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Proposed Alterations and Additions at 87 Wallumatta Road, Newport

Flood Risk Management

Proposed alterations and additions at 87 Wallumatta Road

30 June 2020

Prepared for:

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Prepared by

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1.0 Executive Summary

Stellen Consulting was engaged to assess the proposed alterations and additions to the existing dwelling at 87 Wallumatta Road in reference to potential risks and impacts connected with flooding. Architectural drawings and a detailed survey (Appendix A) were used in conjunction with Council supplied flooding information (Appendix B).

Based on the evaluations of the proposed architectural drawings and flood information available from Council, the following can be concluded:

- The proposed development is consistent with the flood risk of the land and will not create any additional risks for the occupants of the site as a result of the development.
- In the event of an emergency, safe refuge can be taken within the rear extension and outdoor deck area on the upper floor of the dwelling where the floor level is higher than the predicted Probable Maximum Flood (PMF) level.
- The proposed alterations and additions are consistent with the flood hazard of the land and will not create any additional adverse impacts on upstream and downstream property owners.

Provided that the recommendations within this report are followed, no additional adverse flooding impacts are expected to occur to the neighbouring upstream and downstream properties as a result of the proposed development.

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2.0 Introduction

The purpose of this report is to provide Northern Beaches (Pittwater) Council with sufficient information to assess the proposed alterations and additions for the development located at 87 Wallumatta Road in reference to potential risks and impacts connected with flooding based on the architectural drawings and a detailed survey (Appendix A) in conjunction with Council supplied flooding information (Appendix B) to evaluate the flood risk to the development.

3.0 Description of the Site and Proposed Development

The property located at 87 Wallumatta Road, Newport is approximately 490 m2 and naturally falls away from the street. The property is located within an existing gulley which ultimately drains to the Pittwater Waterway. The site is roughly bisected by an existing 600mm council owned stormwater pipe which discharges to a natural watercourse below the existing dwelling, midway through the site.

Existing development of the land consists of a two-storey brick dwelling. The site and surrounding locality is shown in Figure 1 below.

Figure 1: Location of Subject Site (Northern Beaches Council. Image Jacobs & Aerometrex)

The development proposes alterations and additions to the existing dwelling including a ground floor extension to the rear (kitchen, living, dining) and deck area.

4.0 Flooding

Council supplied flood information identifies the site as being affected by an overland flow during the 1% AEP event. This information was used to determine flooding extents, impacts and to assess associated risks to the development.

5.0 Analysis & Assessment of Impacts

Council's flood data predicts that during the 1% AEP rain event, 87 Wallumatta Road and the properties immediately adjacent to the site will be subject to floodwaters running towards the south from Wallumatta Road. The development site is identified by Council as high risk (Figure 2).

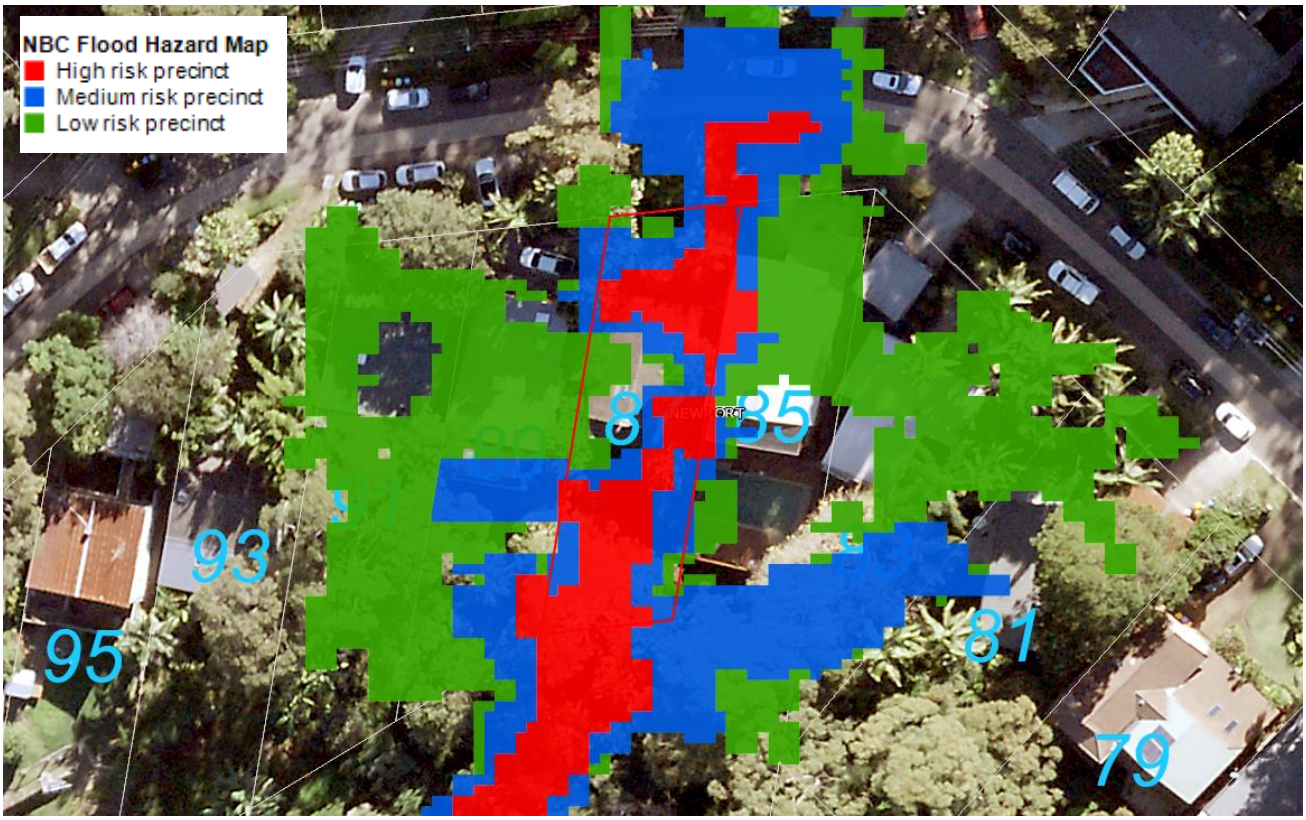


Figure 2: Flood Hazard Map (Northern Beaches Council. Image Jacobs & Aerometrex)

Based on the provided architectural drawings and Council data, the flood characteristics for the site are summarised in Table 1.

