

Central Coast

Local Planning Panel

Central Coast
Local Planning Panel Meeting
Business Paper
28 November 2024



Meeting Notice

**The Local Planning Panel Meeting
of Central Coast
will be held remotely - online,
Thursday 28 November 2024 at 2.00 pm,
for the transaction of the business listed below:**

1 Procedural Items

- 1.1 Disclosures of Interest.....3

2 Confirmation of Minutes of Previous Meetings

- 2.1 Confirmation of Minutes of Previous Meeting.....4

3 Planning Reports

- 3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling
House and the erection of a two storey Dwelling House with roof terrace.9

4 Reports

- 4.1 Operation of the Local Planning Panel in 2025..... 191
4.2 DA/1355/2023 - 76 Tramway Road, North Avoca - Alterations and additions to
an existing residential dwelling 194
4.3 DA/539/2024 - 1CR Oleander Street, CANTON BEACH - Temporary Use of Land
for Community Event (5 years)411

5 Confidential Items

- 5.1 Land and Environment Court Proceedings Class 1 - Central Coast Council ats
The Trustee for Vicary Family Trust Case 2024/00237002 - Appeal of Deemed
Refusal of DA/2209/2023 - 75 Ocean View Drive Wamberal

**The reason for dealing with the report confidentially is that it
contains advice concerning litigation, or advice that would
otherwise be privileged from production in legal proceedings
on the ground of legal professional privilege.**

Jason Perica
Chairperson

Item No: 1.1
Title: Disclosures of Interest
Department: Governance

Central Coast
Local Planning Panel

28 November 2024 Local Planning Panel Meeting

Reference: F2020/02502 - D14205789

The NSW Local Planning Panel Code of Conduct states that all panel members must sign a declaration of interest in relation to each matter on the agenda before or at the beginning of each meeting.

Recommendation

That Panel Members now confirm that they have signed a declaration of interest in relation to each matter on the agenda for this meeting and will take any management measures identified.

Item No: 2.1
Title: Confirmation of Minutes of Previous Meeting
Department: Corporate Services

Central Coast
Local Planning Panel

28 November 2024 Local Planning Panel Meeting

Reference: F2020/02502 - D16528443

Author: Lisa Martin, Civic Support Officer Civic Support

Summary



The Minutes of the following Meeting of the Local Planning Panel, which have been endorsed by the Chair of that meeting, are submitted for noting:

- ***Local Planning Panel Meeting held on 14 November 2024***

Recommendation

That the minutes of the previous Local Planning Panel Meeting held on 14 November 2024, which were endorsed by the Chair of that meeting, are submitted for noting.

Attachments

1   MINUTES - Local Planning Panel - 14 November 2024 D16516377



Local Planning Panel

Minutes of the
Local Planning Panel Meeting
Held Remotely - Online
on 14 November 2024

Panel Members

Chairperson	Heather Warton
Panel Experts	Kevin Hoffman Mike Ryan
Community Representative	Julian Ardas

Central Coast Council Staff Attendance

Dean Wooding	Senior Development Planner, Employment and Urban Release
Emily Goodworth	Section Manager, Employment and Urban Release
Caitlin Northam	Events Officer, Events
Briony Stiles	Civic Support Team Leader
Lisa Martin	Civic Support Officer

The Chairperson Heather Warton, declared the meeting open at 12:01pm.

Apologies

The Panel noted that no apologies had been received.

Minutes of the Local Planning Panel Meeting 14 November 2024 cont'd

PROCEDURAL ITEMS

1.1 Disclosures of Interest

The Panel Members confirmed that they have signed a declaration of interest in relation to each matter on the agenda for this meeting and will take any management measures identified.

CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

2.1 Confirmation of Minutes of Previous Meeting

12:03 pm

The panel confirmed that the minutes of the previous Local Planning Panel Meeting held on 17 October 2024, which were endorsed by the Chair of that meeting, were submitted for noting.

PLANNING REPORTS

3.1 DA/612/2024 - Chapmans Store - 14-16 Alison Road, McKinnon Hall, 10, 17-21 Rankens Court, 1-11 Alison Rd, 98 Pacific Hwy, Bakers Lane, Wyong

Site Inspected	Yes
Relevant Considerations	As per Council assessment report
Material Considered	<ul style="list-style-type: none">Documentation with applicationCouncil assessment report Event overview
Council Recommendation	<ul style="list-style-type: none">Approval
Panel Decision	<p>1 <i>That the additional information contained in the Memo dated 14 November 2024 be considered in the Panel's determination of the application.</i></p> <p>2 <i>That Council <u>grant consent</u> to DA/612/2024 at Lot 6 Sec 2 DP 3136, Lot 7 Sec 2 DP 3136, Pt Lot 16 Sec 3 DP 3136,</i></p>

Minutes of the Local Planning Panel Meeting 14 November 2024 cont'd

Lot 15 DP 656584, Lot 1 DP 319879, Lot A DP 191017, Lot 1 DP 1237827, Lot 1 DP 1119567, Lot 171 DP 727765, Lot R/1560 Rd ROAD, Lot R/2106 Rd ROAD, Lot R/1222 Rd ROAD, Lot R/17 Rd ROAD, Lot R/404 Rd ROAD, Lot R/1415 Rd ROAD, Chapmans Store, 14-16 Alison Rd, McKinnon Hall, 19 Rankens Court - 17 Rankens Court - 21 Rankens Court - 1-11 Alison Rd - 98 Pacific Hwy - Wyong Town Park, 10 Rankens Court - Bakers Lane Wyong for a Temporary Use of Land - Community Event - Love Lanes Festival - 2025-2029 subject to the conditions provided in Memo dated 14 November 2024 (Attachment 1).

3 That Council advise those who made written submissions of Council's decision.

Reasons

- 1 The Panel concurs with the summary of the basis for approval of the proposal in the 'Conclusion' of the Council Officer's Assessment report. The events will provide positive economic and social benefits to Wyong and the wider community.
- 2 The Panel was thoroughly briefed on the proposal and a representative from the Applicant, the Council's Events Team provided further background and information at the Meeting. The Panel notes that a similar event has been held in previous years (under separate consent/s).
- 3 The final conditions in the Supplementary Memo dated 14 November 2024 are aimed at mitigating any impacts.
- 4 The proposed event management measures and plans that form part of the application will also ensure orderly control of the proposed festival and public entertainment.

Votes

The decision was unanimous.

Minutes of the Local Planning Panel Meeting 14 November 2024 cont'd

4.1 Land and Environment Court Proceedings Class 1 - Central Coast Council ats Haibiao Lin Case 2024/00258004 - Appeal of Deemed Refusal of DA/309/2024 - 23 Coogee Road Point Clare

At this stage of the meeting being 12:59 pm the meeting moved into Confidential Session and access to the correspondence and reports relating to the items considered during the course of the closed session will be withheld. This action is taken in accordance with Section 10a of The Local Government Act, 1993 as the items listed come within the following provisions:-

Confidential Session

The reason for dealing with the report confidentially is that it contains advice concerning litigation, or advice that would otherwise be privileged from production in legal proceedings on the ground of legal professional privilege.

Relevant Considerations	Matters contained in the confidential Report titled Land and Environment Court Proceedings Class 1 - Central Coast Council ats Haibiao Lin Case 2024/00258004 - Appeal of Deemed Refusal of DA/309/2024 - 23 Coogee Road Point Clare, and letter from Wilshire Webb Staunton Beattie Lawyers dated 1 October 2024.
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Material Considered	<ul style="list-style-type: none">• Statements of Facts and Contentions, filed 1 August 2024.
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Council Recommendation	That the Panel note receipt of the appeal and delegate legal instructions to the Unit Manager of Development Assessment.
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Panel Decision	<ol style="list-style-type: none">1 The Local Planning Panel notes the receipt of a Class 1 appeal in the Land and Environment Court of the deemed refusal of Development Application DA/309/2024.2 In accordance with section 2.20(8) of the Environmental Planning and Assessment Act 1979, the Local Planning Panel delegate to the Unit Manager of Development Assessment the ability to give legal instruction to Council's external legal counsel at any upcoming proceedings relating to the appeal, including any conciliation conference in accordance with section 34AA of the Land and Environment Court Act 1979.
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Reasons	Not Applicable.
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Votes	The decision was unanimous.
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The Meeting closed at 1:10 pm

Item No: 3.1

Title: DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace.

Central Coast
Local Planning Panel

Department: Environment and Planning

28 November 2024 Local Planning Panel Meeting

Reference: DA/2304/2023 - D16499955

Author: Stephen Goodworth, Senior Building Surveyor

Manager: Wayne Herd, Section Manager Building Assessment and Certification

Executive: Andrew Roach, Unit Manager. Development Assessment

Summary

An application has been received for New Dwelling House & Demolition of the existing Dwelling House and associated Structures. The application has been examined having regard to the matters for consideration detailed in section 4.15 of the *Environmental Planning and Assessment Act 1979* and other statutory requirements with the issues requiring attention and consideration being addressed in this report.

This development application is required to be reported to the Local Planning Panel due to the number of submissions, with 12 submissions by way of objection received at the conclusion of the notification period.

The application is recommended for refusal.

Applicant	Lorna Sinac
Owner	MAK 3 NSW Pty Ltd
Application No	DA/2304/2023
Description of Land	Lot 23 DP 20094. 1 Ficus Avenue, Avoca Beach
Proposed Development	New Dwelling House & Demolition of Existing Dwelling House and ancillary structures
Site Area	1082.8sqm (by survey) and 1081sqm (by DP)
Zoning	R2 Low Density Residential
Existing Use	Dwelling House
Employment Generation	No
Estimated Value	\$4,733,110
Conflict of Interest	The staff responsible for the preparation of the report, recommendation or advice to any person with delegated authority to deal with the application have no pecuniary conflict of interest or non-pecuniary conflict of interest to disclose in respect of the application.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

Recommendation

- 1 *The Local Planning Panel refuse consent to DA/2304/2023 at 1 Ficus Avenue, Avoca Beach, Lot 23 in DP 20094 for New Dwelling House & Demolition of Existing Dwelling House subject to the reasons outlined below and having regard to the matters for consideration detailed in Section 4.15 of the Environmental Planning and Assessment Act 1979.***
- 2 *That Council advises those who made written submissions of the Panel's decision.***

Key Issues

1. Setback of proposed two storey dwelling from Avoca Lake and inadequate design response to edge of Lake (during periods of full or near full capacity) formed by grassed edge.
2. Proposed rear setbacks of dwelling following the pattern of rear setbacks of other dwellings along the southern foreshore of the lake.
3. Setback of proposed northern portion of dwelling from public reserve (eastern side boundary)
4. Fencing and planting proposed within Lake during periods of full or near full capacity.

