



Prime Consulting Engineers Pty. Ltd.

FLOOD IMPACT ASSESSMENT REPORT

FOR ALTERATIONS & ADDITIONS

AT

15 WINGARA GROVE

BELROSE NSW 2085

Prepared by: Prime Consulting Engineers Pty Ltd.

Ref: 22-309A

Date: 12/06/2023

Amendment: -

Prepared by: BG

Checked by: KZ

Dear Mr. & Mrs. Baldwin,

Re: **Flood Report - Proposed Alterations and Additions at
15 Wingara Grove, Belrose, NSW, 2085**

Introduction

Prime Consulting Engineers has been engaged by Mr. & Mrs. Baldwin to prepare a Flood Impact Assessment report for Proposed Alterations and Additions at 15 Wingara Grove, Belrose, NSW, 2085 in respect to flood during an ARI 1:100 rainfall events (1% AEP).

We can confirm that we have reviewed the existing survey levels in order to compare the RLs with 1% ARI flood levels to prepare this report.

At present there is Single story house at the property. The proposal, on ground floor, is to remove & relocate the existing garage, to add the new pool & deck at the rear of the property. On first floor, addition of new studio level over the new garage and new first floor level over the existing ground floor. See **Appendix 'A'** for the existing and proposed floor plans.



Site Image @ Six Maps

Fig: 15 Wingara Grove, Belrose, NSW, 2085

Report

The purpose of this Flood Impact Assessment report for alterations and additions 15 Winagara Grove, Belrose, NSW, 2085 is to provide a flood level (AHD) RL that can be relied upon for the alterations and additions and is required as part of documentation for submission for development application.

This report has been prepared based on the flood information provided by Northern Beaches Council on 17th October 2022 which is attached on Appendix B.

The existing survey plan and floor plan for the proposed site is given in Appendix A.

1. Flood Effects:

- **The existing property is with in the Medium Flood Risk Precinct.**
- **1% AEP Maximum Water Level: 137.8 m AHD**
- **PMF Maximum Water Level: 138.9 m AHD**

Conclusion

As per the report provided by the Northern Beaches Council, the existing property and the proposed new alteration & addition is **affected** by 1% AEP Flood and lies with in the **Medium Flood Risk Precinct.**

The Flood planning level for Habitable area is $137.8\text{ m} + 0.5\text{m} = \mathbf{138.3\text{ m AHD}}$ and for Non-Habitable area is $137.8\text{ m} + 0.3\text{m} = \mathbf{138.1m AHD}$. OR **0.3m** above natural ground level as recommended in Flood Information report. As per the architectural plan, the proposed RL of habitable area is $139.22\text{ mAHD} > 138.3\text{ mAHD}$ and for non-habitable area is $138.24\text{ mAHD} > 138.1\text{ mAHD}$, such that the given levels on proposed ground floor plan complies with flood management policy of Warringah Council's DCP.

Your Sincerely

Kevin Zia

BEng, MEng, MIEAust, CPEng, NER

APPENDIX A

ARCHITECTURAL PLAN

WINGARA GROVE

LOT 42
D.P.232584

LOT 41
D.P.232584
AREA: 696 m²

LOT 54
D.P.232584

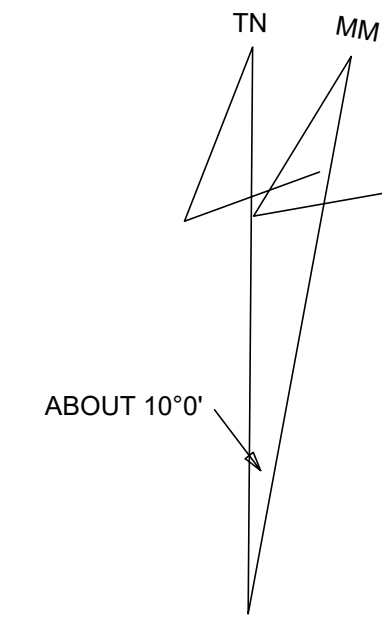
LOT 40
D.P.232584

No. 13
ONE STOREY
BRICK COTTAGE
TILE ROOF

No. 15
ONE STOREY
BRICK COTTAGE
TILE ROOF

No. 17
TWO STOREY
BRICK COTTAGE
TILE ROOF

CHUBBY HOUSE
RIDGE 141.03



ALL BEARINGS ARE ON MAGNETIC MERIDIAN
TAKEN FROM DP232584 DATED 1966



SUITE 7/14 FRENCH AVENUE AVENUE, BANKSTOWN
PH: 02 9708 0177 FAX: 02 9708 0255 E: info@sydneyssurveyors.com.au

NOTE: BOUNDARIES HAVE BEEN DEFINED FOR PLANNING & DESIGN PURPOSES
PROPOSED STRUCTURES ON OR NEAR BOUNDARIES OF THE LAND MUST BE SET OUT BY A REGISTERED SURVEYOR
THE EXACT LOCATION OF UNDERGROUND SERVICES IS UNKNOWN

- | | | | | |
|------------|-------------|-------------|---------------|---------------|
| BENCH MARK | TELSTRA PIT | WATER METER | SEWER MANHOLE | STOP VALVE |
| TREES | HYDRANT | GAS METER | POWER POLE | DRAIN / GRATE |

SHEET 01 OF 01

IAN WICKS - ID000253
REGISTERED SURVEYOR

REF:	17809/1A
SCALE:	1:100 @A1
GRID:	
DATUM:	AHD
DATE:	23/09/2021

PLAN SHOWING DETAIL AND LEVELS AT
15 WINGARA GROVE, BELROSE
LOT 41 IN D.P. 232584



APPENDIX B

FLOOD INFORMATION

SITE RATIO'S - EXISTING:

SITE AREA	696.00m ²
BUILDING FOOTPRINT	174.24m ²
GARAGE & CUBBY	33.53m ²
PAVED AREAS AND DRIVEWAY	52.69m ²
PORCH & REAR TERRACE	57.61m ²
AREAS UNDER 2m WIDE	25.27m ²
SUM TOTAL	343.34m ²
EXISTING LANDSCAPED AREA	352.66m ²
	50.67%

SITE RATIO'S - PROPOSED:

SITE AREA	696.00m ²
BUILDING FOOTPRINT	174.24m ²
GARAGE & CUBBY	35.11m ²
PAVED AREAS AND DRIVEWAY	47.68m ²
PORCH & REAR TERRACE	65.09m ²
AREAS UNDER 2m WIDE	22.45m ²
SUM TOTAL	344.57m ²
PROPOSED LANDSCAPED AREA	351.43m ²
	50.45%

1.6km TO DAVIDSON
HIGH SCHOOL

1.5km TO WAKEHURST
PUBLIC PRIMARY
SCHOOL

250m TO LOCAL
BUS STOP

WINGARA GROVE

1km TO LIONEL
WATTS OVAL

950m TO GLENROSE
VILLAGE SHOPPING
CENTRE

COOLING
SOUTHERLY
WINDS

1

SITE PLAN

1:200

& SITE ANALYSIS / ENVIRONMENTAL SITE MANAGEMENT

NOTES

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Finished ground levels on the plan are subject to site conditions.

Do not scale from drawings. Use figured dimensions only and report any discrepancies to the designer prior to commencement.

All figured dimensions to be checked on site.

BASIC INFORMATION REQUIREMENTS:

LIGHTING
A minimum of 40% of all new or altered light fixtures are to be fluorescent, compact fluorescent or LED lamps.

