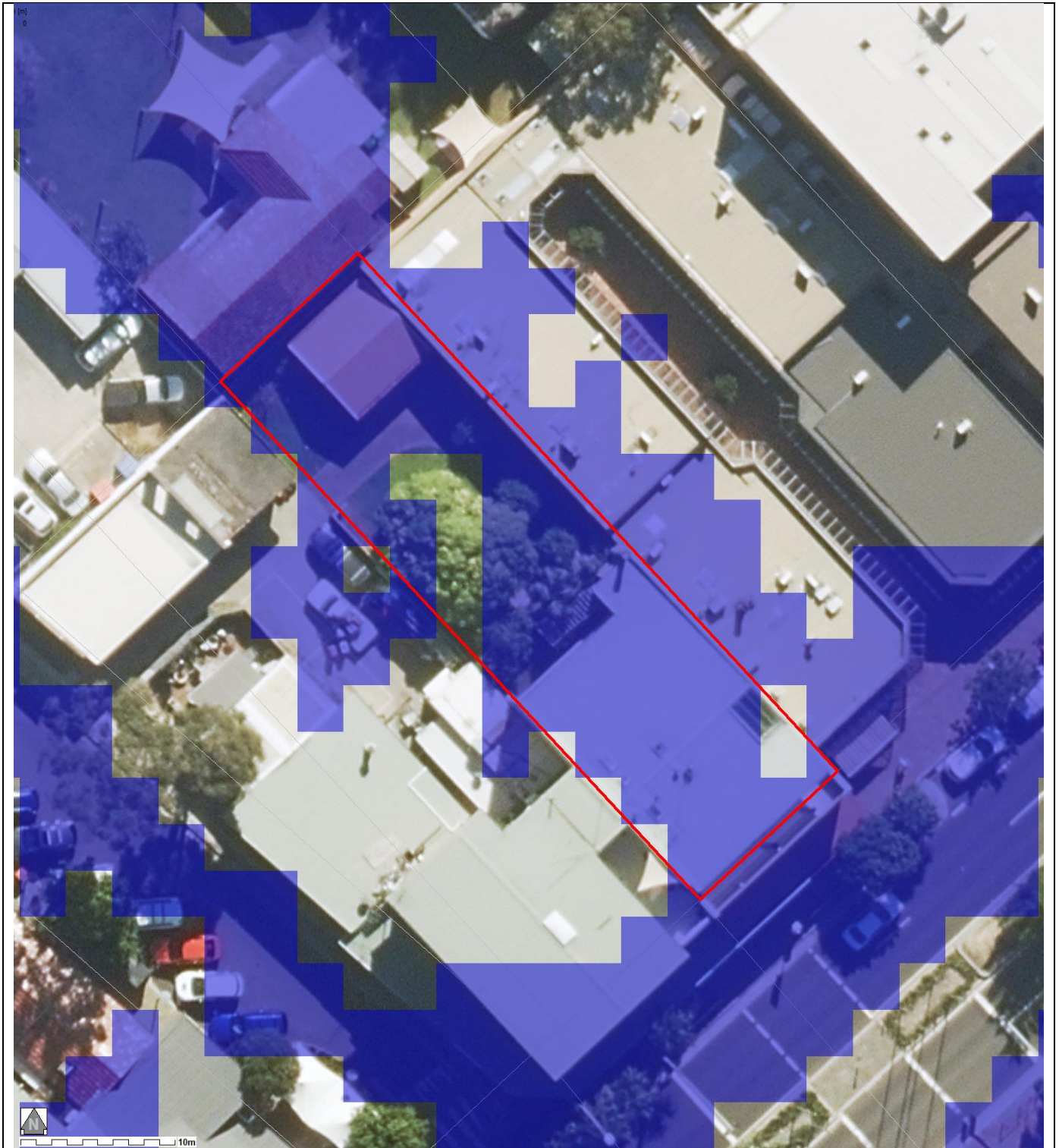
A variable Flood Planning Level might apply - 0.5m above 1% AEP max water level (for Mainstream flooding) or 0.5m above the 1% AEP max water level flow path extent with depth greater than 0.3m and 0.3m above the 1% AEP max water level flow path with depth 0.3m and less (for overland flow)

WL – Water Level

PMF – Probable Maximum Flood

N/A = no peak water level/depth/velocity available in flood event.

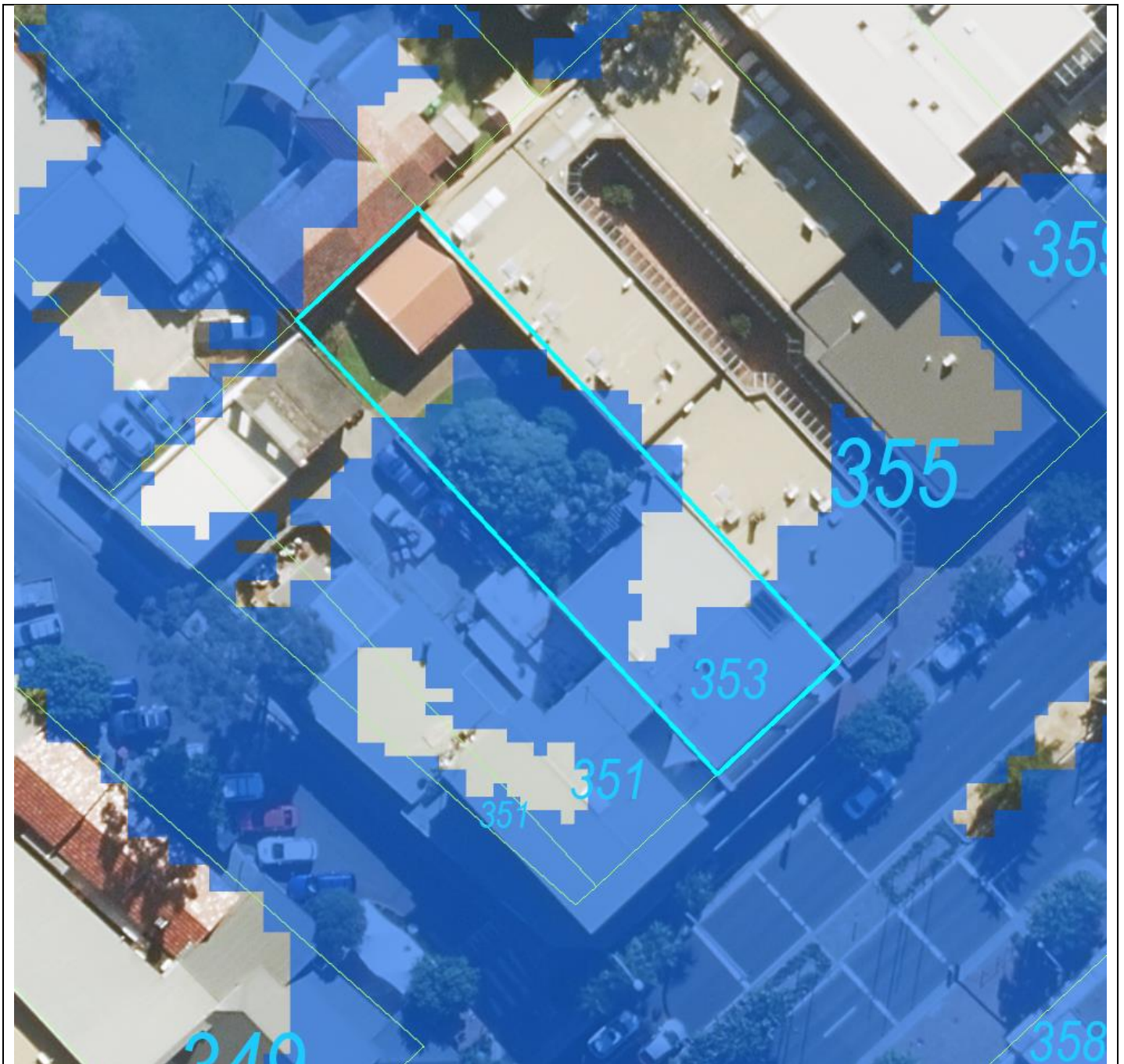
## FLOOD MAP B: FLOODING - 1% AEP EXTENT