Reasons for not supporting the proposed development

In summary, it is recommended that the proposed development be refused for the following reasons, which are elaborated upon throughout the remainder of the report for the information of the Local Planning Panel:

1. The proposal is not acceptable in relation to the matters for consideration under section 4.15 of *Environmental Planning and Assessment Act 1979*.
2. The proposed development does not satisfy the provisions of *State Environmental Planning Policy (Resilience and Hazards) 2021* having regard to the surrounding Coastal Environment and Coastal Use Areas as required to be taken into account under clause 2.10 and 2.11.
3. The Local Planning Panel cannot be satisfied, that granting consent would be in the public interest as the proposal is inconsistent with the objectives of the SEPP (Resilience and Hazards) 2021 and inconsistent with the objectives of the R2 Low Density Residential zone.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

4. The proposal is inconsistent with the following objectives of the R2 Low Density Residential zone:
 - *To encourage best practice in the design of low density residential development.*
 - *To maintain and enhance the residential amenity and character of the surrounding area.*
5. The setting and location of the proposed dwelling house in relation to the established rear building alignment is inconsistent with the objectives within CCDCP 2022 Chapter 2.17 – Character of Scenic Quality and the related document to this DCP being the Character and Scenic Quality Statements of *Avoca1: Ocean Beachfront – Desired Character Requirements*.
6. The development results in unnecessary and reasonable adverse impacts when viewed from the neighbour's land, public spaces and amenity of the area as a result of inconsistency with the established rear building alignment.
7. The proposal is inconsistent with various objectives within Parts 2.1.4.1 and 2.17 of Central Coast Development Control Plan 2022.
8. Both the surrounding predominant form in the area and the desired future character of the area favours a two-storey presentation at consistent rear setbacks to other residential building along the Avoca Lake frontage. The proposal is antipathetic to this form on a visually prominent site from public spaces around the lake, while the proposal (changed or new) could readily achieve form compliance and desirable congruity.

Precis:

Proposed Development	Demolition of existing <i>Dwelling house</i> and erection of a new two Storey <i>Dwelling house</i> incorporating a roof top terrace.
Permissibility and Zoning	R2 – Low Density Residential under the provisions of the Central Coast Local Environmental Plan 2022 (CCLEP 2022) The proposed development is defined as a <i>Dwelling house</i> which is permissible with consent in the zone.
Current Use	Dwelling house
Integrated Development	No
Submissions	The development application was notified (in accordance with the provisions of the <i>Central Coast Development Control Plan 2022</i>) from 9 February 2024 to 23 February 2024. Twelve (12) submissions were received.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

Variations to Instruments and Policies

State Environmental Planning Policy (Resilience and Hazards) 2021

Section	2.11 (1) (a) (i) – Existing safe access to and along the foreshore for members of the public, including persons with a disability
Planning Control	Consent authority to consider whether the proposed development is likely to cause an adverse impact on certain matters
Departure basis	The proposed location of landscaping and the rabbit proof fence, whilst positioned on their land, will impact on historical safe access along the southern foreshore of the lake during periods at full, or near full, capacity.

Section	2.11 (1) (c) consent authority to take into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development
Planning Control	Development on land within the coastal use zone
Departure basis	The proposed development will be inconsistent to the established rear building alignment of other nearby residential buildings when taking into account the surrounding built environment. In other words, the proposed rear alignment of the development will be inconsistent, and hence out of character, to the setting and pattern of other residential buildings located along the Avoca Lake foreshore. Furthermore, the setting of the dwelling (design characteristics) does not respond to the shoreline of the lake during periods when full, or near full to capacity, delineated by the natural curvature of the grassed edged embankment of the lake.

Central Coast Local Environmental Plan 2022

Clause	2.3 – Zone Objectives and land use table
Planning Control	Objectives for Zone R2 Low Density Residential
Departure basis	<p>The 2 of the 5 objectives for Zone R2 Low Density Residential, have determined not to be satisfied being:</p> <ul style="list-style-type: none"> • <i>To encourage best practice in the design of low density residential development</i> • <i>To maintain and enhance the residential amenity and character of the surrounding area.</i> <p>The proposal is not considered to be consistent with zone objectives dot points 3 & 5 based on the rear setback of the proposed dwelling not compatible with the establish rear alignment setback of other residential buildings along the southern foreshore of Avoca Lake and thus be out of character and not conforming to the residential amenity within this locality.</p>

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

Central Coast Development Control Plan 2022 Chapter 2.1 - Dwelling Houses, Secondary Dwellings and Ancillary Structures

Clause	2.1.3.1 e - Waterfront setback (Eastern side boundary)
Planning Control	6m setback (from property boundary) for ground storey 10m setback (from property boundary) for any storey above the ground storey.
Departure basis	Elements of the eastern external walls and attached structures do not run parallel to the eastern side boundary and therefore setbacks vary from its closest point of 1.6m upto 4.8m. (at both levels). This represents a variation of upto 8.4m or 84%.

Clause	2.1.4.1 Views
Planning Control	Sited and designed to enable a sharing of views with surrounding private properties, particularly from habitable rooms
Departure basis	The proposal to position the building further north and beyond the rear establish building line does not align to the principles of view sharing.

Central Coast Development Control Plan 2022 Chapter 2.17.1 - Character and Scenic Quality

Part	2.17.1 -Matters for consideration
Planning Control	Development applications are to demonstrate their consistency or compatibility with Character and Scenic Quality Statements incorporated as related documents to this DCP.
Departure basis	The setting and location of the proposed dwelling house in relation to the established rear building alignment is inconsistent with the objectives within CCDCP 2022 Chapter 2.17 – Character of Scenic Quality and the related document to this DCP being the Character and Scenic Quality Statements of <i>Avoca1: Ocean Beachfront – Desired Character Requirements</i> .

The Site

The site is a single lot legally identified as Lot 23 Deposited Plan No. 20094 (No 1 Ficus Avenue Avoca Beach). The site is 1081m² in area (by DP) and generally rectangular in shape, narrowing towards the rear northern boundary, as illustrated in the aerial image of the land below.

The land is relatively level with ground surface levels (to AHD) of RL2.8m near the road frontage and RL2.5m near the northern grassed edge interfacing with Avoca Lake. The land is flood prone and subject to flood mitigation standards, including the requirement to have a minimum floor level for habitable spaces within the dwelling house of RL3.49m.



Figure 1 - Ariel Image of land and surrounds. – Source: GeoView 2020.

The waterbody known as Avoca Lake during periods at full, or close to full capacity flows across the rear portion of the land. It is estimated that approximately 250m² of land area during these periods is submerged (i.e., forming part of the lake). The northern grass edge depicted within the aerial images of the land generally delineates the lake edge during these periods. The grassed edge also delineates the area of the land subject to *Flood Precinct 4: High Hazard* flooding.

Fences along the southern foreshore of the lake, where provided, are open (generally a rope and post arrangement) and are approx. aligned to the natural grassed edge of the lake during periods, when the lake is full. The local community based on a unique historic circumstance utilise and walk along the southern edge of the lake, across private land parcels, connecting the nearby open space (Heazlett Park) with the surf beach.

The land is not mapped or identified as being bushfire prone, however is mapped as Class 5 - Acid Sulfate Soils. The site does not contain any native vegetation or fauna habitat.

The land contains a dwelling house. The Statement of Environmental Effects submitted with this development application on page 8, describes the existing dwelling house to contain 6 bedrooms. An examination of the most recent development consent (BA41518/87) granted in April of 1987 references stamped approved architectural drawings for a 4-bedroom

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

dwelling house. These drawings describe only spaces for car parking and a laundry room at ground level to withstand the effect of flooding. The additional two bedrooms of the described six bedroom dwelling are likely to be contained beneath the dwelling.



Figure 2 - Image taken of subject land from Ficus Ave. The existing blue in colour dwelling house is proposed to be demolished.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)



Figure 3 - Image taken SE of subject site near public carpark.



Figure 4 - image of subject site taken from Jack Muller Picnic Reserve

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)



Figure 5 - Image taken (25/10/24) from northern portion of subject land viewing north. The lines marked in the sand do not represent the northern rear boundary of the site (it extends for a further 20ms) but rather illustrates the location of proposed landscaping and alignment of rabbit proof fence. Note: It also proposed to plant for a further 1.5ms to the north (lake side) of the north marked sand line.



Figure 6 - Image taken (25/10/24) on adjacent western site viewing east towards the open surf beach. The lines marked in the sand represent the location of the rabbit proof fence. Landscaping is proposed to either side of the marked sand line. It is noted the land boundary extends from the post in the foreground on the same alignment as the chain /post fence for a further 16m (approx.) into the lake.

Surrounding Development

The adjoining land immediately to the west contains a building with 2 dwellings (originally 3) under a strata plan. The eastern adjoining land is Crown Land, under the control of Central Coast Council. A portion of the Crown Land forms Avoca Lake with the remainder a public reserve known as Jack Muller Picnic Area.

Within the vicinity of the subject land, developments comprise of dwelling houses and medium density residential unit developments.



Figure 7 - Image taken (19/3/24) when water level in lake was lower than previous images. Photo taken from within bed of lake with subject site (blue clad dwelling with white trimmings) to left of photo.



Figure 8 - Extract of image included within applicant's SEE. The red arrow highlights the location of the subject site.



Figure 9 - image taken from northern portion of subject site viewing towards building (separated into 2 dwellings) located on the western adjoining land.



Figure 10 - image taken of developments directly opposite the subject site within Ficus Ave.

