DEMLAKIAN
INTELLIGENT THINKING

24 July 2020
REF: 220088rpt20200724_JD_Flood Management Report.docx

Development Link Pty Ltd
C/- Crawford Architects
Suite 3.01
80 Mount Street
NORTH SYDNEY NSW 2060

RE: FLOOD MANAGEMENT REPORT – PROPOSED DEVELOPMENT
349 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.

FIGURE 1: Site Plan View

2.0 PROPOSED DEVELOPMENT AND CONTEXT

The site comprises lot 63 located at 349 Barrenjoey Road and currently consists of mixed-use buildings that are proposed to be demolished and replaced with a new three-storey mixed-use premises over one level of basement carpark.

For the purpose of this report, the site adjoins existing developments to the northern and Western boundaries, with Barrenjoey Road being adjacent to the southern boundary and Robertson Road to the Eastern boundary.

The site has a pronounced fall from north to south.

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 Report provided by Council
- Stormwater 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 enclosed 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 and 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 RL6.70 on Robertson Road at the northern end of the property and RL4.71 on Barrenjoey Road at the western end of the property. (Refer to Flood Information Report provided by Council Enclosed).

Due to the nature of the existing buildings on the adjacent site, there is no overland flow that passes through the site.

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.

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.

		Medium Flood Risk						
		Critical Uses	Vulnerable Uses	Subdivision	Residential	Business & Industrial	Recreational & Environmental	Concessional
A	Flood effects caused by Development	A1 A3 A4	A1 A3 A4	A1 A3	A1 A3	A1 A3	A2 A3	A2 A3
B	Drainage Infrastructure & Creek Works	B1 B2	B1 B2	B1 B2	B1 B2	B1 B2	B1 B2	
C	Building Components & Structural	C1 C2 C3	C1 C2 C3		C1 C2 C3	C1 C2 C3	C1 C2 C3	C1 C2 C3
D	Storage of Goods	D1 D2	D1 D2		D1 D2	D1 D2	D1 D2	D1 D2
E	Flood Emergency Response	E1 E2 E3	E1 E2 E3	E1 E4	E1 E2	E1 E2 E3	E1	E1
F	Floor Levels	F2 F3 F7	F2 F3 F7	F5	F1 F2 F3 F4 F6 F8 F9	F1 F2 F3 F4 F6 F8 F9 F10 F11	F2	F1 F2 F3 F4 F6 F11
G	Car Parking	G1 G4 G6 G7 G9 G10	G1 G4 G6 G7 G9 G10	G1	G1 G2 G3 G5 G6 G7 G8	G1 G2 G3 G4 G5 G6 G7	G1 G2 G3 G4 G5 G6 G7	G1 G2 G3 G4 G5 G6 G7
H	Fencing	H1	H1	H1	H1	H1	H1	H1
I	Pools	I1	I1	I1	I1	I1	I1	I1

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 Architectural drawings show the building levels to have been set to prevent the ingress of stormwater 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 within 5.0 metres from the street frontage, as permitted by the Flood Prone Land Design Standard and as suggested in the PLM minutes. (Refer to Sketch 220088-SK-04 Flood Planning Levels).

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 no overland flow through the site.

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.

As Council have only provided the 1% climate change flood levels as the maximum design level, all floor levels have been set in accordance with these provided levels with the incorporation of the required freeboards.

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 Leve.

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 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.

This item does not apply to this development.

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.

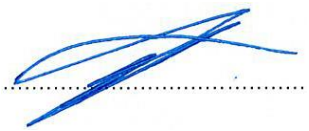
Proposed floor levels are either located above the flood planning level or comply with the requirements of the Flood Prone Land Design Standard.

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 extends 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, meaning that the evacuation of the property will therefore 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.

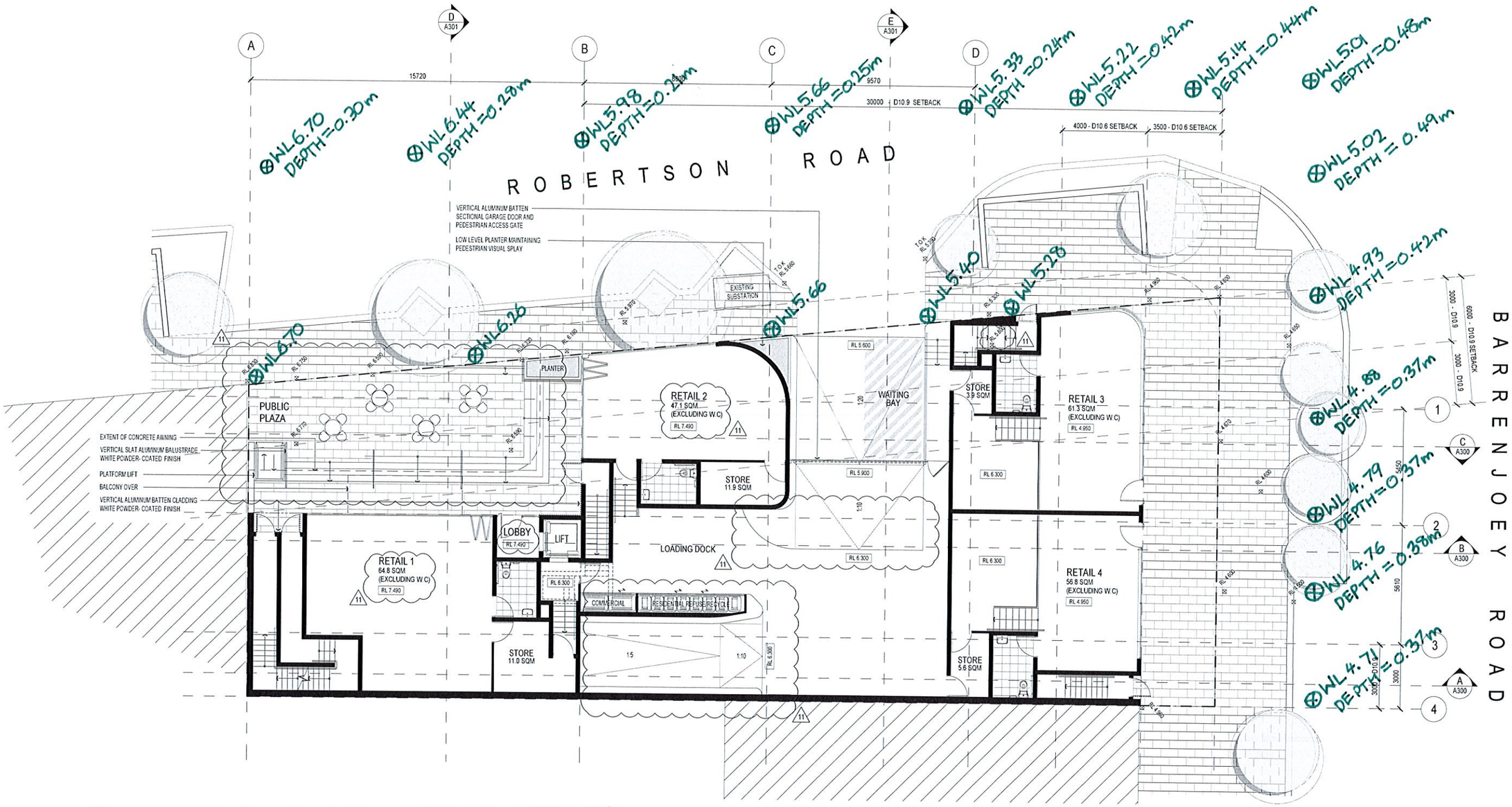
Yours faithfully,



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

Encl. Sketch 220088-SK-04 Flood Planning Levels
Pre-lodgement Meeting Notes
Flood Information Request – Comprehensive – Lot 63, 349 Barrenjoey Road, Newport
Hydraulic Certification Form