Table 1. Summary of flood characteristics

Summary	Proposed Rear Extension	Proposed Deck Area	Existing Front Courtyard
Proposed FFL(1) (mAHD)	49.53	49.43	Existing
Natural Surface Level (2) (mAHD)	45.8	45.8	49.7
Depth (3) (m)	0.1	0.1	0.5
Velocity (3) (m/s)	0.9	0.9	0.2
Flood Risk Precinct (4)	High	High	High
Predicted 1% AEP Flood Level (5) (mAHD)	45.9	45.9	50.2
Flood Planning Level (6) (mAHD)	46.4	46.4	50.7
Probable Maximum Flood Level (3) (mAHD)	46	46	51.1

Note:
1. Refer to architectural plans (Appendix A).
2. Refer to survey (Appendix A).
3. Council provided flood information, refer to Newport Flood Study 2019.
4. Refer Flood Hazard Map (Figure 2).
5. Survey + 1% AEP flood depth, refer to Newport Flood Study 2019.
6. FPL = 1% AEP flood level + 500mm freeboard.

6.0 Assessment of Impacts

All aspects of the proposed development are categorised as concessional and located within the high-risk precinct. In accordance with Northern Beaches Council (Pittwater) DCP B3.11, some flood controls are applicable to the development.

Table 2 provides a summary of the applicable controls for the proposed alterations and additions.

Table 2. DCP flood controls, High flood risk precinct, concessional development

#	Prescriptive controls	Compliance with controls			Relevant Controls
		NA	Yes	No	
A	Flood effects caused by development		✔		A2, A3
B	Drainage infrastructure and creek works	✔			-
C	Building components and structural		✔		C1, C2, C3
D	Storage of goods		✔		D1, D2
E	Flood emergency response		✔		E1
F	Floor levels		✔		F2, F3, F6
G	Car parking	✔			G1, G2, G3, G4, G5, G6, G7
H	Fencing	✔			H1
I	Pools	✔			I1

NA – Not Applicable

6.1.1 Addressing the Controls

Control A - Flood effects caused by development

A2. Refer attached Form 1 statement.

A3. No filling is proposed below the 1% AEP flood level.

Control B - Not applicable

Control C - Building components and structural

C1. All new footings, slabs and structures for the proposed alterations and additions shall be designed / checked by a structural engineer and constructed of flood compatible materials in accordance with the *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 PMF, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. The structural certification shall be provided confirming the above.

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 FPL.

Control D - Storage of goods

D1. Hazardous or potentially polluting materials shall not be stored below the FPL 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 FPL.

Control E - Flood emergency response

E1. The recommended emergency response is to shelter-in-place within the rear deck area of the ground floor of the dwelling which is above the PMF level. In the event that floodwaters overtop the kerb in Wallumatta Road at any point and begin flowing overland toward the house, the recommended actions are:

- The occupants of the property shall be directed to the rear deck of the ground floor of the dwelling, above the predicted PMF water surface level. In the event that flood waters make their way through the dwelling and out to the deck, floodwaters will pass through the porous decking to below.
- Emergency services shall be contacted stating the property's location; the situation faced, number of people on the property and any evacuation measures to be carried out.

Control F - Floor levels

F2. The proposed rear extension will be constructed as a suspended structure, the underside of which is several metres above the surrounding FPL and will not impede the flood conveyance of the site. Piers supporting the structure will be located outside of the areas designated by Council as Floodway. Additionally, the rear extension is within the flood shadow of the existing building and will not cause any additional blockage or loss of flood storage.

F3. The floor level of the proposed rear extension has been elevated to allow the passage of flood waters below. A restriction against the enclosure of this space is not recommended due to the significant height at which the floor level sits above the natural ground level. The requirement for a covenant is generally reserved for small areas that could be potentially enclosed at a later date.

F6. Not applicable – No first-floor addition is proposed.

Control G - Not applicable, no changes to the existing parking arrangement on site are proposed

Control H - Not applicable, no new fencing is proposed

Control I - Not applicable, no new pool is proposed

6.1.2 Conclusion

Council's flood data predicts that, during the 1% AEP rain event 87 Wallumatta Road will be subject to floodwaters arising from overland flow from Wallumatta Road.

The development proposes alterations and additions to the existing dwelling including a rear extension and a deck area. The existing dwelling's floor levels are already below the FPL at the front of the site. While the proposed alterations and additions are at the rear of the existing building and technically above the surrounding FPL it is noted that during the predicted 1% AEP event floodwaters are likely to pass through the building and make their way to the rear of the development. Raising the internal FFL of the proposed new additions was considered but ruled out for the following reasons:

- The proposed rear extension is designed to tie with the existing living space of the dwelling and extends out in-line with the existing concrete balcony. Raising the FFL of the proposed works some 500mm above existing levels would render the alterations and addition incompatible with the existing dwelling's FFL.
- Raising the area of the alterations and additions would create a blockage within the existing flow path (effectively through the dwelling) and be in direct conflict with the requirements of control F2.
- The alterations and additions comply with the relevant controls with the Pittwater 21DCP for concessional high flood risk development (F2, F3 and F6) despite being below the FPL (for the front of the dwelling)
- The proposed alterations and additions reduce the flood risk of the land by providing additional refuge at the rear of the site within the proposed deck area during the predicted PMF event.

To meet the requirements outlined in Council's DCP B3.11 it is recommended that:

- A FPL of 50.2 mHAD is adopted for the site (taken from the front courtyard of outside the dwelling)
- A PMF level of 51.1 mHAD is adopted for the site (taken from the front courtyard of outside the dwelling)
- All new structures below the FPL must be constructed of flood compatible materials.
- All structures must be designed/verified as capable of withstanding the forces generated due to wave action and inundation during the PMF to ensure safety of the occupants should they be required to shelter-in-place.
- New electrical services and stored materials (e.g. fuel, chemicals) must be adequately flood proofed to the FPL.
- A restriction must be imposed on the title of the land, pursuant to S88B of the Conveyancing Act confirming that the under-croft area of the proposed rear extension is not to be enclosed.

