DIRECTORS
Stewart McGeady Rick Wray Brad Seghers

FLOOD RISK MANAGEMENT REPORT

Northern Beaches Council (Pittwater)

Alterations and Additions

at

1041 BARRENJOEY ROAD, PALM BEACH

Job No. 190779

Prepared for: Susie & Rodger Morton
Prepared by: Konstantinos Oikonomou

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FLOOD RISK MANAGEMENT REPORT

DATE	14 February 2020
SITE	1041 Barrenjoey Road, Palm Beach
ENGINEER	Konstantinos Oikonomou
CLIENT	Susie & Rodger Morton
JOB No	190779

INTRODUCTION:

NB Consulting Engineers assessed the plans prepared by PASSER Architects – 12.02.2020 for the 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, Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, 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 1041 Barrenjoey Road, Palm Beach. This report is in reference to a Development Application for a proposed extension to an 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 Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017.

It should be noted that the Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017 predicts the 1% AEP flood extends to a level of RL 2.59m AHD (maximum on site depth of approximately 0.38m) and will inundate approximately 24% of 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 — Medium
- Life Hazard Category — H1, H2, H3, H4
- Maximum 1% AEP Flood Level — 2.59m AHD
- Extreme Flood Level (PMF) — 2.76m AHD
- Flood Planning Level (FPL) — 3.10m AHD
- Existing Dwelling Floor Level — 2.98m AHD
- Proposed Additions Floor Level — 3.15m AHD
- Degree of inundation — 24%
- Flood Emergency Response Strategy — Shelter In Place
- Buoyancy — Medium
- Flood Behavior — Flood Storage
- Impact on surrounding properties — None envisaged

- 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 that the proposed ground floor is suspended above the FPL with openings to the perimeter subfloor walls. Therefore, there will be no flood storage reduction as a result of the development.

- 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. 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 proposed habitable space on the ground floor level (RL 3.15m AHD) is located above the FPL (RL3.10m AHD).

- 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 3.10m 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 3.10m 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 existing first floor (designated shelter in place refuge) (RL 6.10m) located above the PMF (2.76m 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 3.10m 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:

Konstantinos Oikonomou
BET Civil

Reviewed By:

Rick Wray
BE CPEng NER RPEQ Director

\\NBADS\Company\Synergy\Projects\190779 7A ILUKA ROAD, PALM BEACH\ENG Design

APPENDIX A – FLOOD INFORMATION (PITTWATER COUNCIL)

FLOOD INFORMATION REQUEST - BASIC

Property: 1041 Barrenjoey Road Palm Beach
Lot DP: 89//14682
Issue Date: 27/08/2019
Flood Study Reference: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory

Flood Information for lot:

Flood Life Hazard Category – See Map A

1% AEP – See Flood Map B

1% AEP Maximum Water Level[3]: 2.59 mAHD

1% AEP Maximum Peak Depth from natural ground level[3]: 0.38 m

1% AEP Maximum Velocity: 0.41 m/s

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

Flood Planning Area – See Flood Map C

Flood Planning Level (FPL) [1, 2, 3 & 4]: 3.10 m AHD

Probable Maximum Flood (PMF) – See Flood Map D

PMF Maximum Water Level[2]: 2.76 m AHD

PMF Maximum Depth from natural ground level: 0.53 m

PMF Maximum Velocity: 0.71 m/s

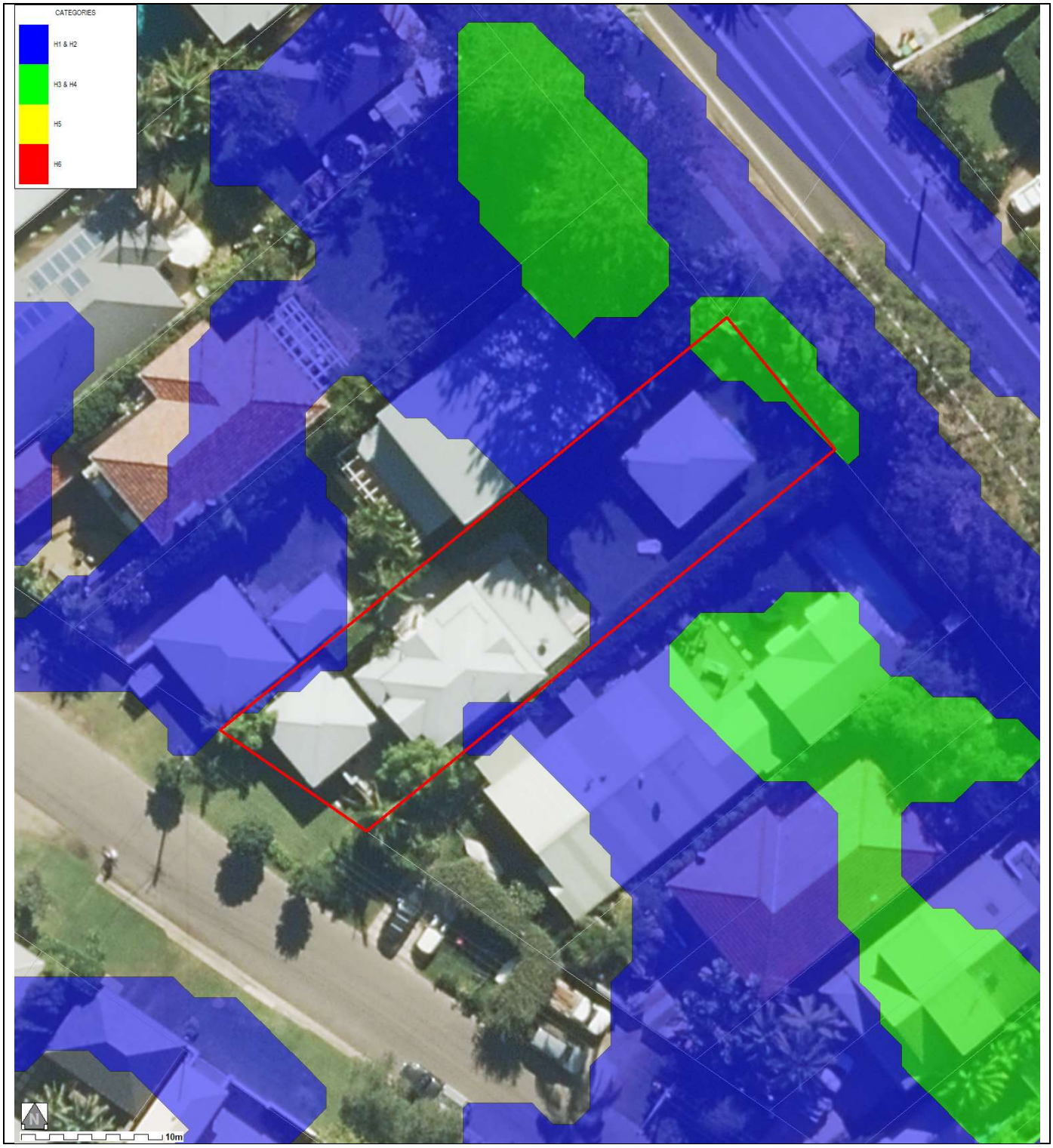
Flood Risk Precinct – See Map F

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

General Notes:

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

FLOOD MAP A: FLOOD LIFE HAZARD CATEGORY



Notes:

- Refer to 'Flood Emergency Response Planning for Development in Pittwater Policy' for additional information on the Flood Life Hazard Categories and Pittwater 21 DCP Control B3.12.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Avalon to Palm Beach Floodplain Risk Management Study and Plan 2017, Manly Hydraulics Laboratory) and aerial photography (Source: NearMap 2014) are indicative only.