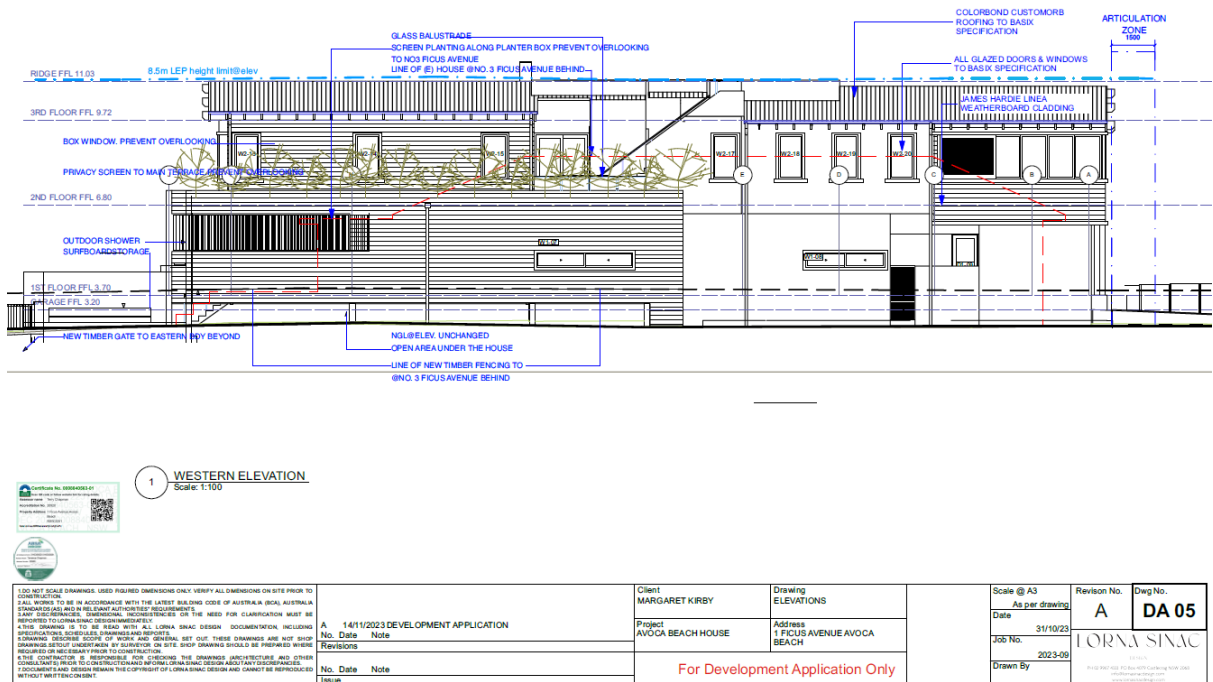


Figure 11 - Image taken to the south of the subject site illustrating heights and size of surrounding developments within the R1 land zone on the southern side of the Ficus Ave.

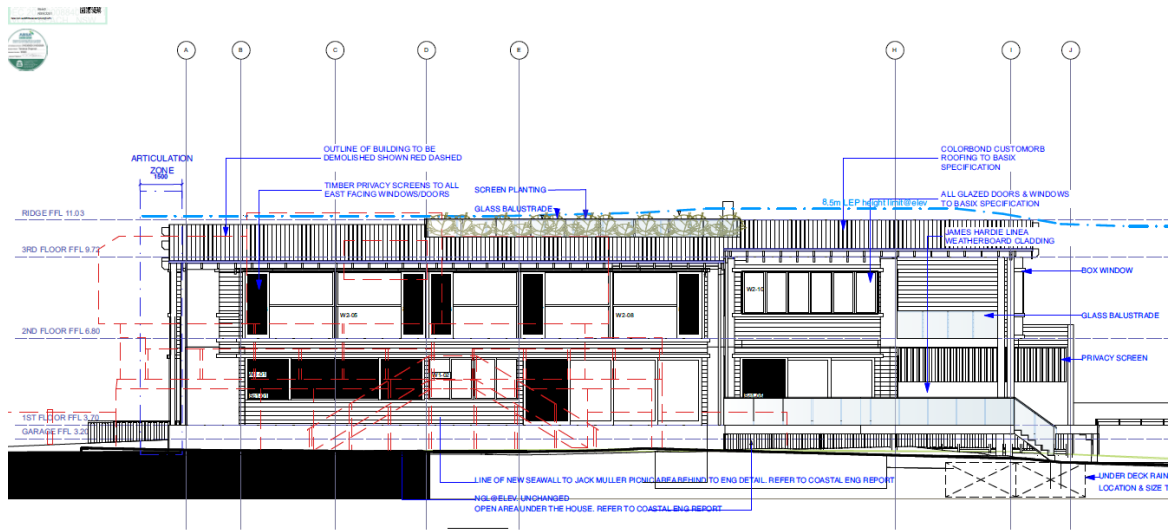
The Proposed Development

The development application seeks consent to demolish the existing dwelling and for the erection of a new two storey dwelling house. The ground floor level is proposed to be approximately 1m above the ground level at a floor level of 3.7mAHD to address flooding. The ground floor level contains living spaces, such as the kitchen, dining, TV, study and living rooms; as well as service rooms including a store, laundry, WC, lift well and double garage. A large terrace, enclosed along its entire western side is proposed to the rear of the dwelling.

The first-floor level mainly contains the bedrooms, ensuites and Walk in Robes. There are 7 bedrooms proposed at this level, with each bedroom serviced by an ensuite. A large balcony is proposed for the master bedroom located at the rear of the dwelling. A smaller balcony is proposed along the western elevation. This balcony is a landing point for access to/from stairs leading to the roof terrace and roof spa.

[illegible]

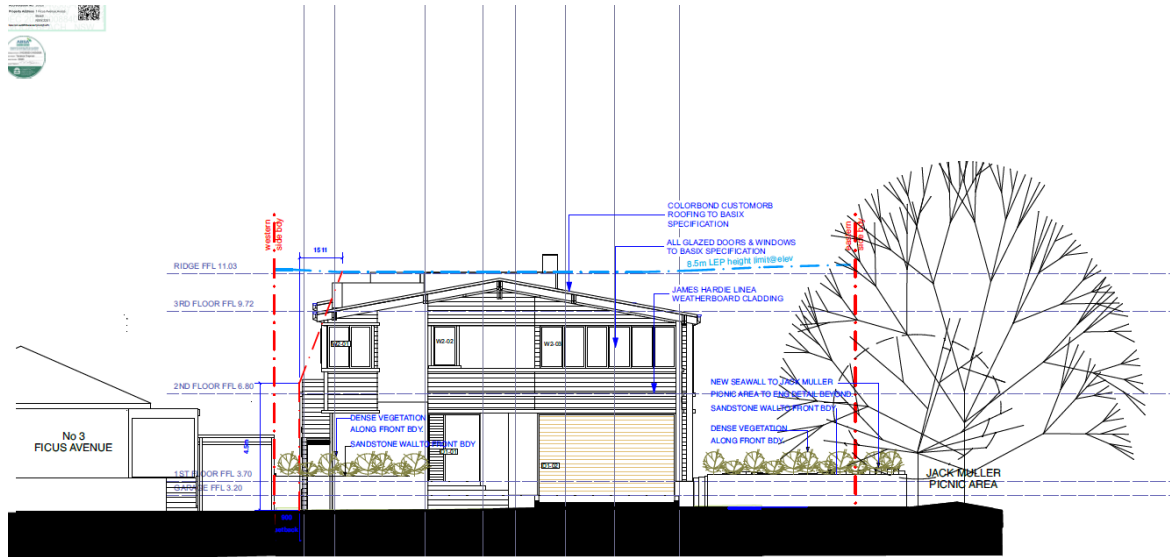
3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)



1 EAST ELEVATION
Scale: 1:100

1:500 NOT SCALE DRAWINGS. USED FIGURED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. 2: ALL WORK TO BE IN ACCORDANCE WITH THE LATEST BUILDING CODE OF AUSTRALIA (BOL), AUSTRALIAN STANDARDS (AS) AND IN RELEVANT AUTHORIZED REQUIREMENTS. 3: LANDSCAPE ARCHITECTURE, ARCHITECTURE OR THE NEED FOR CLARIFICATION MUST BE REFERRED TO LORNA SINAC DESIGN DOCUMENTATION, INCLUDING LORNA SINAC DESIGN DOCUMENTATION. 4: THIS DRAWING IS TO BE READ WITH ALL LORNA SINAC DESIGN DOCUMENTATION, INCLUDING LORNA SINAC DESIGN DOCUMENTATION. 5: THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE DRAWINGS (ARCHITECTURE AND OTHER CONSULTANTS) BEFORE CONSTRUCTION AND BEFORE LORNA SINAC DESIGN AND THAT DIMENSIONS AND DOCUMENTS AND DESIGN REMAIN THE COPYRIGHT OF LORNA SINAC DESIGN AND CANNOT BE REPRODUCED WITHOUT WRITTEN CONSENT.	Client: MARGARET KIRBY Project: AVOCA BEACH HOUSE Drawing: ELEVATIONS Address: 1 FICUS AVENUE AVOCA BEACH Revision No. A Dwg No. DA 06 Scale: @ A3 As per drawing Date: 31/10/23 Job No. 2023-09 Drawn By: LORNA SINAC
14/11/2023 DEVELOPMENT APPLICATION No. Date Note Issue	For Development Application Only

Figure 14 - Extract of eastern side elevation



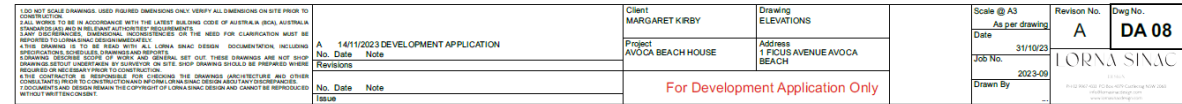
1 SOUTH ELEVATION
Scale: 1:100

1:500 NOT SCALE DRAWINGS. USED FIGURED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. 2: ALL WORK TO BE IN ACCORDANCE WITH THE LATEST BUILDING CODE OF AUSTRALIA (BOL), AUSTRALIAN STANDARDS (AS) AND IN RELEVANT AUTHORIZED REQUIREMENTS. 3: LANDSCAPE ARCHITECTURE, ARCHITECTURE OR THE NEED FOR CLARIFICATION MUST BE REFERRED TO LORNA SINAC DESIGN DOCUMENTATION, INCLUDING LORNA SINAC DESIGN DOCUMENTATION. 4: THIS DRAWING IS TO BE READ WITH ALL LORNA SINAC DESIGN DOCUMENTATION, INCLUDING LORNA SINAC DESIGN DOCUMENTATION. 5: THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE DRAWINGS (ARCHITECTURE AND OTHER CONSULTANTS) BEFORE CONSTRUCTION AND BEFORE LORNA SINAC DESIGN AND THAT DIMENSIONS AND DOCUMENTS AND DESIGN REMAIN THE COPYRIGHT OF LORNA SINAC DESIGN AND CANNOT BE REPRODUCED WITHOUT WRITTEN CONSENT.	Client: MARGARET KIRBY Project: AVOCA BEACH HOUSE Drawing: ELEVATIONS Address: 1 FICUS AVENUE AVOCA BEACH Revision No. A Dwg No. DA 07 Scale: @ A3 As per drawing Date: 31/10/23 Job No. 2023-09 Drawn By: LORNA SINAC
14/11/2023 DEVELOPMENT APPLICATION No. Date Note Issue	For Development Application Only

Figure 15 - Extract of southern street frontage elevation.