The proposed development is consistent with the flood risk of the land and will not create any additional risks for the occupants of the site as a result of the development.

Provided that the recommendations within this report are followed, no additional adverse flooding impacts are expected to occur to the neighbouring upstream and downstream properties as a result of the proposed development.

Appendix A – Architectural Plans and Survey

Architectural Plans by Marika Jarv. dated 05.06.2020

DRAWING LIST		
SHEET	**NAME**	**DATE**
FG01-DA	Site Plan	05.06.2020
FG02-DA	Site Analysis Plan	05.06.2020
FG03-DA	Existing Floor Plan	05.06.2020
FG04-DA	Proposed Floor Plan	05.06.2020
FG05-DA	Footing Plan	05.06.2020
FG06-DA	Section AA	05.06.2020
FG07-DA	Section BB	05.06.2020
FG08-DA	Elevation - West	05.06.2020
FG09-DA	Elevation - East	05.06.2020
FG10-DA	Elevation - South	05.06.2020
FG11-DA	Elevation - North	05.06.2020
FG12-DA	Demolition Plan	05.06.2020
FG13-DA	Waste Management Site Plan	05.06.2020
FG14-DA	Solar Access Diagrams - 9am June 21	05.06.2020
FG15-DA	Solar Access Diagrams - 12pm June 21	05.06.2020
FG16-DA	Solar Access Diagrams - 3pm June 21	05.06.2020

Appendix B – Council Supplied Flood Information

FLOOD INFORMATION REQUEST – COMPREHENSIVE

Property: 87 Wallumatta Road, Newport
Lot DP: 15//13746
Issue Date: 30/01/2020
Flood Study Reference: Newport Flood Study 2019

Flood Information for lot:

Flood Life Hazard Category – See Map A

1% AEP – See Flood Map B

1% AEP Maximum Water Level[3]: 53.77 mAHD

1% AEP Maximum Peak Depth from natural ground level[3]: 0.65 m

1% AEP Average Velocity: 1.08 m/s

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

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

Flood Planning Area – See Flood Map C

Flood Planning Level (FPL) [1, 2, 3 & 4]: 54.27 m AHD

Probable Maximum Flood (PMF) – See Flood Map D

PMF Maximum Water Level[2]: 54.24 m AHD

PMF Maximum Depth from natural ground level: 1.4 m

PMF Average Velocity: 1.81 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[1&3]: 53.8 m AHD

1% AEP Maximum Depth with Climate Change[3]: 0.83 m

1% AEP Maximum Velocity with Climate Change[3]: 3.93 m/s

Flood Risk Precinct – See Map J

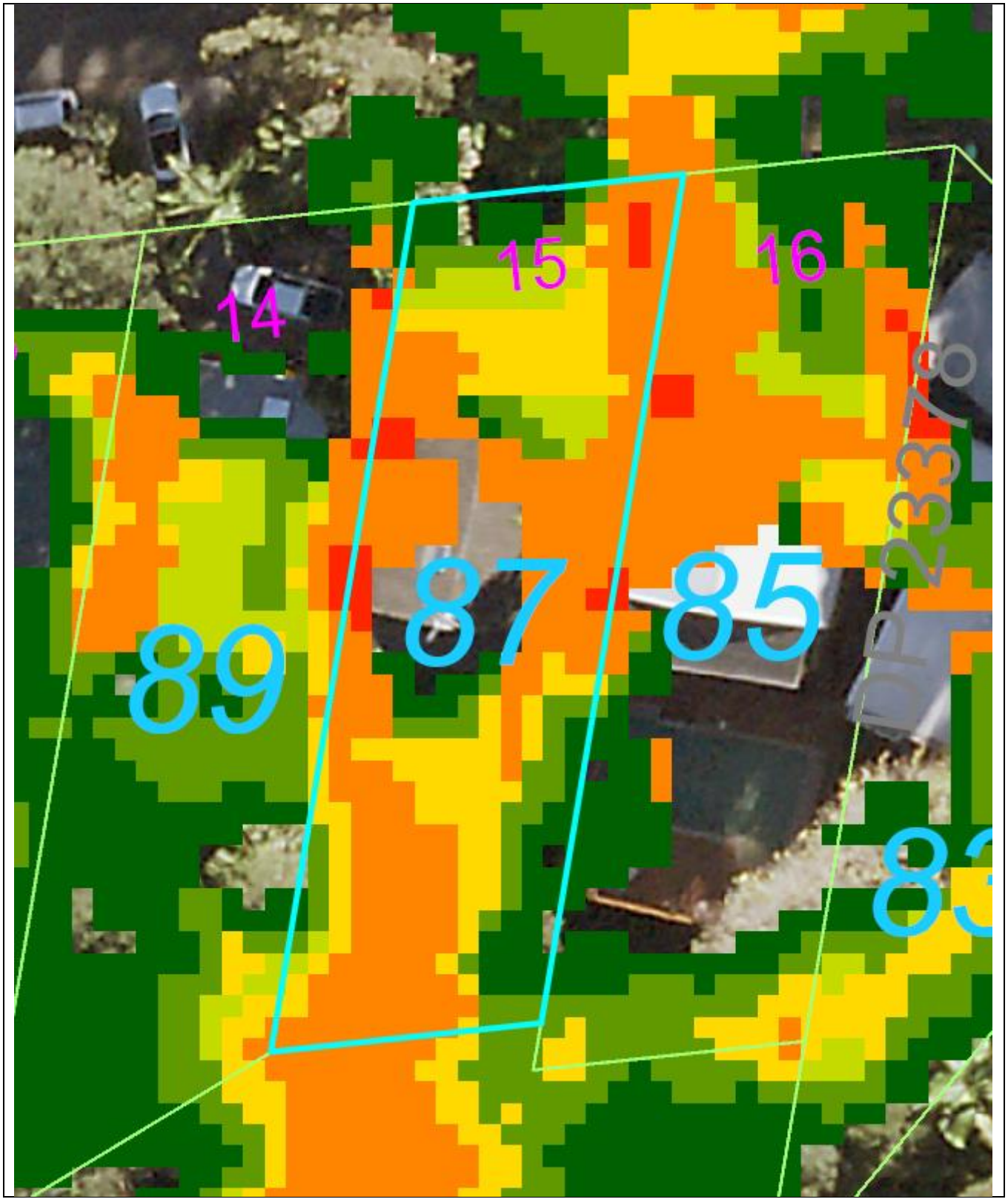
Indicative Ground Surface Spot Heights – See Map K

