FLOOD RISK MANAGEMENT REPORT

Northern Beaches Council (Pittwater)

Proposed Alterations and Additions at

15 Gondola Road, North Narrabeen

Job No. 191044

Prepared for: Yourstyle

Prepared by: Cameron Haack



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FLOOD RISK MANAGEMENT REPORT

DATE 22nd November 2019

SITE 15 Gondola Road, North Narrabeen

ENGINEER Cameron Haack

CLIENT Yourstyle

JOB No 191044

INTRODUCTION:

NB Consulting Engineers assessed the plans prepared by *Yourstyle– dated 8th November 2019* for the proposed additions at the above site address in reference to potential flooding issues. The proposed development generally meets the requirements of Northern Beaches Council (Pittwater DCP) subject to the recommendations outlined in this flood risk management report.

The premises has been assessed in accordance with the requirements of Northern Beaches (Pittwater) DCP, Council's Flood Advice information provided, the Narrabeen Lagoon Flood Study (2013) and the NSW Government Floodplain Management Manual (2005).

The site is located on Gondola Road in North Narrabeen near the intersection of Verona Street. This report is in reference to a Development Application for a proposed first floor addition over the footprint of the existing dwelling. 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 3.00m AHD and will 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 Planning Precinct	High Risk Precinct
•	1% AEP Flood Level	3.00m AHD
•	Extreme Flood Level (PMF)	4.90m AHD
•	Flood Planning Level (FPL)	3.50m AHD
•	Existing Dwelling Floor Level	2.55m AHD
•	Proposed First Floor Level	5.97m AHD
•	Degree of inundation	100%
•	Impacts of waterborne objects	Medium
•	Buoyancy	Medium

Flood Behavior

Hydraulic Category

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;

Flood Storage

- 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 and creek entrance blockage by sand deposits or open to the sea.
- d. Tidal effects or combination of all four impacts.



The lagoon and creek act 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 proposed building footprint area contributing to potential flood blockages will remain the same as a result of the development.

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 PMF with low velocity (including impact loading from debris). Any other new structures located below the 1% AEP Flood level are to be designed to cater for the flood loads.

Types of materials to be used

Any new structures are to be constructed of standard building materials of concrete, steel, timber and/or brickwork within the flood levels. Any proposed fencing along the boundaries, are to be certified and/or designed by a civil engineer to withstand hydrostatic forces up to and including the FPL (unless noted otherwise). Openings are to be provided, excluding the property frontage, to ensure the 1% AEP floodwater can flow through the property unimpeded.

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. As the site is within a flood storage area at the downstream end of a catchment, we recommend Onsite Detention be waived for this development as it is likely to exacerbate flooding due to coinciding of peak flows from the site with relation to the overall catchment.



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 3.50m 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 3.50m AHD) is to be expected during the 1% AEP storm event.

Flood warning

Signage is not recommended

Evacuation strategy and onsite response plan Shelter In Place
 Should floodwaters begin to inundate the street adjacent the property or
 the rear of the site, residents are recommended to proceed to the first floor
 located at RL 5.97 and above the PMF.

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 3.50m 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.
- Authors 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

Rick Wray

Director

BE(Civil) CPEng NER RPEQ Director

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APPENDIX A - FLOOD INFORMATION (PITTWATER COUNCIL)

NORTHERN BEACHES COUNCIL

FLOOD INFORMATION REQUEST – GENERAL-PURPOSE

Property: 15 Gondola Road, North Narrabeen

Lot DP: 194//16719

Issue Date: 5 June 2017

Flood Study Reference: 2013 Narrabeen Lagoon Flood Study

A property can be impacted by more than one Category of flooding.

Flood Categories defined by the Pittwater 21 Development Control Plan include:

- Flood Category 1 Areas- Properties identified on the Flood Hazard Maps and located within Primary Floodplain Areas where the lowest point of the property is affected by the Flood Planning Level (FPL) (1% AEP flood level plus 500mm Freeboard). Flood Category 1 areas are further defined under flood hazard subcategories of high hazard and low hazard.
- Flood Category 2 Areas- Properties identified on the Flood Hazard Maps where the lowest point of the property lies above the Flood Planning Level but below the level of the Probable Maximum Flood.
- Flood Category 3 Areas- Properties generally located outside or adjacent to the Primary Floodplain Areas that are affected by flooding hazards associated with major stormwater drainage systems, local overland flow paths or drainage easements. Flood Category 3 Areas are further defined under the subcategories of Overland Flow Path – Major and Overland Flow Path – Minor.

Flood Information for lot:

Flood Life Hazard Category - See Map A

Minimum life hazard category: H3-H4
Maximum life hazard category: H5

Flood Emergency Response Strategy: SHELTER IN PLACE ONLY

Flood Planning Area - See Flood Map C

1% AEP Maximum Water Level³: 3.0mAHD (See Flood Map B)

1% AEP Maximum Peak Depth from natural ground level³: 1.05m

1% AEP Maximum Velocity: <0.5m/s

Flood Planning Level (FPL)^{1,2,3 &4}: 3.5m AHD - 0.5m above 1% AEP

1% AEP Provisional Flood Hazard: See Flood Map E

Issue Date: 5 June 2017 Page 1 of 11

1% AEP Hydraulic Categorisation: See Flood Map F

PMF - See Flood Map D

Probable Maximum Flood (PMF) Level²: 4.9m AHD (See Flood Map D)

PMF Maximum Depth from natural ground level: 2.9m

PMF Maximum Velocity: 0.5m/s

General Notes:

- All levels are based on Australian Height Datum (AHD) unless otherwise noted.
- The source information on this advice was obtained from numeric modelling prepared by consultants for Northern Beaches Council for existing site conditions at the time of the flood study. Separate review and flood model verification has not been undertaken by Council.
- The interpolated information is for the purpose of planning only. Detailed flood data for individual land areas were not determined from the exercise.
- Flood models only approximate flood behaviour. Site specific ground and building survey levels should be used to relate flood levels and to assess the impact of flooding. A site specific flood study/risk assessment may be required for any future development. Care and expertise is required in the interpretation of these flood levels. Engage a suitably qualified engineer to assist you in this matter.
- You need to refer to the Pittwater 21 DCP flood development controls, if you are planning to lodge a
 Development Application. The advice may be reviewed and amended by Northern Beaches Council in
 the course of assessment of a specific development application.
- While this advice is periodically updated, it is possible that the Council holds further information dealing with the flooding which has not been incorporated into the above advice.
- Estuarine/coastal inundation has not been taken into account in the flood information.

