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Flood Risk Management Plan

For a Proposed Seniors Housing Development

Prepared for: NSW Land and Housing Corporation

Project address: Lot 67 DP 529880 (No. 41) and
Lot 68 DP 529880 (No. 43) Owen Avenue, Wyong

Document No.: CC210464_FRMP

Version No.: 06

Dated: 5 June 2023

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VERSION HISTORY

Version	Date	Purpose	Prepared By	Approved By
01	7/6/2022	Flood Risk Management Plan	Amanda Newman	Bruce Kenny
02	14/12/2022	Revised Flood Risk Management Plan	Amanda Newman	Bruce Kenny
03	28/04/23	Revised Flood Risk Management Plan – Revised Flood Certificate	Nathan Broadbent	Bruce Kenny
04	01/05/23	Flood Risk Management Plan – Final	Nathan Broadbent	Bruce Kenny
05	15/05/23	Flood Risk Management Plan – revised to address LAHC comments	Nathan Broadbent	Bruce Kenny
06	5/06/23	Flood Risk Management Plan – revised to address additional LAHC comments	Nathan Broadbent	Bruce Kenny

Review Panel

Division/Office	Name

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Annexures

Annexure A	Architectural plans prepared by Barry Rush and Associates Pty Ltd, sheets A03 and A08, dated 22 March 2023
Annexure B	Central Coast Flood Information Certificate for No.'s 41 and 43 Owen Avenue, Wyong dated 20 April 2023

1 Introduction

ACOR Consultants (CC) Pty Ltd (ACOR) has been commissioned to prepare a Flood Risk Management Plan in accordance with the requirements of Chapter 3.1 of Central Coast Development Control Plan (DCP) 2022, Clauses 5.21 and 7.23 of *Central Coast Local Environmental Plan 2022* and Clause 7.3 of *Wyong Local Environmental Plan 2013*.

In the preparation of this report ACOR has relied upon certain data and information contained within the following documents:

- Architectural plans prepared by Barry Rush and Associates Pty Ltd, sheets A03 and A08, dated 22 March 2023.
- Site survey prepared by Total Surveying Solutions, reference 211660, dated 6 October 2021.
- Central Coast DCP 2022.
- *Central Coast Local Environmental Plan 2022*.
- *Wyong Local Environmental Plan 2013*.
- Central Coast Flood Information Certificate for No.'s 41 & 43 Owen Avenue, Wyong dated 20 April 2023.
- 'Australian Disaster Resilience Guideline 7-3: Flood Hazard.' published by the Australian Institute for Disaster Resilience (AIDR), dated 2017.
- 'Floodplain Development Manual: the management of flood liable land' published by NSW Department of Infrastructure, Planning and Natural Resources (NSW DIPNR), dated April 2005.

The purpose of this report is to provide NSW Land and Housing Corporation with sufficient information to assess the proposed development which is located on flood liable lands.

2 Site Description

The subject site consists of the lots known as Lot 67 DP 529880 (No. 41) and Lot 68 DP 529880 (No. 43) Owen Avenue, Wyong. The site is located at the intersection of Owen Avenue and Cutler Drive, being located on the southern side of Cutler Drive and the eastern side of Owen Avenue. The surrounding sites support a mixture of low and medium density residential development.

The site is a developed site of total area 1161 m². The site is zoned R2 Low Density Residential under the provisions of Central Coast Local Environmental Plan 2022. Current development of the site consists of two single storey dwellings.

The site falls to the south-east. Elevations on site are generally within the range 7.2 m AHD to 9.9 m AHD.

The Applicant proposes the demolition of existing structures on site and construction of a seniors housing complex. The primary features of the ground floor level of the proposed development are depicted on architectural plans prepared by Barry Rush and Associates Pty Ltd, sheets A03 and A08, dated 22 March 2023 (copy enclosed under Annexure A).

3 Flood Characteristics

The site is impacted by floodwaters during the PMF flood event. Information regarding flood extents and depths are depicted on Central Coast Flood Information Certificate for No.'s 41 & 43 Owen Avenue, Wyong dated 20 April 2023 (copy enclosed under Annexure B).

The developable site is not impacted by floodwaters during the 1% AEP flood event.

The site is located partly within Precinct 1, partly within Precinct 2 and partly on flood free ground. Note that the proposed development footprint is located outside the Flood Planning Area (Precinct 2).

We note that Council's online flood precinct shows an isolated occurrence of Precinct 4 near the southern boundary of No. 41 Owen Avenue. We refer to our discussions with Council and note that this has occurred due to an error in flood map processing. Precinct 4 floodwaters can only occur within the mapped extent of 1% AEP floodwaters. In this instance, the isolated occurrence of Precinct 4 falls outside of both the 1% AEP extents and the Flood Planning Area. (FPA).

The Flood Planning Level (FPL) applicable to the proposed development is approximately 7.92 m AHD which results from the occurrence of Precinct 2 area near the southern corner of No.41. There are no features of the proposed development located within the 1% AEP and all finished surface levels meet the minimum requirements for flooding. Subsequently, the requirements for development on land falling partially within Precinct 2 are met.

PMF flows within the site are likely to consist of shallow surface flows, with the exception of flows impacting the south-eastern corner of the site which are expected to impact the site to approximately 7.75 m AHD. In our view, the PMF level of RL 7.75 m AHD represents a flood level that is considered genuine flooding.

We note that the maximum PMF flood level reported on Council's flood information certificate is 9.45 m AHD for No.41 Owen Avenue and 9.83 m AHD for No.43 Owen Avenue, however, we note that these levels are reported due to flood modelling anomalies where water is artificially bunded between buildings. These anomalies will not be reflected on site. In this regard it is likely that PMF flood depths across the site do not generally exceed 0.3 m. Subsequently, the small area of high hazard (H3 - H5) PMF floodwaters shown occurring near the existing dwelling on No.41 are not legitimate. These modelling anomalies have been discussed with Council's floodplain management team who agree with this assessment.

Significant PMF flows are not expected to impact the footprint of the proposed development and reliable pedestrian and vehicular access and egress is available from the site during flood events up to and including the PMF.

4 Flood Risk Management

Based on the foregoing, we offer the following response, having due regard for the requirements of Central Coast DCP 2022 Chapter 3.1.2.

4.1 Floor level

The proposed development provides minimum habitable floor levels of 9.1 m AHD. The proposed minimum floor levels are above the Flood Planning Level of 7.92 m AHD and the applicable PMF flood level. Refer to Section 3 for PMF summary. Floor levels are to be provided in accordance with the requirements of the National Construction Code (NCC).

4.2 Building components and method

All proposed buildings are located on land above the Flood Planning Level. Subsequently, the use of flood compatible building materials and construction techniques are not required.

4.3 Structural soundness

PMF floodwaters on the site will result in low hazard floodwaters. Subsequently the structural design of the proposed residential building is not required to specifically consider the loads imposed by floodwaters.

4.4 Car parking and driveway access

The proposed car parking and driveway surface will be located above the PMF flood level. In this regard vehicles parked within the proposed driveway and car parking area will not be subject to damage from floodwaters as it is located above the anticipated genuine PMF flood level of RL 7.75 m AHD. Refer to Section 3 for PMF summary.

