



FLOOD RISK MANAGEMENT REPORT

Northern Beaches Council (Pittwater)

Proposed Additions

at

24 Darius Avenue, North Narrabeen

Job No. 190820

Prepared for: Matt Hardy

Prepared by: Cameron Haack



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FLOOD RISK MANAGENENT REPORT

DATE 12th, August 2019
SITE 24 Darius Avenue, North Narrabeen
ENGINEER Cameron Haack
CLIENT Calcad Design and Drafting
JOB No 190820

INTRODUCTION:

NB Consulting Engineers assessed the plans prepared by *Calcad Design and Drafting* – dated 07.08.2019 for the proposed alterations and additions at the above site address in reference to potential flooding issues. The proposed development generally meets the requirements of *Pittwater Council 21 DCP* subject to the recommendations outlined in this flood risk assessment.

The architectural plans and Council supplied flood information was used to determine flooding extents and impacts and to assess associated risks. The premises has been assessed in accordance with the requirements of Pittwater Council 21 DCP, Councils supplied flood information, The *Narrabeen Lagoon Flood Study (2013)*, Pittwater Council's Flood Risk Management Reports – “*considerations when preparing a report*” sheet and the *NSW Government Floodplain Management Manual (2005)*.

The site is located on Darius Avenue in North Narrabeen but does not back onto Narrabeen lagoon. This report is in reference to a Development Application for alterations and additions to the existing structure including a ground floor extension. The development site is located within the vicinity of the flow extents (for the 1% AEP flood event) of the flood as predicted in the *Narrabeen Lagoon Flood Study (2013)*.

It should be noted that the *Narrabeen Lagoon Flood Study (2013)* predicts the 1% AEP flood extends to a level of RL 3.03m AHD (maximum on site depth of approximately 0.97m) and will completely inundate the property.

Below is a summary of flood information in reference to Northern Beaches Council (Pittwater) Flood Assessment report requirements and the *NSW Government Floodplain Management Manual* with reference to the 1% AEP storm event.

FLOOD RISK REPORT:

- | | |
|-------------------------------------|------------------|
| • Flood Risk Precinct | High |
| • Flood Life Hazard Category | H3-H4 |
| • Maximum 1% AEP Flood Level | 3.03m AHD |
| • Extreme Flood Level (PMF) | 4.84m AHD |
| • Flood Planning Level (FPL) | 3.53m AHD |
| • Existing Dwelling Floor Level | 2.76m AHD |
| • Floor Level of Proposed Additions | 3.56m AHD |
| • Degree of inundation | 100% |
| • Flood Emergency Response Strategy | Shelter In Place |
| • Buoyancy | Medium |
| • Flood Behavior | Flood Storage |
| • Impact on surrounding properties | None envisaged |

The development lies in the floodplain of the coastal Narrabeen Lagoon which discharges to the ocean at the North end of Narrabeen beach. The Lagoon has possible flooding impacts from four sources, as follows;

- a. Flooding from upstream runoff. This is the major cause of flooding.
- b. Storm surges as a result of low atmospheric pressure, combined with strong onshore winds.
- c. Lagoon entrance blockage by sand deposits or open to the sea.
- d. Tidal effects or combination of all four impacts.

The lagoon acts similar to a detention basin where water is temporarily stored prior to discharge to the Tasman Sea. The lagoon slowly releases water to the sea during the latter part of the flood.

- Flood storage No anticipated net reduction
The building footprint area contributing to potential flood blockages is proposed to increase as a result of the development. However, we have reviewed the proposed drawings and note/recommend that:
 1. The addition is suspended above the FPL, on isolated brick piers with no perimeter subfloor walls.
 2. The proposed pool is completely inground, with no projection above the surrounding natural surface levels.
 3. The proposed carport slab FFL is to match the surrounding natural surface levels.

If the above recommendations are met, the flood storage will be maintained for the site.

- Flood levels No anticipated increase
- Recommendations for structural design
The proposed structures are recommended to be designed and inspected by a structural engineer to ensure the structure is adequate to withstand the forces of floodwaters up to the FPL with low velocity. Any other new structures located below the FPL are to be designed to cater for the flood

loads. The proposed onsite refuge (see: “*Evacuation Strategy and Onsite Response Plan*”) is to be designed by a structural engineer to ensure the structure is adequate to withstand forces of floodwaters up to the PMF.

- Types of materials to be used

Any new structures are to be constructed of standard building materials of concrete, steel, timber and/or brickwork above the flood levels. Any proposed fencing along the boundaries, alternative to pool type fencing, are to be certified and/or designed by a civil engineer to withstand hydrostatic forces up to and including the 1% AEP storm event. Openings are to be provided, excluding the property frontage, to ensure the 1% AEP floodwater is able to flow through the property unimpeded.

- Ground floor requirements

The existing ground floor level (RL 2.74m AHD) is located below the FPL (RL3.53m AHD). NB Consulting has assessed the extent of the additions and note that all new works proposed are above the FPL and are of the opinion, that it would be impractical to raise the level of the existing house to the FPL.

The proposed alterations are not envisaged to have an effect on the flood levels and there is no proposed decrease in flood storage. The property owner however, is to acknowledge the existing floor levels are below the FPL and a level of inundation may occur in the event of the 1% AEP rainfall event.

- Onsite Stormwater Management

Site Stormwater management and discharge is recommended to be designed by a civil / hydraulic engineer with relevant experience. The site Stormwater disposal method is recommended to be in general accordance with AS3500.3 and Northern Beaches Council (Pittwater) DCP requirements. Additional council approval / review of alternative disposal methods may be required.



- Waterproofing methods

All electrical equipment is to be fitted with circuit breakers. Switchboard and main circuit unit to be fitted above the FPL flood level of 3.53m AHD. Other valuable materials or possessions are to be stored as above and should be acknowledged by the owner and occupant that a reasonable extent of damage to fittings below the FPL (RL 3.53m AHD) is to be expected during the 1% AEP storm event.

- Flood warning No signage is recommended

- Evacuation strategy and onsite response plan Shelter in place

Should floodwaters begin to inundate the street kerb and gutter adjacent the property residents are recommended to proceed to the designated shelter in place refuge (RL 5.86m), located above the PMF of 4.84m AHD.

A copy of this report is to be kept on the premises at all times. This should be executed, on individual assessment, during high intensity rainfalls within the first 5–10 minutes of a storm and monitored accordingly. Refer to the local Northern Beaches flood warning website for updates:

<http://new.mhl.nsw.gov.au/users/NBFloodWarning/>

- Hazardous Material Storage

Hazardous chemicals are not to be stored in areas under the Flood Planning Level of 3.53m AHD and should be acknowledged by the owner and occupant.

RECOMMENDATIONS / CONCLUSION:

- The proposed development is not envisaged to have an adverse effect on surrounding properties. The flood levels provided from council flood information have been adopted for this assessment. The proposed development generally meets the requirements of *Northern Beaches Council (Pittwater) DCP* provided the recommendations within this report are implemented. A development application is recommended.