WATER COMMITMENTS:
Fixtures: All new Shower heads, toilets and taps shall have a minimum 3 Star rating.
Swimming pool: Maximum size pool shall be 28 Kilolitres. It must have a pool pump timer, pool cover and no heating.

INSULATION REQUIREMENTS:
External walls: The external walls shall be brick veneer or weatherboard and shall meet R1.70 (including construction).
Floors: The suspended floor above the garage and over the existing dwelling shall require no additional insulation.
Ceilings: The new flat ceiling, pitched roof shall meet minimum R1.45 (up).
The new raked ceiling, pitched/skillion roof ceilings shall meet minimum R1.74 (up).
Roof: The roof shall have a foil backed blanket (55mm) and be a medium colour (solar absorption 0.475>0.70).

WINDOWS & GLAZED DOORS:
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Client

MR. & MRS. BALDWIN

Project Name

PROPOSED ALTERATIONS + ADDITIONS

15 WINGARA GROVE

LOT 41, DP 232584

BELROSE NSW 2085

JAH
DESIGN SERVICES
ABN 22 630 690 834
BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2086
PH. 0410 410 064 EMAIL: juke@jahdesigns.com.au

Drawing Title:

SITE PLAN

Scale:

1:200 @ A3

Date:

JUNE 2023

Status:

ModDA submission

Checked By:

JAH

Project No:

2120

Drawing No.:

ModDA01

Plot Date:

26/06/2023

Demolish and remove existing concrete driveway shown hatched to allow for new driveway as per proposed plans.

Demolish and remove existing timber stair shown hatched. Make good all affected surfaces.

Demolish and remove window shown hatched and block up to allow for new extension as per proposed plan.

Open up ceiling to allow for new staircase as per proposed plan.

Demolish and remove existing timber stair shown hatched. Make good all affected surfaces.

Demolish and remove existing garage shown hatched to allow for new garage as per proposed plan

Remove existing balustrading and replace with new as per proposed plan

Remove existing window and sliding door shown hatched and to allow for new door and window as per proposed plan.

Demolish and remove existing external stairs shown hatched.

Cut back portion of floor shown hatched to allow for new deck as per proposed plan

Demolish and remove all walls, windows and internal doors shown hatched to allow for new layout as per proposed plan. Make good to all affected surfaces as required

Demolish and remove existing cabinetry shown hatched. Make good all walls as per proposed plan

Demolish and remove existing cabinetry shown hatched. Make good all walls as per proposed plan

Demolish and remove existing ensuite cabinetry, fittings, and all wall and floor tiles shown hatched. Cap off any unused plumbing and electrical points and make good as per proposed plan

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Client
MR. & MRS. BALDWIN
Project Name
PROPOSED ALTERATIONS + ADDITIONS
15 WINGARA GROVE
LOT 41, DP 232584
BELROSE NSW 2085

JAH
DESIGN SERVICES
ABN 22 630 690 834
BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2086
PH. 0410 410 064 EMAIL juke@jahdesigns.com.au

Drawing Title:
EXISTING GROUND FLOOR

Scale: 1:100 @ A3	Date: JUNE 2023
Status: ModDA submission	Checked By: JAH
Project No: 2120	Drawing No.: ModDA02
Plot Date:	26/06/2023

1 EXISTING GROUND FLOOR PLAN 1:100

DOOR/WINDOW SCHEDULE

GD 1	3000w x 2100h	Selected Colorbond Garage Door
GD 2	2100w x 2100h	Selected Aluminium Framed Glass Sliding Door
D 1	4200w x 2100h	Selected Aluminium Framed Stacker Door
D 2	2800w x 2100h	Selected Aluminium Framed Stacker Door
W 1	2400w x 1200h	Selected Aluminium Framed Sliding/Fixed/Sliding Window

Note: The Builder shall check measure all windows and doors on site prior to ordering.
Windows and doors to be checked against the requirements of the approved BASIX Certificate.

NOTE- HARD WIRED PHOTOELECTRIC SMOKE ALARMS TO BE INSTALLED IN ACCORDANCE WITH NCC2022 VOLUME 2 PART H3D6 &AS3786

NOTE- PLIABLE BUILDING MEMBRANE INSTALLED MUST COMPLY WITH AS/NZS4200.1 AND INSTALLED IN ACCORDANCE WITH AS4200.

NOTE- EXHAUST SYSTEMS INSTALLED IN THE KITCHEN, BATHROOM, SANITARY COMPARTMENTS OR LAUNDRY MUST COMPLY WITH MINIMUM FLOW RATES AS SPECIFIED IN NCC2022 VOLUME 2 PART H4P5. BATHROOM, SANITARY COMPARTMENTS & LAUNDRIES MUST BE DISCHARGED DIRECTLY VIA SHAFT OR DUCT TO OUTDOOR AIR OR TO A VENTILATED ROOF SPACE COMPLYING WITH NCC2022 VOLUME 2 PART H4D7

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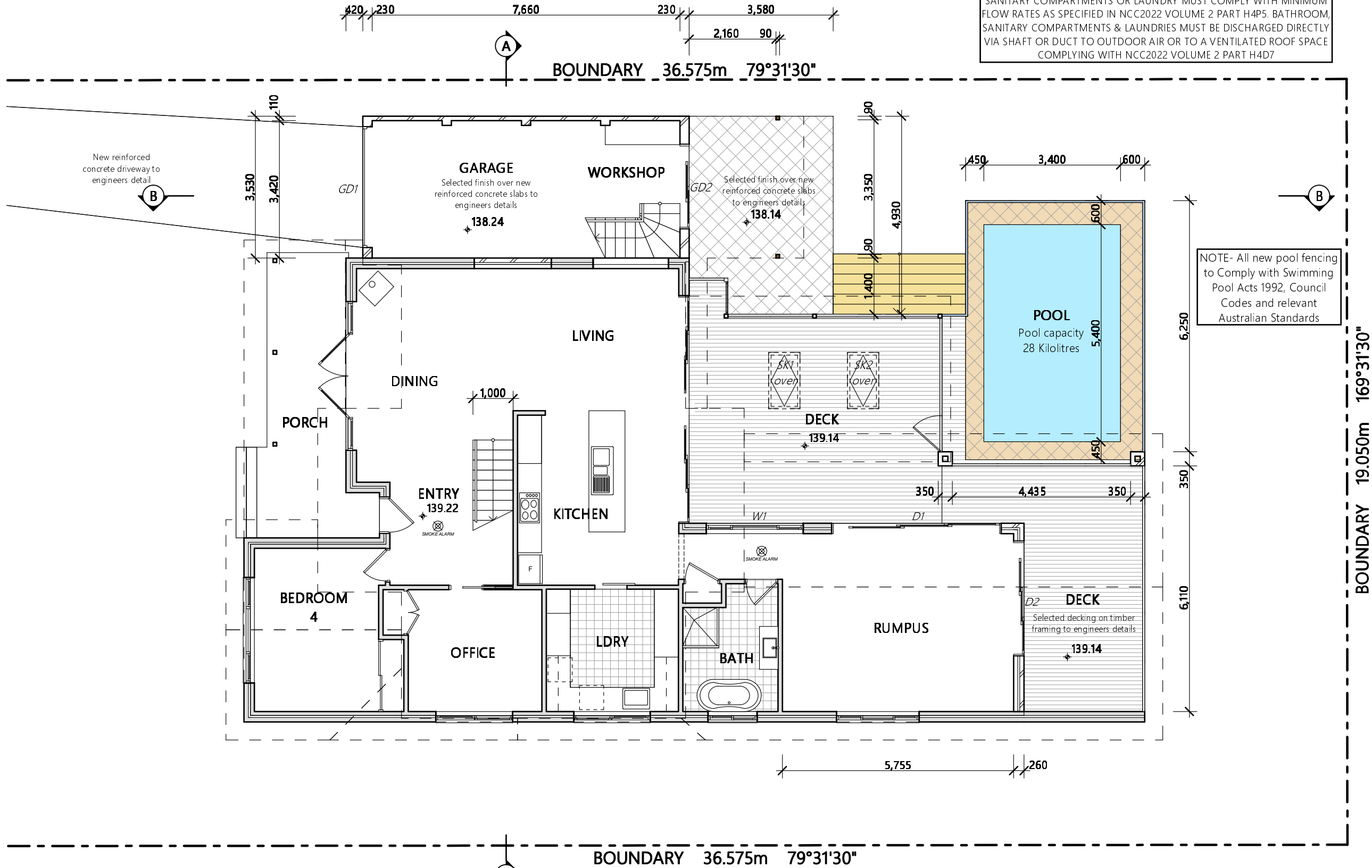
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PH. 0410 410 064 EMAIL jule@jahdesigns.com.au