4.5 Emergency services access

PMF inundation extent mapping provided by Central Coast Council's online mapping service indicates a route between the site and Wyong Ambulance Station (No. 128 Pacific Highway, Wyong) is available which experiences limited inundation during the PMF. This route is expected to be trafficable by an ambulance during the PMF.

Similarly, a route with limited flooding during the PMF exists between the site and the NSW Fire and Rescue station located at 5 Hely Street, Wyong. This route is expected to be trafficable for a fire truck during the PMF.

In this regard, effective access for emergency services is expected to be available to the site during the PMF.

4.6 Evacuation

The State Emergency Service of New South Wales (NSW SES) is responsible for providing flood updates and issuing Flood Evacuation Warnings and Flood Evacuation Orders. Flood information issued by the NSW SES may be received by local, radio and television news, SMS messaging, Facebook and doorknocking in affected communities. The timing for evacuation of persons is to be established in consultation with the NSW SES.

The proposed development provides minimum habitable floor levels above the PMF, allowing occupants of the site to shelter within the proposed units during flood events.

Alternatively, reliable pedestrian and vehicular access and egress is expected to be available from the site during flood events up to and including the PMF allowing residents to evacuate if required.

4.7 Flood readiness

To increase the flood-readiness of the occupants of the proposed development, owners/occupiers of the site should be made aware of FloodSafe kits developed by the NSW SES which aid household development of a Flood Emergency Plan. Information regarding FloodSafe kits is available from <https://www.ses.nsw.gov.au/flood-resources/before-a-flood/things-you-can-do-before-a-flood/>. Future owners/occupiers of the site should prepare, regularly review and update a household Flood Emergency Plan.

In addition to a Flood Emergency Plan, owners/occupiers of the site should prepare an Emergency Kit containing a portable radio with spare batteries, a torch with spare batteries, candles and waterproof matches, and a first aid kit. Advice on preparing an Emergency Kit is available at <https://www.ses.nsw.gov.au/storm-resources/before-a-storm/put-together-an-emergency-kit/>.

In the event that the 1% AEP flood event is expected to be exceeded, strategies should be adopted in accordance with NSW Government operational guidelines and NSW SES Emergency Evacuation operational guidelines.

4.8 Impact of the proposed development

The proposed development is not located within the 1% AEP flood extents. In this regard, the proposed development will have no impact on the flood affectation of other sites within the floodplain during the 1% AEP flood event.

5 Conclusion

A senior's living development is proposed at the site known as Lot 67 DP 529880 (No. 41) and Lot 68 DP 529880 (No. 43) Owen Avenue, Wyong.

The site is partially below the Flood Planning Level (FPL) and partially impacted by PMF floodwaters. The proposed building footprint is located on ground above the FPL and outside the expected PMF extents. The proposed fill for the driveway is located marginally within the PMF extents, however, hazard is expected to be low.

There are no features of the proposed development located within the 1% AEP and all finished surface levels meet the minimum requirements for flooding. Subsequently, the requirements for development on land falling partially within Precinct 2 are met.

Effective access for fire and ambulance services is expected to be available to the site during the PMF.

Reliable pedestrian and vehicular access and egress is available during the PMF.

The proposed development provides minimum habitable floor levels of 9.1 m AHD. The proposed habitable floor levels meet the minimum habitable floor level requirement.

Vehicles parked within the designated parking spaces or on the proposed driveway will be located on ground above the genuine PMF level of RL 7.75 m AHD.

The proposed residential building is not required to be constructed of flood compatible building materials, and structural design of the building is not required to consider the loads imposed by floodwaters.

Based on the foregoing, the proposed development complies with the requirements of Central Coast DCP 2022 Chapter 3.1.2 and Central Coast Local Environmental Plan 2022 and Wyong Local Environmental Plan 2013 provisions for sites affected by flooding.

Yours faithfully,
ACOR Consultants (CC) Pty Ltd



Nathan Broadbent
BEng(Civil)(Hons) MIEAust, CPEng, NER

6 References

Australian Institute for Disaster Resilience (AIDR). (2017). *Australian Disaster Resilience Guideline 7-3: Flood Hazard*. East Melbourne, VIC: Author.

Central Coast Council. (2022). *Central Coast Development Control Plan 2022*.

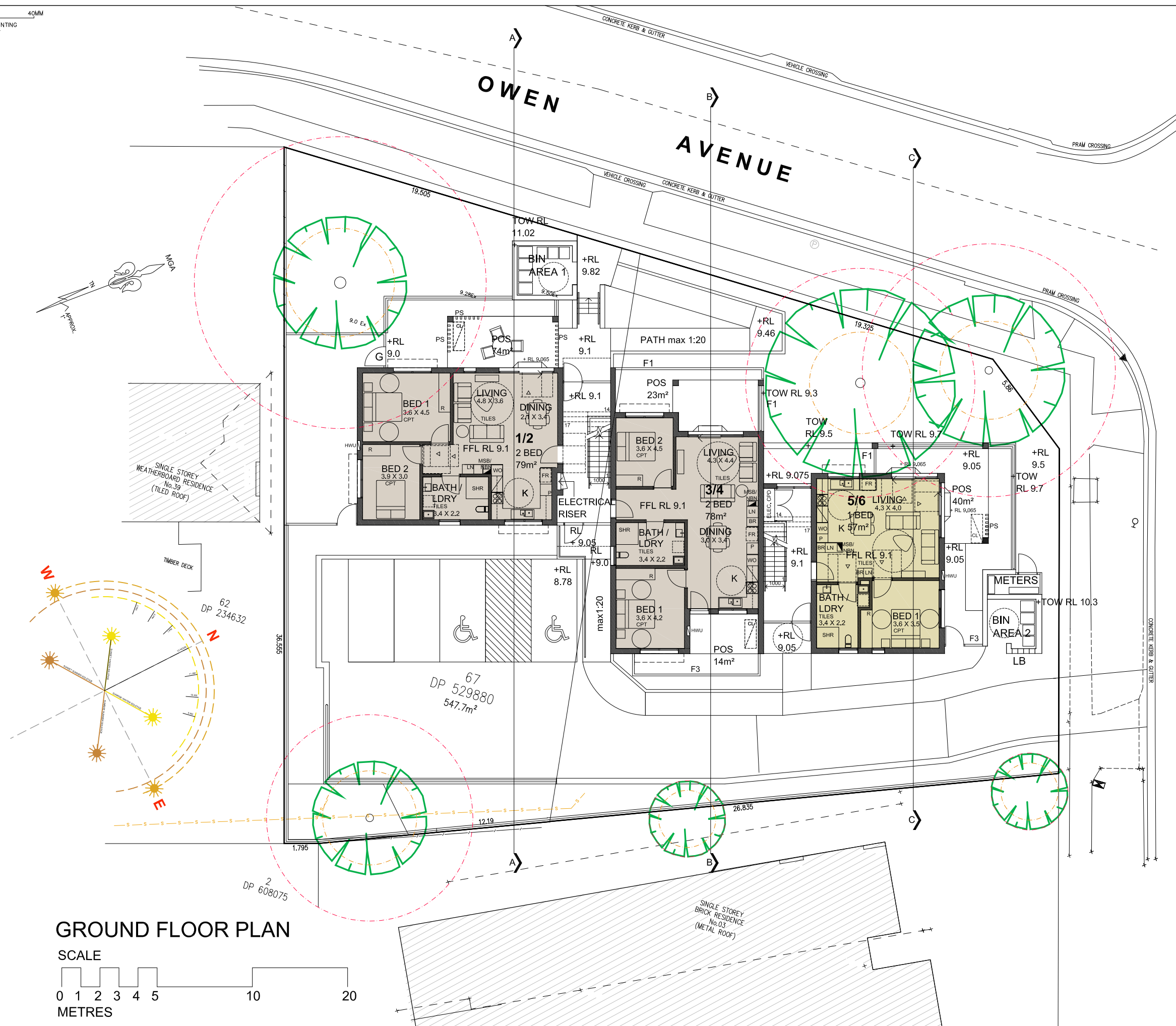
Central Coast Local Environmental Plan 2022 (NSW).