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¹Intensification of development requires the consideration of climate change impacts which may result in higher planning levels than those indicated on this flood advice.

²Special Flood Protection developments require a higher planning level using the higher of the PMF or FPL/minimum floor level.

³The flood information does not take into account any local overland flow issues with a depth below 0.15m nor private stormwater drainage systems.

⁴Overland flow water levels may vary across a sloping site, resulting in variable minimum levels across the site.

FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY



Notes:

- Refer to Pittwater 21DCP for 'Flood Emergency Response Planning for Development in Pittwater Policy (Appendix 15) for additional information on the Flood Life Hazard Categories and Pittwater 21 DCP Control B3.25.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Flood study reference) and aerial photography (Source Near Map 2014) are indicative only.

Issue Date: 5 June 2017 Page 3 of 11

FLOOD LEVEL POINTS



Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Flood study reference) and aerial photography (Source: NearMap 2014) are indicative only.

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Flood Levels

	5% AEP Max WL (m AHD)	5% AEP Max Depth (m)	5% AEP Max Velocity (m/s)	1% AEP Max WL (m AHD)	1% AEP Max Depth (m)	1% AEP Max Velocity (m/s)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
	2.7	0.6	0.1	3.0	0.9	0.1	4.9	2.8	0.3
	2.7	0.6	0.1	3.0	1.0	0.1	4.9	2.9	0.3
	2.7	0.5	0.04	3.0	0.9	0.1	4.9	2.8	0.1
	2.7	0.7	0.1	3.0	1.0	0.1	4.9	2.9	0.3
	2.7	0.5	0.02	3.0	0.8	0.05	4.9	2.7	0.2
A	2.7	0.3	0.02	3.0	0.7	0.1	4.9	2.5	0.5
A	2.7	0.6	0.03	3.0	1.0	0.1	4.9	2.9	0.2
_	2.7	0.4	0.01	3.0	0.8	0.03	4.9	2.6	0.1
_	2.7	0.4	0.02	3.0	0.8	0.05	4.9	2.6	0.2
A	2.7	0.5	0.1	3.0	0.8	0.02	4.9	2.7	0.1

WL – Water Level

PMF - Probable Maximum Flood

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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: Flood study reference) and aerial photography (Source Near Map 2014) are indicative only.

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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: Flood study reference) and aerial photography (Source Near Map 2014) are indicative only.

Issue Date: 5 June 2017 Page **7** of **11**

FLOOD MAP D: PROBABLE MAXIMUM FLOOD EXTENT

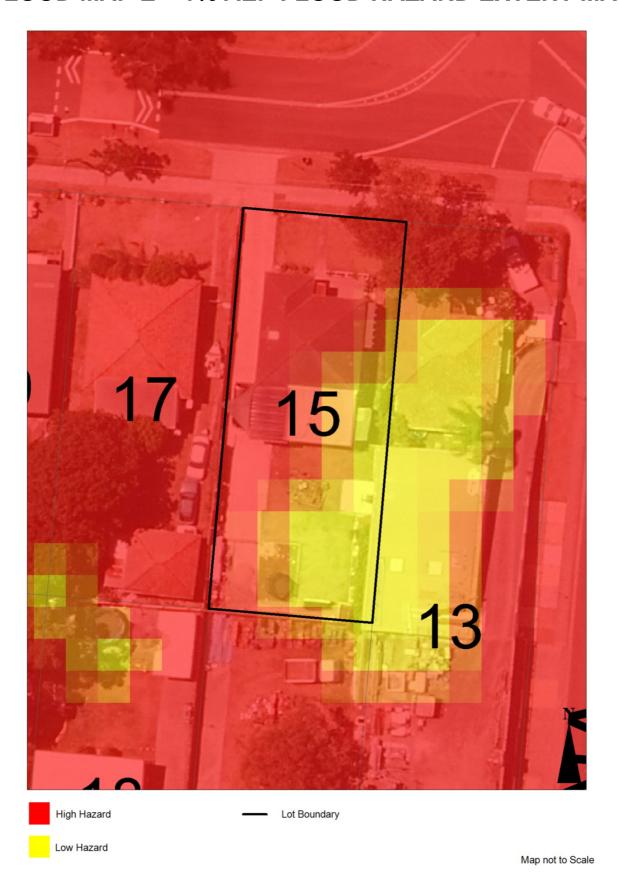


Notes:

- 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: Flood study reference) and aerial photography (Source Near Map 2014) are indicative only.

Issue Date: 5 June 2017 Page 8 of 11

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: Flood study reference) and aerial photography (Source: NearMap 2014) are indicative only.