[1]The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.
[2]Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site.
[3]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.
[4]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:

- H6 = Red. H5 = Orange. H4 = Yellow. H3 = Light Green. H2 = Green. H1 = Dark Green.
- 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 B3.12.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source Near Map 2014) are indicative only.

FLOOD LEVEL POINTS

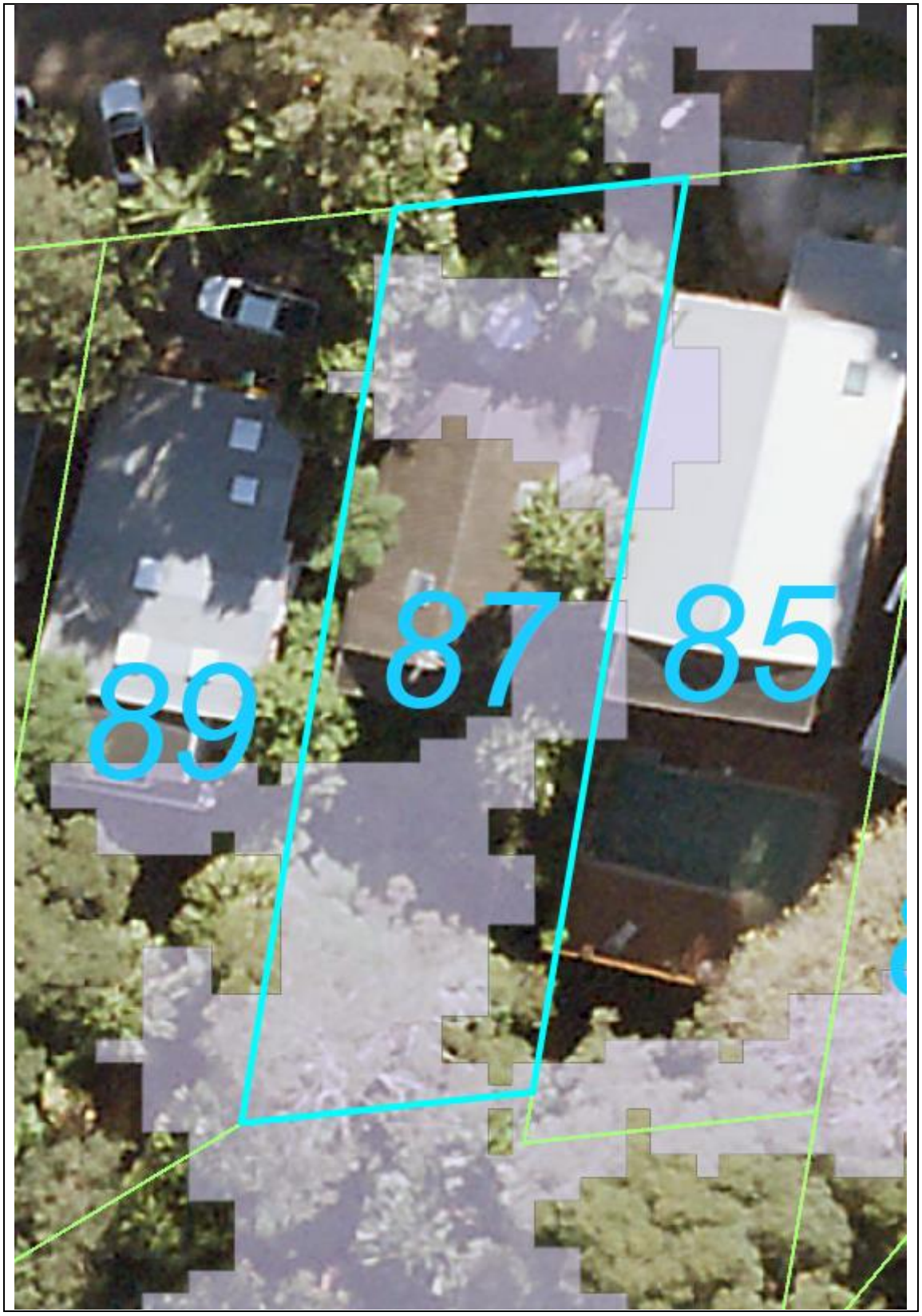
Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source: NearMap 2014) are indicative only.

Flood Levels

ID	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	50.2	0.5	0.2	50.7	51.1	0.8	0.4
2	49.7	0.5	1.5	50.2	50.2	0.9	2.0
3	50.1	0.4	0.6	50.6	50.8	1.0	1.3
4	N/A	N/A	N/A	49.0	48.9	0.3	2.4
5	N/A	N/A	N/A	N/A	46.2	0.1	2.0
6	45.9	0.1	0.9	46.4	46.0	0.2	1.4
7	43.7	0.3	0.9	44.2	44.2	0.5	1.7

