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Our Reference: PDS20052019:8LIDO:NARR

Mr and Mrs Iain and Jenny Sharples
8 Lido Avenue,
North Narrabeen, 2101
15/07/2019

Re: Flood Management Report for 8 Lido Avenue, North Narrabeen

Dear Iain and Jenny,

EXECUTIVE SUMMARY

This report details an investigation into the potential flooding and the impact of a proposed development at 8 Lido Avenue, North Narrabeen (*site*). A summary of the key findings of this investigation are as follows:

1. The *site* is located in the Nareen Creek catchment and the floodplain of Narrabeen Lagoon, as shown in Figure 1. The *site* is exposed to flood inundation to a depth of approximately 0.9 metres during a 1% AEP event, peaking at 3.0 metres AHD. The PMF peak flood level is predicted to be 4.9 metres AHD (Ref 1).
2. The *site* is sheltered from flood flows and should be classified as Flood Storage.
3. The *site* is inundated when flood levels are greater than 2 metres AHD. These events have historically occurred (see Table 3.1).
4. During a major event, flood levels at the *site* are generated by catchment runoff, not ocean surges. During a 1%AEP event the critical duration for 1%ARI rainfall to generate high water levels is between 9 and 24 hours. The *site* is predominately inundated by the flooding processes of Narrabeen Lagoon and to a lesser degree Nareen Creek.
5. During a 1%AEP event the *site* will be fully inundated to a peak level of 3.0m AHD in approximately 2- 3 hours after the floodwaters from Narrabeen Lagoon inundate the *site* (Figure1 and Appendix A page 4).
6. This report provides information on the flooding processes at the *site*. The residents of the *site* should aware of this information to prepare for any future flood events.
7. Severe flood warnings for Narrabeen Lagoon predicted by the Bureau of Meteorology (BoM), should be the trigger to prepare for potential flooding at the *site*. This information is broadcasted

on radio and TV, and is available on BoM website. Typically, rainfall intensities in excess of 10mm/hour over a 10 hour period will generate flooding in Narrabeen Lagoon.

8. A flood level approaching 2m AHD will overtop the boundaries of the *site*. If flood warnings continue, flood preparations should begin as this is a trigger for a major event to occur. Appendix A details a plan
9. Flood evacuation from the *site* is not recommended. The additions First Floor Level as detailed in Figure 4, are above the PMF and should be used as a shelter in Place.

1.0 INTRODUCTION

I refer to your Development Application (DA) at 8 Lido Avenue, North Narrabeen (Lot 330 DP 16719) as discussed with Ukalovc Design and yourselves. The proposed development is detailed in Figures 3 and 4. Northern Beaches Council (NBC) has identified the property as High Risk Princinct. Therefore, a Flood Management Report (FMR) of the design, flooding and evacuation process as detailed in Development Control Plan 2010 (DCP Appendix 8: Section B3.11 and B3.25) is required.

The following investigation was undertaken and submitted for both your and Councils consideration as part of the DA process. Note that 8 Lido Avenue, North Narrabeen will be referred to as the *site*.

2.0 SITE INSPECTION

A *site* inspection was undertaken on the 1st December, 2018 with yourself (co-owner of the *site*) and Mr. Stephen Wyllie. The *site* is located in the Nareen Creek Catchment as shown in Figure 1. There are several features of the topography of the *site* and its location (proximity to Narrabeen Lagoon) that are important to the potential mainstream flooding processes and flood evacuation procedures. These are:

1. The *site* is located on the western floodplain of Narrabeen Lagoon and is in the Nareen Creek Catchment as shown in Figure 1.
2. The floodplain in this area is generally at an elevation of between 1.5 to 2.5 metres AHD, and is exposed to major flooding from Narrabeen Lagoon and the Nareen Creek Catchments. The Lagoon experiences both floods and ocean surges.
3. The *site* varies in level from 2 metres to 2.1 metres and is immediately south of Nareen Creek Drain (Figure 2).
4. The general area surrounding the *site* is a floodplain with no relief. Evacuation from the *site* may be high risk.
5. The *site* is within the floodplain of Narrabeen Lagoon that would not be exposed to high flood or tidal velocities. Flood flows from the Nareen Creek will be concentrated along the existing concrete lined channels.
6. The existing house floor level (2.49 metres AHD) is approximately 0.5 metres above the surrounding ground levels.

The *site* is exposed to flooding from Narrabeen Lagoon during high rainfall events and elevated ocean levels. Narrabeen Lagoons water level can also be controlled by high ocean water levels when the Lagoon entrance is open. Narrabeen Lagoon, under normal astronomical tidal tides, experiences a tidal range of approximately 0.1 metres within the vicinity of the *site*.

3.0 REVIEW OF EXISTING DATA

The *site* was surveyed by Rennie Gollidge Pty Ltd Surveyors File No 455.18 , dated 22nd October 2018. (Figure 2).

The Narrabeen Lagoon and Nareen Creek flooding processes have been extensively studied by a number of investigations commissioned by the then Pittwater and Warringah Councils. The more recent studies are :

1. Narrabeen Lagoon Flood Study, BMT WBM, September 2013 (Ref 1).
2. Nareen Creek Flood Study, Cardno Lawson and Treloar, September 2005 (Ref 2).

Northern Beaches Council provided detailed flood information based on Ref 1 (Appendix A).

The recorded flood level data published in these studies is extensive going back to the early 1940's. However, many developments such as bridges, drainage channels etc. have occurred over this period affecting the flooding processes. The data of interest for the *site* is shown in Table 3.1.