### 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: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.

## FLOOD MAP C: FLOOD PLANNING AREA EXTENT

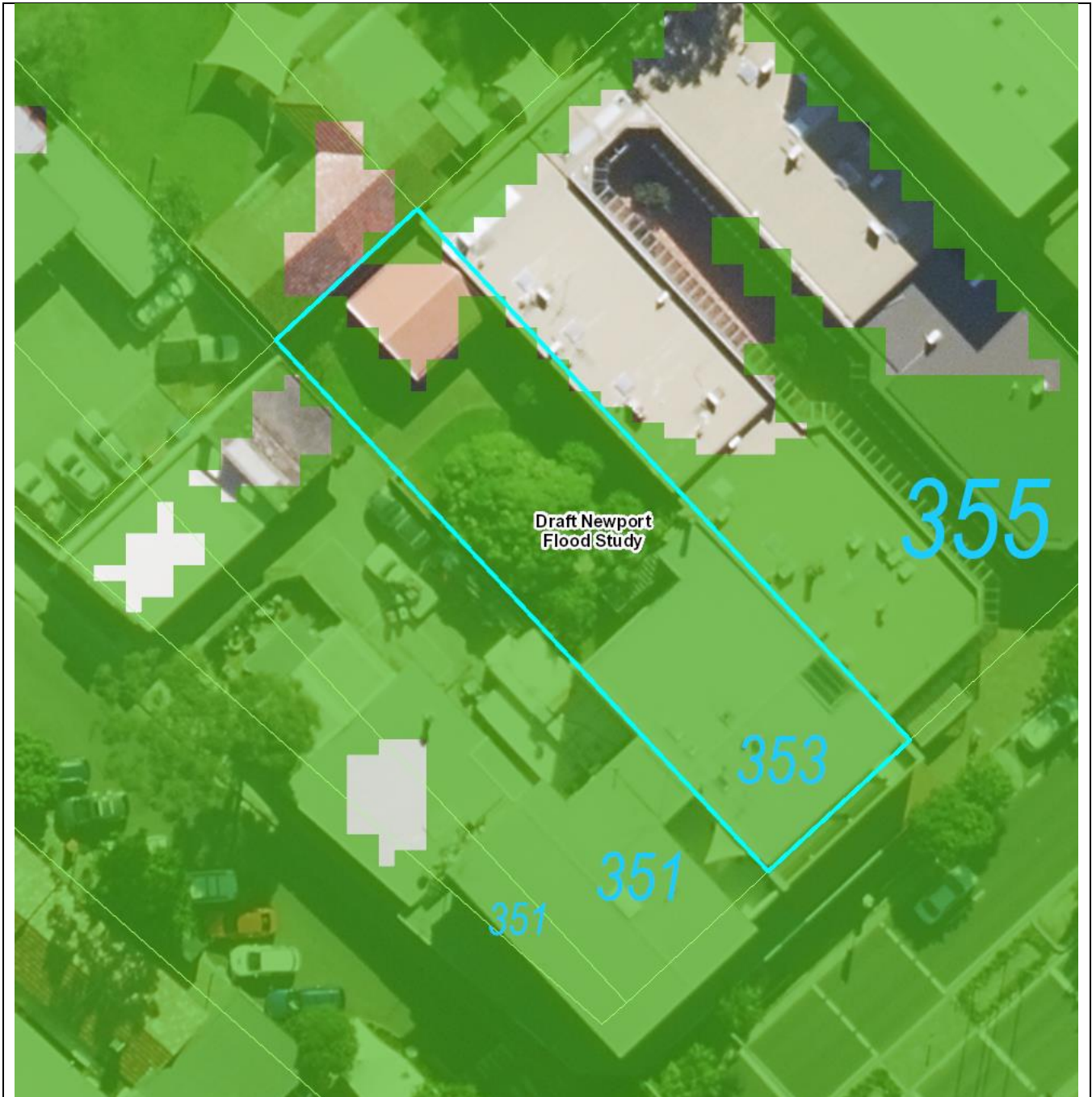


### Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Pittwater Overland Flow Study) and aerial photography (Source Near Map 2014) are indicative only.



