

FLOOD RISK REPORT

FOR PROPOSED SECONDARY DWELLING AT



150 QUEENSLIFF ROAD QUEENSLIFF

JOB NO: 2023025

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1 – Introduction

Approved Consulting Engineers has completed a review of the proposed development at 150 Queenscliff Road, Queenscliff and determined that the site is located within the Low and Medium Flood Risk Precincts as predicted by the '*Manly Lagoon Flood Study, 2013 (BMT WBM)*'. The proposed architectural plans prepared by 'Scope Architects' detail alterations and additions to the existing dwelling and a new secondary dwelling located at the Aitken Avenue frontage below.

This report has been prepared in accordance with part E11 of '*Northern Beaches Council's Warringah Development Control Plan*'. The flood information summary for the site is provided below.

1.0 - Flood Information Summary

Background Information	
Council	Northern Beaches Council
Flood Information Request Date	17 th February, 2023
Flood Study Reference	Manly Lagoon Flood Study (2013 - BMT WBM)
Flood Behaviour	Mainstream Flooding
1% AEP Flood Information	
Flood Level	3.13m AHD
Peak Depth On-site	3.22 m/s
PMF Flood Information	
Flood Level	5.64 m AHD
PMF Velocity	0.23 m/s

2 - Flood Risk Report

Flood Planning Summary	
Hazard Risk Precinct Flood Life Hazard Category	Low and Medium Risk H4
Flood Emergency Response Strategy (Onsite Response)	Shelter In Place <i>(refer section 3 for recommendation)</i>
Flood Planning Level (FPL)	3.63 m AHD
Proposed Floor Level	3.15m AHD (Garage Level) 6.13m AHD (Secondary Dwelling)
Flood Storage	No Reduction <i>(refer section 2.1)</i>
Flood Levels	No anticipated increase
Recommendations For Structural Design	<i>Refer section 2.2</i>
Recommended Construction Materials	<i>Refer section 2.3</i>
Ground Floor Requirements	NA
Stormwater Management	<i>Refer section 2.5</i>
Waterproofing	Below RL 3.63 m AHD <i>(refer section 2.6)</i>
Flood Warning	No signage recommended
Hazardous Materials Storage	Above 3.63 m AHD <i>(refer section 2.7)</i>

2.1 - Flood storage

- The proposed main dwelling additions and carpark situated on the Queenscliff Road frontage are located above RL 15.60m AHD which is considered to be above the 'maximum 1% AEP flood level' as defined in council's flood information report (RL3.13m AHD maximum) and therefore will not adversely impact flood storage.
- The proposed garage and secondary dwelling situated on the Aitken Avenue frontage (located at the southern boundary of the site) encroaches onto the 1% AEP flood extent. The proposed garage Floor Level is at RL 3.15m AHD. The existing garage floor level is at RL 2.54m AHD and will create an additional blockage of. To ensure no net reduction in flood storage flood storage calculations have been undertaken (refer Appendix A) and are summarised below:
 - Existing Blockage = 9.45m^3 (existing garage)
 - Proposed Blockage = 8.54m^3 (proposed garage and driveway)
 - Net Flood Storage Increase = 0.91m^3
- The proposed boundary fencing located shall be designed so as not to impede the flow of floodwaters. At least 50% of the fence must be of an open design.
- If the above recommendations are incorporated into the proposed development, this will ensure no net reduction in flood storage across the site, in accordance with the requirements of the DCP.

2.2 – Structural Requirements

- Perimeter fencing must be designed to be open and to withstand flood forces up to the FPL (including debris impact).
- The proposed garage and secondary dwelling must be designed to withstand flood forces up to the FPL (including debris impact).

- The proposed works are to be certified by a structural engineer as adequate to withstand forces from flood waters and debris impact up to the FPL.

2.3 - Recommended Construction Materials

- The proposed development must be constructed as a flood compatible building, and wet flood proofed below the FPL.
- Below the FPL standard lining materials, such as timber and plasterboard may be used in accordance with section 3.10.3 of the NCC and the ABCB handbook 'Construction of Buildings in Flood Hazard Areas.'
- Standard Building Materials (concrete, steel, timber and/or brickwork) are to be used above and below the FPL.

2.4 – Floor Level requirements

- The proposed floor level of the garage is at RL 3.15m AHD and is above the 1% AEP flood level (RL3.13m AHD).
- The proposed floor level of the secondary dwelling is at RL 6.13m and is above the FPL (RL 3.63m AHD) and PMF (RL 5.64m AHD)

2.5 - Stormwater Management

- To be incorporated as per council requirements and AS3500.3.
- The site is located at the bottom of the catchment and any lag in flows from the site may coincide with the peak runoff from the catchment. Therefore, Onsite Detention (OSD) is not recommended (subject to council review and approval).

- Stormwater runoff and overland flows from the kerb and gutter in Queenscliff Road above the site may top the kerb/layback in heavy rainfall events. We recommend the site drainage (including overflow routes) are designed to re-direct flows around the building to Aitken Avenue below. All design is to be in accordance with AS3500.3 and council requirements. The driveway and crossover at the Queenscliff Road frontage should be designed and constructed in accordance with AS2890.1 and council requirements.

2.6 - Waterproofing methods

- All electrical equipment is to be fitted with circuit breakers.
- All conduits below the FPL are to be free draining, with 1% (minimum) fall.
- Switchboard and main circuit unit to be fitted above RL 3.63m AHD (FPL)
- Other valuable materials or possessions are to be stored above RL 3.63m AHD (FPL)
- Owner and occupant are to acknowledge that a reasonable extent of damage to fittings below the RL 3.63m AHD (FPL) is to be expected during the flood events.

2.7 - Hazardous Material Storage

- The owner and occupant are to acknowledge that all hazardous materials are to be stored at or above 3.63m AHD.

3 – Emergency Response Plan

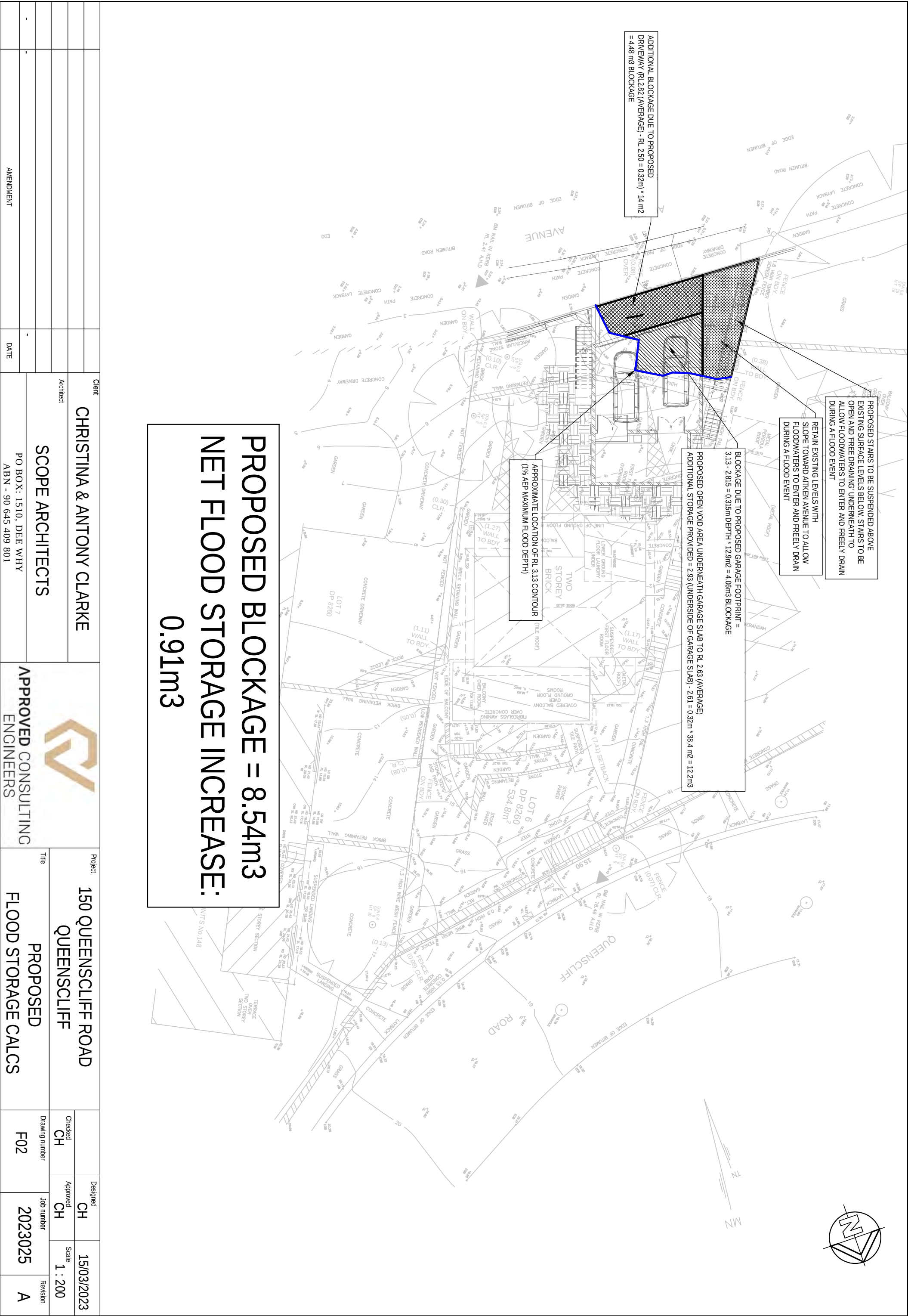
- In a flood event, shelter in place is recommended. Occupants are to proceed to the secondary dwelling level (minimum) and await further direction from local authorities and the SES.
- This should be completed within the first 5 minutes of the rainfall event (heavy rainfall, inundation of the site or spilling of Manly creek [adjacent] into Aitken Avenue indicate a potential flood event).
- The refuge is to provide:
 - Clean water for all occupants
 - Portable radio (with spare batteries)
 - Torch (with spare batteries)
 - First aid kit
- The client is to refer to local flood warnings provided by the Manly Hydraulics Laboratory and the Northern Beaches Council for warnings and updates prior to and during flood events.
- A list of emergency contacts is to be provided that includes but not limited to; emergency services (000), the State Emergency Service (132 500), local Council, the local Police, ambulance and fire and rescues numbers and the Bureau of Meteorology.
- A copy of this Flood Risk Report and the *Flood Emergency Response Plan* is to be kept on the premises at all times. The owner/occupant is to be fully aware of these documents and requirements in a potential flooding event.

We have provided the above report in accordance with the flood information provided by council and have assessed the site and proposed development in accordance with the flood related DCP requirements. If further clarification is required, please contact *'Approved Consulting Engineers Pty Ltd.'*



Cameron Haack
Director BE (Civil) MIE Aust NER RPEQ (24684)
Approved Consulting Engineers P/L

APPENDIX A – FLOOD STORAGE CALCULATIONS



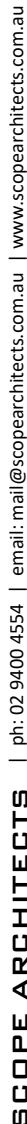
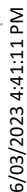
PROPOSED BLOCKAGE = 8.54m3

NET FLOOD STORAGE INCREASE:

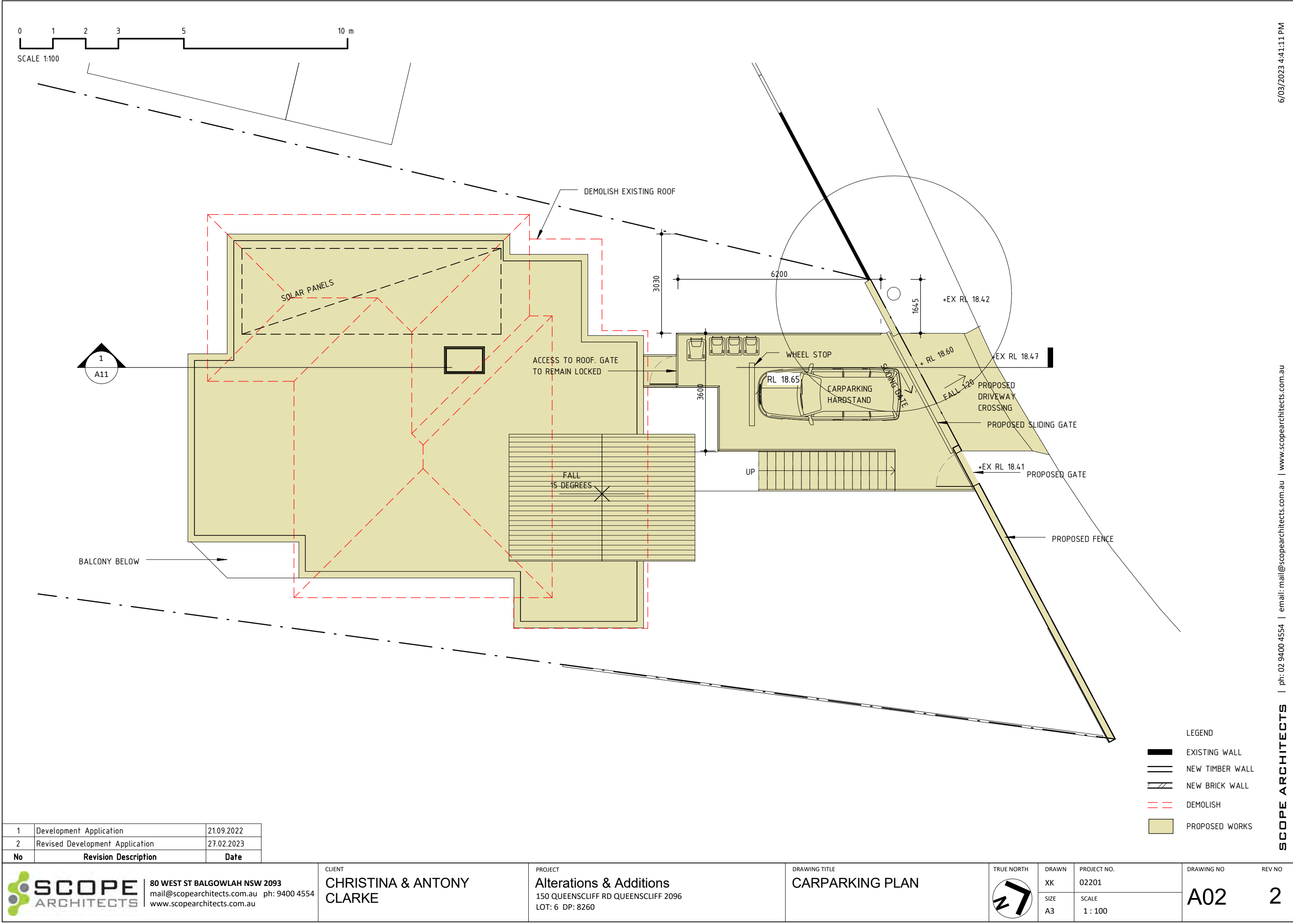
0.91m3

Client		Project		Designed	
CHRISTINA & ANTONY CLARKE		150 QUEENSCLIFF ROAD		CH	
Architect		QUEENSCLIFF		Checked	15/03/2023
				CH	
				Approved	
				CH	
				Scale	1 : 200
				Job number	
				Drawing number	
				F02	
				2023025	
				Revision	
				A	
AMENDMENT		DATE			

