Pittwater Data Services Pty Ltd
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Our Reference: PDS20042020:49ELAINEAV:AVALON

Atelier Haefeli Pty Ltd
C/- 49 Elaine Avenue,
Avalon, 2107.
20/04/2020

Re: Flood Management Report for 49 Elaine Avenue, Avalon

Dear Linda and Rolf,

EXECUTIVE SUMMARY

This report details an investigation into the potential flooding hazard and risk management of a proposed development at 49 Elaine Avenue, Avalon (***site***). The summary of the key findings of this investigation are:

1. The ***site*** is located on the western bank of the downstream reach of Careel Creek as shown in Figure 1. The ***site*** is exposed to flood inundation to a depth of 0.6 to 0.9 metres (m) during a 1% AEP event, peak flood level of 3.63m AHD. The PMF peak flood level is predicted to be 5.64 metres AHD. (Appendix C page 1).
2. The ***site*** eastern portion is a floodway (High Risk Precinct) and the western portion, location of the existing Dwelling and proposed developments are in the Medium Risk Precinct Map F Appendix C.
3. The ***site*** is inundated when flood levels are greater than 2.7m AHD as shown in Figure 4. These events have historically occurred as recently as February 2020 (Figure 4).
4. During a major event, flood leveling on the ***site*** are generated by catchment runoff and not ocean tides/surges alone. During a 1%AEP event the critical duration for 1%ARI rainfall to generate high flood levels, is approximately 2 hours (Ref 1 and 2)).
5. During a 1%AEP event the ***site*** will be fully inundated to a peak level of 3.63m AHD in 40 minutes once the banks of Careel Creel are overtopped and flood waters enter the ***site*** (Figure 4).
6. The existing Dwelling GFL is 3.46m AHD and will be inundated by the 1%AEP and PMF flood events. The FPL is 4.13mAHD and all refurbishments and services below this level are to be flood proofed.
7. The proposed first floor Addition FFL is 6.16m AHD is above the PMF and is to be used as a Shelter-in-Place.

8. This report provides information on the flooding characteristics of the ***site.*** The residents and visitors of the ***site*** should aware of this information to prepare for any future flood events as detailed in Appendix A.

9. In conclusion, considering the flooding processes at the ***site*** the proposed Alterations and Additions as detailed in Figures 5,6 and 7, it is my opinion the design and this flood evacuation plan as detailed in Appendix A will satisfy NBC DCP requirements Sections B3.11 and B3.25. The flood standards as detailed in Appendix B have been complied.

1.0 INTRODUCTION

I refer to your Development Application (DA) at 49 Elaine Avenue, Avalon (Lot 18 DP21687) . The design of the Alterations and Additions is by Atelier Haefeli Pty Ltd, Architects as shown in Figures 5,6 and 7. Northern Beaches Council (NBC) has identified the property as potentially Flood Prone: High and Medium Risk Precinct as shown in Appendix C Map F and Flood Life Hazard H5/H6 (Map A Appendix C). NBC DCP Section B.311 and B3.25 applies to this proposed development. An assessment in relation to NBC Flood Standards is undertaken as detailed in Appendix B.

The following Flood Management Report was undertaken and submitted for your and NBC consideration as part of the DA process. Note that 49 Elaine Avenue, Avalon will be referred to as the ***site.***

2.0 SITE INSPECTION

A ***site*** inspection was undertaken on the 11th March 2020 by Mr Stephen Wyllie and yourself. There are several features of the topography of the ***site*** and the catchment generally, that are important to the potential flooding processes at the ***site***. These are:

1. The catchment boundary of the ***site*** extends from The Plateau Road in the south, Hilltop Road in the west, Pittwater in the north and the coast in the east as shown in Figure 1. Four major flow systems contribute to Careel Creek flows as shown in Figure 1. Flood levels at the ***site*** are influence by ocean levels in Careel Bay. The channel is tidal under non flood conditions.
2. The flood flows that inundate the ***site*** are from the main Careel Creek Channel and to a lesser degree the Riviera Road catchment as shown in Figure 1. Flood flows from this catchment are to the north of the ***site*** as shown in Figures 1 and 2.
3. The ***site*** is located on the western bank of Careel Creek which is a concrete lined open channel. As shown in Figure 3 the eastern boundary of the ***site*** is within the channel.
4. Elaine Avenue, in the vicinity of the ***site,*** is generally at 3.2m AHD as shown in Figures 2 and 3.
5. The ***site*** is relatively flat varying in level from 2.7 to 3.1m AHD. The existing Dwelling is located on the on the higher portion of the ***site*** ie approximately 3mAHD.
6. The recent floods on the 9th February 2020 inundated the ***site*** as shown in Figure 4. A depth of 0.3 m inundation was recorded at the time of inspection.

3.0 REVIEW OF EXISTING DATA

The topography for this investigation used the NSW Government Land and Property Lidar 2014 Data Sydney 3406272. Contours were generated by Pittwater Data Services Pty Ltd at 0.2 metre intervals (Figure 1&2). The ***site*** survey as shown in Figure 3, was undertaken by Adam Clerke Surveyors Pty Ltd Ref 920 Dated 11th February 2020.

The Careel Creek Catchment flooding processes has been extensively studied by a number of investigations commissioned by the then Pittwater Council and NBC. The more recent studies are:

1. Avalon to Palm Beach Floodplain Risk Management Study and Plan. Manly Hydraulics Laboratory, 2017 (Ref 1).
2. Careel Creek Catchment Flood Study, WMA Water, 2013 (Ref 2).

These studies used complex hydrological and numerical models to generate design flood conditions. The objective of the study was to determine flooding hazards under various rainfall and sea level criteria, this included the overland flow processes. Flood data for the ***site*** based on Ref 1 simulations, was obtained from NBC as shown in Appendix C. Relevant data for the ***site*** from these studies are:

1. 1%AEP design time of concentration for this ***site*** is approximately 2 hours (Ref 1and 2).
2. At the ***site*** Maximum flood level predictions for the 1%AEP is 3.63 m AHD (Appendix C page 1) .
3. The Flood Planning Level (FPL) 4.13m AHD (1%AEP of 3.63 plus 0.5 metres freeboard)
4. The PMF flood level is 5.64 m AHD (Appendix C page 1).

Note the PMF level is a rare flood event (in excess of 10,000years recurrence) and is 2 metres higher than the 1%AEP and higher than the FPL as shown in Figures 6 and 7.

The following technical design conditions are required to assess the development proposal for the ***site***:

1. The ***site*** 1%AEP and PMF design flood levels: determine FPL and evacuation response planning.
2. The ***site*** 1%AEP and PMF design flood velocities and depth. Hazzard assessment.

3.1 Recorded Flood Levels

Flood levels observed near the ***site*** as reported in Ref 2, indicate that maximum peak flood level occurred on 24 October 1987 at 3.4m AHD. This event would have inundated the site by approximately 0.4metres near the existing Dwelling. The recent flood event recorded on the 9th February 2020 by the residents of the ***site***, was approximately 3.3 m AHD as shown in Figure 4. Both these events are lower than the design 1%AEP 3.63m AHD event.

4.0 RESULTS OF THIS INVESTIGATION

The catchment characteristics for the ***site*** as discussed in Section 2 and the numerical modelling results from Ref 1and 2, highlights several aspects of the flood processes for the 1% AEP and PMF floods. These are:

1. The inundation of the ***site*** will be a relatively fast process once the intense rainfall has eased. As shown in Figure 4 the design flood level response shows a simulated typical rising and falling flood level process (hydrograph) for the 1%AEP and PMF events. The associated times when the ***site*** is predicted to be inundated and flood free: time of the flood levels when the ***site***, GFL of Dwelling and Laine Avenue are flood inundated and flood free. The ***site*** is inundated for approximately 3-4 hours. From the start of inundation to the peak is approximately 1.5 hours. These times may vary according to the rainfall intensities patterns experienced in the catchment.

