No.15 RIVERVIEW PARADE, NORTH MANLY

Our Ref: E220211

FLOOD MANAGEMENT REPORT

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ISSUE A

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INTRODUCTION

NY Civil Engineering have been engaged to prepare this Flood Management Report to accompany the Development Application for proposed garage at No.15 Riverview Parade, North Manly. Northern Beaches Council have identified the site as being a flood control lot, and as such, a Flood Management Report is to be submitted outlining compliance with DCP requirements.

The following documentation has been used in the preparation of this Flood Management Report;

- Northern Beaches Council 'Flood Information Request – Comprehensive' dated 15 October 2021 (Appendix A)
- Concept Architectural Plans by Du Plessis + Du Plessis Architects dated 24th July 2024 (Appendix B)
- Northern Beaches Council DCP Clause E11 Flood Prone Land
- Northern Beaches Council Flood Prone Land Design Standard

SITE INFORMATION

The proposed development site is on the eastern side of Riverview and is located approximately 50m north east of Manly Creek. The topography is fairly low lying, with the topography of the site running generally flat. The existing development on the site consists of a single dwelling with alteration and addition approved under DA2022/1956. The general nature of the surrounding development is primarily residential. See Figure 1.

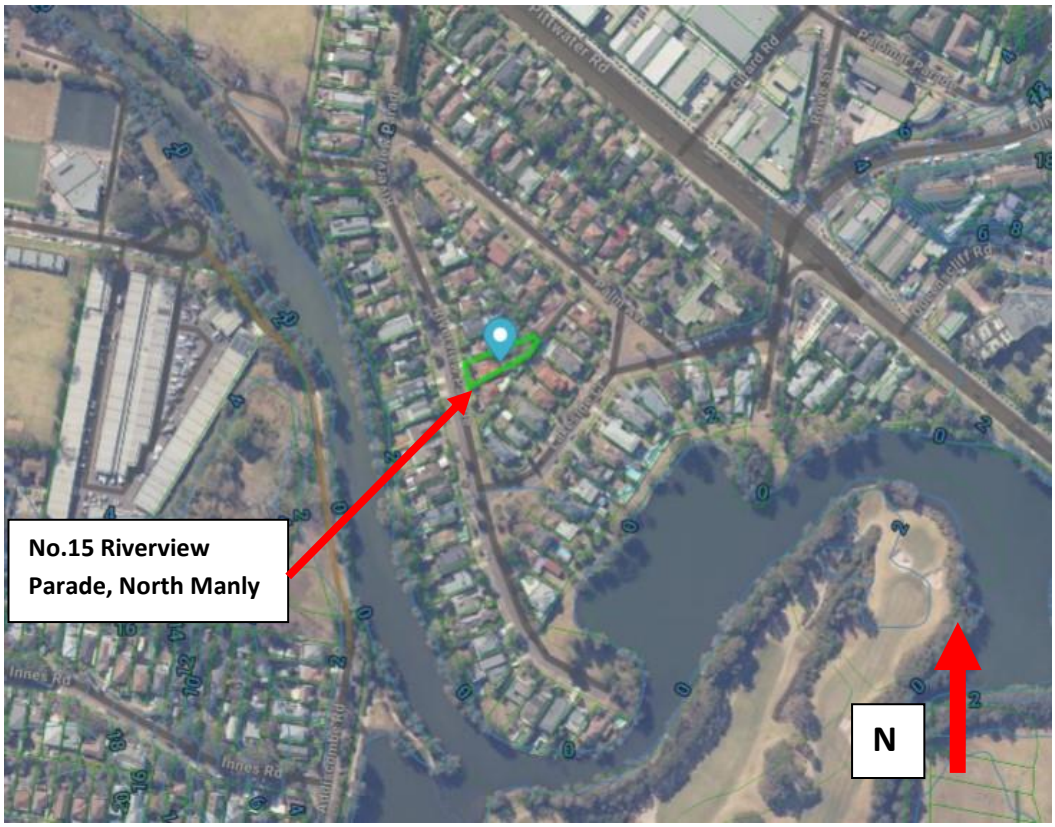


Figure 1: Subject Site – 15 Riverview Parade, North Manly

THE PROPOSAL

The proposal consists of a 15m^2 garage. The garage is proposed at RL 2.5m AHD.

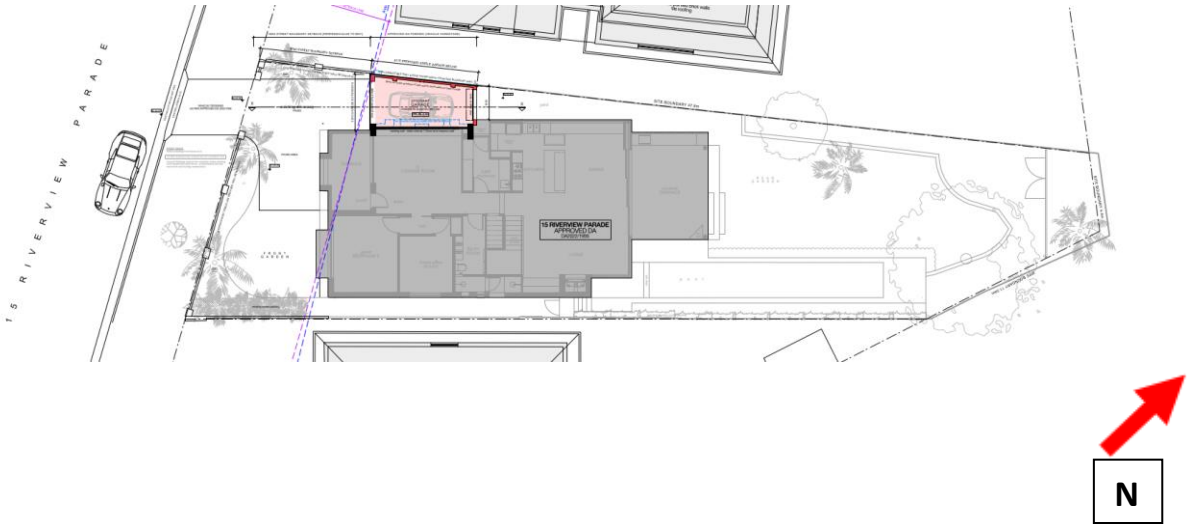


Figure 2: Proposed garage plan from architectural plans

Figure 2 is taken from the architectural plans and identifies the extent of the proposed garage.

FLOODING

Council has indicated in their 'Flood Information Request – Comprehensive' dated 15 October 2021 (Appendix A) that the site is subject to flooding in the 1% AEP and PMF flood events, with the flood extent through the site being predominantly medium risk, with flood Hazard H5.;

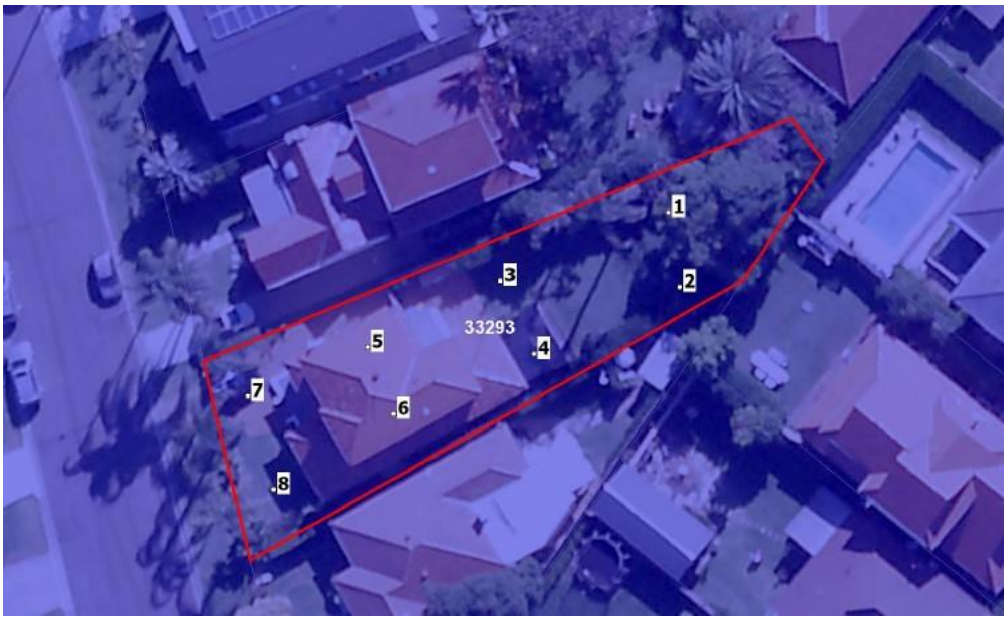


Figure 3: Flood Level Mapping

Figure 3 is taken from Council's flood information and indicates the extent of flooding across the site and surrounding areas in the 1% AEP storm event.