APPENDIX B – PROPOSED ARCHITECTURAL PLANS
BY SCOPE ARCHITECTS



DRAWING NO	REV NO
A01	2

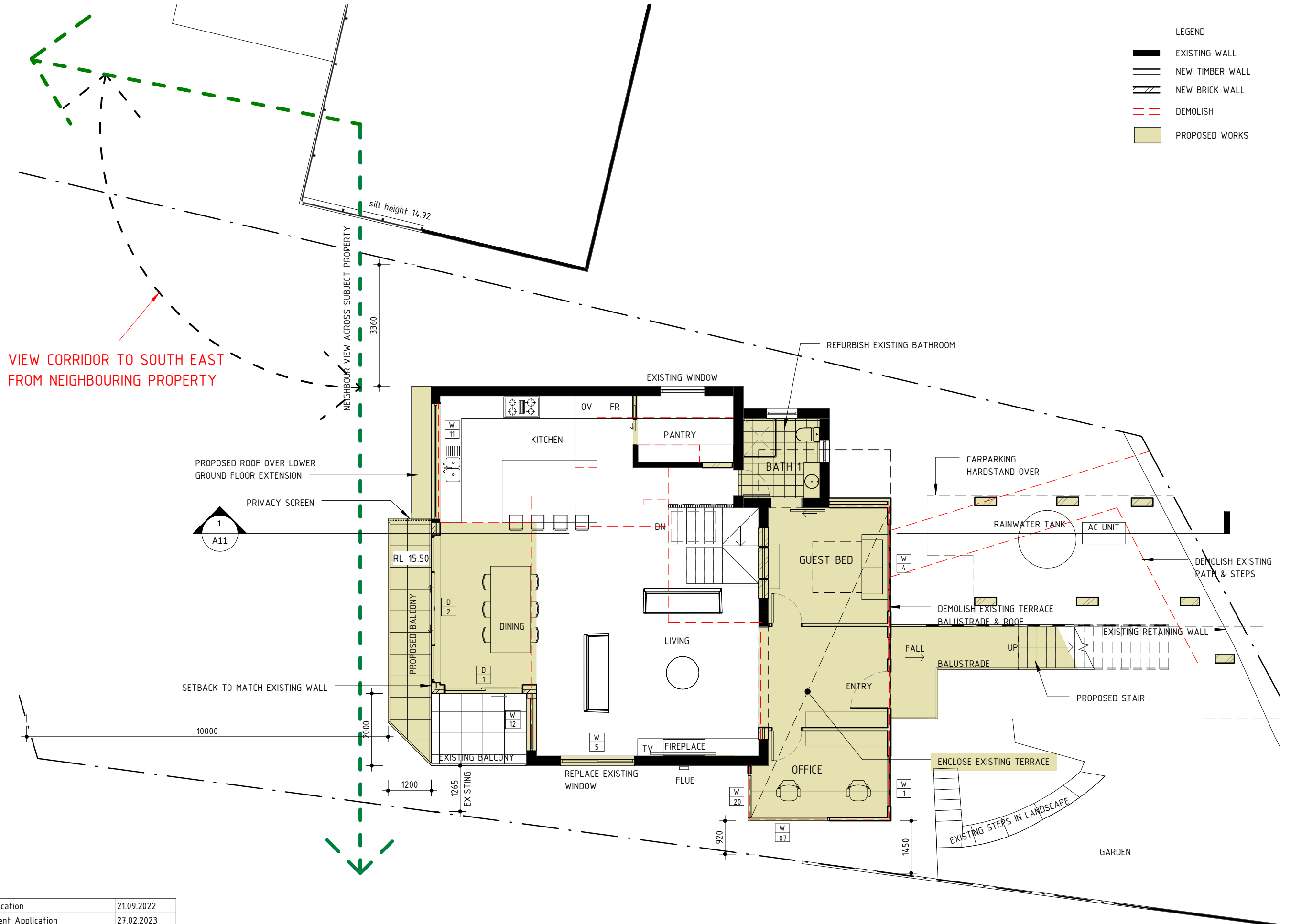


1	Development Application	21.09.2022
2	Revised Development Application	27.02.2023
No	Revision Description	Date

- LEGEND
- EXISTING WALL
 - NEW TIMBER WALL
 - NEW BRICK WALL
 - DEMOLISH
 - PROPOSED WORKS

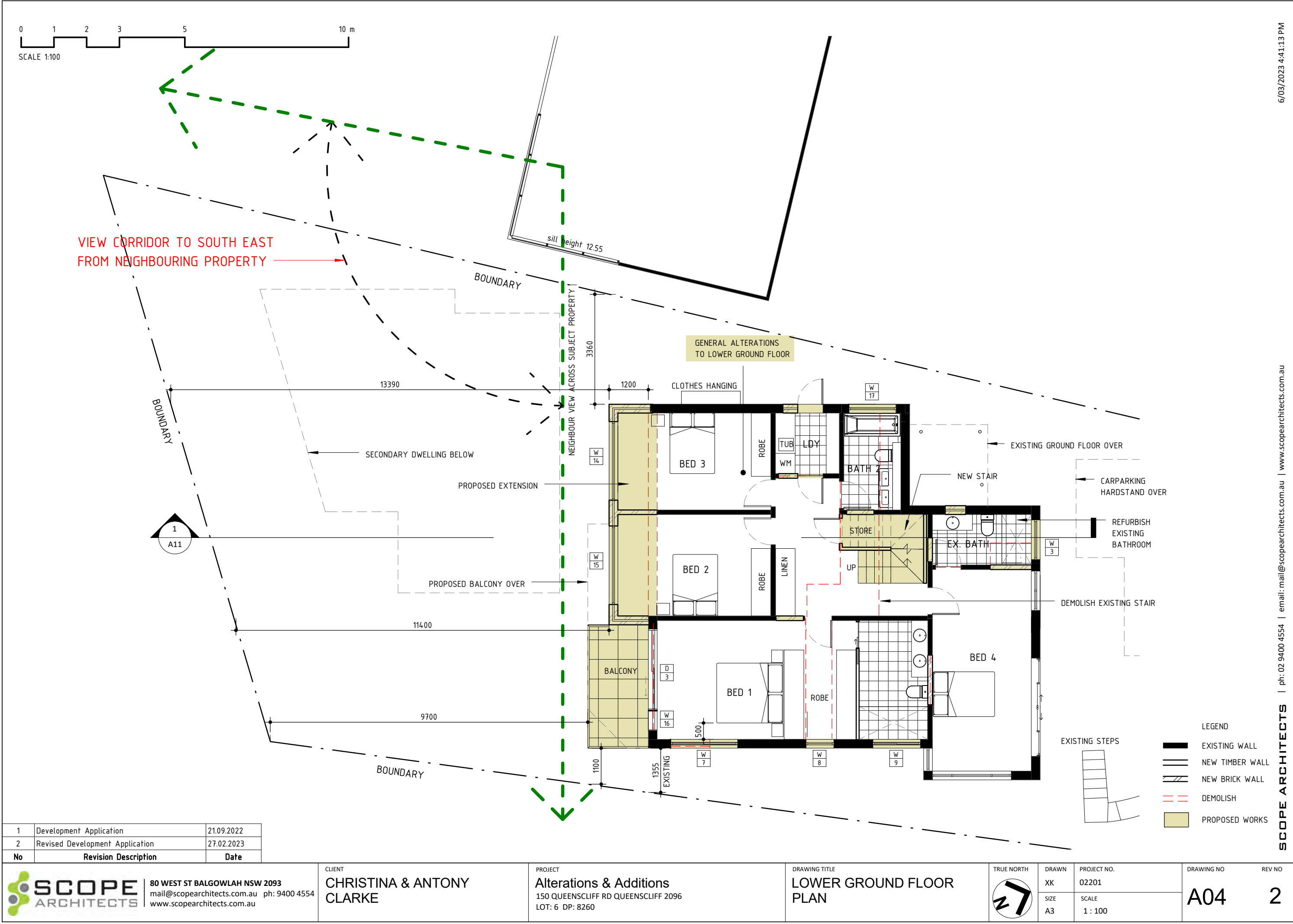
VIEW CORRIDOR TO SOUTH EAST
FROM NEIGHBOURING PROPERTY

- LEGEND
- EXISTING WALL
 - NEW TIMBER WALL
 - NEW BRICK WALL
 - DEMOLISH
 - PROPOSED WORKS



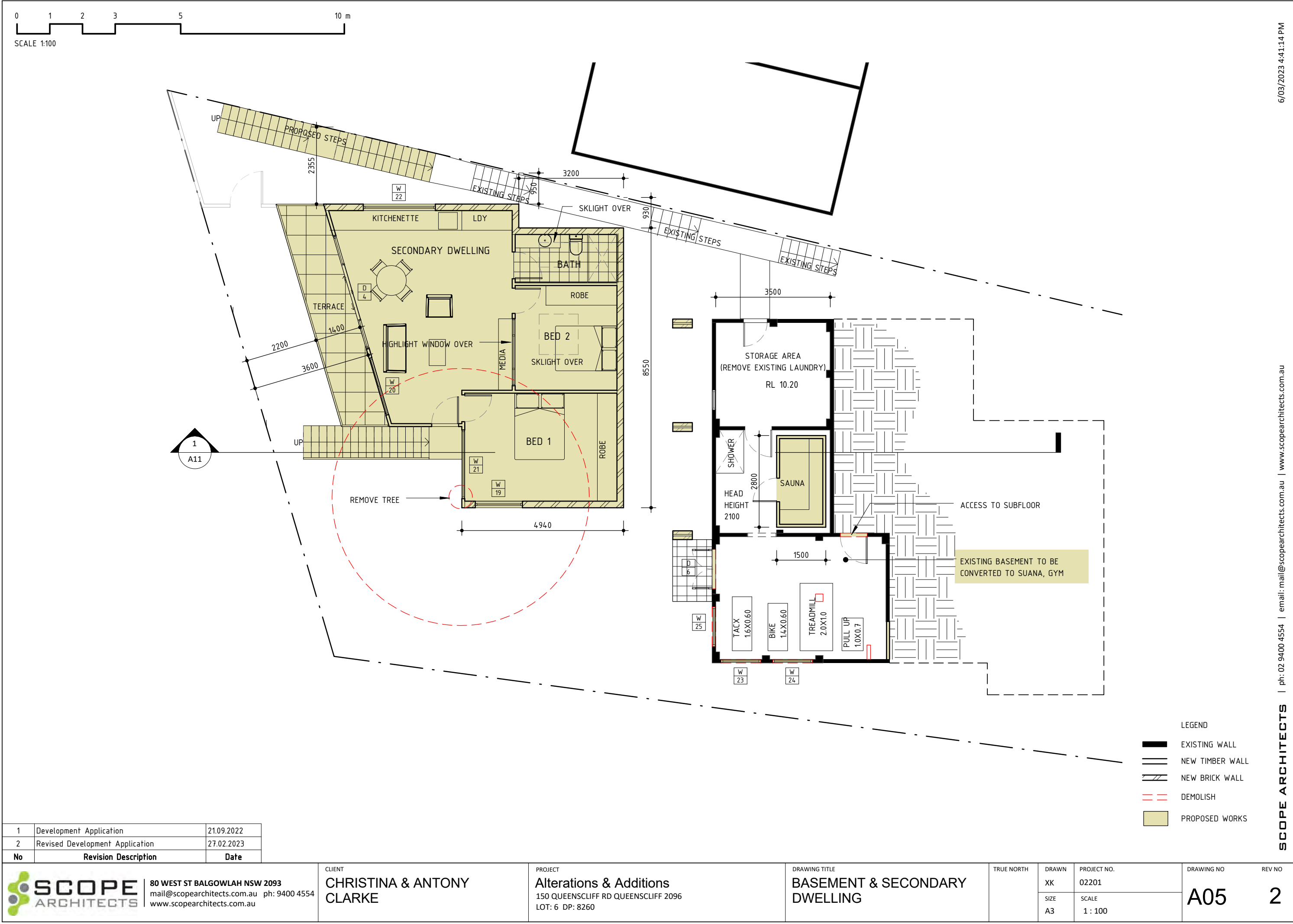
1	Development Application	21.09.2022
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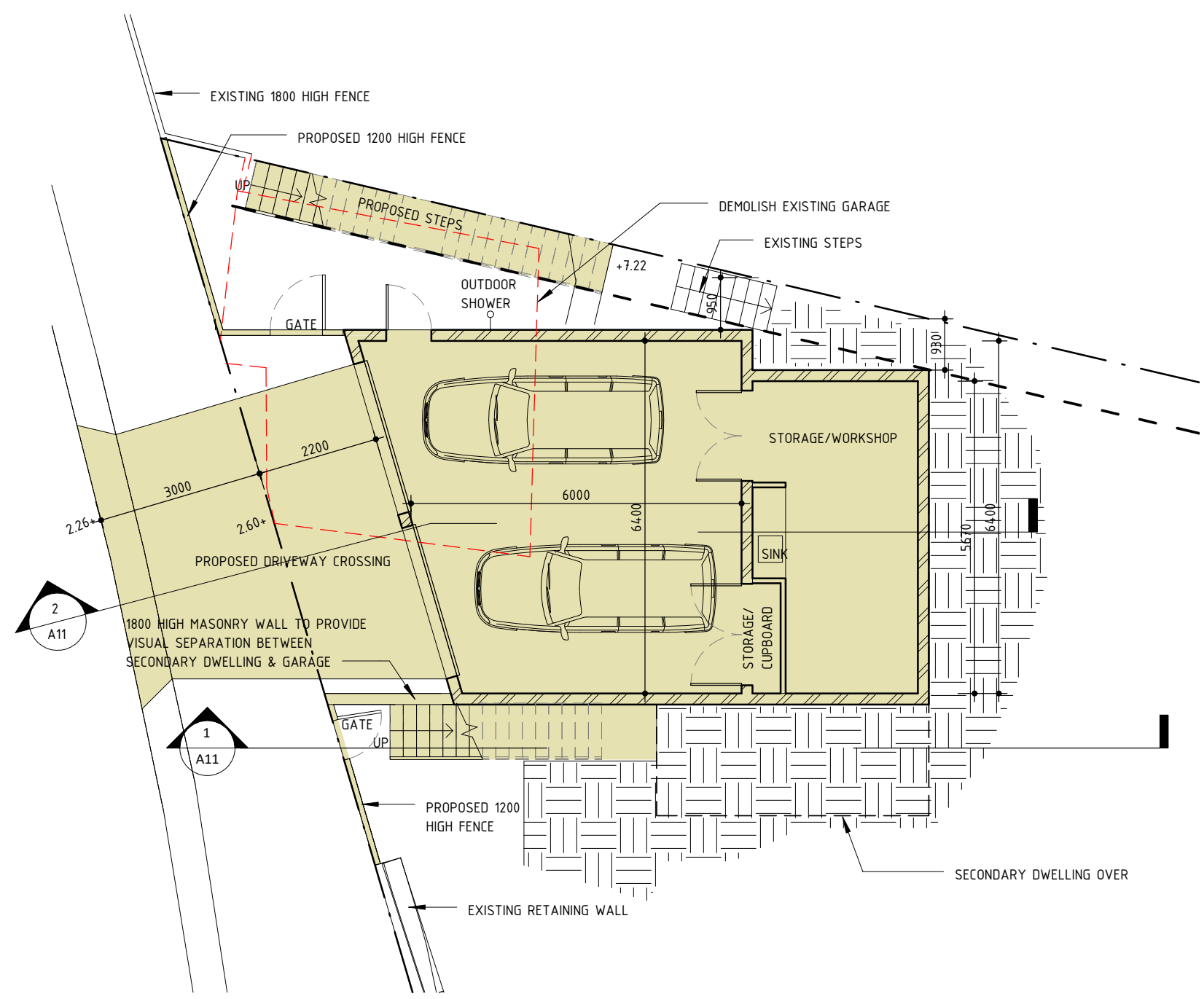
 SCOPE ARCHITECTS 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE GROUND FLOOR PLAN	TRUE NORTH 	DRAWN XK	PROJECT NO. 02201	DRAWING NO A03	REV NO 2
					SIZE A3	SCALE 1 : 100		