- Qualifications / experience

Rick Wray
Director NB Consulting Engineers
BE(Civil) MIEAust CPEng NER RPEQ
Over 30 years professional
experience

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

NORTHERN BEACHES CONSULTING ENGINEERS P/L

Author:



Cameron Haack
BE Civil MIEAust

Reviewed By:



Rick Wray
BE CPEng NER RPEQ Director

\\NBADS\Company\Synergy\Projects\190820 24 DARIUS AVENUE, NORTH
NARRABEEN\ENG Design\190820 Flood Risk Report.docx



APPENDIX A – FLOOD INFORMATION **(PITTWATER COUNCIL)**

FLOOD INFORMATION REQUEST - BASIC

Property: 24 Darius Ave, North Narrabeen

Lot DP: 16//28354

Issue Date: 29/07/2019

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: 0.96 m

1% AEP Maximum Velocity: 1.22 m/s

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

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: 4.84 m AHD

PMF Maximum Depth from natural ground level: 2.77 m

PMF Maximum Velocity: 0.76 m/s

Flood Risk Precinct – See Map F

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.

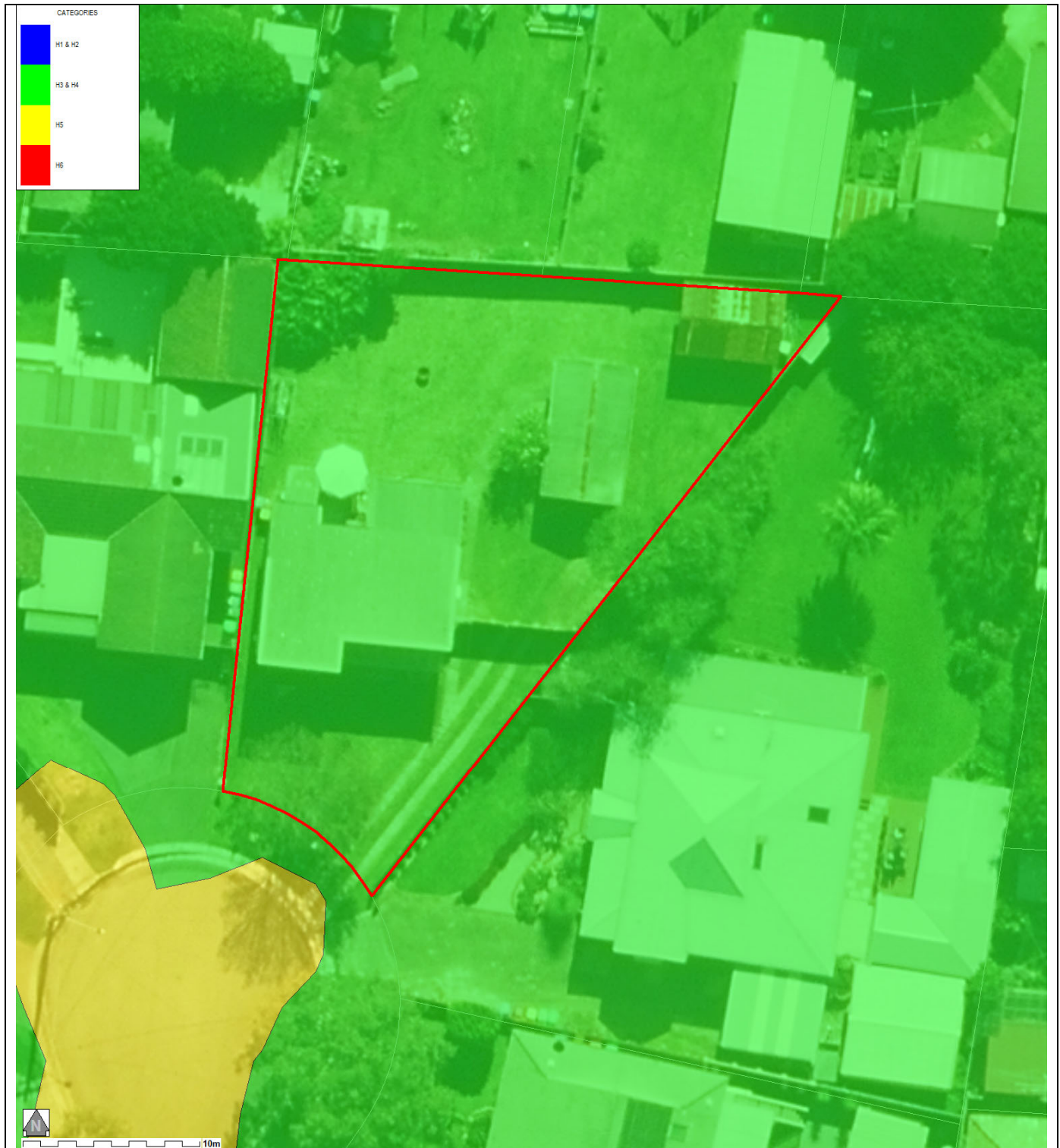
³Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

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 B3.13.
- 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 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: 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: Narrabeen Lagoon Flood Study) and aerial photography (Source: NearMap 2014) are indicative only.