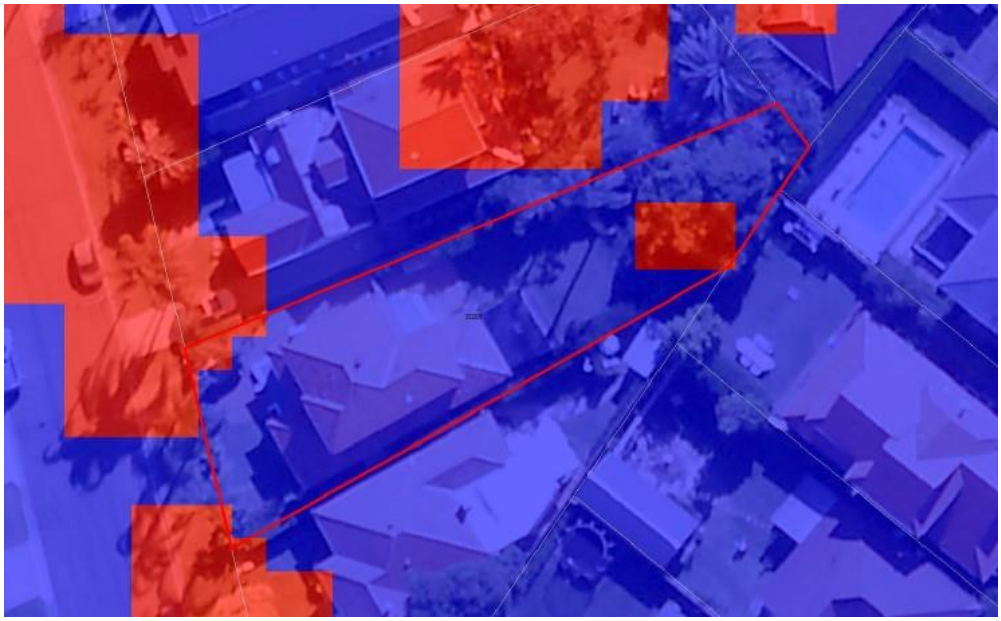


Figure 4: Flood Risk Mapping

Figure 4 is also taken from Council's flood information and indicates the level of flood risk across the site and surrounding area.

Council's flood information indicates that the existing building and proposed development area is within a 'medium flood risk precinct, which by definition is an area within the 1% AEP flood extent that does not encounter high hazard flows or significant difficulty in evacuation.

The proposed garage extends from the rear of the site within the area noted by points '5' and '7' of Council's flood depth mapping. The 1% AEP flood Top Water Level (TWL) across the site in at RL 3.16m AHD – this even water level is caused by mainstream flooding, resulting from the rising banks of Manly Creek.

Figure 5: Hazard Category Map

Figure 5 is also taken from Council's Flood Information and indicates the flood hazard category H5 across the site.

DCP Compliance & DISCUSSION

The proposed garage have triggered the flood controls for residential development under Northern Beaches Council DCP E11 Flood Prone Land. As such, NY Civil Engineering have undertaken an assessment of the proposed development's compliance with these requirements under the 'Medium' Risk category.

Flood effects caused by Development;

A1. Development (including earthworks and subdivision) shall not be approved unless it can be demonstrated in a Flood Management Report that it complies with the Flood Prone Land Design Standard found on Council's webpage.

An assessment of the proposal's compliance with the requirements of Council's Flood Prone Land Design Standard has been undertaken further in this report.

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 'proposed garage' footprint in Appendix C will occupy the space of the existing parking hardstand. Therefore, no decrease to the flood storage area in the post-development stage. The proposed garage is at FFL of 2.50m AHD which is 0.41mm below the ground floor. The Garage doors at the western and eastern elevations are to be permeable to RL. 3.66m AHD to not occupy flood volume.

Drainage Infrastructure & Creek Works;

B1. Flood mitigation works or stormwater devices that modify a major drainage system, stormwater system, natural water course, floodway or flood behaviour 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. Suitably qualified structural engineer to certify at CC stage that the building materials proposed are of flood compatible materials up to the PMF flood level.

No modification is proposed to a major or minor 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.

This control is not applicable.

Building Components & Structural;

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).

All new building materials to be flood compatible to a height of RL 3.66m AHD.

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.

A suitably qualified structural engineer to certify at Construction Certificate stage that the structural integrity of the proposed garage is maintained to the flood planning level (1% AEP + 500mm) of RL 3.66m AHD, accounting for forces of floodwater, debris and buoyancy.

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.

Electrical equipment to be flood compatible to 3.66m AHD.

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.

No storage area is proposed below the flood planning area.

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

Any storage within the garage is to be at RL. 3.66m AHD or above.

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.

See 'Flood Emergency Response Plan' appended to this report, Relevant to the approved alteration and addition to the existing dwelling.

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.

Shelter-in-place is a viable option considering the level of the first floor at RL 6.100m AHD is higher than the PMF level of RL 5.66m AHD, and has sufficient habitable floor area for the likely occupants of the single dwelling.

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.

Flood compatible material to be used to the flood planning level RL. 3.66m AHD.

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 proposed garage has no impact on the flood storage volume. The flood affectation of the site is caused by mainstream flooding and not overland flows, flood waters rise slowly and evenly due to Manly Creek overtopping its banks. For this reason, the location of the obstruction is not critical to the behaviour of the flood water, but rather the volume of the obstruction.

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.

Noted.

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;

N/A – the site is within a floodway.

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

The first flood additions at RL 6.10m AHD is higher than the PMF level of RL 5.66m AHD.

Car Parking;

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

The proposed garage is in the place of the existing car parking arrangement in the pre-development state and does not increase risk to life or properties.

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.

The proposed garage at FFL 2.50m AHD is at natural ground level.

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 proposed garage is in the place of the existing car parking arrangement in the pre-development state and does not increase risk to life or properties.

G4. Vehicle barriers or restraints are to be provided to prevent floating vehicles leaving the site where there is more than 300mm depth of flooding in a 1% AEP flood event. The minimum height of the vehicle barriers or restraints must be at or above the Flood planning Level. Vehicle barriers or restraints must comply with the Flood Prone Land Design Standard.

The proposed garage will include a concealed tilt panel garage door to prevent floating vehicles leaving the site or where there is more than 300mm depth of flooding above the flood planning level of 3.66m AHD.

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

The proposed garage is in the place of the existing car parking arrangement in the pre-development state and does not increase risk to life or properties.

G6. Carports must comply with the Flood Prone Land Design Standard

The proposed garage complies with the Flood Prone Land Design Standard to the flood planning level RL. 3.66m AHD.

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.

This requirement is not applicable.

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.

No modification to the existing fencing or pool fencing arrangement is proposed.

Flood Prone Land Design Standard

A1. The development has been designed and can be constructed so that in a 1%AEP flood event: (a) There is no net loss of flood storage/ floodway; (b) There are no adverse changes in flood levels and velocities caused by alterations to the flood conveyance; (c) There are no adverse effects on surrounding properties; and (d) It is sited to minimise exposure to flood hazard. Where relevant certification shall also be provided in Northern Beaches Council's Standard Certification Form (Form A in Flood Risk Management Policy for Development) to this effect.

As previously discussed, the proposal will not result in a loss of flood storage and, due to the garage proposed will be in the place of the existing parking hardstand, and will have no material impact to the existing flood regime.

B1. The development has been designed and can be constructed so that in a 1% AEP flood event: (a) There is no loss of flood storage/floodway; (b) There are no adverse effects on surrounding properties; (c) The works do not have an adverse impact on the environment. (This includes but is not limited to the altering of natural flow regimes, the clearing of riparian vegetation, artificial modification of the natural stream, such as by relocation, piping etc, in accordance with Council's Protection of Waterways and Riparian Land Policy). Certification shall also be provided in Northern Beaches Council's Standard Certification Form (Form A in Flood Risk Management Policy for Development) to this effect.

As previously discussed, the proposal will not result in a loss of flood storage and, will have no material impact to the existing flood regime.

F2. For suspended pier/pile footings, there must also be sufficient openings in perimeter walls located below the 1% AEP flood level to allow for the flood waters to flow through unimpeded: a) The underfloor area of the dwelling below the 1% AEP flood level is to be designed and constructed to allow clear passage of floodwaters, and (b) 50-75% of the perimeter of the underfloor area is of an open design between the natural ground level and the 1% AEP flood level. Only 25-50% of the perimeter would be permitted to be solid, and (c) No solid areas of the perimeter of the underfloor area would be permitted in a floodway.

No suspended pier/pile footings are proposed.

F9. It must be demonstrated that: (a) The Flood Planning Level is more than 1 metre above the typical existing ground level, and (b) The maximum footprint of the foyer is limited to 15 square metres, and (c) The foyer is not used for habitable purposes, and (d) All structural elements, external finishes and internal finishes are constructed from flood compatible materials, and (e) All electrical services, power points, fittings and equipment are located above the Flood Planning Level.

N/A – the Flood Planning Level is not 1.5m above existing ground level.

F10. It must be demonstrated that: (a) The development is located within an existing Business Zone and; (b) The minimum floor level of the first internal 5 metres from one street front only, is no lower than the adjacent footpath level, and (c) The maximum internal distance from the front of the building is 5 metres, and (d) The maximum area for each individual premises below the Flood Planning Level is 30 square metres, and (e) There

is direct internal access between areas above and below the Flood Planning Level for each individual premises, and (f) All new and existing structural elements, external finishes and internal finishes below the Flood Planning Level are constructed from flood compatible materials, and (g) All electrical services, power points, fittings and equipment are located above the Flood Planning Level, and (h) All internal areas below the Flood Planning Level are assumed to be enclosed and so will not be available to form an offset for floodplain storage volume.