New South Wales Department of Infrastructure, Planning and Natural Resources (NSW DIPNR). (2005). *Floodplain Development Manual: the management of flood liable land*. Sydney, NSW: Author.

Wyong Local Environmental Plan 2013 (NSW).

Annexure A Architectural plans prepared by Barry Rush and Associates Pty Ltd, sheets A03 and A08, dated 22 March 2023





GROUND FLOOR PLAN

SCALE



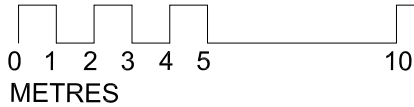
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- 1 BED UNIT
2 BED UNIT



FIRST FLOOR PLAN

SCALE



LOCKED BAG 5022
PARRAMATTA NSW 2124
PHONE No 1800 738 718
<https://www.dpie.nsw.gov.au/land-and-housing-corporation>



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Architects. Nominated Architect: Barry John Rush
ARB Registration No 3753
Suite 25A, 2 Beattie Street, Balmain, NSW
Phone: (02) 9555 9028 Email: info@barryrush.com.au
www.barryrush.com.au

REV	DATE	NOTATION/AMENDMENT
-	-	-
DO NOT SCALE DRAWINGS. CHECK ALL DIMENSIONS ON SITE. FIGURED DIMENSIONS TAKE PRECEDENCE.		

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SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW
LOTS 67 & 68 in DP 529880

PROJECT:
SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW
LOTS 67 & 68 in DP 529880

PROJECT:
SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW
LOTS 67 & 68 in DP 529880

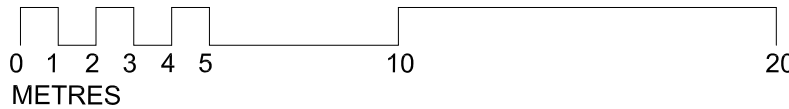
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ROOF PLAN

SCALE



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PROJECT:
**SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW**
LOTS 67 & 68 in DP 529880

TITLE:
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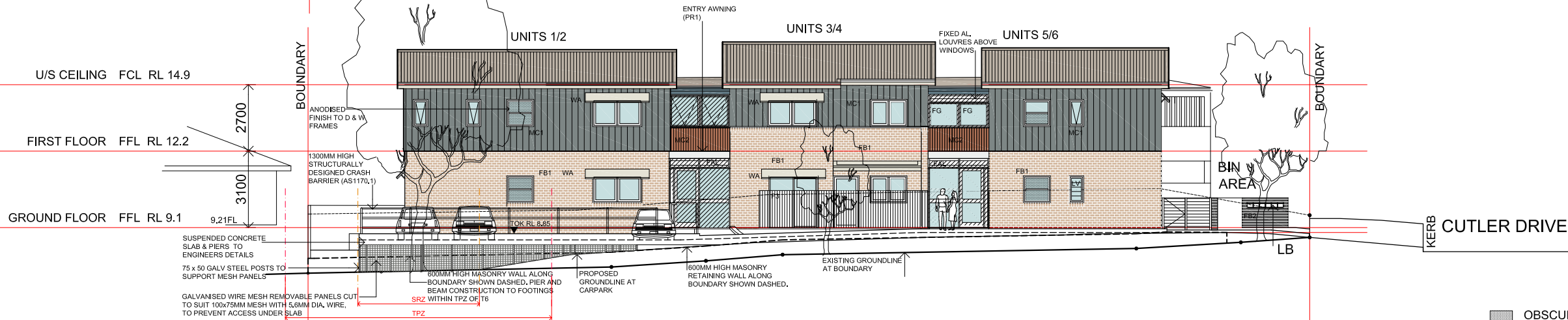
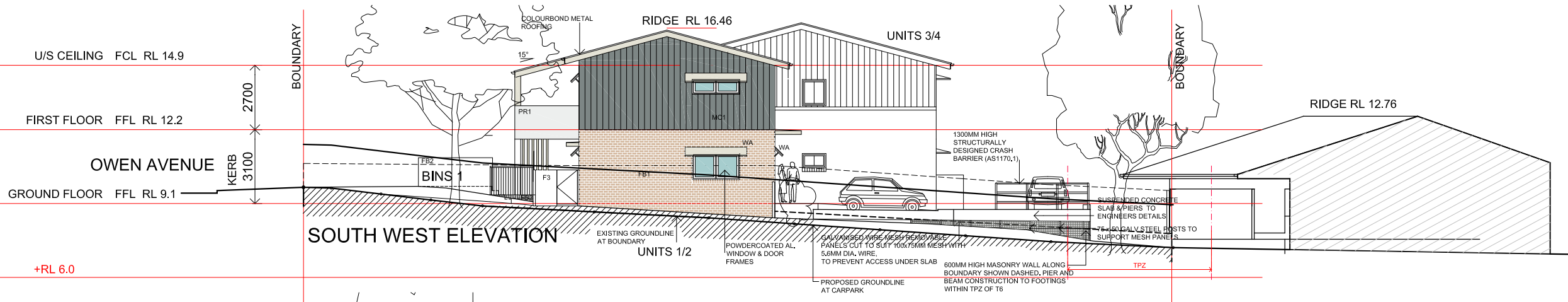
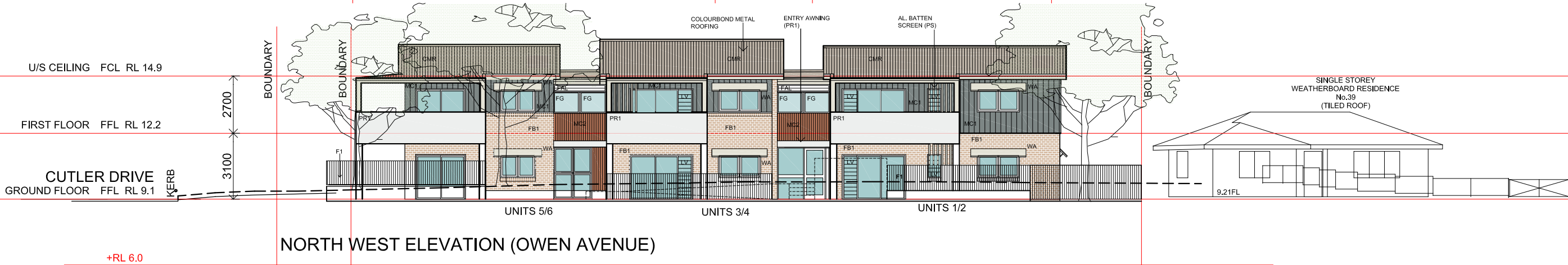
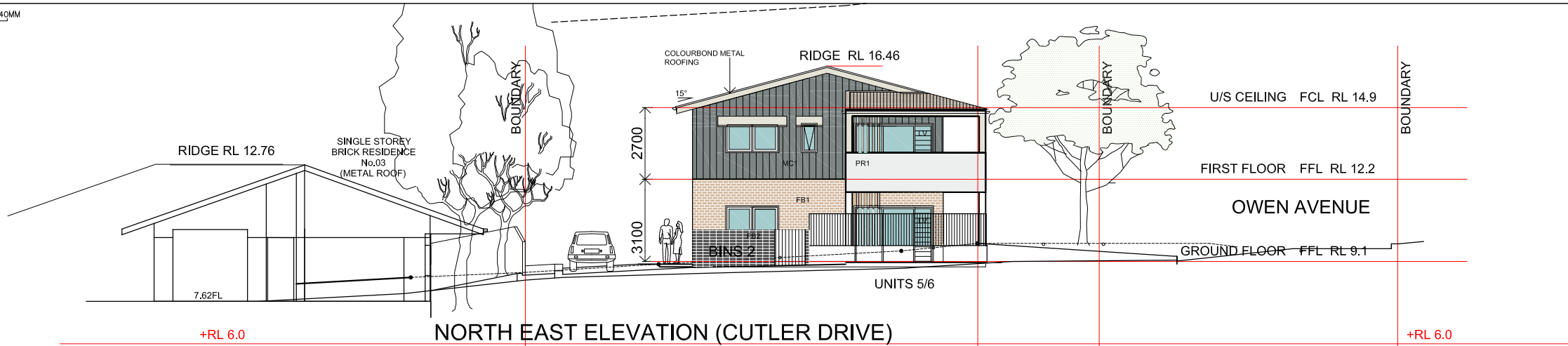
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DRAWN: MB
SHEET: A06