Associação Unificada de Mulheres - Nelly Rodrigues
 Associação Unificada No. 00000
 Endereço: Rua do Comércio, 100 - Centro
 Maceió - Alagoas - 54010-000
 Telefone: (33) 3222-1111
 E-mail: aum@ausa.org.br

AUSA
 Associação Unificada do Sul de Alagoas
 Associação Unificada de Mulheres
 Associação Unificada de Jovens
 Associação Unificada de Idosos
 Associação Unificada de Pessoas com Deficiência



SECTION C
Scale: 1:100

1 NEXT ISSUE DRAWINGS. USED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION.
A. 20/1/2023 REVISED BASIX
B. 14/1/2023 DEVELOPMENT APPLICATION
C. 31/10/23
D. 2023-09

Client MARGARET KIRBY
Project AVOCA BEACH HOUSE
Drawing SECTION C
Address 1 FOCUS AVENUE AVOCA BEACH
Scale A3
Date 31/10/23
Job No. 2023-09
Revision No. B
Dwg No. A4 11
Drawn By 2023-09
For Development Application Only

- 24 -

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

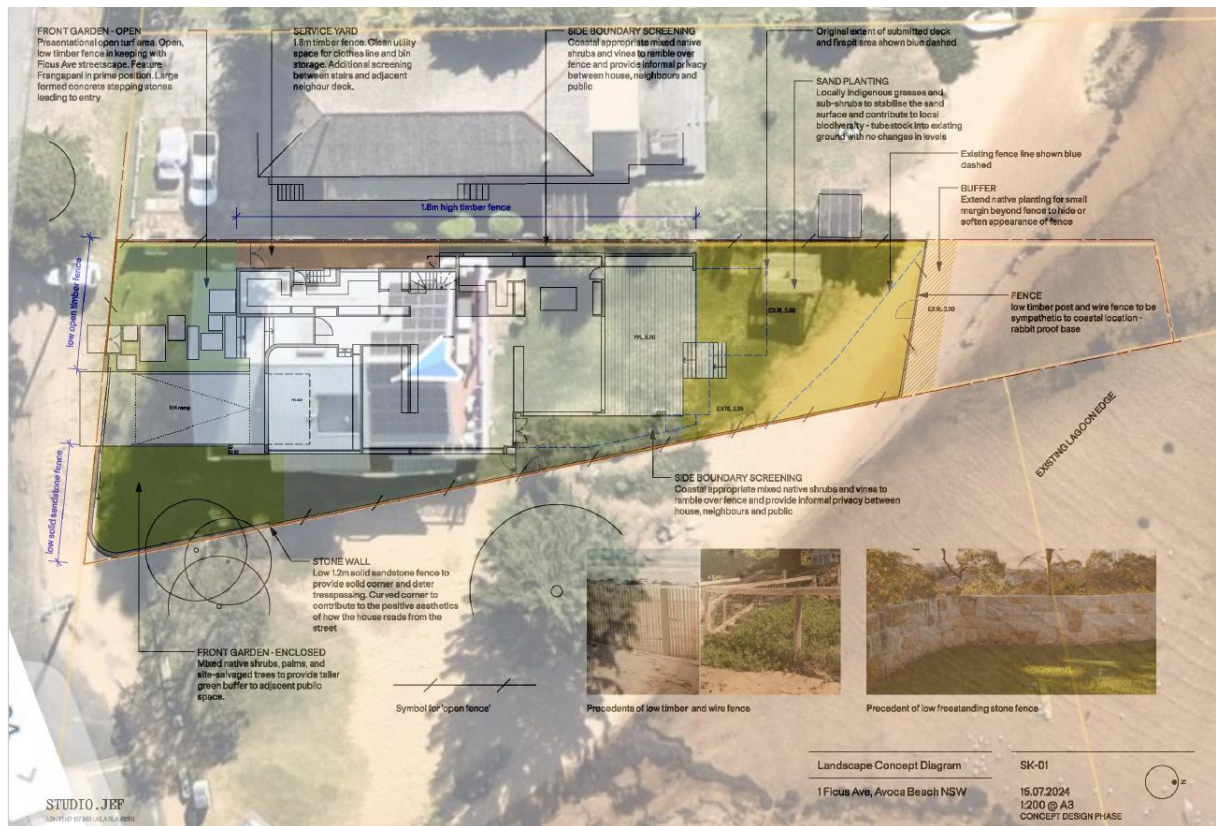


Figure 18 - Landscape design overlaid with aerial image of land dated 21/8/2024.

ASSESSMENT

Having regard for the matters for consideration detailed in Section 4.15 of the Environmental Planning and Assessment Act 1979 and other statutory requirements, Council's policies and Section 10.7 Certificate details, the assessment has identified the following key issues, which are elaborated upon for Council's information. Any tables relating to plans or policies are provided as an attachment.

Provisions of Relevant Instruments/Plans/Policies

Draft Environmental Planning Instruments

No draft Environmental Planning Instruments apply to this application.

State Environmental Planning Policies

State Environmental Planning Policy (Sustainable Buildings (2022))

The *State Environmental Planning Policy (Sustainable Buildings (2022))* (Sustainable Buildings SEPP) commenced on 1 October 2023. The application was lodged after the commencement

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

date and is supported by a BASIX Certificate demonstrating compliance with the requirements of the Sustainable Buildings SEPP.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 Coastal Management

The Resilience and Hazards SEPP applies to land within the coastal zone.

The site is located within the Coastal Use Area and the Coastal Environment Area and is therefore subject to the provisions of Clauses 2.10 and 2.11 of Chapter 2.

The northern shores of the lake are mapped as coastal wetlands. The subject site is located close to, but not within the outer boundary of the mapped "*Coastal Wetlands -Buffer area*". Therefore, the provisions of Section 2.8, relating to land within *proximity area for coastal wetlands* does not apply.

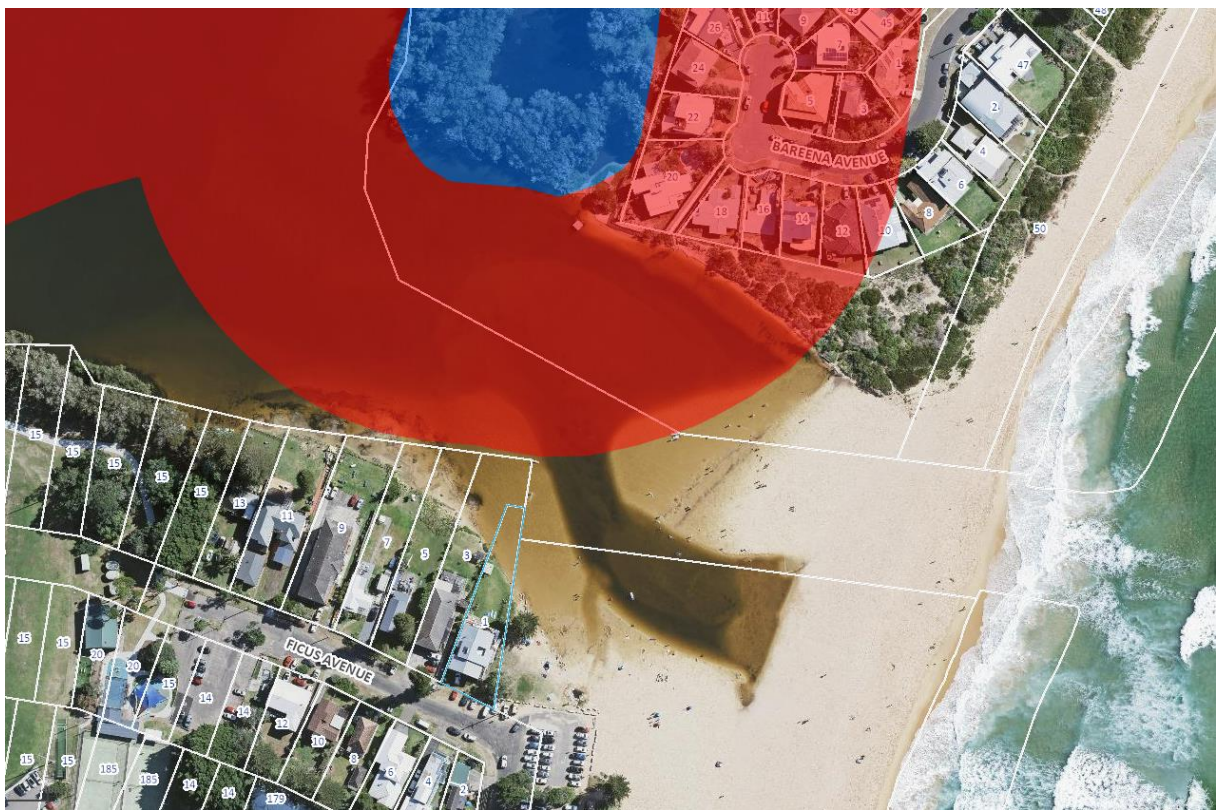


Figure 19 Aerial image of locality illustrating subject land close to the "Coastal Wetlands – Buffer" boundary marked in red shading. Note: blue shading is the mapped Coastal Wetlands area

The development proposal for a two storey dwelling house, with proposed landscape planting and a rabbit proof fence within the lake, is inconsistent with the relevant provisions

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of Clauses 2.10 in respect of the Coastal Environment Area as it will cause an adverse impact on the following matters for consideration.

Consideration of potential impact on Coastal Environment Area

Matters for consideration	Compliance
<i>(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,</i>	With the exception of the proposal to introduce landscape planting and a rabbit proof fence within the lake, the proposed two storey dwelling house is not likely to cause adverse impacts on the biophysical, hydrological, or ecological environment. Roof stormwaters are proposed to be directed to a 5,000-litre rainwater tank located under the rear terrace with overflow to an absorption trench positioned on the rear grassed area.
<i>(b) coastal environmental values and natural coastal processes,</i>	The proposal will not impact on the geological and geomorphological coastal processes.
<i>(c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,</i>	<p>With the exception of the proposal to introduce landscape planting and a rabbit proof fence within the lake, the proposal will not result in an adverse impact on the water quality of the marine estate and does not drain to a sensitive coastal lake contained in Schedule 1.</p> <p>The proposal is to dispose of roof waters, from the water tank overflow to an inground absorption trench.</p>
<i>(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,</i>	The proposal will not result in an adverse impact on native vegetation or fauna, undeveloped headlands, and rock platforms.
<i>(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,</i>	The proposed dwelling house does not impact on access to public open space and safe access for members of the public including persons with a disability. The proposed location of landscaping and the rabbit proof fence, whilst positioned on their land, will impact on historical safe access along the southern shores of the lake during periods of full, or near full, capacity.
<i>(f) Aboriginal cultural heritage, practices and places,</i>	There are no identified aboriginal cultural heritage items within 50m of the site.
<i>(g) the use of the surf zone.</i>	The land is subject to coastal inundation however does not have a frontage to the surf zone.