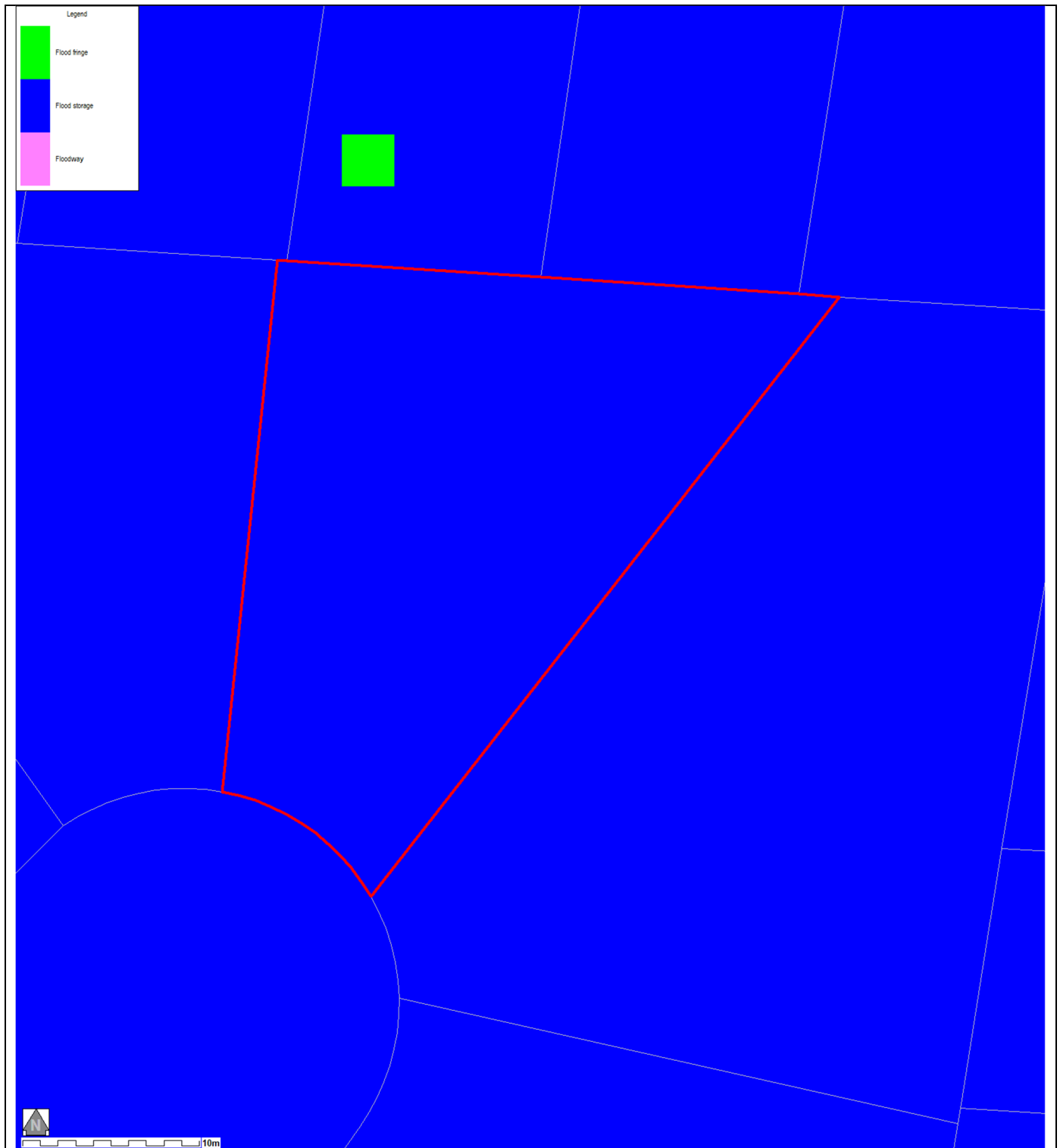
FLOOD MAP D: PROBABLE MAXIMUM FLOOD EXTENT



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

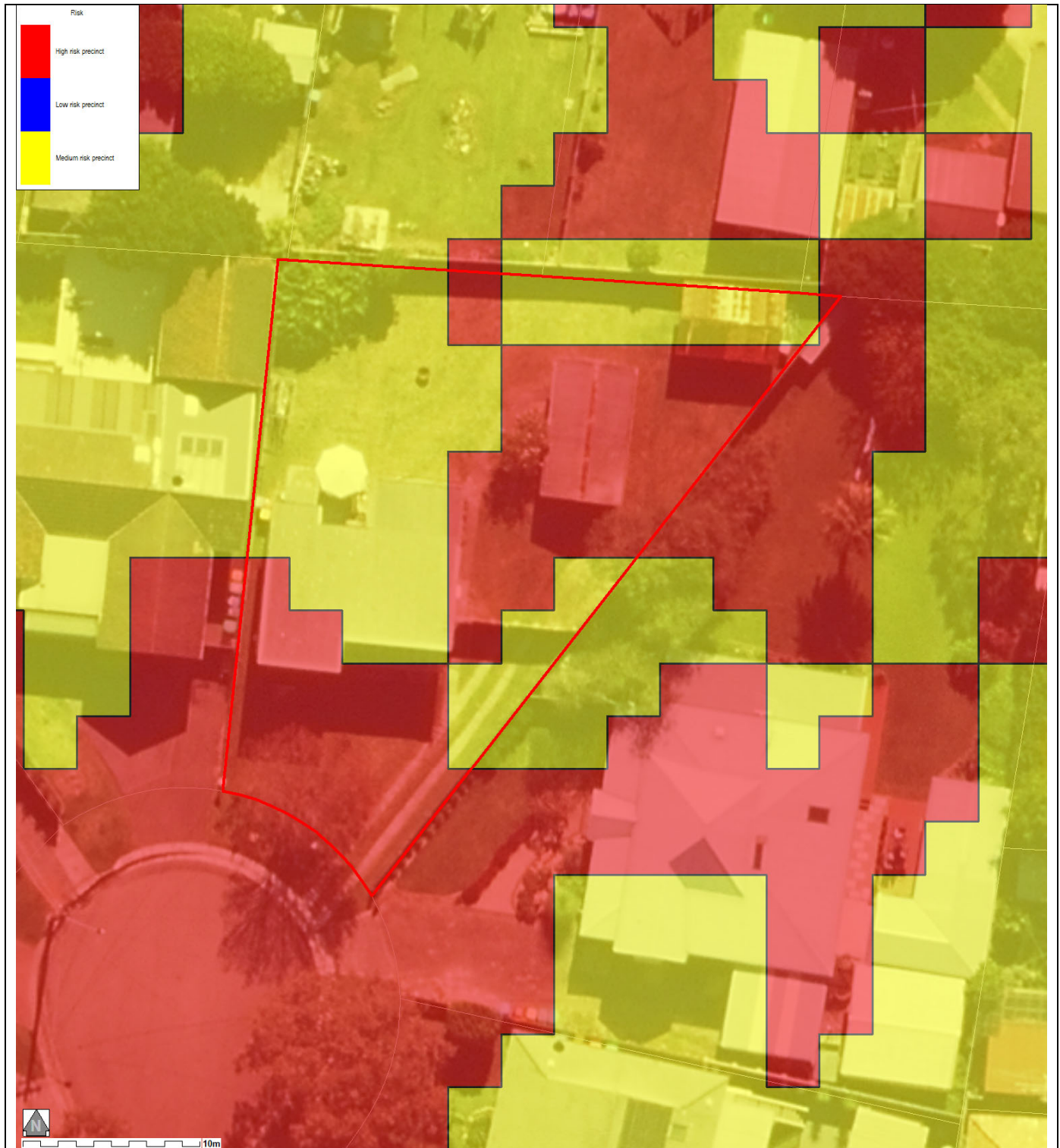
FLOOD MAP E: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



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: Narrabeen Lagoon Flood Study) 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)

GUIDELINES for Preparing a Flood Management Report

Introduction

These guidelines are intended to provide advice to applicants on preparing a Flood Management Report. The purpose of a Flood Management Report is to help applicants measure and manage the flood risk to life and property on their site.

When is a Flood Management Report required?

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

Note that the flood extents shown on the mapping are indicative only. It is recommended that flood levels are compared to registered ground survey to more accurately determine the flood extent.

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

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

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

What is in a Flood Management Report?