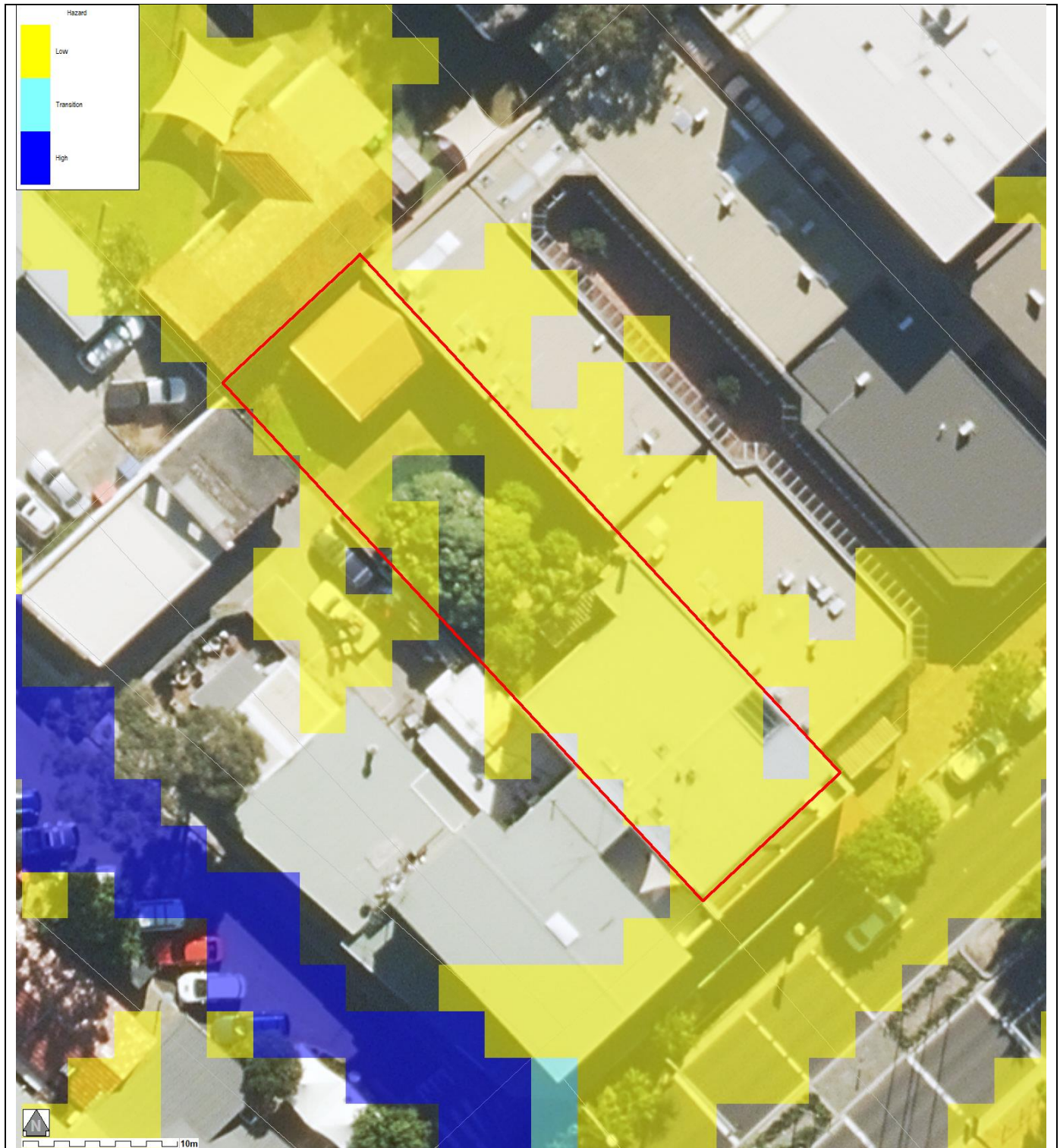
## FLOOD MAP D: PMF EXTENT MAP



### 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

# FLOOD MAP E: 1% AEP FLOOD HAZARD 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

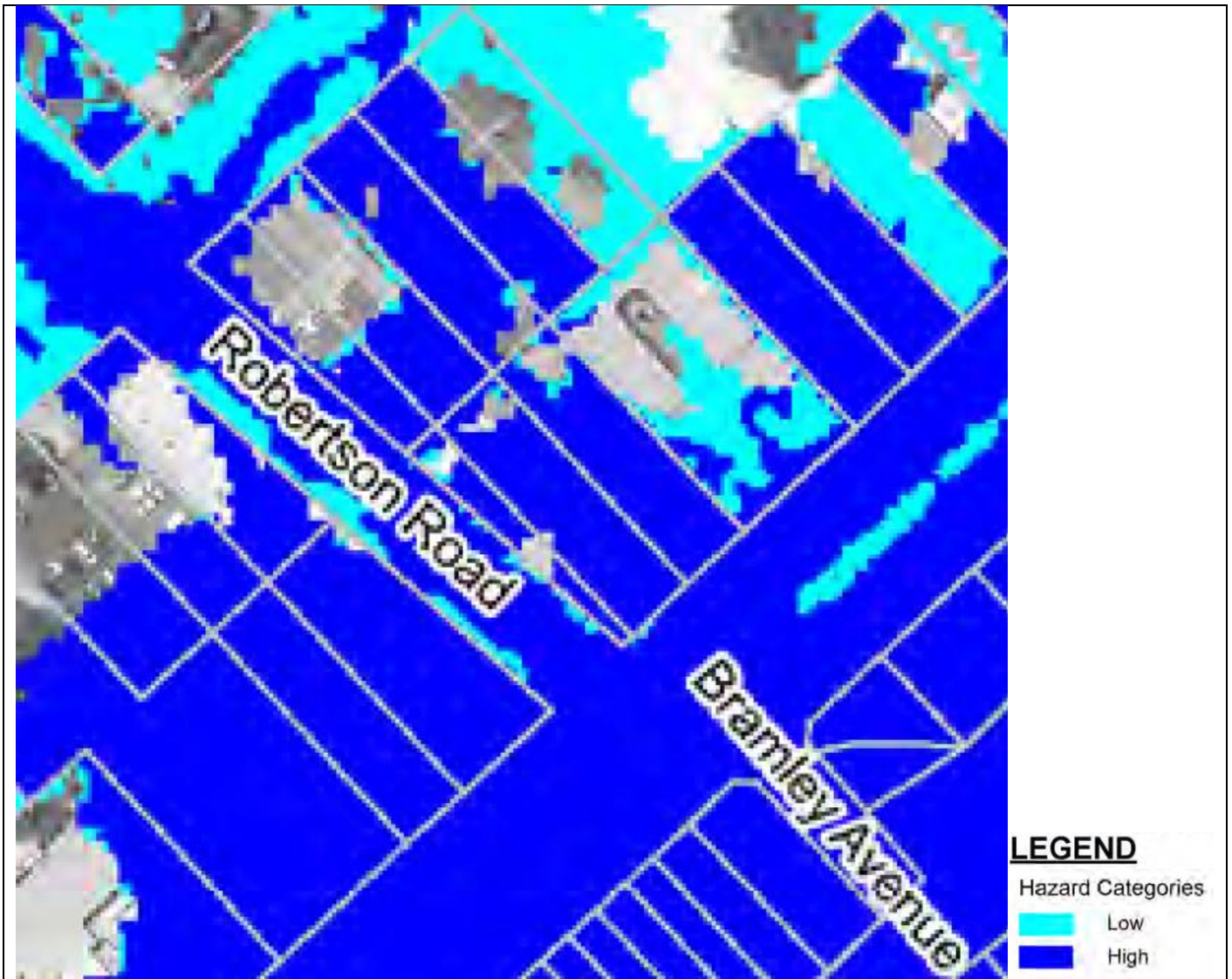
# FLOOD MAP F: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