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The development proposal is inconsistent with provisions in Clause 2.11, (Sub-Clauses 2.11(1)(a)(i) &(1) (c)), in respect of the Coastal Use Area.

Consideration of potential impact on Coastal Use Area

Matters for consideration	Compliance
<i>(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority—</i>	N/A
<i>(a) has considered whether the proposed development is likely to cause an adverse impact on the following—</i>	N/A
<i>(i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,</i>	The proposed component of the development consisting of landscaping and rabbit proof fence will result in changes to the existing access along the foreshore.
<i>(ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,</i>	The proposal will not cause an adverse impact on access, overshadowing, wind funnelling or view loss from public places to any foreshore.
<i>(iii) the visual amenity and scenic qualities of the coast, including coastal headlands,</i>	The proposal does not impact the visual amenity or scenic quality of the coast (when viewed well away from the subject land and near the breaking surf beach).
<i>(iv) Aboriginal cultural heritage, practices and places,</i>	There are no known objects, areas, or items of heritage significance on the land, and no potentially adverse impacts on cultural or environmental heritage have been identified.
<i>(v) cultural and built environment heritage, and</i>	There are no known objects, areas, or items of heritage significance on the land, and no potentially adverse impacts on cultural or environmental heritage have been identified.
<i>(b) is satisfied that—</i>	N/A
<i>(i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or</i>	There have been no adverse impacts identified in the consideration of clause 2.11(1), with the exception of the landscaping and fence to the northern area of the land, that would engage the further considerations under section 2.11(2) of the Resilience and Hazards SEPP.
<i>(ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</i>	N/A

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Matters for consideration	Compliance
<i>(iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and</i>	The impact can be minimised by excluding landscaping and fencing near and within the lake during periods at full or near full capacity.
<i>(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.</i>	<p>The proposed development will be inconsistent to the established rear building alignment of other nearby residential buildings when taking into account the surrounding built environment. In other words, the proposed rear alignment of the development will be inconsistent, and hence out of character, to the setting and pattern of other residential buildings located along the Avoca Lake foreshore. Furthermore, the setting of the dwelling (design characteristics) does not respond to shore of the lake during periods when full, or near full to capacity, delineated by the natural curvature of the grassed edged embankment of the lake.</p> <p>The natural curvature of the southern foreshore of the lake is identified and distinct in aerial imagery of this locality taken at various times since 1954.</p>

Chapter 4: Remediation of Land

The Resilience and Hazards SEPP applies to any land defined in section 4.3 (1)(a) or (b).

The current use of the site is for a dwelling house and there are no known previous uses that would lead to the site being contaminated or unsuitable for the proposed use.

It is therefore considered that the requirements of the SEPP in relation to remediation of land have been satisfied.

Central Coast Local Environmental Plan 2022 (CCLEP 2022)

Zoning and Permissibility

The site is zoned R2 – Low Density Residential. The development is defined as a Dwelling House and the proposed land use is a permissible use within the R2 zone.

As illustrated with the figure below, the small pocket of this R2 zone (consisting of only 7 properties and the adjoining public road) is bordered by W1 – Natural Waterways, RE1 – Public Recreation and directly to the south, R1 – General Residential.



Figure 20 Aerial image of land and locality overlaid with CCLEP2022 land use zone map.

Clause 2.3 – Zone Objectives

Clause 2.3(2) requires the consent authority to have regard to the objectives of the zone when determining a development application.

The objectives of the zone are:

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To encourage best practice in the design of low density residential development.
- To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.
- To maintain and enhance the residential amenity and character of the surrounding area.

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The proposed size and position of the dwelling on the land is considered to be inconsistent with zone objectives

- To encourage best practice in the design of low density residential development.
- To maintain and enhance the residential amenity and character of the surrounding area.

for the following reasons:

- The rear setback of the proposed dwelling is not compatible with the establish rear alignment setback of other residential buildings along the southern foreshore of Avoca Lake and thus be out of character and not conforming to the residential amenity within this locality.
- The proposed location of landscaping and fence on the northern portion of the land and within the lake during periods of near full or full capacity is uncharacteristic to other features and landscaping of other properties along the southern shoreline of the Lake.

Clause 4.3 Height of Buildings

Clause 4.3(2) of CCLEP 2022 provides that the height of a building on any land will not exceed the maximum height shown for the land on the Height of Buildings Map. The maximum height shown on the relevant map is 8.5m. The Dictionary within CCLEP 2022 defines *building height* -as the vertical distance from ground level (existing) to the highest point of the building. The definition excludes communication devices, antennae, satellite dishes, mast, flagpoles, chimneys, flues and the like.

The proposed building height is measured at 8.45m and complies with this clause of the CCLEP2022.

Clause 4.4 Floor Space Ratio

Clause 4.4(2) Floor Space Ratio (FSR) of CCLEP 2022 provides the maximum floor space ratio for a building on any land is not to exceed the floor space ration shown for land on the *Floor Space Ratio Map*. The land is not included within this map and hence no floor space ratio applies to the proposed development under the CCLEP 2022.

Clause 5.21 Flood Planning

Council's records indicate that the site is affected by flooding in the 1% AEP flood event including the following Flood Precincts as depicted in the mapping below.

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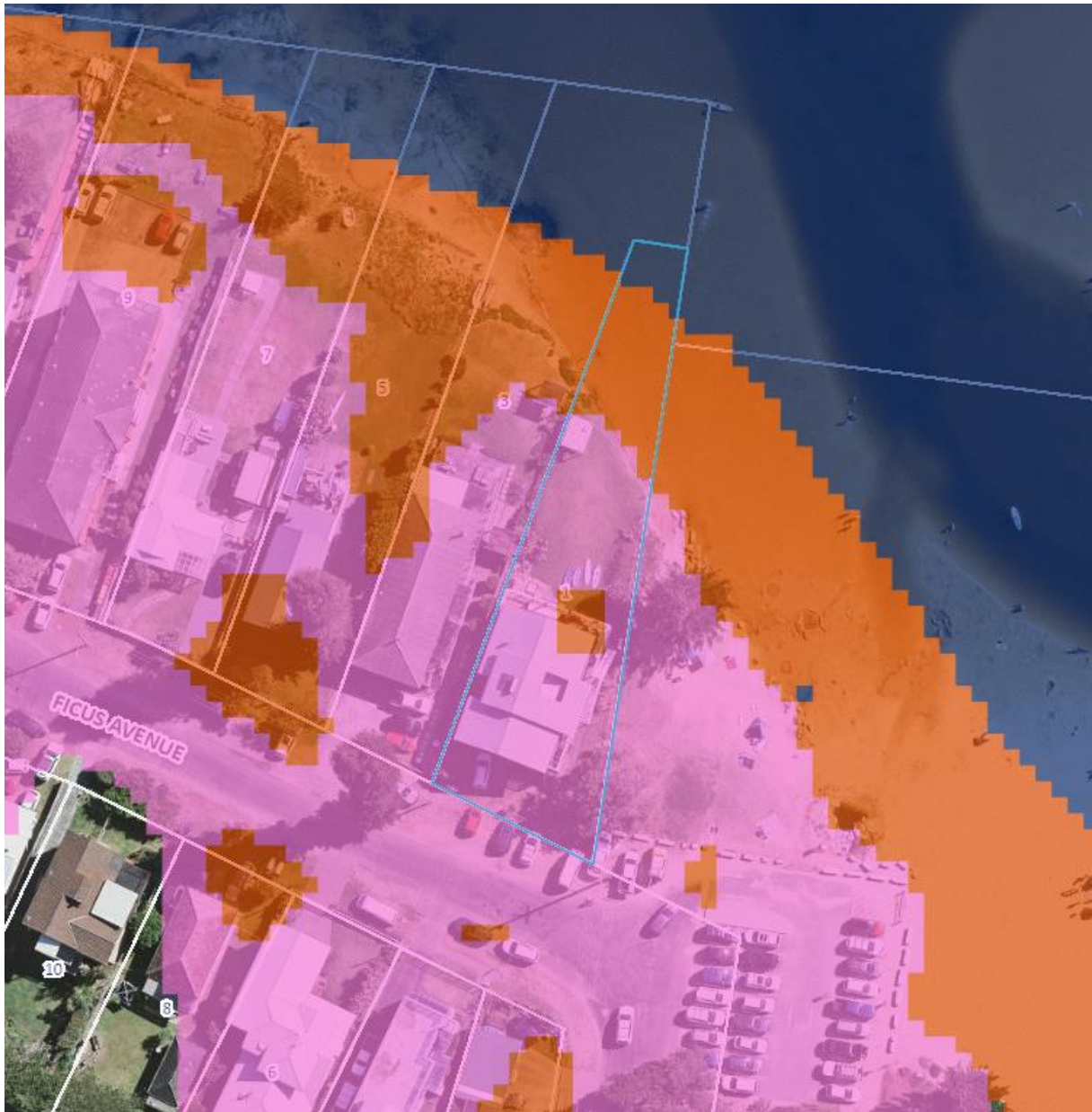






Figure 21 - Aerial image of land with flood precinct overlay.

<input checked="" type="checkbox"/>	Flood Precincts
<input checked="" type="checkbox"/>	 Floodway
<input checked="" type="checkbox"/>	 Precinct 4 : High Hazard
<input checked="" type="checkbox"/>	 Precinct 3 : Flood Storage
<input checked="" type="checkbox"/>	 Precinct 2 : Flood
Planning Areas	

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In accordance with clause 5.21(2) development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development:

- (a) is compatible with the flood function and behaviour on the land, and
- (b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
- (c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
- (d) incorporates appropriate measures to manage risk to life in the event of a flood, and
- (e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.