N/A – the proposed development is not located within a Business Zone.

G4. Vehicle barriers or restraints (such as mounding, bunding, louvers or similar) that redirect and/or exclude floodwaters will not be permitted. Perimeter walls/louvers installed as vehicle barriers or restraints are to be of an open design, where 50-75% of the perimeter walls/louvers are 'open' between natural ground level and the Flood Planning Level. Only 25-50% of the perimeter walls/louvers would be permitted to be 'solid', openings should permit a 75 mm sphere to pass through, and should not impede the flow of water.

The garage doors are to be of permeable construction up to RL 3.66m AHD.

G6. Car ports must: (a) Be of an open design, where 50-75% of the perimeter walls are 'open' between natural ground level and the Flood Planning Level. Only 25-50% of the perimeter wall would be permitted to be 'solid', openings should permit a 75 mm sphere to pass through, and should not impede the flow of water; and (b) Constructed of flood compatible material.

The garage doors are to be of permeable construction up to RL 3.66m AHD.

G8. It must be demonstrated that: (a) The Flood Planning Level is more than 1.5m above the typical existing ground level, and (b) All structural elements, external finishes and internal finishes below the Flood Planning Level are constructed from flood compatible materials, and (c) All electrical services, power points, fittings and equipment are located above the Flood Planning Level, and (d) 50-75% of the perimeter walls are 'open' between natural ground level and the Flood Planning Level. Only 25-50% of the perimeter would be permitted to be 'solid', Openings should permit a 75 mm sphere to pass through, and should not impede the flow of water, and (e) Internally there are no solid dividing walls within the carparking area, and (f) No 'storage cages' are permitted within the carparking area below the Flood Planning Level, and (g) Prominent signage is displayed that warns of the possibility of flooding and that personal goods other than vehicles must not be stored in the carparking area, and (h) Vehicle barriers or restraints will be provided to prevent floating vehicles leaving the carparking area.

N/A – the Flood Planning Level is not 1.5m above existing ground level.

H1. Fencing (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be open for passage of flood waters - All new fencing on the property must be flood compatible with 50-75% of the fence being of an open design between the natural ground level and the Flood Planning Level. Only 25-50% of the perimeter fence would be permitted to be solid. Openings should permit a 75 mm sphere to pass through, and should not impede the flow of water.

This requirement is not applicable.

CONCLUSIONS AND RECOMMENDATIONS

Based on our assessment of the flood information and the proposed development, we have concluded and summarise as follows:

1. **The proposed development has no material impact on the existing flood regime.**

2. **The proposed garage doors are to be of permeable construction to a minimum height of RL 3.66m AHD.**

3. **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 (FPL). Any existing electrical equipment and power points located below the Flood Planning Level – RL 3.66m AHD - must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.**

4. **A suitably qualified structural engineer to certify at Construction Certificate stage that the structural integrity of the proposed additions is maintained to the FPL level – RL 3.66m AHD, accounting for forces of floodwater, debris and buoyancy.**

5. **The natural ground levels for the pre-development state are to be maintained for the post-development state of the site.**

6. **A laminated copy of the Flood Emergency Response Plans appended to this report is to be provided to the residents of the dwelling.**

APPENDIX A

Northern Beaches Council 'Flood Information Request – Comprehensive'

FLOOD INFORMATION REPORT – COMPREHENSIVE

Property: 15 Riverview Parade NORTH MANLY NSW 2100
Lot DP: Lot A DP 366644
Issue Date: 15/10/2021
Flood Study Reference: Manly Lagoon Flood Study 2013, BMT WBM

Flood Information for lot [1]:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) [2, 3, 4]: 3.66 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level [2, 3]: 3.16 mAHD

1% AEP Maximum Depth from natural ground level[3]: 0.98 m

1% AEP Maximum Velocity: 0.57 m/s

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

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level [4]: 5.66 m AHD

PMF Maximum Depth from natural ground level: 3.47 m

PMF Maximum Velocity: 0.95 m/s

PMF Hydraulic Categorisation: N/A **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:

1% AEP Maximum Water Level with Climate change [3]: 3.44 m AHD

1% AEP Maximum Depth with Climate Change[3]: 1.25 m

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

Flood Life Hazard Category – See Map G

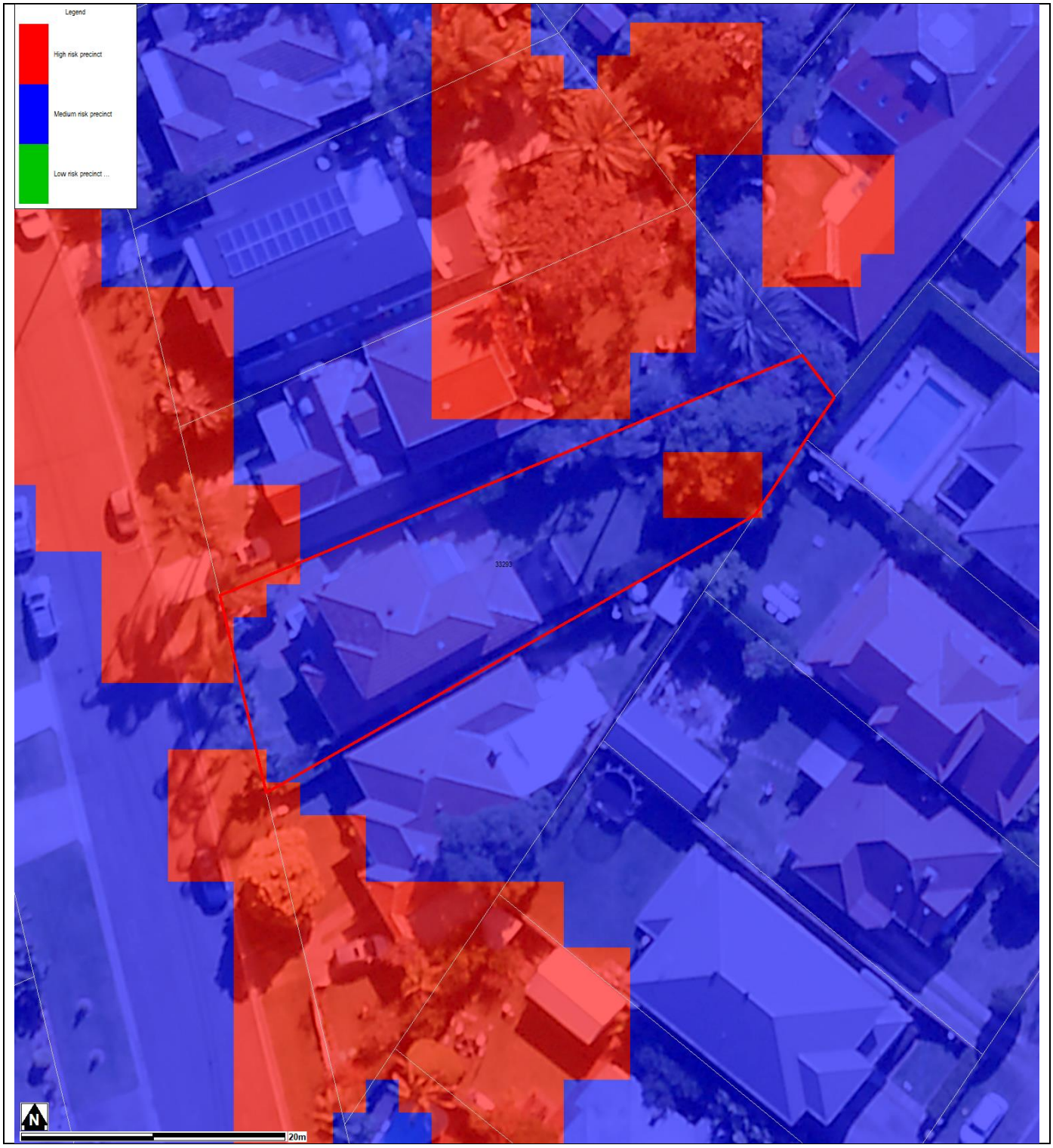
Indicative Ground Surface Spot Heights – See Map H

[1] The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.
[2] Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning Level may be in a different location to the maximum 1% AEP flood level.
[3] Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.
[4] Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or FPL.

General Notes:

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

FLOOD MAP A: FLOOD RISK PRECINCT MAP



Notes:

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

FLOOD LEVEL POINTS

Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Manly Lagoon Flood Study 2013, BMT WBM) 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	2.74	0.44	3.16	0.86	0.49	3.66	5.66	3.36	0.56
2	2.74	0.38	3.16	0.81	0.22	3.66	5.66	3.30	0.44
3	2.74	0.34	3.16	0.76	0.18	3.66	5.66	3.26	0.45
4	2.74	0.36	3.16	0.78	0.18	3.66	5.66	3.28	0.44
5	2.74	0.42	3.16	0.84	0.20	3.66	5.66	3.34	0.54
6	2.74	0.41	3.16	0.83	0.20	3.66	5.66	3.33	0.52
7	2.74	0.36	3.16	0.78	0.33	3.66	5.66	3.28	0.75
8	2.73	0.34	3.16	0.77	0.51	3.66	5.66	3.27	0.90

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)

ID	CC 1% AEP Max WL (m AHD)	CC1 % AEP Max Depth (m)
1	3.44	1.13
2	3.43	1.08
3	3.44	1.04
4	3.43	1.06
5	3.44	1.12
6	3.43	1.11
7	3.44	1.05
8	3.43	1.04

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

A variable Flood Planning Level might apply. Freeboard is generally 0.5m above the maximum 1% AEP water level. However for overland flow with a depth less than 0.3m and a VelocityxDepth product less than $0.3m^2/s$, a freeboard of 0.3m may be able to be justified.