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 SCOPE ARCHITECTS 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE LOWER GROUND FLOOR PLAN	TRUE NORTH 	DRAWN XK	PROJECT NO. 02201	DRAWING NO A04	REV NO 2
					SIZE A3	SCALE 1 : 100		

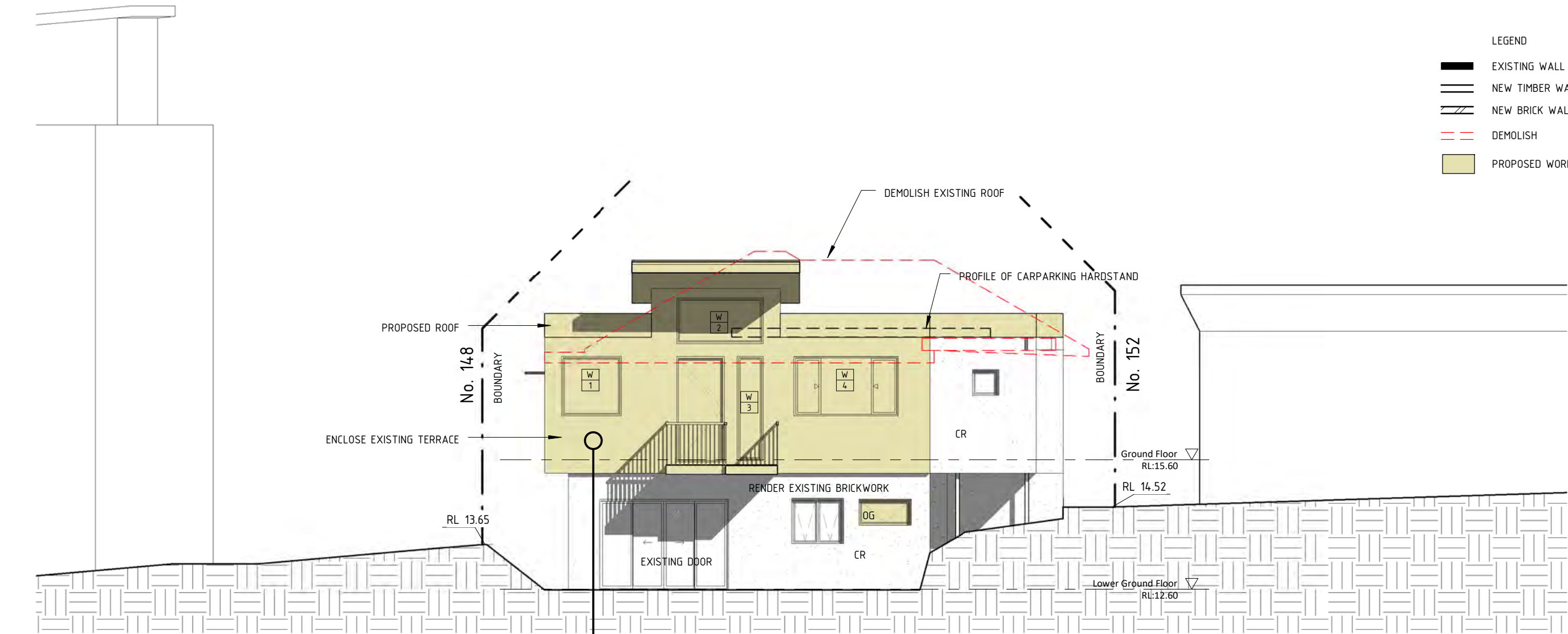




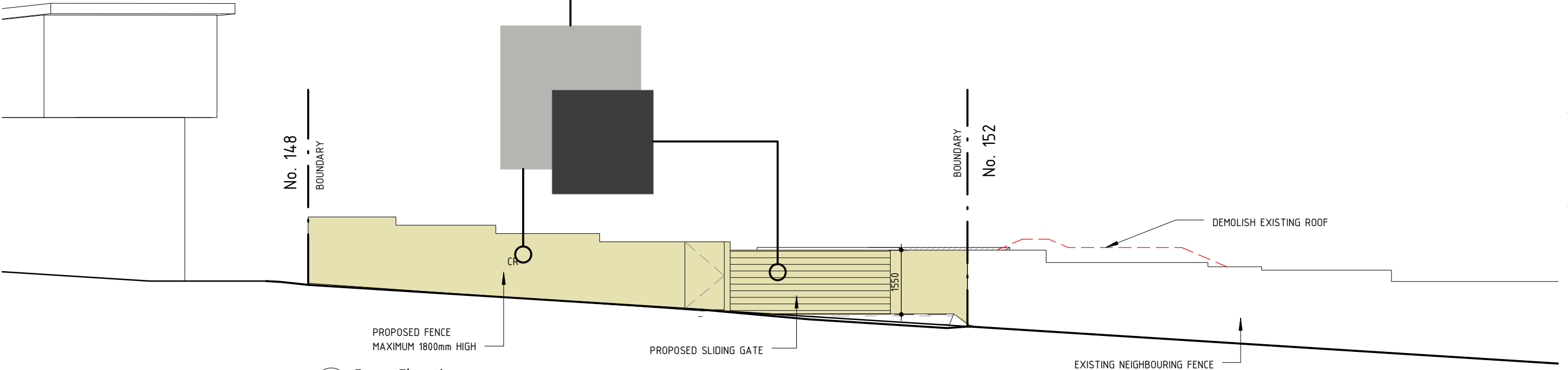
- LEGEND
- EXISTING WALL
 - NEW TIMBER WALL
 - NEW BRICK WALL
 - DEMOLISH
 - PROPOSED WORKS

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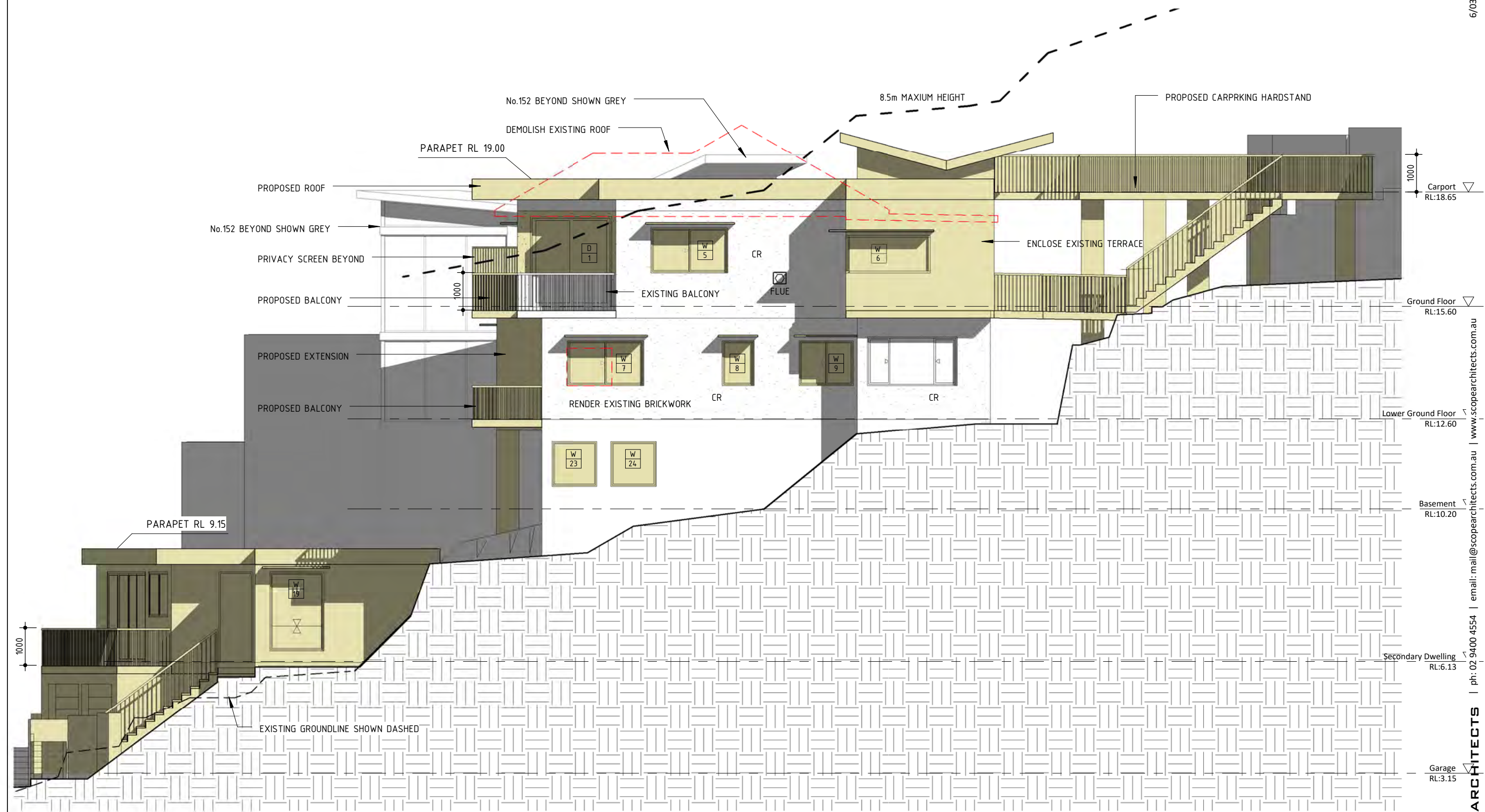
1 North Elevation
1 : 100