2. The design critical storm duration is approximately between 2 hours which provides a reasonable 1 hour time period to prepare for evacuation to a Shelter-in -Place as detailed in Appendix A.

The 1%AEP and PMF flood extents are shown in Appendix C Maps B and D are based on flood simulations generated by Ref 1. In summary the 1%AEP and PMF events inundates the ***site*** from overtopping the Careel Creek channel and to a lesser degree from overland flows from the drainage Riviera catchment easement as shown in Figures 1 and 2.

As the property boundary includes the Careel Creek channel (Figure 3). The predicted 1%AEP maximum velocitiy of 2.53m/s does not reflect the velocity on across the remainder of the ***site***, particularly that portion occupied by the existing dwelling. The velocity distribution across the ***site*** can be conceptulised from the Flood Risk Precinct Map F (Appendix C). As shown the existing Dwelling is located in the Medium Risk Precinct and is west of the floodway (High Risk).

High Overland Flows from the Riviera catchment as shown in Map F Appendix C are located north of the ***site***.

5.0 IMPACT OF THE DEVELOPMENT

The development proposal as detailed in Figures 5, 6 and 7 has the following Alterations and Additions:

1. The existing Dwelling will be refurbished and a staircase installed. There is no net change to area of the Ground Floor Level (GFL).
2. A first level will be constructed over the existing Dwelling at a First Floor Level (FFL) of 6.16m AHD. This Addition includes a bedroom, ensuite, storeroom and deck.

The existing Dwelling GFL is 3.46m AHD and is below the Flood Planning Level (FPL) of 4.13m AHD. All refurbishments of this Dwelling area will need to be flood proofed. That is the use of flood compatible materials and electrical circuit modifications to allow for safe emersion. There is no net change to the flood storage volume below the FPL.

The first floor Addition FFL of 6.16 m AHD is above the PMF level of 5.64m AHD. This level can be used as a Shelter-in Place during major flood events as discussed in Section 6.

The overall development has been assessed to the NBC flood standard for a Medium Risk Precinct as detailed in Appendix B.

6.0 FLOOD MANAGEMENT PLAN

The ***site*** is flood prone for the 1% AEP and PMF events and is potentially hazardous, therefore a Flood Risk Assessment and Plan is discussed in this Section.

The flooding process during an extreme event results in the surrounding access roads and pedestrian ways inundated over a period of several hours. The ***site*** is inundated once the Careel Creel Channel (CCC) is overtopped. Elaine Avenue is inundated from CCC and the overland flows from the Riviera catchment. During major flood events as shown in the 1%AEP hydrograph (Figure 4) the times the ***site***, GFL and Elaine Av are inundated and flood free. These time events are important in the planning and action process.

During the lead up to an 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 key processes and actions. Appendix A lists a sequence of actions that should be posted in a visible location: BoM warning process, inundation process of the ***site***.

2. Severe flood warnings for the Northern Beaches predicted by the Bureau of Meteorology (BoM), should be the trigger to 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 20mm/hr over a period of several hours will generate flooding in Careel Creek. The tidal state will affect the flooding process at the ***site***.
3. Flood levels approaching the top of the CCC will overtop and flow into the ***site***. Evidence of overland flows on the ***site***, 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 to its peak value in approximately 0.5 hours from the time of ***site*** inundation (Figure 4). During that time, final preparations should be concluded to secure items on the ***site*** and ensure the safety of all persons at the FFL of the Dwelling. Loose items, are to be stored above the PMF. The vehicles should secured within the bollards.
5. The eastern portion of the ***site*** is particularly hazardous and should be bought to everyone attention.

The access to any flood free haven for people away from the ***site*** is not considered as an option: considering the rate of rise of the flood levels, general frequency of warnings from BoM and the low levels of surrounding access roads and pedestrian ways. As such, the FFL of the Dwelling should be used as a "Shelter- in-Place" (SiP) .

The basic requirements of a SiP are:

1. The FFL at or above the PMF flood peak level of 5.64 m AHD. The FFL is 6.16 m AHD and to be used as SiP.
2. Floor space has to be 2 square metres /person. Complies with these guidelines.
3. Access to the ground floor. This is provided staircase as shown in Figure 5 and 6.
4. There is a bathroom and sufficient storage in the SiP for items that need to be raised above flood levels. This is provided (Figure 5).
5. Hazardous materials that can be dislodged by floodwaters and should not be stored below PMF flood level. This process can be satisfied.

In conclusion, considering the flooding processes at the ***site,*** the proposed Addition and Alterations as detailed in Figures 5,6 and 7, it is my opinion the design and this flood evacuation plan as detailed in Appendix A will satisfy NBC DCP requirements Sections B3.11 and B3.25. The proposal complies with the flood standard.

Yours Sincerely

Stephen Wyllie Bsc(Eng) FMA Member

Director 20/4/2020

Pittwater Data Services Pty Ltd

7.0 REFERENCES

1. Avalon to Palm Beach Floodplain Risk Management Study and Plan. Manly Hydraulics Laboratory, 2017.

2. Careel Creek Catchment Flood Study, WMA Water, 2013.

Appendix A

FLOODING WARNING

AWARENESS

- Heavy rain predicted by the Bureau of Metrology (BoM) : flood warning /flash flooding
- Monitor media reports for flood warnings in the Sydney Metropolitan Area.
- Observe local rainfall channel flows and overtopping.

ACTION BoM WARNINGS ISSUED

- Inform all residents and visitors of procedures the potential flood situation. Account for all residents visitors in Dwelling and ***site***.
- Inform all residents and visitors the hazardous eastern portion of the ***site*** where flood velocities are predicted to be high.
- Any items transportable by floods move to above (FFL) PMF 7 m AHD.
- Secure vehicles within bollards.
- Observe overland flows through ***site*** assemble residents visitors to FFL of the Dwelling (Shelter- in- Place). This is important as there is only 0.5 hour to organize this action.
- Continue to monitor BoM reports and inundation on the ***site***.
- If rainfall continues and BoM issue warnings remain at FFL.

POST FLOOD

- Account for all residents and visitors.
- Inspect vehicles and ***site*** generally for safety.
- Monitor BoM reports to ensure no further flood warnings.

NOTE THIS ACTION PLAN NEEDS TO BE DISCUSSED AT YEARLY INTERVALS.