PROJECT No: BGYCG
CHECKED: BR
DESIGNATED ARCHITECT: BR
REV: -



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REV	DATE	NOTATION/AMENDMENT
-	-	-

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BUSINESS PARTNER:
SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW
LOTS 67 & 68 in DP 529880

TITLE:
ELEVATIONS

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STATUS: **DA**

DATE: **22/03/23**

SCALE: **1:100**

PROJ: **-**

PROJECT No: **BGYCG**

STAGE: **MB**

DRAWN: **MB**

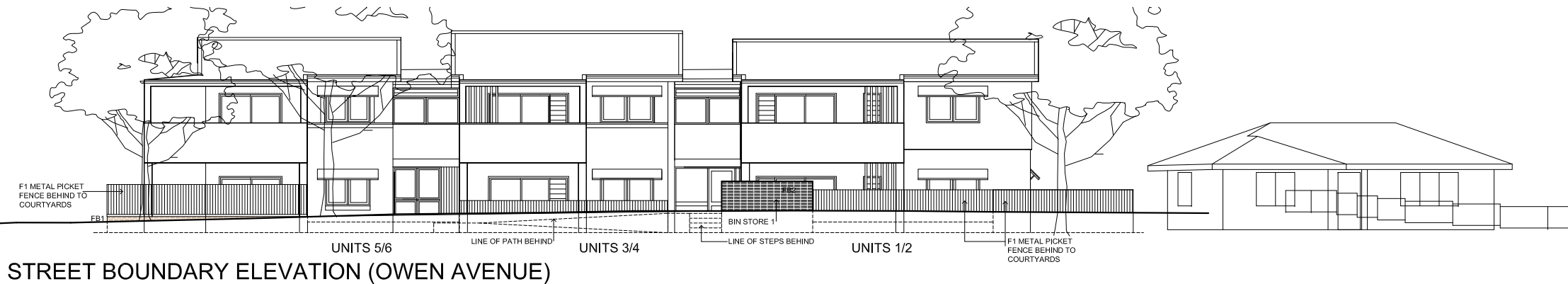
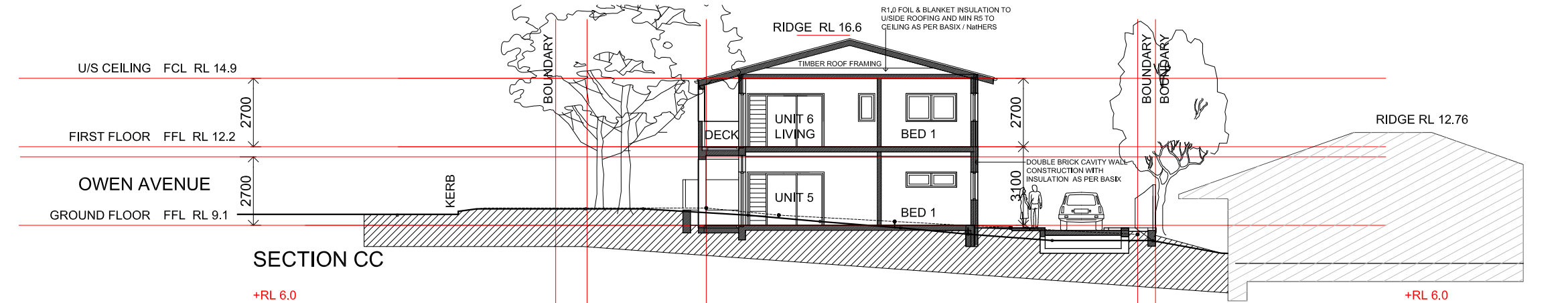
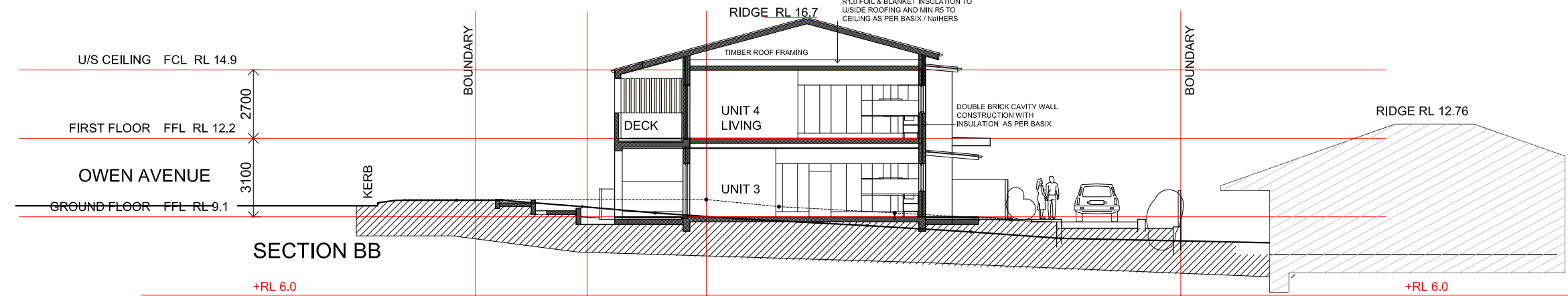
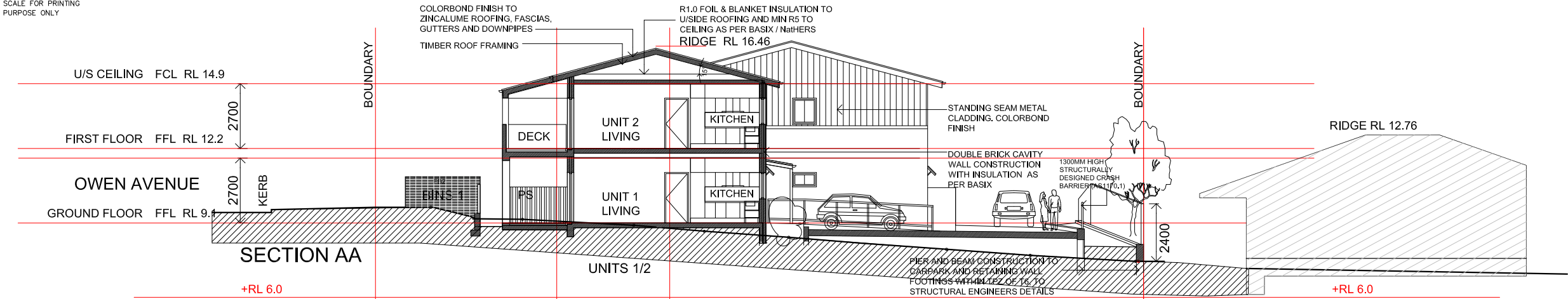
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DESIGNATED ARCHITECT: **BR**