Drawing Title:
PROPOSED GROUND FLOOR

Scale: 1:100 @ A3	Date: JUNE 2023
Status: ModDA submission	Checked By: JAH
Project No: 2120	Drawing No.: ModDA03
Plot Date:	27/06/2023



1

PROPOSED GROUND FLOOR PLAN 1:100

WINDOW/SKYLIGHT SCHEDULE

W 2	2600w x 900h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 3	2200w x 750h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 13	1800w x 600h	Selected Aluminium Framed Sliding Window
W 14	1800w x 600h	Selected Aluminium Framed Sliding Window
SK1	780w x 1400h	Selected Aluminium Framed Fixed Skylight
SK2	780w x 1400h	Selected Aluminium Framed Fixed Skylight

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BELROSE NSW 2085

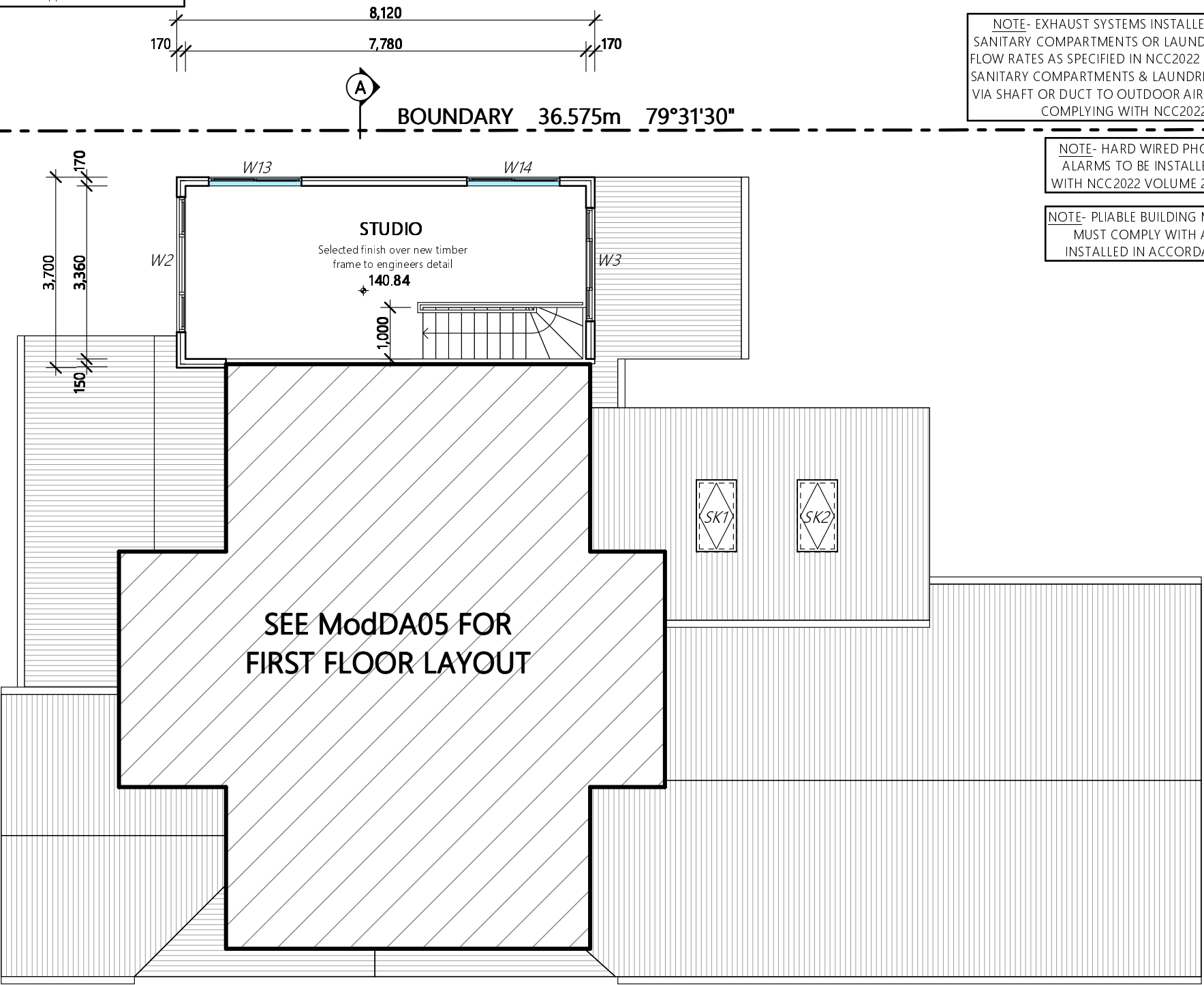
JAH
DESIGN SERVICES

ABN 22 630 690 834
BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2086
P.H. 0410 410 064 EMAIL jule@jahdesigns.com.au

Drawing Title:

PROPOSED STUDIO LEVEL

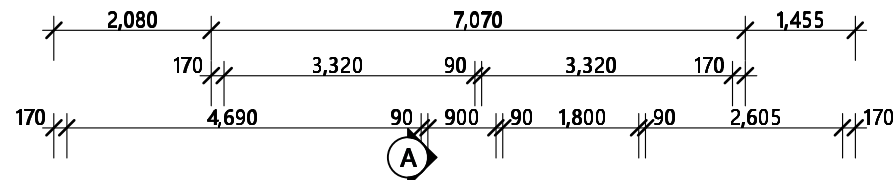
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Status: ModDA submission	Checked By: JAH
Project No: 2120	Drawing No.: ModDA04
Plot Date:	27/06/2023