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

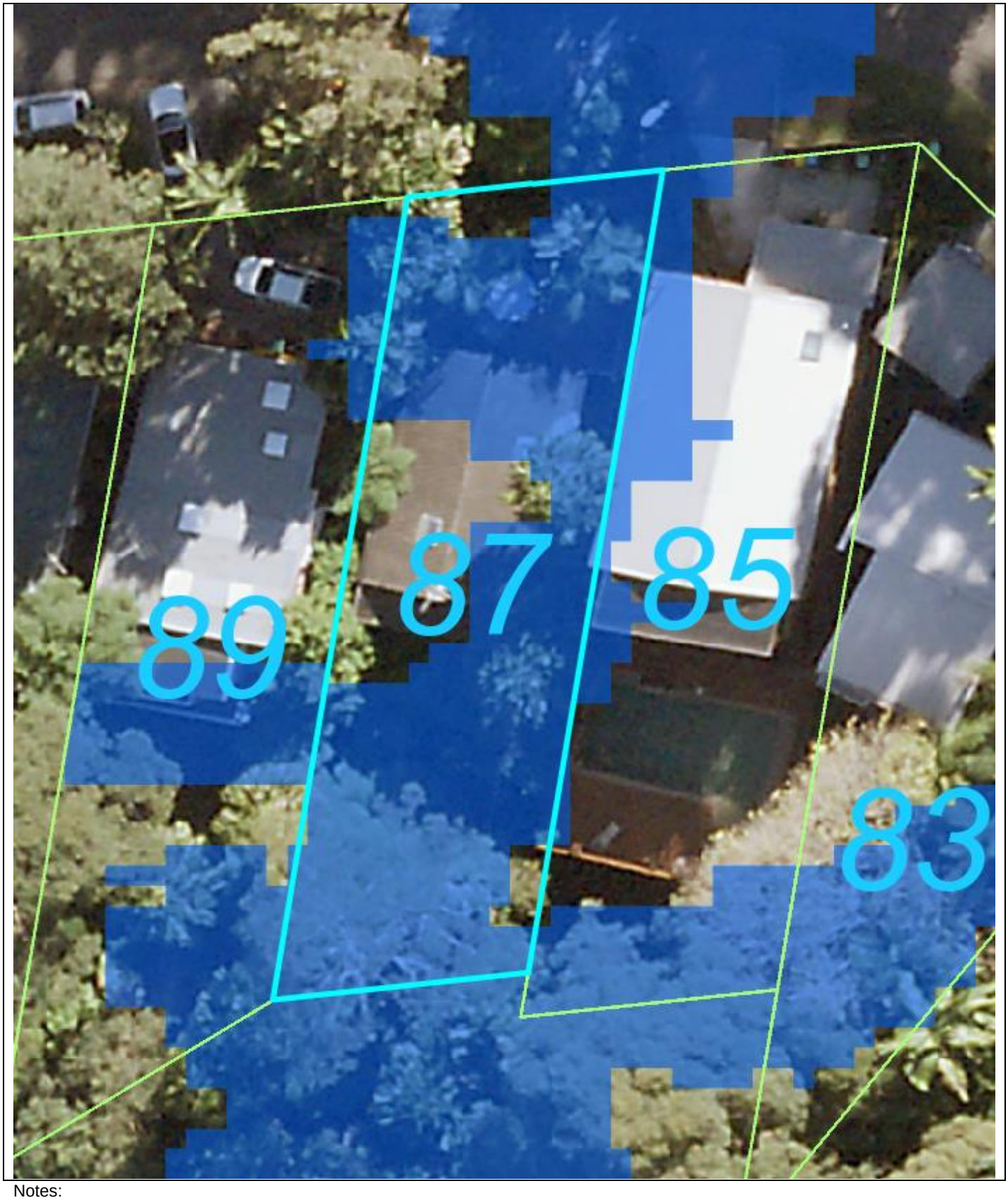
FLOOD MAP B: FLOODING - 1% AEP EXTENT



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

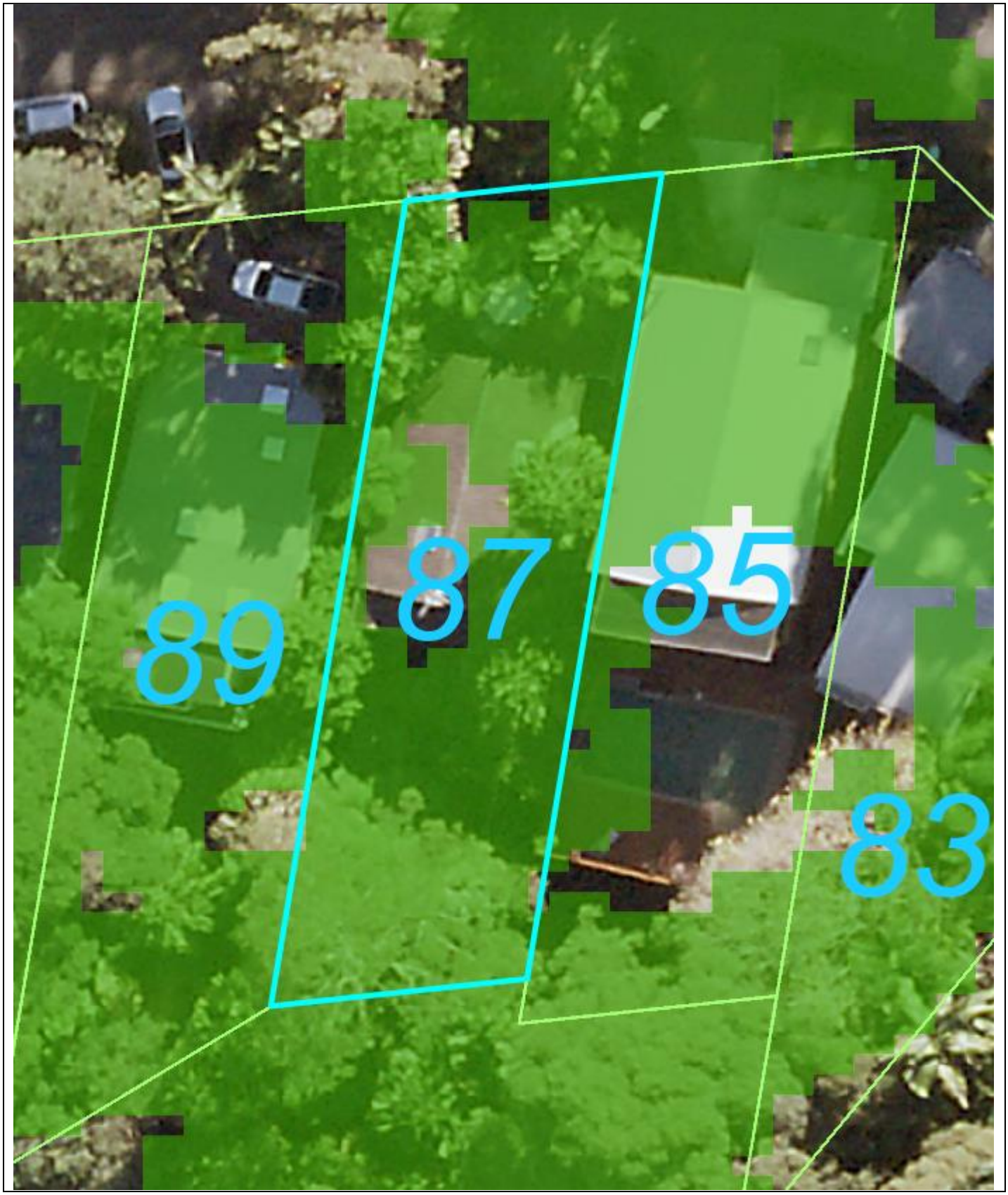
FLOOD MAP C: FLOOD PLANNING AREA EXTENT



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