Issue Date: 5 June 2017 Page 9 of 11

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

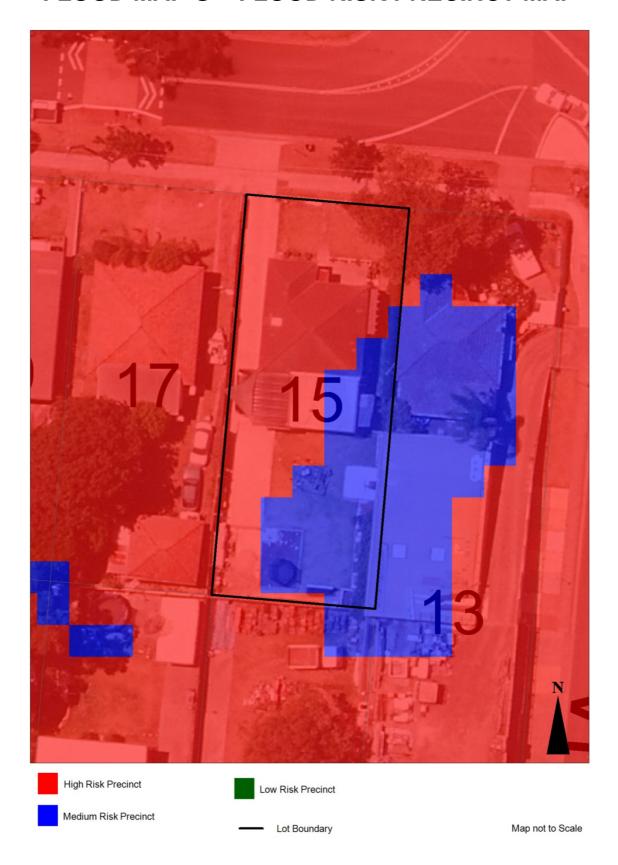


Notes:

- 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: Flood study reference) and aerial photography (Source: NearMap 2014) are indicative only.

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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).

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APPENDIX B - PROPOSED DRAWINGS AND SITE SURVEY

DESIGN OPTION 1



INDICATIVE ARTIST IMPRESSION NOT TO BE REFERRED TO FOR CONSTRUCTION PURPOSES



9938 5611

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A DIVISION OF TAG TEAM CONSTRUCTIONS PTY LTD

Client Name : Client Address: PHILLIP & JEMMA MARCELLINO 15 GONDOLA ROAD, NORTH NARABEEN 210

Client No.:

MAR 1019

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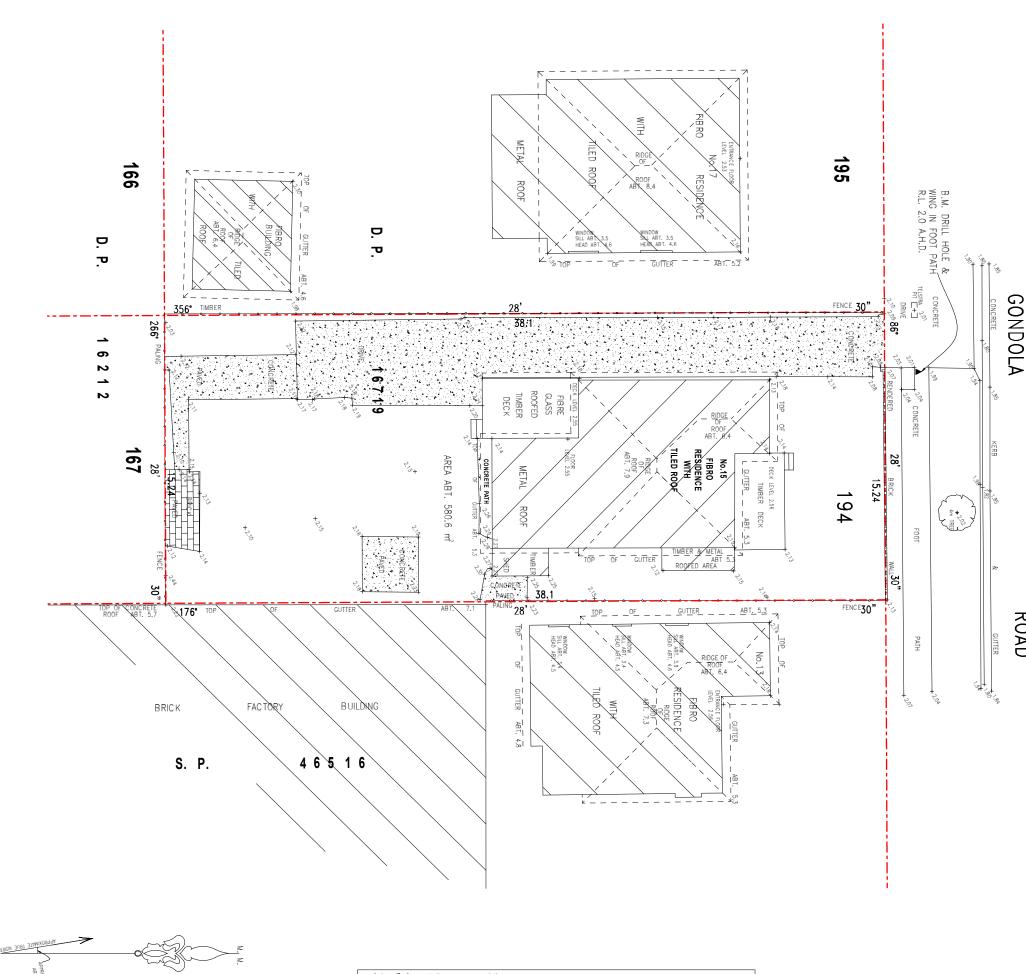
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ROAD SURVEY PLAN





Client No. :

MAR 1019

Client Address:

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Client Name :

PHILLIP & JEMMA MARCELLINO

FAX: 9938-5911

ABN 92-003-918-116 • ACN 003-918-116

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Project Number: MAR 1019

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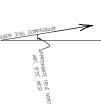
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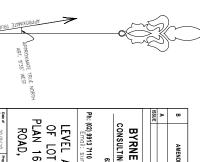
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CONSULTING SURVEYORS