REV: **-**

TYPE: **A**

SHEET: **A07**



February 2023		BSA Reference: 18669	
Building Sustainability Assessments		Ph: (02) 4962 3439	
enquiries@buildingsustainability.net.au		www.buildingsustainability.net.au	
Important Note			
The following specification was used to achieve the thermal performance values indicated on the Assessor Certificate. If the proposed construction varies to those detailed below than the Assessor and NatHERS certificates will no longer be valid. Assessments assume that the BCA provisions for building sealing & ventilation are complied with at construction.			
In NSW both BASIX & the BCA variations must be complied with, in particular the following:			
- Thermal construction in accordance with Vol 1 Section J1.2 or Vol 2 Part 3.12.1.1			
- Thermal breaks for Class 1 dwellings in accordance with Part 3.12.1.2(c) & 3.12.1.4(d)			
- Floor insulation for Class 1 dwellings as per Part 3.12.1.5(a)(ii), (iii) & (e) or (c), (d) & (e)			
- Building sealing in accordance with Section J3 or Part 3.12.3.1 to 3.12.3.6.			
Thermal Performance Specifications (does not apply to garage)			
External Wall Construction		Added Insulation	
Cavity Brick		R1.0	
Reverse Brick Veneer		R2.5	
Internal Wall Construction		Added Insulation	
Brick (internal to units)		None	
Cavity Brick (adjacent to common lobbies/stair)		R1.0	
Ceiling Construction		Added Insulation	
Plasterboard		R5.0 to ceilings adjacent to roof space	
Roof Construction		Added Insulation	
Colour (Solar Absorptance)		SA 0.47	
Metal		Foil + R1.0 blanket	
Floor Construction		Added Insulation	
Concrete		As drawn (if not noted default values used)	
Covering		None	
Windows			
Glass and frame type		U value	SHGC Range
Performance glazing Type A		4.80	0.46 - 0.56
Performance glazing Type B		4.80	0.53 - 0.65
ALM-001-01 A Aluminium Type A Single clear		6.70	0.51 - 0.63 All other glazing
ALM-002-01 A Aluminium Type B Single clear		6.70	0.63 - 0.77 All other glazing
Type A windows are awning windows, bifolds, casements, tilt 'n' turn windows, entry doors, french doors			
Type B windows are double hung windows, sliding windows & doors, fixed windows, stacker doors, louvres			
Skylights		Glass and frame type	U SHGC Area sq m Detail
U and SHGC values are according to AFRC. Alternate products may be used if the U value is lower & the SHGC is within the range specified			
Shade elements		(eaves, verandahs, awnings etc)	
All shade elements modelled as drawn			
Ceiling Penetrations		(downlights, exhaust fans, flues etc)	
Modelled as drawn and/or to comply with the ventilation and sealing requirements of the BCA			
Ducting is modelled at 150mm. No insulation losses from downlighting have been modelled.			
Additional Notes			
Nil			



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REV	DATE	NOTATION/AMENDMENT
-	-	-
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BUSINESS PARTNER:

PROJECT:
**SENIORS DEVELOPMENT
41-43 OWEN AVENUE
WYONG, NSW**
LOTS 67 & 68 in DP 529880

TITLE:
**SECTIONS
STREET BOUNDARY
ELEVATION**

FILE:
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PROJECT No: BGYCG

DRAWN: MB

CHECKED: BR

DESIGNATED ARCHITECT: BR

REV: -

TITLE: A

SHEET: A08

**Annexure B Central Coast Flood Information Certificate for No.'s
41 and 43 Owen Avenue, Wyong dated 20 April 2023**

Flood Information Certificate



Property Address: 41 Owen Ave, WYONG
Lot /DP: 67/DP529880
Date Prepared: 20 April 2023
Source of information: Wyong CBD Flood Study 2014

This Flood Certificate provides advice furnished in good faith by the council relating to the likelihood of the land identified above being flooded and to the nature or extent of any such flooding ("flood risk").

Flood level and flood planning advice is provided in the tables below and as maps in the Appendix. This advice regarding flood risk has been derived from the flood study listed above. Should you have any enquiries concerning this certificate, please do not hesitate to contact Andrew Dewar on 1300 463 954 during the hours of 8.00am to 4.15pm Monday to Friday

Flood Level Information Table

Flood Event	Minimum Level (m AHD)	Maximum Level (m AHD)
PMF	7.74	9.45
1% AEP	N/A	N/A
5% AEP	N/A	N/A

Planning Information Table

Flood Control Lot	<input checked="" type="checkbox"/>
Minimum Habitable Floor Level	7.92m AHD (Based on near 1% AEP flood level)
<i>Complying Development: Flood Exclusionary Categories</i>	
(a) Flood Storage Area	<input type="checkbox"/>
(b) Floodway Area	<input type="checkbox"/>
(c) Flow Path	<input type="checkbox"/>
(d) High Hazard Area (H3, H4, H5, H6 Hazard Categorisation)	<input type="checkbox"/>
(e) High Risk Area	<input type="checkbox"/>