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

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

Technical requirements of a Flood Management Report

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

1. Description of development

The description of development should identify:

- Outline of the proposed development, with plans if necessary for clarity
- Use of the building, hours of operation, proposed traffic usage or movement
- Type of use, ie, critical, vulnerable, subdivision, residential, business, industrial, recreational, environmental or concessional

2. Flood analysis

The flood analysis should include:

- Predicted 1 in 100 year flood level
- Flood Planning Level (FPL)
- Probable Maximum Flood (PMF) level
- Flood Risk Precinct, ie High, Medium or Low
- Flood Life Hazard Category (in former Pittwater Council area only)
- Mapping of relevant extents
- Flood characteristics for the site, eg depth, velocity, hazard and hydraulic category, and the impact these have on the proposed development

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

3. Assessment of impacts

The assessment of impacts should address the various elements of the relevant LEP and DCP. A simple compliance table should be provided, similar to the table one below.

	Compliance		
	Not Applicable	Yes	No
A Flood effects caused by Development			
B Drainage Infrastructure & Creek Works			
C Building Components & Structural			
D Storage of Goods			
E Flood Emergency Response			
F Floor Levels			
G Car Parking			
H Fencing			
I Pools			

Further details of what is required for each of these categories can be found in the *Development Control Plan for Flood Prone Land*.

For any of these categories which are applicable, the assessment should demonstrate how the development complies, or if it doesn't, provide an explanation of why the development should still be considered.

Reporting requirements for a Flood Management Report

The Flood Management Report should include:

- a) Executive summary
- b) Location plan, at an appropriate scale, that includes geographical features, street names and identifies all waterways and Council stormwater pipes, pits and easements
- c) Plan of the proposed development site showing the extent of the predicted 100 year, any high hazard or floodway conditions and the PMF flood event
- d) Development recommendations and construction methodologies
- e) Calculation formulae (particularly for flood storage)
- f) Clear referencing using an accepted academic referencing system (eg. Harvard)
- g) Analysis of development against relevant State Environmental Planning Policies
- h) Analysis of development against relevant Local Environment Plan and Policies
- i) Conclusion detailing key points
- j) Standard Hydraulic Certification (Form A/A1)
- k) Qualifications of author
- l) Any flood advice provided by Council
- m) Any other details which may be relevant

NOTE: Qualifications of Author

Council requires that the Flood Management Report be prepared by a suitably qualified Engineer with experience in flood design / management who has, or is eligible for, membership to the Australian Institute of Engineers.

For further information please contact Stormwater and Floodplain Team on 1300 434 434 or via email at floodplain@northernbeaches.nsw.gov.au

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: _____

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

I, _____ on behalf of _____
(Insert Name) (Trading or Business/ Company Name)

on this the _____ 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:

Report Date:

Author:

Author's Company/Organisation:

I: _____
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

☐ have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

☐ have followed Council's Guidelines for Preparing a Flood Management Report

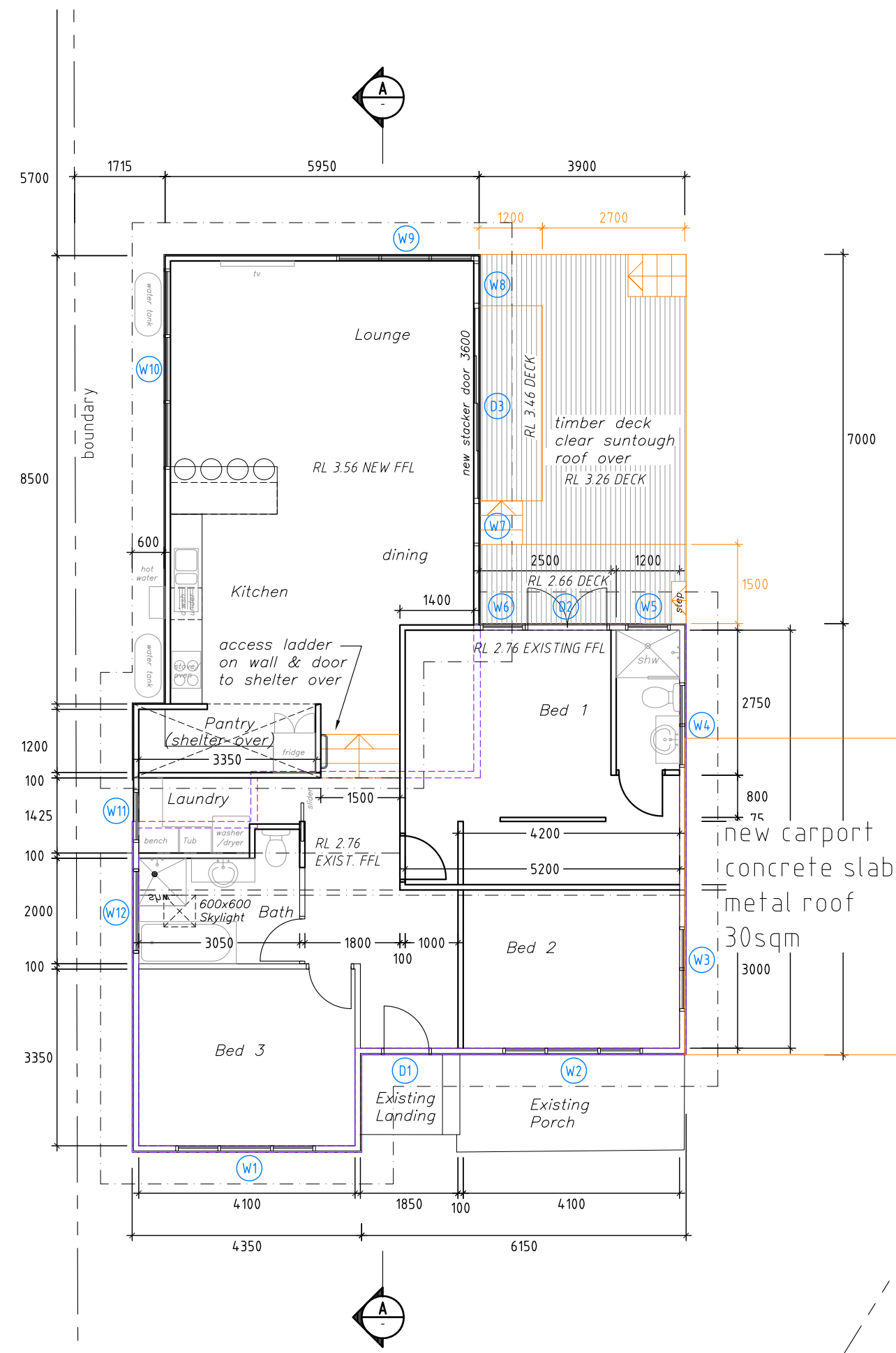
☐ have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature

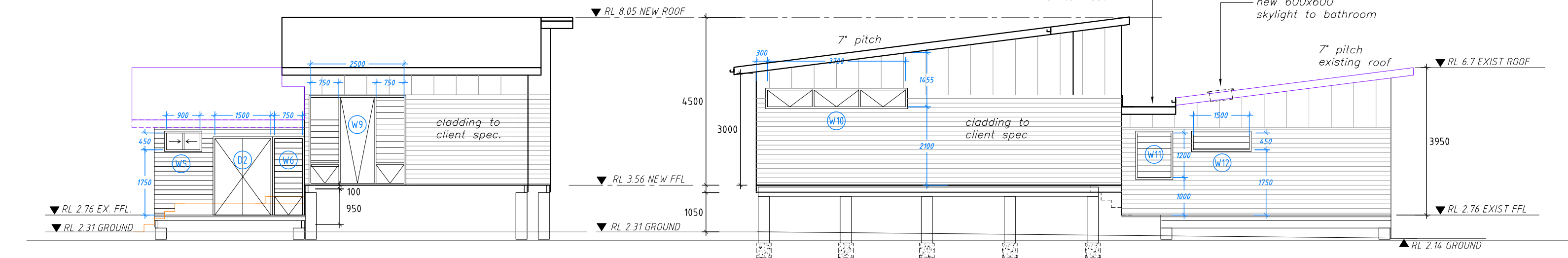
Name



APPENDIX B – PROPOSED DRAWINGS AND SITE SURVEY

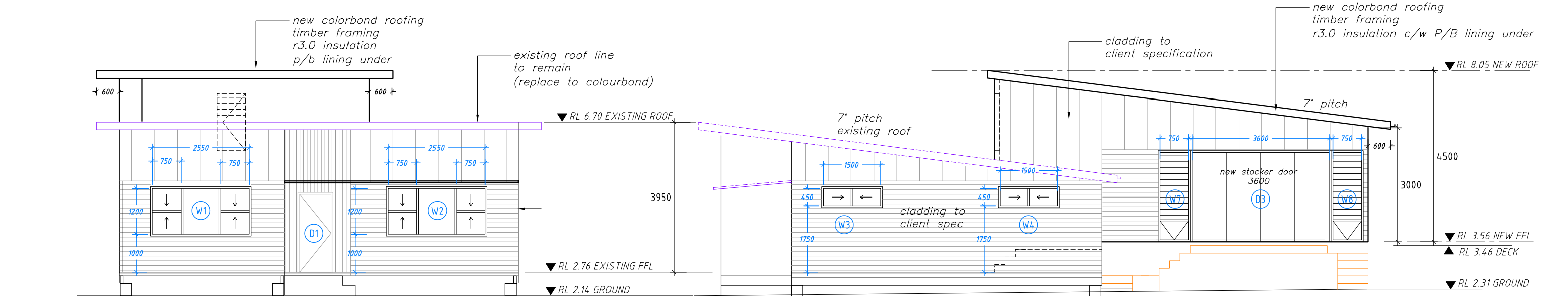


FLOOR PLAN-NEW WORKS
1:100



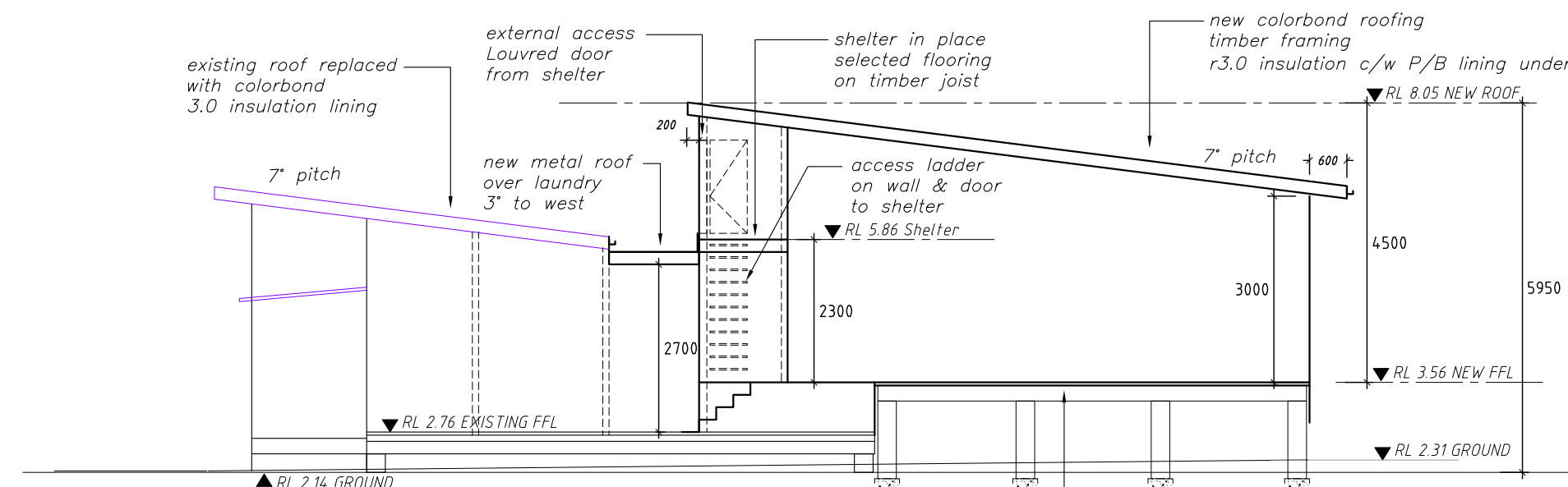
NORTH ELEVATION
1:100

WEST ELEVATION
1:100



SOUTH ELEVATION
1:100

EAST ELEVATION
1:100



SECTION A-A
1:100



SITE PLAN
1:200

- NOTES:
- TOTAL BLOCK AREA - 699.6sqm
 - BUILDING AREA - 260.4sqm - 37%
 - LANDSCAPED AREA - 63%
 - ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE PROCEEDING WITH WORKS
 - SEWER TO BE CONNECTED INTO EXISTING DOMESTIC LINE & COUNCIL SYSTEM
 - STORMWATER TO BE CONNECTED TO EXIST SYSTEM
 - ALL MATERIALS & WORKMANSHIP TO BE STRICTLY IN ACCORDANCE WITH BCA REQUIREMENTS & AUSTRALIAN STANDARDS.
 - FLOOR, WALL & ROOF FRAMING TO AS1684
 - SMOKE DETECTORS TO BE INSTALLED IN ACCORDANCE WITH AS3186
 - WATERPROOFING OF WET AREAS TO BE IN ACCORDANCE WITH AS3740
 - GLAZING TO BE IN ACCORDANCE WITH AS1288
 - CLADDING TO CLIENT SPECIFICATION (REPLACE EXISTING IF REQUIRED)
 - REFER TO BASIC CERTIFICATE No. A3517421

