TAYLOR CONSULTING
CIVIL & STRUCTURAL ENGINEERS

FLOOD RISK MANAGEMENT PLAN

FLOOD RISK MANAGEMENT REPORT

1056 Barrenjoey Road
PALM BEACH

10 December 2021

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1. INTRODUCTION

1056 Barrenjoey Road, Palm Beach has been identified by Northern Beaches Council as being flood affected for the 1 in 100 year storm event. This document details the measures to be taken to ensure that the risks to both the site buildings and occupants are minimised and managed in accordance with Council's DCP requirements.

It is the intention of the author that copies of this Flood Risk Management Report are kept by The Owner where it can be used to manage and prepare the site for a significant flood event.

It is also the intention that the Emergency Response Plan and associated signage be fixed to the wall in a clearly visible location in the existing premises.

The Owner will ultimately be responsible for the implementation of this plan and is responsible for ensuring tasks are undertaken or the delegation of those tasks.

2. SITE

The site is located in the suburb of Palm Beach area and is situated approximately 100m to the north of Iluka Park. A site locality map is included in Appendix A.

The site covers 812.5 m^2 of area which grades evenly towards Barrenjoey Road to the west.

The site currently contains an existing single level residential premises sitting on brick piers and a suspended timber floor frame with clad timber frame walls over.

3. PROPOSED DEVELOPMENT

The proposed works could be summarised as:

- A first floor addition
- Minor alterations & additions to the ground floor level

Architectural plans for the proposed works are attached in Appendix B as is a detailed survey plan of the site.

4. FLOOD EVENTS

The site is identified as being flood affected for the 1 in 100 year and Probable Maximum Precipitation (PMP) storm event and maps illustrating the Council flood designations and data for the site are contained within Appendix C.

4.1 FORECASTS & WARNINGS

There are usually no specific warnings issued by the Bureau of Meteorology for Palm Beach and as such the monitoring of general warnings for the Sydney metropolitan area with respect to severe weather warnings will be critical in the process of managing risks to the site.

The Bureau of Meteorology website (www.bom.gov.au) has rainfall forecast maps and also any warnings for predicted severe weather events.

The Owner & other relevant occupants should have his/her mobile phone number added to the SES contact list for the issue of SMS alerts for severe weather warnings.

4.2 FLOOD DATA FOR THE SITE

The site is defined by Northern Beaches Council as being affected by the 1 in 100 year flood event and Probable Maximum Flood (PMF) events.

A summary of Council flood information for the site is as follows:

- 1 in 100 year Hazard Classification: **Medium Risk precinct**
- Flood Life Hazard Classification: **H5**
- 1% Flood Hydraulic Category : **Flood Storage**
- 1% Flood Level: **3.52m A.H.D.**
- Flood Planning Level **: 4.02m A.H.D.**
- Probable Maximum Flood level: **5.45m A.H.D.**

The relevant Council issued flood data is contained within an Appendix attached to this report.

4.3 FLOOD BEHAVIOUR

In a major flood event, the site can expect to experience flooding in the Barrenjoey Road frontage and then across the site to the east as the flooding depth increases.

The site is designated by the Council as flood fringe and subsequently the management of flood risks is required to ensure the ongoing protection of life and property.

4.4 EMERGENCY RESPONSE

This Flood Risk Management Report recognises that protection of life is of primary importance, followed by a secondary philosophy of attempting to minimise damage and disruption to the site's proposed domestic operation.

The emergency response to a potential flood event will be initiated upon the occurrence of a certain 'trigger' threshold, upon which the emergency response plan will be actioned.

4.5 THE EMERGENCY TRIGGER(S)

It is critical to the success of this plan that during extremely heavy & intense rainfall events, The Owner is able to closely monitor media reports and also the drainage conditions in Barrenjoey Road to the west.

The initial trigger for commencement of the emergency response plan follows the observation of overland stormwater flows beginning to inundate the Barrenjoey Road roadway following extremely heavy and intense rainfall events.

Upon the visual confirmation of either of these trigger events, the evacuation responses described in Section 5 are to be enacted.

4.6 TIME NEEDED TO RESPOND

It is considered that a total period of 15 minutes would be required for The Owner to turn off the relevant mains and services and ensure that all persons within the premises have been notified and are located to the nominated emergency assembly point.

4.7 THE EMERGENCY ASSEMBLY POINT

The emergency response to a flood event is to 'shelter-in-place' in the upper levels of the primary dwelling.

An emergency response sign showing that the upper level of the primary dwelling is easily accessible and adequate to act as a refuge in a significant flood event is provided in Appendix D.

5 OWNER'S RESPONSIBILITIES

The following section describes the on-going responsibilities of The Owner with respect to flood risk management.

5.1 BEFORE THE FLOOD

Trigger for action: Always

- The Owner will ultimately be responsible for the implementation of this plan. The Owner will be responsible for ensuring tasks are undertaken or delegating those tasks;
- Through a systematic induction process, all occupants are to be made aware of the possibility of flooding and the procedures to be followed if a flood were to occur;
- A copy of this plan is to be provided to all occupants, together with an Actions Checklist (Appendix E) and a single page notice (Appendix D);
- The Owner should continue to develop detailed procedures to support the actions required by this plan. Procedures will include clear responsibilities in the event of a flood, and back up resources should key persons not be present;
- The emergency response sign is to be permanently affixed to a wall in a highly visible location;
- Check the facilities within the primary dwelling for use in a flood emergency, should occupants need to take shelter there. As a minimum these facilities comprise drinking water, toilets, blankets and emergency lighting.

5.2 WHEN A FLOOD IS LIKELY

Trigger for action: When the forecasts predict severe weather or significant amounts of rainfall (land is saturated) are observed

- The Owner will monitor weather forecasts and warnings;
- The Owner to enact the emergency response plan;
- The Owner should prepare for the potential emergency assembly at the nominated point.

5.3 DURING A FLOOD

Trigger for action: When flood waters are observed in Barrenjoey Road:

- The phases of the emergency response shall be:
- The Owner is to request all occupants to evacuate to the emergency assembly area in the upper levels of the primary dwelling;
- All occupants should be at the emergency assembly area by the time the flood waters start to significantly inundate the site;
- The Owner is to sweep the premises following evacuation to ensure that all occupants have sought refuge to the emergency assembly area;
- The Owner is to turn off all power and water and other relevant services;
- The Owner is to retreat to the emergency assembly area;.
- Emergency services to be notified by The Owner of the situation at the site (Appendix F).

5.4 AFTER A FLOOD

Trigger for action: When emergency services give the all clear to return:

- No persons should be allowed to leave the site while flooding is still occurring or has recently occurred;
- Occupants can leave the site only after the all clear has been given by emergency services or Council;
- Where necessary, the site is to be checked by professionals before any re-use of the site or it's utility services;
- The Owner are to arrange an inspection of the sub-floor area under the building and remove any flood debris if required;
- A de-brief is to be held between The Owner and the occupants and may involve emergency services and/or council employees. The flood event and response procedures, including the use of this plan, are to be reviewed; and
- Changes may be made to the plan and the requirements for future emergency evacuations should be reviewed and identify any improvements which may be necessary.

6.0 FLOOD COMPLIANCE

It is proposed to develop the site such that the objectives of Council's Flood Risk Management Policy are met.

6.1 SPECIFIC CONTROLS

Section B3.11 of the Pittwater 21 DCP controls are to be applied to each of the lots.

Medium Flood Risk Matrix – Residential Category

		Medium Flood Risk Precinct				
		Vulnerable & Critical Use	Residential Use	Business & Industrial Use	Recreational & Environmental Use	Subdivision & Civil Works
A	Flood effects caused by Development	A1 A2	A1 A2	A1 A2	A1 A2	A1 A2
B	Building Components & Structural	B1 B2 B3	B1 B2 B3	B1 B2 B3	B1 B2 B3	
C	Floor Levels	C2 C3	C1 C3 C4 C6	C1 C3 C4 C6 C7	C3	C5
D	Car Parking	D1 D2 D3 D4 D7	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1
E	Emergency Response	E1 E2	E1	E1	E1	E3
F	Fencing	F1	F1	F1	F1	F1
G	Storage of Goods	G1	G1	G1	G1	
H	Pools	H1	H1	H1	H1	H1

Flood Effects Caused By Development

A1 – ***Development shall not be approved unless it can* be *demonstrated in a Flood Risk Management Report that it complies with the Flood Prone Lane Design Standard found on Council's website.***

Outcome – The provisions of this Flood Risk Management Report demonstrate that the flood risks have been adequately addressed in accordance with the provisions of the *Flood Prone Land Design Standard.*

A2 – ***Development shall not be approved unless it can be demonstrated in a Flood Management Report that in all events up to the 1% AEP event there is no net loss of flood storage.***

Outcome – There are no ground level works external to the existing dwelling that will significantly reduce the site's flood storage capacity.

Building Components and Structural Soundness

B1 – All buildings shall be designed and constructed with flood compatible materials

in accordance with "Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas", Hawkesbury-Nepean Floodplain Management Steering Committee (2006).

Outcome – All new building elements below the Flood Planning Level of 4.02 m A.H.D. shall be constructed from flood compatible materials.

A table of equivalent flood compatible materials is contained within Appendix G.

B2 – ***All new development must be designed and constructed to ensure structural integrity up to the Flood Planning Level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. Where shelter-in-place refuge is required, the structural integrity for the refuge is to be up to the Probable Maximum Flood level. Structural certification shall be provided confirming the above.***

Outcome – All new building elements are to be designed, constructed and/or modified to ensure structural integrity for immersion and impact of velocity and debris up to the Probable Maximum Flood level of 5.45m A.H.D.

B3 – ***All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level.***

All existing electrical equipment and power points located below the Flood Planning Level must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Outcome – All proposed electrical equipment, wiring, fuel lines and any other service pipes and connections are to be waterproofed to the Flood Planning Level of 4.02m A.H.D.

All existing electrical equipment and power points located below the Flood Planning Level will have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Floor Levels

C1 – ***New floor levels within the development shall be at or above, the Flood Planning Level.***

Outcome – Complies as the proposed first floor addition will be constructed above the Flood Planning Level of 4.02m A.H.D.

All new building elements below the Flood Planning Level of R.L. 4.02m A.H.D. shall be constructed from flood compatible materials.

All new works are to be in accordance with Council's requirements for 'Building Components and Structural Soundness' as previously described in this report.

C3 – ***All new development must be designed and constructed so as not to impede the floodway or flood conveyance on the site, as well as ensuring no net loss of flood storage in all events up to the 1% AEP event.***

Outcome – The proposed works are considered to be located within the flood fringe and as such there will be no significant loss of flood storage or conveyance area and hence the existing flow regime will not be affected.