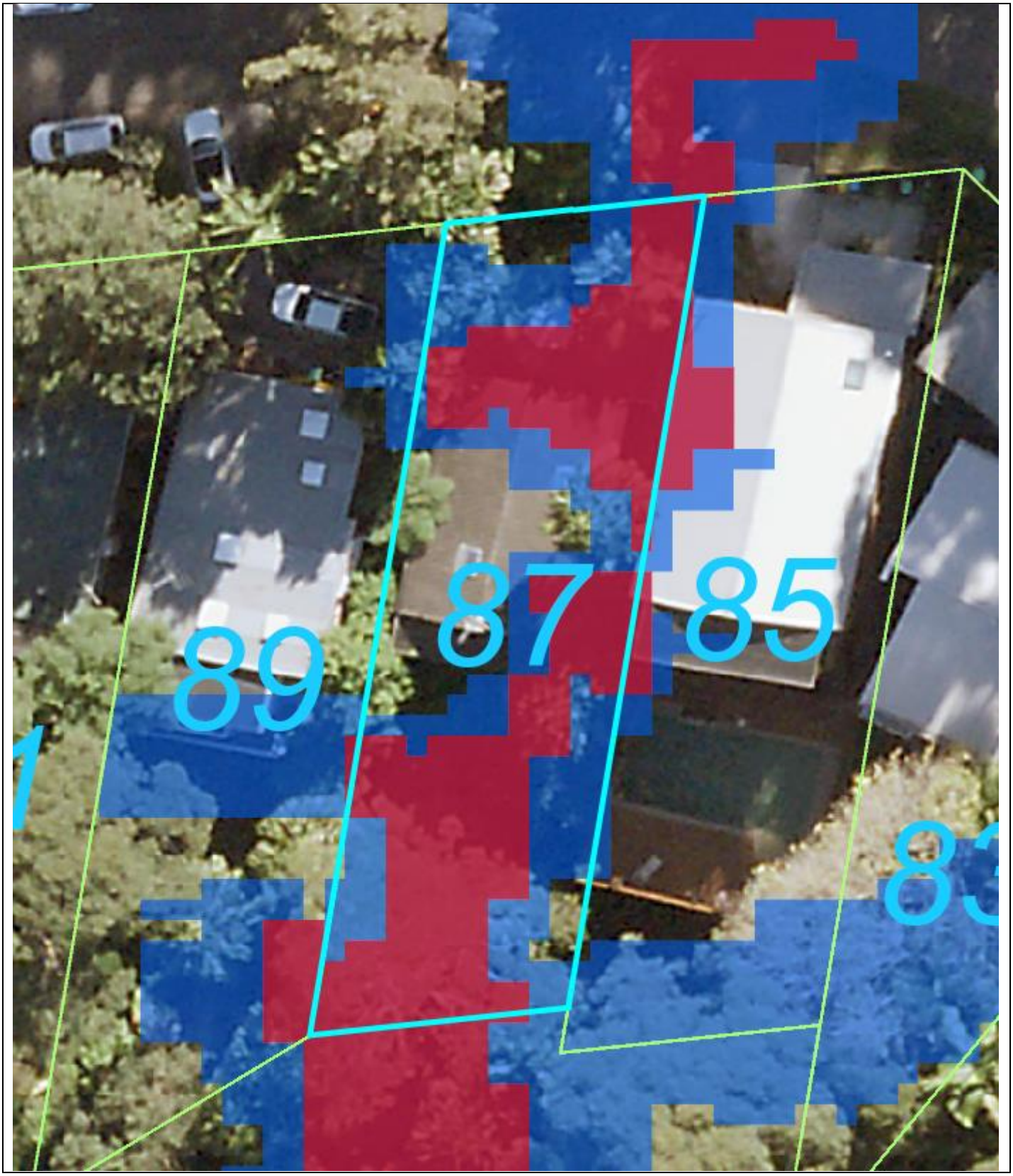
FLOOD MAP D: PMF EXTENT MAP



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

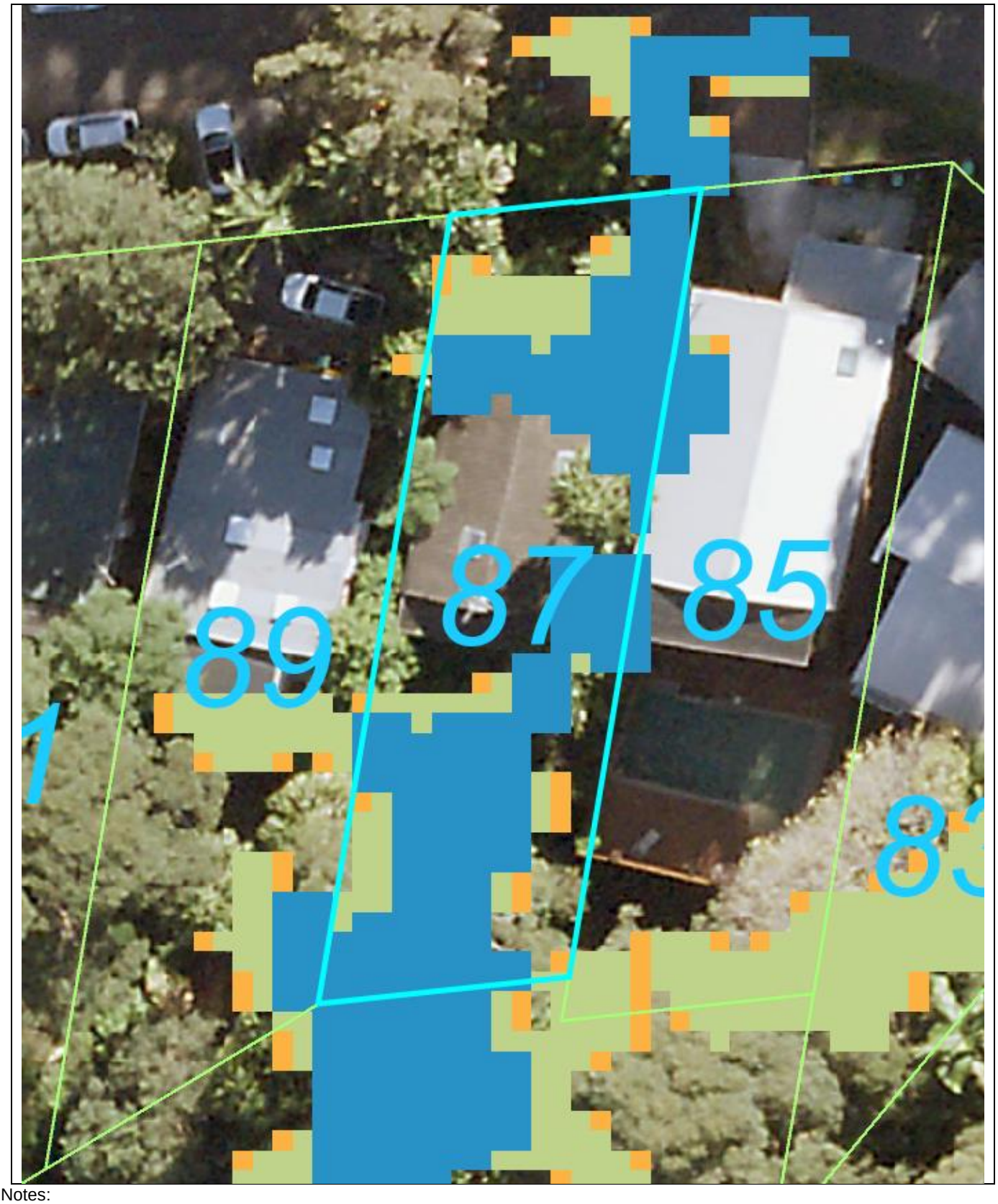
FLOOD MAP E: 1% AEP FLOOD HAZARD EXTENT MAP



Notes:

- 1% AEP High Hazard = Red. 1% AEP Low Hazard = Blue
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source: NearMap 2014) are indicative only

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



Notes:

- Floodway = Blue. Flood Storage = Pale green. Flood Fringe = Orange.
- Extent represents the 1% annual Exceedance Probability (AEP) flood event. Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source: NearMap 2014) are indicative only