Table 3.1: Recorded Peak Flood Levels

Date	Location	Flood Level m AHD	Comments
1942	22 Richard Road	2.7	Published MHL (Ref 2)
	32 Lido Avenue	2.7	Published MHL (Ref 2)
	25 Narroy Road	2.5	Published MHL (Ref 2)
May 1974	72 Gondola Rd	2.4	Published PWD (Ref 2)
	78 Gondola Rd	2.4	Published PWD (Ref 2)
August 1986	13, 23,25 and 32 Lido Ave	2.3,2.3,2.1and 2.5	Published MHL (Ref 2)
1987	24 Lido Ave	2.1	Published MHL (Ref 2)

Generally, the major flood peak levels in the vicinity of the *site* over the last 70 years have reached a level of approximately 2.1 to 2.7 metres AHD. These flood levels would have inundated the *site*. The 1998 events were recorded by an official PWD automatic water level gauge which recorded the rising and falling stages of the floods (hydrograph). The hydrograph rate of rise is a process that is significant in planning for major flood events. The history of flooding provides insight to the design events such as the 1%AEP flood. The flood event of June 2016 inundated Lido Avenue peaking at 2.1 m AHD.

4.0 RESULTS OF INVESTIGATION

The flood study which is relevant to this report is the GMT WBM 2013 study (Ref 1). The key findings for the 1%AEP flood simulations that relate to the Nareen Creek floodplain and the *site* specifically are:

1. The critical rainfall duration at Pittwater Road Bridge (PRB) is between 9 and 24 hours which equates (based IFD Bureau of Metrology curves) to between 230 to 340 mm of accumulated rainfall over the respective periods. This range of times and rainfall volumes will generate the highest peak water level of approximately 3.0m AHD at the *site*.
2. The 1%AEP ocean storm surge and associated setup is 1.9m AHD as observed at Pittwater Road Bridge during the May 1974 storm (Ref 1). This level will not inundate the *site*.
3. The rate of rise of the predicted flood level between 2 metres and 3.m AHD (peak 1%AEP level) is approximately 2-3 hours.
4. The combination of extreme catchment rainfall and ocean levels will result in the same predicted 1%AEP peak levels as the extreme catchment flooding alone. This indicates the significant impact the Narrabeen Lagoon catchment runoff could have on the *site*. The peak flood level at the *site* is independent of the ocean tide and to a lesser degree Nareen Creek flows at the *site*.
5. The entire floodplain and associated road network would become inundated as shown in Figure 1. However this area is not located in the high flood velocity zone. The velocities in the vicinity of the *site* are predicted to be low as the predicted flood gradient along Nareen Ct creek drain is flat (Ref 2).
6. At a peak flood level (3.0 metres AHD for the 1%AEP) velocities are low at the *site*. The flood definition of the *site* is considered to be Flood Storage.
7. All access routes from the *site* will flood at the same rate: complete inundation in 2 to 3 hours once floodwaters enter the *site*.

5.0 IMPACT OF THE ADDITIONS

The proposed additions as detailed in Figures 3 and 4 include the following:

1. First floor level floor level 5.45m AHD.
2. Roofing the existing awning and Alfresco floor and foundations.
3. Covered car space .
4. swimming pool.

These additions would have minimal impact on the flooding characteristics of the Nareen Creek flow and the Narrabeen Lagoon inundation regimes and any properties in the catchment. This area is a Flood Storage area where it is predicted that the flood velocities are low in the vicinity of the *site*.

As required by Section B3.11 of DCP 21, the proposed first floor level is at or above the Flood Planning Level (FPL) of 3.53 metres AHD (1%AEP peak level of 3.03 metres AHD plus 0.5metres freeboard). The first floor level of the additions floor level is at 5.45 metres AHD, above the PMF level of 4.9 metres AHD as shown in Figure 4. An assessment is detailed in the development matrix (Appendix B).

The car space is at ground level as shown in Figure 4 (2.0m AHD) should have bollards to ensure that the vehicles will not be transported by flood waters.

6.0 FLOOD MANAGEMENT PLAN

The access to any flood free haven away from the *site* is not considered as a viable option: considering the rate of rise of the flood levels, general frequency of warnings from BoM and the low levels of surrounding access Roads. As such, the dwelling should be used as a “Shelter- in-Place” (SiP) and be used as the *only action* for flood planning. Access is not available through Lido Street.

During the lead up to this event there are a number of flood prediction services available which should be used to ensure sufficient planning and action. The sequence of information available are:

1. This report provides information on the flooding processes of the *site*. The residents of the *site* should aware of this information and the Action Plan should be posted in a visible location: BoM warning process, inundation process of the *site* and an action plan. The Action plan is in Appendix B.
2. Severe flood warnings for the Northern Beaches predicted by the Bureau of Meteorology (BoM), should prepare for a potential flooding at the *site*. This information is broadcasted on ABC radio and TV and is available on BoM website. Typically, rainfall intensities in an excess of 10mm/hr over a period of 10 hrs will generate flooding.
3. Flood levels exceeding 2 metres AHD will inundate the *site* and should be a trigger to prepare. When rain is predicted to continue a major event may occur, particularly if flood warnings continue to be issued by BoM.

4. As discussed in Section 4, the 1%AEP flood will rise above 2 m to its peak value in 2 to 3 hours. During that time the final preparations should be concluded to secure items on the *site* and ensure the safety of all persons on the first floor level of the Dwelling. The ground floor level area should be cleared of chemicals and any loose equipment stored on the First Floor Level. The vehicles should be secured and be within the bollard system.
- 5.