Appendix B: Development Matrix for Medium 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 No.
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 Structural report required 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 5 and 6 Yes Section 5 and 6
F:Floor Levels	F1 F2 F3 F4 F6 F8 F9	Floor levels above FPL Sub floor not impede flow Pursuant of S88B One Off Additions below FPL Existing floor level retained below FPL First level Additions above PMF New Foyers	Yes yes Not Applicable Not Applicable Yes Yes Not Applicable
G: Car Parking	G1 G2 G3 G4 G5 G6 G7 G8	Open carpark not in floodway Floor level above ground level Enclosed carparks protected from inundation Vehicle barriers for d >300mm Enclosed garages at 1%AEP Comply with flood standard Raised driveways no impact Multi Dwellings	Yes Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
H: Fencing	H1	Designed not to impede flow	Not Applicable
I:Pools	I1	Coping flush pumps and electrical	Not Applicable

APPENDIX C

northern beaches council

FLOOD INFORMATION REQUEST - BASIC

Property: 49 Elaine Ave Avalon
Lot DP: 18//21687
Issue Date: 12/03/2020
Flood Study Reference: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory

Flood Information for lot:

Flood Life Hazard Category – See Map A

1% AEP – See Flood Map B

1% AEP Maximum Water Level[3]: 3.63 m AHD

1% AEP Maximum Peak Depth from natural ground level[3]: 3.01 m

1% AEP Maximum Velocity: 2.53 m/s

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

Flood Planning Area – See Flood Map C

Flood Planning Level (FPL) [1, 2, 3 & 4]: 4.13 m AHD

Probable Maximum Flood (PMF) – See Flood Map D

PMF Maximum Water Level[2]: 5.64 m AHD

PMF Maximum Depth from natural ground level: 5.03 m

PMF Maximum Velocity: 2.66 m/s

Flood Risk Precinct – See Map F

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

General Notes:

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

FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY

Notes:

- 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: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 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: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 2014) are indicative only.

FLOOD MAP C: FLOOD PLANNING AREA EXTENT

Notes:

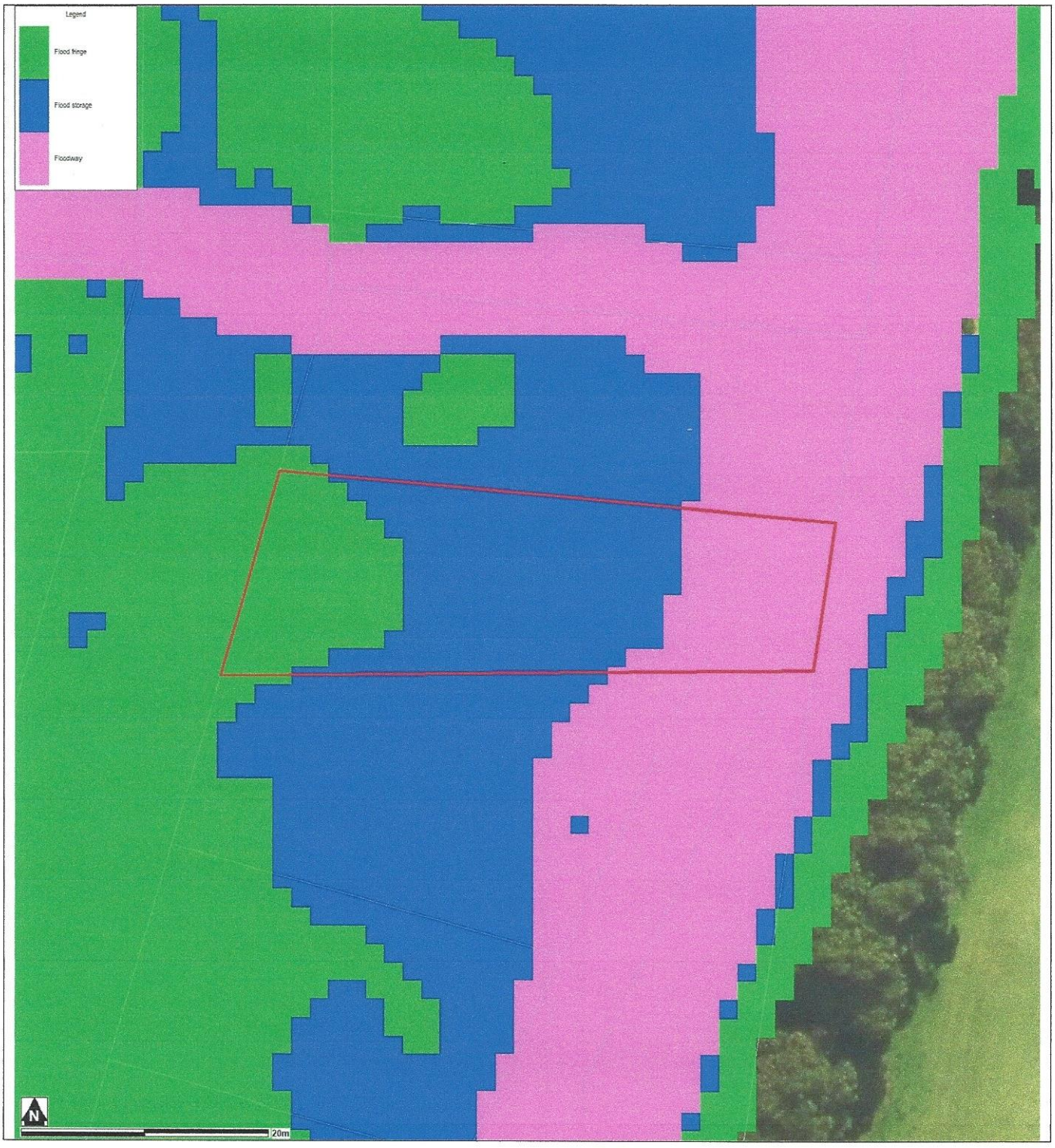
- Extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 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: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 2014) are indicative only.

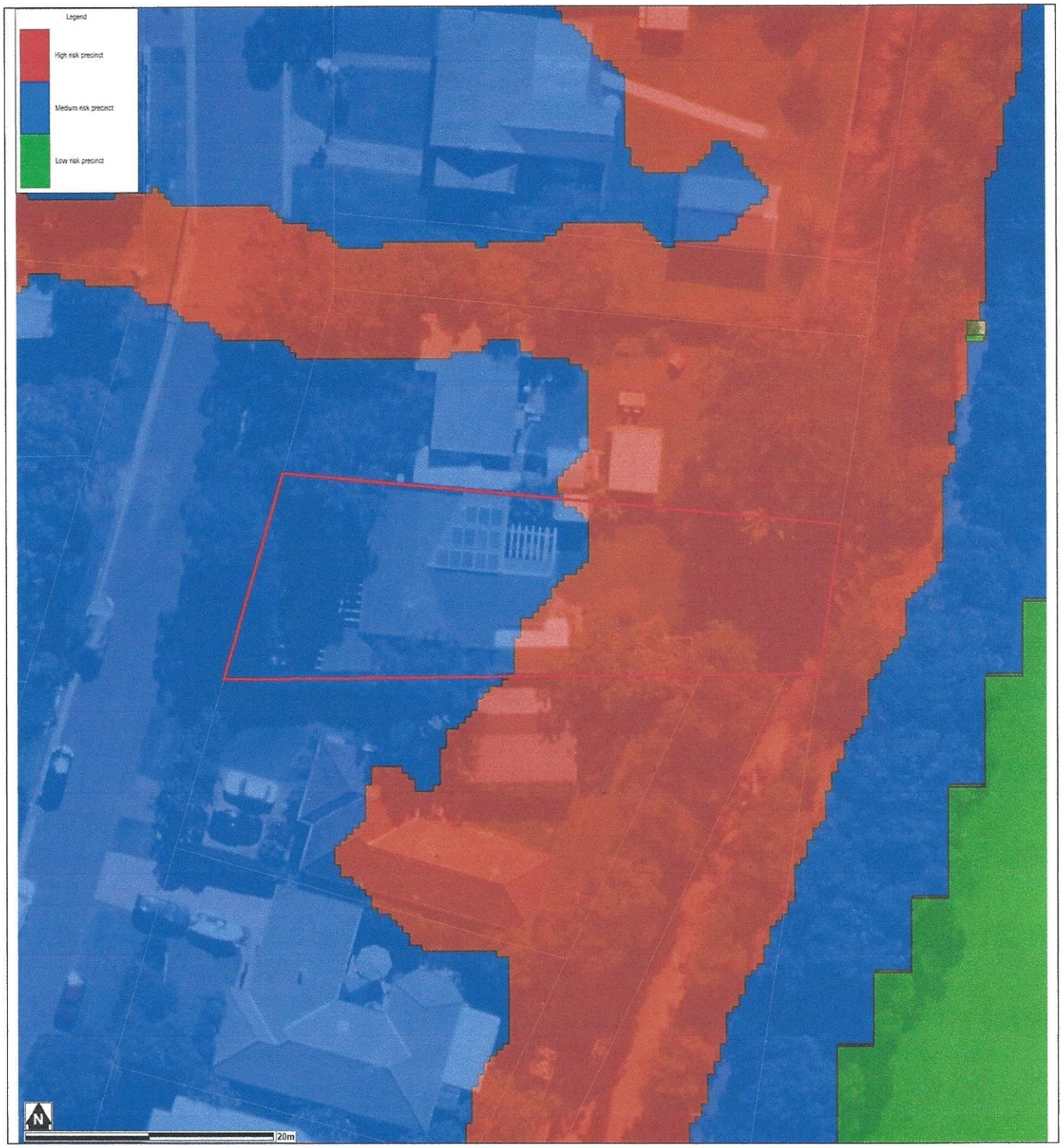
FLOOD MAP E: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