C4 – ***A one-off addition or alteration below the Flood Planning Level of less than 30 square metres (in total, including walls) may be considered only where:***

(a) it is an extension to an existing room; and

(b) the Flood Planning Level is incompatible with the floor levels of the existing room; and

(c) out of the 30 square metres, not more than 10 square metres is below the 1% AEP flood level.

Outcome – The proposed first floor addition will be constructed above the Flood Planning Level of 4.02m A.H.D.

A small ground floor extension of less than $5m^2$ is to be provided to allow for access to the first floor.

C6 – ***Consideration may be given to the retention of an existing floor level below the Flood Planning Level when undertaking a first floor addition provided that:***

(a) it is not located within a floodway; and

(b) the original foundations are sufficient to support the proposed final structure above them. The Flood Management Report must include photos and the structural certification required as per Control B2 must consider whether the existing foundations are adequate or should be replaced; and

(c) none of the structural supports/framing of existing external walls of are to be removed unless the building is to be extended in that location; and

(d) the ground floor is floodproofed.

Outcome – Complies as all proposed habitable floors are not located in floodway areas.

Original foundations are to be retained and only strengthened where necessary to provide support for the new first floor addition.

All new building elements are to be designed, constructed and/or modified to ensure structural integrity or immersion and impact of velocity and debris up to the level of the Probable Maximum Flood Level of R.L. 5.45 m A.H.D.

All new building elements below the Flood Planning Level of R.L. 4.02 m A.H.D. shall be constructed from flood compatible materials.

All new electrical equipment, wiring, fuel lines and any other service pipes and connections are to be waterproofed to the Flood Planning Level.

All existing electrical equipment and power points located below the Flood Planning Level will have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

A table of equivalent flood compatible materials and Structural Project Plan are contained within Appendix G.

Car Parking

D1 - ***Open carpark areas and carports shall not be located within a floodway.***

Outcome – Complies as the existing car parking area is located in an area which is not considered to be a floodway.

D2 - ***The lowest floor level of open car parks and carports shall be constructed no lower than the natural ground levels, unless it can be shown that the carpark or carport is free draining with a grade greater than 1% and that flood depths are not increased.***

Outcome – Complies as no new car parking areas are proposed.

D3 - ***Carports must be of open design, with at least 2 sides completely open such that flow is not obstructed up to the 1% AEP flood level. Otherwise it will be considered to be enclosed.***

When undertaking a like-for-like replacement and the existing

garage/carport is located on the street boundary and ramping is infeasible, consideration may be given for dry floodproofing up to the 1% AEP flood level.

Outcome **–** No enclosed carport/garage is proposed.

D4 - ***Where there is more than 300mm depth of flooding in a car park or carport during a 1% AEP flood event, vehicle barriers or restraints are to be provided to prevent floating vehicles leaving the site. Protection must be provided for all events up to the 1% AEP flood event***

Outcome **–** The property is fully fenced and gated and as such will contain vehicles on the site during flooding events.

D5 - ***Enclosed Garages must be located at or above the 1% AEP level***

Outcome **–** No enclosed garage area is proposed.

D6 - ***All enclosed car parks (including basement carparks) must be protected from inundation up to the Flood Planning Level. All access, ventilation, driveway crests and any other potential water entry points to any enclosed car parking shall be above the Flood Planning Level.***

Where a driveway is required to be raised it must be demonstrated that there is no net loss to available flood storage in any event up to the 1% AEP flood event and no impact on flood conveyance through the site.

Council will not accept any options that rely on electrical, mechanical or manual exclusion of the floodwaters from entering the enclosed car park

Outcome **–** No enclosed car park area is proposed.

<u>Emergency Response</u>

E1 – ***If the property is affected by a Flood Life Hazard Category of H3 or higher, then Control E1 applies and a Flood Emergency Assessment must be included in the Flood Management Report.***

Where flood-free evacuation above the Probable Maximum Flood level is not possible, new development must provide a shelter-in-place refuge where:

- ***a) The floor level is at or above the Probable Maximum Flood level; and***
- ***b) The floor space provides at least 2m2 per person where the flood duration is long (6 or more hours) in the Probable Maximum Flood event, or 1m2 per person for less than 6 hours;***
- ***c) It is intrinsically accessible to all people on the site, plainly evident, and self-directing, with sufficient capacity of access routes for all occupants without reliance on an elevator; and***
- ***d) It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; torch with spare batteries; and a first aid kit***

Note that in the event of a flood, occupants would be required to evacuate if ordered by Emergency Services personnel regardless of the availability of a shelter-in-place refuge.

Outcome **–** The Flood Life Hazard Classification for this property is H2-H3. The Emergency Flood response sign is attached in Appendix D.

The emergency response is to shelter-in-place in the upper level of the premises which is above the Probable Maximum Flood level of 5.45m A.H.D, has a floor space greater than 2m2 per person, and is easily accessible from all areas within the premises.

The owner is to provide sufficient clean water for all occupants; a portable radio with spare batteries; a torch with spare batteries; and a first aid kit.

Fencing

F1 -Fencing, (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be designed so as not to impede the flow of flood waters and not to increase flood affectation on surrounding land. At least 50% of the fence must be of an open design from the natural ground level up to the 1% AEP flood level. Less than 50% of the perimeter fence would be permitted to be solid. Openings should be a minimum of 75 mm x 75mm.

Outcome – No new fencing is proposed.

Storage of Goods

G1 – ***Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level unless adequately protected from floodwaters in accordance with industry standards.***

Outcome – The Owners are to ensure storage of toxic or potentially polluting goods, materials or other products, which may be hazardous or pollute floodwaters, will not be stored below the Flood Planning Level of 4.02m A.H.D.

Pool

H1 - ***Pools located within the 1% AEP flood extent are to be in-ground, with coping flush with natural ground level. Where it is not possible to have pool coping flush with natural ground level, it must be demonstrated that the development will result in no net loss of flood storage and no impact on flood conveyance on or from the site.***

Outcome – No new pool is proposed.

7.0 SUMMARY

This report is a plan for the site for major flood events to be incorporated by The Owners into the on-going management protocols for the site to manage the flood risks.

The report contains procedural information to ensure the safety of occupants during flood events and also to ensure the satisfactory performance of any new building elements.

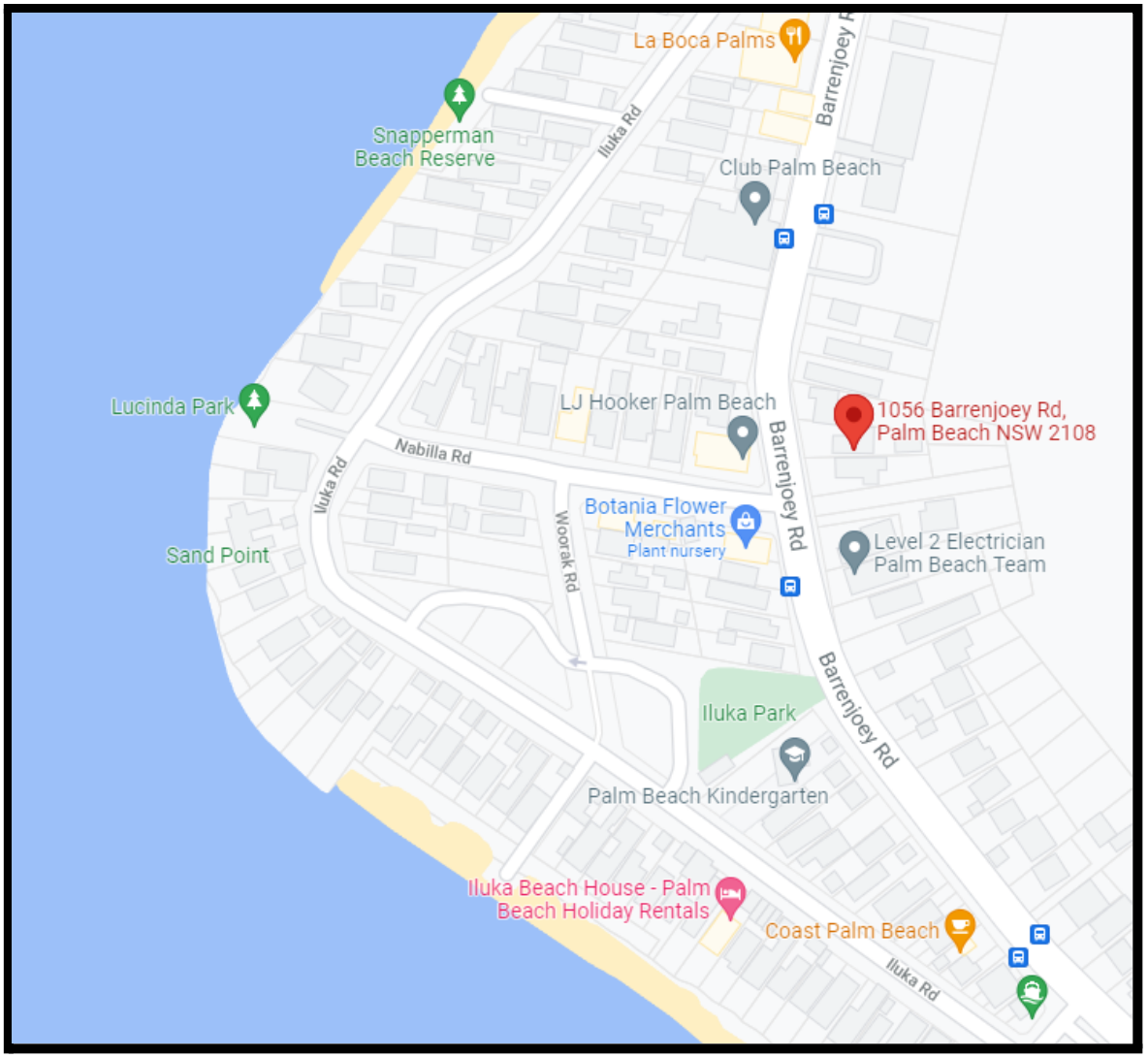
The recommendations and strategies within this report ensure compliance with Pittwater 21 Development Control Plan, Section B General Controls, Part B3.11 'Flood Prone Land'.

Should you have any questions or queries please do not hesitate to contact the undersigned.

TAYLOR CONSULTING

D M SCHAEFER - Director
B.E. Civil (Hons) M.I.E. Aust. N.E.R.