The basic requirements of a SiP which are met based on Figure 3 and 4 are:

1. The Dwelling has access to a First Floor Level at or above the PMF flood peak level of 4.9 m AHD. The first floor level is 5.45 m AHD.
2. Floor space has to be 2 square metres /person. The design is compliant with these guidelines.
3. Access to the first floor is via a staircase is provided.
4. The stability of the carport will be acceptable if adequately designed for hydraulic loads. The vehicles are to be secured and contained within a bollard system.
5. There is a bathroom in the first level and sufficient storage for items that need to be raised above flood levels.
6. Hazardous materials that can be dislodged by floodwaters and should not be stored below PMF flood level.

In conclusion, considering the flooding processes at the *site* the design of the additions to the Dwelling as detailed in Figures 3 and 4, it is my opinion the design and this flood Action Plan will satisfy NBC DCP Section B 3.11 and 3.25 requirements as detailed in Appendix B and C.

Yours Faithfully,



Stephen Wyllie Bsc (Eng) FMA Member

Director

15/7/2019

7.0 REFERENCES

1. Narrabeen Lagoon Flood Study, BMT WBM, Sept 2013
2. Nareen Creek Flood Study, Cardno Lawson and Treloar, Sept 2005
3. Narrabeen Floodplain Risk Management Study and Plan, Cardno, July 2015
4. Pittwater LGA Flood Risk to Life Classification Study, Cardno, Jan 2015

Appendix A



FLOOD INFORMATION REQUEST - COMMON

Property: 8 Lido Avenue, North Narrabeen

Lot DP: 330//16719

Issue Date: 21/12/2018

Flood Study Reference: Narrabeen Lagoon Flood Study 2013, BMT WBM

Flood Information for lot:

Flood Life Hazard Category – See Map A

1% AEP – See Flood Map B

1% AEP Maximum Water Level³: 3.03 mAHD

1% AEP Maximum Peak Depth from natural ground level³: 1.16 m

1% AEP Maximum Velocity: 0.87 m/s

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

1% AEP Hydraulic Categorisation: Floodway See Flood Map F

Flood Planning Area – See Flood Map C

Flood Planning Level (FPL)^{1,2,3 &4}: 3.53 m AHD

Probable Maximum Flood (PMF) – See Flood Map D

PMF Maximum Water Level²: 4.90 m AHD

PMF Maximum Depth from natural ground level: 3.03 m

PMF Maximum Velocity: 0.91 m/s

Flood Risk Precinct – See Map G

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

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

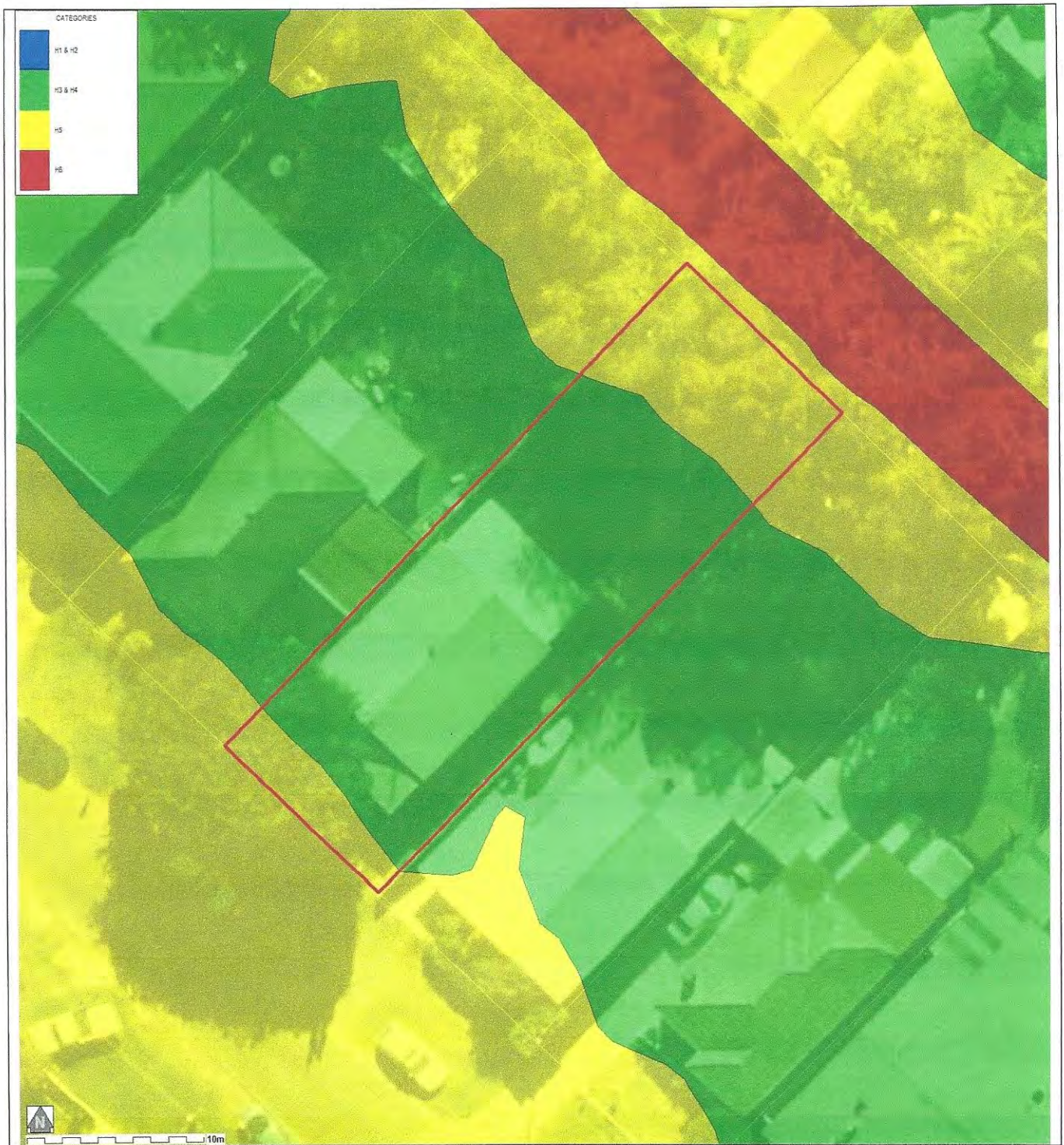
³Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