2 Fence Elevation
1 : 100

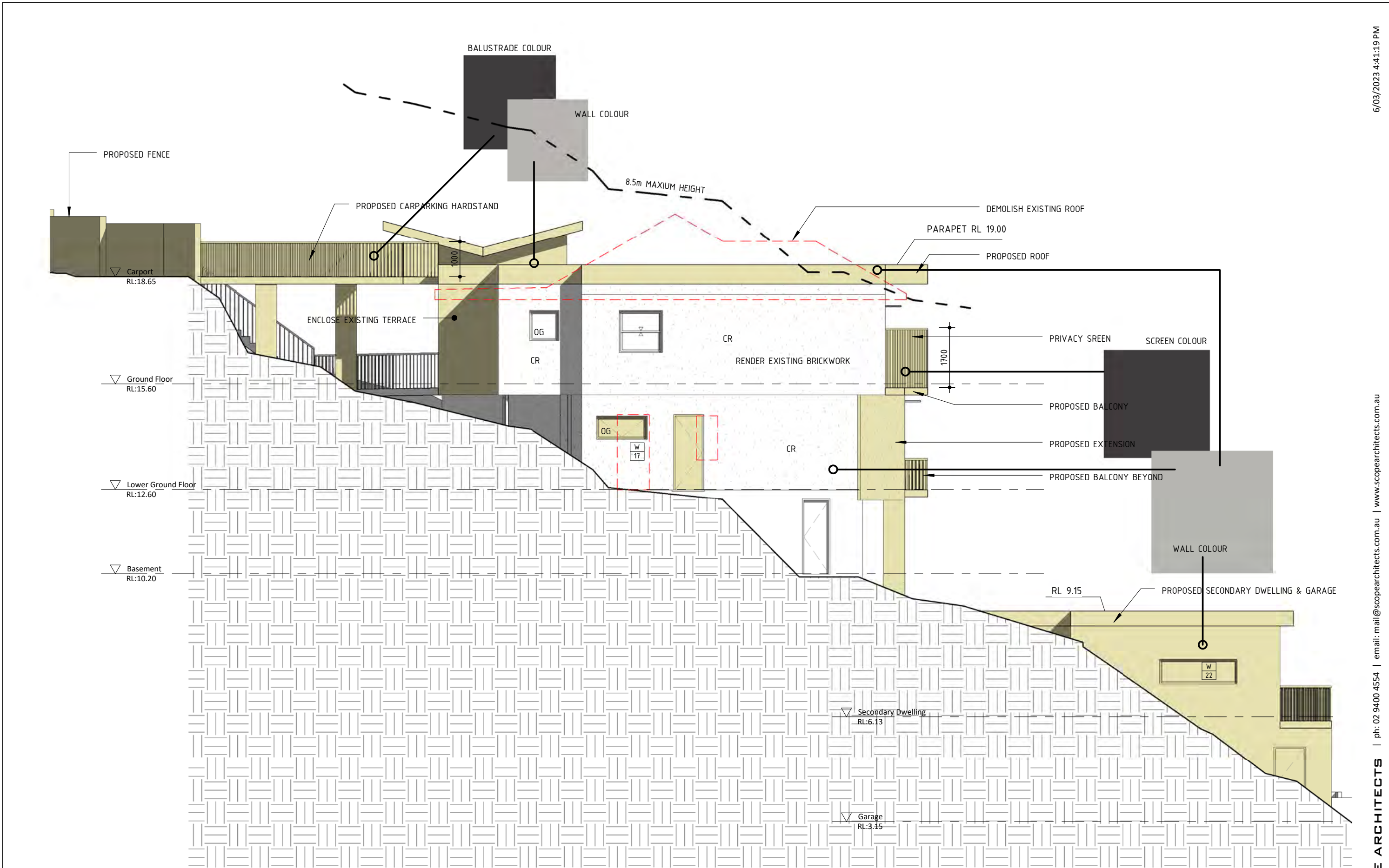
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 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE ELEVATIONS & MATERIALS	TRUE NORTH	DRAWN Xu	PROJECT NO. 02201	DRAWING NO A07	REV NO 2
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 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE EAST ELEVATION	TRUE NORTH	DRAWN XK	PROJECT NO. 02201	DRAWING NO A08	REV NO 2
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					SIZE A3	SCALE 1 : 100		



1	Development Application	21.09.2022
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No	Revision Description	Date

1200 HIGH PROPOSED FENCE. 50% OPENING
WITH A MINIMUM OPENING OF 75X75mm

1200 HIGH PROPOSED FENCE. 50% OPENING
WITH A MINIMUM OPENING OF 75X75mm



80 WEST ST BALGOWLAH NSW 2093
mail@scopearchitects.com.au ph: 9400 4554
www.scopearchitects.com.au

CLIENT
**CHRISTINA & ANTONY
CLARKE**

PROJECT
Alterations & Additions
150 QUEENSCLIFF RD QUEENSCLIFF 2096
LOT: 6 DP: 8260

DRAWING TITLE
**SOUTH ELEVATION &
MATERIALS**

TRUE NORTH

DRAWN

Xu

SIZE

A3

PROJECT NO.

02201

SCALE

1 : 100

DRAWING NO

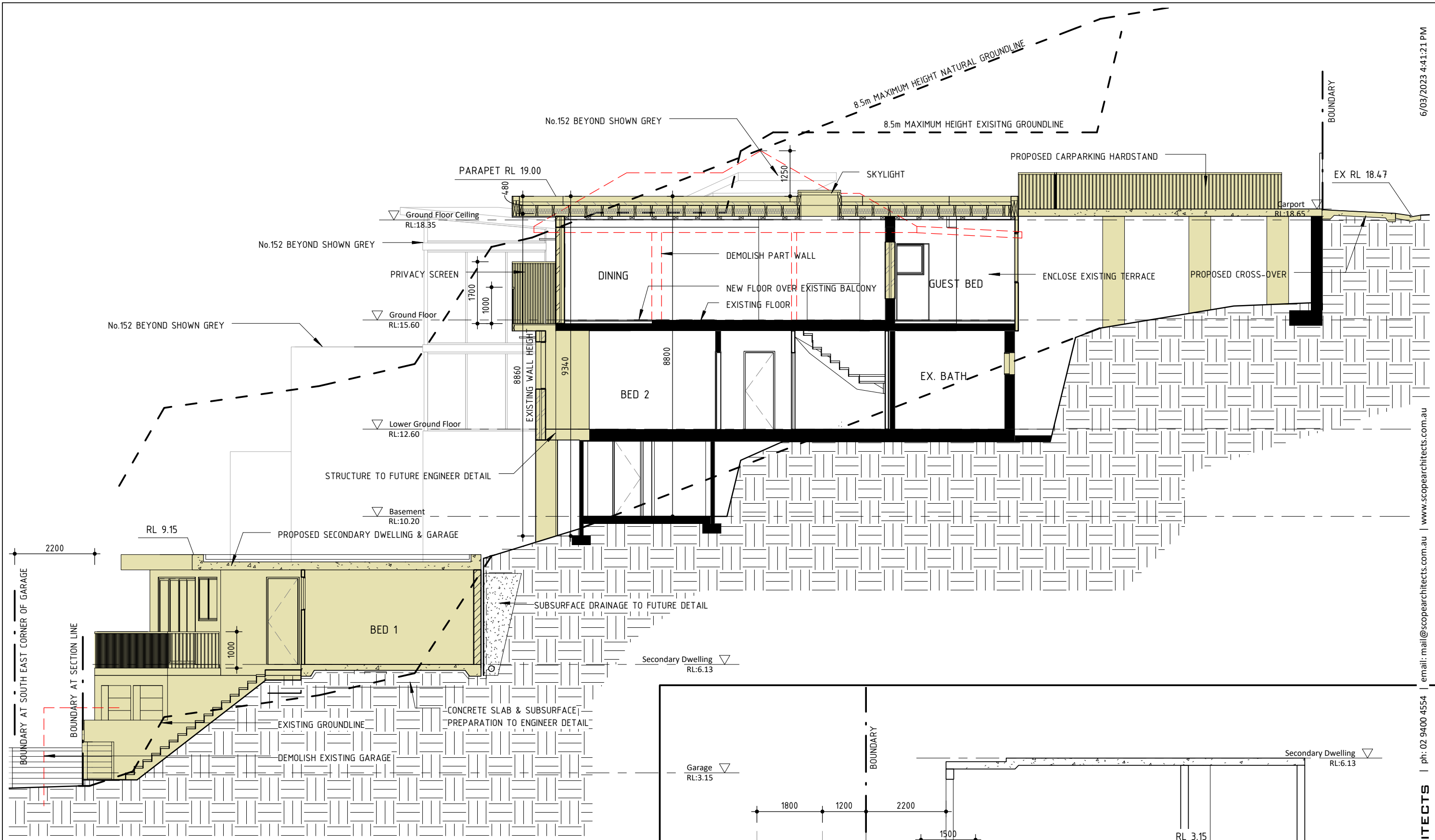
A10

REV NO

2

6/03/2023 4:41:20 PM

SCOPE ARCHITECTS | ph: 02 9400 4554 | email: mail@scopearchitects.com.au | www.scopearchitects.com.au



NOTE: PROVIDE INSULATION TO BASIX REQUIREMENTS

1	Development Application	21.09.2022
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No	Revision Description	Date

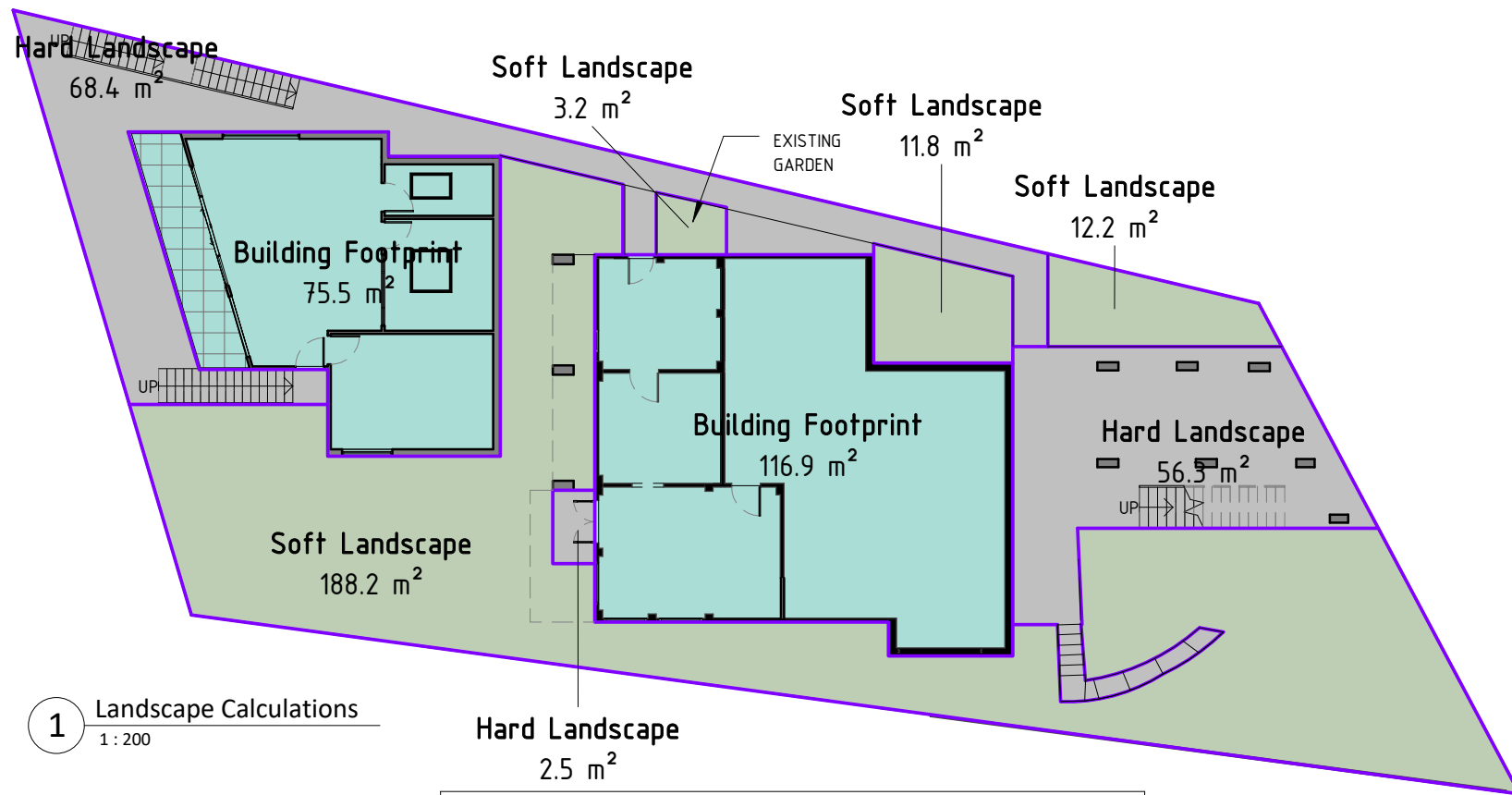
 SCOPE ARCHITECTS 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE SECTIONS	TRUE NORTH	DRAWN XK	PROJECT NO. 02201	DRAWING NO A11	REV NO 2
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6/03/2023 4:41:21 PM

email: mail@scopearchitects.com.au | www.scopearchitects.com.au

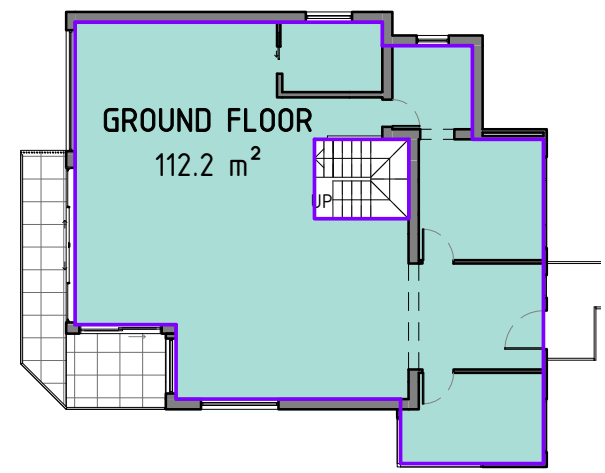
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SCOPE ARCHITECTS