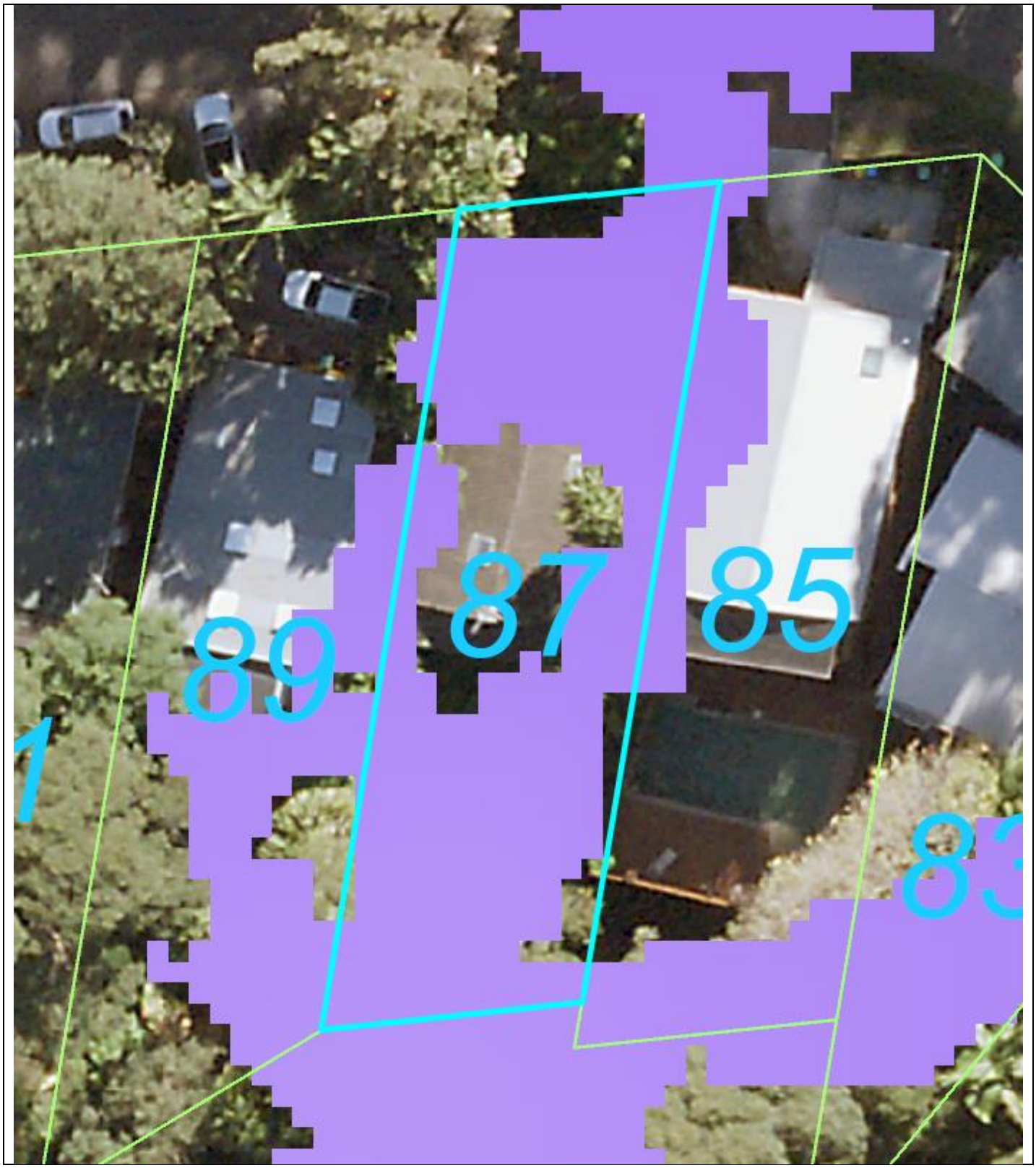
FLOOD MAP G: PMF FLOOD HAZARD EXTENT MAP

Not available

FLOOD MAP H: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP

Not available

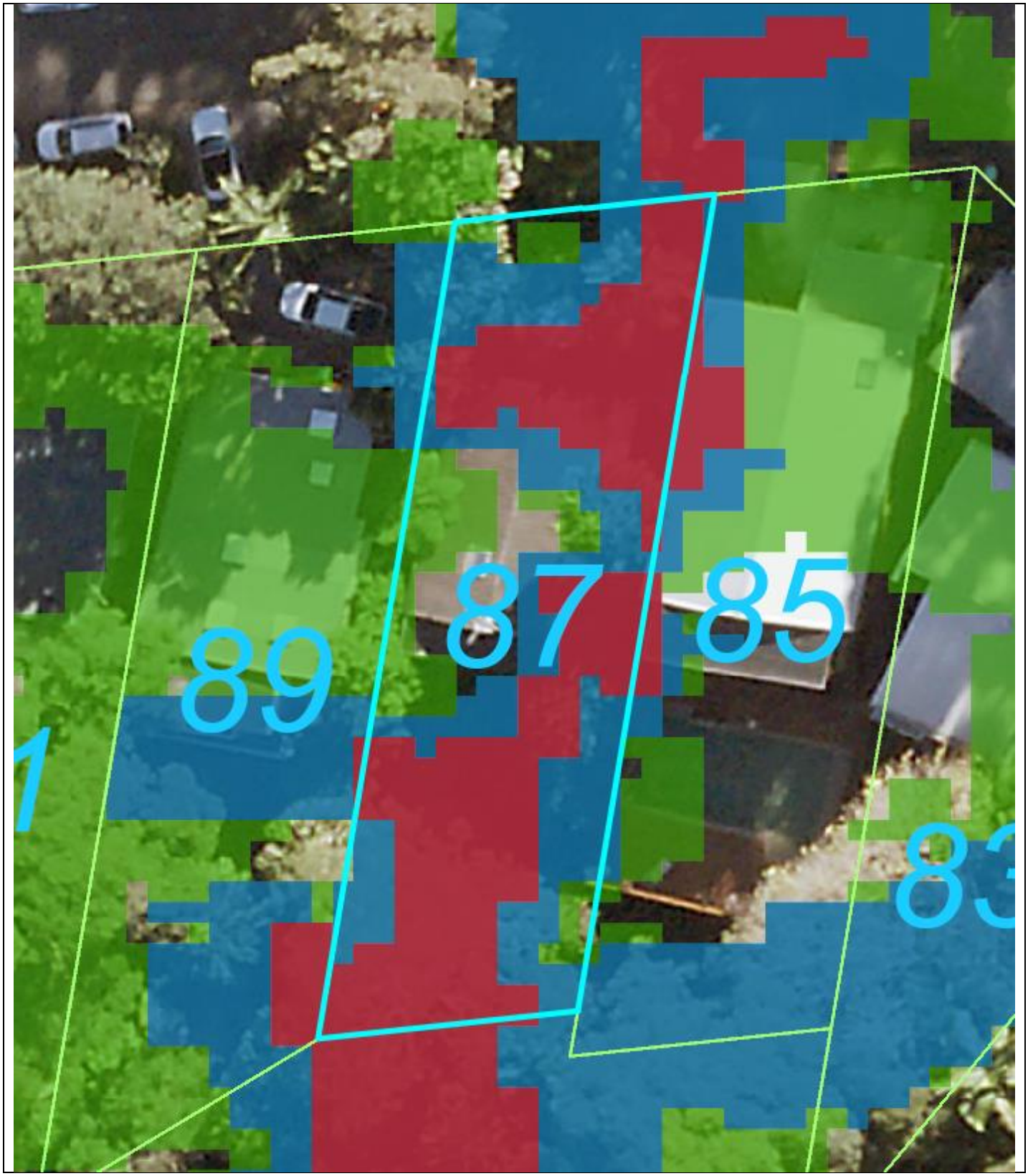
FLOOD MAP I: FLOODING – 1% AEP EXTENT PLUS CLIMATE CHANGE



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

FLOOD MAP J: FLOOD RISK PRECINCT MAP



Notes:

- **Low Flood Risk precinct** (green) means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** (blue) 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 (red)** 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 ± 0.2m vertically and ± 0.15m horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: 87 Wallumatta 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, Logan English-Smith (Insert Name) on behalf of Stellen Consulting (Trading or Business/ Company Name)

on this the 30 June 2020 (Date) certify that I am engineer or a

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: Flood Risk Management - Proposed alterations and additions at 87 Wallumatta Road, Newport

Report Date: 30 June 2020

Author: Saddam Hussein Ali

Author's Company/Organisation: Stellen Consulting

I: Logan English-Smith (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 Logan English-Smith