FLOOD MAP B: FLOODING - 1% AEP EXTENT

Notes:

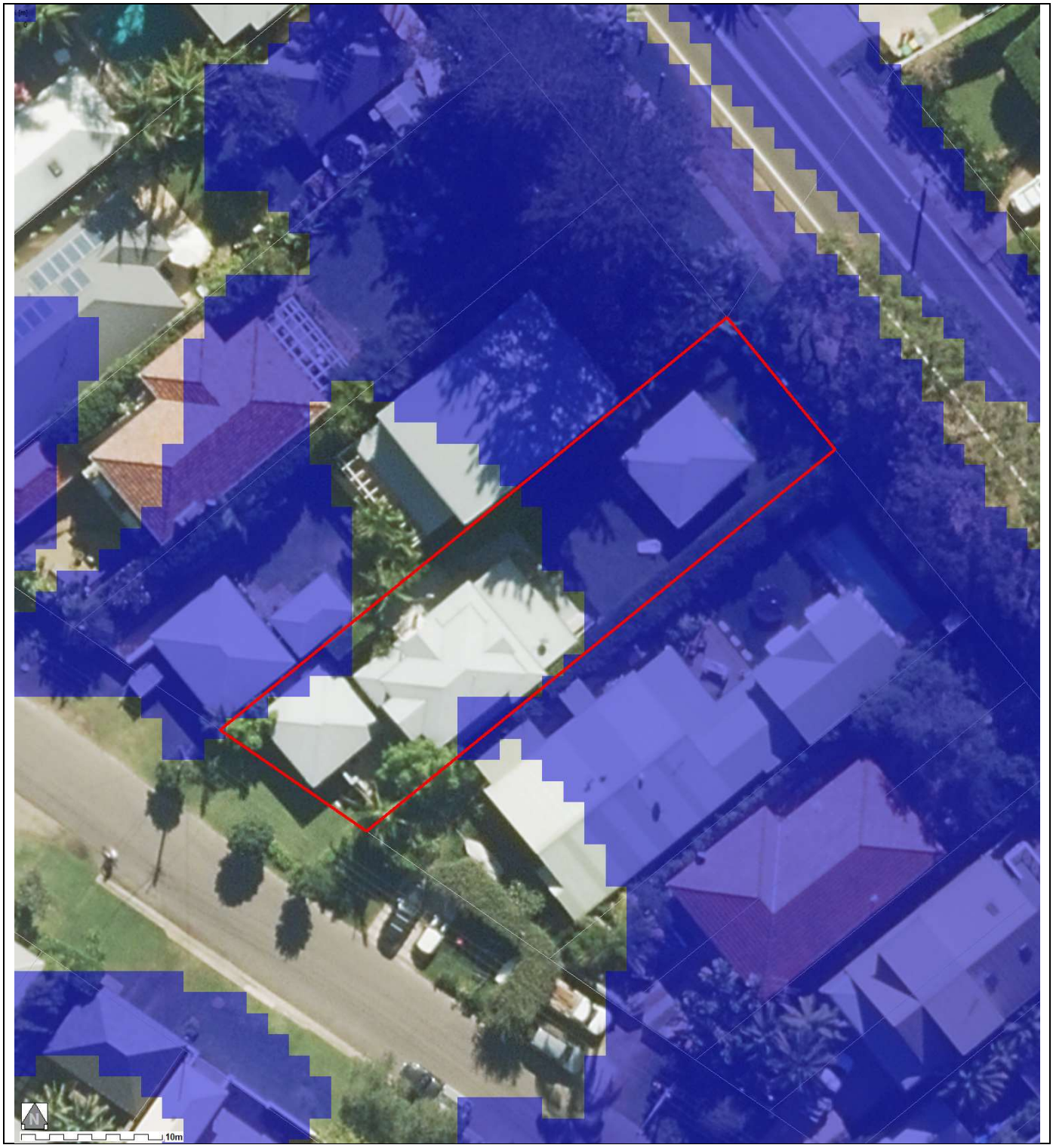
- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Avalon to Palm Beach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

FLOOD MAP C: FLOOD PLANNING AREA EXTENT

Notes:

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

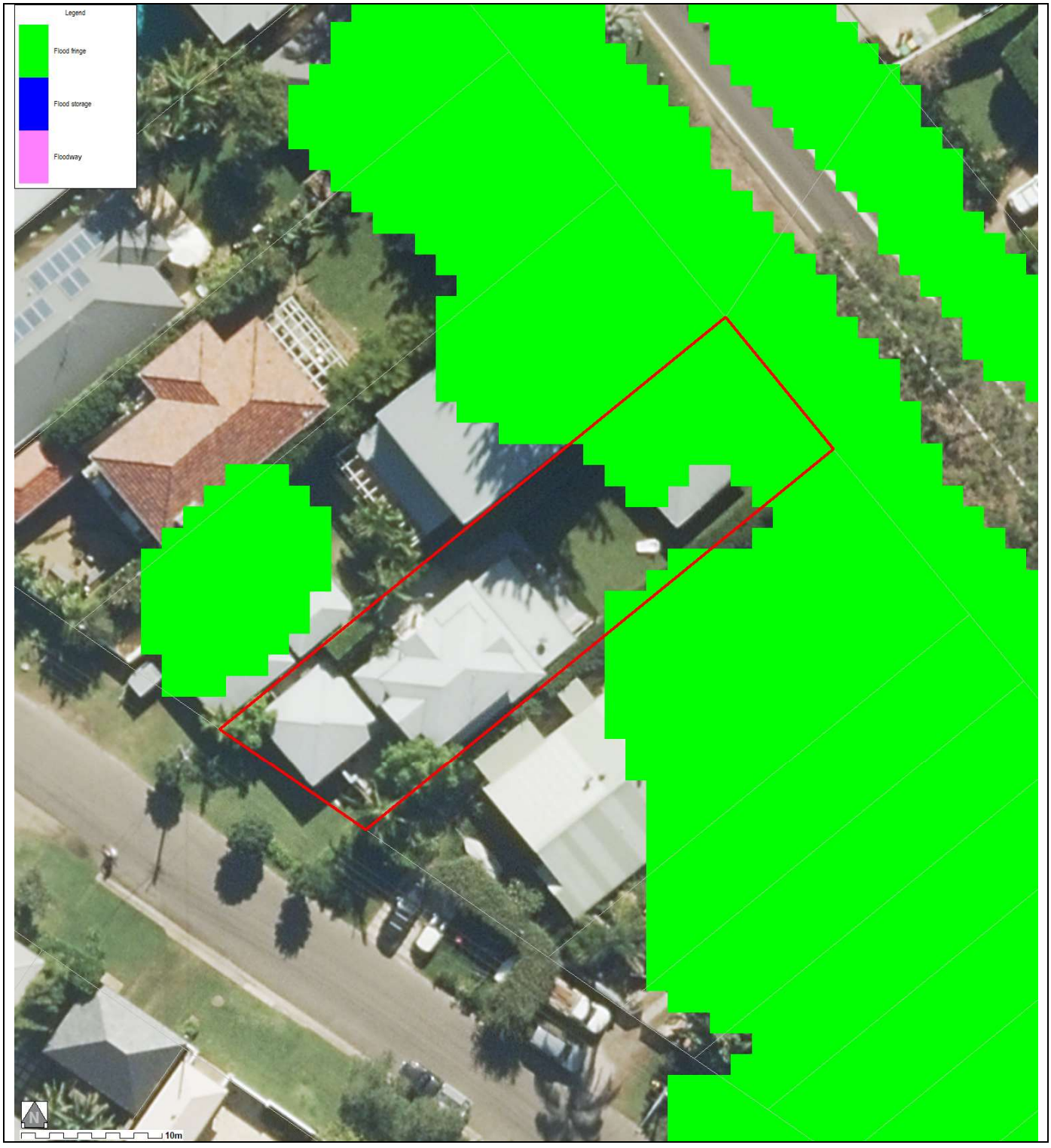
FLOOD MAP D: PROBABLE MAXIMUM FLOOD EXTENT



Notes:

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

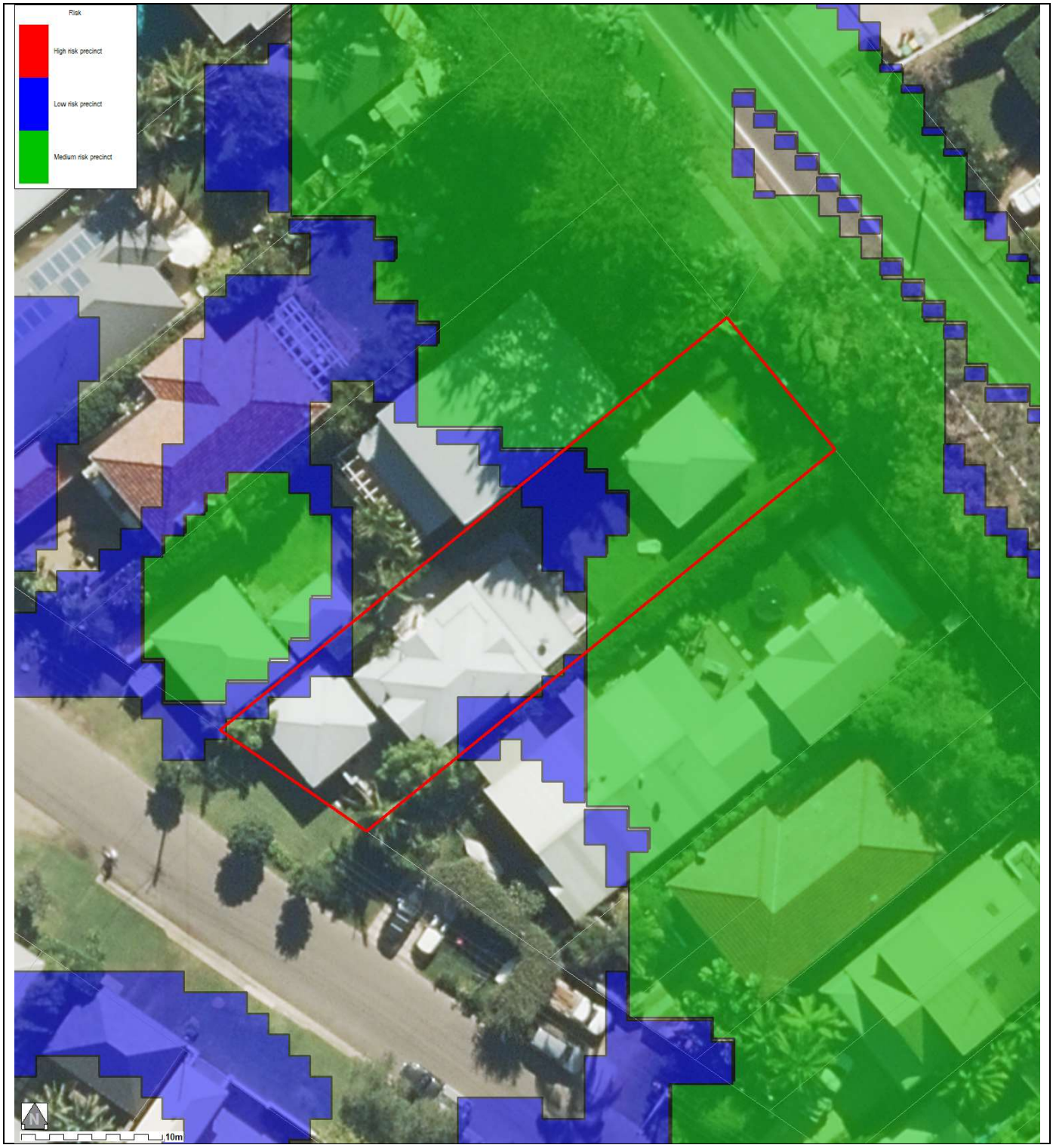
FLOOD MAP E: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