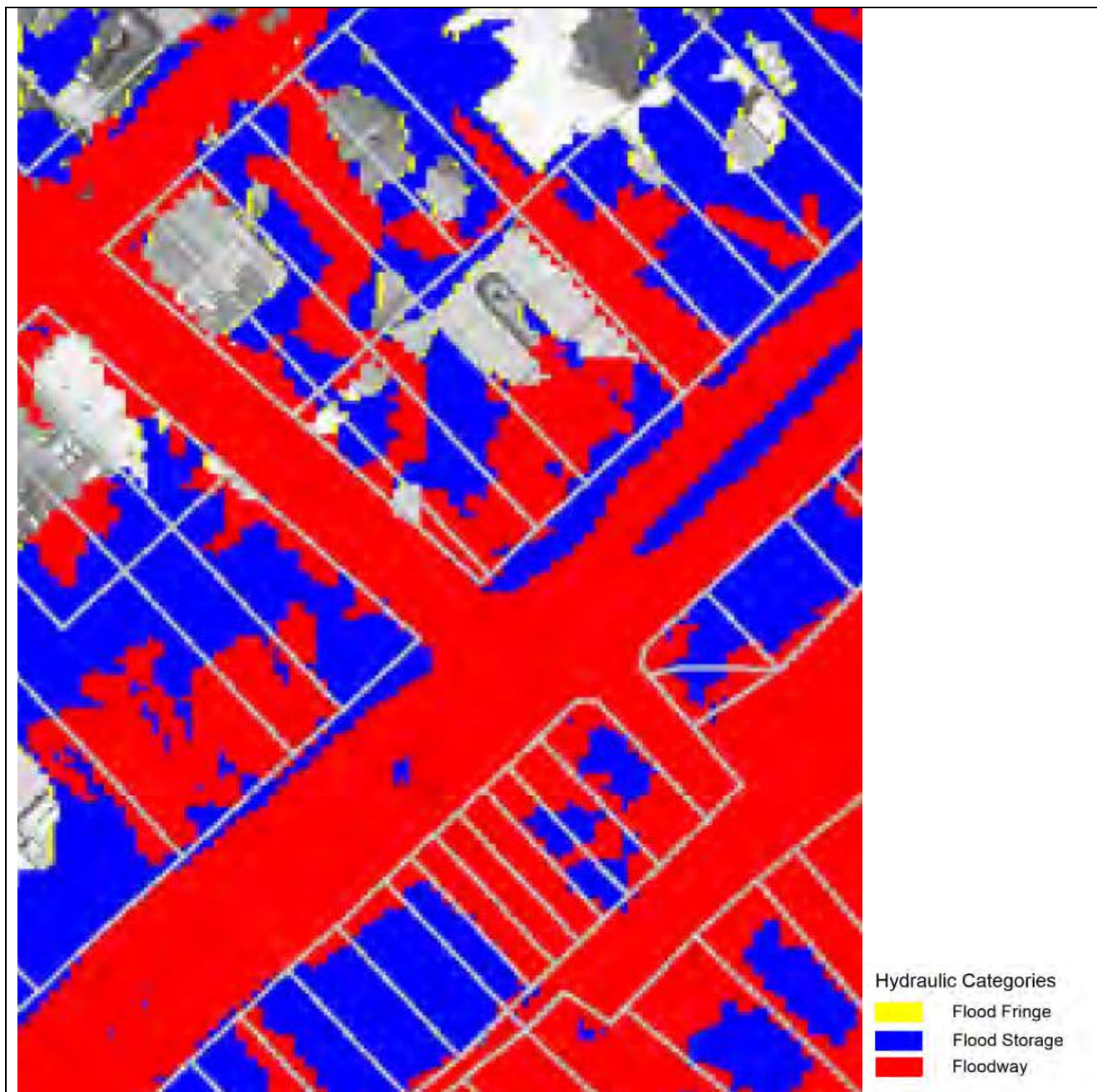
# FLOOD MAP G: PMF FLOOD HAZARD EXTENT MAP



## Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event
- 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

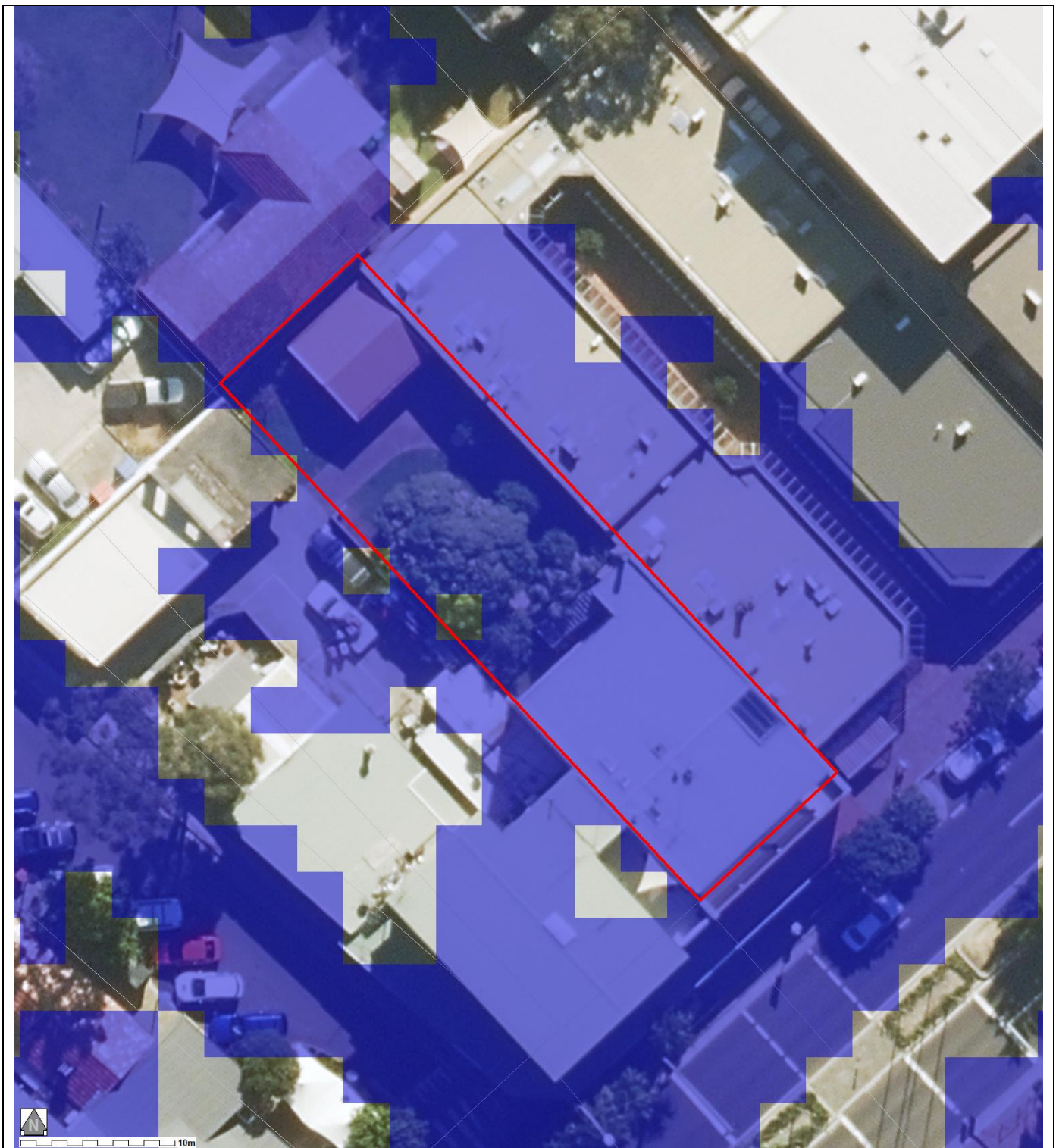
# FLOOD MAP H: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