FLOOD MAP B: FLOODING - 1% AEP EXTENT

Notes:

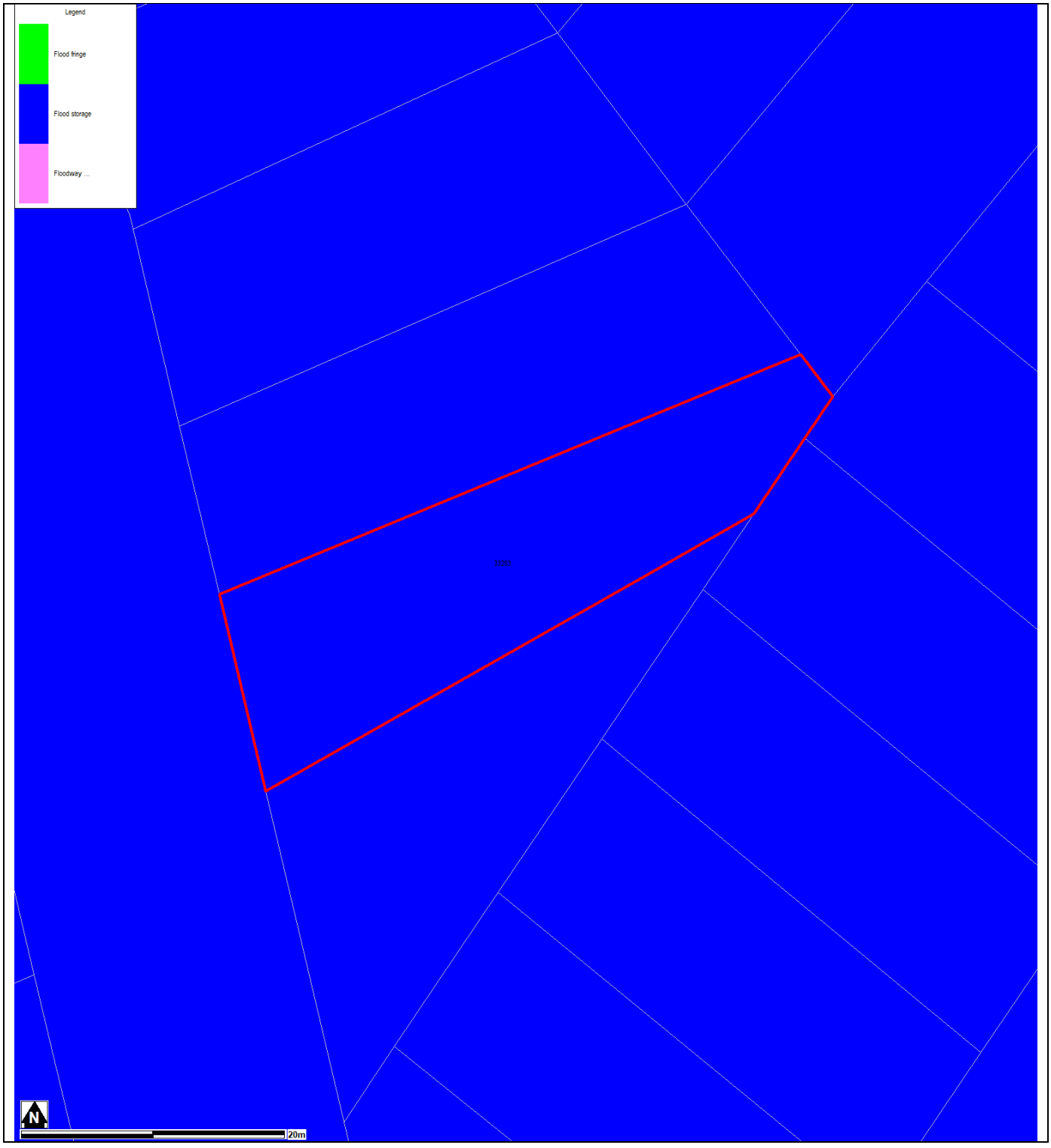
- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Manly Lagoon Flood Study 2013, BMT WBM) 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: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

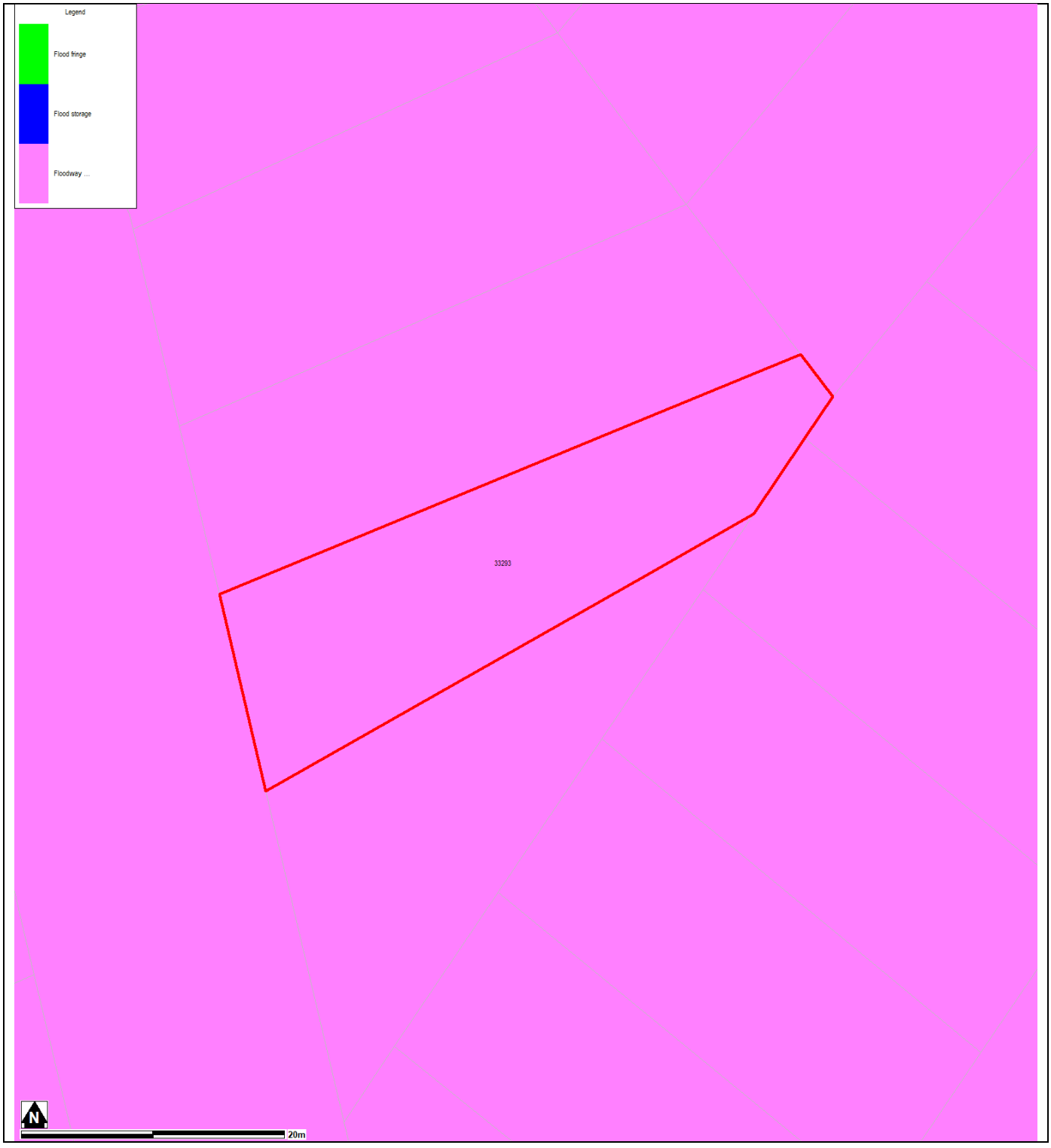
FLOOD MAP D: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP E: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