ENGINEERS

63 WATERLOO STREET
NARRABEEN 2101
ACK 000 199 202
Fav.

LEVEL AND DETAIL SURVEY OF LOT 194 IN DEPOSITED PLAN 16719 No.15 GONDOLA ROAD, NORTH NARRABEEN

Fax: (02) 9913 1583 10297D2



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No.15 FIBRO RESIDENCE WITH

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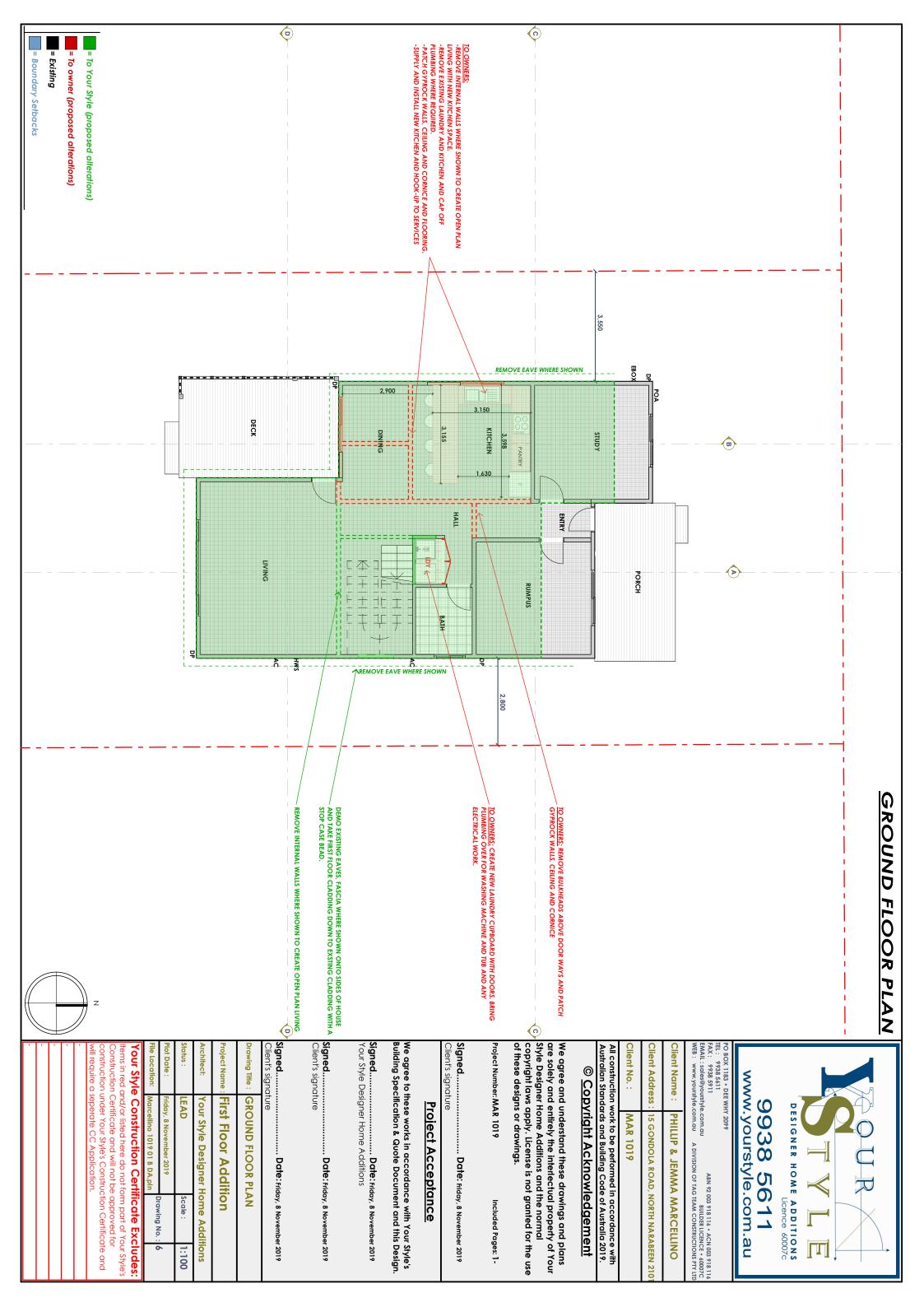
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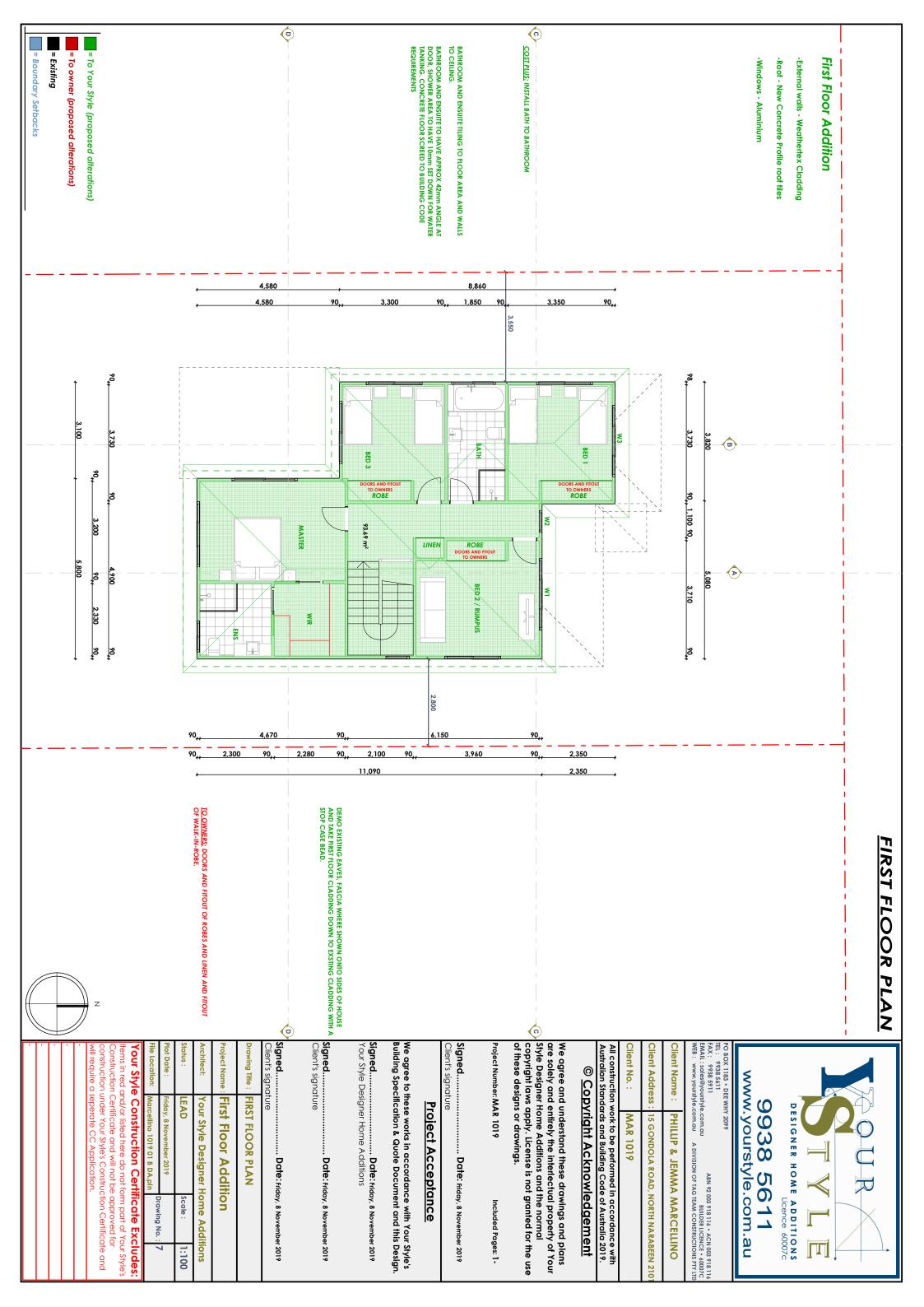
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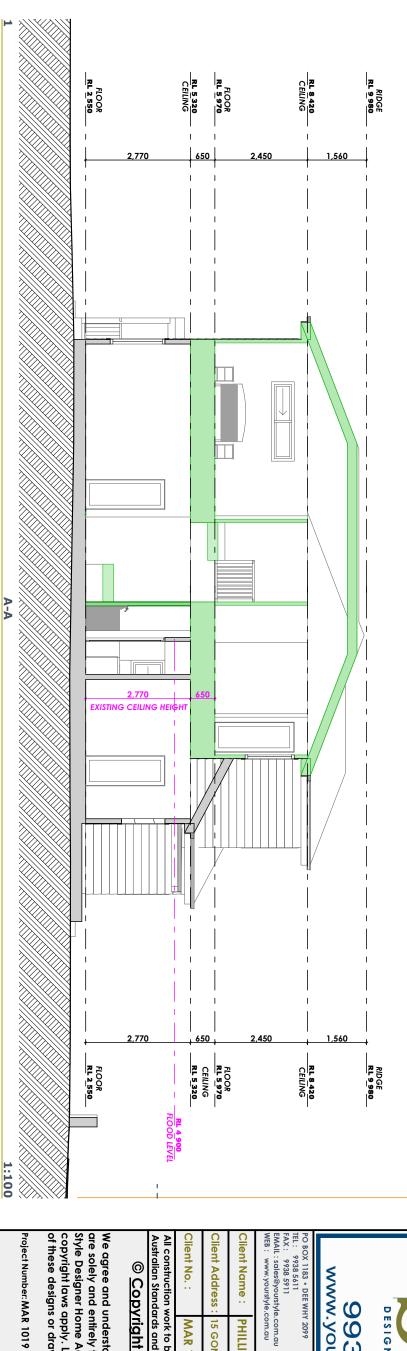
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SECTIONS (A-A **B-B**)