ISSUE	DATE	AMENDMENT
B	07.08.19	DA ISSUE
A1	24.06.19	PC APPROVAL & PRICING
A	22.05.19	RETAIN EXIST ROOF-REV. TO SUIT
0	06.09.18	PRELIMINARY - FOR REVIEW

CALCAD
DESIGN & DRAFTING
87 POWDERWORKS ROAD
NORTH NARRABEEN, 2101
TELEPHONE: 0423 590975
EMAIL: calcad@outlook.com

CLIENT:
MATTHEW & BELINDA HARDY

PROJECT:
**24 DARIUS ST
NORTH NARRABEEN, NSW 2101**

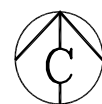
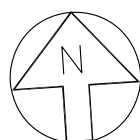
DRAWING TITLE:
**PLANS, SECTION & ELEVATIONS
ALTERATIONS & ADDITIONS**

SCALE:	1:100 / 1:200	DRAWING NO.	ISSUE
DATE:	SEPT 2018		
DRAWN:	D.C	A-001	B



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 - GLAZING TO BE IN ACCORDANCE WITH AS1288
 - CLADDING TO CLIENT SPECIFICATION (REPLACE EXISTING IF REQUIRED)
 - REFER TO BASIC CERTIFICATE No. A351742 (

Issue	Date	Revision
B	07.08.19	DA ISSUE
A1	24.06.19	PC APPROVAL & PRICING
A	22.05.19	RETAIN EX. ROOF-REV. TO SUIT
A	06.09.18	PRELIMINARY - FOR REVIEW

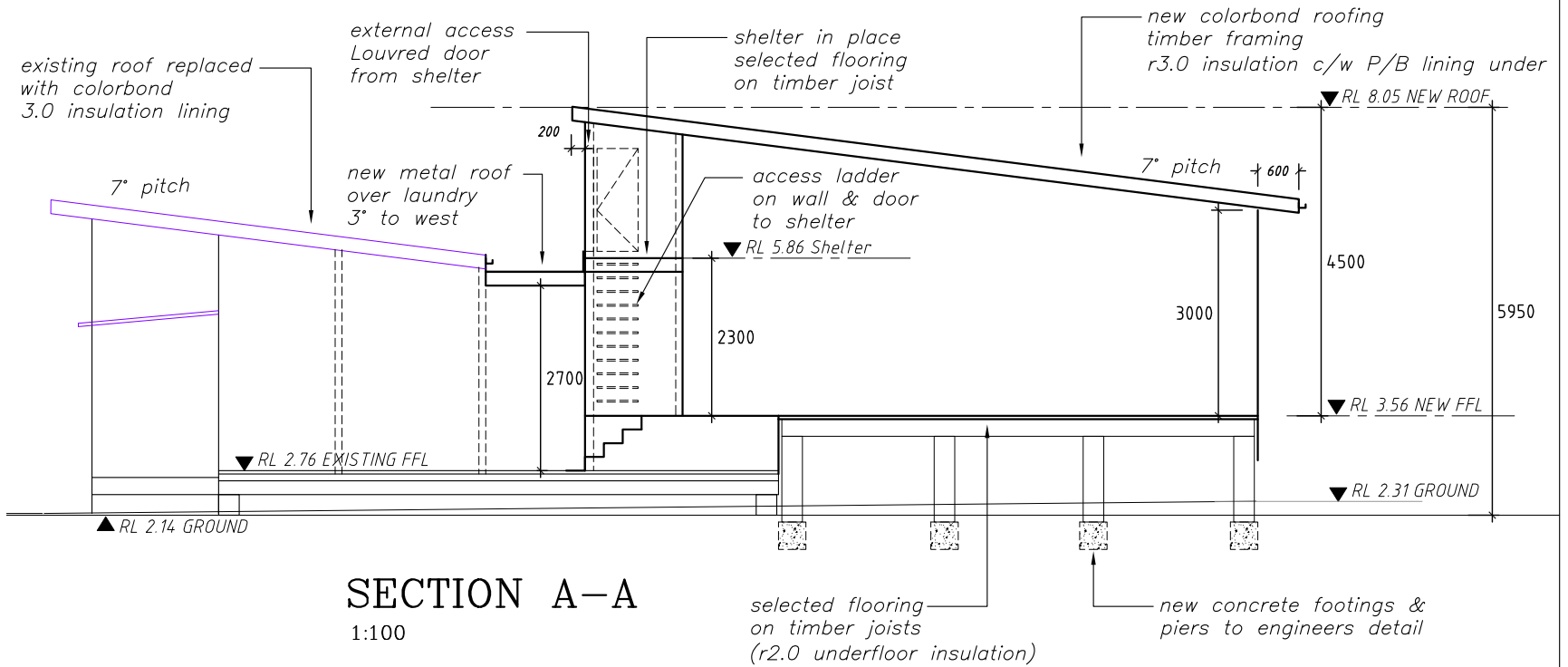
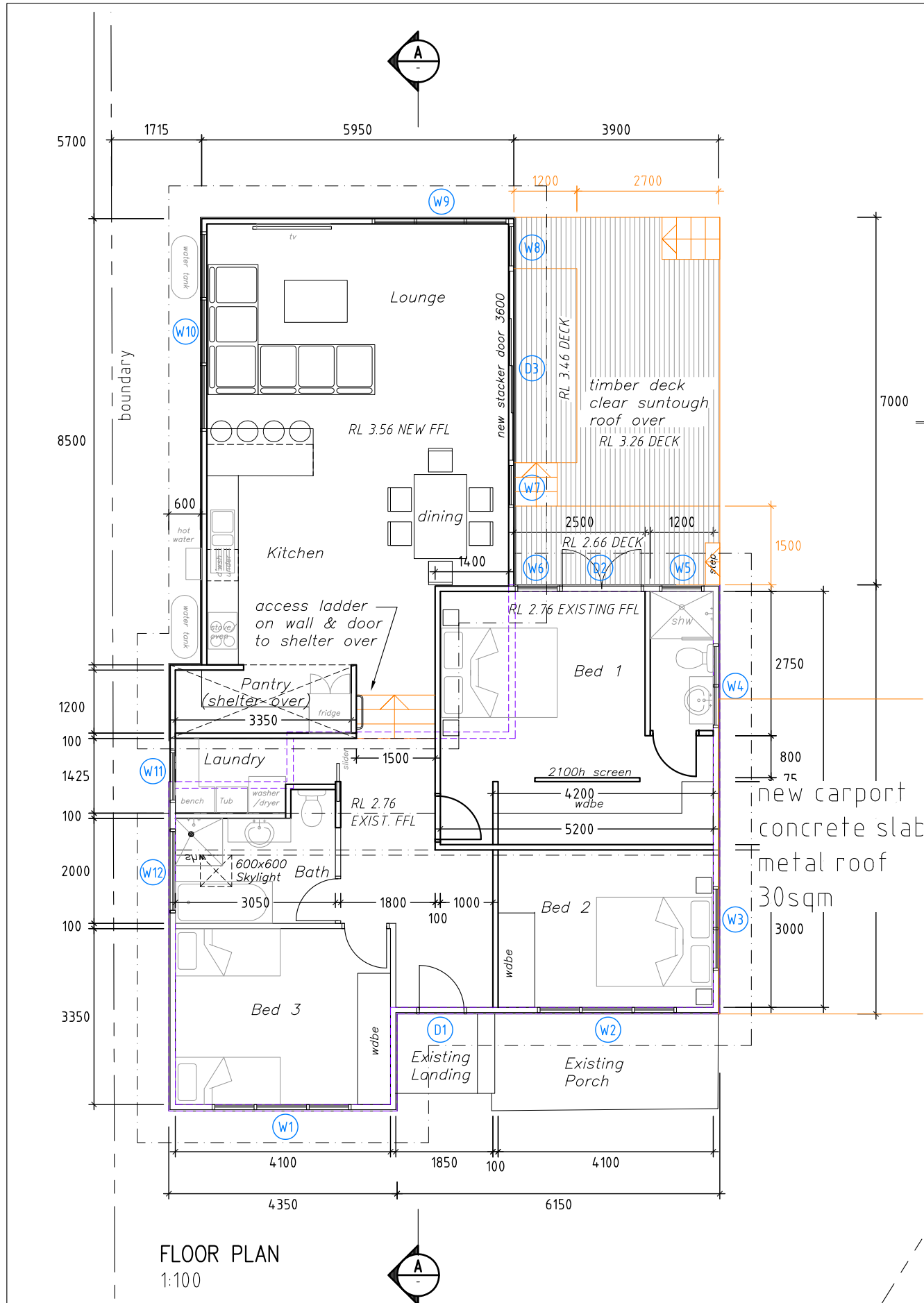