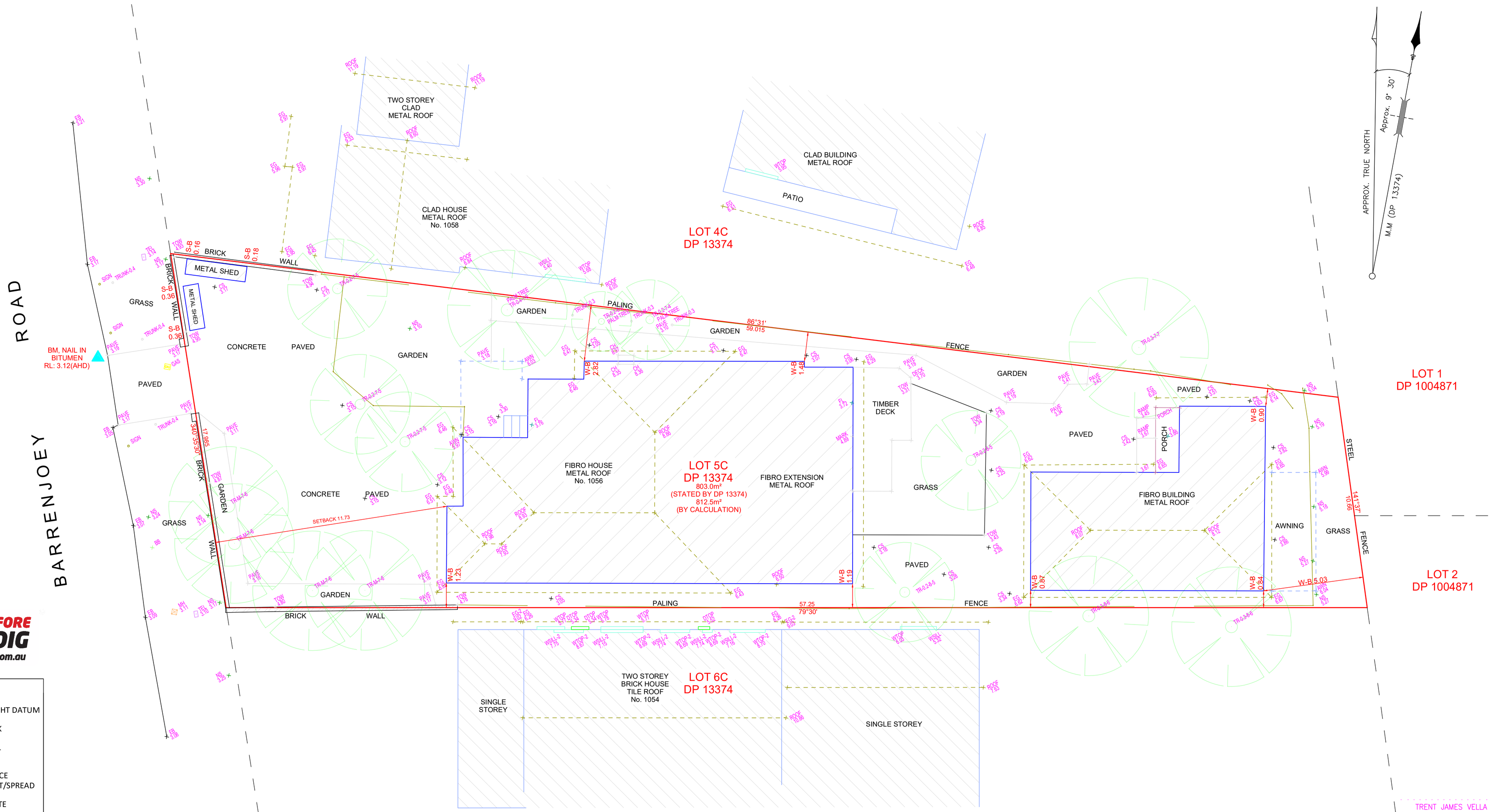
Appendix A



Locality Map - 1056 Barrenjoey Road, Palm Beach

Appendix B

A1



DIAL BEFORE YOU DIG
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LEGEND:

AHD	AUSTRALIAN HEIGHT DATUM
AWN	AWNING
BB	BOTTOM OF BANK
BM	BENCH MARK
BOW	BOTTOM OF WALL
CL	CENTER LINE
CONC	CONCRETE
CS	CONCRETE SURFACE
D/H/S	DIAMETER/HEIGHT/SPREAD
D	DOOR
EC	EDGE OF CONCRETE
EG	EAVE & GUTTER
FL	FLOOR LEVEL
GDN	GARDEN
HYD	HYDRANT
IL	INVERT LEVEL
LH	LAMP HOLE
NS	NATURAL SURFACE
PAV	PAVERS
PP	POWER POLE
RL	REDUCED LEVEL
S	STEPS
S-B	SHED TO BOUNDARY
SL	SURFACE LEVEL
SILL	WINDOW SILL
SV	STOP VALE
TB	TOP OF BANK
TEL	TELSTRA PIT
TK	TOP OF KERB
TOW	TOP OF WALL
TRW	TOP OF RETAINING WALL
VC	VEHICLE CROSSING
W	WINDOW
W-B	WALL TO BOUNDARY
WM	WATER METER
WTOP	TOP OF WINDOW

THE SUBJECT TITLE NOTES : AS AT 20/8/2021

1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2. B666281 COVENANT
3. AF80992 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTES:

A) SERVICES SHOWN HAVE BEEN DERIVED FROM VISUAL EVIDENCE APPARENT AT THE TIME OF SURVEY. SERVICES MAY EXIST WHICH ARE NOT SHOWN. THE RELEVANT SERVICE AUTHORITY SHOULD BE CONTACTED TO VERIFY THE EXISTENCE AND POSITION OF SERVICES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION.
B) DIAMETER, HEIGHT & SPREAD OF TREES ARE APPROXIMATE ONLY.
C) LEVELS SHOWN ARE OF AUSTRALIAN HEIGHT DATUM.
ORIGIN OF LEVELS : SSM 12815, RL 3.40(AHD), CLASS E.
D) USE STATED DIMENSIONS. DO NOT SCALE.
E) THESE NOTES FORM PART OF THIS PLAN AND CANNOT BE REMOVED.
F) NO COVENANTS AND/OR RESTRICTIONS HAVE BEEN INVESTIGATED BY C & A SURVEYORS PTY LTD.

C&A SURVEYORS
30 Grose Street, Parramatta,NSW 2150
Ph: 96309299 email: info@candasurveyors.com.au
www.candasurveyors.com.au

DETAIL & BOUNDARY IDENTIFICATION SURVEY OF LOT 5C IN DP 13374, LOCATED AT No.1056, BARRENJOEY ROAD, PALM BEACH.

S — S — APPROXIMATE LOCATION OF BURIED SEWER MAIN BY SYDNEY WATER RECORDS
W — W — WATER MAIN (WM)
E — E — ELECTRIC LINE
TELSTRA PIT
STOP VALE
POWER PLOT
WATER METER
HYDRANT

TREE
D/H/S DIAMETER/HEIGHT/SPREAD

INSTRUCTING PARTY:	JOHN BRYANT		SURVEYED BY:	AA	DATUM: AHD
LGA: NORTHERN BEACHES	AREA BY DP:	803.0 m²	DRAWN BY:	SE	CHECKED BY: JD
SURVEY DATE: 23/8/2021	AREA BY CALC:	812.5 m²	SCALE:	1:100@A1	REF.NO: 18685 - 21 DET/ID
DATE DRAWN: 30/8/2021	CONTOUR INTERVAL	-- m	REV NO:	01	SHEET: 1 OF 1

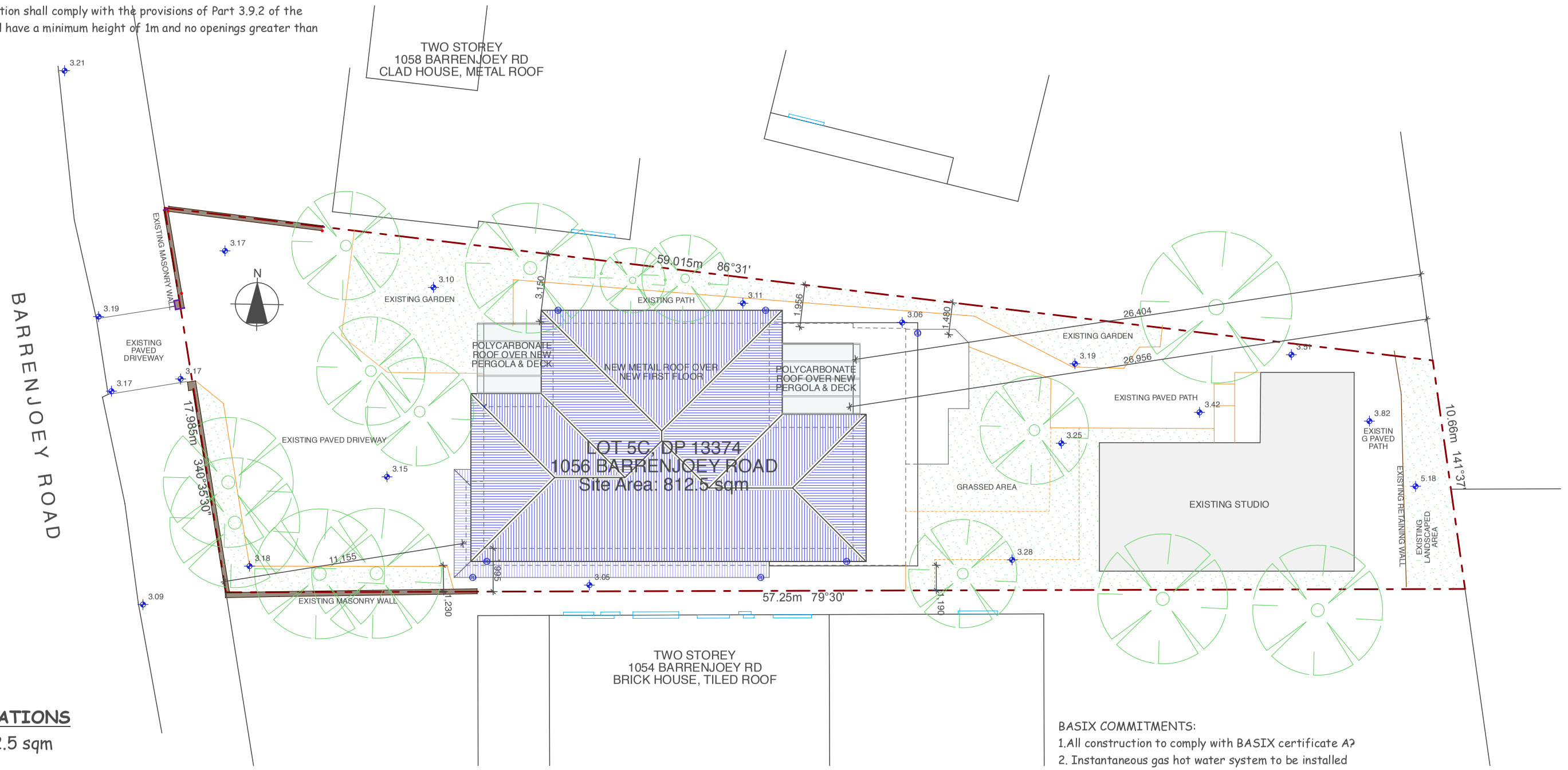
TRENT JAMES VELLA
(REGISTERED SURVEYOR)
SURVEYOR ID No. 8959

GENERAL NOTES

1. The Works shall be constructed in accordance with NCC2019/BCA and all relevant Australian Standards together with any amendment or replacement of those Standards

2.Smoke alarms shall be installed in accordance with 3.7.5 of the BCA, AS 3786 and Manufacturers Specification recommendations and connected to consumer mains power and interconnected where there is more than one alarm

3. Balustrade construction shall comply with the provisions of Part 3.9.2 of the BCA . Balustrades shall have a minimum height of 1m and no openings greater than 125mm



SITE CALCULATIONS

Site Area : 812.5 sqm

Existing Landscaped area - 188sqm = 23.14%

Proposed Landscaped area - 213 sqm = 26.22%

+ 48 sqm (impervious uncovered recreational space)

TOTAL Landscaped area -261sqm = 32.12%

BASIX COMMITMENTS:

1.All construction to comply with BASIX certificate A?