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Signed.....Client's signature Date: Friday, 8 November 2019

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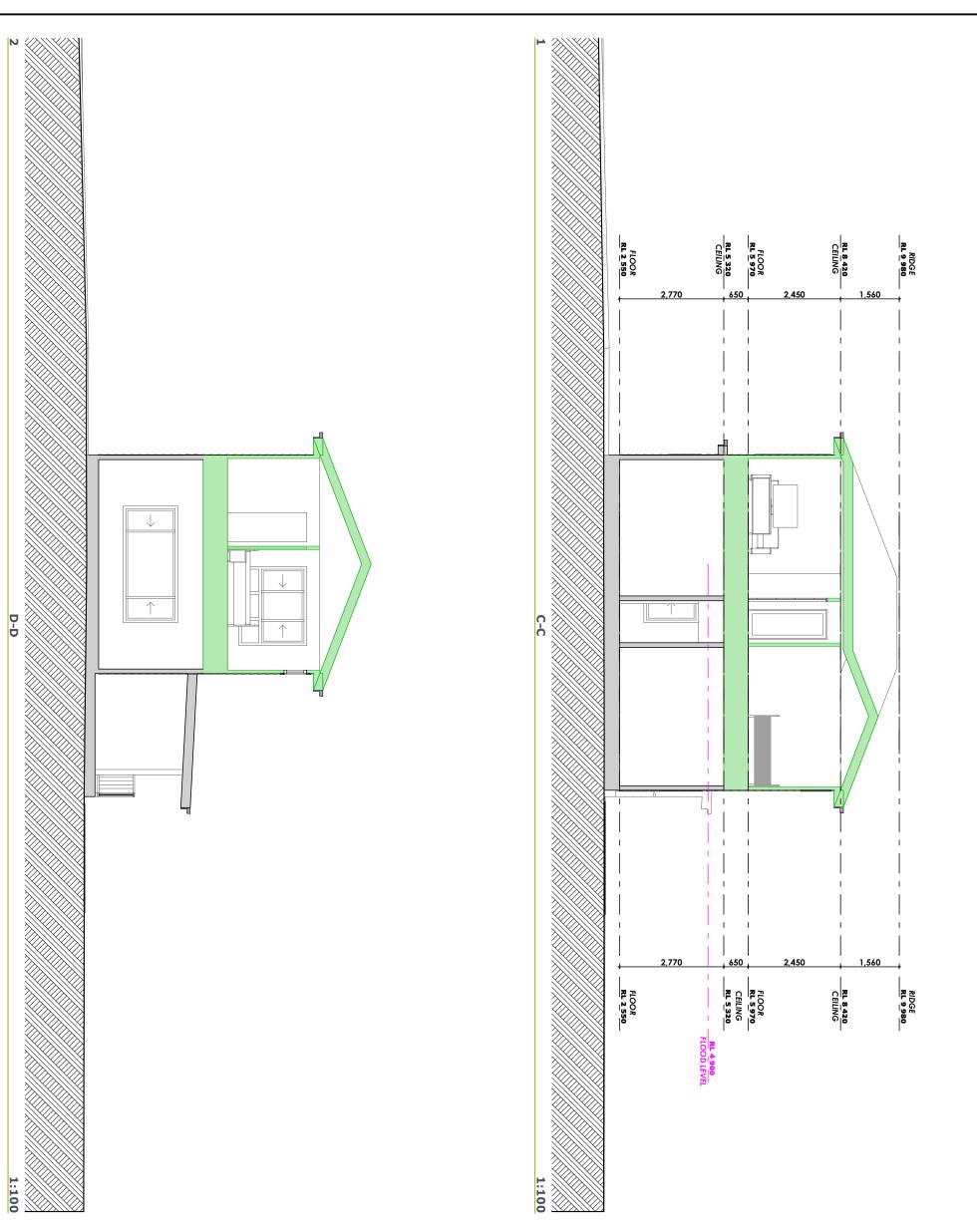
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SECTIONS (A-A & **B-B**)





PO BOX 1183 • DEE WHY 2099 TEL: 9938 5611 FAX: 9938 5911

www.yourstyle.com.au

FAX: 9938-5911

ABN 92-003-918116 • ACN 003-918116

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A DIVISION OF TAG TEAM CONSTRUCTIONS PTY LTD

All construction work to be performed in accordance with Australian Standards and Building Code of Australia 2019. Client Name : Client No. : Client Address: **MAR 1019** PHILLIP & JEMMA MARCELLINO 15 GONDOLA ROAD, NORTH NARABEEN 210

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Project Number: MAR 1019

Included Pages: 1-

Signed....... Date: Friday, 8 November 2019
Client's signature

Project Acceptance

We agree to these works in accordance with Your Style's Building Specification & Quote Document and this Design.

Signed....... Date: Friday, 8 November 2019
Your Style Designer Home Additions

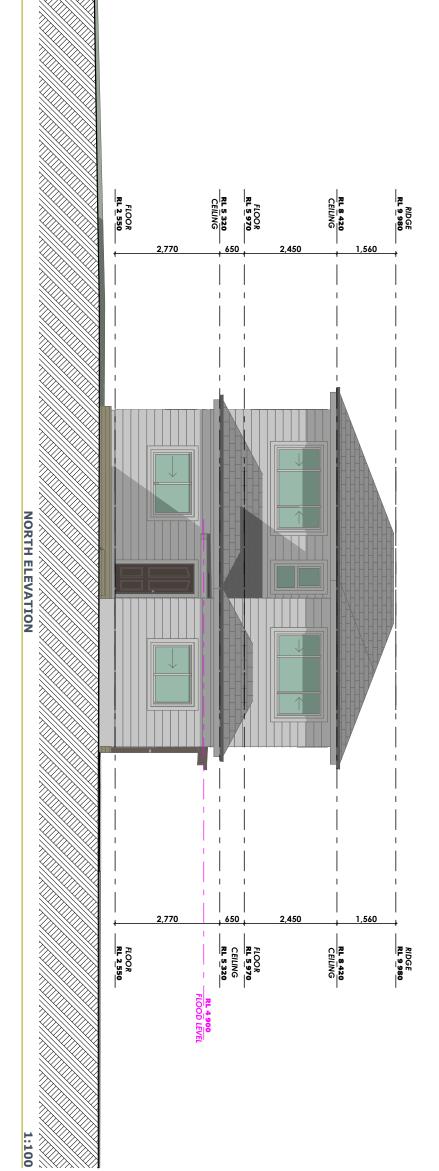
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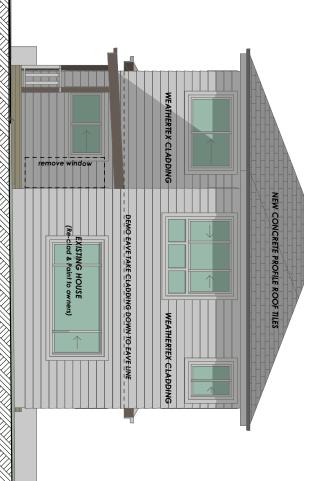
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FAX: 9938-5911 ABN 92-003-918-116 • ACN 003-918-116
EMAIL : sales@yourstyle.com.au BUILDER LICENCE • 40007C
WEB: www.yourstyle.com.au A DIVISION OF TAG TEAM CONSTRUCTIONS PTY LTD

Client Name :	PHILLIP & JEMMA MARCELLINO
Client Address :	Client Address : 15 GONDOLA ROAD, NORTH NARABEEN 2101
Client No. :	MAR 1019
All construction w	All construction work to be performed in accordance with

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Project Number: MAR 1019

Included Pages: 1-

Project Acceptance

Client's signature

We agree to these works in accordance with Your Style's Building Specification & Quote Document and this Design.