FLOOD PLANNING LEVELS



⊕WLX.XX = CLIMATE CHANGE 1%. AEP MAX WATER LEVEL
DEPTHX.XX = CLIMATE CHANGE 1%. AEP MAX WATER DEPTH

220088-SK-04
24/7/2020

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ISSUE	DATE	AMENDMENTS
11	20.07.24	DRAFT DA ISSUE
10	20.07.17	DRAFT DA ISSUE
09	20.06.25	CONSULTANT ISSUE
08	20.06.19	REVISED ISSUE

CLIENT: SUMMIT BUILD P/L

PROJECT: MIXED USE DEVELOPMENT

349 BARRENJOEY ROAD NEWPORT NSW 2106

TITLE: FLOOR PLAN GROUND

SCALE: 1:100 @ A1 / 1:200 @ A3
APPROVED: MN
DRAWN: TG
CHECKED:
DATE: JULY
STATUS: DA

PROJECT NUMBER: 19032
DRAWING NUMBER: A101
ISSUE: 11

crawford architects

northern beaches council

PRELODGEMENT ADVICE

Application No:	PLM2019/0216
Meeting Date:	31/10/2019
Property Address:	349 Barrenjoey Road NEWPORT
Proposal:	Shop top housing
Attendees for Council:	Penny Wood (Planner, Development Assessment) Rebecca Englund (Principal Planner, Development Assessment) Dominic Chung (Urban Designer) Duncan Howley (Team Leader, Floodplain Planning & Response)
Apologies:	Patrick Bastawrous (Traffic Engineering Coordinator) Paul David (Development Engineer) Joseph Tramonte (Landscape Architect)
Attendees for Applicant:	Tony Gray (Crawford Architects) Megan Naylor (Crawford Architects) Georgina & Tony Nassif (Property Owners)

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	
Definition of proposed development: **(ref. PLEP 2014 Dictionary)**	Shop top housing
Zone:	B2 Local Centre
Permitted with Consent or Prohibited:	Permitted with consent

Principal Development Standards:	
Clause 4.3 Height of Buildings	
Standard	**Proposed**
11.5m above existing ground level, or 11.5m above the relevant Flood Planning Level (FPL)	>11.5m above existing ground level
The proposal appears to exceed the 11.5m height limit prescribed by clause 4.3(2) of PLEP 2014. However, it is likely that the proposal is compliant with the variable height limit associated with the flood affectation of the site, being 11.5m above the relevant FPL, as prescribed by clause 4.3(2C) of PLEP 2014.	

PITTWATER 21 DEVELOPMENT CONTROL PLAN (P21 DCP)

Note: P21 DCP can be accessed via Council's Website.

Section B: General Controls
B2 Density Controls
B2.6 Dwelling Density and Subdivision – Shop Top Housing
The commercial/retail component of the development must be a minimum of 25% of the gross floor area of the building as a whole.
B3 Hazard Controls
B3.11 Flood Prone Land **B3.12 Climate Change (Sea Level Rise and Increased Rainfall Volume)** **B3.13 Flood Hazard - Flood Emergency Response Planning**
The subject site is classified flood prone land. The controls of the above clauses are applicable to the proposed development on site, in addition to the provisions of clause 7.3 (Flood planning) of PLEP 2014. Please refer to the comments from Council's Flooding Team further in this report.
B6 Access and Parking
B6.3 Off-Street Vehicle Parking Requirements
The proposed development generates the following demand for off-street parking: 14 x residential spaces (inclusive of 1 space for people with a disability) 3 x residential visitor spaces (inclusive of 1 space for people with a disability) 1 x service/delivery space 9 x retail spaces (inclusive of 1 space for people with a disability) Total: 27 off-street parking spaces The proposal provides 21 off-street parking spaces, representing a shortfall of 6 spaces. The proposed non-compliance is not supported, and the proposal is to be amended to address this deficiency. Council's preference would be for the shortfall to be addressed by virtue of a reduction in the amount of units and/or the replacement of two bedrooms units with one bedroom units. The current amount of commercial floor space is supported.
B8 Site Works Management
B8.1 Construction and Demolition – Excavation and Landfill
In accordance with the provisions of this clause, a Geotechnical Risk Management Report will be required to address the excavation proposed. The Geotechnical Risk Management Report should also identify the depth of any groundwater, noting that any interference of groundwater will constitute integrated development and require general terms of approval from Water NSW.

Section C: Development Type Controls
C1 Design Criteria for Residential Development
C1.9 Adaptable Housing and Accessibility
20% of the proposed residential units are to be designed to be consistent with the Silver Level design requirements of the *Livable Housing Guidelines*.

Section D: Locality Specific Development Controls
Newport Locality - Newport Commercial Centre
D10.9 Setbacks (Newport Commercial Centre)
Barrenjoey Road The siting of the stairs, accessible hoist and access platform in the south-east corner of the site is inconsistent with the 3.5m minimum front setback prescribed in relation to Barrenjoey Road. The proposed structures are to be recessed into the development, to provide for a clear 3.5m extension of the Barrenjoey Road footpath. Robertson Road The setback of the third floor in relation to the public plaza is inconsistent with the additional 3m setback prescribed by this development control. The setbacks and façade treatment should be amended to avoid the appearance of a three storey wall abutting the plaza. Whilst the dimensions of the proposed public plaza are consistent with the requirements of this development control, the design of the space is inconsistent with the design intent of the Newport Masterplan, in so far as the accessible ramp creates a disconnect to the adjacent footpath. The space should be redesigned to create one continuous space, with no barriers between public and private land. Southern Side Setback The southern side setback of the upper floor is inconsistent with the 3m minimum prescribed by this development control, and the 6m minimum spatial separation requirements of the ADG. Noting that the proposal fails to amalgamate with the adjoining property to the south, concern is raised in relation to any potential impact of this non-compliance upon the development potential of the site next door. As currently proposed, the sizing of the upper floor presents as an overdevelopment, and the accumulation of setback non-compliance is not supported.
D10.19 Subdivision and Amalgamation (Newport Commercial Centre)
The proposed development is inconsistent with the indicative amalgamation pattern prescribed by this development control, and fails to amalgamate with any adjoining properties. As such, the proposal also fails to achieve the access requirements and built form anticipated by the Newport Village Centre Masterplan.

In choosing to proceed/develop in isolation before any adjoining properties, the application must:

a. be supported by detailed evidence of all attempts to amalgamate with adjoining properties,
b. demonstrate that the proposal will not adversely affect the development potential of the adjoining properties, and
c. be supported by evidence of attempts to gain legal access across the adjoining property to the south (noting that vehicular access to Robertson Road is not anticipated in the Newport Village Centre Masterplan).

D10.21 Active Frontage (Newport Commercial Centre)

Awnings are to extend the full width of the lot at the ground floor on Barrenjoey Road and Robertson Road (including the public plaza to a minimum depth of 2m). The awning along Barrenjoey Road should extend the full depth of the front setback.

SEPP No. 65 (Design Quality of Residential Apartment Development)

For the purpose of this prelodgement, it is assumed that the proposal has been designed to meet the criteria and guidelines of the Apartment Design Guideline. However, your attention is drawn to the following specific requirements:

- The 3m/6m minimum spatial separation requirements of Objective 3F-1,
- The design requirements for car park access in Objective 3H-1,
- 8m maximum room depth in Objective 4D-2,
- The minimum requirement for 20% of units to meet the Silver Level requirements of the *Livable Housing Guidelines* in Objective 4Q-1.