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

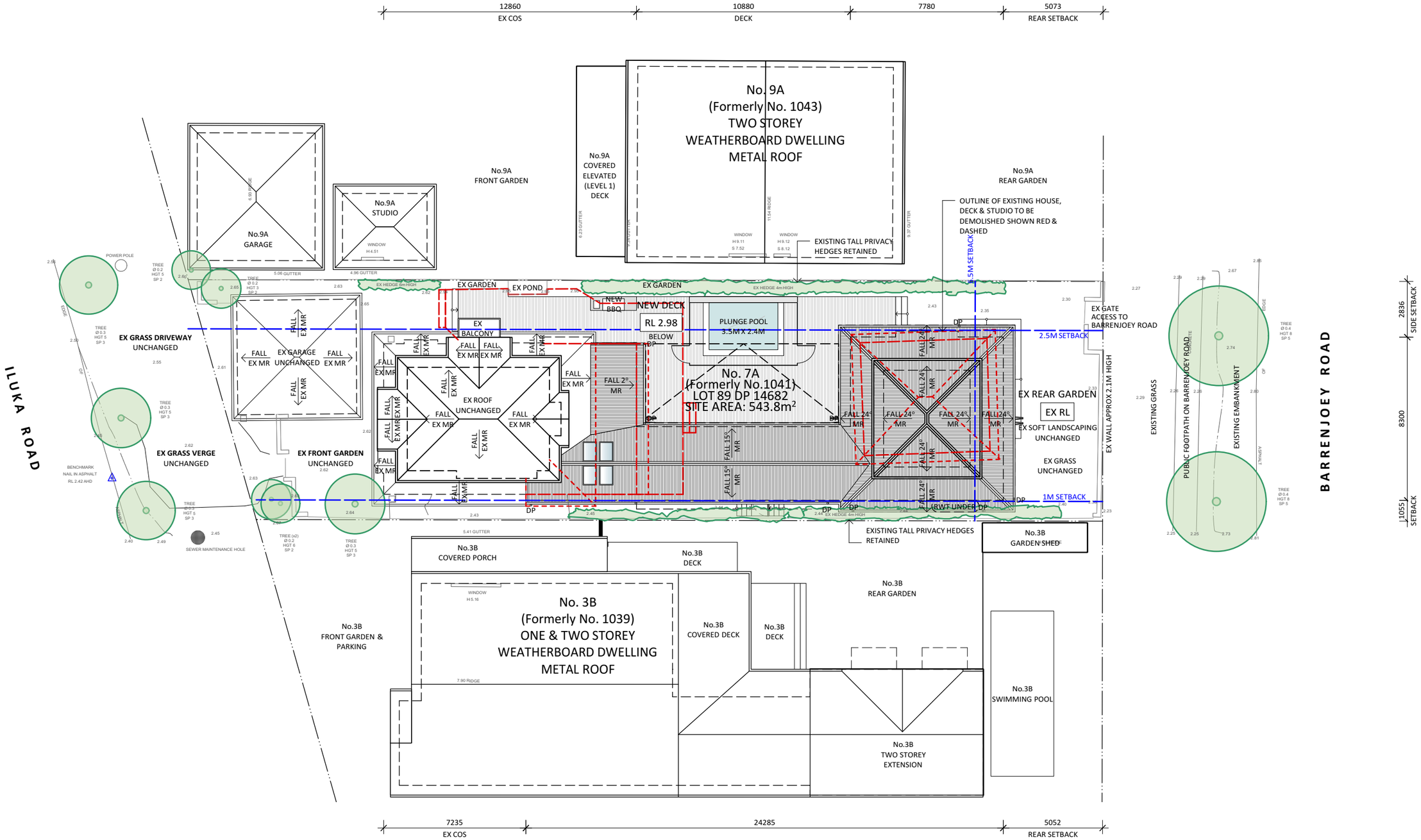
FLOOD MAP F: FLOOD RISK PRECINCT MAP



Notes:

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

APPENDIX B – PROPOSED DRAWINGS AND SITE SURVEY



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ISSUE No.	STATUS	DATE
A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

MR PB WB GLASS SS NEW FC/TIMBER

TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
FG	FRAMELESS GLASS
GT	GATE
MR	METAL ROOFING
PB	PLASTERBOARD
RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

SITE & ROOF PLAN

PROJECT

ILUKA BEACH HOUSE

7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

DRAWING No:

DA02

ISSUE:	A
PROJECT:	1915
SCALE:	1:200
DATE:	FEB 2020

12860 EX COS | 10880 DECK | 7780 | 5073 REAR SETBACK

No.9A STUDIO
WINDOW H 4.51
No.9A FRONT GARDEN
6.23 GUTTER
No.9A COVERED ELEVATED (LEVEL 1) DECK
9.34 GUTTER
11.54 RIDGE
No. 9A (Formerly No. 1043) TWO STOREY WEATHERBOARD DWELLING METAL ROOF
WINDOW H 9.11 S 7.52
WINDOW H 9.12 S 8.12
9.37 GUTTER
No.9A REAR GARDEN

4.96 GUTTER
EX DECK & STEPS TO BE DEMOLISHED & REPLACED
OUTLINE OF EXISTING DECK TO BE DEMOLISHED
SWIMMING POOL GNERALLY TO COMPLY WITH THE SWIMMING POOLS ACT & REGULATIONS IN ADDITION TO AS1926 & NCC CONTROLS.
EXISTING TALL PRIVACY HEDGES RETAINED
EX HEDGE 6m HIGH
EX GARDEN
EX POND UNCHANGED
EX GARDEN
EX HEDGE 4m HIGH
NEW STEP
NEW BBQ
NEW DECK TO REPLACE EXISTING
SANDSTONE FEATURE WALL & WATERFALL
PLUNGE POOL 3.5M X 2.4M
GLASS FENCE
GLASS FENCE
GATE
GATE
GLASS FENCE
EX GRASS UNCHANGED
6.5M SETBACK
SIDE SETBACK
2.5M SETBACK
EX GATE ACCESS TO BARRENJOEY ROAD
EX PERMEABLE PATH UNCHANGED
EX PIT
SANDSTONE FEATURE WALL
NEW STAIR TIMBER
EX GARAGE UNCHANGED
EX ENTRY
EX PERMEABLE PATH UNCHANGED
BED 2 (EX) EX RL 2.98 NEW CARPET
EX STORE
EX STAIR
EX LINEN
EX STORE
LIVING/DINING EX RL 2.98 NEW TIMBER
TV
EX STAIRS DEMOLISHED
No. 7A (Formerly No.1041) LOT 89 DP 14682 SITE AREA: 543.8m²
NEW ALFRESCO RL 2.98 NEW DECK
FIRE
RUMPUS RL 3.15 NEW TIMBER
NEW STAIR TIMBER
EX REAR GARDEN EX RL
EX SOFT LANDSCAPING UNCHANGED
EX WALL APPROX 2.1M HIGH
PUBLIC FOOTPATH ON BARRENJOEY ROAD
HALL RL 3.15
EX FRONT GARDEN
EX GARDEN UNCHANGED
BED 3 (EX) EX RL 2.98 NEW CARPET
BATH 2 (EX) EX RL 2.98 NEW TILES
PANTRY
NEW KITCHEN EX RL 2.98 NEW TIMBER
STEP UP
LOW WALL
LOUNGE RL 3.15 NEW TIMBER
LAUNDRY RL 3.15 NEW TIMBER
BATH 3 RL 3.15 NEW TILES
BED 4 RL 3.15 NEW TIMBER
BED 5 RL 3.15 NEW TIMBER
EX GRASS UNCHANGED
1M SETBACK
EX PIT
NEW GRAVEL SIDE PATH TO REPLACE EX CONCRETE
NEW STAIR
NEW STAIR
NEW GRAVEL SIDE PATH
RWT TO SUIT BASIX
EX HEDGE 4m HIGH
EXISTING TALL PRIVACY HEDGES RETAINED
5.41 GUTTER
TREE Ø 0.3 HGT 5 SP 3
No.3B GARDEN SHED 4.70 RIDGE
No.3B COVERED PORCH
No.3B COVERED BBQ
No.3B DECK
No.3B FRONT GARDEN & PARKING
No.3B REAR GARDEN
WINDOW H 5.16
No. 3B (Formerly No. 1039) ONE & TWO STOREY WEATHERBOARD DWELLING METAL ROOF
No.3B COVERED DECK
No.3B DECK
No.3B TWO STOREY EXTENSION
No.3B SWIMMING POOL