2. Instantaneous gas hot water system to be installed

3.40% of all new or altered lighting fixtures to be fluorescent, compact fluorescent or LED

4. Minimum 3 star water rating shower heads to be installed

5. Minimum 3 star water rating toilets to be installed

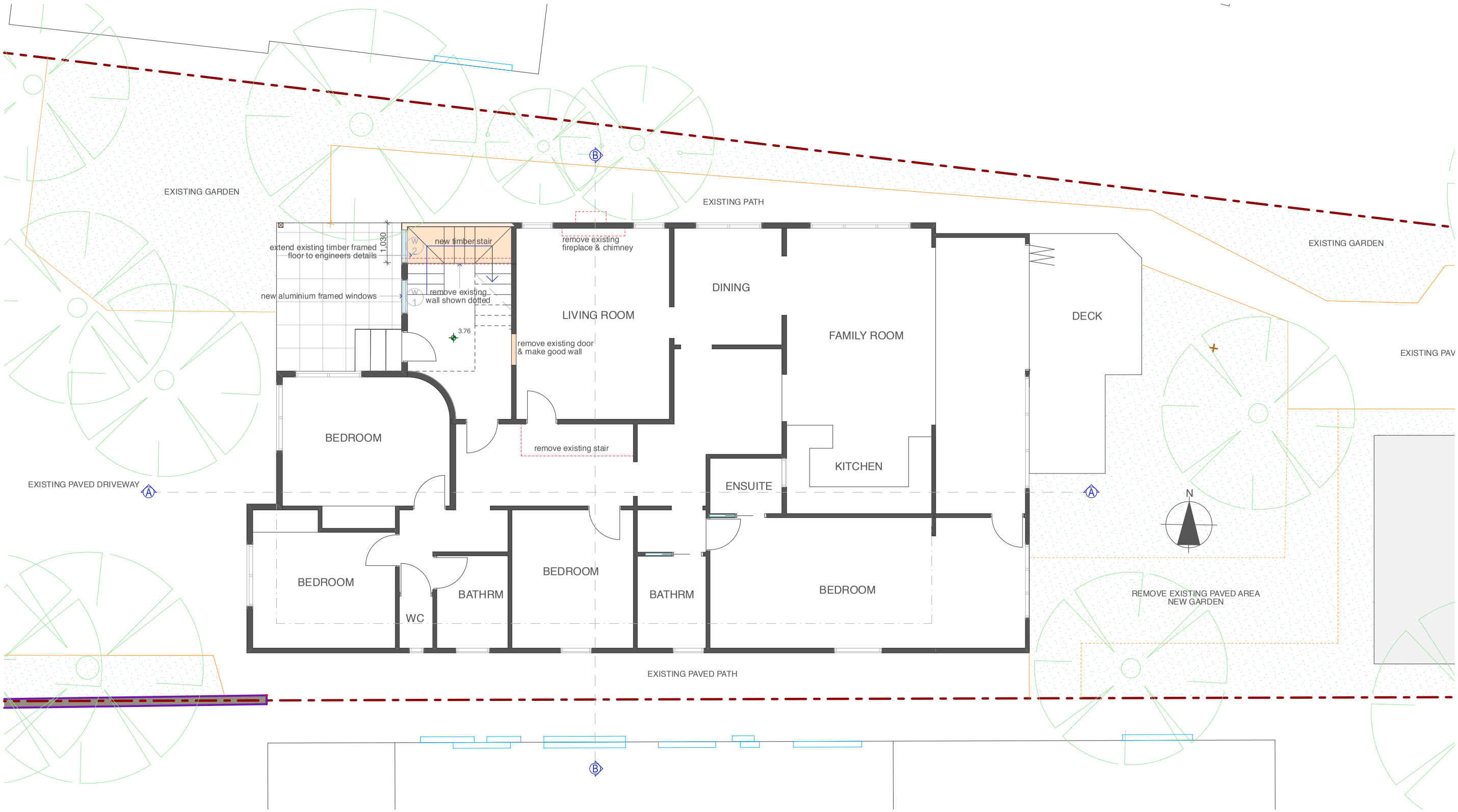
6.Minimum 3 star water taps to be installed

7.Minimum R0.6 insulation to be installed below all suspended timber framed floors with enclosed subfloor

8. Minimum R1.3 insulation to be installed to all external timber framed walls (minimum combined Rvalue with construction R1.7)

9.Flat ceilings with pitched roofs to have minimum 55m foil backed insulating blanket installed below all roofs with minimum R1.95 insulation to ceiling

AMENDMENTS	JO WILLMORE DESIGNS 11 Hudson Parade Clareville NSW 2107 9918 2479 ABN 27 370 370 173	**PROPOSED ALTERATIONS & ADDITIONS** for: J.Bryant at: LOT 5C, DP 13374, 1056 Barrenjoey Road PALM BEACH 2108	drawing title **SITE PLAN** NOTE: Use figured dimension only. Do not scale off drawings . All levels and dimensions to be verified prior to construction of work	date: November 2021 scale: 1:200 (A3) drawing number DA- 01



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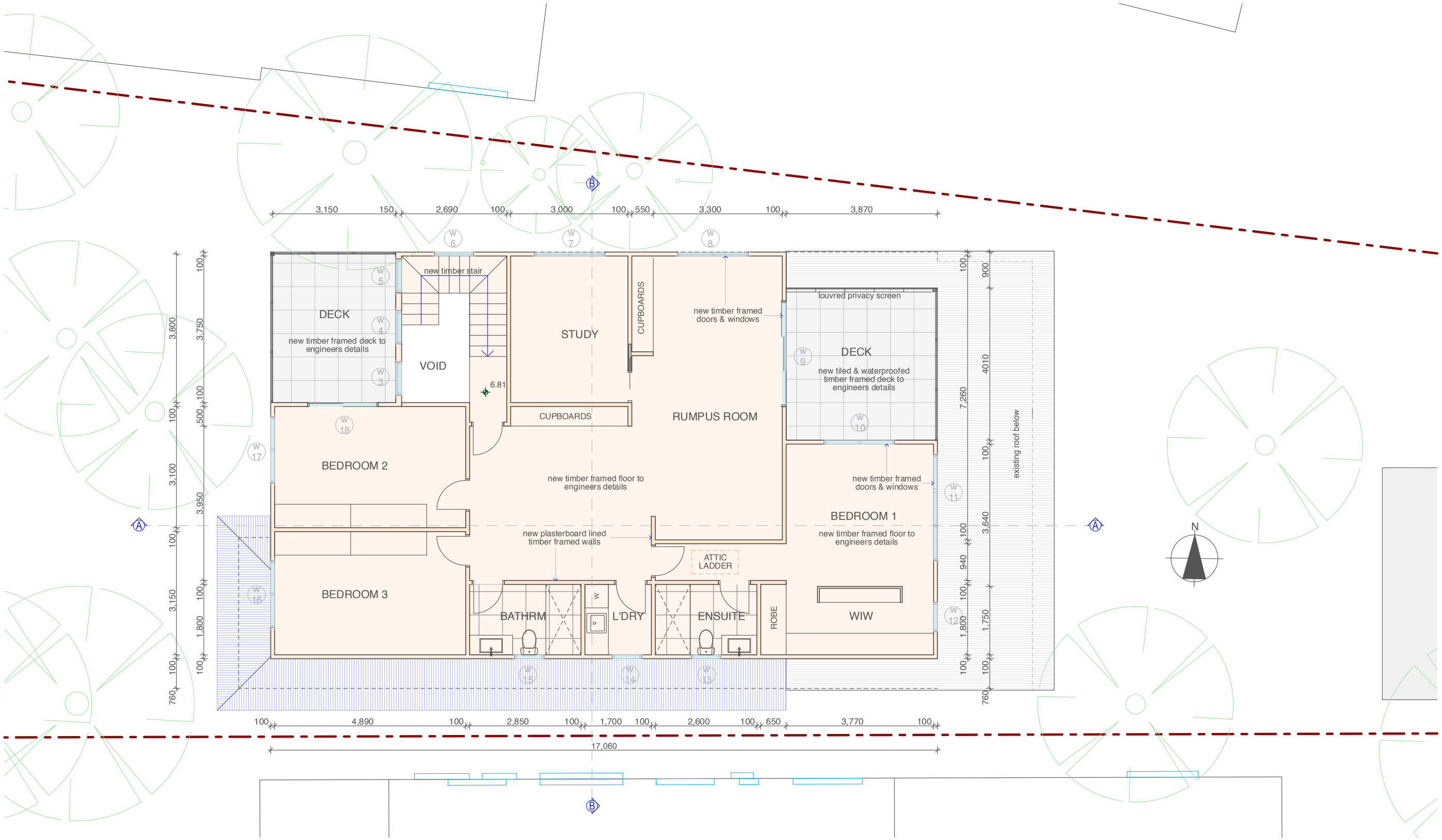