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

General Notes:

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

FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY



Notes:

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

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: Narrabeen Lagoon Flood Study) and aerial photography (Source Near Map 2014) are indicative only.

FLOOD MAP C: FLOOD PLANNING AREA EXTENT



Notes:

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

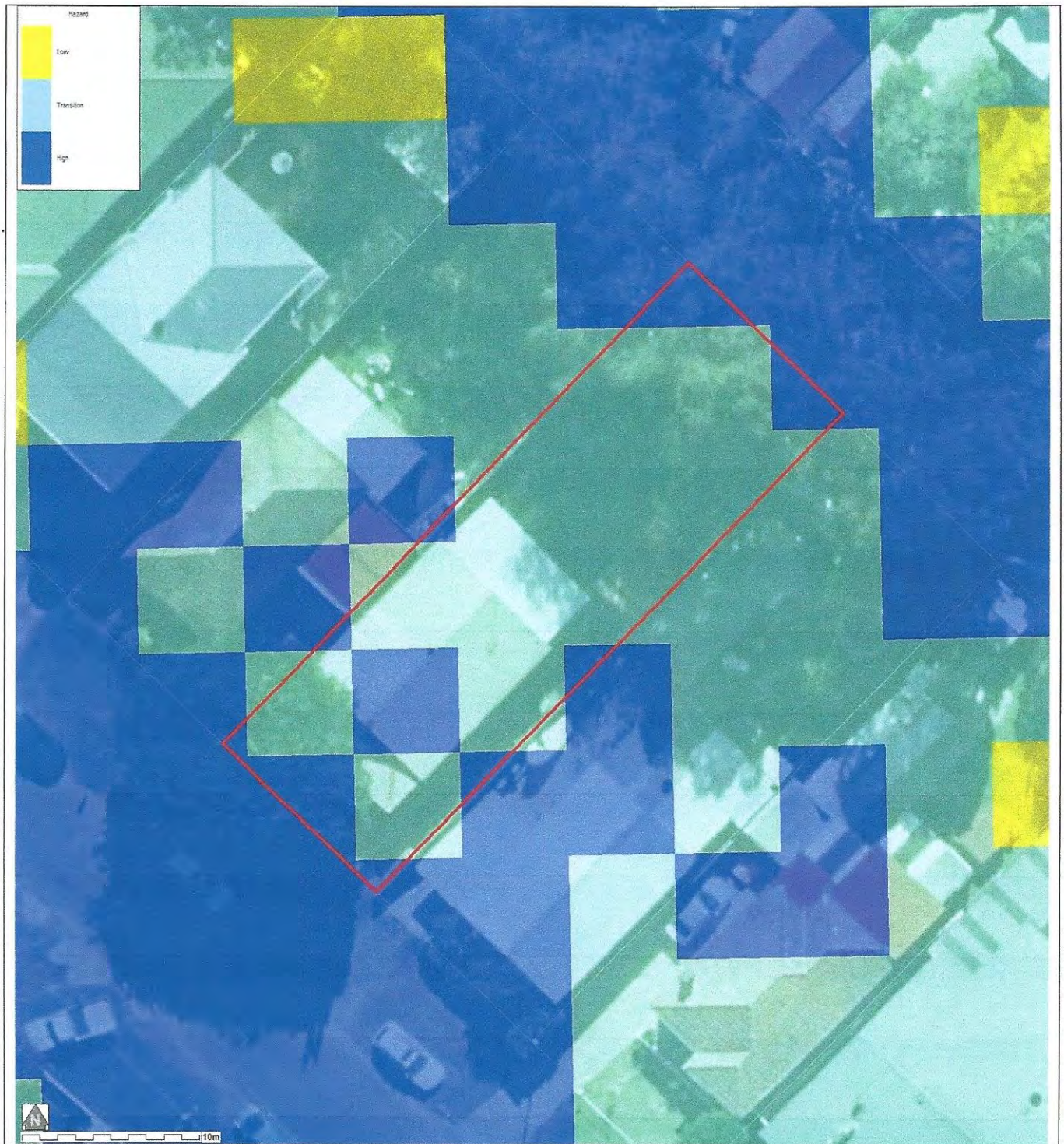
FLOOD MAP D: PROBABLE MAXIMUM FLOOD EXTENT



Notes:

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

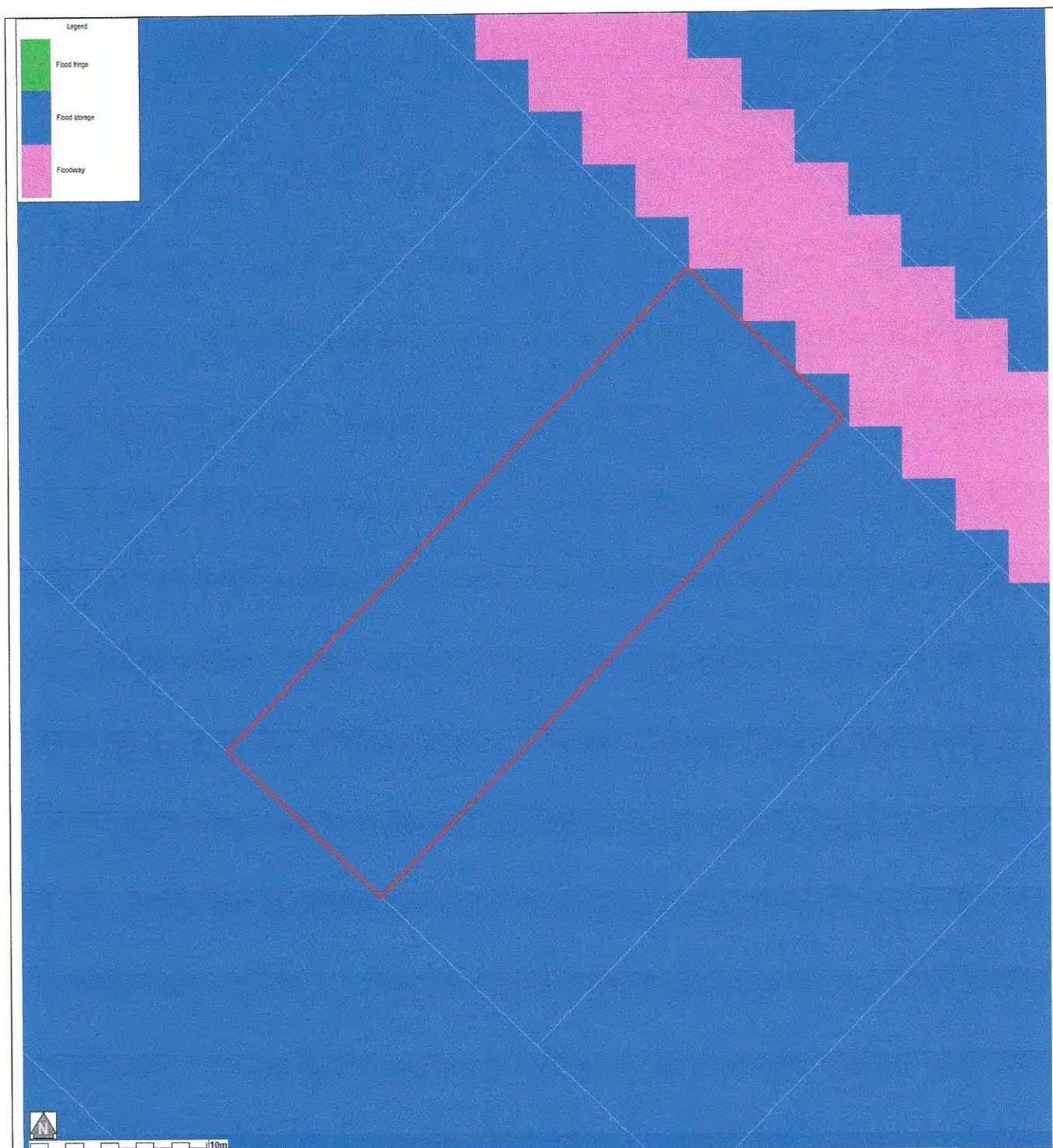
FLOOD MAP E – 1% AEP FLOOD HAZARD EXTENT MAP



Notes:

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

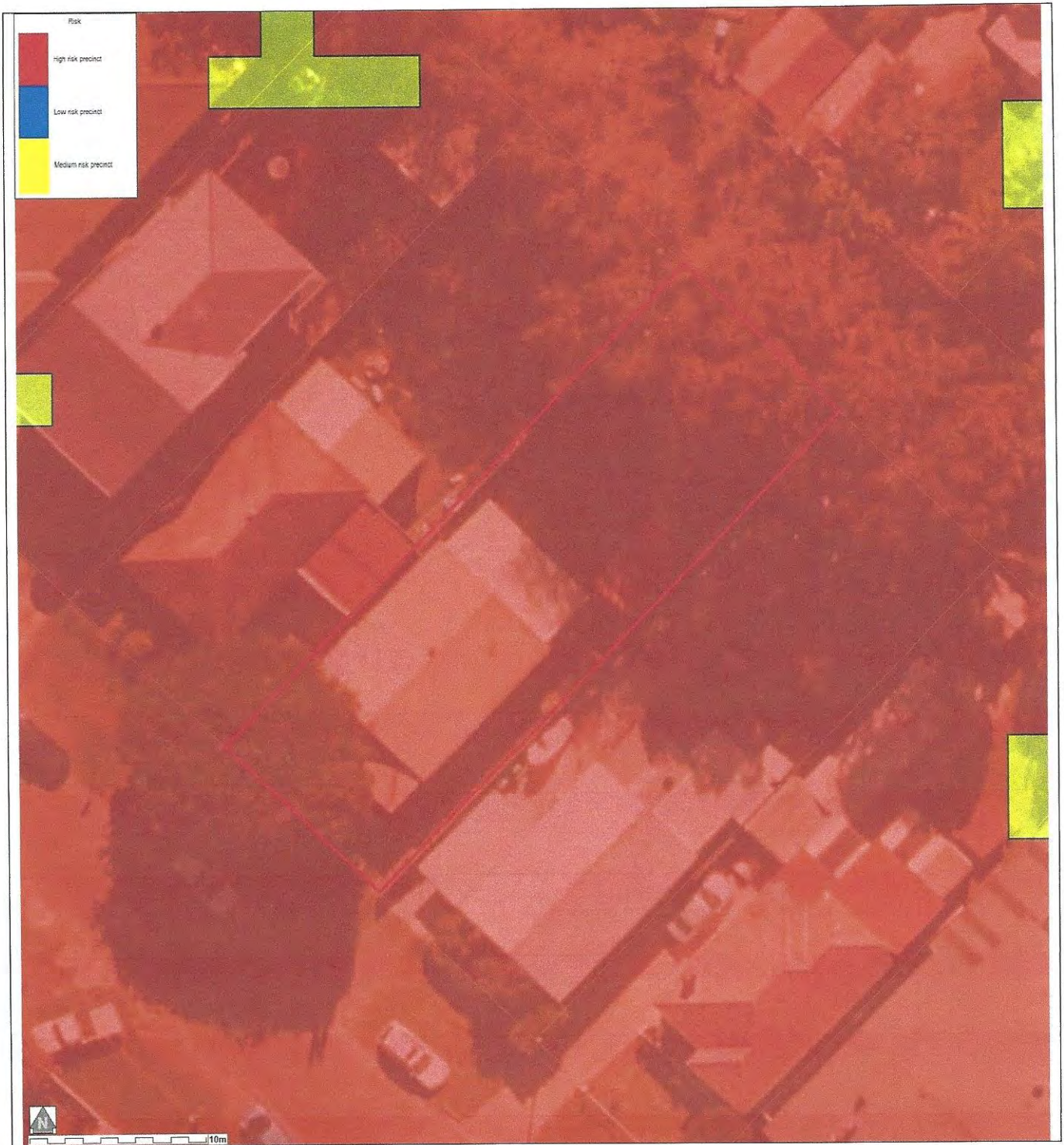
FLOOD MAP F – 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