7235 EX COS | 24285 | 5052 REAR SETBACK

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ISSUE No.	STATUS	DATE
A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:
MR PB WB GLASS SS NEW FC/TIMBER
TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
FG	FRAMELESS GLASS
GT	GATE
MR	METAL ROOFING
PB	PLASTERBOARD
RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

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FOR DEVELOPMENT APPLICATION
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DRAWING TITLE
GROUND FLOOR PLAN

PROJECT
ILUKA BEACH HOUSE
7A ILUKA ROAD, PALM BEACH NSW 2108
For SUSIE + RODGE MORTON

DRAWING No:
DA03

ISSUE:	A
PROJECT:	1915
SCALE:	1:100
DATE:	FEB 2020

12860 EX COS | 10880 DECK | 7780 | 5073 REAR SETBACK

No.9A STUDIO

4.96 GUTTER

No.9A FRONT GARDEN

No.9A COVERED ELEVATED (LEVEL 1) DECK

No. 9A
(Formerly No. 1043)
TWO STOREY
WEATHERBOARD DWELLING
METAL ROOF

9.37 GUTTER

No.9A REAR GARDEN

OUTLINE OF EXISTING DECK TO BE DEMOLISHED

SWIMMING POOL GNERALLY TO COMPLY WITH THE SWIMMING POOLS ACT & REGULATIONS IN ADDITION TO AS1926 & NCC CONTROLS.

EXISTING TALL PRIVACY HEDGES RETAINED

EX HEDGE 6m HIGH

EX HEDGE 4m HIGH

EX GARDEN

EX POND UNCHANGED

NEW BBQ

DECK BELOW

SANDSTONE FEATURE WALL & WATERFALL

PLUNGE POOL 3.5M X 2.4M

RETRACTABLE SHADE DSAHED OVER

GLASS FENCE

GATE

EX PIT

EX GUTTER

EX BALCONY

EX GARAGE
UNCHANGED

EX STAIR

BED 1 (EX)
EX RL 6.10
UNCHANGED

BATH 1 (EX)
EX RL 6.10
UNCHANGED

WIR ..(EX)
EX RL 6.10
UNCHANGED

No. 7A
(Formerly No.1041)
LOT 89 DP 14682
SITE AREA: 543.8m²

NEW DECK
RL 2.98
BELOW

FALL 2° MR

FALL 15° MR

SL 01 | SL 02 | SL 03 | SL 04

CHIMNEY

FALL 24° MR

RWT UNDER TO SUIT BASIX

EX GRASS UNCHANGED

6.5M SETBACK

2.5M SETBACK

1M SETBACK

SIDE SETBACK 2836

8300

1055 SETBACK

EX GATE ACCESS TO BARRENJOEY ROAD

EX REAR GARDEN

EX RL

EX SOFT LANDSCAPING UNCHANGED

EX WALL APPROX 2.1M HIGH

PUBLIC FOOTPATH ON BARRENJOEY ROAD

EX FRONT GARDEN

EX GARDEN UNCHANGED

TREE
Ø 0.3
HGT 5
SP 3

EXISTING TALL PRIVACY HEDGES RETAINED

OUTLINE OF EXISTING HOUSE, DECK & STUDIO TO BE DEMOLISHED SHOWN RED & DASHED

No.3B COVERED PORCH

No.3B DECK

No.3B FRONT GARDEN & PARKING

No.3B REAR GARDEN

No.3B GARDEN SHED

No. 3B
(Formerly No. 1039)
ONE & TWO STOREY
WEATHERBOARD DWELLING
METAL ROOF

No.3B COVERED DECK

No.3B DECK

No.3B TWO STOREY EXTENSION

No.3B SWIMMING POOL

7235 EX COS | 24285 | 5052 REAR SETBACK

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A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

MR, WB, SS, PB, GLASS, NEW FC/TIMBER

TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS CHECK ONSITE
CR CEMENT RENDER
D DOOR
DP DOWNPIPE
EX EXISTING
FC FIBRE CEMENT
FG FRAMELESS GLASS
GT GATE
MR METAL ROOFING
PB PLASTERBOARD
RWT RAINWATER TANK
SS SANDSTONE
W WINDOW
WB WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