Specialist Advice	
Flooding	*The property at 349 Barrenjoey Road is identified at being subject to the risk of flooding. It is located in the medium flood risk precinct as shown in the Newport Flood Study, 2019. As the proposal will intensify development on the site, the provisions of B3.12 – Climate Change apply to this proposed development. Future development would require:* • *Any future Development Application must be accompanied by a Flood Management Report, guidelines to undertake this are available on Council's website.* • *The basement car park entry ramp crest and all potential water entry points must be located at or above the Flood Planning Level of 6.2m AHD. This is based on the Flood Planning Level at the location of the existing driveway, if it is re-located west the Flood Planning Level will increase. Please note flood barriers or exclusions will not be permitted.*

Specialist Advice	

	• *All ground floor levels must be set at or above the relevant Flood Planning Level.*
	• *The relevant Flood Planning Levels and required minimum floor levels for the proposed retail tenancies are:*
	  o *Retail 1 – 5.3m AHD (if rear entry is located above the driveway crest level of 6.2m AHD)*
	  o *Retail 2 – 5.4m AHD (if rear entry is located above the driveway crest level of 6.2m AHD)*
	  o *Retail 3 – 6.6m AHD*
	  o *Retail 4 – 6.9m AHD*
	  o *Retail 5 – 7.2m AHD*
	• *The minimum floor level requirement for the lift lobby on Barrenjoey Road is 5.3m AHD.*
	• *The proposed outdoor courtyard at the rear of the property is not required to be set at the Flood Planning Level.*
	• *A shelter in place refuge must be provided above the peak Probable Maximum Flood level of 7.4m AHD, specifications for the shelter in place refuge can be found in the Flood Emergency Response Planning for Development in Pittwater Policy.*
	• *Clause F10 of Part B3.11 of the Development Control Plan can be utilised have a minimum floor level for the first 5 metres from the street front of new development in business zonings below the Flood Planning Level provided it can be demonstrated that it complies with the Flood Prone Land Design Standard, specifically that the area below the Flood Planning Level is limited to a maximum of 30m².*
	• *Compliance with Part B3.11, B3.12 and B3.13 of the Pittwater 21 Development Control Plan and clauses 7.3 and 7.4 of the Pittwater Local Environmental Plan 2014*

Stormwater	*Council's records indicate that the property 349 Barrenjoey Road, Newport is located adjacent to a 600mm stormwater pipeline (SPI54365), a 300mm stormwater pipeline (SPI54366), a 900mm x 930mm Tonkin pipe (SPI59110), a 375mm stormwater pipeline (SPI58298), and associated stormwater infrastructure. This is shown on Council's stormwater map which is available on the webpage. (Please follow the relevant link below and select the 'Stormwater' map from the 'No Overlay Map' drop down menu. You can then search by address and use the zoom functionality to see pipe diameters and asset id*

Specialist Advice	
	numbers. i.e. 600 mm and SPP or SPI etc.). *To demonstrate compliance with Pittwater 21 Development Control Plan and Northern Beaches Council's Water Management Policy PL 850 Water (Section 6 – Building Over or Adjacent to Council Drainage System and Easement. Links provided below), it is recommended that the following details are submitted with any application.* • *Accurately locate, confirm dimensions including depth and plot to scale Council's stormwater pipelines and associated infrastructure on the DA site plans that outline the proposal. This should be carried out by a service locating contractor and registered surveyor. (Evidence of methodology used for locating stormwater system should be provided);* • *If the applicant proposes to use a CCTV pipeline survey to confirm the location of the pipeline, it is recommended that the survey is carried out in accordance with Council's CCTV guideline attached;* • *All structures are to be located clear of any Council pipeline, pit or easement;* • *Footings of any structure adjacent to an easement or pipeline are to be designed in accordance with the above-mentioned policy; and* • *Structural details prepared by a suitably qualified Civil Engineer demonstrating compliance with Council's policy are to be submitted.*
Water Quality	***Stormwater*** *The applicant is required to provide stormwater treatment for the site. A stormwater engineer should prepare the stormwater plan.* 1. *The following pollutant reduction targets apply: GP 90%, TSS, 85%, TP 65% and TN 45%. The incorporation of roofwater for reuse in toilets and laundries will be viewed favourably and is more important than meeting targets for TP and TN removal.* 2. *Stormwater treatment measures must be included in the Water Management Plan, with detail provided of each measure.* 3. *A MUSIC model file must be provided with the DA to allow Council to review the model and parameters used.* 4. *A restriction as to user and positive covenant will be placed over the asset(s) and the applicant is required to*

Specialist Advice	
	provide an operation and maintenance plan for each asset. The responsibilities of the strata association in terms of maintaining and replacing the stormwater treatment measures must be made clear in the appropriate documents. (for CC – not for DA) ***Sediment*** *1. A sediment and erosion control plan must be provided.* ***Groundwater*** *If the applicant intends to have basements and will excavate deeper than 1.5m, bores must be drilled to greater than the intended depth of the basements to monitor groundwater. The presence of groundwater should be discussed in the Geotech report and if present, measures to respond should be addressed.*
Traffic	*From a traffic and transport perspective the applicant would need to address the following issues:* • *Conflict between pedestrians and vehicles at the entry to the carpark as this will be through a pedestrian priority area.* • *All loading and waste collection is to be conducted on site.* • *The carpark access signals are to prioritise access into the basement to prevent queuing close to Barrenjoey Road.* • *RMS referral required (State Road Corridor).* • *The applicant will be required to submit a plan showing the compliance with AS 2890.1 & 2890.6 (Note: the current plans do not comply)* • *Loss of off-street parking is acceptable however this needs to be off-set with parking provided onsite for the retail component of the development.* • *How all retail parking spaces will be accessible to the public during trading hours and how residential spaces will be appropriately secured.*
Engineering	*1. Construction a standard vehicular crossing in accordance with Council's Vehicular Crossing standard profile available on Council's web page. A concept driveway plan with grades and levels is required to be submitted with the DA, demonstrating that the driveway*

Specialist Advice	
	is in compliance with AS2890.1 and Council's vehicular crossing standard profiles. Any raised crest required as result of flood levels shall be considered and appropriately designed. 2. *Council infrastructure such as footpath and kerb & gutter surrounding the development site may require to be upgraded subject to detail assessment at DA stage.* 3. *A Geotechnical engineers report is required to be submitted in accordance with Geotechnical Risk Management Policy for Pittwater – 2009.* 4. *On Site Detention basin will not be required for the proposed development.* 5. *Stormwater management for the development shall be provided in accordance with clause B5.10 of Pittwater DCP and connected to Council piped drainage system.*
Urban Design	*The applicant should address the following issues:* 1. *The proposed external stairs and platform lift encroachment into the 3.5m footpath setback along Barrenjoey Road cannot be supported. They should be relocated to be in-line with the shop fronts to maintain an unobstructed footpath setback area. The proponent should consider the possibility of the lift lobby access to be from Robertson Road next to the vehicle entry/ exit/ service area to gain a higher street level access point. That will also result in a longer shopfront address to Barrenjoey Road which will be desirable for footpath activation. The continuous shop awning proposed should cantilever out the full width of the 3.5 setback footpath area.* *The loading dock address to Robertson Road should consider the high quality public domain amenity of the popular pedestrian footpath by using a higher quality of finishes and interior treatments to enhance the welcoming entrance gesture. That could also improve the arrival experience of residents and visitors if the lift lobby entrance is relocated next to the loading dock as suggested earlier.* 2. *The ramp to access the courtyard alfresco dining area could also be potentially shortened if it is relocated to the north-west corner of the site subjected to the logistic of working with the flood levels. Integration with the future*