Flood Information Certificate



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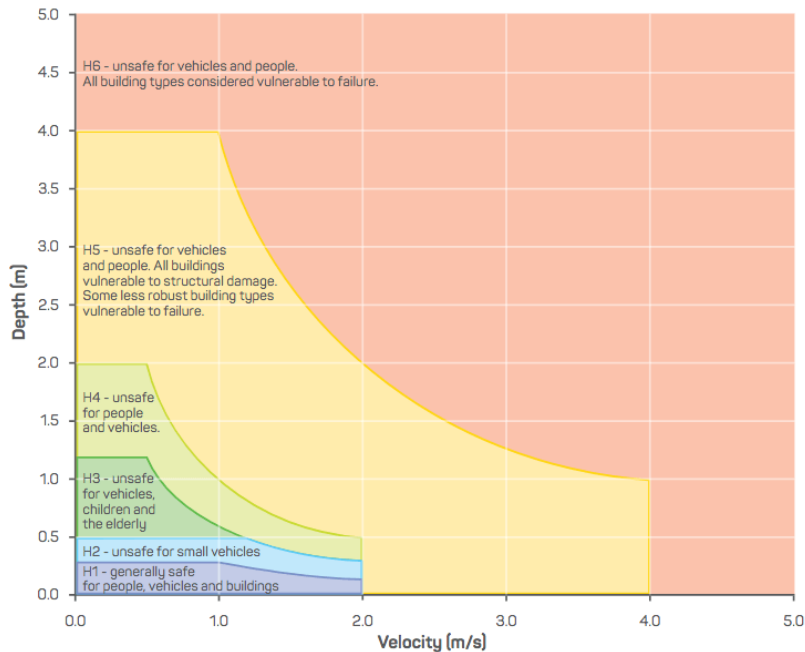
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Flood Information Certificate



Source – Australian Institute for Disaster Resilience 2017. Hydraulic Hazard: refer also to Australian Rainfall and Runoff Section 7.2.7 General Flood Hazard Curves (Figure 6.7.9) <http://book.arr.org.au.s3-website-ap-southeast-2.amazonaws.com/>

Disclaimers

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Flood Information Certificate



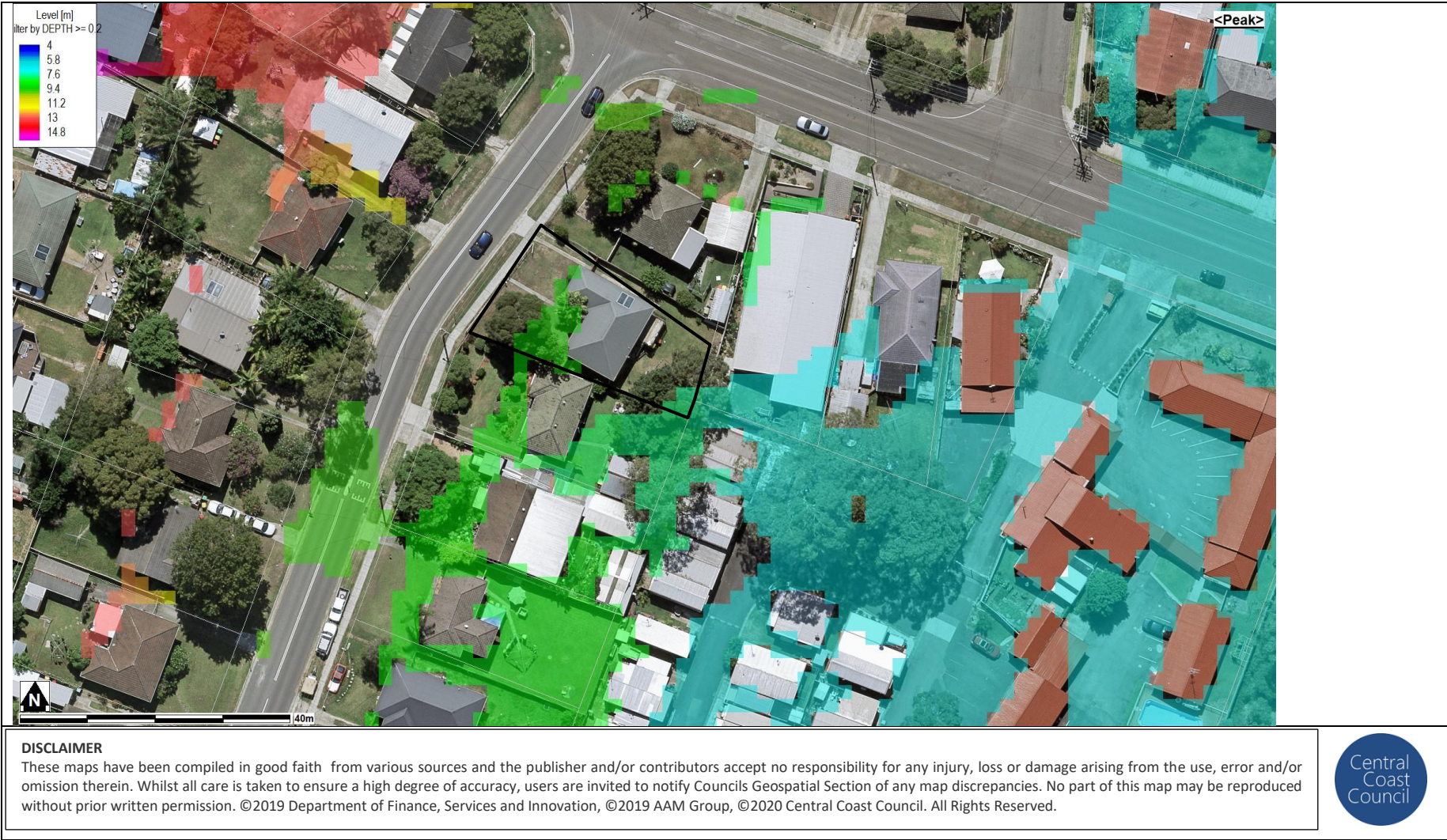
Glossary

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Flood Information Certificate