## Notes:

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

# FLOOD MAP I: 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: Pittwater Overland Flow Study) and aerial photography (Source: NearMap 2014) are indicative only

# FLOOD MAP J: 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 and or H6 Life Hazard Classification).
- Does not include climate change

# MAP K: 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  $\pm 0.2\text{m}$  vertically and  $\pm 0.15\text{m}$  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.



## **GUIDELINES for Preparing a Flood Management Report**

### **Introduction**

These guidelines are intended to provide advice to applicants on preparing a Flood Management Report. The purpose of a Flood Management Report is to help applicants measure and manage the flood risk to life and property on their site.

### **When is a Flood Management Report required?**

A Flood Management Report must be submitted with any Development Application on flood prone land, for Council to consider the potential flood impacts and 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.

Note that the flood extents shown on the mapping are indicative only. It is recommended that flood levels are compared to registered ground survey to more accurately determine the flood extent.

There are some circumstances where a 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 Flood Planning Level 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 in a Flood Management Report?**

The aim of a Flood Management Report is to demonstrate how a proposed development will comply with the flood related 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.

### Technical requirements of a Flood Management Report

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

#### 1. Description of development

The description of development should identify:

- 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, ie, critical, vulnerable, subdivision, residential, business, industrial, recreational, environmental or concessional

#### 2. Flood analysis

The flood analysis should include:

- Predicted 1 in 100 year flood level
- Flood Planning Level (FPL)
- Probable Maximum Flood (PMF) level
- Flood Risk Precinct, ie High, Medium or Low
- Flood Life Hazard Category (in former Pittwater Council area only)
- Mapping of relevant extents
- Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the impact these have on the proposed development

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

#### 3. Assessment of impacts

The assessment of impacts should address the various elements of the relevant LEP and DCP. A simple compliance table should be provided, similar to the table one below.

	Compliance		
	Not Applicable	Yes	No
A Flood effects caused by Development			
B Drainage Infrastructure & Creek Works			
C Building Components & Structural			
D Storage of Goods			
E Flood Emergency Response			
F Floor Levels			
G Car Parking			
H Fencing			
I Pools			

Further details of what is required for each of these categories can be found in the *Development Control Plan for Flood Prone Land*.

For any of these categories which are applicable, the assessment should demonstrate how the development complies, or if it doesn't, provide an explanation of why the development should still be considered.

### Reporting requirements for a Flood Management Report

The Flood Management Report should include:

- a) Executive summary
- b) Location plan, at an appropriate scale, that includes geographical features, street names and identifies all waterways and Council stormwater pipes, pits and easements
- c) Plan of the proposed development site showing the extent of the predicted 100 year, any high hazard or floodway conditions and the PMF flood event
- d) Development recommendations and construction methodologies
- e) Calculation formulae (particularly for flood storage)
- f) Clear referencing using an accepted academic referencing system (eg. Harvard)
- g) Analysis of development against relevant State Environmental Planning Policies
- h) Analysis of development against relevant Local Environment Plan and Policies
- i) Conclusion detailing key points
- j) Standard Hydraulic Certification (Form A/A1)
- k) Qualifications of author
- l) Any flood advice provided by Council
- m) Any other details which may be relevant

### NOTE: 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 Australian Institute of Engineers.

For further information please contact Stormwater and Floodplain Team on 1300 434 434 or via email at [floodplain@northernbeaches.nsw.gov.au](mailto:floodplain@northernbeaches.nsw.gov.au)

## Attachment A

### NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: \_\_\_\_\_

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, \_\_\_\_\_ on behalf of \_\_\_\_\_  
(Insert Name) (Trading or Business/ Company Name)

on this the \_\_\_\_\_ certify that I am engineer or a  
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least \$2 million.

### Flood Management Report Details:

Report Title: .....

Report Date: .....

Author: .....

Author's Company/Organisation: .....

I: \_\_\_\_\_  
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

have followed Council's Guidelines for Preparing a Flood Management Report

have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature .....

Name .....



northern  
beaches  
council

**Application No:** PLM2019/0111  
**Meeting Date:** 13/06/2019  
**Property Address:** 351 & 353 Barrenjoey Road NEWPORT  
**Proposal:** Development Application – Shop top housing  
**Attendees for Council:** Penny Wood (Planner, Development Assessment)  
Rebecca Englund (Principal Planner, Development Assessment)  
Lea Lennon (Urban Designer)  
Valerie Tulk (Specialist Floodplain Engineer)  
**Apologies:** Patrick Bastawrous (Senior Traffic Engineer)  
Joseph Tramonte (Senior Landscape Architect)  
**Attendees for applicant:** Ray Touma (Owner)  
Paul Godsell (Architect, Crawford Architects)

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#### General Comments/Limitations of these Notes

These notes have been prepared by Council on the basis of information provided by the applicant and a consultation meeting with Council staff. Council provides this service for guidance purposes only. These notes are an account of the specific issues discussed and conclusions reached at the pre-lodgement meeting. These notes are not a complete set of planning and related comments for the proposed development. Matters discussed and comments offered by Council will in no way fetter Council's discretion as the Consent Authority. A determination can only be made following the lodgement and full assessment of the development application.