Specialist Advice	
	courtyard space when the neighbouring site to the west is developed should also be considered. 3. *The Newport Village Commercial Centre Masterplan 2014 indicates a preference for a site amalgamation with the next door site to the south with the Built form Strategy on page 48. The Masterplan states that topmost level of buildings should be designed to promote view sharing and to give openness to the streetscape with full breaks between them of minimum 6m. There should be a two storey street wall height to reduce apparent scale and setbacks on the top floor to modulate and breakdown building massing. The proposed top floor plan should consider the 4/3m setbacks from the façades of the lower floors fronting Barrenjoey/ Robertson Road respectively. All building facades fronting the Robertson Road plaza should be two storey and with a 3m setback on the top floor to reinforce an intimate pedestrian scale.*
Landscape	***Public Domain*** *The public domain character established from the Newport streetscape upgrade works undertaken previously, which were developed in consideration of the Newport Village Commercial Centre Masterplan, is minimally impacted by the proposal. The proposed driveway off Robertson Road is located to retain the existing small public space consisting of outdoor dining and street furniture, near the corner of Barrenjoey Road, and can be utilised as both a driveway and pedestrian footpath.* *Any public domain street furniture required to be removed for the proposed driveway will be replaced in close proximity, including the street lighting which appears to be located within the driveway footprint.* *A 3.5 metre setback to building is achieved in front of the proposed retail spaces along Barrenjoey Road, in accordance with DCP D10.9 Setbacks (Newport Commercial Centre). The public domain benefit, however is interrupted by the entry stairs/lift and as such the intent of the DCP clause to visually extend the public domain and thus the opportunities for street activation is reduced.* *A public Plaza Is proposed, however it does not strictly meet the intent of the DCP clause that the small public plaza is formed by a widened setback due to the proposal for a ramp and stair*

Specialist Advice	
	access, but can be interpreted as beneficial to the public domain. *At DA stage, detailed documentation is required demonstrating the extent of existing public domain streetscape elements that are retained, and if any, removed or relocated, complying with the Newport Village Commercial Centre Masterplan, Appendix 12, or as advised by Council.* *A Public Domain Protection Plan is required to demonstrate the methodology to protect the following existing elements along the Barrenjoey Road and Robertson Rd road reserve: pavements, utilities, lighting, street furniture, and tree planting and gardens.* ***Landscaping*** *A landscape plan will be required to satisfy the outcomes and controls of the DCP as noted below:* *For shop top housing, a planter or landscaped area with minimum area of 4m^2 is to be provided as a feature at the ground floor (entry) 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^2 and where canopy trees are proposed a minimum soil volume of 8m^3 is required. Provision of available root volume may need to incorporate the use of structural soils.*
Other	*Further information is required to demonstrate:* • *Separate and accessible public pedestrian access from the retail parking spaces within the basement carpark to the public domain.* • *Compliance with Council's Waste Management Policy, specifically with regard to the need for separate commercial and residential waste stores and appropriate access thereto.*

Relevant Policies
You are advised that copies of the following (but not limited to all) Council's policies are available via Council's website www.northernbeaches.nsw.gov.au : • Geotechnical Risk Management Policy for Development in Pittwater • Development Assessment Management Policy • Waste Management Guidelines Other policies that are relevant to the application, include but are not limited to: • SEPP No. 65 – Design Quality of Residential Apartment Development • SEPP (Building Sustainability Index: BASIX) • SEPP (Infrastructure) 2007 • Apartment Design Guideline • Livable Housing Guidelines

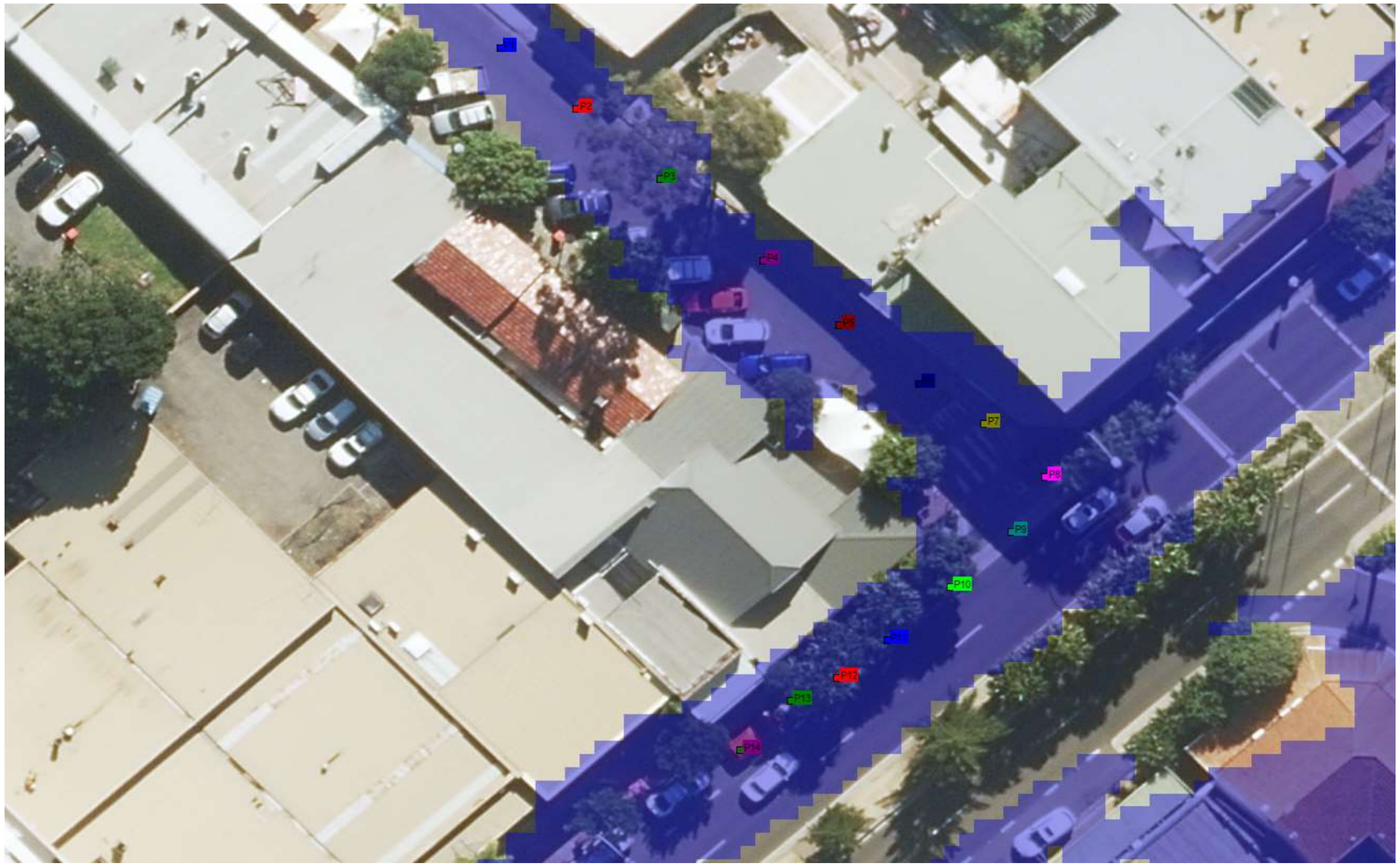
Documentation to accompany the Development Application

- Completed Application Form and 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
- Energy Performance Report
- Schedule of colours and materials
- Landscape Plan and Landscape Design Statement
- Arboricultural Impact Assessment Report (*if works are within 5m of existing trees)
- Photo Montage
- Erosion and Sediment Control Plan / Soil and Water Management Plan
- Stormwater Management Plan / Stormwater Plans and On-site Stormwater Detention (OSD) Checklist
- Stormwater Drainage Assets Plan
- Geotechnical Report
- Acoustic Report (addressing clause 101 of SEPP Infrastructure)
- Flood Risk Assessment Report
- Traffic and Parking Report
- Construction Traffic Management Plan
- Construction Methodology Plan
- Access Report
- BCA Compliance Report
- SEPP 65 Report, including compliance table addressing all relevant provisions of the ADG
- Integrated Development Fees (*if interference with ground water is proposed)

Please refer to Council's *Development Application and Modification Lodgement Requirements 19/20* for further detail.