Signed...... Date: Friday, 8 November 2019
Your Style Designer Home Additions

Signed.....Client's signature Signed...... Date: Friday, 8 November 2019 Date: Friday, 8 November 2019

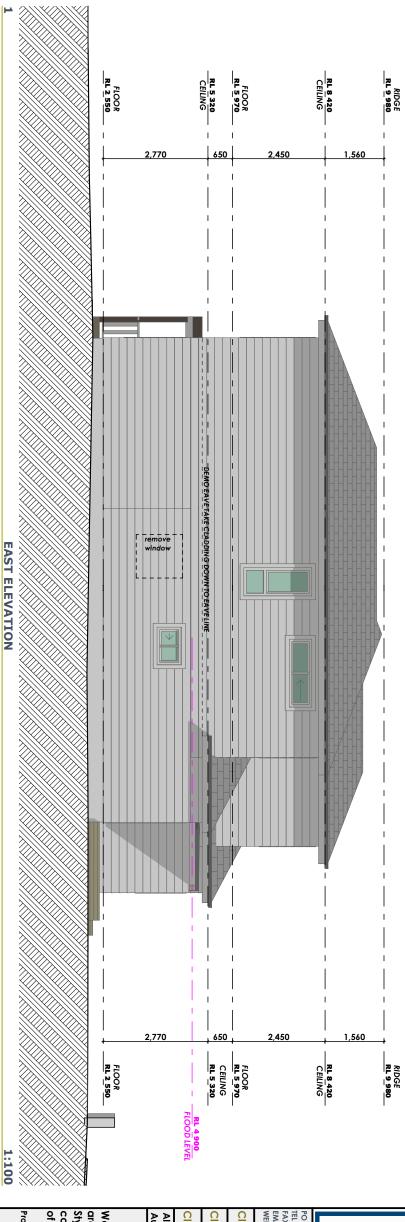
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ELEVATIONS (EAST & WEST)

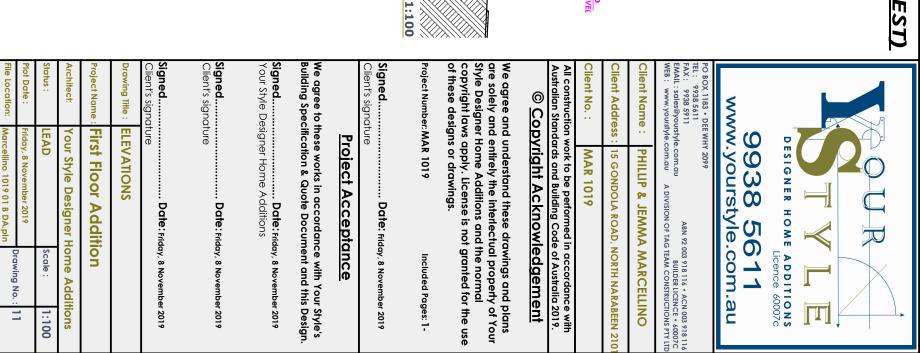


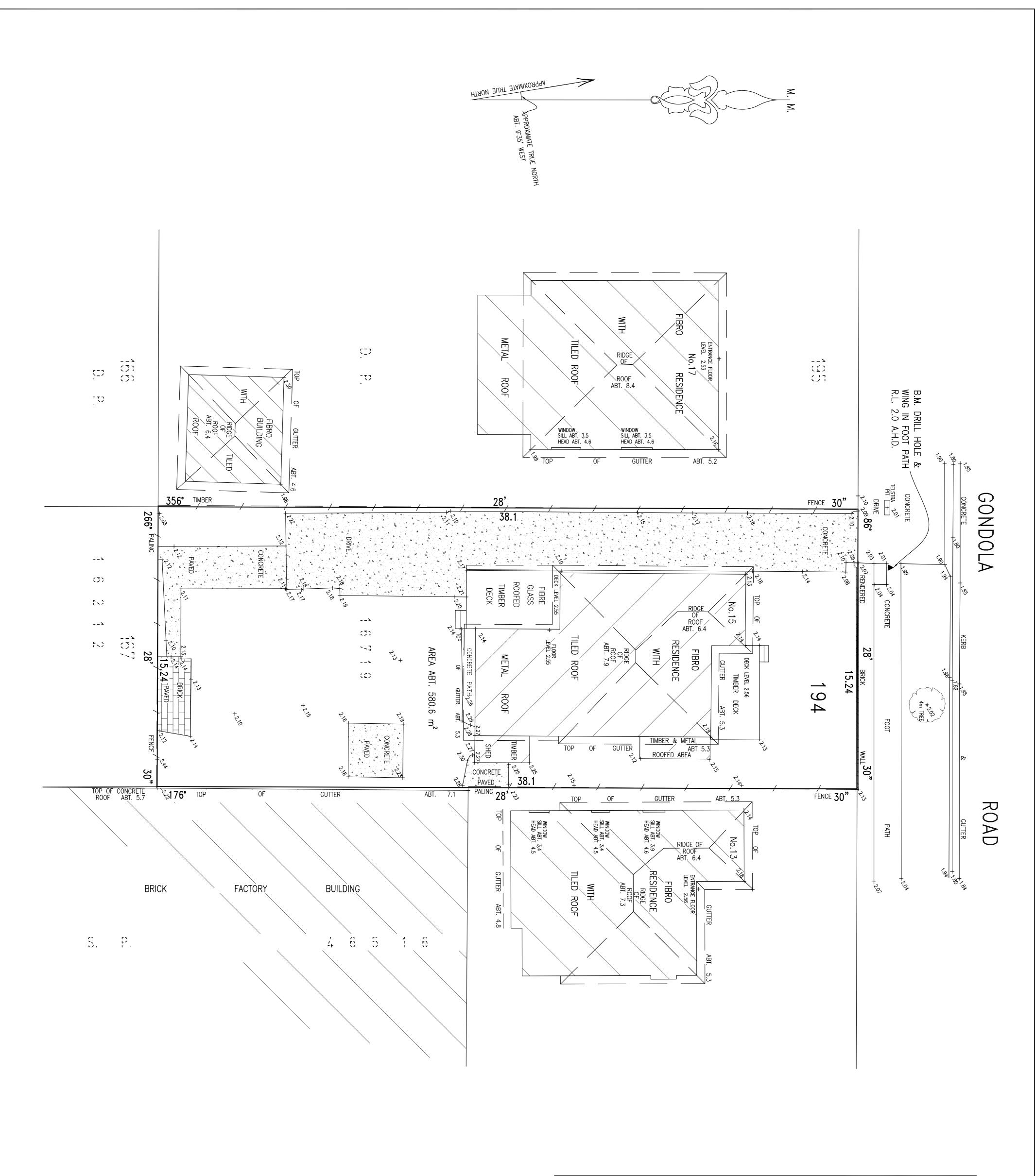
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our Style Construction Certificate Excludes