FIRST FLOOR PLAN

PROJECT

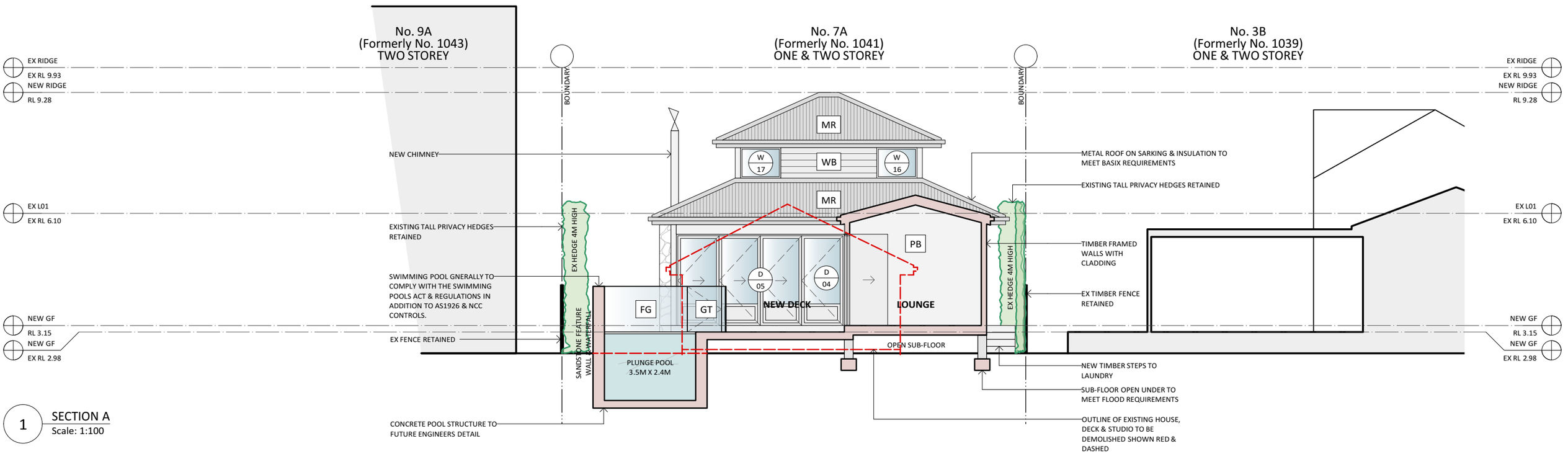
ILUKA BEACH HOUSE

7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

DRAWING No: **DA04**

ISSUE:	A
PROJECT:	1915
SCALE:	1:100
DATE:	FEB 2020



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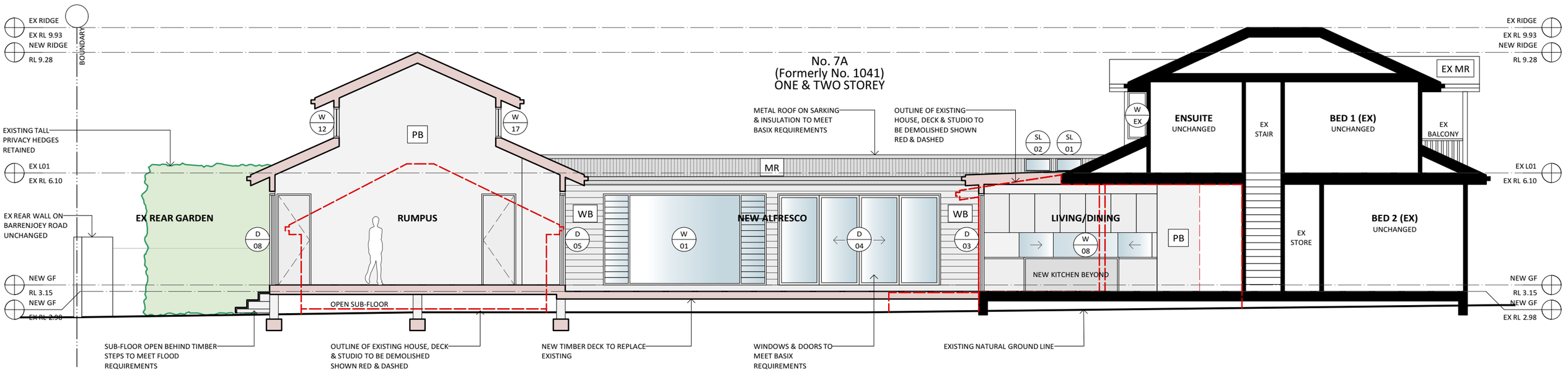

2 SECTION B
Scale: 1:100

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LEGEND:

MR, WB, SS, PB, GLASS, NEW FC/TIMBER

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LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
FG	FRAMELESS GLASS
GT	GATE
MR	METAL ROOFING
PB	PLASTERBOARD
RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

SECTIONS

PROJECT

ILUKA BEACH HOUSE

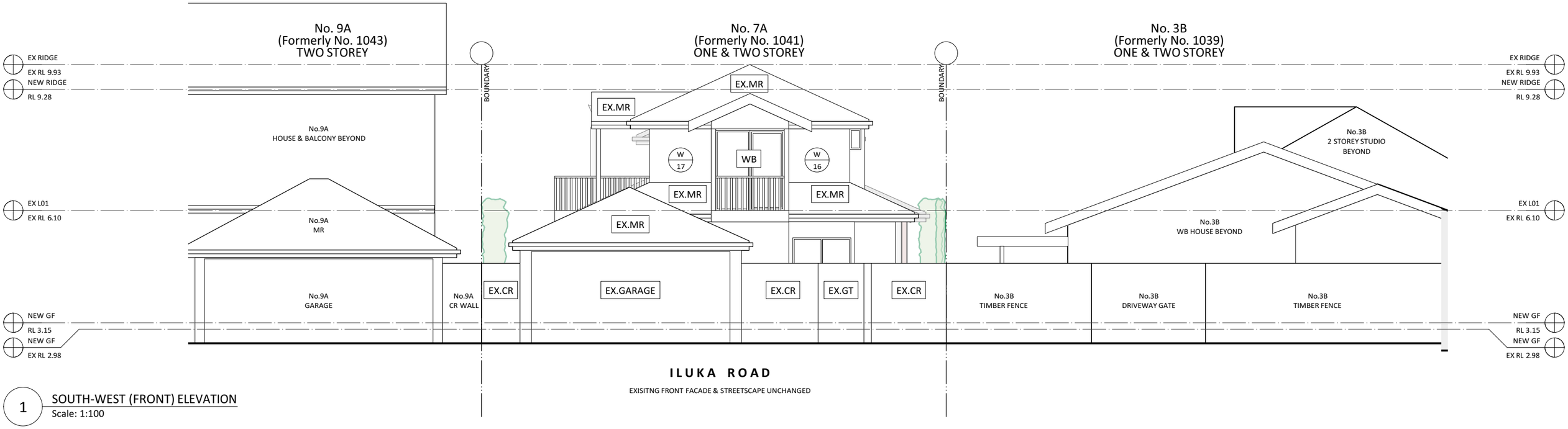
7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

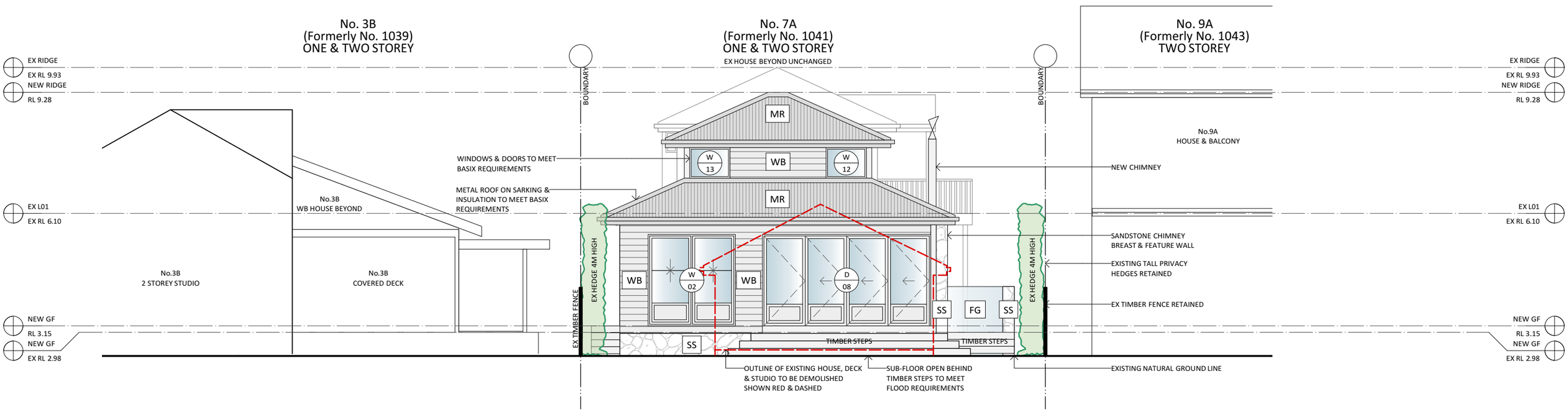
DRAWING No:

DA08

ISSUE:	A
PROJECT:	1915
SCALE:	1:100
DATE:	FEB 2020



1 SOUTH-WEST (FRONT) ELEVATION
Scale: 1:100



2 NORTH EAST (REAR) ELEVATION
Scale: 1:100

PASSER
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E: jessica@hlavorseninteriors.com
www.halvorseninteriors.com

ISSUE No.	STATUS	DATE
A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

MR PB
WB GLASS
SS NEW FC/TIMBER

TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
FG	FRAMELESS GLASS
GT	GATE
MR	METAL ROOFING
PB	PLASTERBOARD
RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