Concluding Comments
These notes are in response to a prelodgement meeting held on 31 October 2019 to discuss a shop top housing proposal at 349 Barrenjoey Road, Newport. The notes reference preliminary plans prepared by Crawford Architects dated 8 October 2019. The subject site is considered to be appropriate for the type of development proposed. However, concern is raised in regards to the lack of amalgamation with adjoining sites and non-compliance with a number of provisions of P21 DCP and the Newport Village Centre Masterplan. If it is able to be demonstrated that the site is suitable for development in isolation, the proposal still requires refinement with respect to the non-compliances highlighted in this advice, including those associated with relevant flood controls, setback controls and minimum car parking requirements. You are advised to satisfactorily address the matters raised in these notes prior to lodging any future development application.

Item	Units	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14
Terrain	[m]	6.4	6.16	5.77	5.4	5.09	4.8	4.7	4.53	4.52	4.5	4.5	4.42	4.38	4.34
Level	[m]	6.7	6.44	5.98	5.66	5.33	5.22	5.14	5.01	5.02	4.93	4.88	4.79	4.76	4.71
X-Vel.	[m/s]	3.37	3.35	3.43	2.91	3.45	2.68	2.15	1.66	1.17	0.45	0.94	0.89	0.66	1.15
Y-Vel.	[m/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V*D	[m²/s]	1	0.92	0.72	0.69	0.82	1.01	0.87	0.78	0.61	0.2	0.36	0.33	0.26	0.42
Hazard		High	High	High	High	High	High	High	High	Transition	Low	Low	Low	Low	Low
Depth	[m]	0.3	0.28	0.21	0.25	0.24	0.42	0.44	0.48	0.49	0.42	0.37	0.37	0.38	0.37
Velocity	[m/s]	3.37	3.35	3.43	2.91	3.45	2.68	2.15	1.66	1.17	0.45	0.94	0.89	0.66	1.15
Energy	[m]	7.28	7.01	6.58	6.09	5.94	5.58	5.38	5.15	5.09	4.94	4.92	4.83	4.79	4.78
Froude		1.95	2.02	2.41	1.84	2.25	1.32	1.03	0.77	0.53	0.22	0.49	0.47	0.34	0.61
Shear	[Pa]	0	-2	0	3.69E+19	3.69E+19	0	0	0	0	0	0	2	0	0
Unit_Strea	[N/m/s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water_Slo	[m/m]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
X-Coord	[m]	344217.6	344222.8	344228.6	344235.6	344240.8	344246.3	344250.7	344254.9	344252.6	344248.4	344244.1	344240.6	344237.5	344234
Y-Coord	[m]	6274861	6274856	6274851	6274844	6274840	6274835	6274832	6274828	6274824	6274820	6274816	6274813	6274811	6274807



FLOOD INFORMATION REQUEST – COMPREHENSIVE

Property: 349 Barrenjoey Road NEWPORT NSW 2106
Lot DP: Lot 63 Sec 5 DP 6248
Issue Date: 07/07/2020
Flood Study Reference: Newport Flood Study, 2019

Flood Information for lot:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Flood Planning Level (FPL) [1, 2, 3 & 4]: 7.23 m AHD **FOR SITE SPECIFIC FLOOD PLANNING LEVEL REFER TO CLIMATE CHANGE LEVELS IN SEPARATE CSV FILE TO DETERMINE RELEVANT FLOOD PLANNING LEVELS**

1% AEP – See Flood Map B

1% AEP Maximum Water Level[3]: N/A mAHD

1% AEP Maximum Peak Depth from natural ground level[3]: N/A m

1% AEP Maximum Velocity: N/A m/s

1% AEP Provisional Flood Hazard: N/A **See Flood Map D**

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level[2]: 7.54 m AHD

PMF Maximum Depth from natural ground level: 1.72 m

PMF Maximum Velocity: 1.83 m/s

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

Flooding with Climate Change (See Flood Map F)

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

See separate CSV file of climate change levels in road reserve.

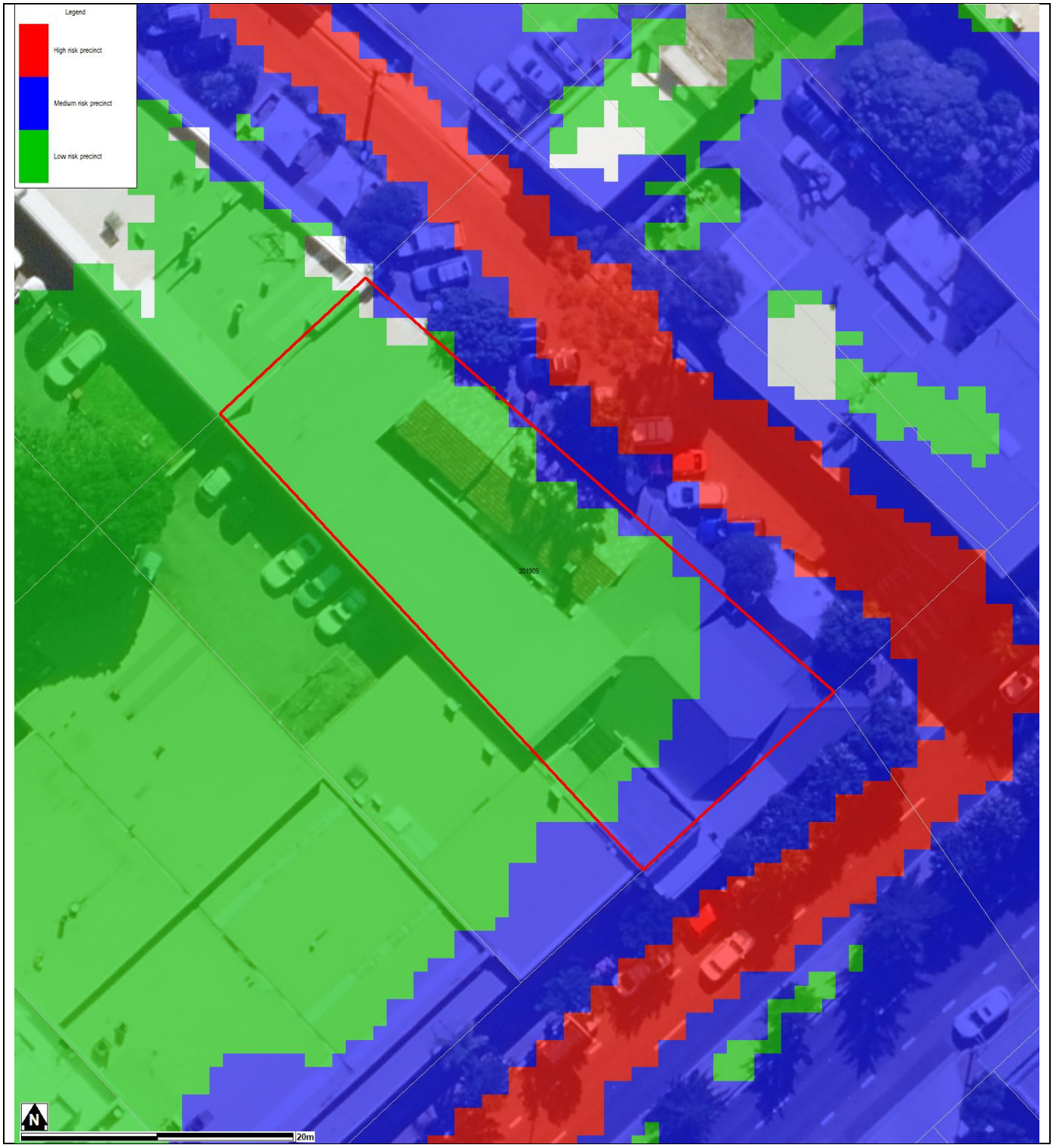
Flood Life Hazard Category – See Map G

[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 FPL.