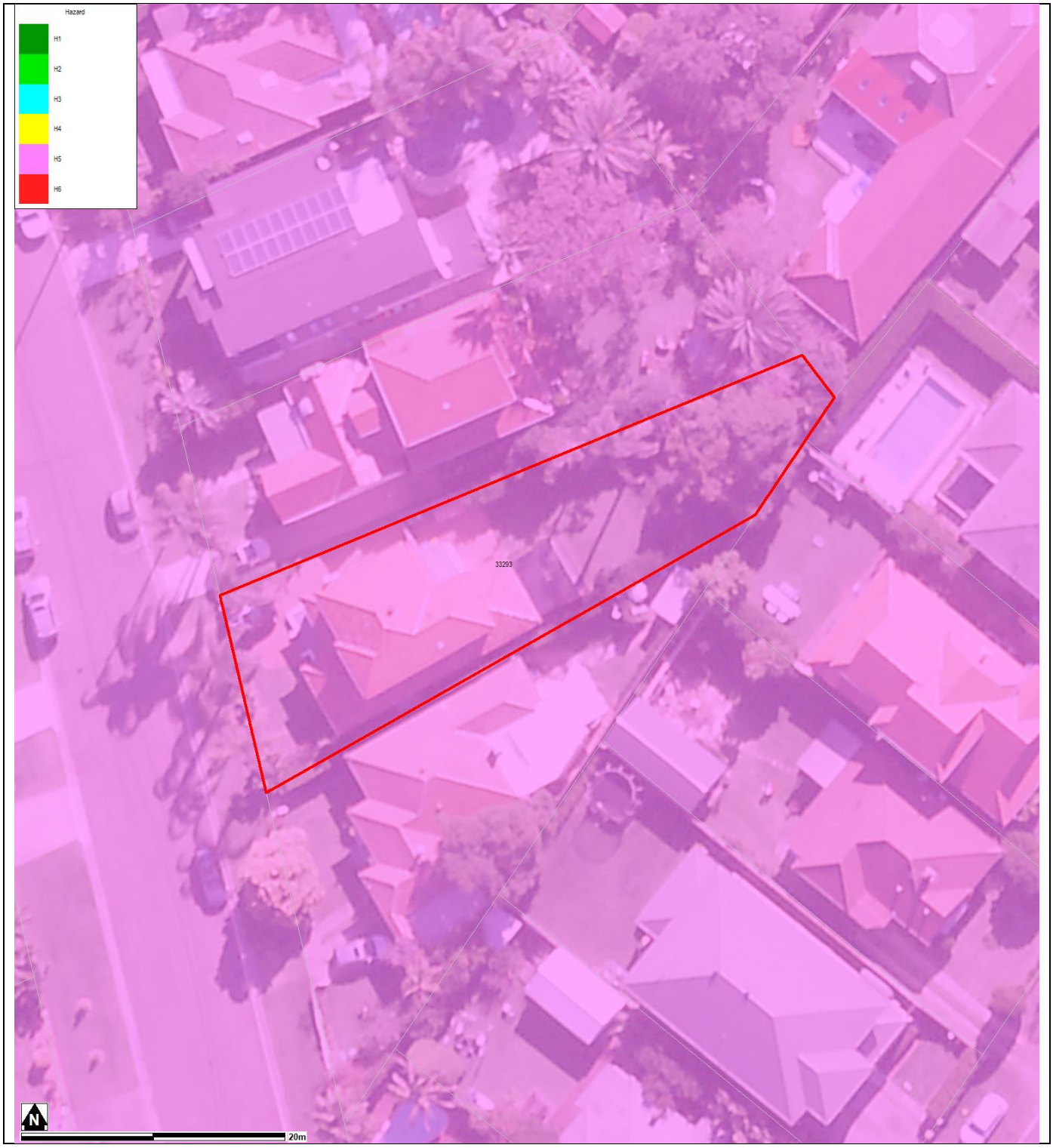
- Extent represents the Probable Maximum Flood (PMF) event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative 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: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP G: FLOOD LIFE HAZARD CATEGORY



Notes:

- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source Near Map 2014) are indicative only.

MAP H: INDICATIVE GROUND SURFACE SPOT HEIGHTS

Notes:

- The surface spot heights shown on this map were derived from Airborne Laser Survey and are indicative only.
- Accuracy is generally within ± 0.2m vertically and ± 0.15m horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

Preparation of a Flood Management Report

Introduction

These guidelines are intended to provide advice to applicants on how to determine what rules apply on flood prone land, and how to prepare a Flood Management Report. The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood related planning requirements.

Planning Requirements for Flood Prone Land

Development must comply with the requirements for developing flood prone land set out in the relevant Local Environment Plan (LEP) and Development Control Plan (DCP). There are separate LEPs and DCPs for each of the former Local Government Areas (LGAs), although preparation of a LGA-wide LEP and DCP is currently under way.

The clauses specific to flooding in the LEPs and DCPs are as follows:

LEP Clauses	DCP Clauses
Manly LEP (2013) – 6.3 Flood Planning	Manly DCP (2013) – 5.4.3 Flood Prone Land
Warringah LEP (2011) – 6.3 Flood Planning Warringah LEP (2000) – 47 Flood Affected Land *	Warringah DCP (2011) – E11 Flood Prone Land
Pittwater LEP (2014) – 7.3 Flood Planning Pittwater LEP (2014) – 7.4 Flood Risk Management	Pittwater 21 DCP (2014) – B3.11 Flood Prone Land Pittwater 21 DCP (2014) – B3.12 Climate Change

* The Warringah LEP (2000) is relevant only for the “deferred lands” which affects only a very small number of properties, mostly in the Oxford Falls area.

Development on flood prone land must also comply with Council’s Water Management for Development Policy, and if it is in the Warriewood Release Area, with the Warriewood Valley Water Management Specification. Guidelines for Flood Emergency Response Planning are available for addressing emergency response requirements in the DCP. These documents can be found on Council’s website on the Flooding page.

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

When is a Flood Management Report required?

A Flood Management Report must be submitted with any Development Application on flood prone land (with exceptions noted below), for Council to consider the potential flood impacts and applicable controls. For Residential or Commercial development, it is required for development on land identified within the Medium or High Flood Risk Precinct. For Vulnerable or Critical development, it is required if it is within any Flood Risk Precinct.

There are some circumstances where a formal Flood Management Report undertaken by a professional engineer may not be required. However the relevant parts of the DCP and LEP would still need to be addressed, so as to demonstrate compliance. Examples where this may apply include:

- If all proposed works are located outside the relevant Flood Risk Precinct extent
- First floor addition only, where the floor level is above the Probable Maximum Flood level
- Internal works only, where habitable floor areas below the FPL are not being increased

Note that development on flood prone land will still be assessed for compliance with the relevant DCP and LEP, and may still be subject to flood related development controls.

What is the purpose of a Flood Management Report?

The purpose of a Flood Management Report is to demonstrate how a proposed development will comply with flood planning requirements, particularly the development controls outlined in the relevant LEP and DCP clauses. The report must detail the design, measures and controls needed to achieve compliance, following the steps outlined below.

A Flood Management Report should reflect the size, type and location of the development, proportionate to the scope of the works proposed, and considering its relationship to surrounding development. The report should also assess the flood risk to life and property.

Preparation of a Flood Management Report

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

1. Description of development
   - Outline of the proposed development, with plans if necessary for clarity
   - Use of the building, hours of operation, proposed traffic usage or movement
   - Type of use, eg vulnerable, critical, residential, business, industrial, subdivision, etc

2. Flood analysis
   - 1% AEP flood level
   - Flood Planning Level (FPL)
   - Probable Maximum Flood (PMF) level
   - Flood Risk Precinct, ie High, Medium or Low
   - Flood Life Hazard Category
   - Mapping of relevant extents
   - Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the relevance to the proposed development

   If the property is affected by an Estuarine Planning Level (EPL) which is higher than the FPL, then the EPL should be used as the FPL. If the FPL is higher than the PMF level, then the FPL should still be used as the FPL, as it includes freeboard which the PMF does not.

3. Assessment of impacts

- Summary of compliance for each category of the DCP, as per the table below.

	Compliance		
	N/A	Yes	No
A) Flood effects caused by Development			
B) Building Components & Structural Soundness			
C) Floor Levels			
D) Car parking			
E) Emergency Response			
F) Fencing			
G) Storage of Goods			
H) Pools			

- Demonstration of how the development complies with any relevant flood planning requirements from the DCP, LEP, Water Management for Development Policy, and if it is in the Warriewood Valley Urban Land Release Area, with the Warriewood Valley Water Management Specification (2001)

- For any non-compliance, a justification for why the development should still be considered.
- Calculations of available flood storage if compensatory flood storage is proposed
- Plan of the proposed development site showing the predicted 1% AEP and PMF flood extents, as well as any high hazard or floodway affectation
- Development recommendations and construction methodologies
- Qualifications of author - Council requires that the Flood Management Report be prepared by a suitably qualified Engineer with experience in flood design / management who has, or is eligible for, membership to the Institution of Engineers Australia
- Any flood advice provided by Council
- Any other details which may be relevant

Further information and guidelines for development are available on Council's website at:

https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/development-applications/guidelines-development-flood-prone-land