1

PROPOSED STUDIO FLOOR PLAN

1:100



WINDOW/SKYLIGHT SCHEDULE

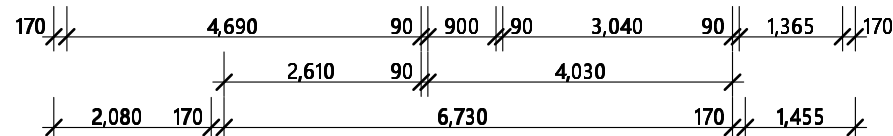
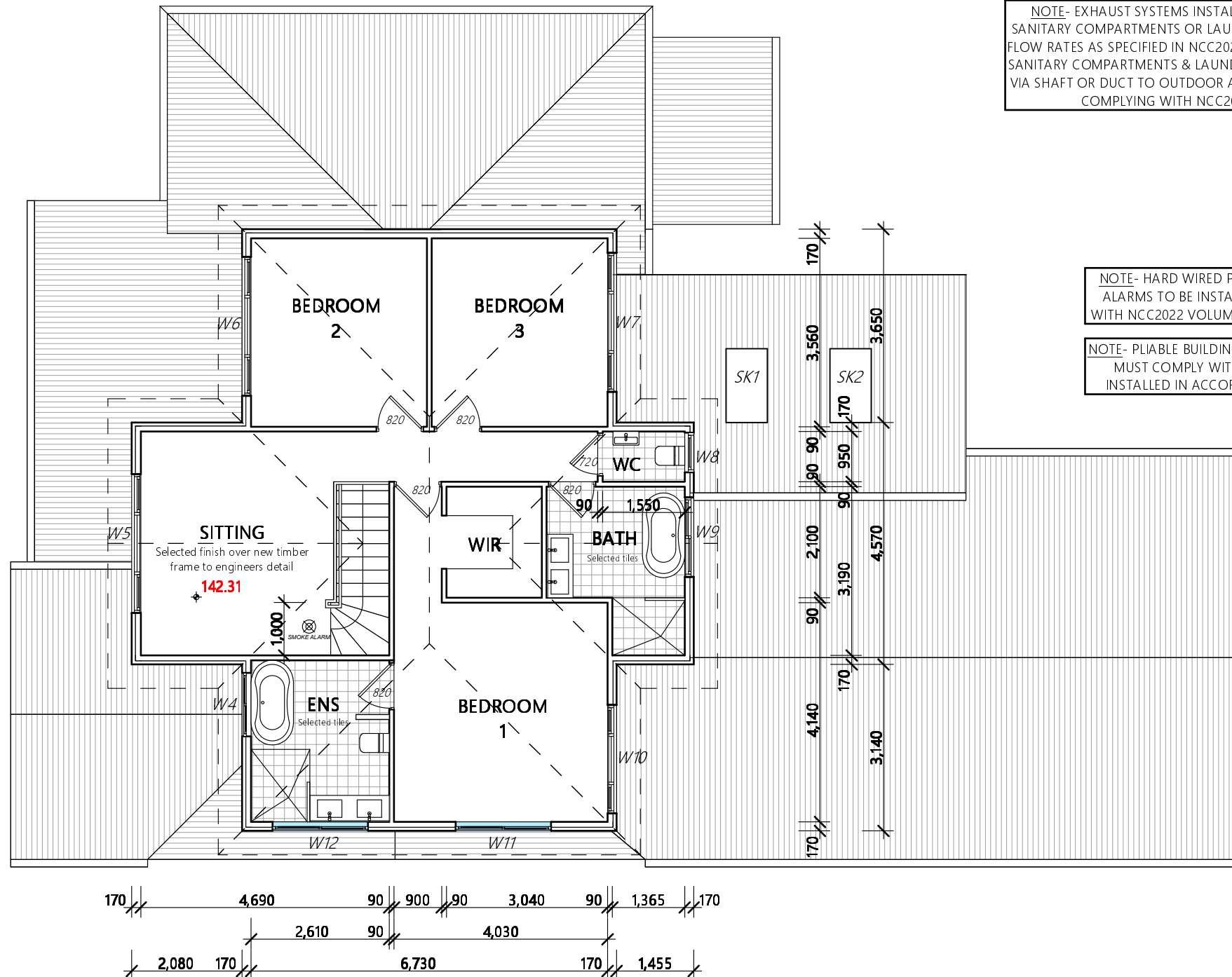
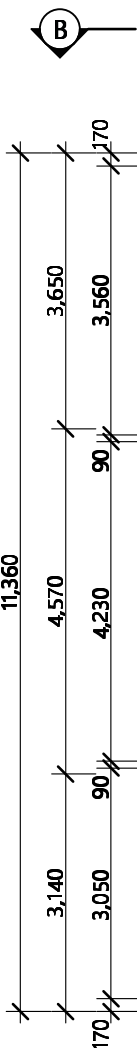
W 4	1200w x 600h	Selected Aluminium Framed Sliding Window with Frosted Glass
W 5	2600w x 1200h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 6	2600w x 1200h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 7	2600w x 1200h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 8	750w x 900h	Selected Aluminium Framed Double Hung Window with Frosted Glass
W 9	1500w x 900h	Selected Aluminium Framed Sliding Window with Frosted Glass
W 10	2050w x 1200h	Selected Aluminium Framed Sliding/Fixed/Sliding Window
W 11	1800w x 600h	Selected Aluminium Framed Sliding Window
W 12	1800w x 400h	Selected Aluminium Framed Sliding Window

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NOTE- HARD WIRED PHOTOELECTRIC SMOKE ALARMS TO BE INSTALLED IN ACCORDANCE WITH NCC2022 VOLUME 2 PART H3D6 & AS3786

NOTE- PLIABLE BUILDING MEMBRANE INSTALLED MUST COMPLY WITH AS/NZS4200.1 AND INSTALLED IN ACCORDANCE WITH AS4200.



1

PROPOSED FIRST FLOOR PLAN

1:100

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Client

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PROPOSED ALTERATIONS + ADDITIONS

15 WINGARA GROVE

LOT 41 , DP 232584

BELROSE NSW 2085



ABN 22 630 690 834
BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2086
PH. 0410 410 064 EMAIL jule@jahdesigns.com.au

Drawing Title:

PROPOSED FIRST FLOOR

Scale: 1:100 @ A3

Date: JUNE 2023

Status: ModDA submission

Checked By: JAH

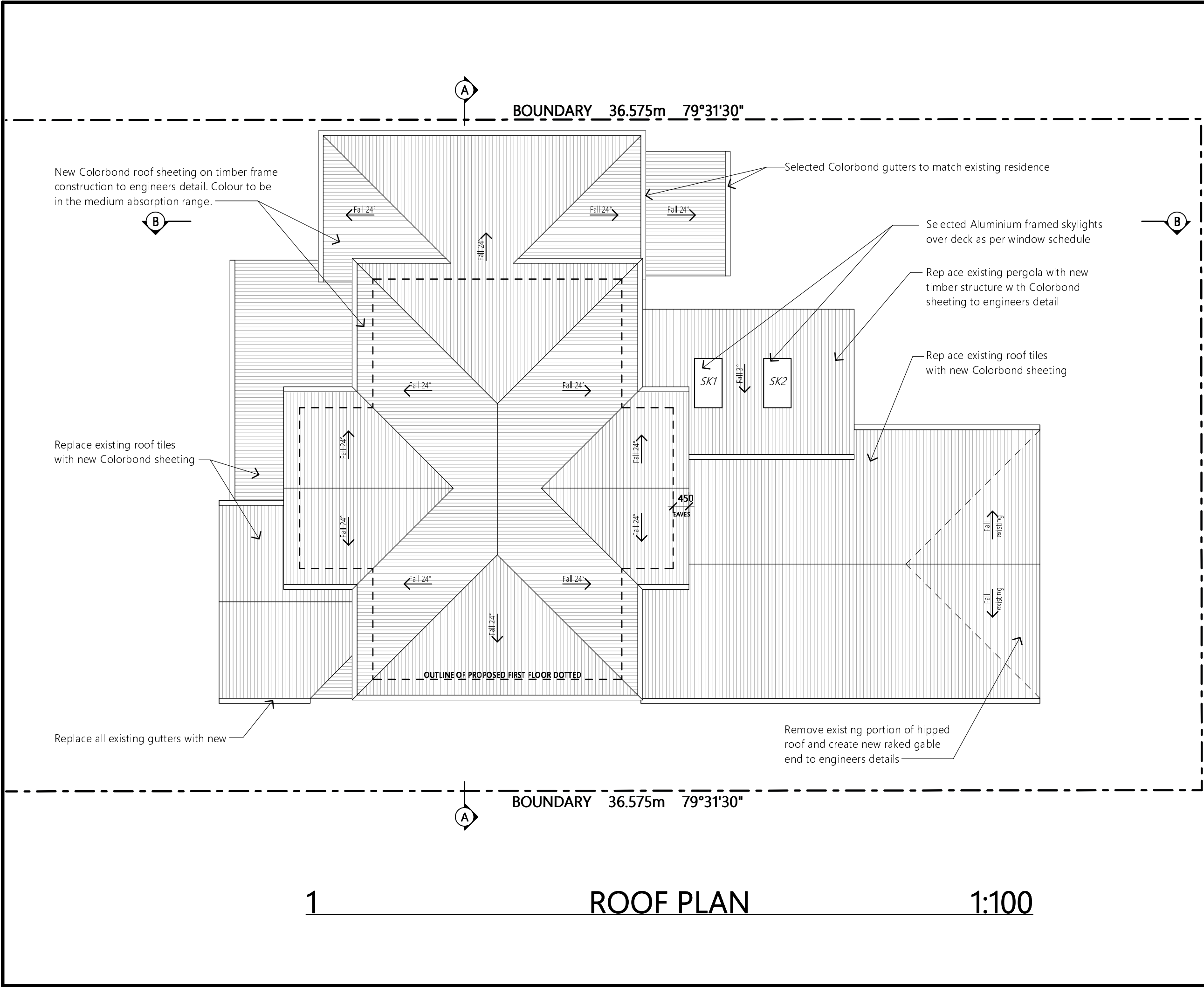
Project No:

Drawing No.:

2120

ModDA05

Plot Date: 27/06/2023



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Drawing Title:	
ROOF PLAN	
Scale: 1:100 @ A3	Date: JUNE 2023
Status: ModDA submission	Checked By: JAH
Project No: 2120	Drawing No.: ModDA06
Plot Date:	27/06/2023