General Notes:

- All levels are based on Australian Height Datum (AHD) unless otherwise noted.
- This is currently the best available information on flooding; it may be subject to change in the future.
- Council recommends that you obtain a detailed survey of the above property and surrounds to AHD by a registered surveyor to determine any features that may influence the predicted extent or frequency of flooding. It is recommended you compare the flood level to the ground and floor levels to determine the level of risk the property may experience should flooding occur.
- Development approval is dependent on a range of issues, including compliance with all relevant provisions of Northern Beaches Council's Local Environmental Plans and Development Control Plans.
- Please note that the information contained within this letter is general advice only as a detail survey of the property as well as other information is not available. Council recommends that you engage a suitably experienced consultant to provide site specific flooding advice prior to making any decisions relating to the purchase or development of this property.
- The Flood Studies on which Council's flood information is based are available on Council's website.

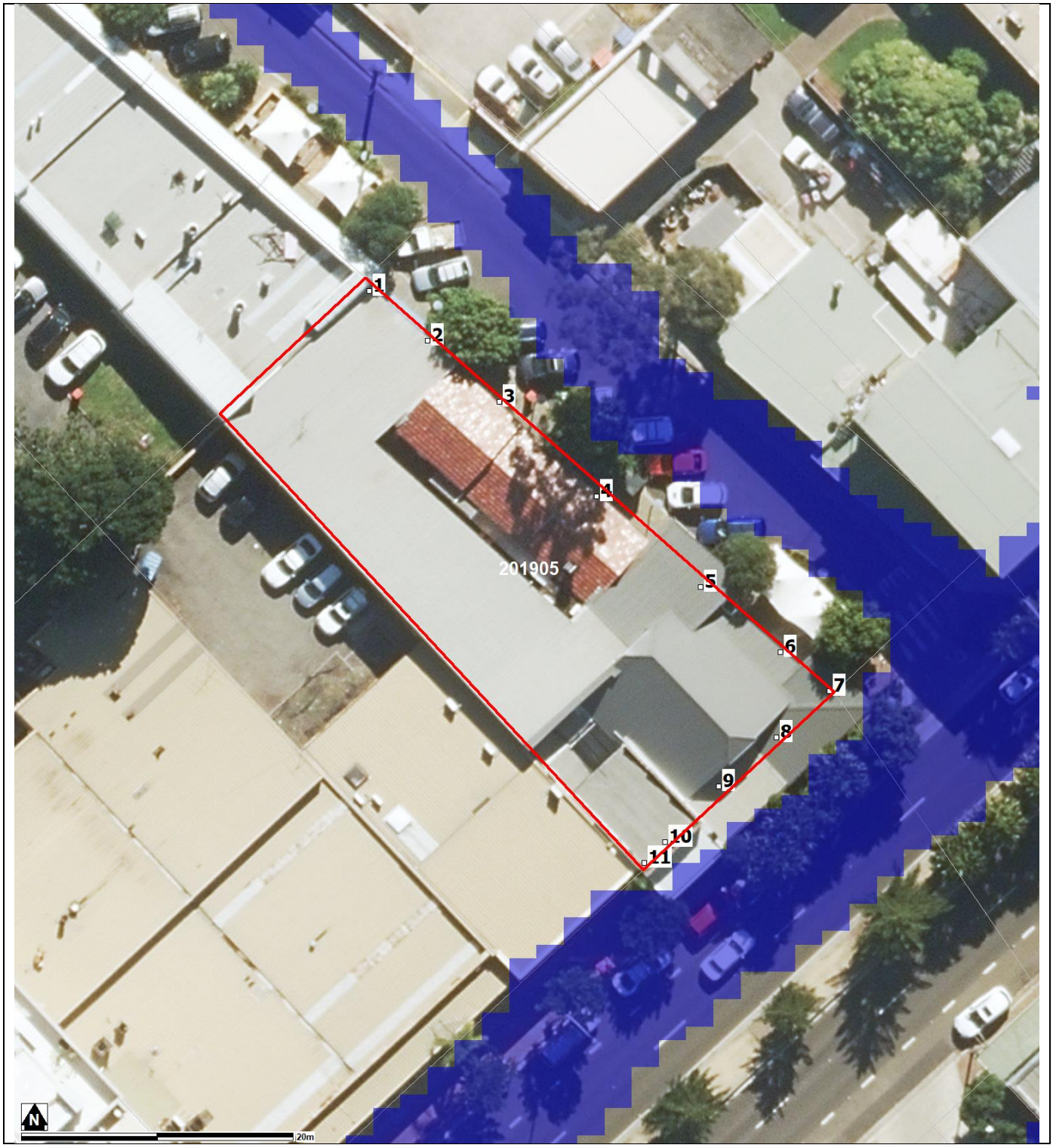
FLOOD MAP A: FLOOD RISK PRECINCT MAP



Notes:

- **Low Flood Risk precinct** means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** means all flood prone land that is (a) within the 1% AEP Flood Planning Area; and (b) is not within the high flood risk precinct.
- **High Flood Risk precinct** means all flood prone land (a) within the 1% AEP Flood Planning Area; and (b) is either subject to a high hydraulic hazard, within the floodway or subject to significant evacuation difficulties (H5 or H6 Life Hazard Classification).
- The **Flood Planning Area** extent is equivalent to the Medium Flood Risk Precinct extent, and includes the High Flood Risk Precinct within it. The mapped extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- None of these mapped extents include climate change.

FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) 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	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	6.78	0.06	1.00
3	N/A	N/A	N/A	N/A	N/A	7.01	6.85	0.52	1.38
4	N/A	N/A	N/A	N/A	N/A	6.54	6.45	0.57	1.09
5	N/A	N/A	N/A	N/A	N/A	5.83	5.99	0.51	1.28
6	N/A	N/A	N/A	N/A	N/A	5.70	5.82	0.77	0.83
7	N/A	N/A	N/A	N/A	N/A	5.39	5.86	0.88	0.85
8	N/A	N/A	N/A	N/A	N/A	5.34	5.88	0.95	0.77
9	N/A	N/A	N/A	N/A	N/A	5.26	5.89	1.07	0.87
10	N/A	N/A	N/A	N/A	N/A	5.17	5.89	1.21	0.46
11	N/A	N/A	N/A	N/A	N/A	5.15	5.89	1.24	0.67

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)