PMF Flood Extents



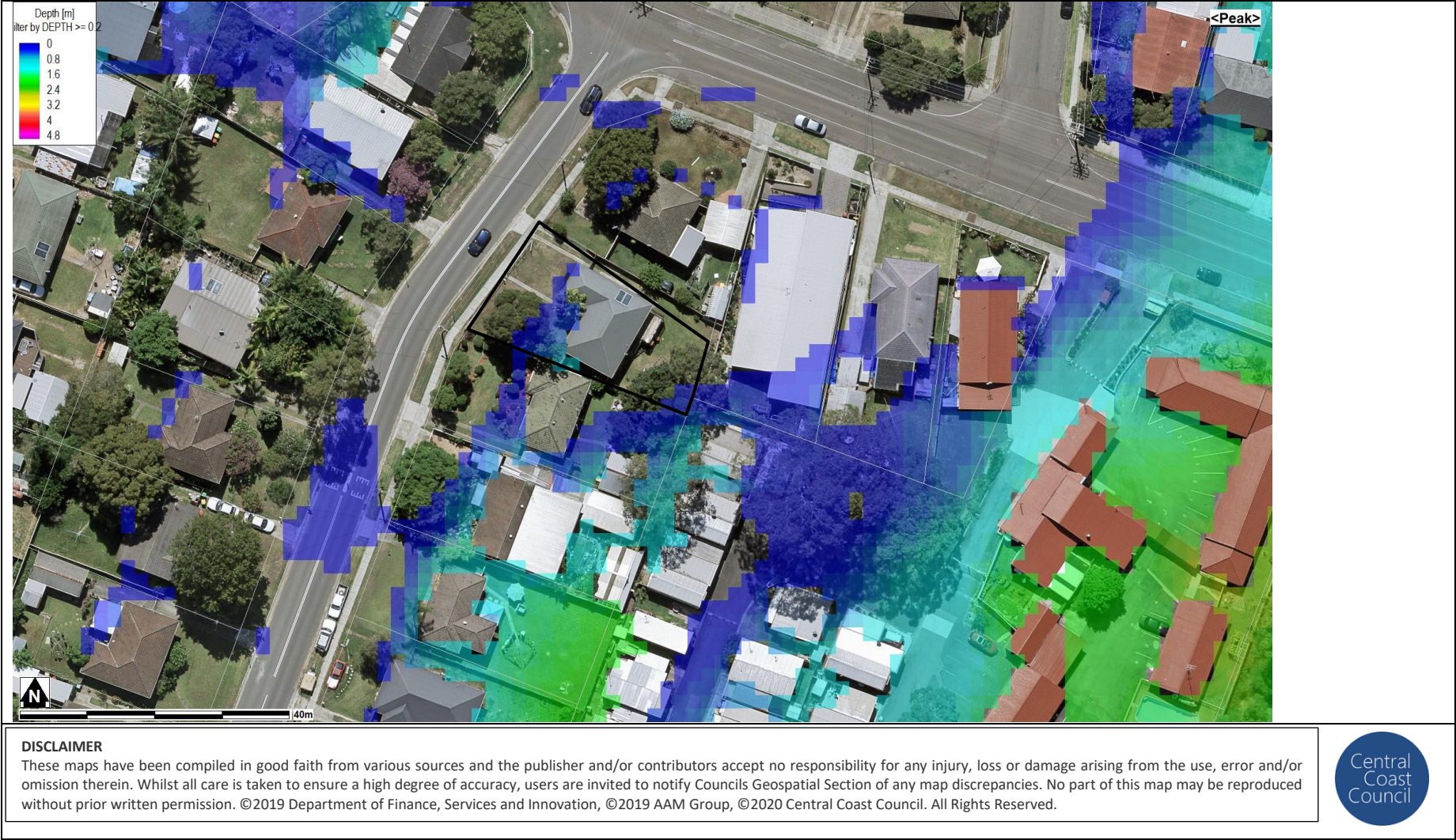
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Flood Information Certificate

PMF Flood Depth



Flood Information Certificate

1% AEP Flood Extents



Flood Information Certificate

1% AEP Flood Depth



Flood Information Certificate

5% AEP Flood Extents



Flood Information Certificate

5% AEP Flood Depths



Flood Information Certificate

1% AEP Hazard Categorisation



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Flood Information Certificate



Property Address: 43 Owen Ave, WYONG
Lot /DP: 68/DP529880
Date Prepared: 20 April 2023
Source of information: Wyong CBD Flood Study 2014

This Flood Certificate provides advice furnished in good faith by the council relating to the likelihood of the land identified above being flooded and to the nature or extent of any such flooding ("flood risk").

Flood level and flood planning advice is provided in the tables below and as maps in the Appendix. This advice regarding flood risk has been derived from the flood study listed above. Should you have any enquiries concerning this certificate, please do not hesitate to contact Andrew Dewar on 1300 463 954 during the hours of 8.00am to 4.15pm Monday to Friday

Flood Level Information Table

Flood Event	Minimum Level (m AHD)	Maximum Level (m AHD)
PMF	8.69	9.83
1% AEP	N/A	N/A
5% AEP	N/A	N/A

Planning Information Table

This site falls outside the Flood Planning Area. Flood Planning Controls do not apply for single and dual occupancy developments.

Flood Control Lot	<input type="checkbox"/>
Minimum Habitable Floor Level	N/A
<i>Complying Development: Flood Exclusionary Categories</i>	
(a) Flood Storage Area	<input type="checkbox"/>
(b) Floodway Area	<input type="checkbox"/>
(c) Flow Path	<input type="checkbox"/>
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Flood Information Certificate