CALCAD
DESIGN & DRAFTING

67 POWDERWORKS ROAD
NORTH NARRABEEN, 2101

TELEPHONE: 0423 590975
EMAIL: calcad@outlook.com

project:	MATTHEW & BELINDA HARDY 24 DARIUS ST NORTH NARRABEEN	drawn:	D.C	date:	SEPT '18
		scale:	1:200@A3	cad ref.	-
title:	SITE PLAN – ALTERATIONS & ADDITIONS	drawing number			issue
		200			B

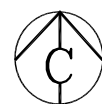
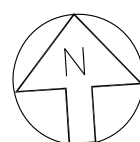


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 - REFER TO BASIC CERTIFICATE No. A351742 (

WINDOW SCHEDULE (Aluminium frame / safety glass)					
REF.	LOCATION	SIZE (GLASS) WIDTHxHEIGHT	HEIGHT U/S TO FFL	TYPE (OPTION)	REMARKS
W1	BED 3 SOUTH	2550x1200	1000	2x750 DBLE HUNG+CTR FIXED	REPLACE EXISTING
D1	FRONT DOOR SOUTH	840x2050	0	FRONT DOOR	REPLACE EXISTING
W2	BED 2 SOUTH	2550x1200	1000	2x750 DBLE HUNG+CTR FIXED	REPLACE EXISTING
W3	BED 2 EAST	1500x450	1750	HORIZ. SLIDE	REPLACE EXISTING
W4	BED 1 ENSUITE EAST	1500x450	1750	HORIZ. SLIDE	FROSTED / SCREEN
W5	BED 1 ENSUITE NORTH	900x450	1750	HORIZ. SLIDE	FROSTED / SCREEN
D2	BED 1 NORTH	1500x2050	0	DOUBLE DOOR	
W6	BED 1 NORTH	750x2050	0	LOUVRE+ LOW FIXED	SCREEN
W7	LOUNGE EAST	750x2350	0	LOUVRE+ LOW FIXED	SCREEN
D3	LOUNGE EAST	3600x2350	0	STACK OR BIFOLD DOOR	
W8	LOUNGE EAST	750x2350	0	LOUVRE+ LOW FIXED	SCREEN
W9	LOUNGE NORTH	2500x2350	0	2x750 LOUVRE+CTR FIXED	SCREEN TO LOUVRES
W10	LOUNGE WEST	3700x450	0	3x1200 LATCH	-
W11	LAUNDRY	900x1200	1000	LOUVRE	FROSTED / SCREEN
W12	BATHROOM WEST	1500x450	1750	LOUVRE FROSTED / SCREEN	REPLACE EXISTING

AL WINDOWS TO BE POWDERCOATED & MATT FINISH

Issue	Date	Revision
B	07.08.19	DA ISSUE
A1	24.06.19	PC APPROVAL & PRICING
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0	06.09.18	PRELIMINARY - FOR REVIEW

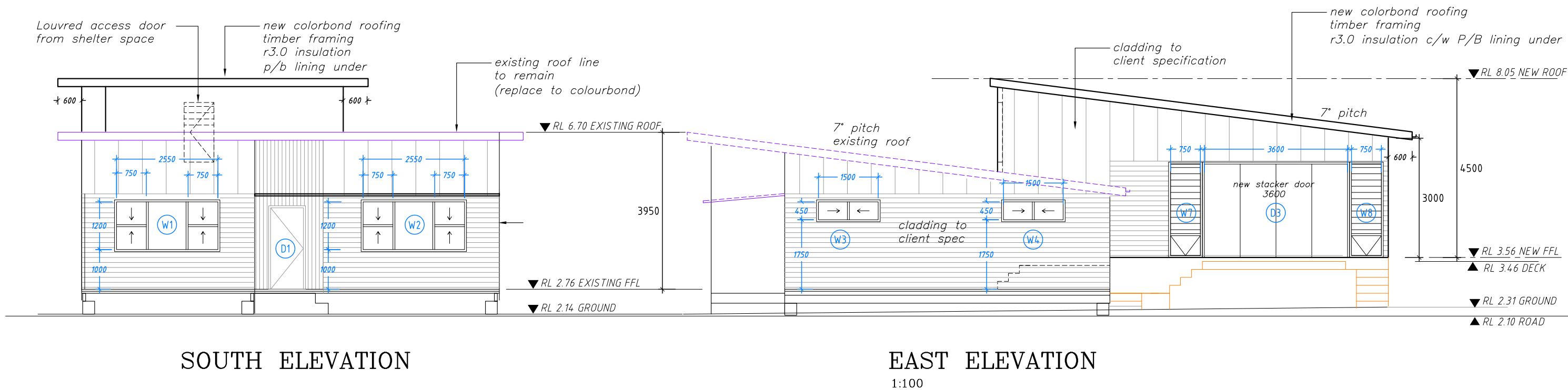
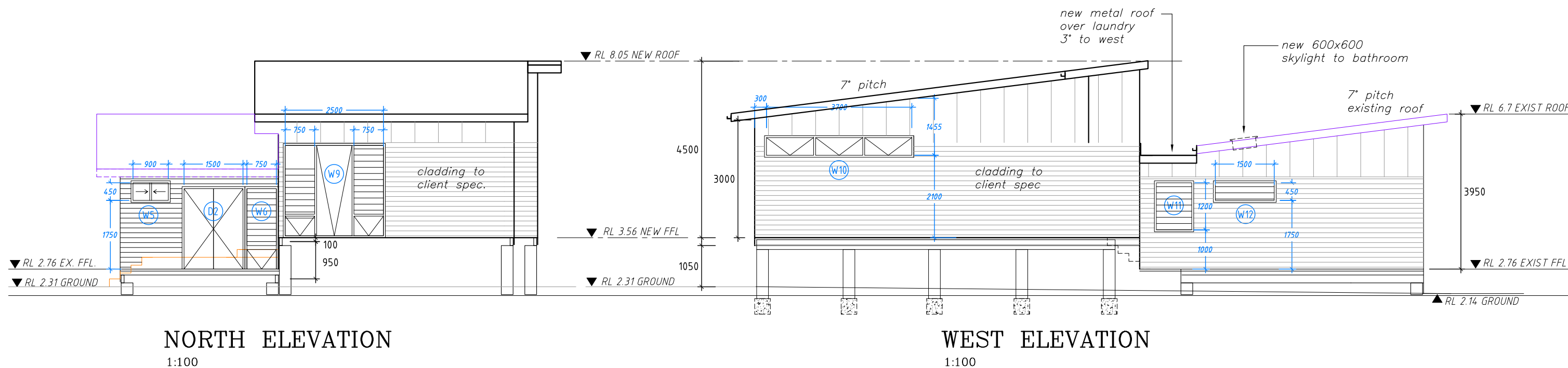