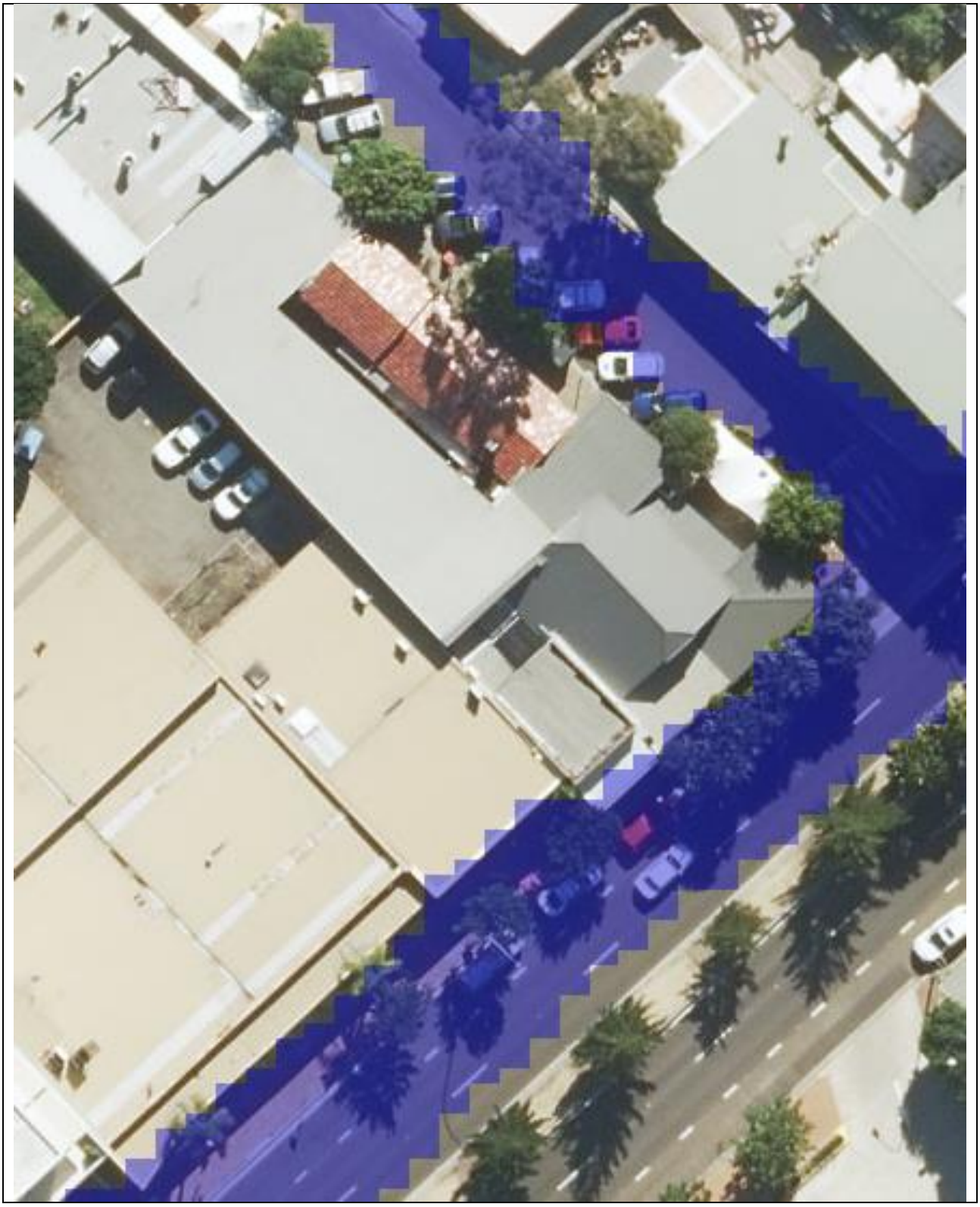
REFER TO CSV FILE FOR CLIMATE CHANGE LEVELS IN ROAD RESERVE

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).

If the CC 1% AEP level is less than the 1% AEP level, this is probably because the 1% AEP level used for planning includes a 5% AEP ocean surge. In this case, the 1% AEP value should be used.

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:

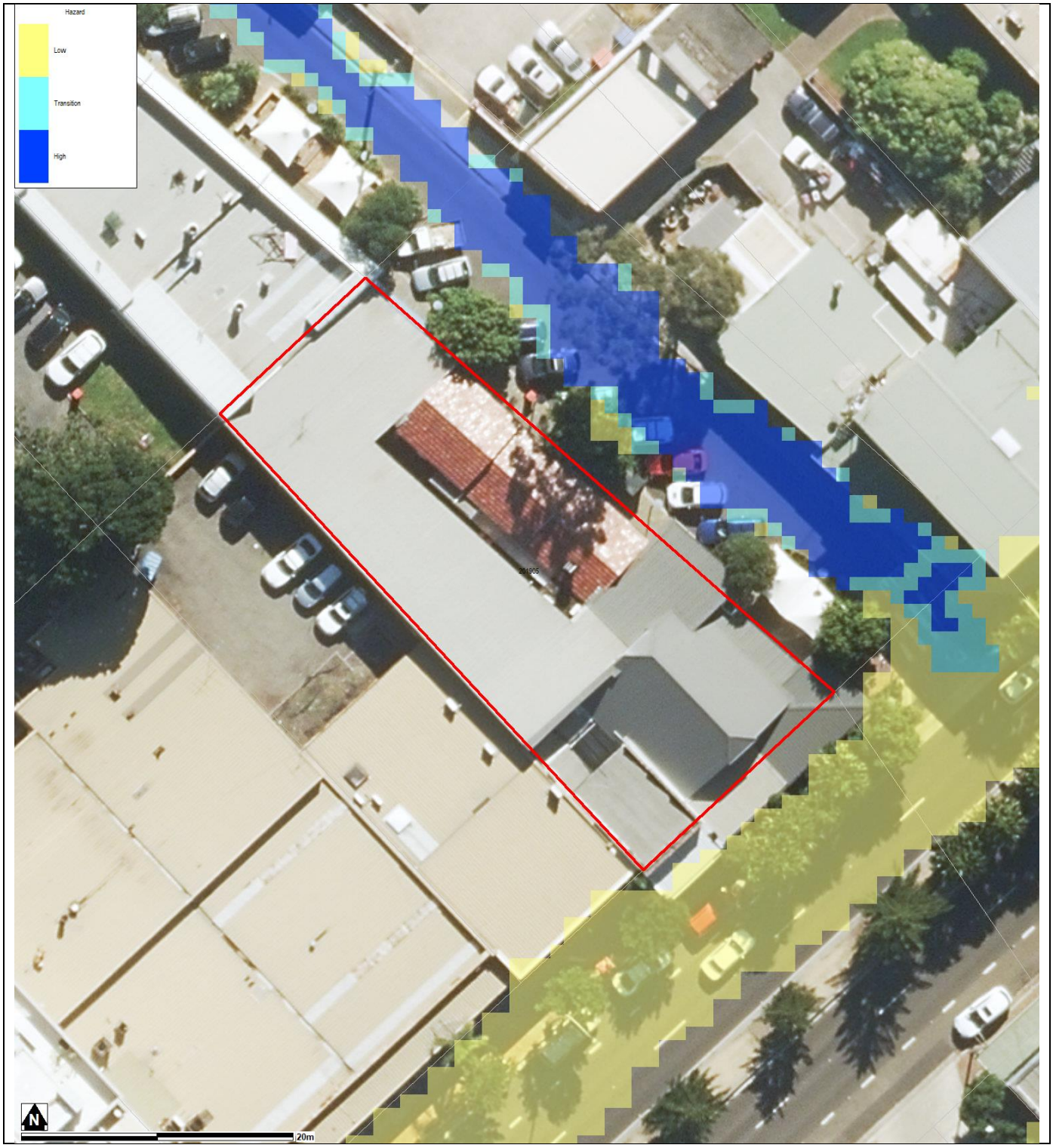
- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography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