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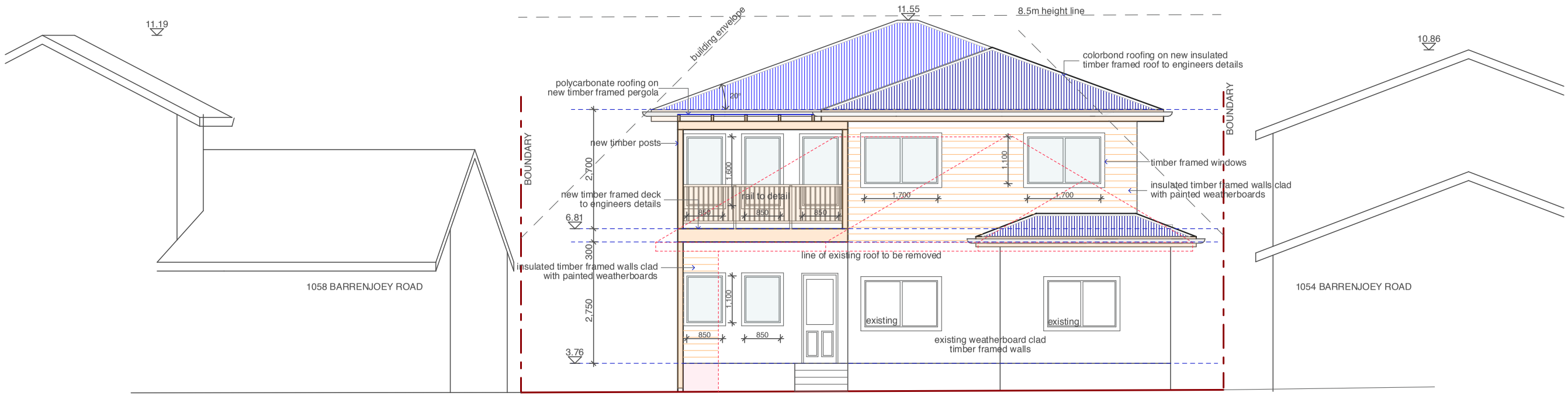
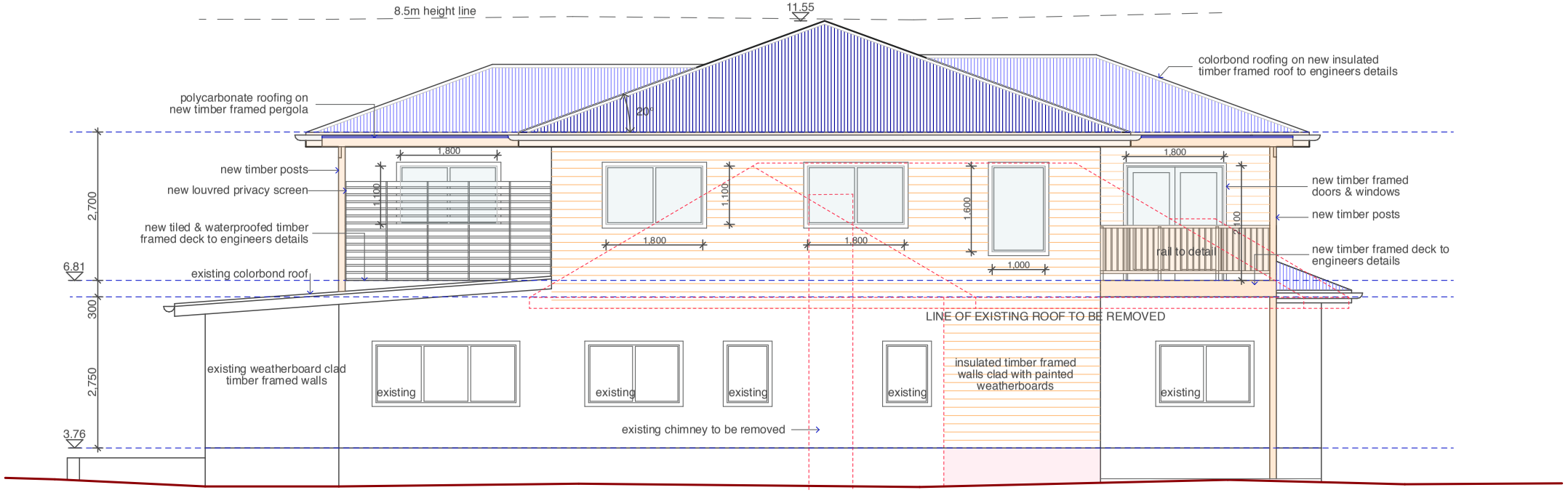
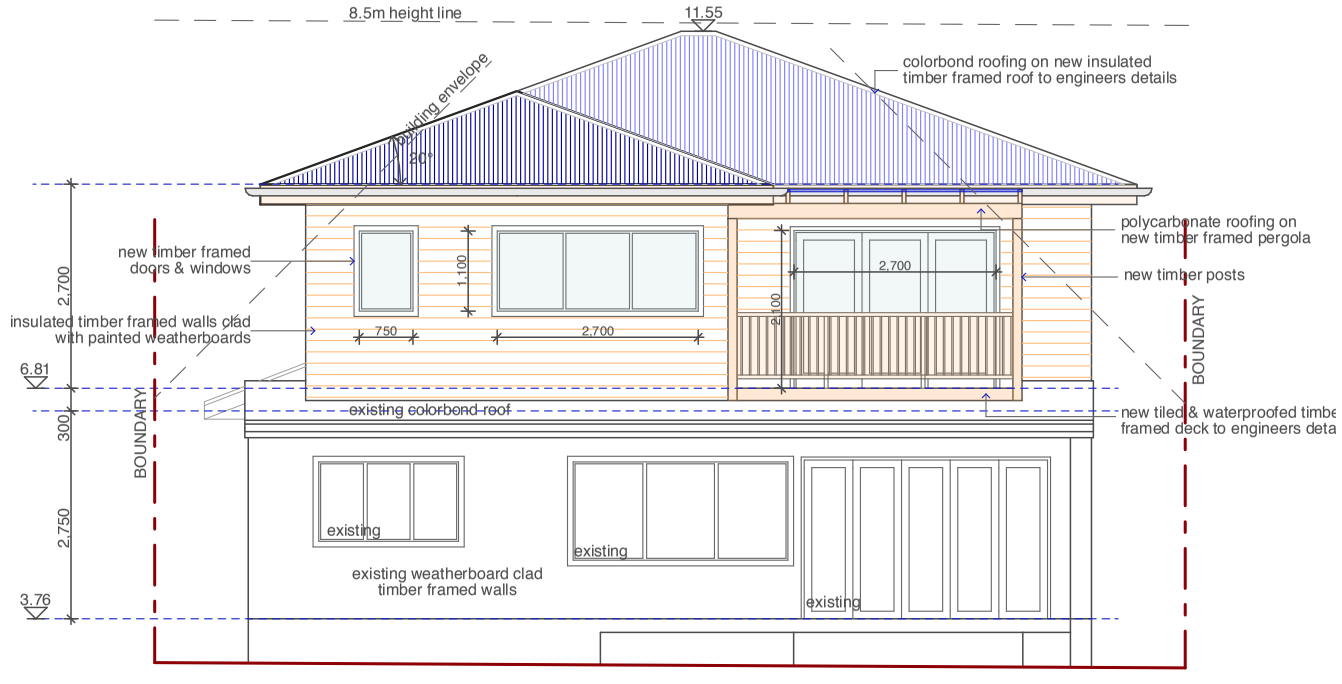


WEST ELEVATION

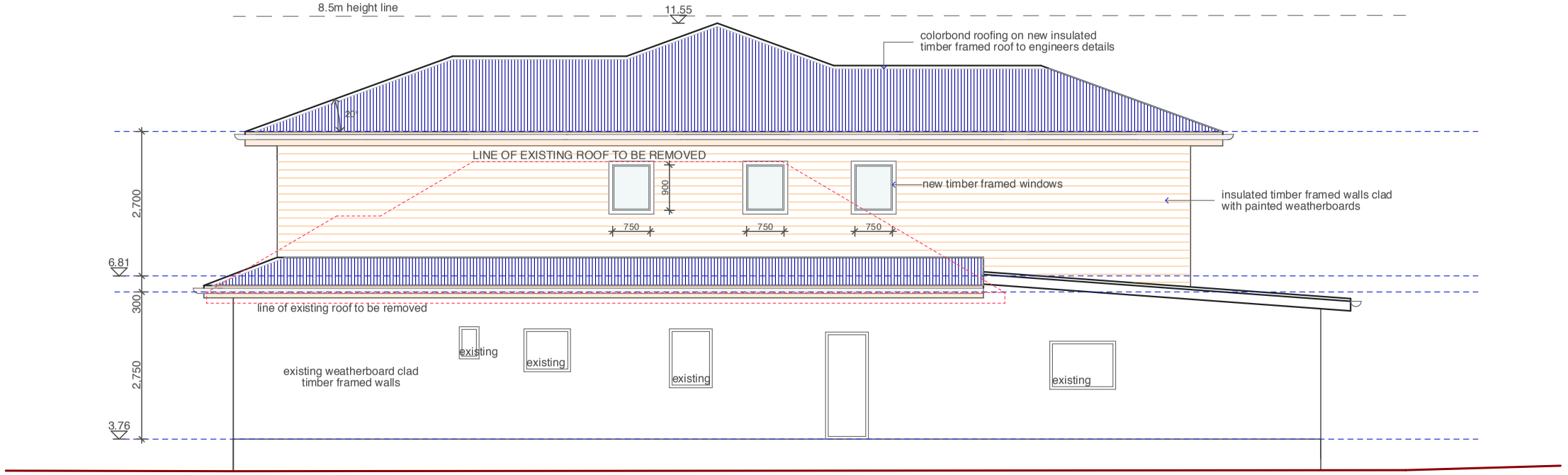


NORTH ELEVATION

AMENDMENTS	JO WILLMORE DESIGNS 11 Hudson Parade Clareville NSW 2107 9918 2479 ABN 27 370 370 173	**PROPOSED ALTERATIONS & ADDITIONS** for: J.Bryant at: LOT 5C, DP 13374, 1056 Barrenjoey Road PALM BEACH 2108	drawing title **ELEVATIONS** NOTE: Use figured dimension only. Do not scale off drawings . All levels and dimensions to be verified prior to construction of work	date: November 2021 scale: 1:100 (A3) drawing number DA- 04



EAST ELEVATION



SOUTH ELEVATION

AMENDMENTS

JO WILLMORE DESIGNS
11 Hudson Parade
Clareville NSW 2107
9918 2479
ABN 27 370 370 173