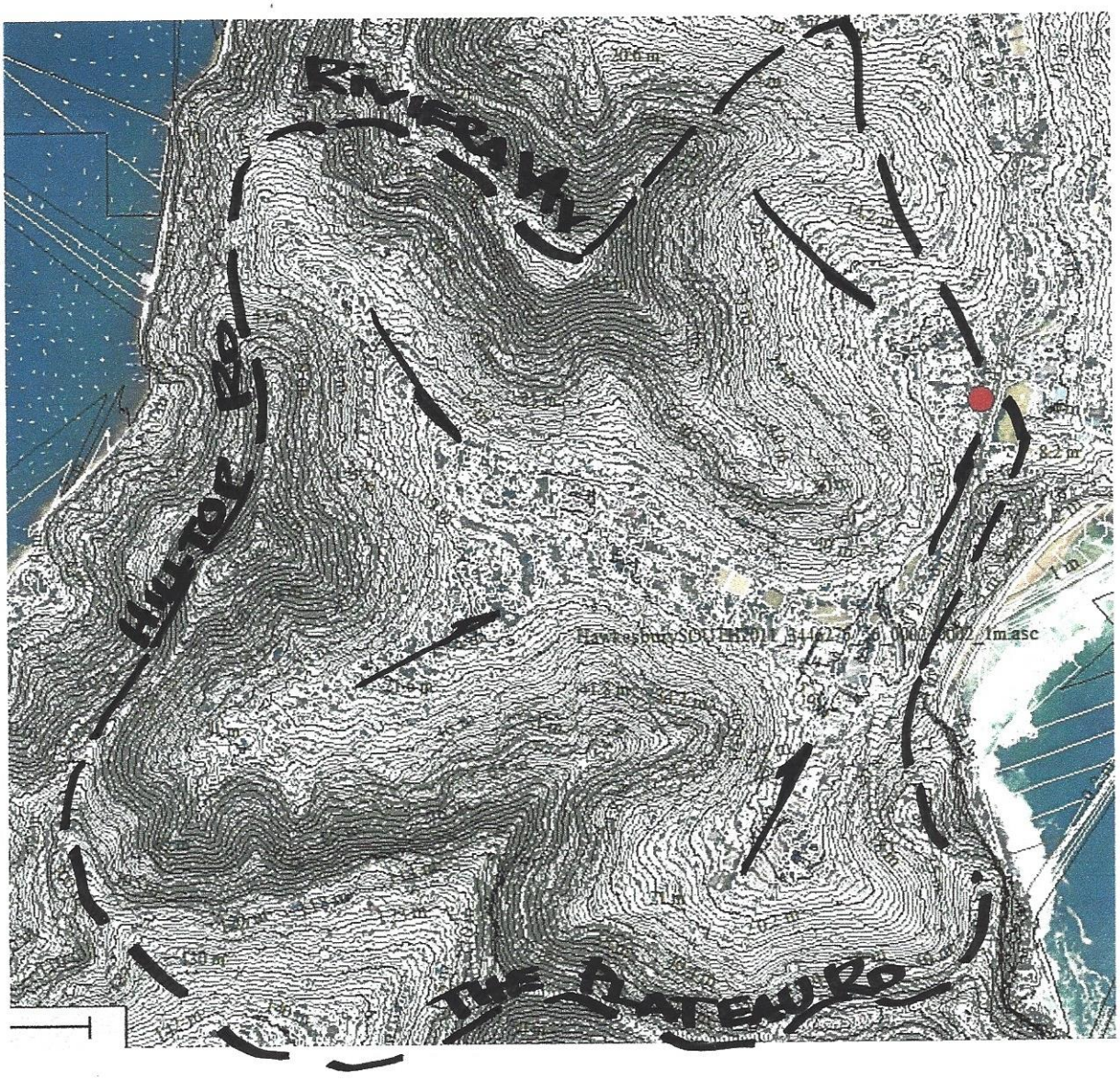
- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 2014) are indicative only.

FLOOD MAP F: 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)