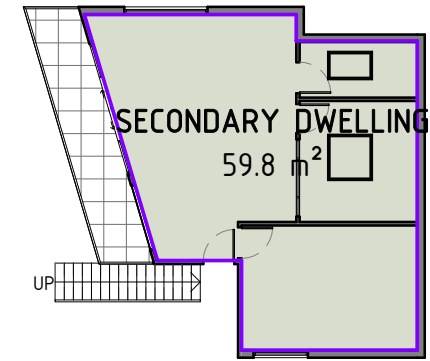


1 Landscape Calculations
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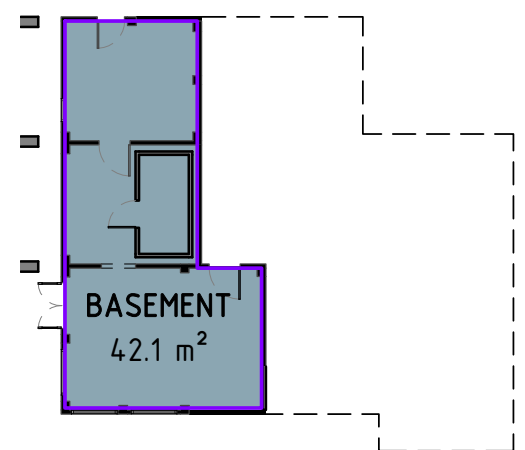
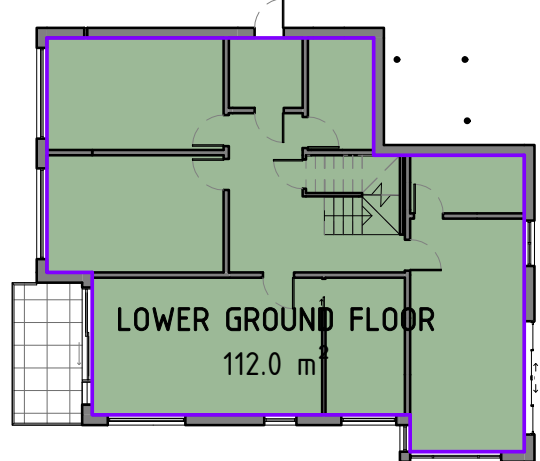
Landscape Area Calculations		
Name	Area	% of site
Building Footprint	192.4 m ²	36.0%
Hard Landscape	127.2 m ²	23.8%
Soft Landscape	215.3 m ²	40.3%
	534.9 m ²	100.0%



2 Ground Floor
1 : 200



3 Lower Ground Floor
1 : 200

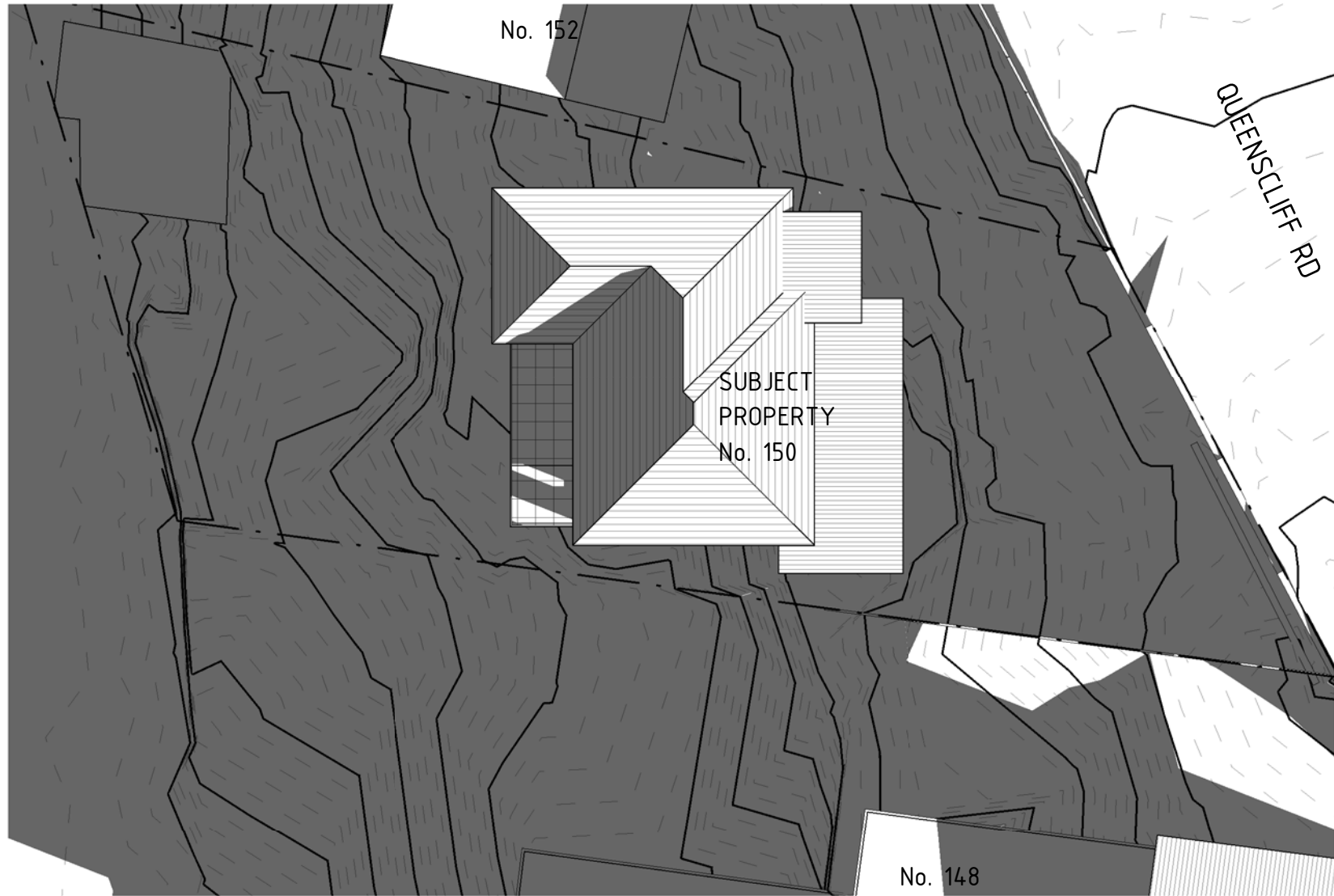


4 Basement
1 : 200

BASIX COMMITMENTS	REQUIREMENTS
HOT WATER FIXTURES SHOWERHEADS TOILETS TAPS	SOLAR ELECTRIC BOOST 3 STAR (NO GREATER THAN 9L/MIN) 3 STAR (AVERAGE 4L/FLUSH) 3 STAR (NO GREATER THAN 9L/MIN)
THERMAL COMFORT BRICK VENEER CONCRETE SLAB SUSPENDED FLOOR EXTERNAL WEATHERBOARD CEILING FLAT CEILING RAKED ROOF ROOF COLOUR	INSULATION R1.86 (OR 2.40 INC CONSTRUCTION) NIL NIL R2.0 (OR R2.4 INC. CONSTRUCTION) R1.45(UP) R14.5(UP) FOIL BACKED BLANKET 55mm MEDIUM (SOLAR ABSORPTANCE 0.475- 0.70)
WINDOWS	REFER TO BASIX SCHEDULE
ARTIFICIAL LIGHTING	PRIMARY LIGHTING TO BE LIGHT-EMITTING-DIODE (LED) LAMPS
RAINWATER TANK	2500 LITRES. ROOF COLLECTION AREA 135sqm
COOLING & HEATING ALTERNATIVE ENERGY	1 PHASE AIR CONDITIONING 5 STAR RATING PHOTOVOLTAIC SYSTEM TO GENERATE AT LEAST 4kW

Gross Floor Area	
Name	Area
BASEMENT	42.1 m ²
GROUND FLOOR	112.2 m ²
LOWER GROUND FLOOR	112.0 m ²
SECONDARY DWELLING	59.8 m ²
	326.1 m ²

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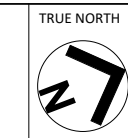


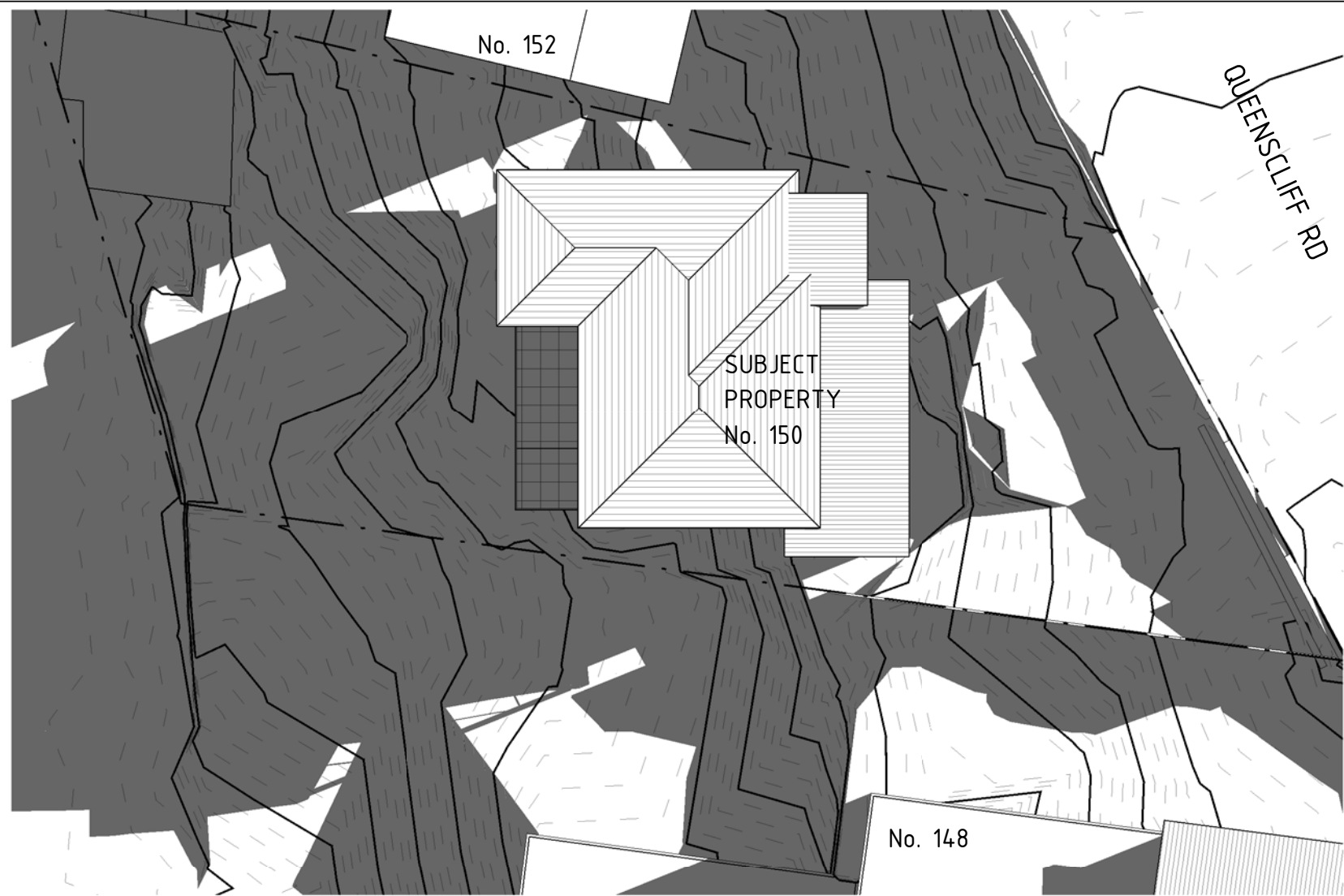
1 June 21 - 9am Existing
1 : 200



2 June 21 - 9am Proposed
1 : 200

1	Development Application	21.09.2022
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	80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE SHADOW DIAGRAMS JUNE 21 9am	TRUE NORTH 	DRAWN Xu	PROJECT NO. 02201	DRAWING NO A13	REV NO 2
						SIZE A3	SCALE 1 : 200		