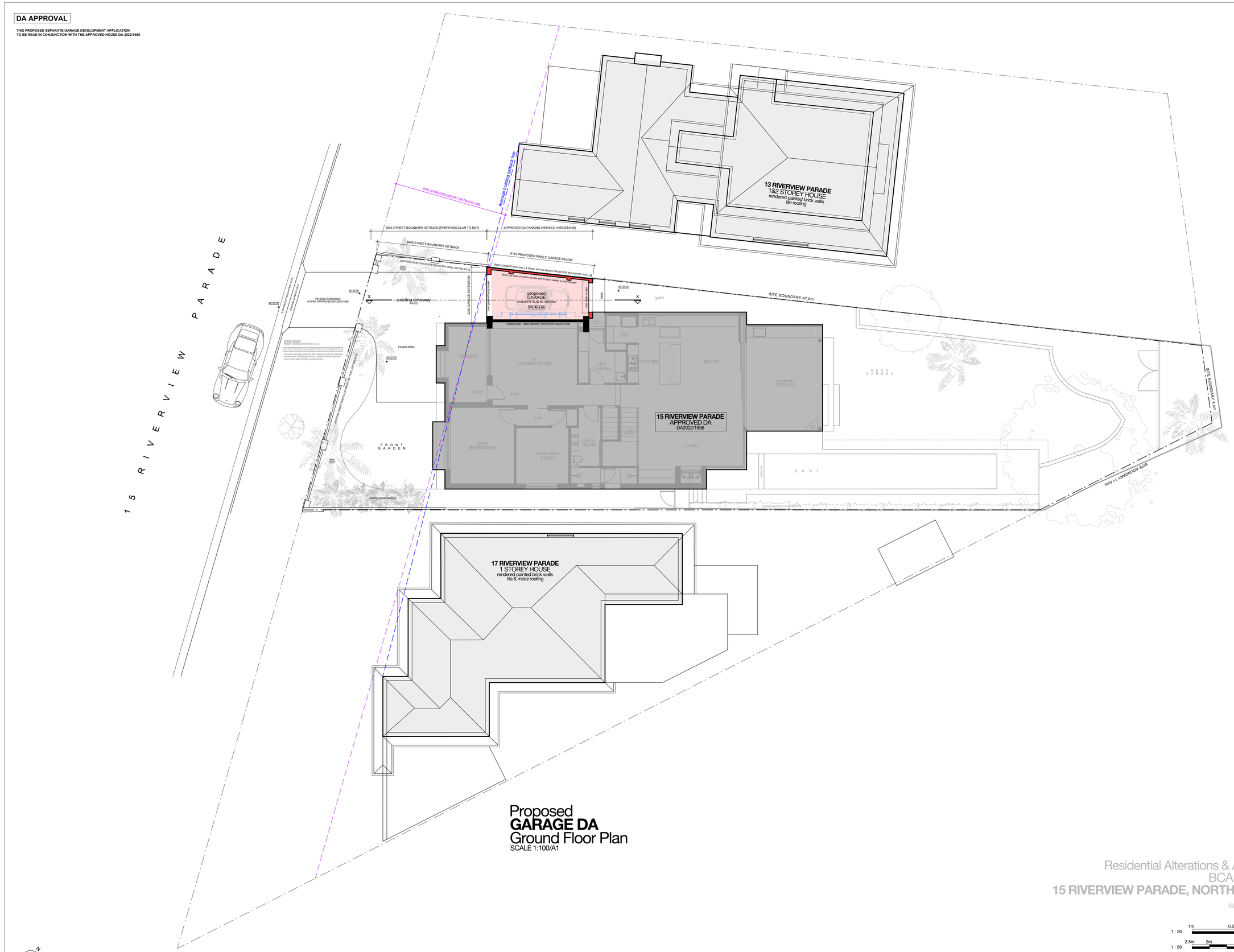
Council's Flood Team may be contacted on 1300 434 434 or at floodplain@northernbeaches.nsw.gov.au .

APPENDIX B

Architectural Plans and Elevations

DA APPROVAL

THIS PROPOSED SEPARATE GARAGE DEVELOPMENT APPLICATION TO BE READ IN CONJUNCTION WITH THE APPROVED HOUSE DA 2022/1956.



Proposed **GARAGE DA** Ground Floor Plan

SCALE 1:100/A1

House
Residential Alterations & Additions
BCA Class 1a
15 RIVERVIEW PARADE, NORTH MANLY
D.P. 366644
SITE AREA 580.6m²

scales

1 : 20 — 1m 0.5m 0
1 : 50 — 2.5m 2m 1m 0
1 : 100 — 5m 4m 3m 2m 1m 0

A1 SHEET

LEGEND

- **DEMOLITION** EXISTING HOUSE WALLS & OTHER TO BE DEMOLISHED
- **EXISTING HOUSE WALLS** MASONRY, P.BOARD, ETC WALLS ETC TO BE RETAINED
- **PROPOSED ALTS & ADD'S WALLS** NEW WALLS AS SELECTED TO FUTURE DETAIL
- **PROPOSED GARAGE EXTENSION** ADDITIONAL BUILDING BULK
- **NEIGHBOURING BUILDINGS** ADJOINING HOUSES
- **FLOOR** SELECTED HARDWOOD TIMBER FLOORING
- **FLOOR** SELECTED TILES & SET-OUT TO DETAIL
- **FLOOR** SELECTED PAVERS TO FALLS
- **FLOOR** SELECTED CARPET OVER ACOUSTIC UNDERLAY
- **ROOF** COLORBOND METAL ROOFING TO FALLS
- **CONCRETE** OFF FORM REINFORCED CONCRETE AS INDICATED
- **SWIMMING POOL** POOL TO STANDARDS AND TO FUTURE DETAIL
- **LANDSCAPING** EXISTING GARDEN LANDSCAPE AREAS, TREES, ETC AS IS
- RL 11.43 LEVELS AS PER SURVEY PLAN

NOTES

+ SITE SURVEY INFORMATION:
THE SITE INFORMATION HERIN HAS BEEN TRANSPOSED FROM THE TSS SURVEY PLANS #201730, REFER TO THIS SURVEY DRAWING TO CONFIRM BOUNDARIES, EXISTING FEATURES, LEVELS & DATUM, HOUSE WALL MEASUREMENTS [INTERNAL] BY TSS SURVEY PLANS #201728-2 TO BE CONFIRMED ON SITE BY BUILDER BEFORE CONSTRUCTION COMMENCES.

+ COORDINATION:
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+ DETAIL DRAWINGS:
UNLESS NOTED OTHERWISE REFER TO DETAIL DRAWINGS FOR SET-OUT INFORMATION. DETAIL DRAWINGS AT LARGER SCALES TAKE PRECEDENCE OVER GENERAL ARRANGEMENT DRAWINGS AT SMALLER SCALES. IF IN DOUBT NOTIFY ARCHITECT FOR DIRECTION PRIOR TO PROCEEDING WITH THE WORKS.

+ EXECUTION OF THE WORKS:
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ISSUE	DATE	DESCRIPTION
A	24.07.2024	PRELIMINARY

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www.droom.com.au

NSW REGISTERED ARCHITECT: #7435

NOMINATED ARCHITECT: Eugene du Plessis

PROJECT TITLE:
HOETMER
House Alterations & Additions

CLIENT:
Ken & Meaghan Hoetmer

ADDRESS:
15 Riverview Parade
North Manly NSW 2100

DRAWING TITLE:
PROPOSED GARAGE GROUND FLOOR PLAN

DRAWN:	CHECKED:
D DU PLESSIS	E DU PLESSIS

SCALE: 1:100 [A1]