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

FLOOD MAP G – FLOOD RISK PRECINCT MAP



Notes:

- **Low Flood Risk precinct** means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** means all flood prone land that is (a) within the 1% AEP Flood Planning Area; and (b) is not within the high flood risk precinct.
- **High Flood Risk precinct** means all flood prone land (a) within the 1% AEP Flood Planning Area; and (b) is either subject to a high hydraulic hazard, within the floodway or subject to significant evacuation difficulties (H5 and or H6 Life Hazard Classification).

Appendix B

FLOODING WARNING

AWARENESS

- Heavy rain and Ocean storms predicted by the Bureau of Metrology (BoM) : flood warning /flash flooding for the Northern Beaches.
- Monitor media reports for flood warnings in the Sydney Metropolitan Area.
- Observe local rainfall and Narren creek drain flows and flood levels . Note that the drain may peak twice from the different catchments.
- Check Predicted Fort Denison Tides.
- Drain overtopped triggers Action Plan.

ACTION **BoM WARNINGS ISSUED**

- Account for all residents and visitors. Inform all residents and visitors of the potential flood situation and this Action Plan.
- Any items transportable by flood waters move to the First Floor Level.
- Secure the vehicles in garage. Move essential items to First Floor Level
- Observe inundation at drain and in Lido Street and state of tide.
- Continue to monitor BoM reports and tide.
- If rainfall is intense and warnings continue remain at First Floor Level.

POST FLOOD

- Inspect vehicles and *site* generally for safety particularly electrical problems.
- Account for all residents and visitors.
- Monitor BoM reports to ensure no further flood warnings and check on tide predictions.

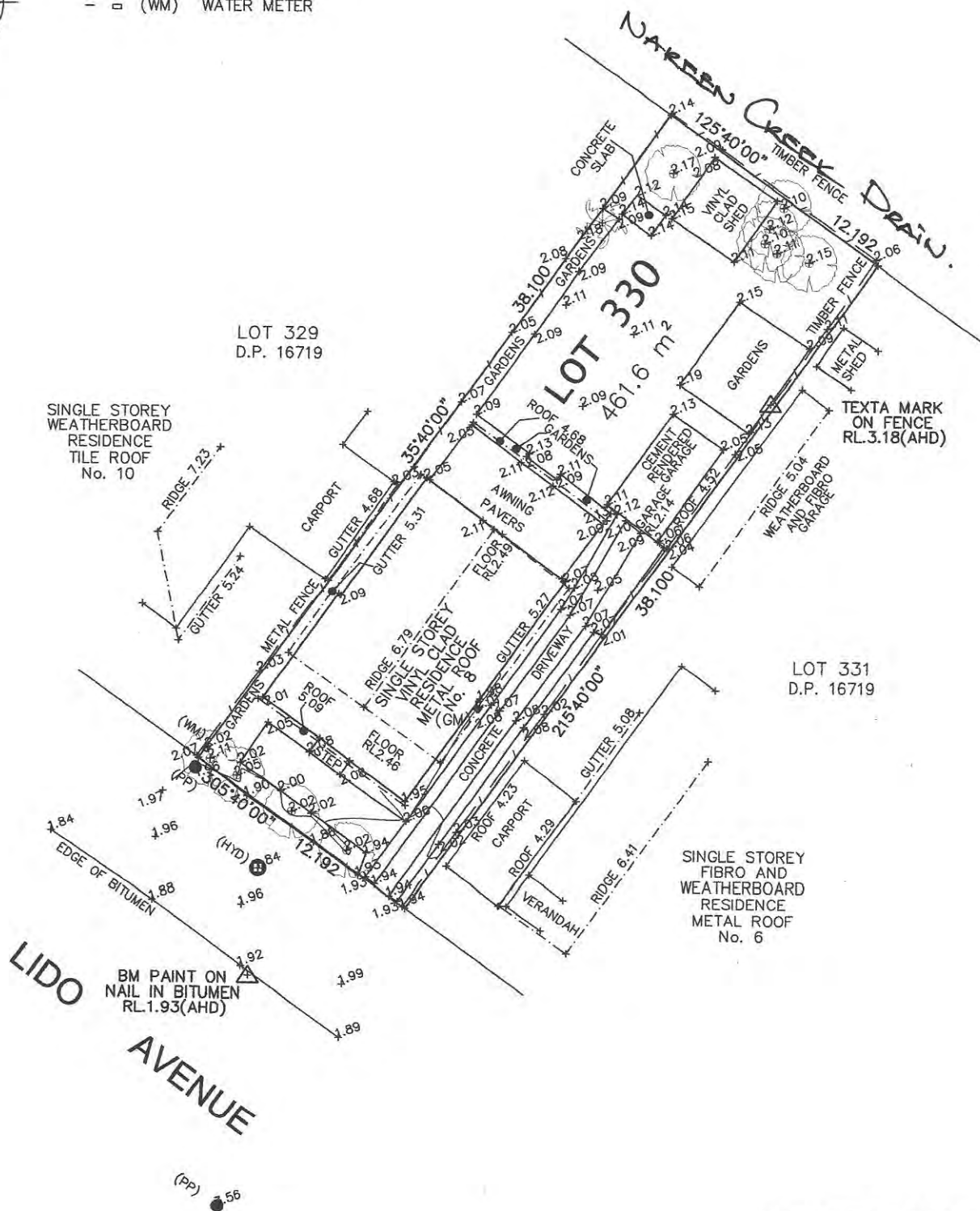
Appendix C: Development Matrix for High Risk Residential Development