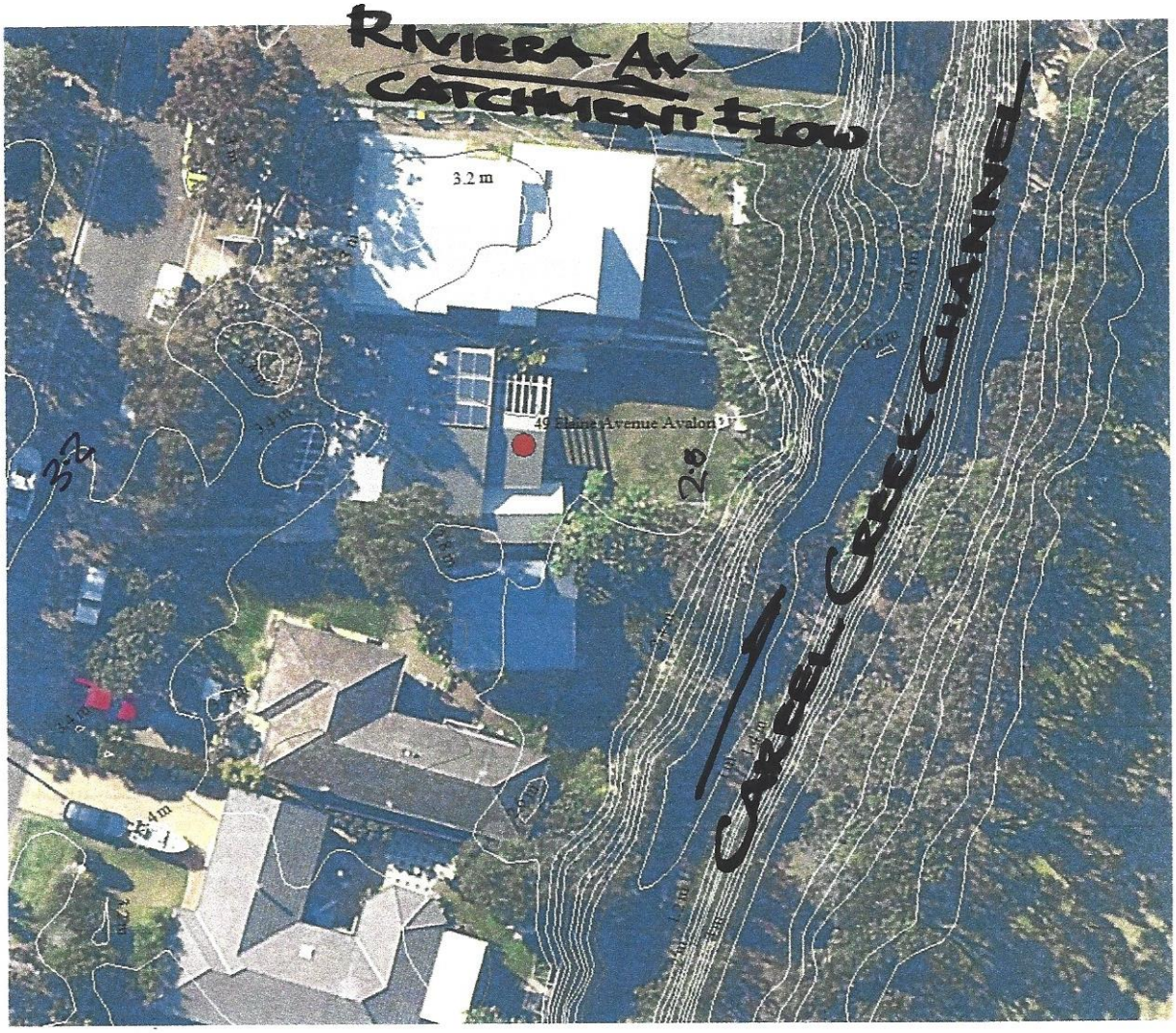
LEGEND

SITE

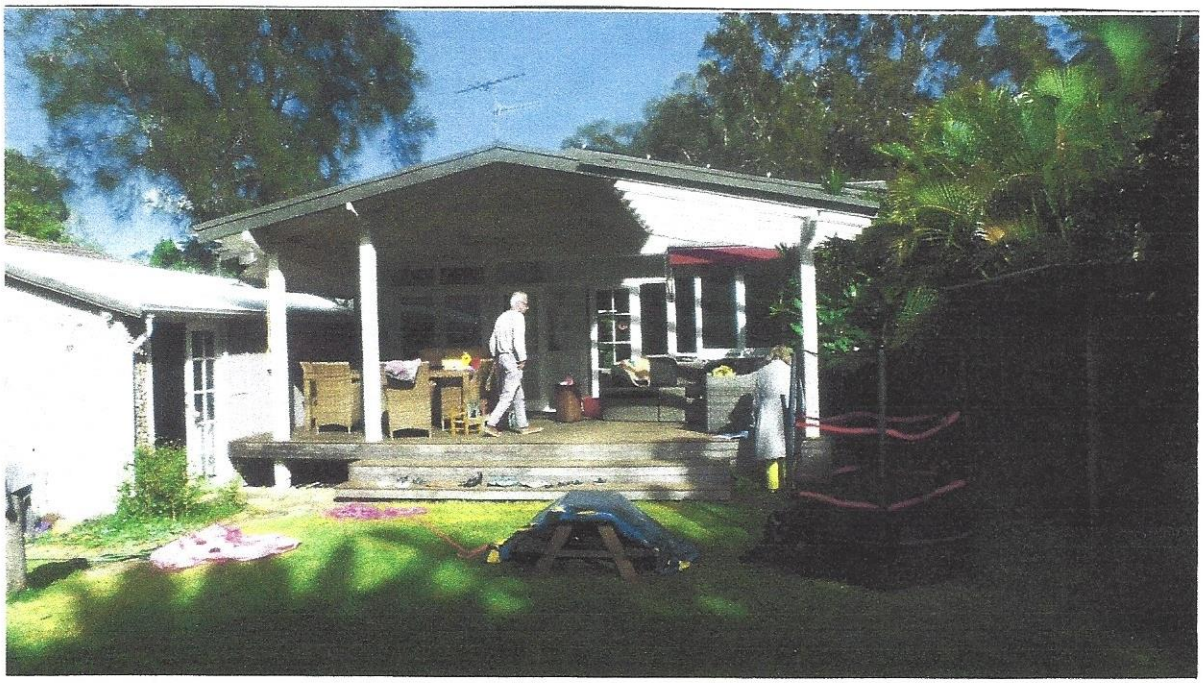
CATCHMENT BOUNDARY

MAJOR OVERLAND FLOW PATHS

FIGURE 1

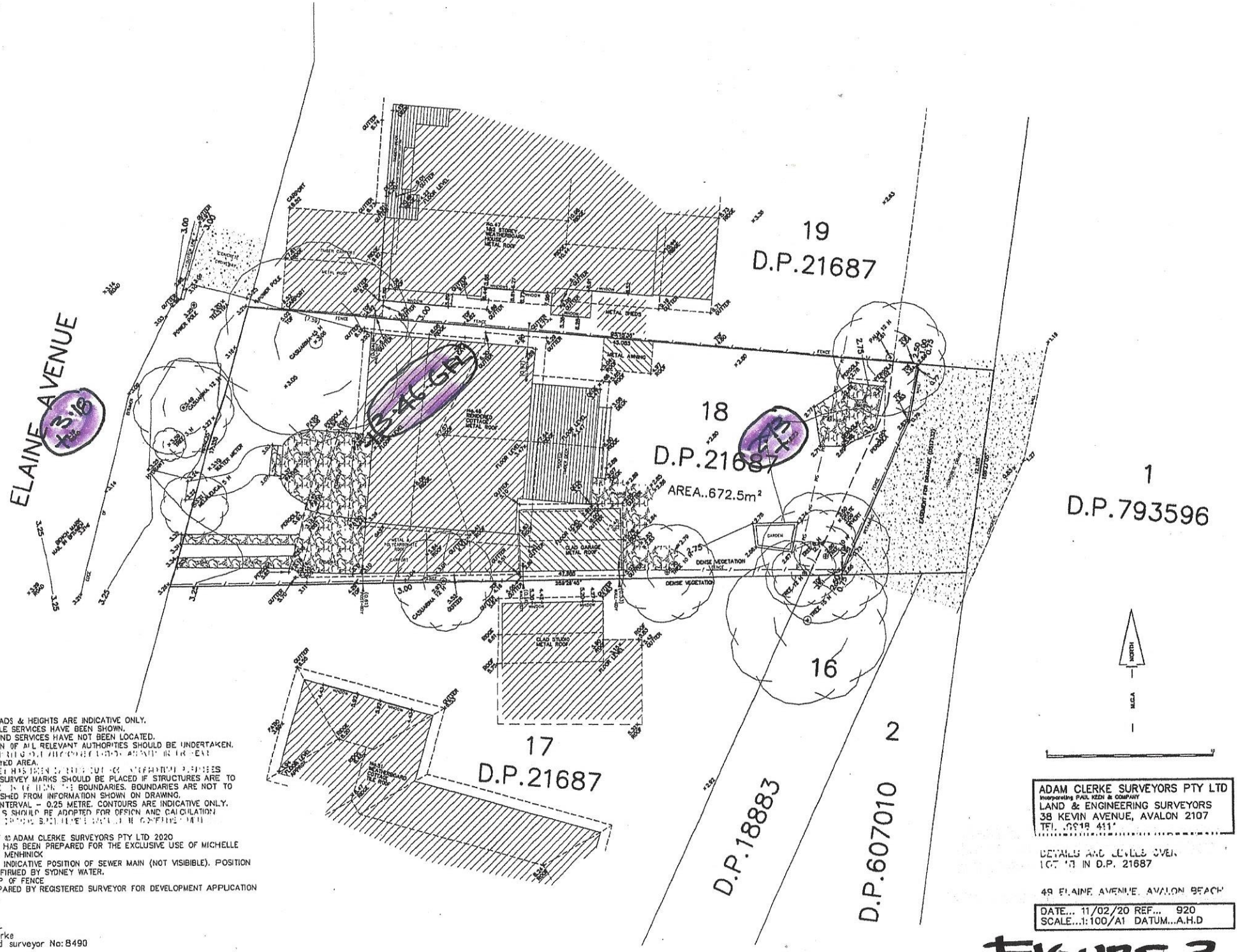


SITE 0.2m CONTOURS



BACK OF EXISTING DWELLINGS.
LOOKING WEST

FIGURE 2



NOTES:

- TREE SPREADS & HEIGHTS ARE INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN SHOWN. UNDERGROUND SERVICES HAVE NOT BEEN LOCATED. NOTIFICATION OF ALL RELEVANT AUTHORITIES SHOULD BE UNDERTAKEN. [illegible] THE SURVEYED AREA.
- [illegible] ONLY AND SURVEY MARKS SHOULD BE PLACED IF STRUCTURES ARE TO [illegible] BOUNDARIES. BOUNDARIES ARE NOT TO BE ESTABLISHED FROM INFORMATION SHOWN ON DRAWING.
- CONTOUR INTERVAL – 0.25 METRE. CONTOURS ARE INDICATIVE ONLY. SPOT LEVELS SHOULD BE ADOPTED FOR DESIGN AND CALCULATION [illegible] SURVEYOR.
-
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF MICHELLE & RICHARD MENHINICK
- — SM — INDICATIVE POSITION OF SEWER MAIN (NOT VISIBLE). POSITION TO BE CONFIRMED BY SYDNEY WATER.
- TOF ... TOP OF FENCE
- PLAN PREPARED BY REGISTERED SURVEYOR FOR DEVELOPMENT APPLICATION PURPOSES.

A Clerke
Adam Clerke
Registered surveyor No: 8490

ADAM CLERKE SURVEYORS PTY LTD
Incorporating PAUL KIZIN & COMPANY
LAND & ENGINEERING SURVEYORS
38 KEVIN AVENUE, AVALON 2107
TEL. 9918 4111