PROPOSED ALTERATIONS & ADDITIONS

for: J.Bryant
at: LOT 5C, DP 13374, 1056 Barrenjoey Road
PALM BEACH 2108

drawing title

ELEVATIONS

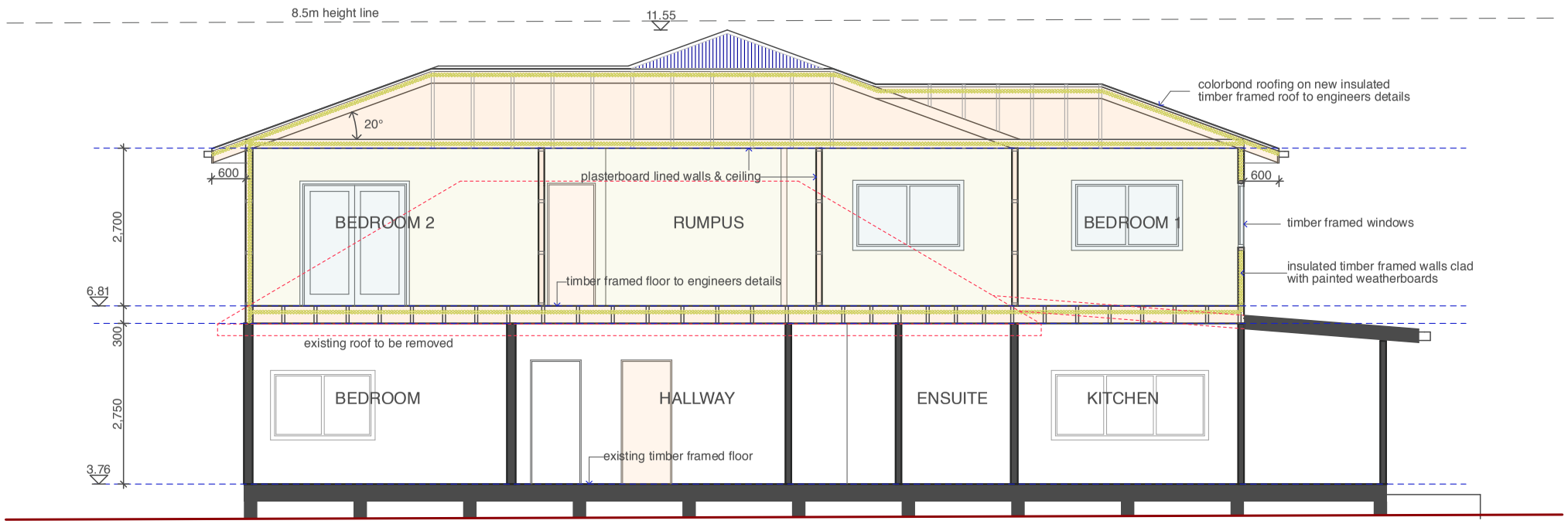
NOTE: Use figured dimension only.
Do not scale off drawings . All levels and dimensions to be verified prior to construction of work

date: November 2021

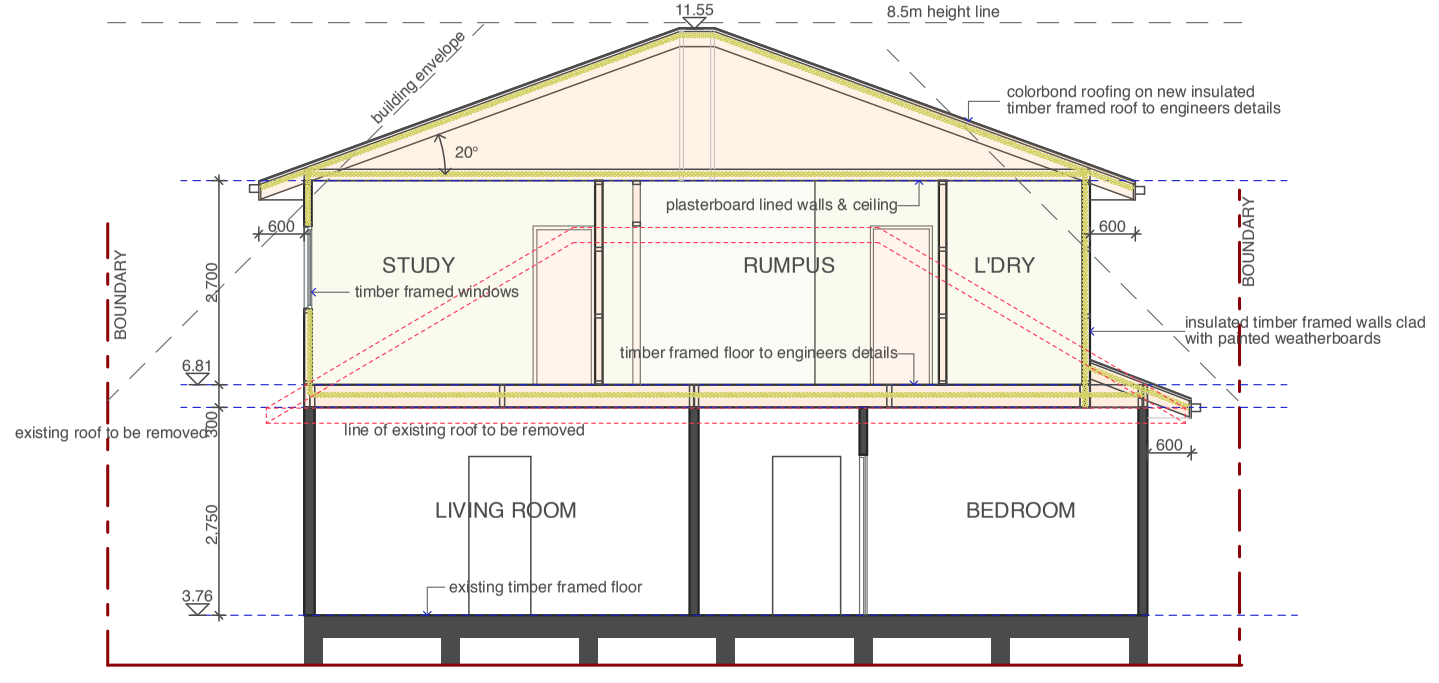
scale: 1:100 (A3)

drawing number

DA- 05



SECTION AA



SECTION BB

AMENDMENTS	JO WILLMORE DESIGNS 11 Hudson Parade Clareville NSW 2107 9918 2479 ABN 27 370 370 173	**PROPOSED ALTERATIONS & ADDITIONS** for: J.Bryant at: LOT 5C, DP 13374, 1056 Barrenjoey Road PALM BEACH 2108	drawing title **SECTIONS** NOTE: Use figured dimension only. Do not scale off drawings . All levels and dimensions to be verified prior to construction of work	date: November 2021 scale: 1:100 (A3) drawing number DA- 06

Appendix C

FLOOD INFORMATION REPORT - BASIC

Property: 1056 Barrenjoey Road PALM BEACH NSW 2108
Lot DP: Lot 5C DP 13374
Issue Date: 17/08/2021
Flood Study Reference: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory

Flood Information for lot [1]:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) [2, 3, 4]: 4.02 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level [2, 3]: 3.52 m AHD

1% AEP Maximum Depth from natural ground level[3]: 0.45 m

1% AEP Maximum Velocity: 0.35 m/s

1% AEP Hydraulic Categorisation: Flood Fringe **See Flood Map D**

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level [4]: 5.45 m AHD

PMF Maximum Depth from natural ground level: 0.59 m

PMF Maximum Velocity: 0.62 m/s

Flood Life Hazard Category – See Map E

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

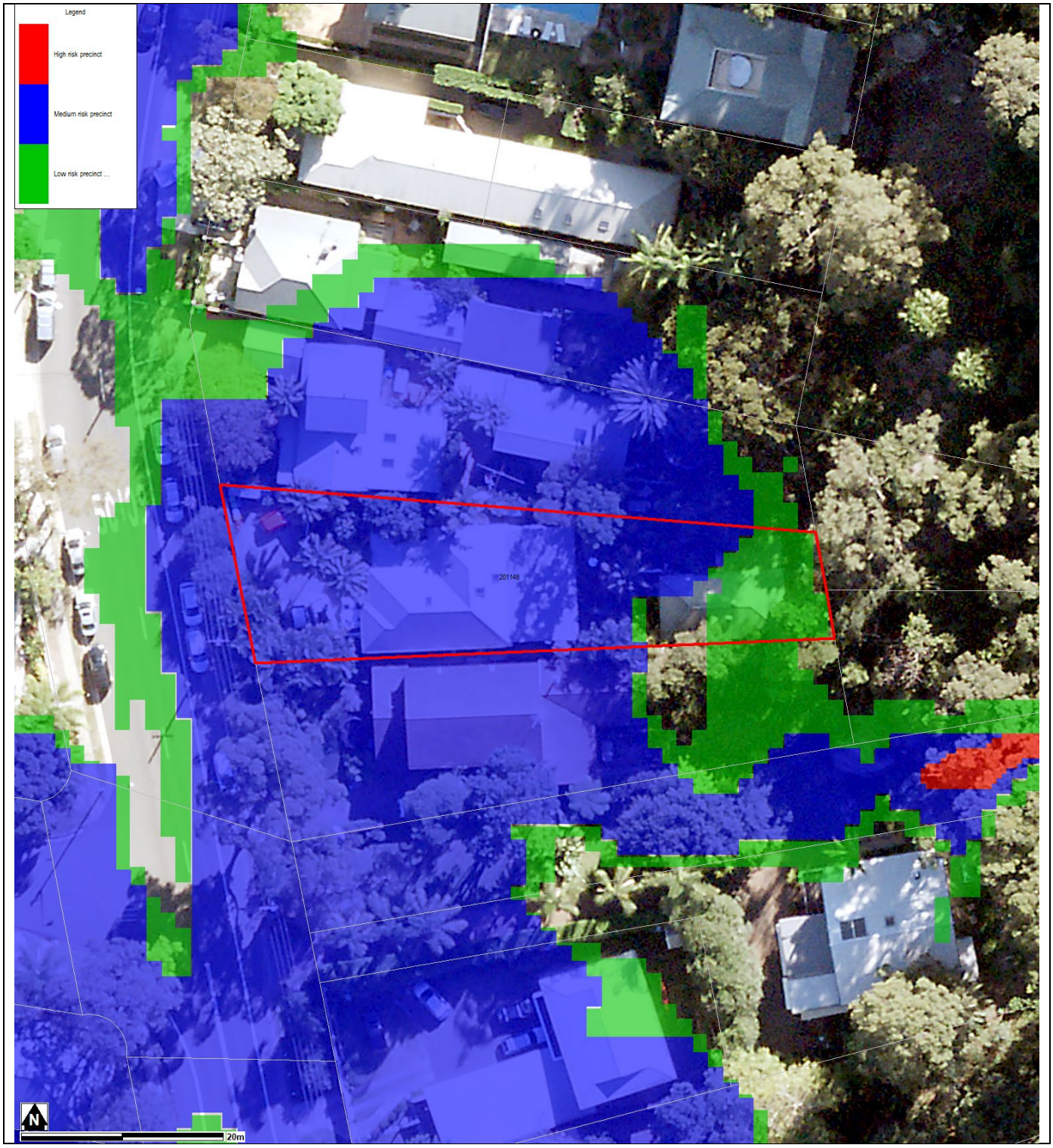
General Notes:

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

Property Notes:

- There is a little slope on the property. The 1% AEP level at the eastern edge of the house is 3.44m AHD, and at the western edge it is 3.40m AHD

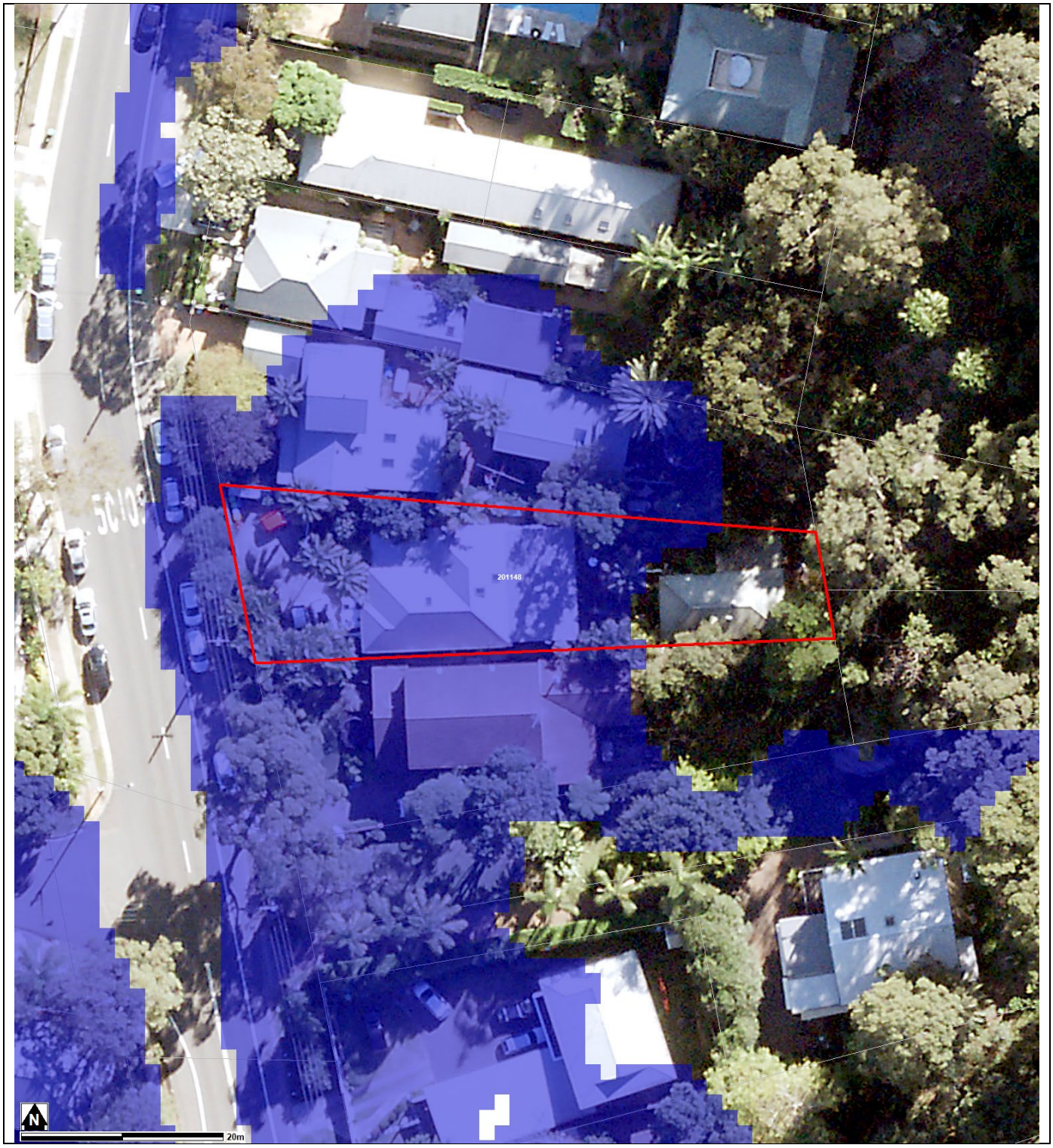
FLOOD MAP A: FLOOD RISK PRECINCT MAP



Notes:

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

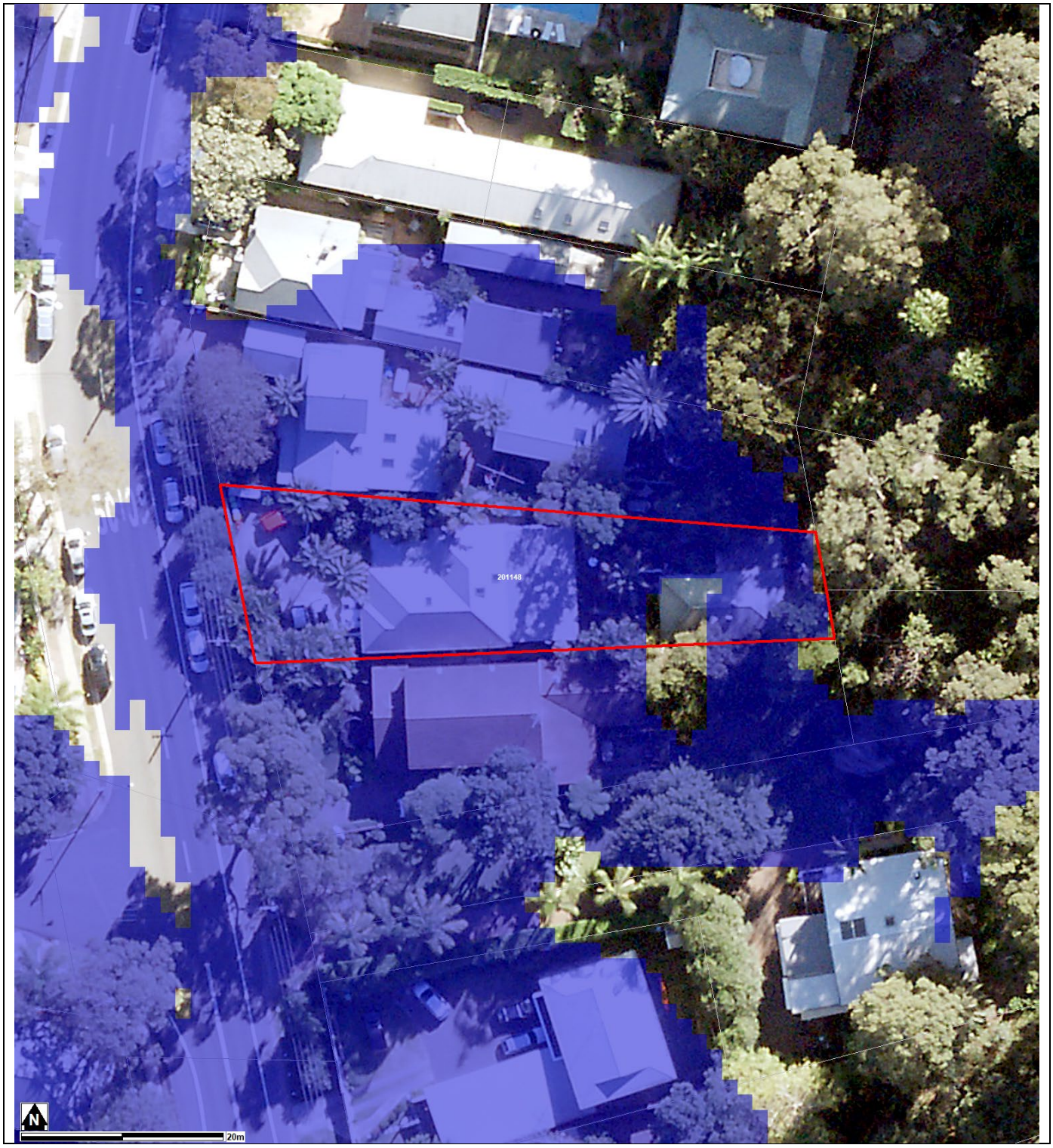
FLOOD MAP B: FLOODING - 1% AEP EXTENT



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.

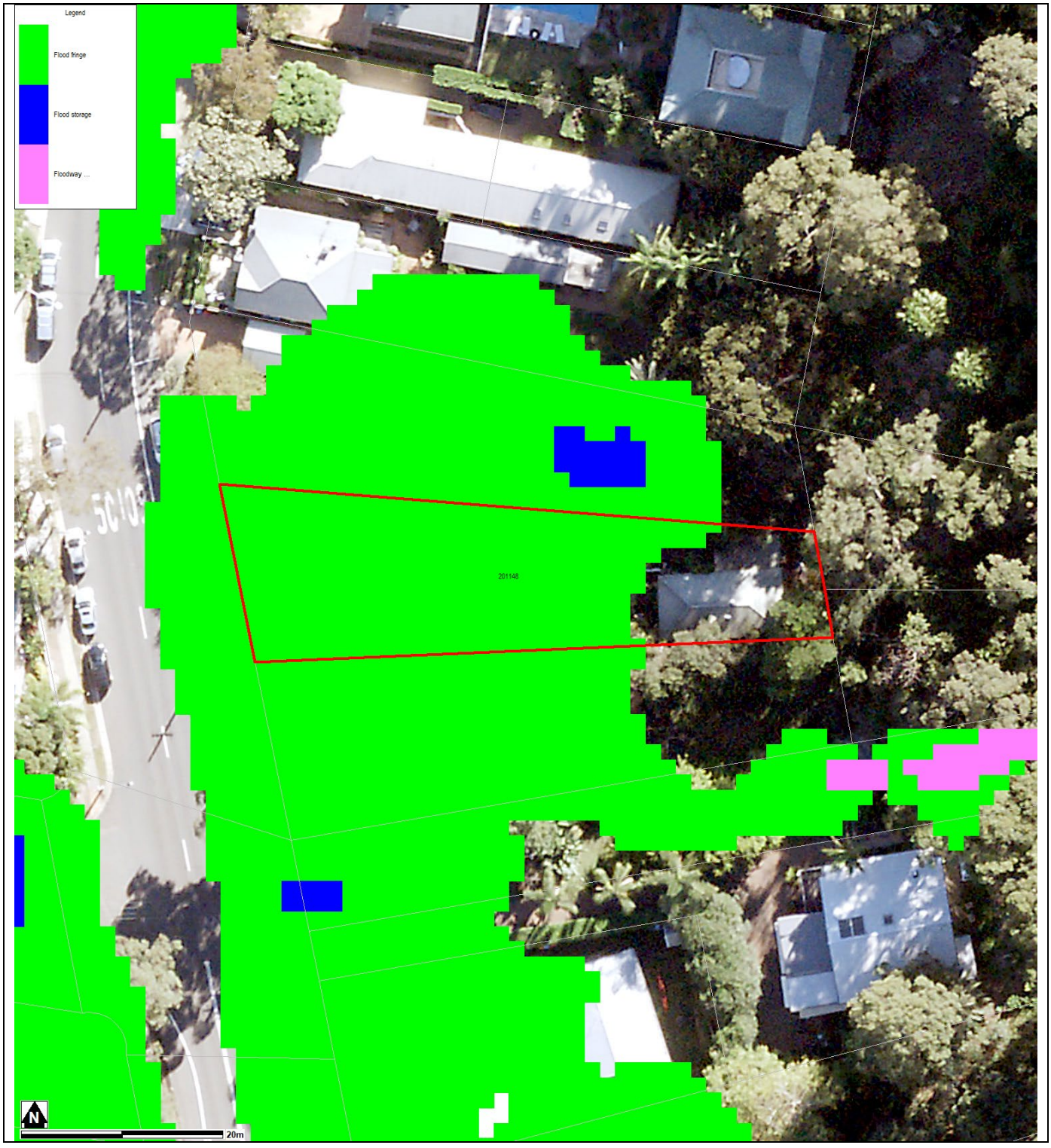
FLOOD MAP C: PROBABLE MAXIMUM FLOOD EXTENT



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.