Flood Impacts	Design Standard	Description	Comment
A: Flood Effects caused by Development	A1 A3	Complies with Flood Standard Loss of flood storage compensated	Yes Loss of flood storage imperceptible not required Section 5
B: Drainage Infrastructure and Creek Works	B1 B2	Flood mitigation works Section 88B Notice	Not Applicable Not Applicable
C: Building Components and Structural	C1 C2 C3	Constructed of flood compatible materials Structural stability under flood loads Services flood proofed or above FPL	Yes Not Applicable Yes see Section 5
D: Storage of Goods	D1 D2	Hazardous stored above FPL Goods/ materials stored above FPL	Yes Section 6 Yes Section 6
E: Flood Emergency Response	E1 E2	Complies with NBC Planning Shelter In Place requirement and above PMF	Yes Section 6 Yes Section 6
F: Floor Levels	F1 F2 F3 F6 F8	Floor levels above FPL Sub floor not impede flow Pursuant of S88B Existing floor level retained below FPL First level Additions above PMF	Yes First Floor see Figure 4 Not Applicable To be applied Yes Figure 4 Yes Figure 4
G: Car Parking	G1 G2 G3 G4 G5 G6 G7	Open carpark not in floodway Floor level above ground level Enclosed carpark protected from inundation Vehicle barriers for d > 300mm Enclosed garages at 1% AEP Comply with flood standard Raised driveways no impact	Yes Not Applicable Not Applicable Not Applicable yes Not Applicable Yes Not Applicable
H: Fencing	H1	Designed not to impede flow	Not Applicable
I: Pools	I1	Coping flush pumps and electrical	Yes Figure 4

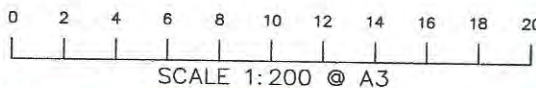


LEGEND

- ○ (HYD) HYDRANT
- ● (PP) POWER POLE
- □ (GM) GAS METER
- □ (WM) WATER METER



- NOTES:
1. SURVEY IS FOR CONTOUR PURPOSES ONLY
 2. BM IS AHD AS SHOWN, DATUM PM 5315 (R.L. 1.631)
 3. CONTOUR INTERVAL IS 0.2m
 4. SERVICES LOCATED BY FIELD SURVEY ONLY
 5. TREE SPREADS ARE DIAGRAMMATIC ONLY AND MAY NOT BE SYMMETRICAL



NOTE: NO SUBTERRANEAN INVESTIGATIONS HAVE BEEN UNDERTAKEN. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT DIAL BEFORE YOU DIG ON PHONE No. 1100 PRIOR TO ANY EXCAVATION OR EARTHWORKS.

DATE	REVISION	BY

DRAWN AR SHEET 1 OF 1 SHEETS



RENNIE GOLLEDGE PTY. LTD.
SURVEYORS & PLANNERS

P.O. BOX 132
36 ST ANDREWS ST
MAITLAND NSW 2320
ABN: 55 002 622 317
PH (02) 49334977
FAX (02) 49338579
mail@renniegolledge.com.au

CLIENT

MR. IAIN SHARPLES

THIS PLAN WAS PRODUCED SOLELY FOR THIS CLIENT.

THIS DOCUMENT IS THE PROPERTY OF RENNIE GOLLEDGE PTY. LTD.
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CONTOUR AND DETAIL PLAN

LOT 330 D.P. 16719
8 LIDO AVENUE, NORTH NARRABEEN

FILE NO. 455.18 RATIO 1:200 DATE 22/10/18 SURVEYED SH DATUM AHD

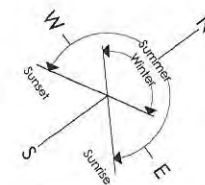
FIGURE 2

LEGEND

TOTAL EXISTING LANDSARED AREA	58 3790	271 13
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TOTAL PROPOSED LANDSCAPED AREA	45.22%	210.10
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(continued)



Scale 1:200

Tuesday, 9 July 2019

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DO NOT SCALE DIMENSIONS. ALL DIMENSIONS SHOULD BE VERIFIED ON SITE BEFORE COMMENCEMENT OF ANY WORKS.