DETAILS AND LEVELS OVER
LOT 18 IN D.P. 21687

49 ELAINE AVENUE, AVALON BEACH

DATE... 11/02/20 REF... 920
SCALE...1:100/A1 DATUM...A.H.D

FIGURE 3

CAREEL CREEK

SITE 9TH FEBRUARY 2020 LOOKING EAST

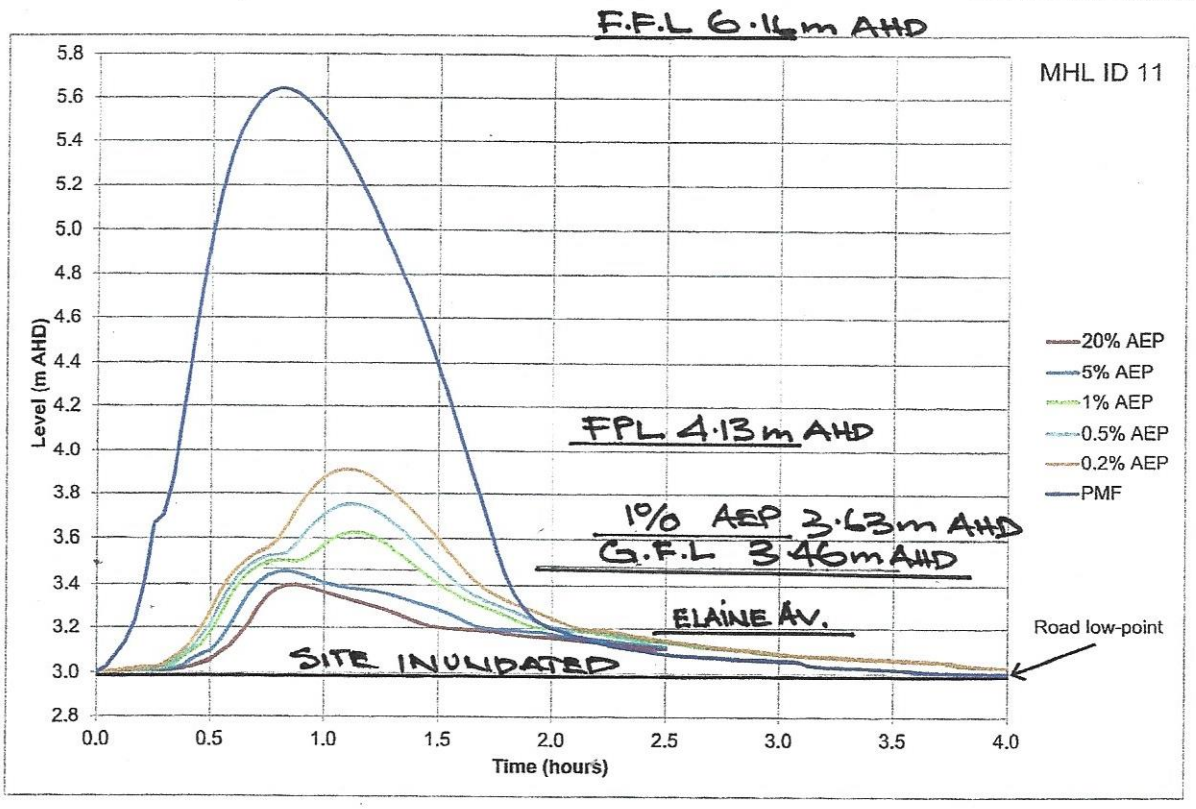
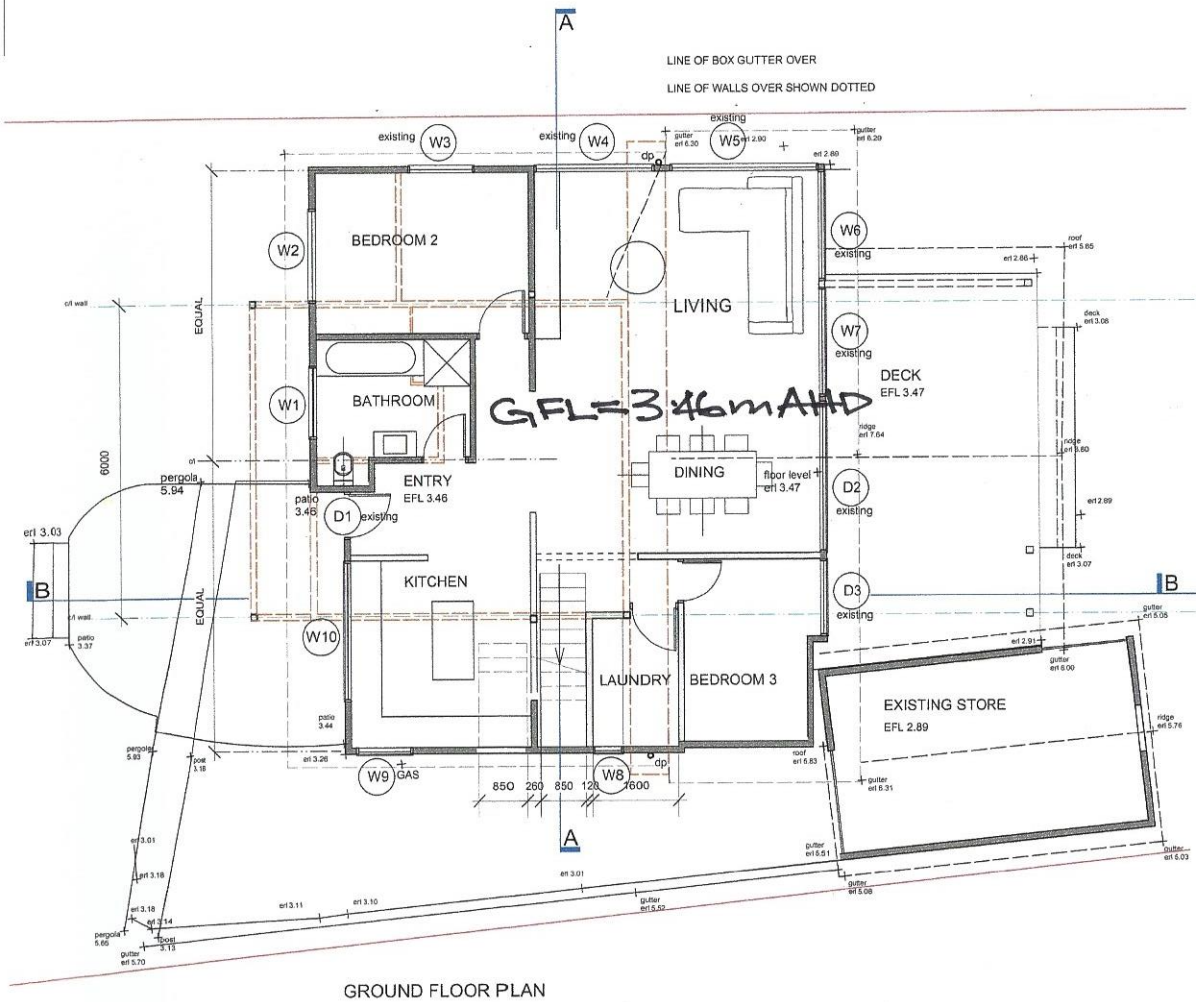
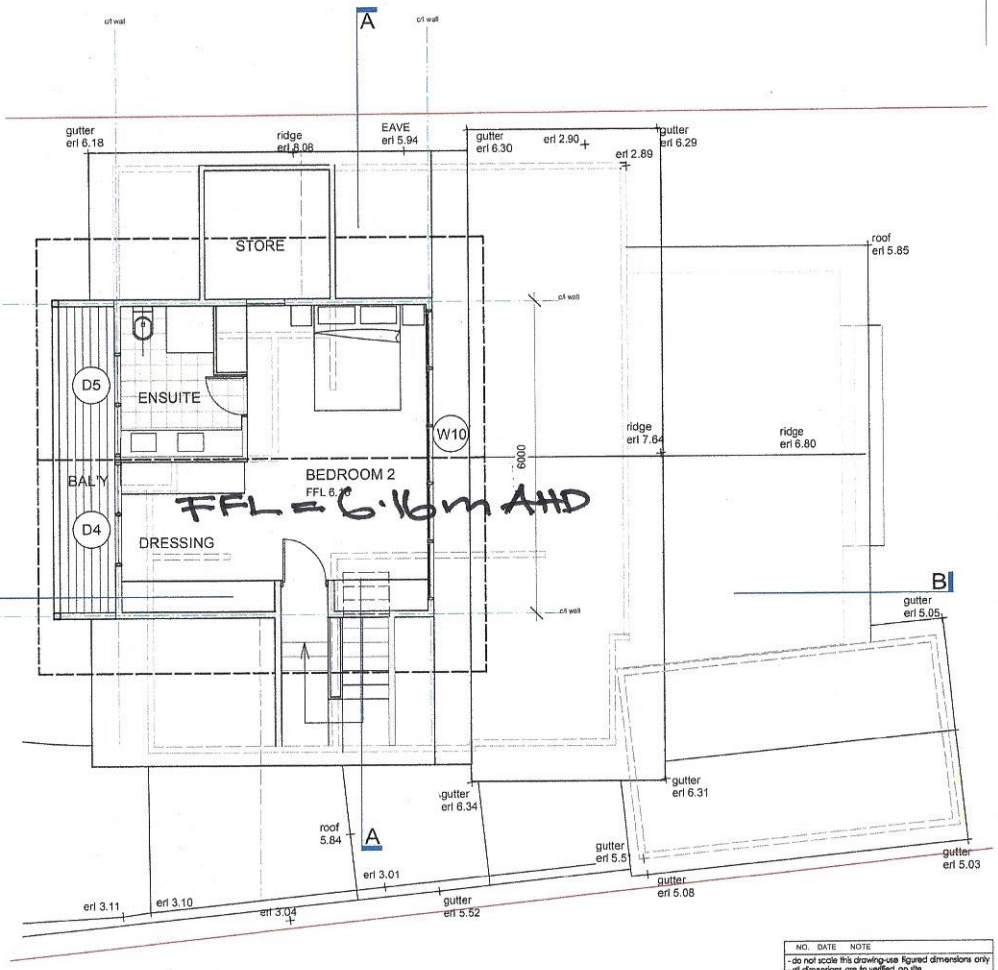


Figure 8.10 – Stage hydrographs, Elaine Avenue

FIGURE 4



GROUND FLOOR PLAN



FIRST FLOOR PLAN

0 5.0m

SCALE

NO. DATE NOTE

- do not scale this drawing-use figured dimensions only
- all dimensions are to verified on site
- report any discrepancies to Architect for decision/ clarification before proceeding with the work
- this drawing is to be read in conjunction with all relevant specifications and drawings
- these drawings and the copyright therein are the property of Atelier Haefeli Pty. Ltd. and must not be used, reproduced or copied wholly or in part without the written permission of Atelier Haefeli Pty. Ltd.

Project
ALTERATIONS + ADDITIONS TO 49 ELAINE AVENUE, AVALON BEACH for MR. + MRS. MENHINICK

Drawing name
FLOOR PLANS

Architect
atelier haefeli ARCHITECTS
a: 15 Loquat Valley Rd Bayview NSW 2104
t: 9979 9280 m: 0409 815 119
e: linda@atelierhaefeli.com.au
w: www.atelierhaefeli.com.au
nom. architect: Linda Haefeli AIA reg. 14430

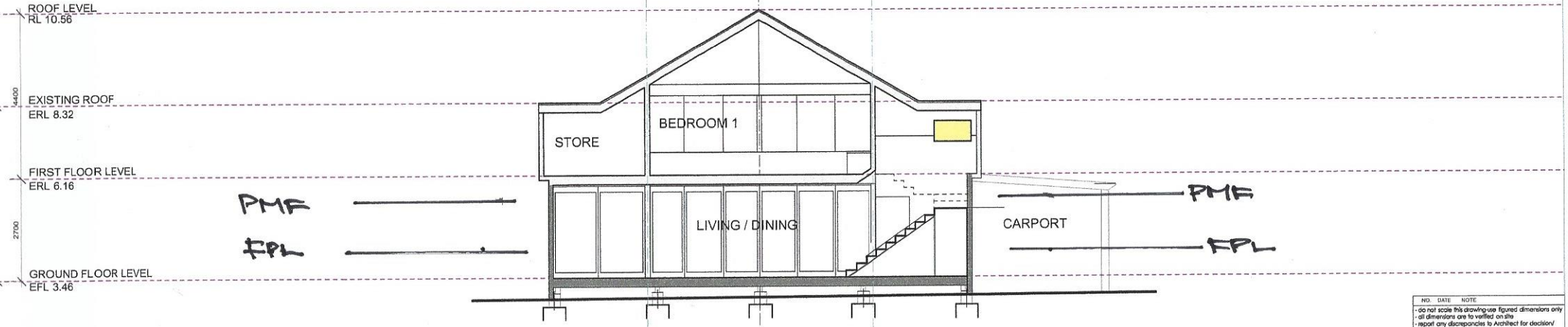
Scale 1:100 2022
Date march '20
North
Job No.
Rev.
Dwg No. A/02