CALCAD
DESIGN & DRAFTING

67 POWDERWORKS ROAD
NORTH NARRABEEN, 2101

TELEPHONE: 0423 590975
EMAIL: calcad@outlook.com

project:	MATTHEW & BELINDA HARDY 24 DARIUS ST NORTH NARRABEEN	drawn: D.C	date: SEPT '18
		scale: 1:100@A3	cad ref. -
title: PLAN & SECTION – ALTERATIONS & ADDITIONS	drawing number 001		issue B



Issue	Date	Revision
B	07.08.19	DA ISSUE
A1	24.06.19	PC APPROVAL & PRICING
A	22.05.19	RETAIN EX. ROOF-REV. TO SUIT
0	06.09.18	PRELIMINARY - FOR REVIEW



CALCAD
DESIGN & DRAFTING

67 POWDERWORKS ROAD
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TELEPHONE: 0423 590975
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project:	MATTHEW & BELINDA HARDY 24 DARIUS ST NORTH NARRABEEN	drawn: D.C	date: SEPT '18
title:	ELEVATIONS – ALTERATIONS & ADDITIONS	scale: 1:100@A3	cad ref. -
		drawing number 100	issue B

MGA (approx. Trues)

A	FIRST ISSUE	12/08/18

- BOUNDARIES HAVE NOT BEEN DEFINED. LOT DIMENSIONS HAVE BEEN TAKEN FROM THE TITLE DIAGRAM. SITE AREA HAS BEEN CALCULATED FROM THESE DIMENSIONS - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.

- IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.

- TREE SIZES ARE ESTIMATES ONLY.

- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF MATTHEW & BELINDA HARDY

- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.

- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.

- ONLY VISIBLE SERVICES HAVE BEEN LOCATED. UNDERGROUND SERVICES HAVE NOT BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (db 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.

- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.

- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.

- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN, THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

- CONTOUR INTERVAL - 0.25 metre. - SPOT LEVELS SHOULD BE ADOPTED.

- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).

- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.

- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.

- IF ACCURATE TRUE NORTH IS REQUIRED A FURTHER SURVEY WOULD BE NECESSARY.

- COPYRIGHT WATERVIEW SURVEYING SERVICES

- NO PART OF THIS SURVEY MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM, WITHOUT THE WRITTEN PERMISSION OF THE COPYRIGHT OWNER EXCEPT AS PERMITTED BY THE COPYRIGHT ACT 1968.

- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.

- THIS NOTICE MUST NOT BE ERASED.

Waterview
SURVEYING SERVICES

1A Mona Street Mona Vale NSW 2103
ACN 610 583 572
michael@wvsurveying.com.au
0474 843 180

Vertical Datum

DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. PM 46379
R.L. 1.692
SOURCE: S.C.I.M.S.

Client Details MATTHEW & BELINDA HARDY
24 DARIUS AVENUE
NORTH NARRABEEN NSW 2101

Drawing Title
DETAIL AND LEVELS OVER
24 DARIUS AVENUE
NORTH NARRABEEN NSW 2101
BEING LOT 16 IN DP.28354

PROJECT: 856	PAGE 1 OF 1
Date of survey 08/08/18	Drawing No. 856detail 1
Scale 1:100 @ A1	Rev. A

- LEGEND
- AW AWNING
 - BIT BITUMEN
 - CON CONCRETE
 - DK DECK
 - DS DOOR SILL LEVEL
 - ELO ELECTRICITY OVERHEAD
 - FL FLOOR LEVEL
 - GF GUTTER FLOW
 - GM GAS METER
 - GR GRAVEL
 - HL HOOD LEVEL
 - HYD HYDRANT
 - LAN LANDING
 - NS NATURAL SURFACE
 - PAV PAVING
 - PP POWER POLE NETWORK
 - RF ROOF
 - RMP RAMP
 - RR ROOF RIDGE
 - SL SILL LEVEL
 - TEL TELSTRA
 - TER TERRACE
 - TG TOP OF GUTTER
 - TR TREE-DIA,SPREAD,HEIGHT
 - VC VEHICLE CROSSING
 - VER VERANDAH
 - WM WATER METER

27
D.P.11087

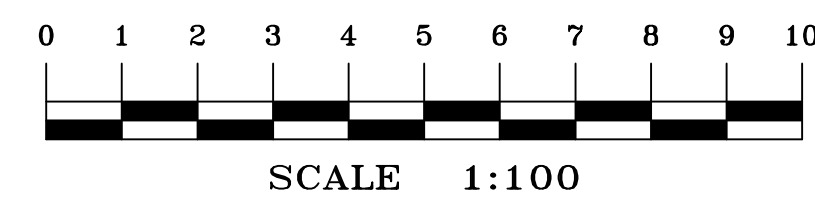
28
D.P.11087

16
D.P.28354
699.6 m²

17
D.P.28354

15
D.P.28354

DARIUS AVE



TITLE INDICATES THAT LOT 16 IN D.P.28354 IS SUBJECT TO:
- RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S).