1 June 21 - 12pm Existing
1 : 200



2 June 21 - 12pm Proposed
1 : 200

1	Development Application	21.09.2022
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No	Revision Description	Date

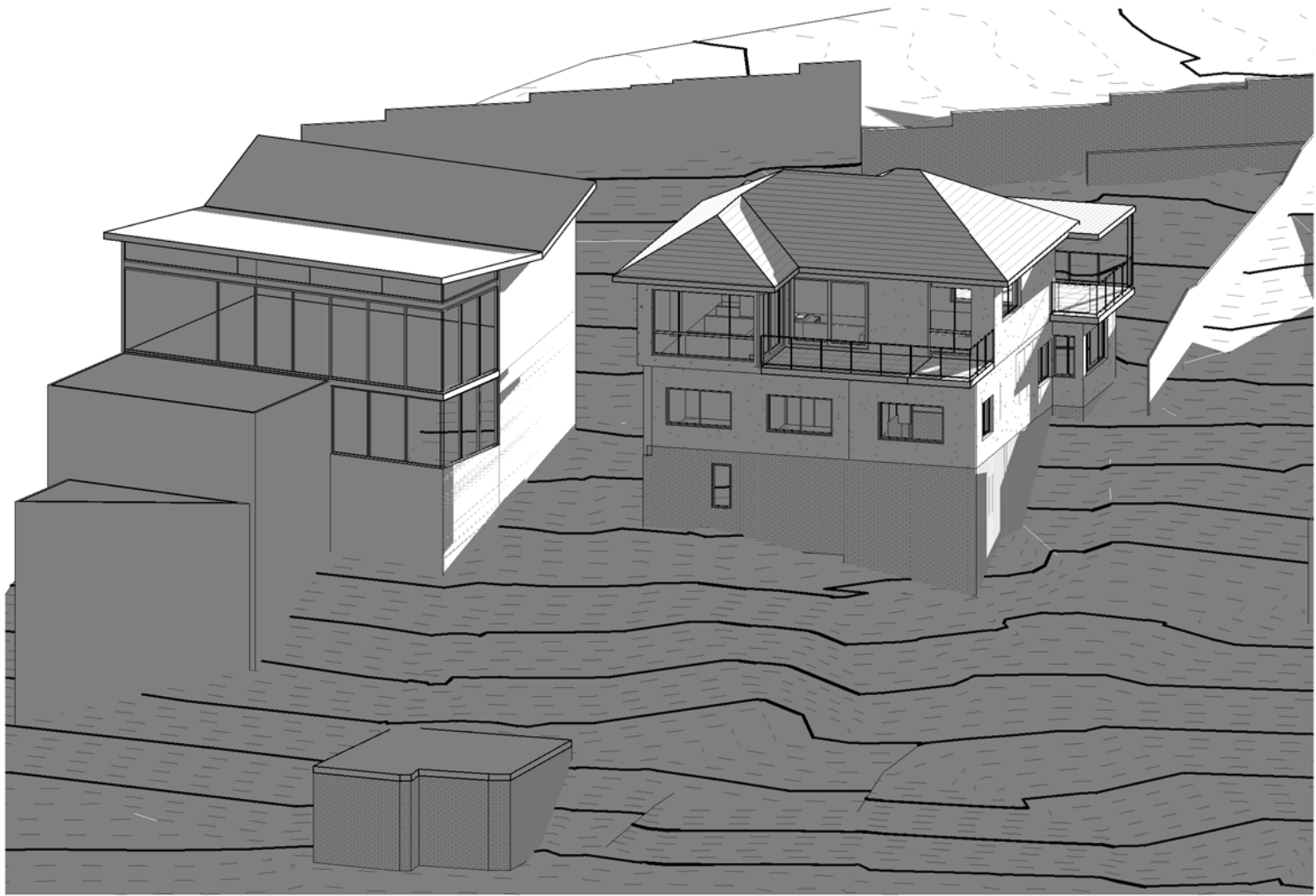


1 June 21 - 3pm Existing
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2 June 21 - 3pm Proposed
1 : 200

1	Development Application	21.09.2022
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No	Revision Description	Date



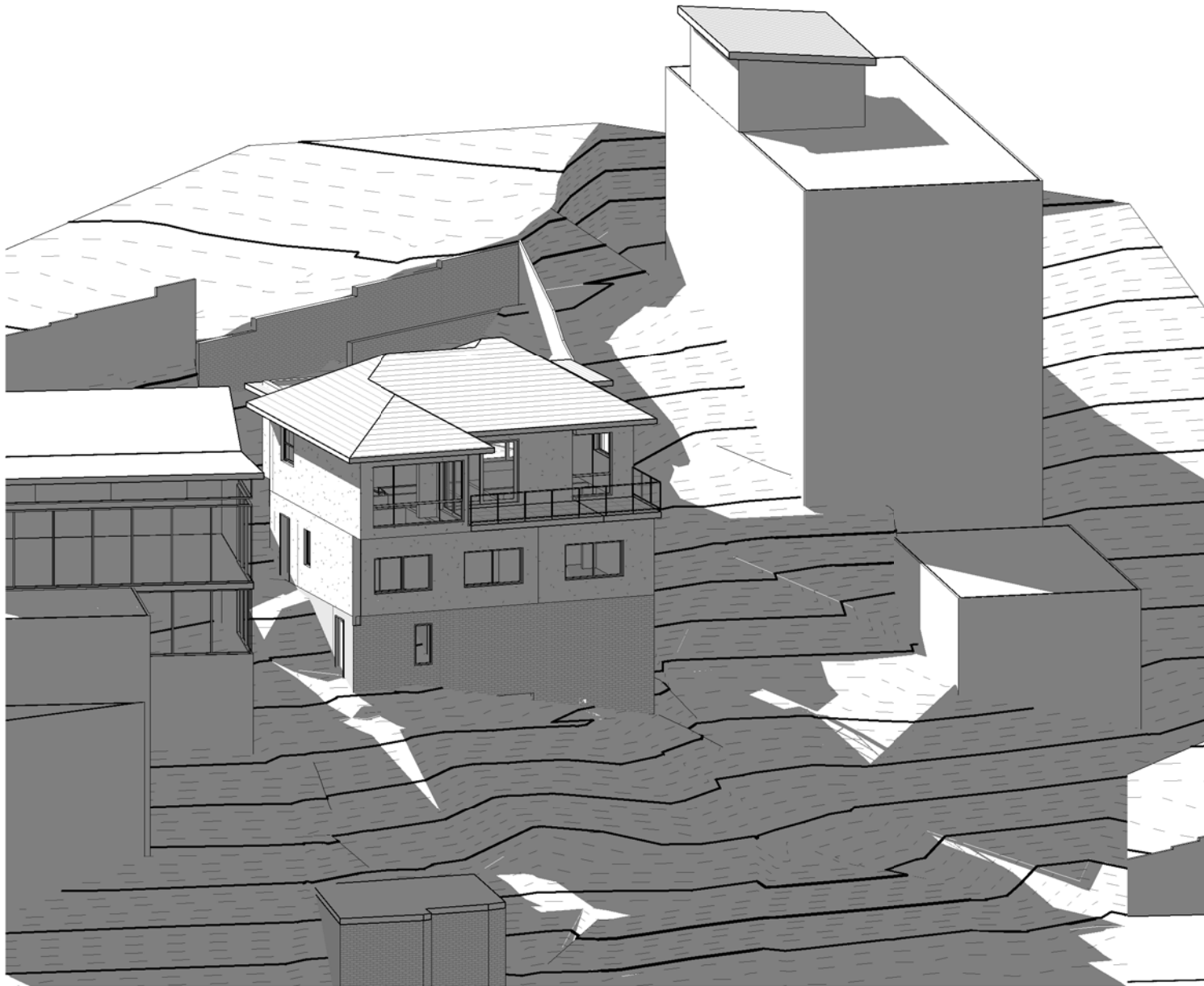
1 June 21 9am Existing



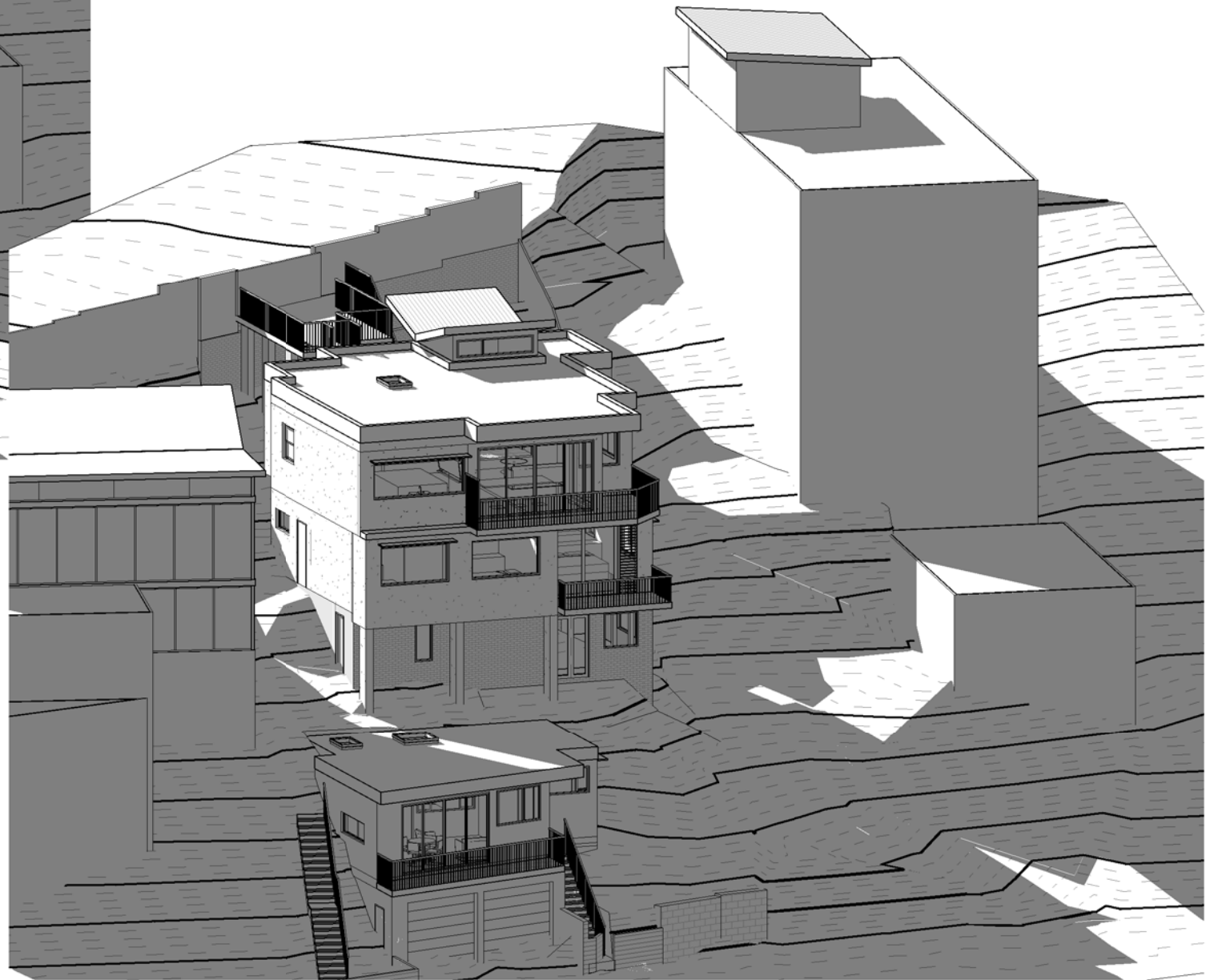
2 June 21 9am Proposed

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 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE SHADOW DIAGRAMS JUNE 21 9am	TRUE NORTH	DRAWN XK	PROJECT NO. 02201	DRAWING NO A17	REV NO 2
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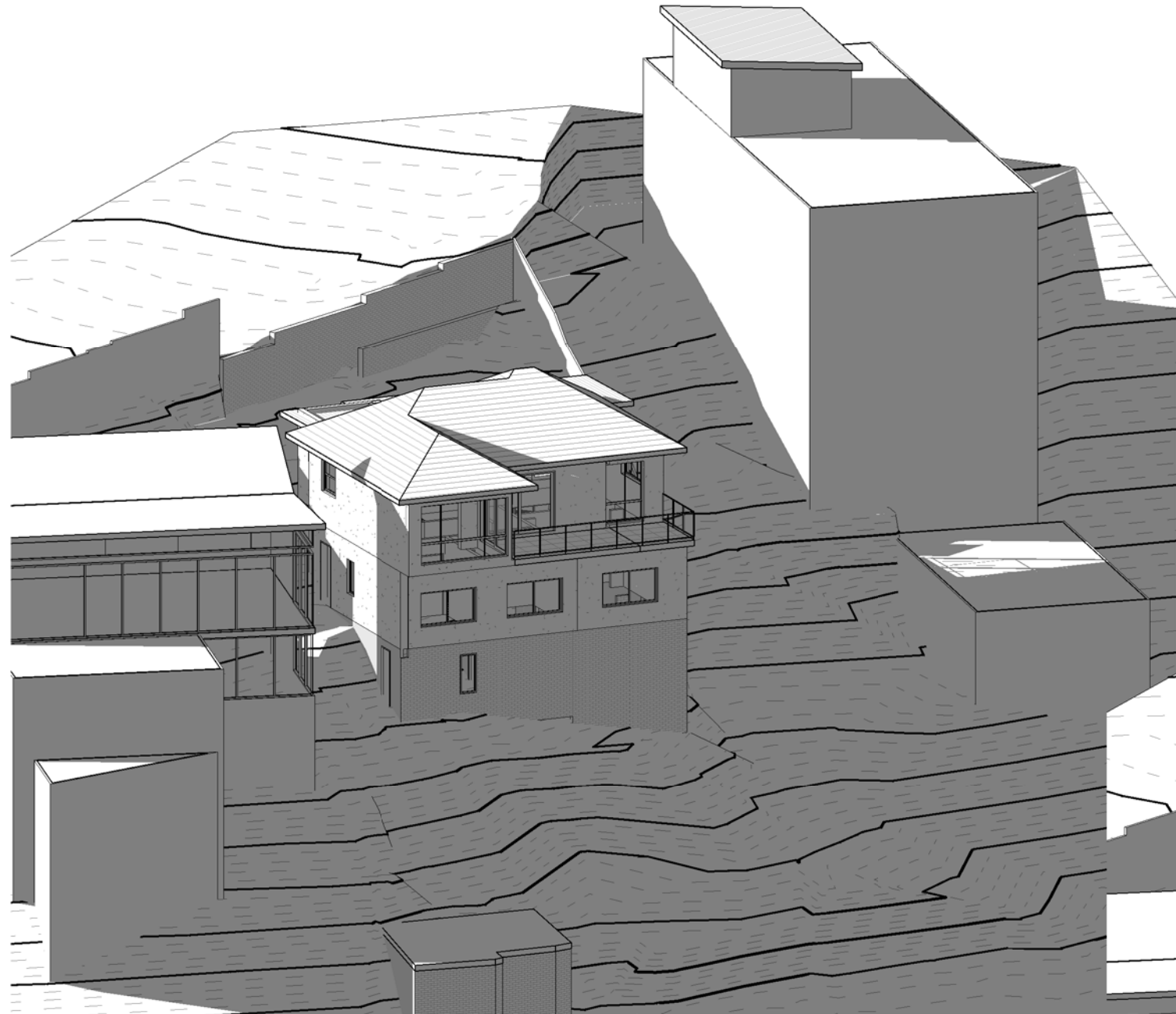
1 June 21 12pm Existing