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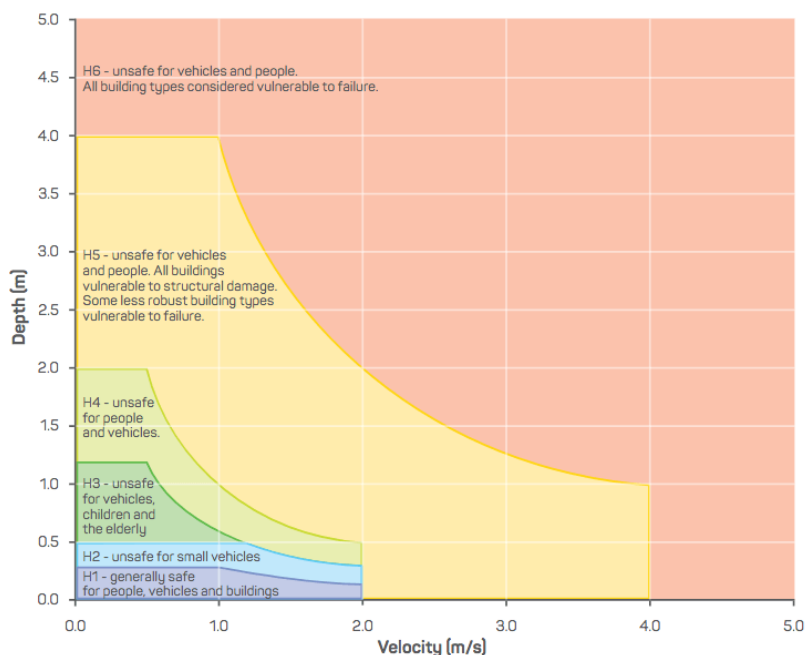
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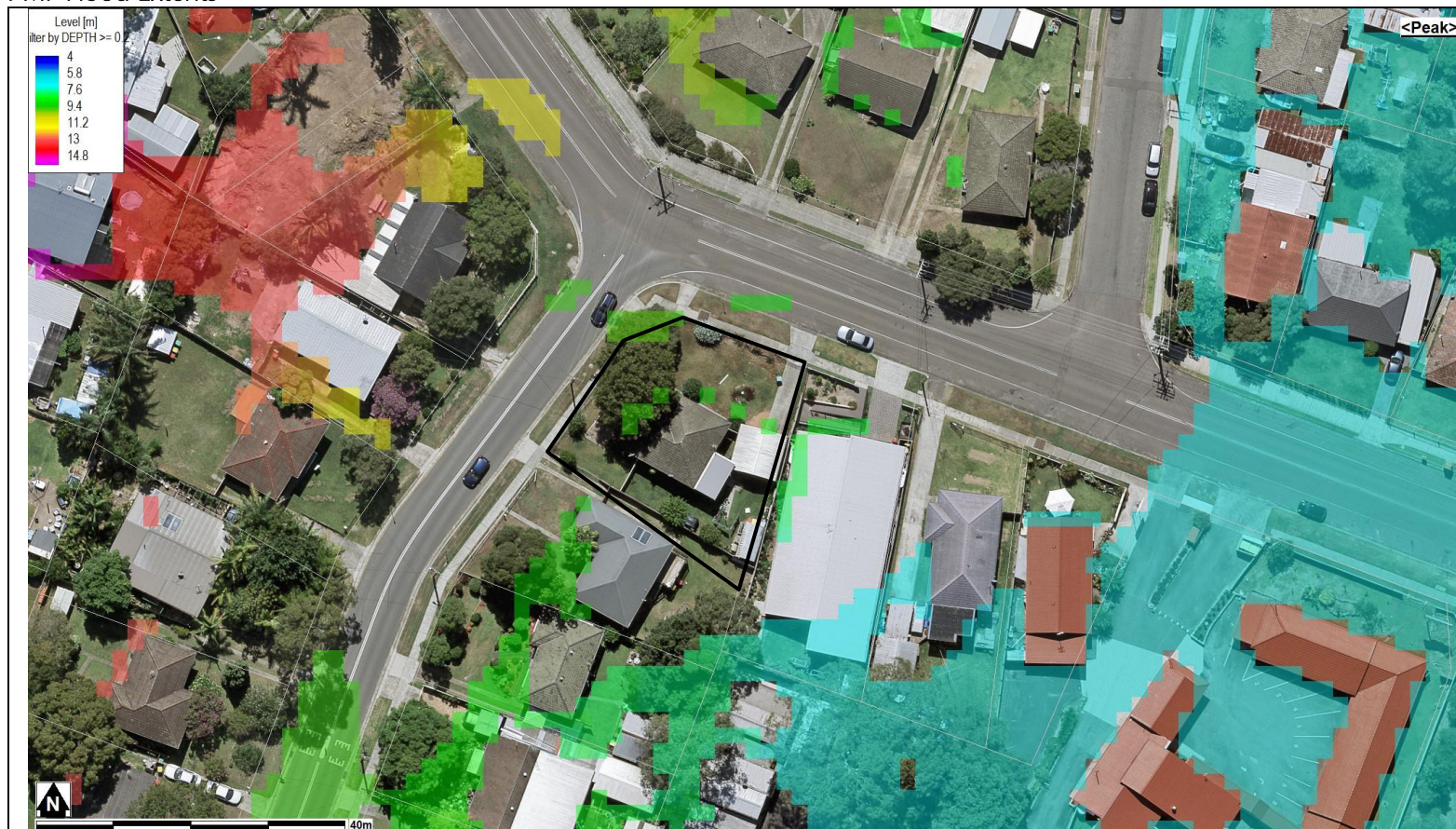
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Flood Information Certificate

PMF Flood Extents



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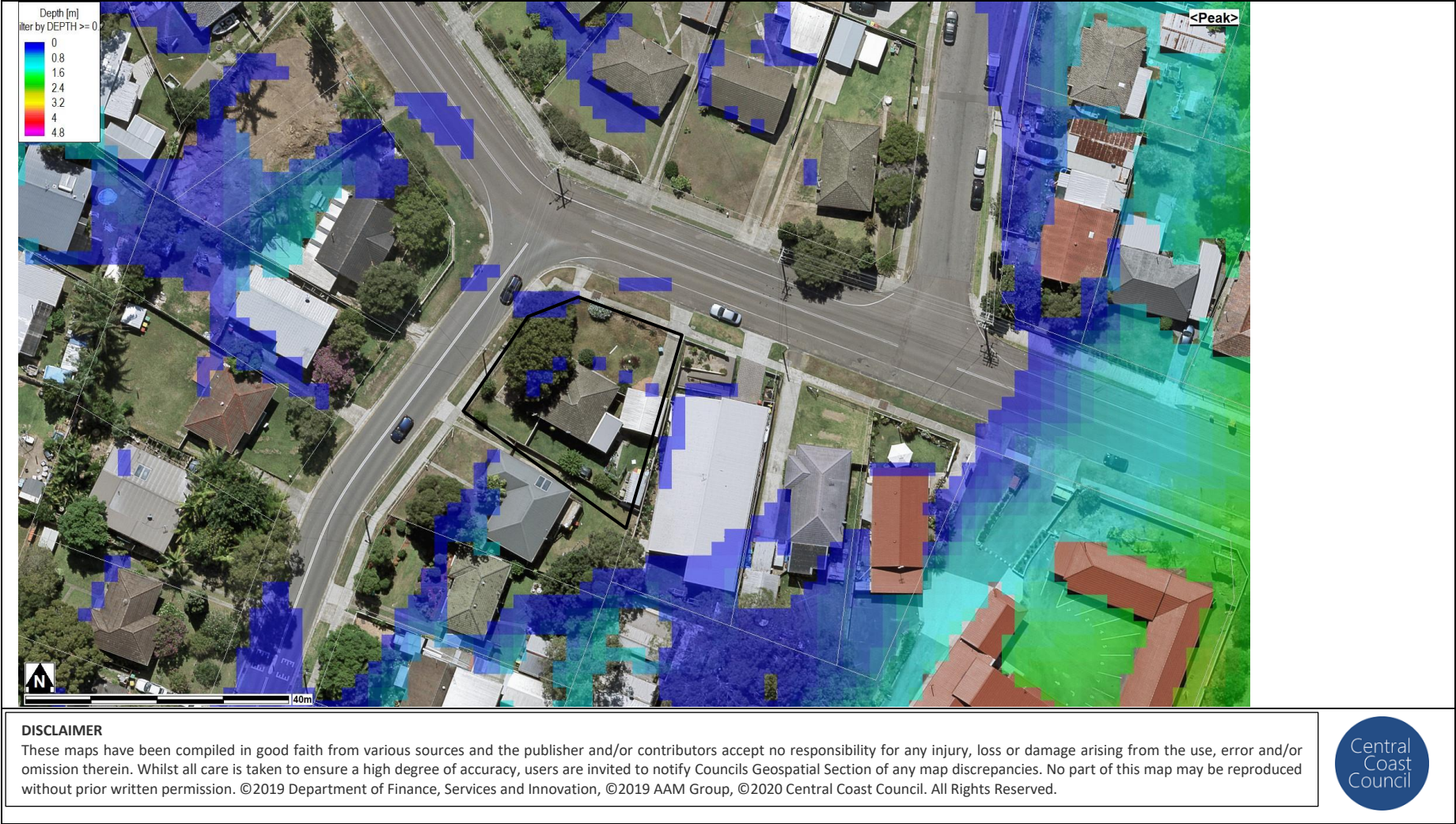
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Flood Information Certificate

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Flood Information Certificate

1% AEP Hazard Categorisation



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