PROPOSED RIDGE LEVEL
RL 146.46

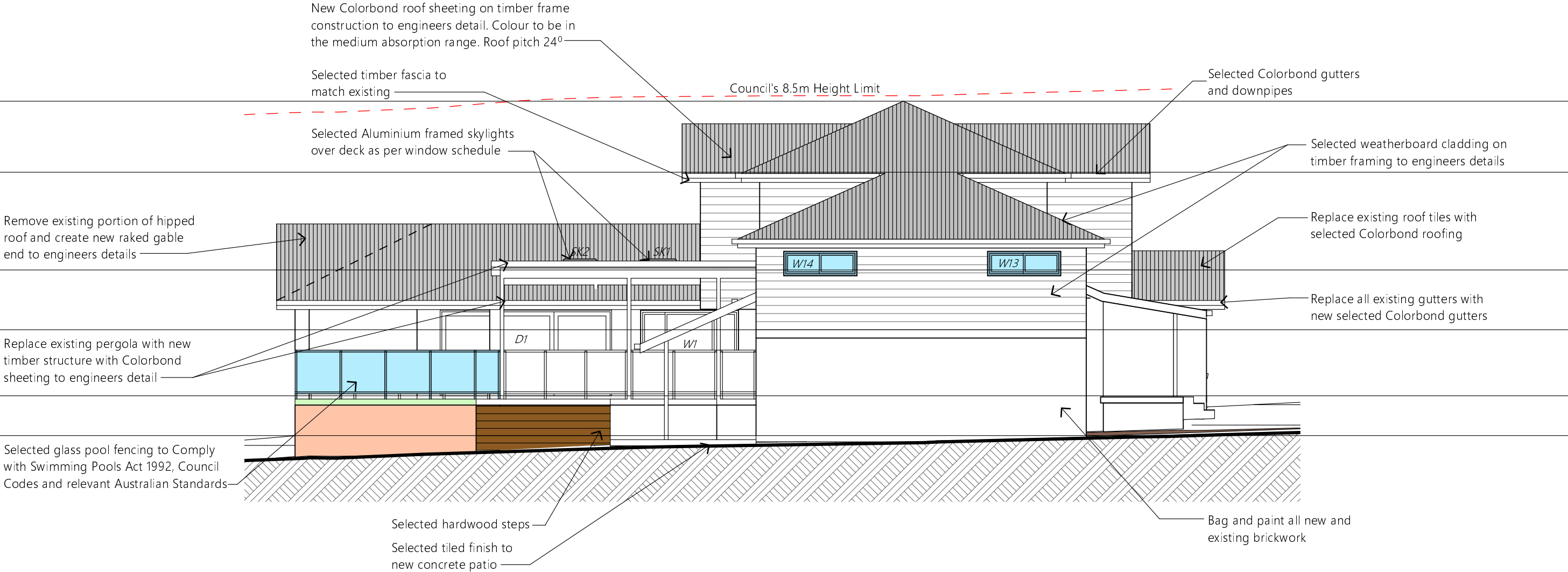
PROPOSED CEILING LEVEL
RL 144.71

PROPOSED FIRST FLOOR LEVEL
RL 142.31

PROPOSED STUDIO LEVEL
RL 140.84

EXISTING GROUND FLOOR LEVEL
RL 139.22

PROPOSED GARAGE FLOOR LEVEL
RL 138.24



1 NORTH ELEVATION 1:100

NOTE- ALL WINDOWS, DOORS AND SKYLIGHTS TO COMPLY WITH THE APPROVED BASIX CERTIFICATE

PROPOSED RIDGE LEVEL
RL 146.46

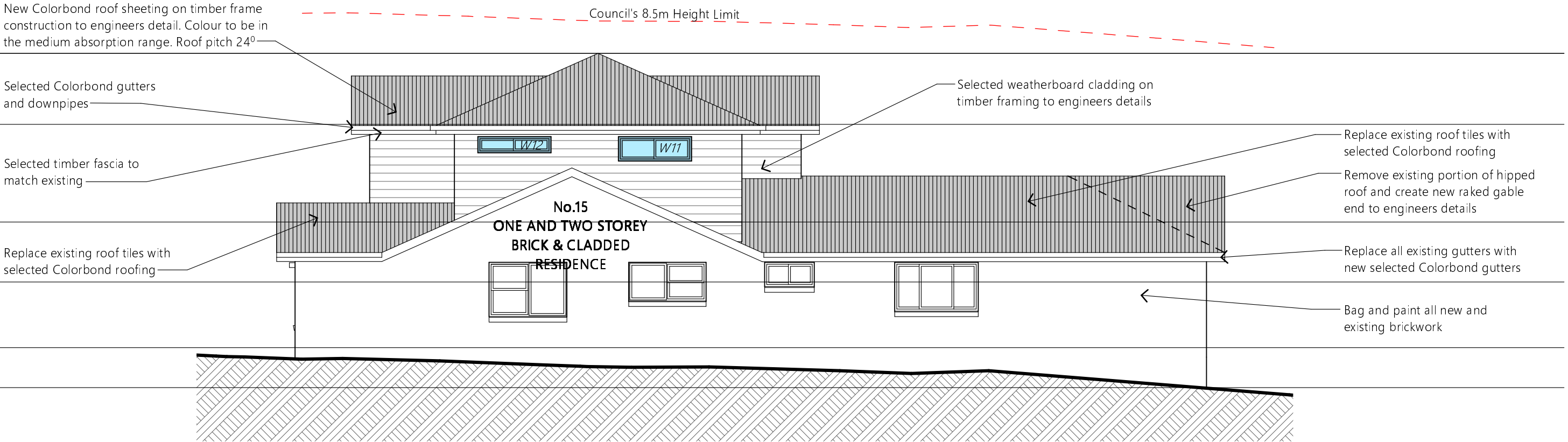
PROPOSED CEILING LEVEL
RL 144.71

PROPOSED FIRST FLOOR LEVEL
RL 142.31

PROPOSED STUDIO LEVEL
RL 140.84

EXISTING GROUND FLOOR LEVEL
RL 139.22

PROPOSED GARAGE FLOOR LEVEL
RL 138.24



2 SOUTH ELEVATION 1:100

NOTES

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Do not scale from drawings. Use figured dimensions only and report any discrepancies to the designer prior to commencement.

All figured dimensions to be checked on site.

BASIX INFORMATION REQUIREMENTS:

LIGHTING:
A minimum of 40% of all new or altered light fixtures are to be fluorescent, compact fluorescent or L.E.D. lamps

WATER COMMITMENTS:
Fixtures: All new Shower heads, toilets and taps shall have a minimum 3 Star rating
Swimming pool: Maximum size pool shall be 28 Kilolitres. It must have a pool pump timer, pool cover and no heating.

INSULATION REQUIREMENTS:
External walls: The external walls shall be brick veneer/weatherboard and shall meet R1.70 (including construction)
Floors: The suspended floor above the garage and over the existing dwelling shall require no additional insulation.
Ceilings: The new flat ceiling, pitched roof shall meet minimum R1.45 (up).
The new raked ceiling, pitched/skillion roof ceilings shall meet minimum R1.74 (up).
Roof: The roof shall have a foil backed blanket (55mm) and be medium colour (solar absorption 0.475>0.70)

WINDOWS & GLAZED DOORS:
All window & door numbers shown on the window/door schedule correspond to matching window/door numbers shown in the Basix certificate.
Sizes: The total area of glazing for each window/door shall be no greater than that shown on the Basix certificate
Shading devices: Shading devices shall be installed in accordance with the Basix certificate
Frames and glazing: Frame and glazing types shall meet the requirements of the Basix certificate

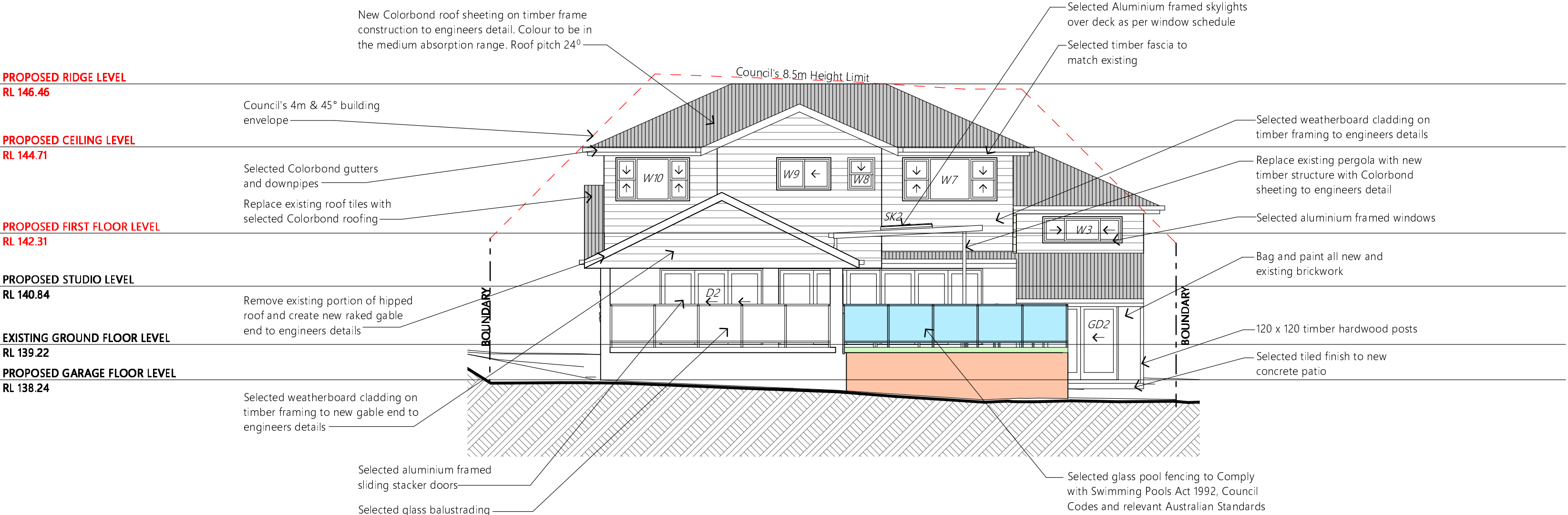
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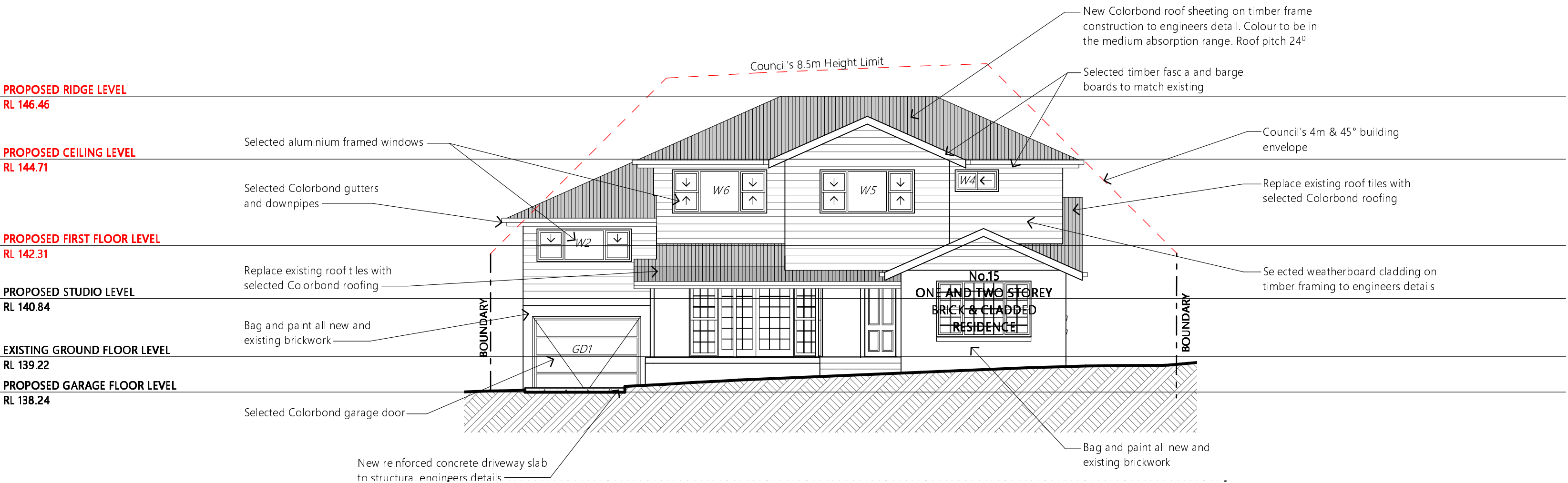
Client
MR. & MRS. BALDWIN
Project Name
PROPOSED ALTERATIONS + ADDITIONS
15 WINGARA GROVE
LOT 41 , DP 232584
BELROSE NSW 2085