In accordance with clause 5.21(3) in deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—

- (a) the impact of the development on projected changes to flood behaviour as a result of climate change,
- (b) the intended design and scale of buildings resulting from the development,
- (c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,
- (d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

The following comments are provided in relation to clause 5.21(2) and 5.21(3) as follows:

- Consideration has been given to the requirements of clause 5.21(3)(d) in relation to potential impact to the surrounding area that is impacted by flood affectation as follows:
 - The site is affected by control flooding levels. (Coastal Lagoons Catchment Overland Flood Study, 2020).
 - The 1% AEP is RL 2.99m AHD and the Flood Planning Level (minimum habitable floor level) is RL 3.49m AHD. (the proposed development has a MFL of 3.7mAHD).
 - The subject property is defined as a Flood Control Lot, located within a Flooding Hydraulic Flood Storage Area, and within a High Hazard Area. The proposed dwelling being open underfloor bearers and joists type of structure helps to address this situation.

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- The northern part of the property is also located within a High Hazard Flooding Area.

The proposal is consistent with the requirements and objectives of clause 5.21 in that:

- There is approximately 200mm deep flood affectation over the existing ground levels adjacent to the road in a 1% AEP flood event. The risk to life and property associated with the proposed development or the surrounding area is considered to be manageable.
- The proposal would be at an acceptable risk of coastal hazard, provided that the proposed structures are founded on suitable footing system, designed to support all the loads and structural actions and recommended conditions.

The Panel can be satisfied that the proposed development complies with the provisions of clause 5.21 Flood Planning.

Clause 5.22 Special flood considerations

This development application for a dwelling house, is not sensitive and hazardous development. Furthermore the proposed development in the event of a flood, is not considered to cause a particular risk to life or require the evacuation of people or other safety considerations, above what has been considered under the provisions of Clause 5.21.

Clause 7.1 Acid sulfate soils

This land has been identified as being affected by the Acid Sulfate Soils Map and the matters contained in clause 7.1 of CCLEP 2022 have been considered. The site contains Class 5 Acid Sulfate Soils (ASS) which are likely to occur where:

- Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

The land is mapped as Class 5, no known occurrence ASS and is located adjacent to Class 1 ASS (Avoca Lake). Extensive excavation of the land is not proposed. The geotechnical engineer, within their report is recommending the footing system of the dwelling to comprise of concrete beam strip footings near the land surface, supported on screw piles, which is not likely to lower the water table below 1 metre in the adjacent Class 1 land; therefore, an ASS Management Plan is not required.

The Panel can be satisfied that the proposed development complies with the provisions of clause 7.1 Acid Sulfate Soils.

Clause 7.6 Essential Services

Development consent must not be granted to development unless the consent authority is satisfied that all of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required—

- (a) the supply of water,
- (b) the supply of electricity,
- (c) the disposal and management of sewage,
- (d) stormwater drainage or on-site conservation,
- (e) suitable vehicular access,
- (f) the collection and management of waste.

The property was previously connected to electricity, reticulated water and sewer and serviced for waste collection and is therefore available to the proposed new dwelling house.

Water and Sewer is available to the land. A Section 307 certificate of compliance under the *Water Management Act 2000* is required to be obtained prior to the occupation of the building.

Satisfactory details have been provided in the Waste Management Plan for waste management procedures associated with the construction, and ongoing operation of the proposed development.

Satisfactory stormwater drainage can be obtained in accordance with the Stormwater Plans and there is adequate area for vehicle access.

The Panel can be satisfied that the proposed development complies with the provisions of clause 7.6 and that adequate essential servicing is available to the development having regard for water, sewer, electricity, stormwater drainage, waste collection and vehicular access.

Central Coast Development Control Plan 2022

The relevant controls of Central Coast Development Control Plan (CCDCP 2022) are considered below:

Chapter 2.1 Dwelling Houses, Secondary Dwellings and Ancillary Development

The proposal has been assessed in accordance with the relevant provisions of Chapter 2.1 Dwelling Houses, Secondary Dwellings and Ancillary Development.

3.1

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Development Control	Required	Proposed	Compliance with Control	Compliance with Objective
2.1.2.1 a & c Building Height	a) max height – 8.5m c) max 2 storeys, however 3 storeys allowed in some circumstances	Max 8.45m 2 storeys	Yes	Yes
2.1.2.2 a (ii) Site Coverage	Max 40% for allotment that has an area of 900m ² to 1500m ² (site area is 1081m ²)	28%	Yes	Yes
2.1.2.3 Floor Space Ratio (FSR)	No mapped FSR in CCLEP 2022	N/A	N/A	N/A
2.1.3.1a Front Setbacks	Average distance of the front setbacks to the nearest 2 dwelling houses having the same primary road boundary and located within 40m of the lot on which the dwelling house is erected, or if 2 dwelling houses are not located within 40m of the lot – 4.5m. iv. The minimum required setback for garage and carport structures and the like: A minimum 1m behind the front boundary setback.	There are 2 dwellings located within 40m of the subject land (with the same primary road boundary) – required setback is calculated at 8.55m. Propose front boundary setback is 8.7m. Garage located > 1m (1.96m) behind front boundary setback.	Yes	Yes
2.1.3.1b (i) Rear Setbacks	To a private allotment	Notwithstanding the unique situation of the rear boundary of this allotment adjoining a private allotment, both being within the Lake, the required numerical setback by calculation is 6m. The proposed development is 31.6m from its rear boundary.	Yes	Yes
2.1.3.1c (i) Side Western Setback	Any part of a dwelling with a height of up to 4.5m – 0.9m; and - for any part of the dwelling with a height of more than 4.5m – 0.9m + one quarter of the height of the building above 4.5m.	Required setback of 1.55m based on a wall height of 7.12m. Proposed setback at the first floor level 1.98m	Yes	Yes

Development Control	Required	Proposed	Compliance with Control	Compliance with Objective
2.1.3.1 e Waterfront setback (Eastern side boundary)	<p>The entire eastern side boundary adjoins either a waterbody(natural) or land zoned public recreation adjoining the waterway (natural waterbody).</p> <p><u>Required setbacks.</u></p> <ul style="list-style-type: none"> • 6m setback for the ground storey and; • 10m for any storey above the ground storey. 	Elements of the eastern façade do not run parallel to the eastern side boundary and therefore the setbacks varies from its closest point of 1.6m to 4.8m. (at both levels).	No	No -refer to comments at the end of this table.
2.1.4.1 Views	<p>a. Address NSW L&E Court planning principles relating to view sharing.</p> <p>b. Sited and designed to enable view sharing to adjoining / adjacent sites particularly from habitable rooms.</p> <p>c. Development steps down a sloping site.</p> <p>d. Design of the roof form provides for view sharing.</p>	<p>The site adjoins a public reserve to the north and a public walkway beach access reserve to the south.</p> <p>There are impacts on scenic coastal views from west adjacent building containing two dwellings</p>	No	No -refer to comments at the end of this table.
2.1.4.2 Visual Privacy	Orientation of windows and terrace areas to not directly overlook private open space areas of adjoining allotments		Yes	Yes
2.1.4.3 Private Open Space (POS)	24sqm for allotments with a width greater than 10m wide at the building line Min dimension 3m.	Greater than 24sqm and 3m width achieved by the terrace area on the rear elevation directly accessible from living/dining area.	Yes	Yes
2.1.4.4 Sunlight Access	<p>Min 3 hrs/day sunlight mid-winter to 50% of principal private open space POS for new dwellings.</p> <p>Minimum 3 hours/day sunlight mid-winter to</p>	<p>Shadow diagrams indicate compliance is achieved to the POS of the subject dwelling. The POS is located at the northern lakefront.</p> <p>The dwelling house south of the subject site is</p>	Yes	Yes

3.1

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Development Control	Required	Proposed	Compliance with Control	Compliance with Objective
	50% of principal POS on adjoining land	separated by the public walkway reserve and its east facing POS it not impacted by overshadowing.		
2.1.5 Car Parking and Access	Provide minimum off street parking facilities – 2 spaces for a dwelling with 4 or more bedrooms. Ensure safe vehicular access to public road.	2 spaces provided within garage. The garage spaces being behind the primary road setback. The garage/driveway is designed to enable vehicles to provide for safe vehicle entry and pedestrian access and minimise potential for pedestrian and vehicle conflict.	Yes	Yes
2.1.6.1 Earthworks	Cut/fill maximum 1m within 1m of boundaries, or 3m if more than 3m from boundary	Earthworks for the proposal is considered satisfactory for the characteristics of the site, complies with the objectives and generally consistent with the controls. Erosion and Sedimentation Control Plan provided and deemed satisfactory.	Yes	Yes
2.1.6.3 Drainage	All stormwater drainage collecting must be conveyed by a gravity fed or charged system to a public drainage system, or an inter-allotment drainage system, or an on-site disposal system	Stormwater Management Plan provided – no stormwater runoff is directed onto neighbouring properties	Yes	Yes
2.1.7.3 Swimming Pools	i. be located behind the setback area from a primary road or in the rear yard unless it can be justified site constraints exist. ii. Comply with side and rear setbacks for the swimming pool water line and any associated deck.	The proposed swimming pool (spa on the roof terrace) complies with the requirements of clause 2.1.7.3.	Yes	Yes

Development Control	Required	Proposed	Compliance with Control	Compliance with Objective
	iii. Have associated pump housed in an enclosure that is sound proofed.			
2.1.7.4 Fencing	Fencing 1.2m – local road or 1.8m to a collector road. Fences should not be constructed in areas where front fencing is not part of the overall streetscape.	1.2m high fencing is proposed on the front boundary of the site.	Yes	Yes

Clause 2.1.3.1 e Waterfront setback (Eastern side boundary)

In most circumstances the provisions of the clause would relate to the setback from the rear boundary of a property, where there is greater opportunity for dwellings to achieve either a 6m or 10m rear setback without unreasonably limiting the design potential of a dwelling house. In the circumstance of this property with its entire eastern side boundary adjoining a public reserve and waterway, achieving a 10m side boundary setback with a property width of approx. 15m (centrally positioned) presents a significant design challenge.

The proposed dwelling incorporates variable setbacks associated with the stepping of the building from the eastern side boundary. These setback areas are proposed to be planted with a variety of coastal shrubs. The eastern wall of the dwelling is designed with a variety of high-quality architectural materials and large openings over the public reserve creating high levels of architectural interest.

Generally, the proposed setbacks from the eastern side boundary is reasonable, with the exception of the northern portion of the dwelling in close proximity to the interface with the edge of the lake. The proposed dwelling is considered to extend well beyond the established rear building alignment and unresponsive to the natural curvature of lake during periods of full or near full, delineated by the grassed edge of the lawn area. Not only should the dwelling have an increased rear setback, but also step at least half of the eastern portion of the dwelling to be sympathetic to the natural curvature of the lake. By stepping this rear portion of the dwelling from the rear boundary will also result in an increased side setback.