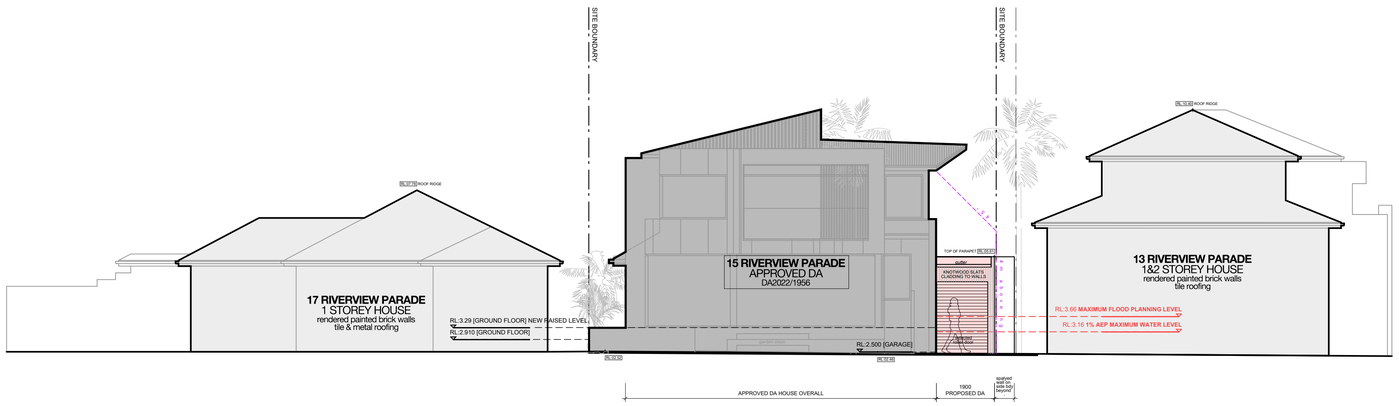
DRAWING NO: A.02

ISSUE:	DATE:
A	24.07.2024

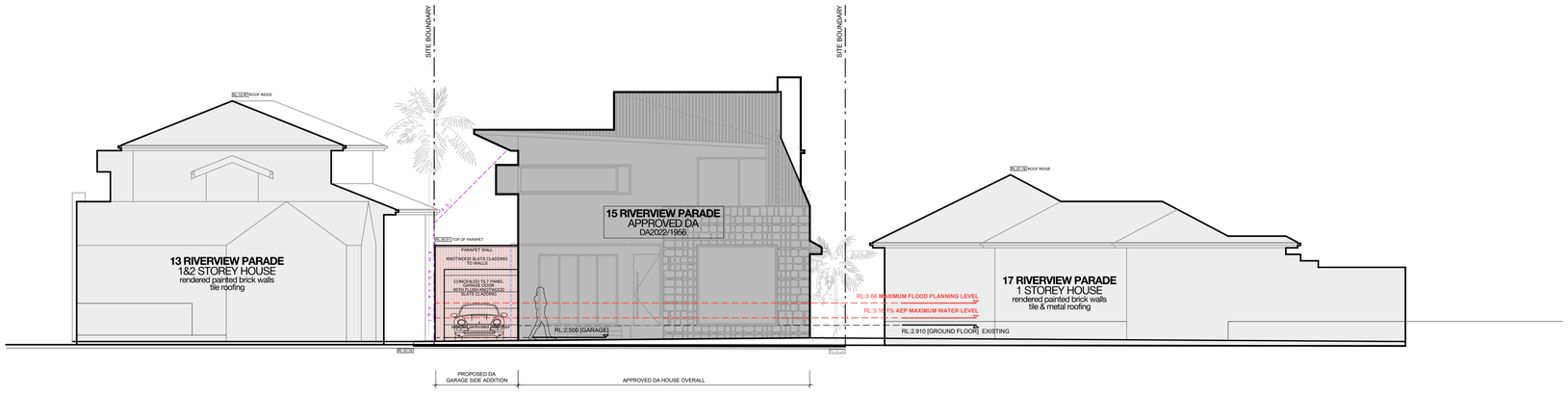
DRAWING STATUS: DEVELOPMENT APPLICATION

DA APPROVAL

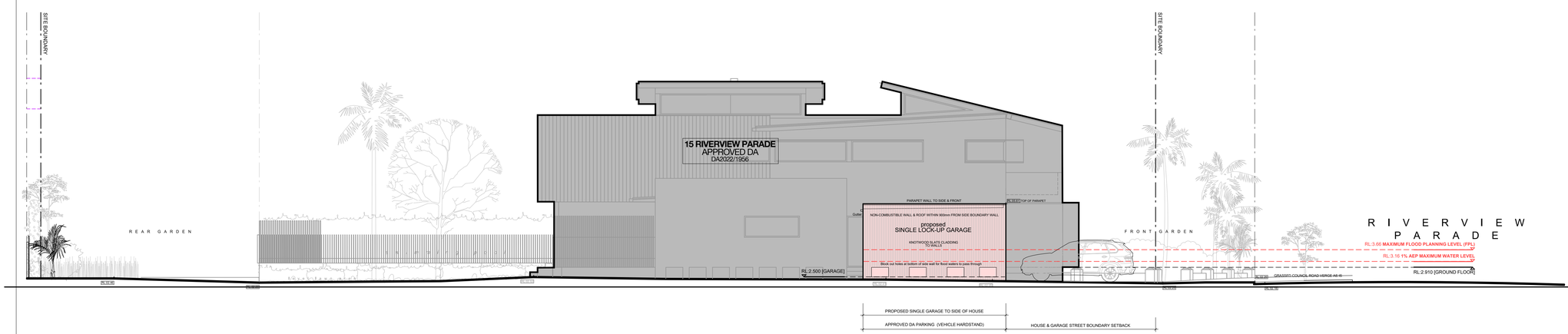
THIS PROPOSED SEPARATE GARAGE DEVELOPMENT APPLICATION TO BE READ IN CONJUNCTION WITH THE APPROVED HOUSE DA 2022/1956.



Proposed
GARAGE
Rear Elevation (East)
SCALE 1:100/A1



Proposed
GARAGE
Front Elevation (West)
SCALE 1:100/A1



Proposed
GARAGE
Side Elevation (North)
SCALE 1:100/A1

LEGEND

- **DEMOLITION** EXISTING HOUSE WALLS & OTHER TO BE DEMOLISHED
- **EXISTING HOUSE WALLS** MASONRY, P.BOARD, ETC WALLS ETC TO BE RETAINED
- **PROPOSED ALTS & ADD'S WALLS** NEW WALLS AS SELECTED TO FUTURE DETAIL
- **PROPOSED GARAGE EXTENSION** ADDITIONAL BUILDING BULK
- **NEIGHBOURING BUILDINGS** ADJOINING HOUSES
- **FLOOR** SELECTED HARDWOOD TIMBER FLOORING
- **FLOOR** SELECTED TILES & SET-OUT TO DETAIL
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- **FLOOR** SELECTED CARPET OVER ACOUSTIC UNDERLAY
- **ROOF** COLORBOND METAL ROOFING TO FALLS
- **CONCRETE** OFF FORM REINFORCED CONCRETE AS INDICATED
- **SWIMMING POOL** POOL TO STANDARDS AND TO FUTURE DETAIL
- **LANDSCAPING** EXISTING GARDEN LANDSCAPE AREAS, TREES, ETC AS IS
- RL 17.42 LEVELS AS PER SURVEY PLAN

NOTES

+ SITE SURVEY INFORMATION:
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+ COORDINATION:
REFER TO AND COORDINATE INFORMATION CONTAINED IN THE ARCHITECTURAL DRAWINGS AND THE DOCUMENTATION OF OTHER CONSULTANTS WITH THE 'SPECIFICATION FOR BUILDING WORKS'. REPORT DISCREPANCIES BETWEEN THE DOCUMENTS AND/OR WITH CONDITIONS ON SITE TO THE ARCHITECT FOR DIRECTION PRIOR TO PROCEEDING WITH THE WORKS.

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CONTRACTORS TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

FIGURED DIMENSIONS ARE TO BE TAKEN IN PREFERENCE TO SCALING.

ALL DIMENSIONS ARE IN MILLIMETRES [UNO].

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ALL WORKS TO BE IN ACCORDANCE WITH THE RELEVANT AS, BCA AND COUNCIL BUILDING REQUIREMENTS.

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NSW
REGISTERED
ARCHITECT:
#7435

NOMINATED
ARCHITECT:
Eugene du Plessis

PROJECT TITLE:
HOETMER
House Alterations & Additions

CLIENT:
Ken & Meaghan
Hoetmer

ADDRESS:
15 Riverview Parade
North Manly NSW 2100

DRAWING TITLE:
PROPOSED GARAGE ELEVATIONS

DRAWN:	CHECKED:
D DU PLESSIS	E DU PLESSIS

SCALE:
1:100 [A1]

DRAWING NO:
A.05

ISSUE:	DATE:
A	24.07.2024

DRAWING STATUS:
DEVELOPMENT APPLICATION

scales
1 : 20 — 1m 0.5m 0
1 : 50 — 2.5m 2m 1m 0
1 : 100 — 5m 4m 3m 2m 1m 0

A1 SHEET

APPENDIX C

Building Footprint Plan

FLOOD INFORMATION

northern beaches council

FLOOD INFORMATION REPORT – COMPREHENSIVE

Property: 15 Riverview Parade NORTH MANLY NSW 2100
Lot DP: Lot A DP 366644
Issue Date: 15/10/2021
Flood Study Reference: Manly Lagoon Flood Study 2013, BMT WBM

Flood Information for lot [1]:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) [2, 3, 4]: 3.66 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level [2, 3]: 3.16 mAHD