FRONT & REAR ELEVATIONS

PROJECT

ILUKA BEACH HOUSE

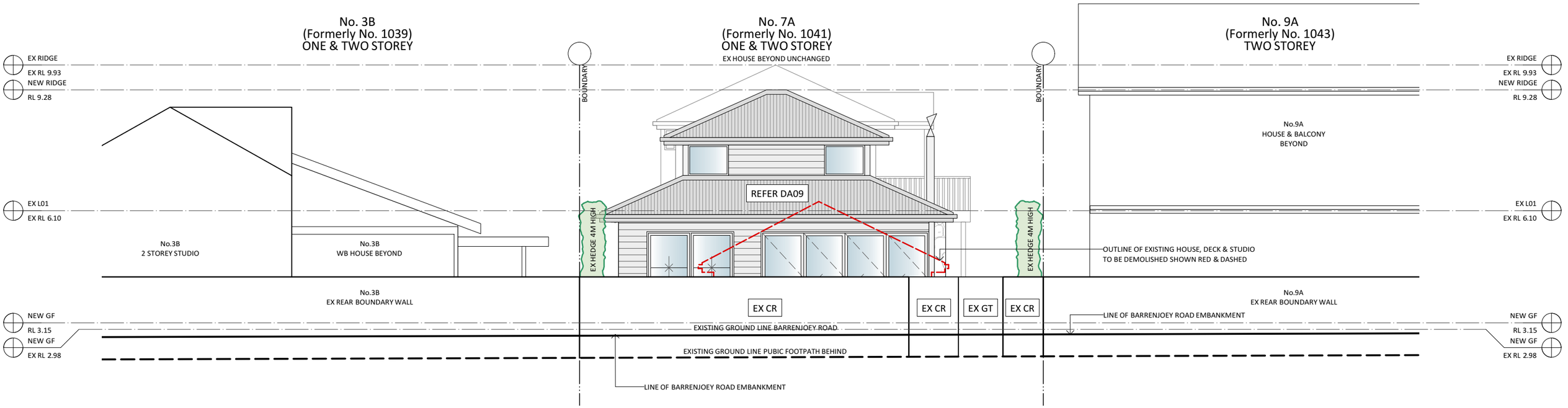
7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

DRAWING No:

DA09

ISSUE:	A
PROJECT:	1915
SCALE:	1:100
DATE:	FEB 2020



4 NORTH EAST (REAR) BARRENJOEY RD ELEVATION
Scale: 1:100

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ISSUE No.	STATUS	DATE
A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

MR PB
WB GLASS
SS NEW FC/TIMBER

TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
FG	FRAMELESS GLASS
GT	GATE
MR	METAL ROOFING
PB	PLASTERBOARD
RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

REAR (BARRENJOEY ROAD) ELEVATION

PROJECT

ILUKA BEACH HOUSE

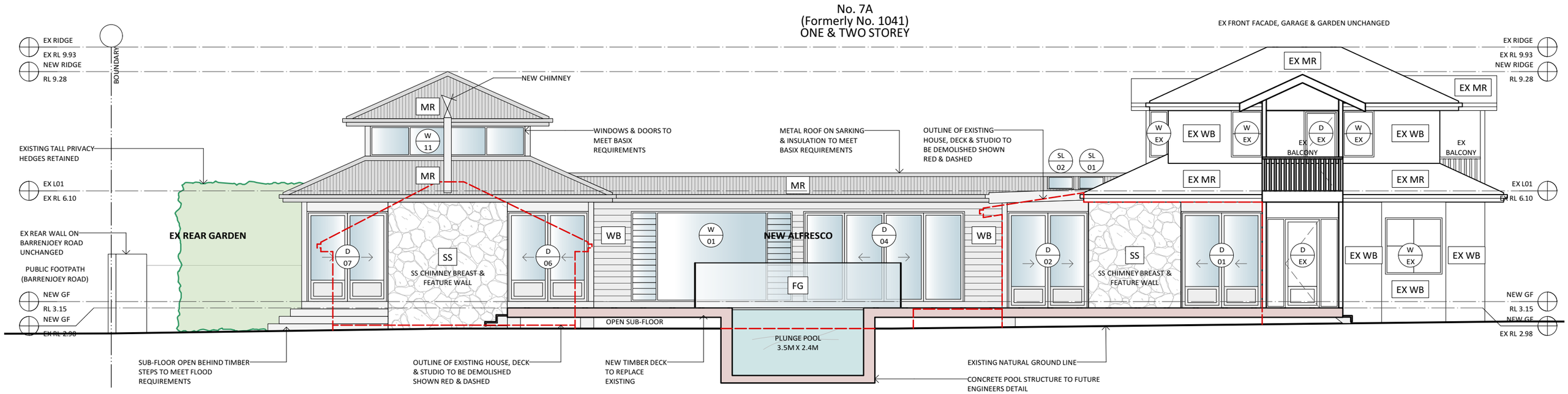
7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

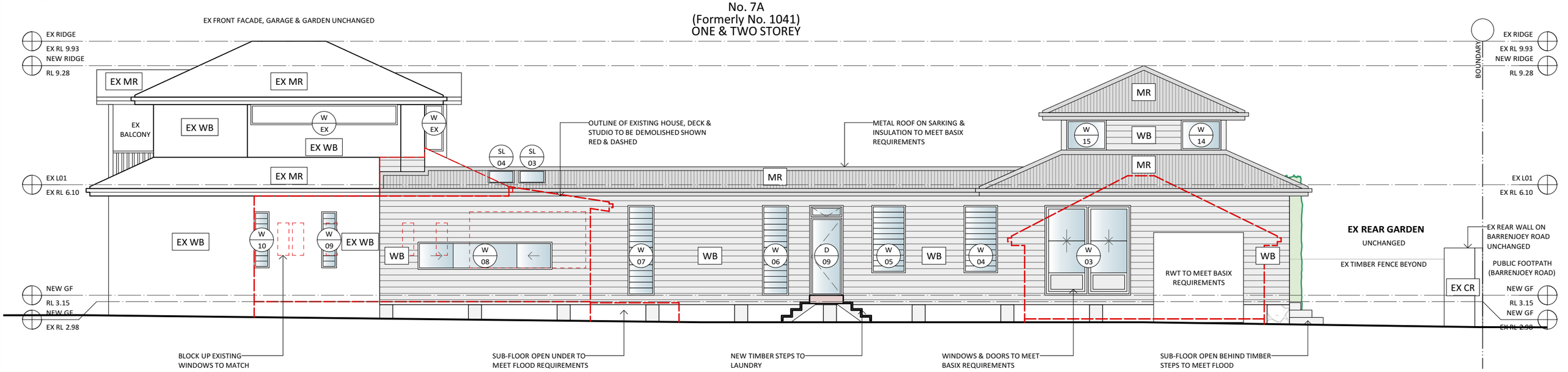
DRAWING No:

DA10

ISSUE: A
PROJECT: 1915
SCALE: 1:100
DATE: FEB 2020



1 NORTH WEST (SIDE) ELEVATION
Scale: 1:100



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ISSUE No.	STATUS	DATE
A	FOR CLIENT REVIEW	14.02.2020