Clause 2.1.4.1 Views

The design of the proposed development is to have regard to existing views enjoyed by surrounding properties. Existing views should not be substantially affected where it is possible to design for the sharing of views. The primary view lines of adjacent properties should be maintained where possible. Notwithstanding this, an objective set out within this

clause of the DCP is facilitation of view sharing should be encouraged whilst not restricting the reasonable development of the site.

Submissions in relation to impact on views has been received from occupants of the western adjoining property containing 2 dwellings, as a result of the position of the proposed rear portion of the dwelling.

For the purpose of this assessment, the planning principles established by the NSW Land and Environment Court have been utilised. In *Tenacity Consulting v Warringah* [2004] NSWLEC 140, the Court adopted a four-step assessment process for determining potential impacts on existing views and is detailed as follows:

Step 1: Determining the type of view to be affected.

The images below illustrate the current view from the rear deck of the western side adjoining dwelling to the rear of the building. Elements of the view, in an easterly direction, include the ocean, interface of lake with beach, breaking surf and the beach. The neighbour will be impacted by the elements of the proposed dwelling extending further north (towards the rear) of the established rear building alignment. The impact is illustrated by red hatching edited into the image representing the western wall of the proposed dwelling.

The current views of the other neighbours dwelling (located closer to the road) will not vary greatly, given the current location of the existing dwelling on the subject site.



Figure 22 - Image taken from western neighbour rear deck (under the awning) adjacent to the rear wall of the neighbours dwelling. The red hatching illustrates the extent of view loss from this position on the deck and similar to within the living spaces of the dwelling.

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Step 2: Determining the position of where views are obtained.

The images and captions above illustrate where the views are obtained from both a standing position.

Step 3: Assessing the extent of impact.

The third step is to assess the extent of the impact. This should be done for the whole of the property, not just for the view that is affected. The impact on views from living areas is more significant than from bedrooms or service areas. It is usually more useful to assess the view loss qualitatively as negligible, minor, moderate, severe or devastating.

The rear alignment of the ground floor rear deck extends a 500mm beyond the rear alignment of the western neighbours rear deck. The neighbours rear deck is generally open, whilst the western side of the proposed deck is to be enclosed for its entire length to act as a privacy screen. The enclosure of the western side deck will severely impact the neighbours view towards the beach and ocean.



Figure 23 - Image taken from western neighbours rear open deck in a central location. The red hatching illustrates the extent of view loss.

Step 4: Assessing whether the extent of impact is reasonable.

The fourth step is to assess the reasonableness of the proposal that is causing the impact. A development that complies with all planning controls would be considered more reasonable than one that breaches them. Where an impact on views arises as a result of non-compliance with one or more planning controls, even a moderate impact may be considered unreasonable. With a complying proposal, the question should be asked whether a more skilful design could provide the applicant with the same development potential and amenity and reduce the impact on the views of neighbours. If the answer to that question is no, then the view impact of a complying development would probably be considered acceptable and the view sharing reasonable.

Views across side boundaries are more difficult to protect than views from front and rear boundaries, and the expectation to retain side views is often unrealistic and not achievable particularly where compliant design is proposed.

The impact on view loss is across the side boundaries of the land, however the proposed development, extending further beyond the established rear alignment and not incorporating design principles of being sympathetic to the setback from the curvature of the edge of the lake during periods when full, is achievable to protect or reduce the impact on view loss.

The applicant could therefore reasonably propose a more skilful design with increased rear setbacks, providing the applicant with the same development potential and amenity resulting in a reduction of the impact of the neighbours view.

The proposal significantly and unreasonable reduces the amenity enjoyed by the occupants of the western adjoining land.

Chapter 2.14 Site Waste Management

A Waste Management Plan has been submitted with the proposal. The proposal has demonstrated compliance with this chapter of the CCDCP 2022 and associated Waste Control Guidelines applying at the time the application was lodged. Appropriate conditions are included in the development consent.

Chapter 2.17 Character and Scenic Quality

The principle aim of this chapter of the DCP is to maintain the character and scenic quality of an area while considering the desired and likely future character of the area.

The site is located within South Coastal landscape unit comprising Avoca Beach and surrounding localities and is within in the Character and Scenic Quality Statements of *Avoca 1: Ocean Beachfront – Desired Character Requirements*.

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The desired character of developments within this precinct is to ensure developments do not dominate the informal scenic quality of prominent backdrops to ocean beaches and ensure new structures do not disrupt the development patterns that are evident upon surrounding properties.

The setting and location of the proposed dwelling house in relation to the established rear building alignment (development patterns) is inconsistent with the objectives within CCDCP 2022 Chapter 2.17 – Character of Scenic Quality and the related document to this DCP being the Character and Scenic Quality Statements of *Avoca1: Ocean Beachfront – Desired Character Requirements*.

Chapter 3.1 Floodplain Management/Water Cycle Management

Chapter 3.1 seeks to minimise the impact of development on the natural pre-development water cycle. This will lead to more sustainable outcomes that will protect the environment.

The Stormwater Management Plan submitted with the application is considered satisfactory for this type of development.

Chapter 3.2 Coastal Hazard Management

The application is supported by a coastal engineering report, as outlined within the report the site is not subject to typical erosion/recessions processes as occur at the adjacent open coast Avoca Beach, but rather take into account the effect of ocean waves overtopping the beach berm and flowing east towards the site.

The figure below, extracted from the coastal engineer report, illustrates an ocean inundation event that occurred in early April 2022.

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Figure 6: Long-period oceanic inundation event at site in April 2022 (flow from left to right, site at arrow, three images about 3s apart getting later from top to bottom, facing SW)

Figure 24 - extract from Coastal Engineers report dated 15/11/23.

This application originally included a 'solid wave trip fence' extending along the eastern boundary and to approximately 12m within the lake during periods of full capacity. This

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

component of the development has been withdrawn and does not form part of the assessment of this development application.

With the removal of the solid wave trip fence from the application, the comments from Councils Senior Coastal Planning Officer in terms of chapter 3.2 – Coastal Hazard Management, centres around the positioning of the dwelling from the edge of the lake and its likely obstruction to flood flow and increase the coastal hazard of the site, neighbouring dwellings and the adjacent public space.

Further communication was made with Councils Senior Coastal Planning Officer, whereby an increased rear setback consistent with the setbacks of the western adjoining property would address this issue.

Chapter 3.7 Geotechnical Requirements for Development

Chapter 3.7 provides a management strategy for development in areas identified as having landslip potential and guidelines on the content of geotechnical reports.

The subject site is not mapped as being Immediate high, high nor medium within Councils Geocortex mapping system. The site, however is described of being a Low Hazard based on its distance from the lake and beach.

The application is supported by a geotechnical engineer's report including the geological profile of the subsurface conditions at two locations on the site. The two locations are at the front (southern) side and rear (northern) side of the existing dwelling. The outcome of the geotechnical investigation includes recommendations that screw piers to be used due to the collapsible nature of the sandy soils.

Provisions of regulations

The Environmental Planning and Assessment Regulations 2021 applies to all development applications in regard to such items as application type, compulsory contributions, notification of development applications and a range of many other details regarding development application requirements. Assessment of this application has considered all relevant matters including the demolition of the building in accordance Australian Standard AS2601-2001: *The Demolition of Structures*.

Likely Impacts of the Development

Section 4.15 (1)(b) of the *Environmental Planning and Assessment Act 1979* requires consideration of the likely impacts of the development including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

As outlined within this planning report the rear setback of the proposed dwelling house is inconsistent with the established rear setbacks of other dwellings adjoining the lake, nor does the design respond with the natural curvature of the lake delineated by the grassed edge of the lawn area.

Suitability of the site

In accordance with section 4.15(1)(c) in determining a development application the suitability of the site for the proposed development is to be considered. Having regard to the assessment above, it is considered a dwelling house is suitable for the site, however not in term of the proposed rear setbacks of the proposed dwelling house in relation to the established rear building alignment.

Public interest

Having regard to the above assessment it is considered that the proposed development is not in the public interest as the proposed development is inconsistent with the objectives of a number of stated chapters of the CCDCP2022, inconsistent with the provisions of State Environmental Planning Policy (Resilience and Hazards) 2021 and inconsistent with the objectives of the R2 Low Density Residential zone.

Access and traffic

The local road network is considered to have adequate capacity to cater for the proposed development and minimal increase in traffic generated by the proposal. More than adequate provision is provided for onsite car parking and vehicle movements.

Natural Environment

The proposal is satisfactory in relation to impacts on the natural environment as identified throughout this report for land subject to coastal hazards with the exception of the proposed fence and landscape works within the lake during periods of full or near full capacity.

Economic and Social Impacts

The proposal replaces a dwelling house. No unreasonable economic or social impacts will arise from the approval of the dwelling house.

Any Submission made in Accordance with this Act or Regulations

Section 4.15 (1)(d) of the *Environmental Planning and Assessment Act 1979* requires consideration of any submissions received during notification of the proposal.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

The proposed modification has been notified in accordance with the provisions of Central Coast Development Control Plan 2022. The application was notified for the period of 9 February 2024 to 23 February 2024.

Twelve submissions were received.

A summary of submission items with respect to the amended development proposal is as follows:

- Concerns regarding view loss.

Comment: The impact on views and consideration of view sharing is elaborated under the heading of CCDCP2022 - 2.1.4.1 Views.

- Concerns regarding the impact of the development on flooding

Comment: The proposed development has been designed with habitable floor levels to be above the flood planning level. The proposed impact can be improved with a greater rear setback. The initial component of the proposed development involving a sold wave trip fence along the eastern side boundary has been removed from this application.

- Concerns regarding overshadowing and loss of sunlight and impact on sea breezes.

Comment: The proposed development will result in some overshadowing to the western adjoining dwelling particularly during the morning period. The western side boundary setbacks and height of the proposed dwelling complying with planning controls. Whilst there will be some impacts on the neighbours as a result of the proposed development in terms of overshadowing and obstruction of seas breezes, the impact is considered reasonable whilst residing in a coastal residential area.

- Concerns regarding the character of the area and impact on the streetscape and setbacks from boundaries.

Comment: Generally, the size and scale of the proposed dwelling is considered to be consistent with other more contemporary developments in the area. The setback of the proposed dwelling along the rear, associated with the established rear building alignment and design response to the natural curvature of the edge of the lake is considered to be out of character.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)

- Concerns on property values and public safety

Comment: The proposed solid wave trip fence has been removed from the proposed development. The impact on property values is not a matter of consideration under planning legislation.