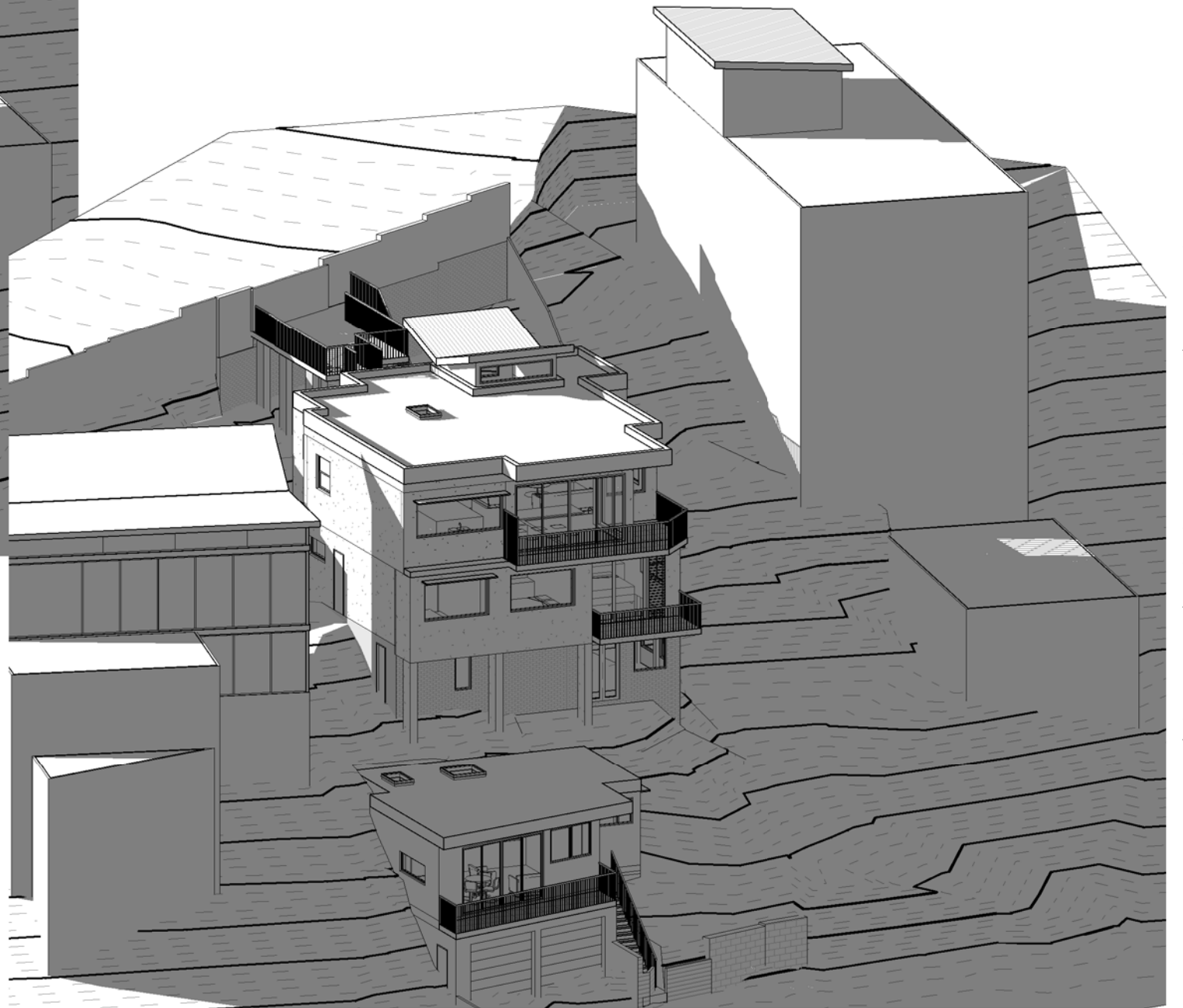
2 June 21 12pm Proposed

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 SCOPE ARCHITECTS 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE SHADOW DIAGRAMS JUNE 21 12pm	TRUE NORTH	DRAWN XK	PROJECT NO. 02201	DRAWING NO A18	REV NO 2
					SIZE A3			



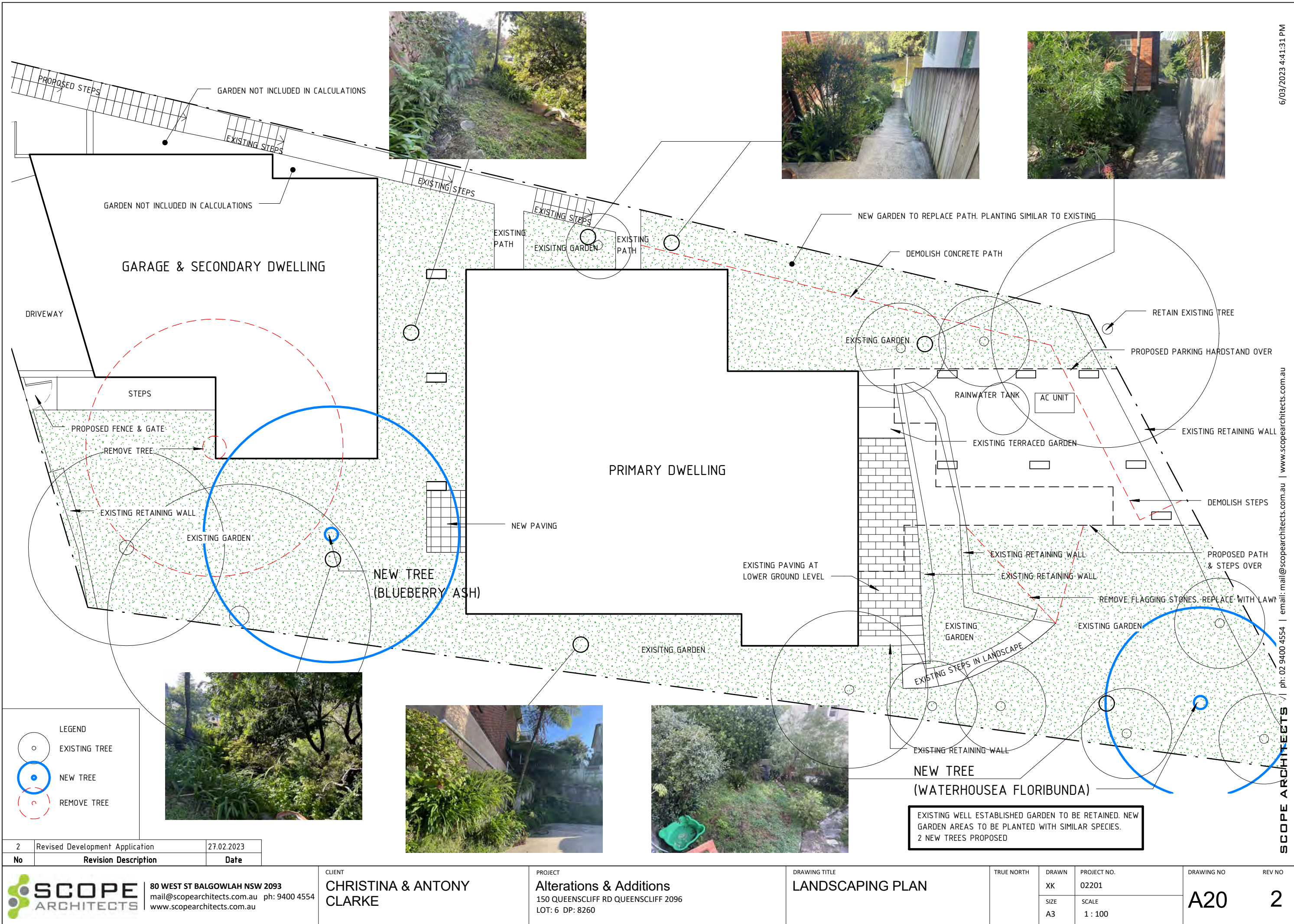
1 June 21 3pm Existing



2 June 21 3pm Proposed

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 SCOPE ARCHITECTS 80 WEST ST BALGOWLAH NSW 2093 mail@scopearchitects.com.au ph: 9400 4554 www.scopearchitects.com.au	CLIENT CHRISTINA & ANTONY CLARKE	PROJECT Alterations & Additions 150 QUEENSLIFF RD QUEENSLIFF 2096 LOT: 6 DP: 8260	DRAWING TITLE SHADOW DIAGRAMS JUNE 21 3pm	TRUE NORTH	DRAWN XK	PROJECT NO. 02201	DRAWING NO A19	REV NO 2
					SIZE A3	SCALE		



APPENDIX C – FLOOD INFORMATION REPORT
BY NORTHERN BEACHES COUNCIL



northern
beaches
council

FLOOD INFORMATION REPORT - BASIC

Property: 150 Queenscliff Road QUEENSCLIFF NSW 2096

Lot DP: Lot 6 DP 8260

Issue Date: 17/02/2023

Flood Study Reference: Manly Lagoon Flood Study 2013, BMT WBM

Flood Information for lot ^{1,2,3,4}:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) ^{2, 3, 4}: 3.63 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level ^{2, 3}: 3.13 m AHD

1% AEP Maximum Depth from natural ground level³: 0.80 m

1% AEP Maximum Velocity: 3.22 m/s

1% AEP Hydraulic Categorisation: See Flood Map D

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level ⁴: 5.64 m AHD

PMF Maximum Depth from natural ground level: 2.78 m

PMF Maximum Velocity: 0.23 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.

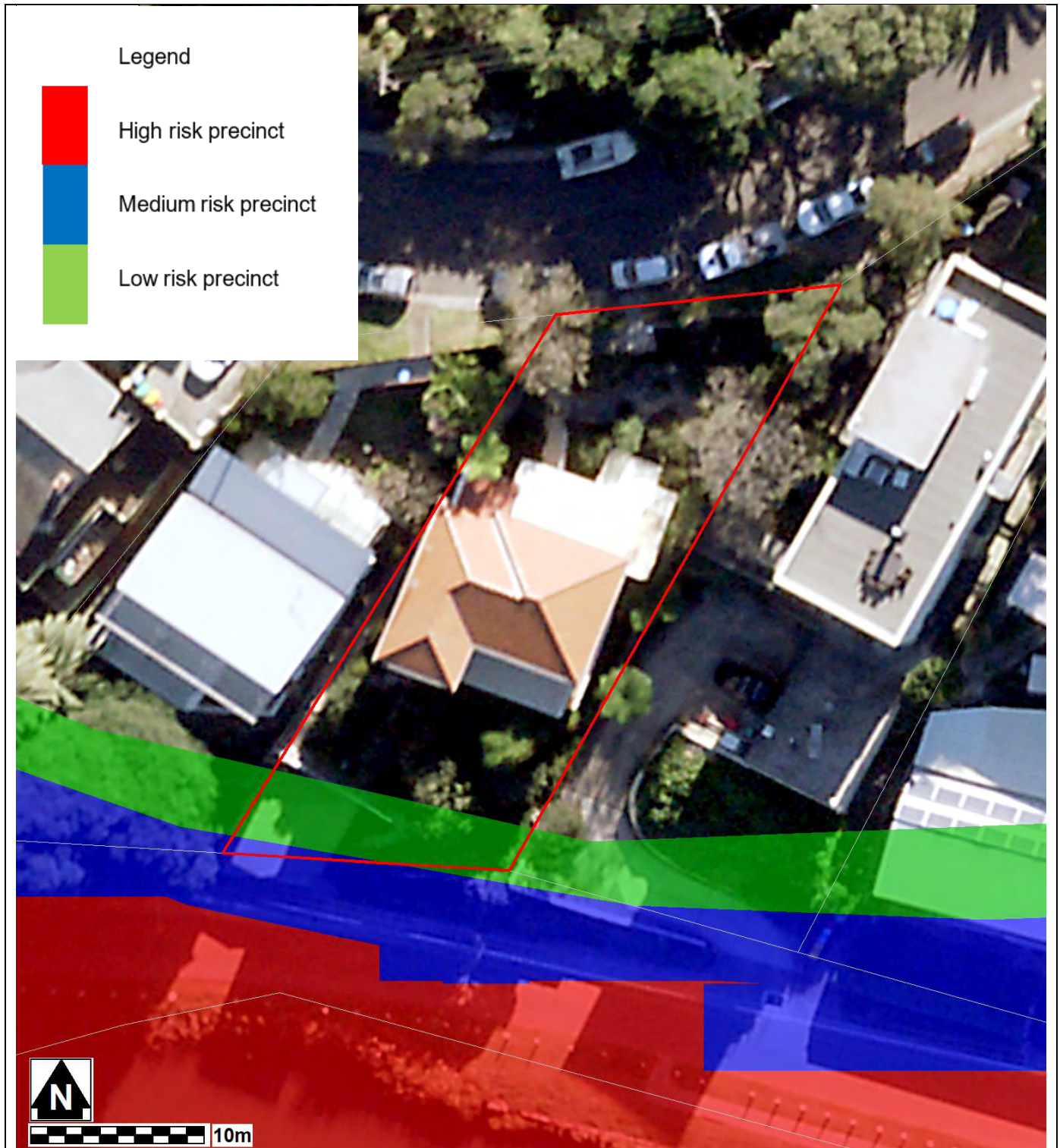
³ Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.

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.