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

MR, WB, SS, PB, GLASS, NEW FC/TIMBER

TO BE DEMOLISHED
LINE OF STRUCTURE OVER / UNDER
EXISTING STRUCTURE
NEW STRUCTURE

COS	CHECK ONSITE
CR	CEMENT RENDER
D	DOOR
DP	DOWNPIPE
EX	EXISTING
FC	FIBRE CEMENT
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RWT	RAINWATER TANK
SS	SANDSTONE
W	WINDOW
WB	WEATHERBOARD

STATUS

FOR DEVELOPMENT APPLICATION

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DRAWING TITLE

SIDE ELEVATIONS

PROJECT

ILUKA BEACH HOUSE

7A ILUKA ROAD, PALM BEACH NSW 2108

For SUSIE + RODGE MORTON

DRAWING No:

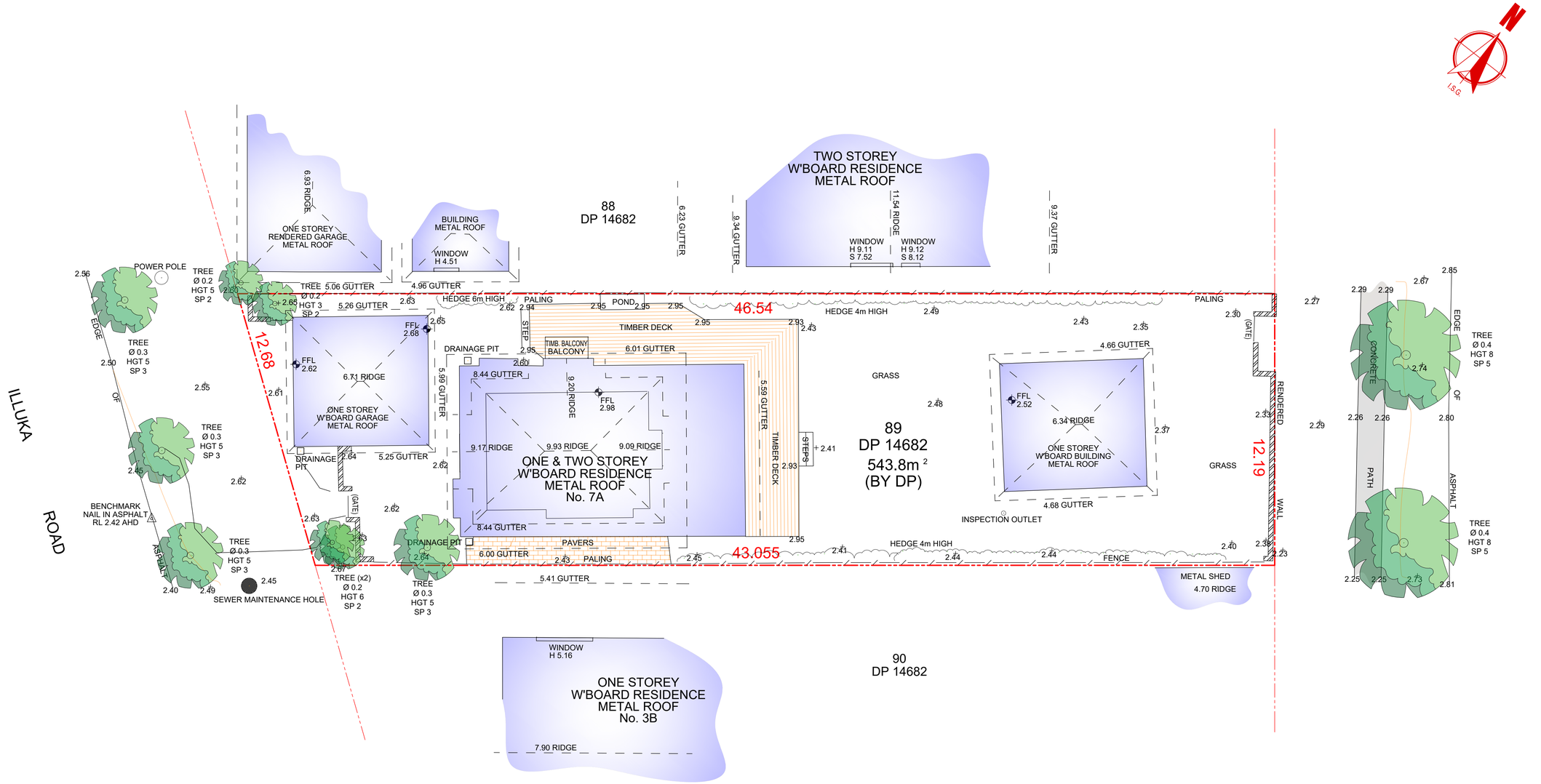
DA11

ISSUE: A

PROJECT: 1915

SCALE: 1:100

DATE: FEB 2020



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N O T E S:

- This plan shows the title plan boundary dimensions but does not include any boundary definition survey. Further investigation and survey work will be required to enable any building or fence construction works to achieve correct positioning in relationship to boundaries.
- The relationship of details on the land to the boundaries is diagrammatic only.
- Contours where shown are indicative only ~ spot levels take precedence.
- The depiction of trees is symbolic.
- Visible service utilities have been located at the surface. Any underground locations will require further investigation.
- Building feature levels where shown are approximate only.
- Prior to any use of this plan a current title search must be obtained to ascertain any easements, restrictions or covenants that may affect the land.
- This plan has been prepared for the express benefit of the client only. No liability in negligence will be accepted towards third parties who are warned to rely only upon the results of their own investigations.
- This plan is copyright and is not to be reproduced copied or altered in any manner whatsoever.
- Any use or printing of this plan must include all of these 'important warning notes'.

RED WING SURVEY
PO BOX 226 MAITLAND NSW 2320
T: (02) 4088 8232 E: aaron@redwingsurvey.com.au

REV: | DESCRIPTION: | BY: | DATE:

STATUS: FINAL

CLIENT: SUSIE & RODGER MORTON		SITE: 7A ILLUKA ROAD	
LOCATION: PALM BEACH		TITLE: DETAIL SURVEY	
VERTICAL DATUM: AHD	ORIGIN: PM16499	SCALE AT A1: 1:100	SURVEY DATE: 10/07/19 / DRAWN: IP / SHEET: 1 OF 1
HORIZONTAL DATUM: I.S.G.	BOUNDARIES ARE IN ACCORDANCE WITH: DP 836320	PROJECT NO: S PB001	DRAWING NO: S PB001 001 / REVISION: 001

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.

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: 1041 Barrenjoey Road, Palm Beach

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 (Insert Name) on behalf of Northern Beaches Consulting Engineers (Trading or Business/ Company Name)

on this the 14/02/2020 (Date) certify that I am engineer or a

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

***Flood Management Report* Details:**

Report Title: Flood Risk Management Report

Report Date: 14/02/2020

Author: Konstantinos Oikonomou

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)

☑ 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 Rick Wray