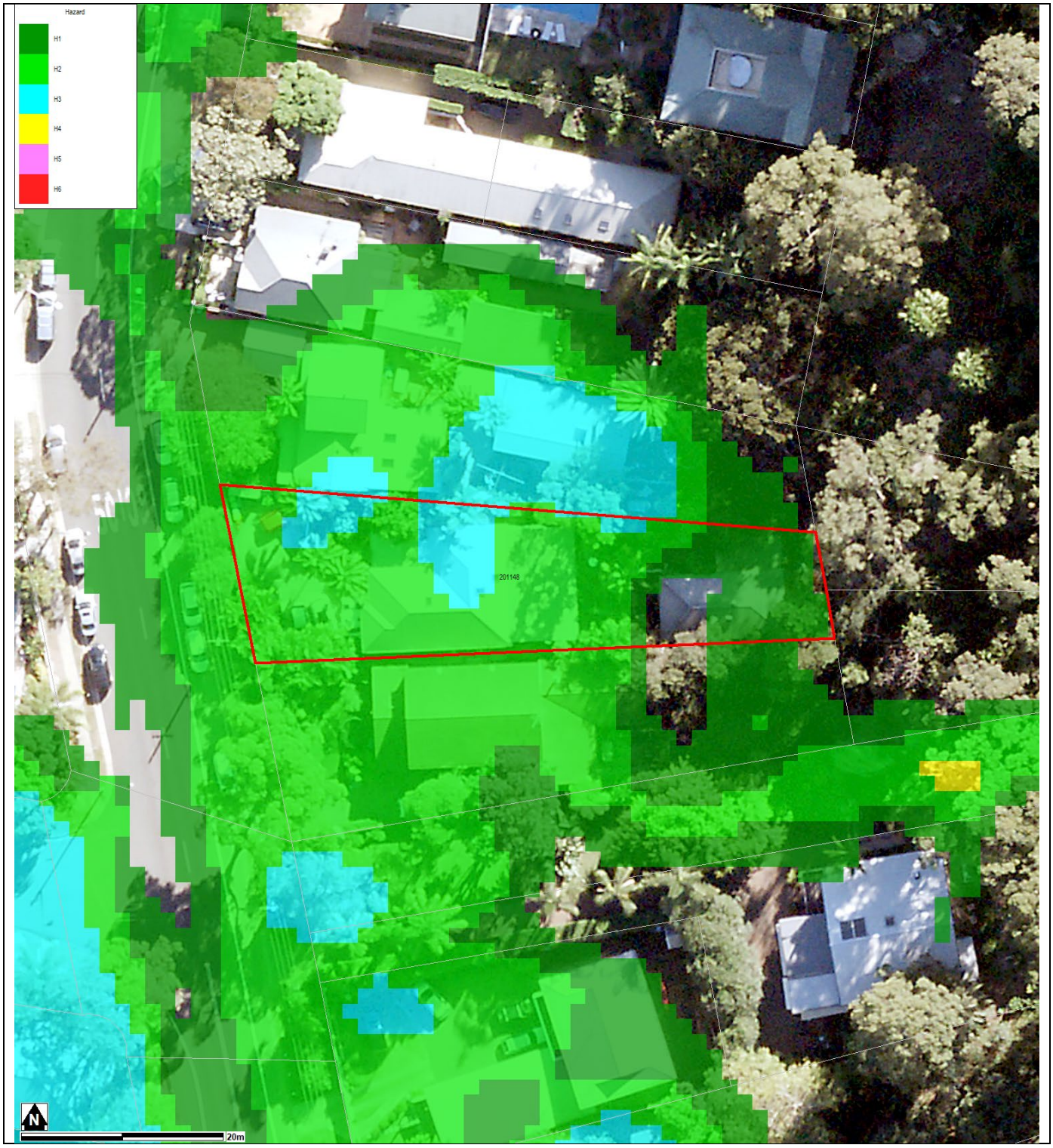
FLOOD MAP D: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: 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: FLOOD LIFE HAZARD CATEGORY



Notes:

- 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.

Preparation of a Flood Management Report

Introduction

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

Planning Requirements for Flood Prone Land

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

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

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

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

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

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

When is a Flood Management Report required?

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

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

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

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

What is the purpose of a Flood Management Report?

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

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

Preparation of a Flood Management Report

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

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

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

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

3. Assessment of impacts

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

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

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

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

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

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

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

Appendix D

EMERGENCY FLOOD RESPONSE PROCEDURE

Flood waters can rise very rapidly on this site

Once a warning is received for a possible flood or floodwaters start to inundate the roadway frontage of the site:

1. All residents should be at the assembly point at the first floor level by the time the flood waters are observed to have inundated the roadway frontage of the site.
2. The Owner is to turn off all power, water and other relevant services.
3. Nominated occupants to sweep the promises to ensure that all occupants have sought refuge at the emergency assembly point.
4. Emergency services to be notified by The Owner of the situation at site.

THIS SITE CAN FLOOD

NEVER DRIVE, WALK OR RIDE THROUGH FLOODWATERS

When emergency services give the all clear to leave:

The site will only be opened for Occupants to leave once floodwaters have subsided and the emergency services have given the all clear.

Appendix E

Flood Checklists

BEFORE A FLOOD

Trigger for action: Always

Action	Status
● All Occupants to be made aware of site flooding potential	
● Develop detailed emergency procedures, responsibilities and resources	
● Provide all Occupants with an emergency response plan and advise of their responsibilities and delegations	
● Maintain an emergency contacts list	
● Update emergency response procedures annually	

WHEN A FLOOD IS LIKELY

Trigger for action: When the forecasts predict severe weather or significant amounts of rainfall are observed:

Action	Status
● Monitor the severe weather forecasts and predictions	
● The Owner to monitor conditions at the rear of the site	
● The Owner to notify Occupants to proceed to the emergency response area	
● The Owner to shut off nominated services	

DURING A FLOOD

Trigger for action: When water is sighted ponding across the rear of the site:

Action	Status
● Emergency response to be undertaken in an orderly fashion	
● The phases of the emergency response shall be:	
➢ The Owner to request all occupants to proceed to the emergency assembly point.	
➢ All occupants should be at the assembly point by the time the flood waters reach the rear boundary of the site.	
➢ The Owner to sweep premises for remaining persons	
➢ The Owner to retreat to the emergency assembly area.	
● Emergency services to be notified by The Owner of the situation at site.	

Appendix F

Emergency Contacts

Organisation	Role	Contact
Emergency Services	Fire/ambulance/ police	000
Northern Beaches Council	Disaster Coordination Centre	9970 1111
State Emergency Service	SES Local Controller	132 500
Northern Beaches Hospital		02 9105 5000

Appendix G

Flood Compatible Materials and Building Components for New Works

BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL	BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL
Flooring and Sub-floor Structure	▪ concrete slab-on ground monolith construction ▪ suspended reinforced concrete slab	Doors	▪ solid panel with water proof adhesives ▪ flush door with marine ply filled with closed cell foam ▪ painted metal construction ▪ aluminium or galvanised steel frame
Floor Covering	▪ clay tiles ▪ concrete, precast or in situ ▪ concrete tiles ▪ epoxy, form-in-place ▪ mastic flooring, formed in-place ▪ rubber sheets or tiles with chemical-set adhesives ▪ silicone floors formed in-place ▪ vinyl sheets or tiles with	Wall and Ceiling Linings	▪ fibro-cement board ▪ brick, face or glazed ▪ clay tile glazed in waterproof mortar ▪ concrete ▪ concrete block ▪ steel with waterproof applications ▪ stone, natural solid or veneer, waterproof grout ▪ glass blocks ▪ glass

	chemical-set adhesive ▪ ceramic tiles, fixed with mortar or chemical-set adhesive ▪ asphalt tiles, fixed with water resistant adhesive ▪ linoleum		▪ plastic sheeting or wall with waterproof adhesive
Wall Structure	▪ solid brickwork, blockwork, reinforced, concrete or mass concrete	Insulation Windows	▪ foam (closed cell types) ▪ aluminium frame with stainless steel ▪ rollers or similar corrosion and water resistant material
Roofing Structure (for Situations where the Relevant Flood Level is Above the Ceiling)	▪ reinforced concrete construction ▪ galvanised metal construction	Nails, Bolts, Hinges and Fittings	▪ brass, nylon or stainless steel ▪ removable pin hinges ▪ hot dipped galvanised steel wire, nails or similar.

Electrical and Mechanical Equipment For buildings constructed on land to which this Plan applies, the electrical and mechanical materials, equipment and Installation should conform to the following requirements.	Heating and Air Conditioning Systems Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the building above the relevant flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.
Main power supply Subject to the approval of the relevant authority the incoming main commercial power service equipment including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the building from the main power supply.	Fuel Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.
Wiring All wiring, power outlets, switches, etc, should to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous	Installation The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the

components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conducts located below the relevant designated flood level should be so installed that they will be self draining if subjected to flooding.	fuel supply line. All storage tanks should be vented to the FPL.
Equipment All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	Ducting All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.
Reconnection Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.	Ancillary Structures (steps, pergolas, etc) Suitable water tolerant materials should be used such as reinforced concrete, masonry, sealed hardwood and corrosive resistant metals. Copper Chrome Arsenate (CCA) treated timber is not a suitable material.