IN CASE OF ANY DISCREPANCIES, IT SHOULD BE VERIFIED BEFORE CONTINUING FURTHER WORKS.

	07/07/2017	07/08/2017
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CLIENT: SHARPLES	ADDRESS: LOT 330 DP 16719 No. 8 LIDO AVENUE, NORTH NARR
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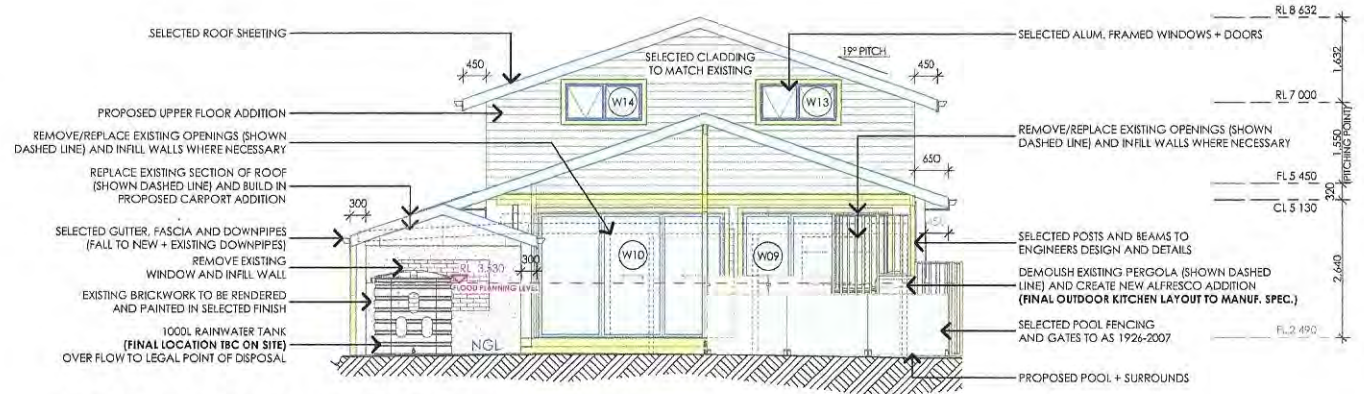
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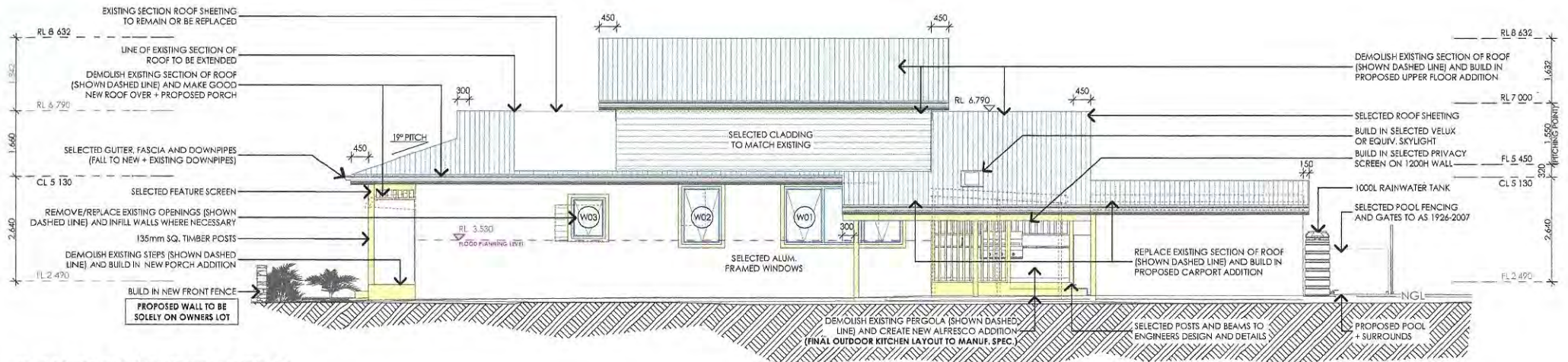
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ANY NEW CONSTRUCTION WITHIN 900mm OF THE
BOUNDARY MUST HAVE A FRL OF 60/60/60 IN
ACCORDANCE WITH THE BCA

ALL BUILDING MATERIALS USED OR LOCATED BELOW
RL 3.53m AND MUST BE FLOOD COMPATIBLE



NORTH EAST ELEVATION
Scale 1:100



SOUTH EAST ELEVATION
Scale 1:100

FIGURE 4 Tuesday, 9 July 2019

Attachment A

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

Development Application for

Address of site: 8 LIDO AVENUE, NORTH NARRABEEN.

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

I, STEPHEN WYLLIE on behalf of PITTWATER DATA SERVICES PTY LTD
(Insert Name) (Trading or Business/ Company Name)

on this the 15th / JULY / 2019 certify that I am engineer or a
(Date)

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

Flood Management Report Details:

Report Title:

FLOOD MANAGEMENT REPORT FOR
Report Date: 15th JULY 2019 8 LIDO AVENUE
NORTH NARRABEEN.

Author: STEPHEN WYLLIE

Author's Company/Organisation: PITTWATER DATA SERVICES PTY LTD

I: STEPHEN WYLLIE
(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. CAR SPACE (COVERED).

Signature Stephen Wyllie

Name STEPHEN WYLLIE BSC(ENG) FMA MEMBER