In addition to the comments made within these notes, it is a requirement of the applicant to address ALL relevant pieces of legislation including (but not limited to) any SEPP and any applicable clauses of Pittwater Local Environment Plan 2014 and Pittwater 21 Development Control Plan within the supporting documentation of a development application including the Statement of Environmental Effects.

You are advised to carefully review these notes. If there is an area of concern or non-compliance that cannot be supported by Council, you are strongly advised to review and reconsider the appropriateness of the design of your development for your site and the adverse impacts that may arise as a result of your development prior to the lodgement of any development application.



## PITTWATER LOCAL ENVIRONMENTAL PLAN 2014 (PLEP 2014)

**Note:** PLEP 2014 can be viewed at the [NSW Government Legislation Website](#)

Zoning and Permissibility	
<b>Definition of proposed development:</b> (ref. PLEP 2014 Dictionary)	Shop top housing
<b>Zone:</b>	Zone B2 Local Centre
<b>Permitted with Consent or Prohibited:</b>	Permitted with consent

Principal Development Standards:	
Clause 4.3 Height of Buildings	
Standard	Proposed
8.5m – 11m	9.175m – 10.7m
<p>The site is subject to two differing height limits, as shown on the Height of Buildings Map of PLEP 2014. Whilst the majority of the site is subject to an 11m height limit, the north-western corner of 351 Barrenjoey Road is subject to an 8.5m height limit, as shown on the diagram <b>attached</b>. As proposed, the north-west corner of the development is inconsistent with the 8.5m building height development standard and the proposed variation is unlikely to be supported by Council.</p> <p>The proposal may ultimately seek to rely upon variable height limits associated with flooding prescribed by clauses 4.3(2A) and 4.3(2B) of PLEP 2014, which provide that the height of the development may be measured from the flood planning level, as follows:</p> <ul style="list-style-type: none"> <li>the portion of the site that is subject to the 8.5m maximum building height may exceed 8.5m but not be more than 8m above the flood planning level, and</li> <li>the portion of the site that is subject to the 11m maximum building height may exceed 11m but not be more than 10.5m above the flood planning level.</li> </ul> <p>However, to warrant these flood related height limits, the proposal should be designed to respond to the relevant flood affectation, which has not been achieved in the proposal currently before Council.</p>	



## PITTWATER 21 DEVELOPMENT CONTROL PLAN (P21 DCP)

**Note:** P21 DCP can be accessed via Council's Website [www.northernbeaches.nsw.gov.au](http://www.northernbeaches.nsw.gov.au)

<b>Section B: General Controls</b>
<b>B2.6 Dwelling Density and Subdivision – Shop Top Housing</b>
The proposed development appears to comply with the requirement for 25% of the gross floor area of the building to be commercial/retail floor space.
<b>B3.11 Flood Prone Land</b>
The site is subject to flooding and is required to be designed to meet the relevant provisions of this control. See detailed comments from Council's Flood Team further in the report.
<b>B3.13 Flood Hazard – Flood Emergency Response Planning</b>
The hazard classification associated with the site ranges from H1-H5 in the PMF event, and as such the proposed development will need to demonstrate consistency with the design requirements of this control. See detailed comments from Council's Flood Team further in the report.
<b>B5.10 Stormwater Discharge into the Public Drainage System</b>
The proposed development does not require the provision of on-site detention. All stormwater should be designed to discharge to the public stormwater system in the adjacent street.
<b>B6.3 Off-Street Vehicle Parking Requirements</b>
Under the provisions of this control, the proposed shop top housing development is required to provide the following amount of parking spaces on site: <ul style="list-style-type: none"> <li>• 1 residential space per 1 bedroom apartment,</li> <li>• 2 residential spaces per 2/3 bedroom apartment,</li> <li>• 1 residential visitor space per 3 apartments (inclusive of one space for persons with a disability),</li> <li>• 1 vehicle wash bay,</li> <li>• 1 delivery space to accommodate the largest service vehicle anticipated on site,</li> <li>• 1 retail space per 30m<sup>2</sup> of retail/commercial GLA (inclusive of one space for persons with a disability), and</li> <li>• 1 secure bicycle rack per 3 apartments,</li> </ul> <p>Note: The retail spaces and the delivery space are required to be accessible to the public at all times.</p>
<b>Section C: Development Type Controls</b>
<b>C1.9 Adaptable Housing and Accessibility</b>
20% of apartments (including parking and access thereto) are to be designed in accordance with the Silver Level requirements of the <i>Livable Housing Guideline</i> .
<b>C1.12 Waste and Recycling Facilities and C2.9 Waste and Recycling Facilities</b>
Separate waste areas are to be provided for the residential and commercial components of the development, in accordance with Council's <i>Waste management Guidelines</i> . As proposed, the development does not conform with these guidelines, as follows:



- There is no separate commercial waste room,
- There is no bulk waste room (separate from the residential waste store),
- There is no separate path of travel to the residential waste room,
- The size of the residential waste room is too small, and will not accommodate all bins associated with the 15 units proposed, and
- The waste room should be above the FPL.

#### **C2.11 Signage**

You are strongly encouraged to incorporate retail signage into the proposal, to ensure a cohesive signage solution for the site.

#### **C2.20 Public Road Reserve – Landscaping and Infrastructure**

The adjoining public road reserves (footpaths, kerb/gutter, drainage, street furniture, street lighting and landscaping) are to be upgraded in accordance with the requirements of this development control and clause D10.17 of P21 DCP.

#### **C2.22 Plant, Equipment Boxes and Lift Over-Run**

No plant equipment is permitted on the roof form. Furthermore, the lift over-run is to be integrated into the roof form such that it is not readily visible from the public domain and properties upslope. This coincides with the provisions of clause D10.25 which encourages the use of skillion or 'floating' roof forms on both Robertson Road and Barrenjoey Road.

### **Section D: Locality Specific Development Controls**

#### **Newport Locality – Newport Commercial Centre**

Part D10 of P21 DCP includes specific design controls for development within the Newport Commercial Centre. These controls are a result of extensive community consultation and the production and adoption of the *Newport Village Commercial Centre Masterplan*. You are strongly encouraged to review this Masterplan and the subsequent DCP controls and amend the development accordingly.