FLOOD MAP C: 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

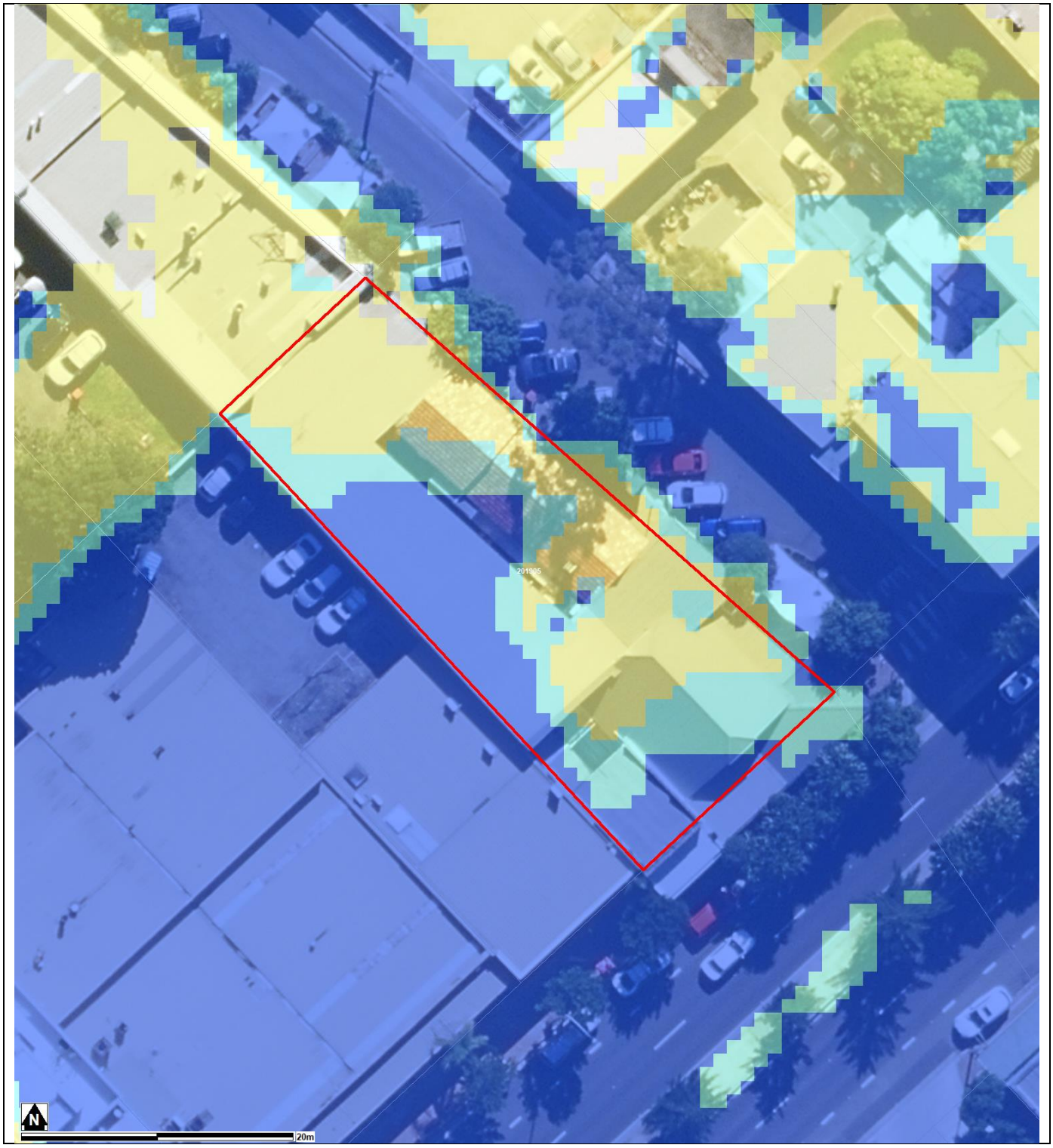
FLOOD MAP D: 1% AEP FLOOD HAZARD EXTENT MAP



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

FLOOD MAP E: PMF FLOOD HAZARD EXTENT MAP



Notes:

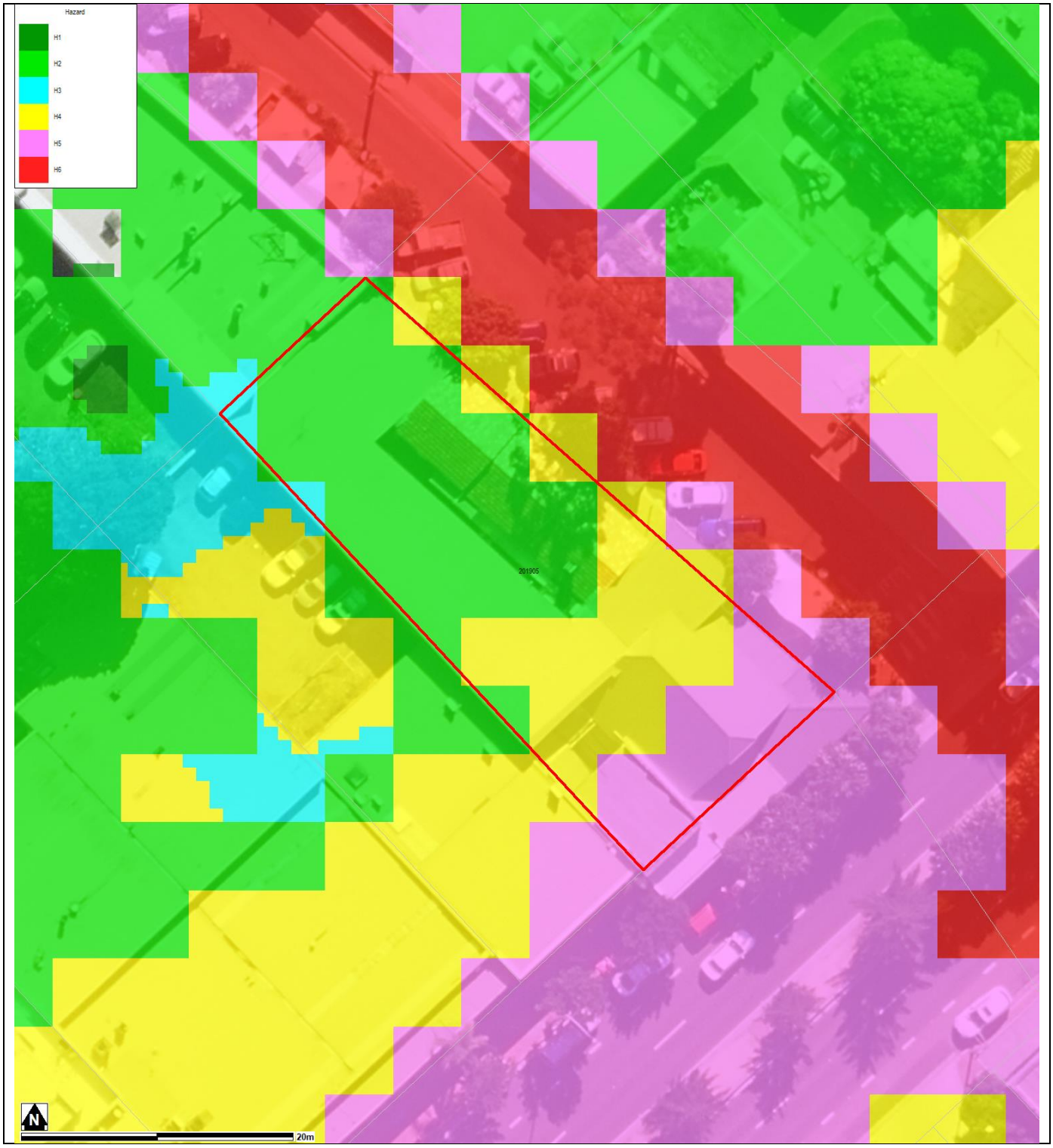
- Extent represents the Probable Maximum Flood (PMF) event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source: NearMap 2014) are indicative only

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

Note:

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

FLOOD MAP G: 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 B3.13.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source:) and aerial photography (Source Near Map 2014) are indicative only.

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

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: 349 Barrenjoey Road, Newport NSW 2106

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 (Insert Name) on behalf of Demlakian Consulting Engineers (Trading or Business/ Company Name)

on this the 24 July 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: 220088rpt20200724_JD_Flood Mangement Report

Report Date: 24 July 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