NOTE: 1. LEVELS SHOWN THUS +^{^,99} ARE BASED ON AUSTRALIAN HEIGHT DATUM

2. ORIGIN OF LEVELS — PM 5315 R.L. 1.63 A.H.D. LOCATED NEAR THE INTERSECTION OF VERONA STREET AND GONDOLA

4. NO BOUNDARY INVESTIGATION HAS BEEN CARRIED OUT AND THEREFORE THIS PLAN DOES NOT DEFINE BOUNDARIES. TITLE DIMENSIONS ONLY SHOWN. 3. LEVELS SHOWN THUS ABT. 5.3 HAVE BEEN DETERMINED BY REMOTE METHODS AND ARE ACCURATE TO +/- 100mm

5. DO NOT SCALE - USE FIGURED BEARINGS & DISTANCES ONLY

6. BASIC LEVEL AND DETAIL SURVEY ONLY — UNLESS OTHERWISE SHOWN, THE POSITION OF IMPROVEMENTS ARE APPROXIMATE. THE INFORMATION SHOWN HEREON IS ONLY TO BE USED AT AN ACCURACY OF 1:100

7. THE DIAMETER, SPREAD AND HEIGHT OF ALL TREES ARE ESTIMATES ONLY. IF THEY ARE CRITICAL TO DESIGN THEN A MORE ACCURATE SURVEY WOULD BE REQUIRED.

8. FEATURES & LEVELS CRITICAL TO DESIGN SHOULD BE LOCATED BY A MORE ACCURATE SURVEY

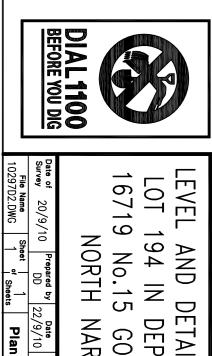
9. ALL SET OUT WITH REGARD TO LEVELS SHOULD BE REFERRED TO THE BENCH MARK

10. NO SERVICES SEARCH HAS BEEN CARRIED OUT FOR THIS SURVEY

PRIOR TO COMMENCEMENT OF DESIGN/CONSTRUCTION REFER "DIAL BEFORE YOU DIG" DETAILS ON THIS PLAN 11. EXISTING SERVICES MAY IMPACT ON DESIGN/CONSTRUCTION - IT IS ADVISED THAT A COMPREHENSIVE SERVICES SEARCH BE CARRIED OUT

12. ORIGIN OF THE NORTH POINT IS D.P.16719. THE POSITION OF TRUE NORTH IS APPROXIMATE ONLY. A MORE ACCURATE SURVEY WOULD BE REQUIRED TO DETERMINE ITS EXACT POSITION.

13. THE SUBJECT LAND IS AFFECTED BY A COVENANT CREATED BY THE REGISTRATION OF TRANSFER No.D160187.



NORTH NARRABEEN

Plan No.

A1 -

10297D2

BYRNE & ASSOCIATES PTY CONSULTING SURVEYORS & ENGINEERS
63 WATERLOO STREET
NARRABEEN 2101
Ph: (02) 9913 7110
Ph: (02) 9913 7110
ACM 002 109 202
Fax: (02) 9913 1583
Email: survey@byrneandassociates.com.au LEVEL AND DETAIL SURVEY C LOT 194 IN DEPOSITED PLAI 16719 No.15 GONDOLA ROAI Fax: (02) 9913 1583 ciates.com.au ROAD, PLAN 유

AMENDED FEATURES ADDED TO PLAN

28/8/17

APPENDIX C - ATTACHMENT A (COUNCIL FORM)

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.

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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		<u> </u>	
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
- I) 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

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Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application
Development Application for
Address of site: 15 Gondola Road, 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, Rick Wray on behalf of Northern Beaches Consulting Engineers (Insert Name) (Trading or Business/ Company Name)
on this the 22/11/2019 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 Risk Management Report
Report Date: 21/11/2019
Author: Cameron Haack
Author's Company/Organisation: Northern Beaches Consulting Engineers
I: Rick Wray
(Insert Name)
Please tick all that are applicable (more than one box can be ticked)
M have obtained and included flood information from Council (must be less than 12 months old) (This is mandatory) note: flood information request dated 5/6/17
✓ 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 <i>Flood Management Report</i> .
R. Way
Signature
NameKICK Wray

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