In this regard, it is noted that:

- The north-western boundary could be reasonably considered as a 'side' boundary, allowing the Level 1 apartments to extend to a nil setback to the north-western boundary (if there are no windows/opening along this wall).
- The proposal is consistent with the preferred amalgamation pattern prescribed by clause D10.19 of P21 DCP.
- The ground floor retail spaces appear inconsistent with the minimum ceiling heights prescribed by clause D10.20 of P21 DCP (and the ADG).
- 2m wide awnings are required, and are to be stepped with the topography of the land.
- A 3.5m setback is required for the first two levels presenting to Barrenjoey Road, with a further 4m setback at the top floor.
- A nil setback is permitted along Robertson Road for the first two levels, with the upper floor setback 4m. However, a larger setback may be preferred at the ground floor to facilitate outdoor use in conjunction with the retail space (ie: outdoor café seating).
- The setbacks to the north-eastern boundary at the upper floors are inconsistent with the spatial separation requirements of clause D10.24 of P21 DCP (and the ADG). A 6m setback is required between the boundary and any windows/balconies.
- A flat roof form is inconsistent with the provisions of clause D10.25 of P21 DCP, which expresses that skillion, low pitched, folded, curved or 'floating' roofs should be used.





- The proposal is inconsistent with the design solutions for flooding prescribed by clause D10.27 of P21 DCP.

## Specialist Advice

### Flooding

The property at 351-353 Barrenjoey Rd, Newport is affected by flooding along Barrenjoey Rd as well as by flood waters flowing down Robertson Rd.

Flood levels (derived from the Draft Newport Flood Study, 2019) vary across the property.

In Barrenjoey Rd, the flood levels are:

1% AEP Flood Level = 5.05 to 5.08 mAHD

Flood Planning Level (FPL) = 5.55 to 5.58 mAHD

Probable Maximum Flood (PMF) level = 5.88 mAHD

Flood Risk Precinct: Medium to High

Flood Life Hazard Category: H3-H5

In Robertson Rd, the flood levels are:

1% AEP Flood Level = 5.08 to 7.01 mAHD

Flood Planning Level (FPL) = 5.58 to 7.51 mAHD

Probable Maximum Flood (PMF) level = 5.88 to 7.44 mAHD

Flood Risk Precinct: Medium

Flood Life Hazard Category: H1-H5

The 1% AEP flood levels and FPLs quoted above include climate change, which needs to be considered for Clause B3.12 of the DCP.

A Flood Management Report would need to be submitted with the DA, demonstrating that the proposed development meets the flood requirements of Clauses B3.11, 3.12 and 3.13 of the P21 DCP (clarification of these requirements is provided in the Flood Prone Land Design Standard) and Clauses 7.3 and 7.4 of the PLEP 2014. In particular for this site, it should be demonstrated that:

- All floor levels are set at or above the FPL. A reduced FPL may be considered only where it is permitted in the DCP. (Control F1).
- Consideration would be given for the minimum floor level to be below the FPL for up to 5 metres from the street front provided it can be demonstrated that it complies with the Flood Prone Land Design Standard. Ie that: the minimum floor level of the first internal 5 metres is no lower than the adjacent footpath level; and the maximum area for each individual premises below the FPL is 30 square metres; and there is direct internal access between areas above and below the FPL for each individual premises. Since this is such a large development, the allowance of up to 5m would be considered for both street fronts. (Control F10).
- Available flood storage is not reduced for flood events up to the 1% AEP event. Compensatory works may be considered, with appropriate calculations and justification. Louvered panels in the shop fronts such as those installed at 316-324 Barrenjoey Rd, Newport would also be considered for flood storage requirements. (Control A3).
- For the basement car park, the driveway crest is set at or above the relevant FPL, as are all other access, ventilation and any other potential water entry points. Council will not accept any options that rely on electrical, mechanical or manual exclusion of the



floodwaters from entering the enclosed carpark (Control G3).

- There is an appropriately sized area to safely shelter in place above the PMF level and appropriate access to this area is available from all areas within the development (Control E2).
- The development does not impact on flooding on this or neighbouring sites. The applicant needs to account for the overland flow coming from the properties at 31 and 33 Foamcrest Ave, and ensure that this is not just blocked such that the flood level on these properties increases. (Control A1).
- All structures are designed and constructed to ensure structural integrity up to the PMF, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. (Control C2).
- All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections are waterproofed and/or located above the FPL. (Control C3).
- Any hazardous or potentially polluting materials are not to be stored below the FPL unless adequately protected from floodwaters in accordance with industry standards. (Control D1).

The Flood Prone Land Design Standard, Flood Emergency Response Planning for Development in Pittwater Policy, Guidelines for preparing a flood management report, and the application form for the more detailed (comprehensive, multi-purpose) Flood Information Report from Council can be found at: <https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/environmental-and-community-protections>

Should the applicant wish to discuss this information, they may contact the Flood Team on 1300 434 434.

### **Urban Design**

Careful consideration to the outcomes of the built form and its prominence within the streetscape should be demonstrated through materiality, façade articulation and modulation/variation to avoid long blank walls. Façade treatments that represent honesty in materiality, whole of life robustness and simple expression of design intent are highly encouraged. Architectural form and interface with the public realm should reflect excellence in design.

There is an opportunity on the site, determined by the site constraints to provide for a central courtyard and arcaded type development for the site. Through site links that provide a pedestrian scale development with high degree of architectural design excellence is highly encouraged on this site. Attention to the human scale and interactivity with the broader streetscape in keeping the character of the commercial zone is highly encouraged. Places for pause and rest, outdoor dining, casual interactions.

The central courtyard typology discussed above presents the opportunity to provide for a sheltered community gathering place and informal interaction zone. Access to commercial tenancies from this courtyard encouraging through site links should also be explored in future designs.

Setbacks at ground level that incorporate places for street activation, openness and through site activation are highly encouraged on this site. Blank glazed street wall conditions should be avoided. Recessed entries and porte cochere type entry sequences should be explored in order to avoid a hard line street frontages with no setback in instances where no awning cover is provided.



The flood planning PMF levels should form the basis of engagement with the street frontages. Strategies that incorporate variation and change of levels is encouraged however consideration of equal access should guide any future designs of podium/platform type treatments of the street frontages across the site.

Roof forms should consider the broader view aspects of surrounding development further up the escarpment to ensure roof forms do not impede view corridors or result in unsightly mechanical systems on the rooftop. The strategy of a central courtyard may assist to mitigate any bulk and scale impacts resulting from the roof forms.

The architectural design intent should inform the clean resolution of a built form that is in keeping with the desired future character of the Newport Commercial Centre and streetscape defined by the controls.

#### **Engineering**

This site is affected by flooding and as such OSD will not be required. Connection of stormwater from the development to the Council piped drainage system will be acceptable.

Due to the extent of the basement excavation a geotechnical report is to be provided in accordance with clause B8.1 of P21 DCP.

#### **Landscape**

Public Domain works as part of the Newport Commercial Centre upgrade occur along Barrenjoey Rd, and partially along Robertson Rd (south side).