Drawing Title: NORTH & SOUTH ELEVATIONS	
Scale: 1:100 @ A2	Date: JUNE 2023
Status: ModDA submission	Checked By: JAH
Project No: 2120	Drawing No.: ModDA07
Plot Date:	27/06/2023



NOTE- ALL WINDOWS, DOORS AND SKYLIGHTS TO COMPLY WITH THE APPROVED BASIX CERTIFICATE



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Client

MR. & MRS. BALDWIN

Project Name

PROPOSED ALTERATIONS + ADDITIONS

15 WINGARA GROVE

LOT 41 , DP 232584

BELROSE NSW 2085



ABN 22 630 690 834
BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2085
PH. 0410 410 064 EMAIL: julie@jahdesigns.com.au

Drawing Title:

EAST & WEST ELEVATIONS

Scale: 1:100 @ A2

Date: JUNE 2023

Status: ModDA submission

Checked By: JAH

Project No:

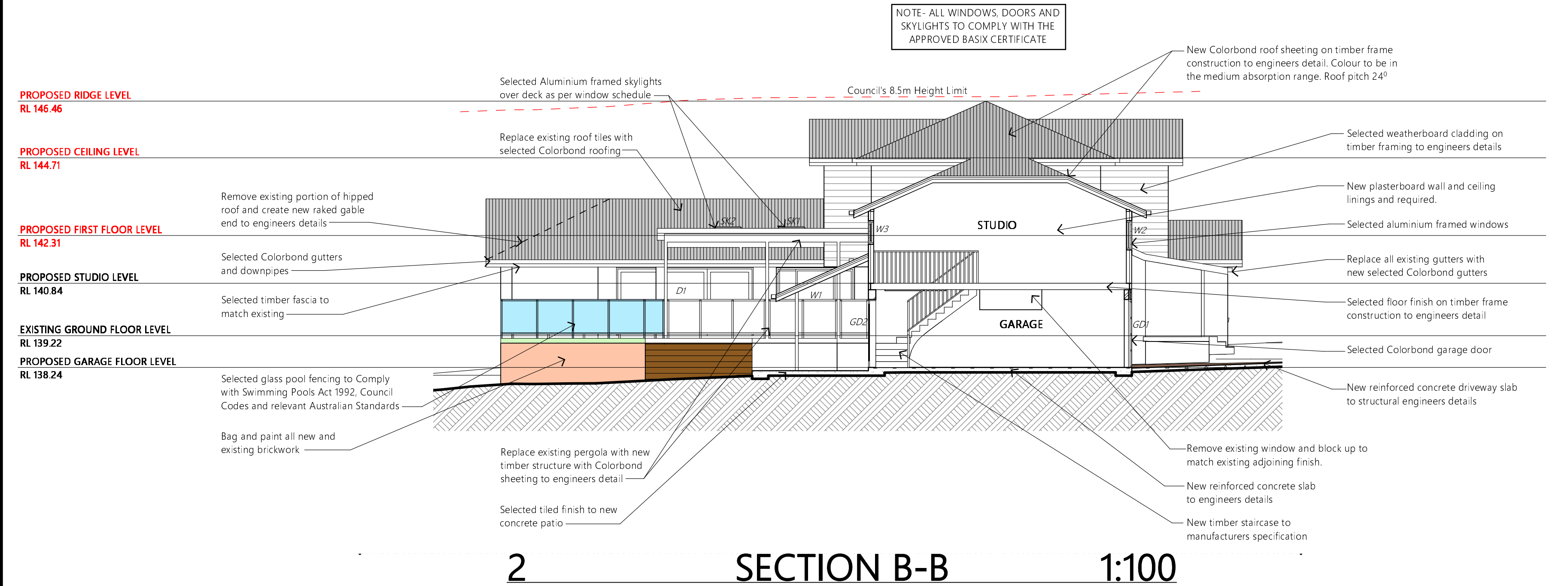
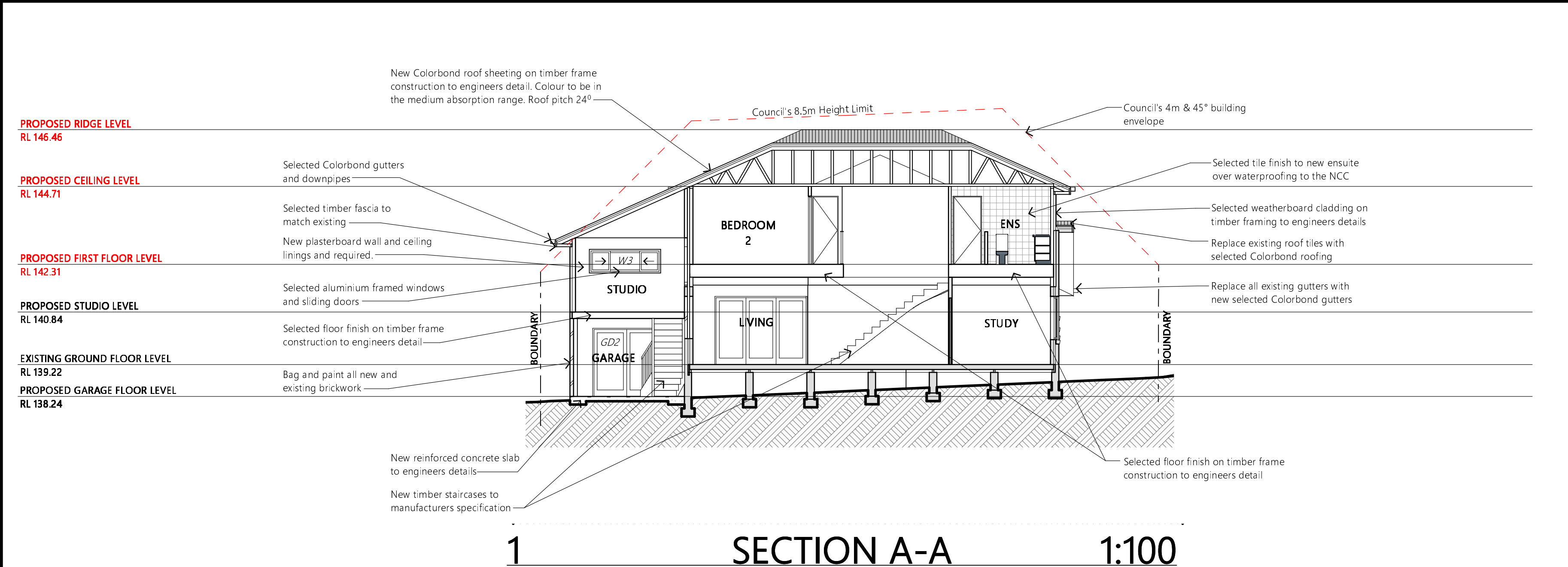
2120