FIGURE 5

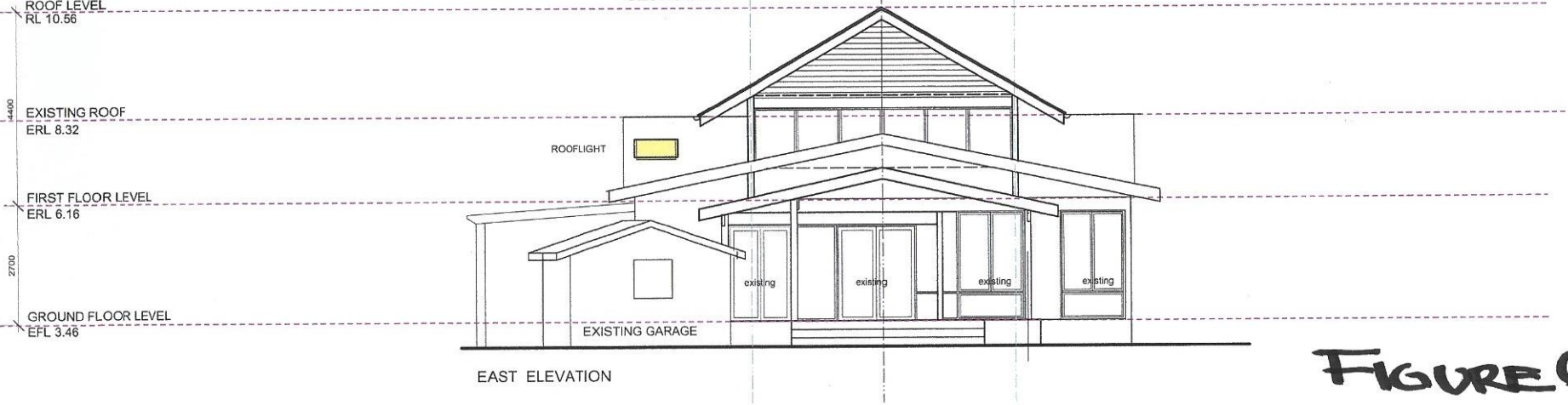
NO. 47

WEST ELEVATION

NO. 51



SECTION BB



EAST ELEVATION

FIGURE C

NO.	DATE	NOTE

- do not scale this drawing-use figured dimensions only
- all dimensions are to verified on site
- report any discrepancies to Architect for decision/ clarification before proceeding with the work
- this drawing is to be read in conjunction with all relevant specifications and drawings
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Project
ALTERATIONS + ADDITIONS TO 49 ELAINE AVENUE, AVALON BEACH for MR. + MRS. MENHINICK

Drawing name
EAST + WEST ELEVATIONS, SECTION BB

Architect
atelier haefeli ARCHITECTS

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t: 9979 9280 m: 0409 815 119
e: linda@atelierhaefeli.com.au
w: www.atelierhaefeli.com.au
nom. architect: Linda Haefeli AIA reg. 14430

Scale
1:100 2022

Date
march '20

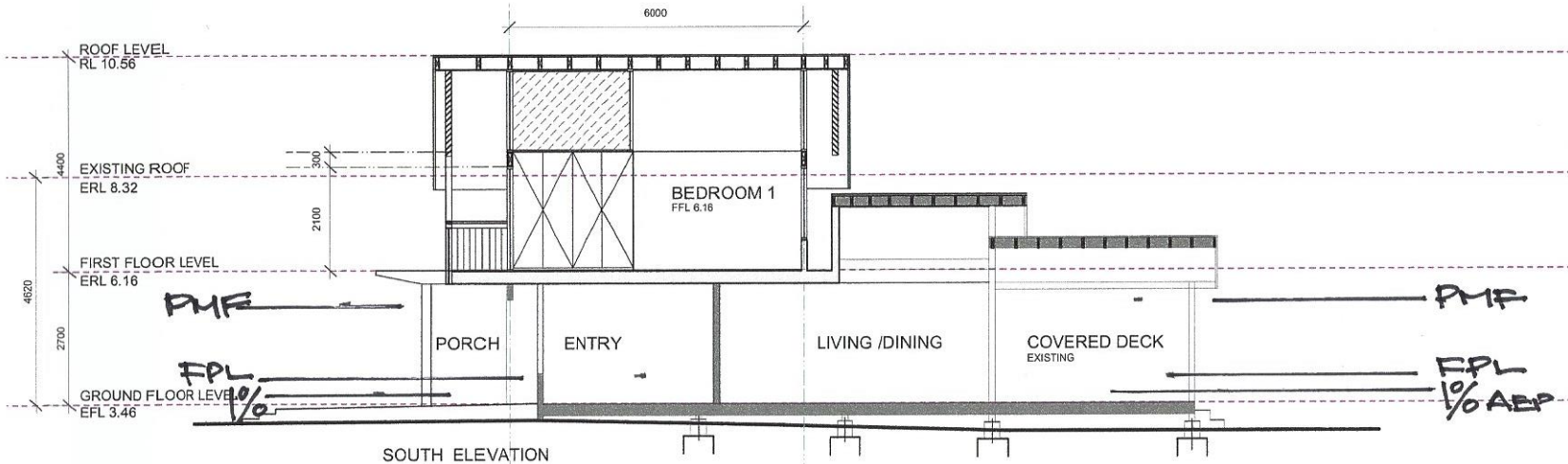
North

Job No.

Rev.

Dwg No.
A/04

NORTH ELEVATION



SOUTH ELEVATION

SOUTH ELEVATION

FIGURE 7

NO.	DATE	NOTE

- do not scale this drawing-use figured dimensions only
- all dimensions are to verified on site
- report any discrepancies to Architect for decision/ clarification before proceeding with the work
- this drawing is to be read in conjunction with all relevant specificaitons and drawings
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Project
ALTERATIONS + ADDITIONS TO 49 ELAINE AVENUE, AVALON BEACH for MR. + MRS. MENHINICK

Drawing name
NORTH + SOUTH ELEVATIONS, SECTION AA

Architect
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nom. architect: Linda Haefeli AIA reg. 14430

Scale
1:100 2022

Date
march '20

North

Job No.

Rev.

Dwg No.
A/03

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: 49 ELAINE AVENUE AVALON.

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

on this the 20TH APRIL 2020 (Date) certify that I am engineer or a

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

***Flood Management Report* Details:**

Report Title: FLOOD MANAGEMENT REPORT FOR 49 ELAINE AV, AVALON.

Report Date: 20/04/2020

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*.

Signature [signature]

Name 20/4/2020 STEPHEN WYLLIE BSC(ENG) IEMA MEMBER.