The applicant will be required to protect the existing public domain works along Barrenjoey Road and provide the required public domain works to the north side of Robertson Road adjacent to the site in accordance with the approved Masterplan for the Newport Commercial Centre, including footpath pavement, street tree planting and street furniture.

Existing Cabbage Tree Palms and associated garden areas shall be protected along Barrenjoey Road fronting the site.

An existing mature Lemon Scented Gum is located within the Robertson Rd road reserve along the boundary of the site. If the tree is determined to be of a High retention value, the design of the basement and any above ground awnings will need to consider the retention of this tree. Proposed removal shall only be considered by Council if the tree displays poor health with a short life expectancy.

The following controls are considered by the Landscape section:

- C2.1 Landscaping
- D10.2 Character – Newport Commercial Centre
- D10.17 Character of the Public Domain – Newport Commercial Centre
- D10.29 Landscaping
- Appendix 12 – Newport Village Commercial Centre Masterplan

-4.7 Public Domain Character

-4.7.1 Streets

-4.7.5 Public Domain Elements

-4.8 Landscape Character

#### **Landscape Concern**

The pre-lodgement plans raise landscape concern on the impact to the existing Lemon Scented Gum located on the Robertson Rd site boundary. The proposed basement at nil setback and any proposed above ground awnings will result in the loss of this mature tree.



### **Public Domain**

A Public Domain Plan is required to illustrate the desired public domain and landscape character of the streetscape in accordance with Appendix 12 - Newport Village Commercial Centre Masterplan

Public domain works to the north side of Robertson Road adjacent to the site are required to be delivered by the applicant, including footpath pavement, street tree planting and street furniture.

DA plans shall provide details of the public domain treatments. The existing footpath treatment along the south side of Robertson Rd is a granite surface finish.

Street tree planting shall consider the use of deciduous trees in accordance with Appendix 12 - 4.8 Landscape Character, or as advised by Council.

Street furniture including street lighting, shade structures, seating and bollard shall be in accordance with Appendix 12 - 4.8 Landscape Character, or as advised by Council.

### **Landscape Works**

A landscape plan will be required to satisfy the outcomes and controls of the DCP as noted below:

#### **C2.1 Landscaping**

For shop top housing, a planter or landscaped area with minimum area of 4m<sup>2</sup> is to be provided as a feature at the ground floor of the front building facade. This feature is to be positioned to soften any hard edges of the building including any ramps, podiums or changes in levels.

Planter areas are to be a minimum area of 4m<sup>2</sup> and where canopy trees are proposed a minimum soil volume of 8m<sup>3</sup> is required. Provision of available root volume may need to incorporate the use of structural soils.

### **Impact to vegetation**

An Arboricultural Impact Assessment report is to be prepared to determine the suitability to retain the existing Lemon Scented Gum in Robertson Rd. Location of any proposed basement and above ground awning is not a valid justification for removal of existing mature trees on public land.

Should the Arboricultural Impact Assessment determine that the existing Lemon Scented Gum exists with a High retention value and a long life expectancy, the basement design and design of above ground awnings shall be altered to ensure retention of the tree.

Consideration for removal of the Lemon Scented Gum shall only be considered by Council if the tree is currently exhibiting poor health with a short life expectancy.

The Arboricultural Impact Assessment shall be prepared by an Arborist with AQZ Level 5 qualifications in arboriculture/horticulture.

A Tree Protection Plan is required to demonstrate protection of the existing Cabbage Tree Palms along the Barrenjoey Road frontage of the site. All tree protection shall be in accordance with AS4970- 2009 Protection of Trees on Development Sites.



### Documentation to accompany the Development Application

- Completed Application Form + Owners Consent
- Electronic copies (USB)
- Statement of Environmental Effects
- Cost of works estimate/ Quote
- Site Plan
- Floor Plan
- Elevations and sections
- A4 Notification Plans
- Survey Plan
- Site Analysis Plan
- Demolition Plan
- Excavation and fill Plan
- Waste Management Plan (Construction & Demolition)
- Waste Management Plan (Ongoing)
- Certified Shadow Diagrams
- BASIX Certificate
- Schedule of colours and materials
- Landscape Plan and Landscape Design Statement
- Arboricultural Impact Assessment Report
- Photo Montage
- Subdivision Plan
- Advertising Structure / Sign Plan
- Erosion and Sediment Control Plan / Soil and Water Management Plan
- Stormwater Management Plan / Stormwater Plans
- Geotechnical Report
- Acoustic Report (to address provisions of clause 101 of SEPP Infrastructure)
- Flood Risk Assessment Report & Emergency Response Plan
- Traffic and Parking Report
- Construction Traffic Management Plan
- Access Report
- BCA Report
- SEPP 65 Report and certification
- Integrated Development Fees\* (required if interrupting groundwater)

*Please refer to Council's 2018/2019 Lodgement Requirements for further detail.*

### Concluding Comments

These notes are in response to a prelodgement meeting held on 13 June 2019 to discuss a shop top housing development at 351-353 Barrenjoey Road, Newport. The notes reference preliminary plans prepared by Crawford Architects dated 19 May 2019.

Whilst the concept of shop top housing at the site is supportable, there are some major concerns regarding flooding that remain unresolved. Addressing these concerns will require considerable amendments to the proposal (in particular the design and layout of the ground floor and driveway).

Concern is also raised in regards to the massing of the residential floors, specifically the height



### **Concluding Comments**

breach in the north-western corner of the site and the proximity of the proposed development to the north-eastern side boundary.

As such, the proposal is not acceptable in its current form and is unlikely to be supported by Council.

Given the amendments required to the design to address concerns raised, you are encouraged to come back to Council for another prelodgement meeting, prior to the lodgement of any future development application.

# Attachment A

**NORTHERN BEACHES COUNCIL  
STANDARD HYDRAULIC CERTIFICATION FORM  
FORM A/A1 – To be submitted with Development Application**

Development Application for

Address of site: 351-353 BARRENJOEY ROAD, NEWPORT

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, DAVID WILCOX on behalf of DEMLAKIAN CONSULTING ENGINEERS  
(Insert Name) (Trading or Business/ Company Name)

on this the 6 MARCH 2020 certify that I am engineer or a  
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least \$2 million.

**Flood Management Report Details:**

Report Title:

219120 rpt 20200306 - DW - FLOOD MANAGEMENT REPORT

Report Date: 6 MARCH 2020

Author: DAVID WILCOX

Author's Company/Organisation: DEMLAKIAN CONSULTING ENGINEERS

I: DAVID WILCOX  
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

have obtained and included flood information from Council (must be less than 12 months old)  
(This is mandatory)

have followed Council's Guidelines for Preparing a Flood Management Report

have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature 

Name DAVID WILCOX