Drawing No:

ModDA08

Plot Date:

27/06/2023



NOTES

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WATER COMMITMENTS:

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Client

MR. & MRS. BALDWIN

Project Name

PROPOSED ALTERATIONS + ADDITIONS

15 WINGARA GROVE

LOT 41 , DP 232584

BELROSE NSW 2085

JAH
DESIGN SERVICES

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BUILDING 6, 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST NSW 2085
PH. 0410 410 064 EMAIL: julie@jahdesigns.com.au

Drawing Title:

SECTIONS

Scale:	1:100 @ A2	Date:	JUNE 2023
Status:	ModDA submission	Checked By:	JAH
Project No:	2120	Drawing No.:	ModDA09
Plot Date:	27/06/2023		



APPENDIX B

FLOOD INFORMATION

FLOOD INFORMATION REPORT - COMPREHENSIVE

Property: 15 Wingara Grove BELROSE NSW 2085

Lot DP: Lot 41 DP 232584

Issue Date: 17/10/2022

Flood Study Reference: Frenchs Creek Flood Study 2010, DHI

Flood Information for lot ¹:

Flood Risk Precinct

Medium Flood Risk Precinct – See Map A

Flood Planning Area

The Flood Planning Level (FPL) can be taken as 0.3m above natural ground level, within the Medium Flood Risk Precinct shown in Map A.

1% AEP Flood

1% AEP Maximum Water Level ^{2, 3}: 137.8 m AHD - See Flood Map B

1% AEP Hydraulic Categorisation: Not available

Flooding with Climate Change: Not available

Probable Maximum Flood (PMF)

PMF Maximum Water Level ⁴: 138.9 m AHD - See Flood Map C

Flood Life Hazard Category

Not available

Indicative Ground Surface Spot Heights

See Map D

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:

- The Frenchs Creek Flood Study is one of Council's oldest current flood studies, and the flood information available from it is not as comprehensive as for the newer studies.
- Council has recently commenced undertaking the Middle Harbour Flood Study, the results from which will supersede the flood information in this certificate some time during 2023. If a DA is to be submitted after March 2023, Council should be consulted to check whether the flood information in this report has been updated.
- Currently, this property is tagged as being largely affected by the Medium Flood Risk Precinct, but hardly at all by the 1% AEP flood event. However it is likely that there is some very shallow overland sheet flow in the 1% AEP flood event. Note that Council's mapping and tagging filters out depths in the 1% AEP flood and PMF events if they are less than 0.15m.

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.

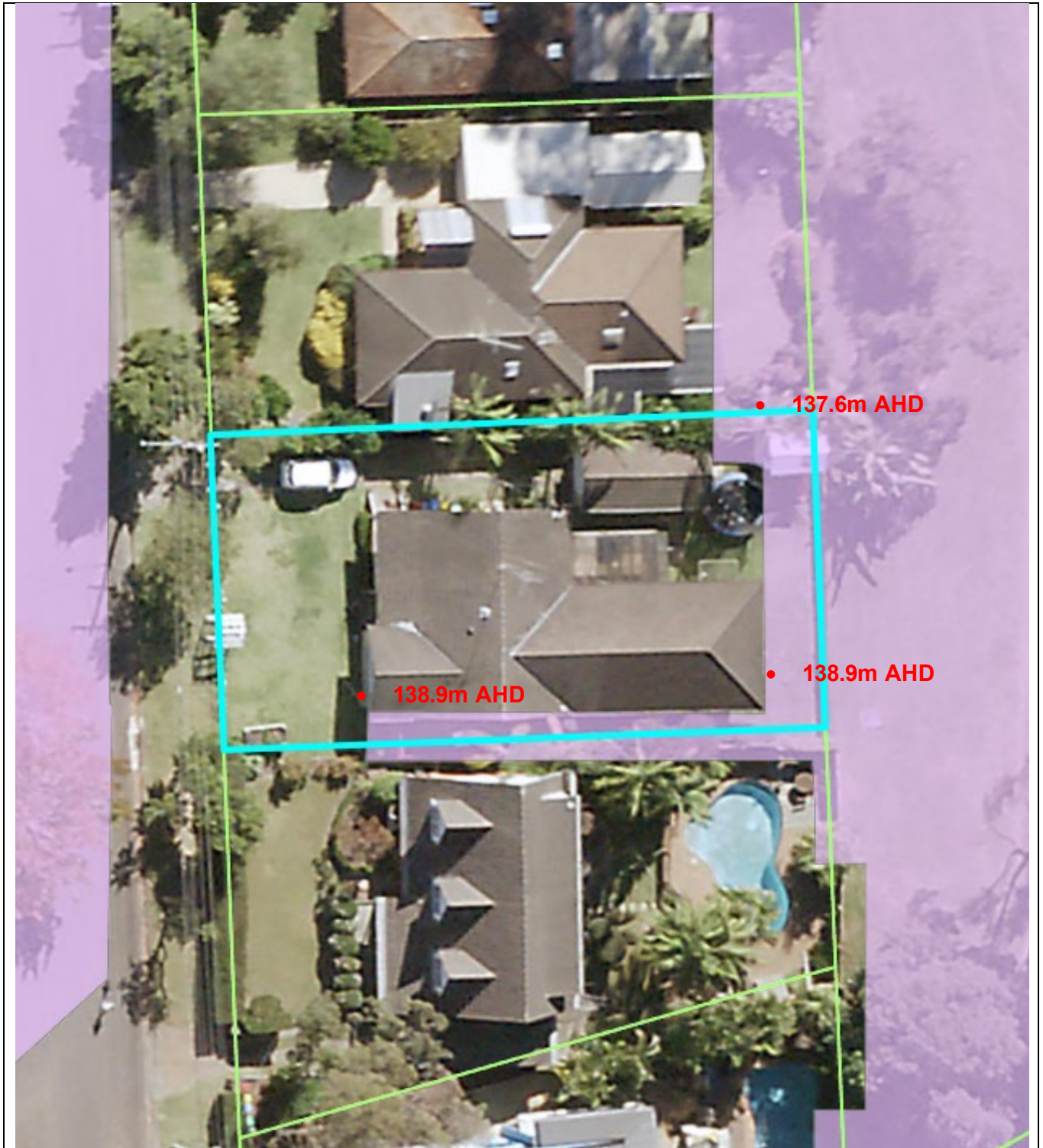
FLOOD MAP B: FLOODING - 1% AEP EXTENT



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: Frenchs Creek Flood Study 2010, DHI) 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: Frenchs Creek Flood Study 2010, DHI) and aerial photography (Source: NearMap 2014) are indicative only.

MAP D: INDICATIVE GROUND SURFACE SPOT HEIGHTS



Notes:

- The surface spot heights shown on this map were derived from Airborne Laser Survey and are indicative only.
- Accuracy is generally within $\pm 0.2\text{m}$ vertically and $\pm 0.15\text{m}$ horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

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 .