1% AEP Maximum Depth from natural ground level[3]: 0.98 m

1% AEP Maximum Velocity: 0.57 m/s

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

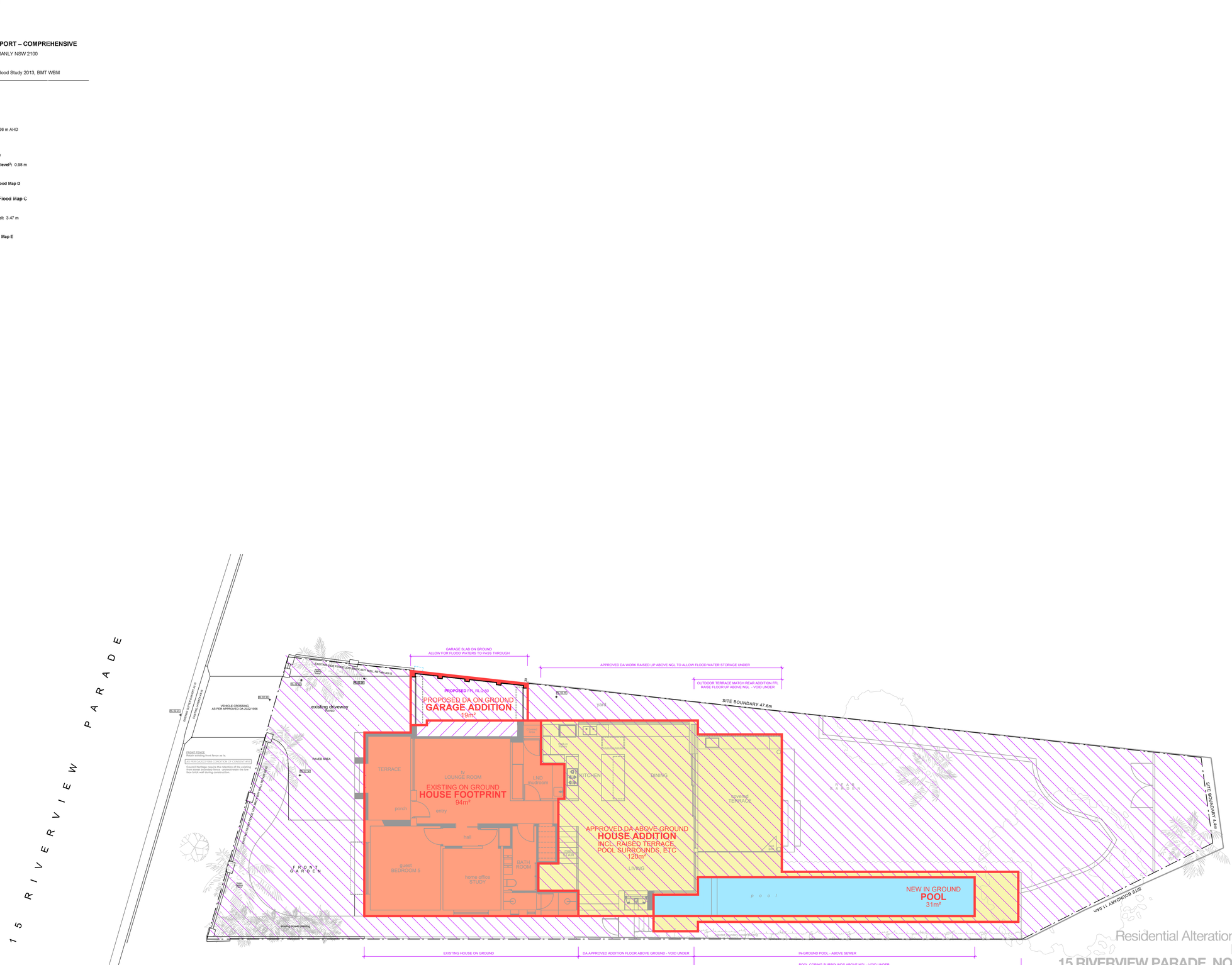
Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level [4]: 5.66 m AHD

PMF Maximum Depth from natural ground level: 3.47 m

PMF Maximum Velocity: 0.95 m/s

PMF Hydraulic Categorisation: N/A See Flood Map E



PROPOSED
Flood Storage Plan
SCALE 1:100/A1

House
Residential Alterations & Additions
BCA Class 1a
15 RIVERVIEW PARADE, NORTH MANLY
D.P. 366644
SITE AREA 580.6m²

scales
1 : 20 — 1m 0.5m 0
1 : 50 — 2.5m 2m 1m 0
1 : 100 — 5m 4m 3m 2m 1m 0
A1 SHEET

LEGEND

- **BUILDING: EXISTING HOUSE** SITE STRUCTURES ON GROUND (AS IS)
- **PORTION OF PROPOSED BLD & OTHER ABOVE GROUND** SITE STRUCTURES RAISED UP ABOVE NGL FOR FLOOD
- **BUILDING: NEW SWIMMING POOL** IN GROUND (NEW)
- **SITE FLOOD STORAGE AREA** INCLUDE VOID AREAS BELOW GROUND LEVEL FLOOR TO ALLOW STORAGE OF FLOOD WATERS UNDERNEATH

EXISTING SITE STORAGE AREA CALCULATION

580.6m² SITE AREA -
144.0m² EXISTING HOUSE (ON GROUND)

436.6 m² EXISTING SITE FLOOD WATER STORAGE AREA

PROPOSED SITE STORAGE AREA CALCULATION

580.6m² SITE AREA -
099.0m² PART OF EXISTING HOUSE RETAINED (ON GROUND)
031.0m² NEW SWIMMING POOL (IN GROUND)

450.6 m² PROPOSED SITE FLOOD WATER STORAGE AREA

Note:
No net loss of overall site flood storage area as a result of the proposed Garage DA on the site.

NOTES

+ SITE SURVEY INFORMATION:
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NSW REGISTERED ARCHITECT: #7435

NOMINATED ARCHITECT: Eugene du Plessis

PROJECT TITLE:
HOETMER
House Alterations & Additions

CLIENT:
Ken & Meaghan Hoetmer

ADDRESS:
15 Riverview Parade
North Manly NSW 2100

DRAWING TITLE:
FLOOD PLANS

DRAWN:	CHECKED:
D DU PLESSIS	E DU PLESSIS

SCALE:
1:100 [A1]

DRAWING NO:
DA.101

ISSUE:	DATE:
A	24.07.2024

DRAWING STATUS:
DEVELOPMENT APPLICATION

APPENDIX D

Flood Response Management Plan

FLOOD RESPONSE MANAGEMENT PLAN – 15 RIVERVIEW PARADE, NORTH MANLY

SITE INFORMATION

Council has advised that this property is subject to potential flooding. This means rising bans of Manly Creek will overtop and floodwater may enter the site in a 100-year storm event. This is due to the geographically low location of the site, allowing flows to travel overland in the vicinity of the site.

PROCEDURE IN CASE OF FLOODING

1. Floodwater will most likely first enter the site through the rear and side boundaries. The upper ground floor level for the development (3.29m AHD) is above the possible 100-year ARI flood level, however it may be necessary to evacuate the first floor of the building in a significant storm event. **It should be noted that if floodwater is entering the front of the site, it may be unsafe for pedestrian/vehicular evacuation. In such case, staying indoors and sheltering in place on the first floor in the safer option unless otherwise instructed by the SES or relevant authorities.**

1% AEP flood level	RL 3.16m AHD
PMF Flood Level	RL 5.66m AHD
Ground Floor (upper)	RL 3.29m AHD
First Floor	RL 6.10m AHD

2. Develop your own family flood plan and be prepared if flooding should occur while the kids are coming home from school, or when you are returning from work. Make arrangements with neighbours or family members to look after children if there are no adults at home.

3. As flood levels appear to approach the ground floor level of the residence:
    (a) move important documents, personal effects, precious photographs and vital medical supplies to a safe and easily accessible place with your emergency flood kit
    (b) gather medicines, special requirements for babies or the elderly, mobile phones, first aid kit, special papers, battery operated torch and radio, fresh water, canned food and opener, water proof clothing and small valuables into a backpack or bag in one location
    (c) locate your pets and gather any special requirements for them
    (d) put on strong shoes, raise any items within the home that may be damaged by water to as high a level as possible, with electrical items on top. Turn off any large electrical items at the power point such as a TV that cannot be raised.

    Note: Suitable storage areas may be on top of desks/tables/bench tops/attics/beds.

4. In the rare event that flood waters appear that they may enter the dwelling:
    (a) switch off electricity at switchboard
    (b) turn off gas at the meter
    (c) turn off water at the meter
    (d) block toilet bowls with a strong plastic bag filled with earth or sand
    (e) cover drains in showers, baths, laundries etc with a strong plastic bag filled with earth or sand

5. In the event that flood waters have risen up to the building, do not evacuate the building at this time unless instructed to do so by the SES or the Police. Floodwaters are much deeper, run much faster and are more dangerous outside.

6. Continue to monitor Bureau of Meteorology forecasts and warnings, listen to ABC 702 radio.

7. In the case of a medical or life-threatening emergency ring 000 as normal, but explain about the flooding.

8. A laminated copy of this flood plan should be permanently attached to an inside cupboard door in the kitchen and/or laundry of the main house and to the inside of the electrical meter box.

9. This flood management plan should be reviewed every 5 years, particularly with the potential sea level rise due to the greenhouse effect.

Important Phone Numbers

State Emergency Service: Emergency 132 500 General Enquires: 4251 6111

Police, Fire, Ambulance: Emergency 000

Bureau of Meteorology (Website): http://www.bom.gov.au/weather

Land, Weather and Flood Warnings, phone: 1300 659 215

DR/Hospital: .....

Family: .....

Friends: .....

Other: .....

IF YOU NEED TO EVACUATE

- Pack warm clothing, essential medications, valuables, personal papers, mobile phones, photos and mementos in waterproof bags to be taken with your emergency kit
- Decide on how to look after your pets if you cannot take them with you
- Raise furniture, clothing and valuables on bed, tables and into roof spaces
- Empty freezers and refrigerators, leaving doors open
- Turn off power, water and gas
- Whether you leave or stay, put sandbags in the toilet bowl and over all laundry/bathroom drain holes to prevent sewage back-flow

- Don’t drive in water of unknown depth and current
- Remember that walking through floodwaters is very dangerous

AFTER THE FLOOD

- Stay tuned to ABC 702 on a battery powered radio for official advice and warnings
- Don’t return home until authorities have said it is safe to do so
- Don’t allow children to play in or near flood waters
- Avoid entering flood waters, it is dangerous. If you must, wear solid shoes and check depth and current with a stick
- Stay away from drains, culverts and water over knee-deep
- Don’t turn on your gas and electricity until it has been checked by a professional/licensed repairer
- Avoid using gas or electrical appliances which have been in flood water until checked for safety
- Don’t eat food that has been in flood waters
- Boil tap water until supplies have been declared safe
- Watch for trapped animals
- Beware of fallen power lines
- Take many photos for all damage for insurance purposes
- Notify family and friends of your whereabouts