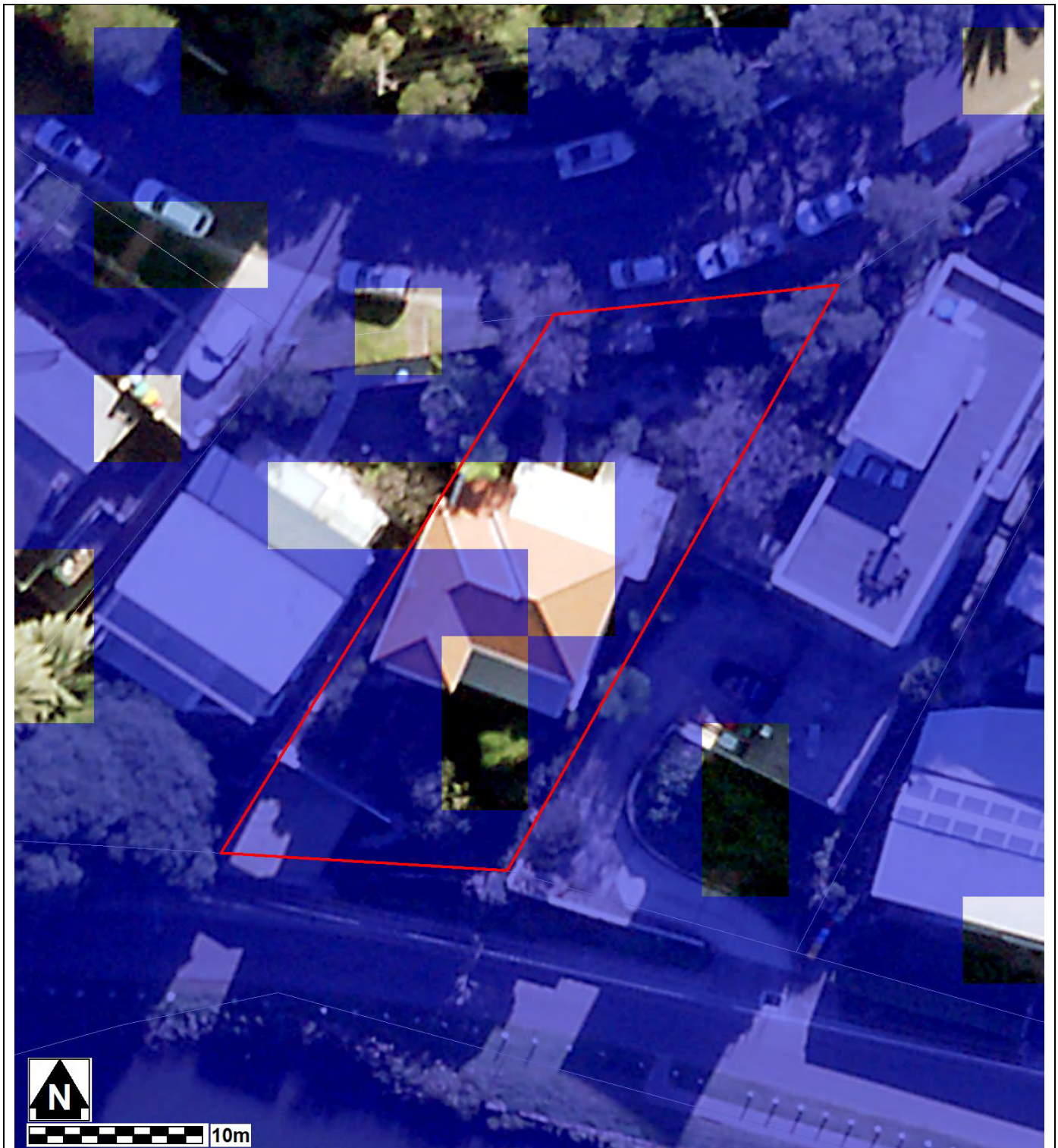
FLOOD MAP A: FLOOD RISK PRECINCT MAP



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.

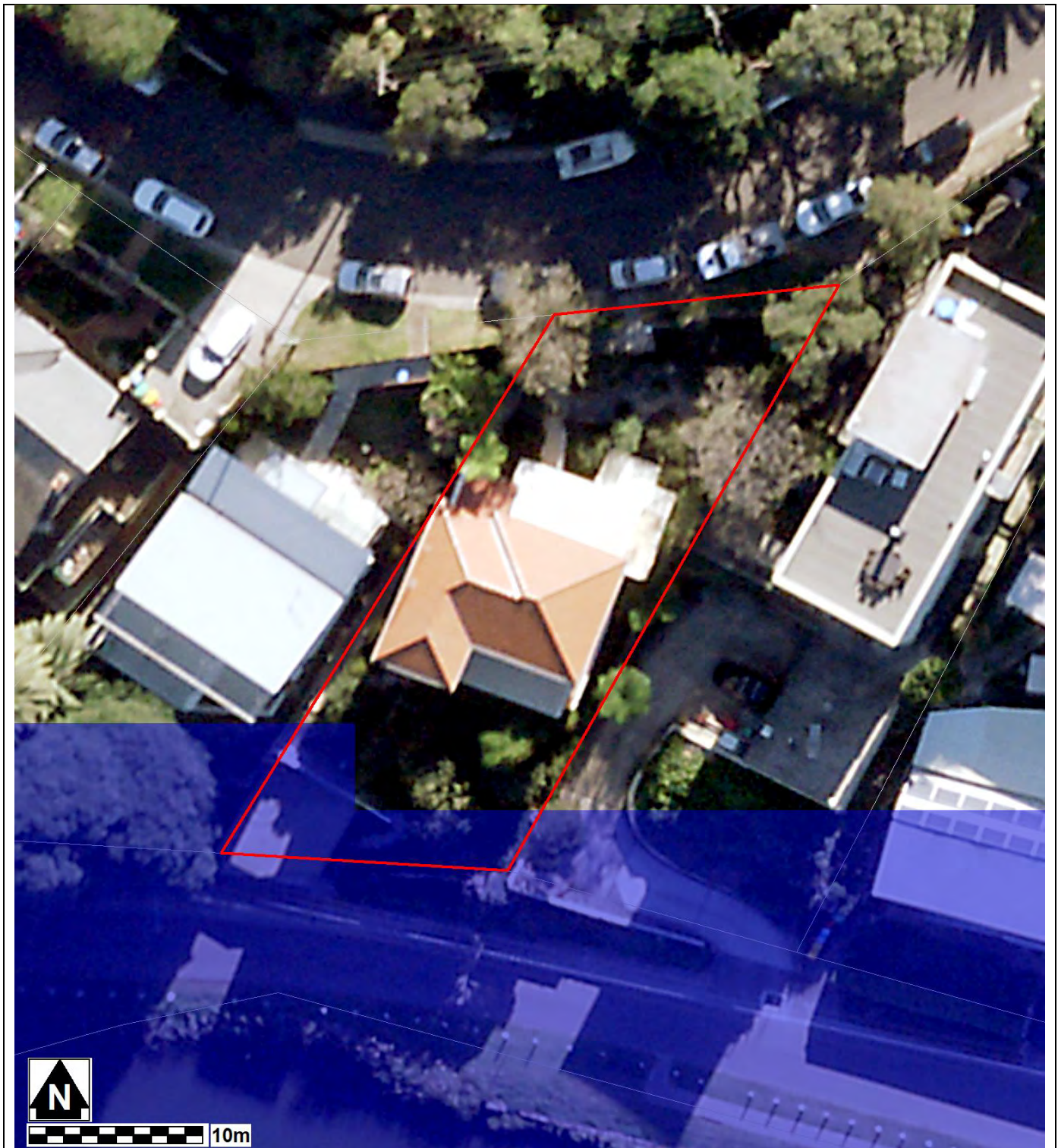
FLOOD MAP B: FLOODING - 1% AEP EXTENT



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: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only.

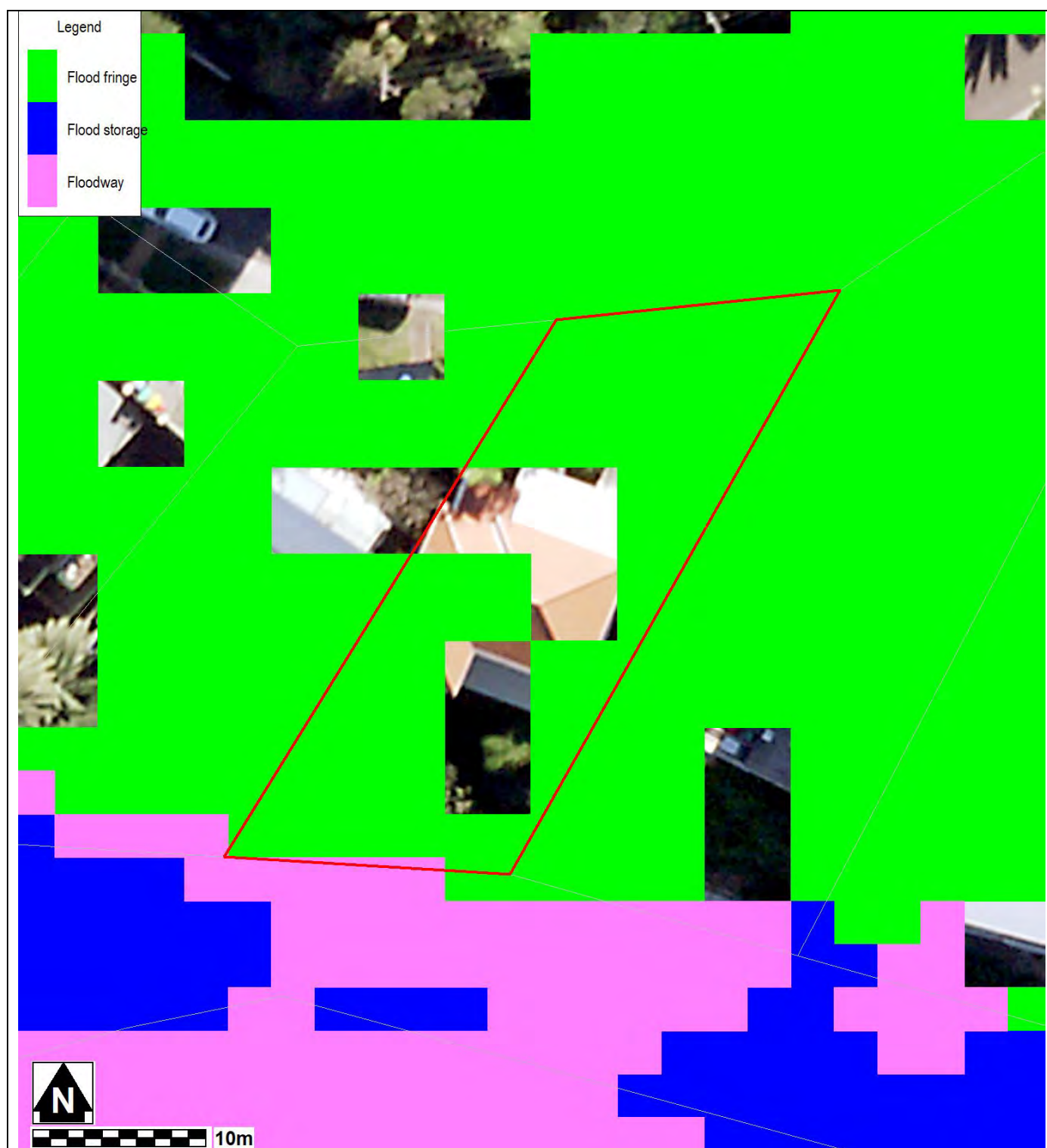
FLOOD MAP C: PROBABLE MAXIMUM FLOOD EXTENT



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: Manly Lagoon Flood Study 2013, BMT WBM) and aerial photography (Source: NearMap 2014) are indicative only.

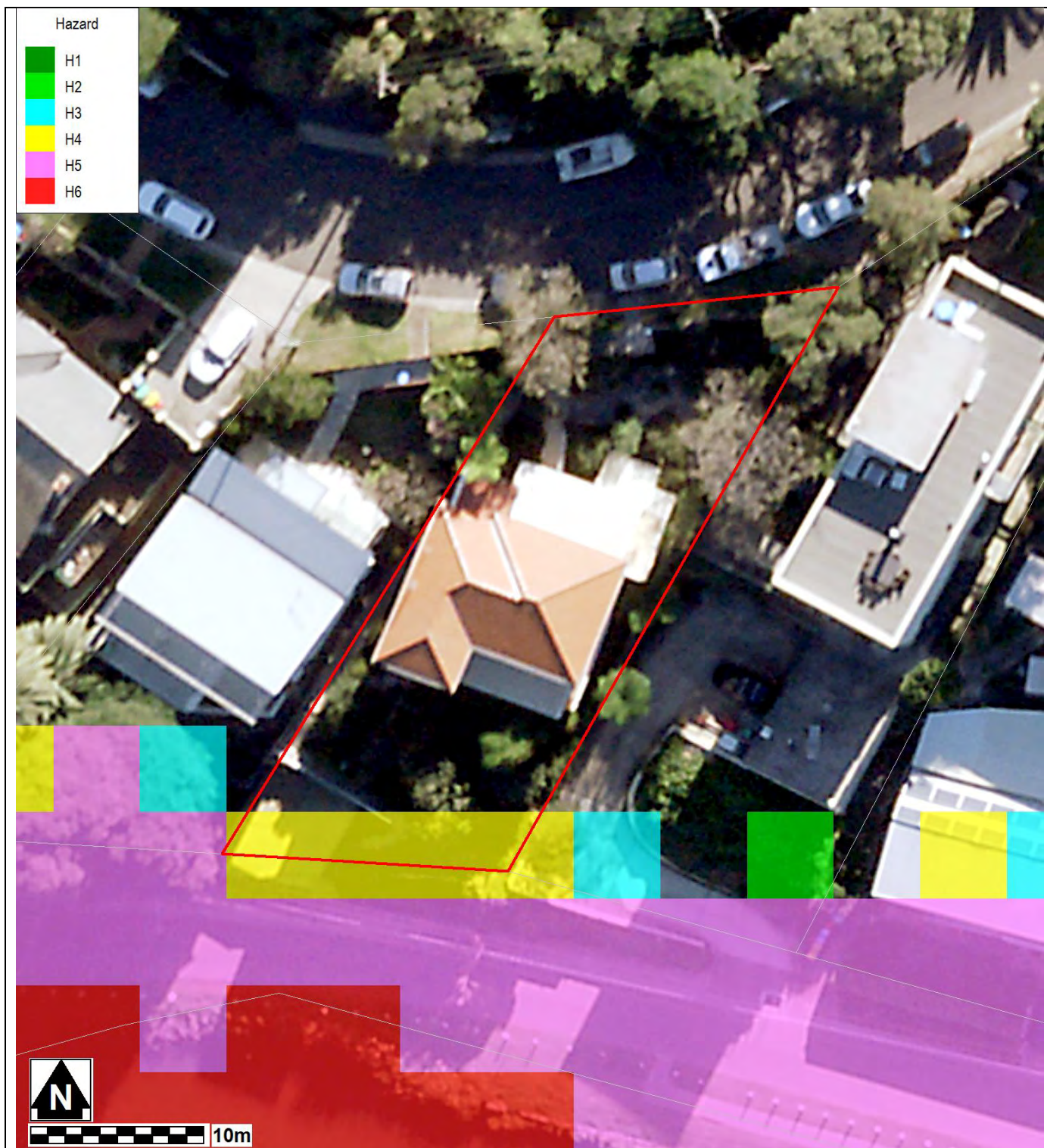
FLOOD MAP D: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



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: Manly Lagoon Flood Study 2013, BMT WBM) 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: Manly Lagoon Flood Study 2013, BMT WBM) 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 .