- Concerns on reduction of privacy

Comment: The size and general layout of windows within the dwelling are consistent in design of other dwellings within a coastal residential setting. The proposed roof top terrace is centrally located and well away from the side boundaries. The stairway access along the western side of the dwelling is proposed to be screened with planting within a planter box adjacent to the stairs and landing area.

- Concerns on the impact on parking based on the number of bedrooms proposed.

Comment: The required provision for off street parking complies with Council development control plans. Furthermore, near to this site are two public carparking areas.

- Concerns on the impact on the fence location and its impact on public access.

Comment: The proposed solid wave trip fence has been removed from this application, however the revision to introduce a rabbit proof fence and landscaping within the lake during periods of full or near full capacity will have the same effect.

It is noted the land to the north of the grassed edge is not public land, however I am certain that members of the public would not recognise the land as part of the site, particularly given the natural features encountered along the edge of the lake.

Submissions from Public Authorities

The application was referred to NSW Government Department of Planning and Environment – Water (NSW DPE-W). NSW DPE-W reviewed the development application for the erection of a two storey dwelling house and considered, for the purposes of the *Water Management Act 2000*, the proposed development is exempt from the need to obtain a controlled activity approval as included within *Schedule 4, 29 – activities with respect to dwellings- of the Water Management (General) Regulation 2018*.

Internal Consultation

Development Engineering (flooding)	Supported subject to conditions. (flooding)
Tree Assessment Officer	Supported subject to conditions.
Coastal Planning Officer	Not supported, see commentary above
Ecologist comments	Not supported

Ecologist comments

Planting of the site is not suitable for areas that are regularly inundated or subject to high water velocity when the lake is open. The placement of fencing in this area is more of concern than planting, particularly if fencing ends up washing away and causing entanglement issues for marine and estuarine wildlife.

Ecologically Sustainable Principles

The development has been assessed having regard to ecologically sustainable development principles and is consistent with the principles.

The development is considered to incorporate satisfactory stormwater, drainage and erosion control and the retention of vegetation where possible and is unlikely to have any significant adverse impacts on the environment and will not decrease environmental quality for future generations. The proposal does not result in the disturbance of any endangered flora or fauna habitats and is unlikely to significantly affect fluvial environments.

Climate Change

The potential impacts of climate change on the development proposed to be modified have been considered by Council as part of the assessment of the application.

This assessment has included consideration of such matters as potential rise in sea level; potential for more intense and/or frequent extreme weather conditions including storm events, bushfires, drought, flood and coastal erosion; as well as how the proposed development may cope, combat, withstand these potential impacts. The proposed development if proposed with a greater rear setback would be considered satisfactory in relation to climate change.

Political Donations

During assessment of the application there were no political donations were declared by the applicant, applicant's consultant, owner, objectors and/or residents.

Other Matters for Consideration:

Development Contributions Plan

The land is subject to the Central Coast Section 7.12 Local Infrastructure Contribution Plan 2023 which was adopted by Council on 28 November 2023 and replaces the Central Coast Regional Section 7.12 Development Contribution Plan 2019.

There are no transitional arrangements in place, therefore any subject contributions will be applied to an application based on the contributions plan in force at the date of application determination.

Development that is not subject to a section 7.11 contribution under any other contributions plan adopted by the Council under the *Environmental Planning & Assessment Act 1979*, may be subject to levy of section 7.12 contributions unless is development that is exempt under Clause 1.5 of this Plan.

Development contributions are only levied where the proposal meets the cost of works thresholds and not subject to any exemption under this plan. The proposed cost of works is \$4,733,111; however the development is for a dwelling house and is exempt under clause 1.5 of the plan, that is, no development contributions levy is applicable in this instance.

Water and Sewer

Water and Sewer services are available to the site. A Section 305 application will be required to obtain a Section 307 Certificate of compliance. The resulting Section 306 letter of requirements will contain Water Authority conditions if required.

Air Quality

Standard dust conditions can be applied during construction works.

Noise

Standard condition for construction times can be applied.

Conclusion

That Development Application No. DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. be REFUSED pursuant to section 4.16(1) of the EP&A Act for the following reasons:


1. The proposal is not acceptable in relation to the matters for consideration under section 4.15 of *Environmental Planning and Assessment Act 1979*.
2. The proposed development does not satisfy the provisions of *State Environmental Planning Policy (Resilience and Hazards) 2021* having regard for Chapter 2 Coastal Management, section 2.10 – Development on land within the coastal environment area and section 2.11 – Development on land within the coastal use area.
3. The Local Planning Panel cannot be satisfied, that granting consent would be in the public interest as the proposal is inconsistent with the objectives of the SEPP (Resilience and Hazards) 2021 and inconsistent with the objectives of the R2 Low Density Residential zone.
4. The proposal is inconsistent with the following objectives of the R2 Low Density Residential zone:
 - *To encourage best practice in the design of low density residential development.*
 - *To maintain and enhance the residential amenity and character of the surrounding area.*
5. The setting and location of the proposed dwelling house in relation to the established rear building alignment is inconsistent with the objectives within CCDCP 2022 Chapter 2.17 – Character of Scenic Quality and the related document to this DCP being the Character and Scenic Quality Statements of *Avoca1: Ocean Beachfront – Desired Character Requirements*.
6. The development results in unnecessary and reasonable adverse impacts when viewed from the neighbour's land, public spaces and amenity of the area as a result of inconsistency with the established rear building alignment.
7. The proposal is inconsistent with various objectives within Parts 2.1.4.1 and 2.17 of Central Coast Development Control Plan 2022.
8. Both the surrounding predominant form in the area and the desired future character of the area favours a two-storey presentation at consistent rear setbacks to other residential building along the Avoca Lake frontage. The proposal is antipathetic to this form on a visually prominent site from public spaces around the lake, while the proposal (changed or new) could readily achieve form compliance and desirable congruity.

3.1 DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)















Attachments

1	Architectural Plans	Provided Under Separate Cover	D16478547
2	Landscape plans		D16310449
3	Coastal Engineering Assessment		D15973727
4	Coastal Engineering Assessment in relation to the Water Management Act 2000		D16311206
5	Geotechnical Engineers Assessment		D15973732
6	Statement of Environmental Effects		D15973739
7	Survey plan		D15973741
8	NatHERS certificate		D16044051
9	Structural engineers report		D16044065
10	Coastal Management Comments		D16079509
11	Engineering Comments		D16183230
12	Response from Dept of Planning & Environment- Water		D16397180
13	Stormwater management plan		D16310452
14	Environment referral comments		D16491960

Attachments

1	ARCHITECTURAL DETAILS FORMING THE ASSESSMENT -  1 FICUS Ave Avoca Beach PAN-393546 - DA23042023	Provided Under Separate Cover	D16478547
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3.1 **DA/2304/2023 - 1 Ficus Avenue Avoca Beach - Demolition of Existing Dwelling House and the erection of a two storey Dwelling House with roof terrace. (cont'd)**

 2	ARCHITECTURAL DETAILS FORMING THE ASSESSMENT - 1 FICUS Ave Avoca Beach PAN-393546 - DA23042023_Redacted		D16525593
 3	Updated Landscape Plan - 1 FICUS AVENUE AVOCA BEACH - PAN-393546 - DA/2304/2023		D16310449
 4	Coastal Assessment Report - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023.pdf		D15973727
 5	commentary (from applicants coastal engineer) as to whether the Avoca Lagoon is a waterfront land as defined by the Water Management Act 2000 - 1 FICUS AVENUE AVOCA BEACH - PAN-393546 - DA/2304/2023		D16311206
 6	PUBLIC - Geotechnical report - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023.pdf		D15973732
 7	Statement of environmental effects - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023.pdf	Provided Under Separate Cover	D15973739
 8	Survey plan - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023.pdf		D15973741
 9	PUBLIC - NatHERS Certificate - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023		D16044051
 10	Structural Engineering Report - 1 FICUS AVENUE AVOCA BEACH 2251 - PAN-393546 - DA/2304/2023		D16044065
 11	Coastal Management Referral Comments - 1 Ficus Avenue, AVOCA BEACH NSW 2251 - DA/2304/2023 - Central Coast Council		D16079509
 12	Engineering Referral Comments - 1 Ficus Avenue, AVOCA BEACH NSW 2251 - DA/2304/2023 - Central Coast Council		D16183230
 13	NSW Department of Planning and Environment—Water Response_IDAS-2024-10500_A-86376		D16397180
 14	Updated Stormwater - 1 FICUS AVENUE AVOCA BEACH - PAN-393546 - DA/2304/2023	Provided Under Separate Cover	D16310452
 15	Environment Referral Comments - 1 Ficus Avenue, AVOCA BEACH NSW 2251 - DA/2304/2023 - Environment Referral Comments - Central Coast Council		D16491960



DEVELOPMENT APPLICATION
1 FICUS AVENUE, AVOCA BEACH

DRAWING NO	DRAWING NAME	ISSUE
DA00	SITE AND SITE ANALYSIS PLAN	A
DA01	GROUND FLOOR PLAN	A
DA02	FIRST FLOOR PLAN	A
DA03	SECOND FLOOR PLAN	A
DA04	THIRD FLOOR PLAN	A
DA05	ELEVATIONS - WEST	A
DA06	ELEVATIONS - EAST	A
DA07	ELEVATIONS - SOUTH	A
DA08	ELEVATIONS - NORTH	A
DA09	SECTION A	A
DA10	SECTION B	A
DA11	SECTION C	A
DA12	SHADOW DIAGRAMS - EQUINOX	A
DA13	SHADOW DIAGRAMS - WINTER SOLSTICE	A
DA14	SCHEDULE OF FINISHES	A
DA15	NOTIFICATION PLANS	A

CONSULTANTS DRAWINGS

BASIX AND NATHERS CERTIFICATE
COST PLAN
DETAIL SURVEY
STRUCTURAL DRAWINGS
GEOTECH REPORT
STATEMENT OF ENVIRONMENTAL EFFECTS
WASTE MANAGEMENT PLAN
STORMWATER MANAGEMENT PLAN
COASTAL ENGINEERING DRAWINGS

PREPARED BY:

CHAPMAN ENVIRONMENTAL SERVICES PTY LTD
QCOST CONSULTANTS PTY LTD
HILL & BLUME CONSULTING SUVEYORS
RISE ENGINEERS
FORTIFY GEOTECH
MYRIAD CONSULTING
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No.	Date	Note
Issue		

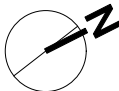
Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

Drawing
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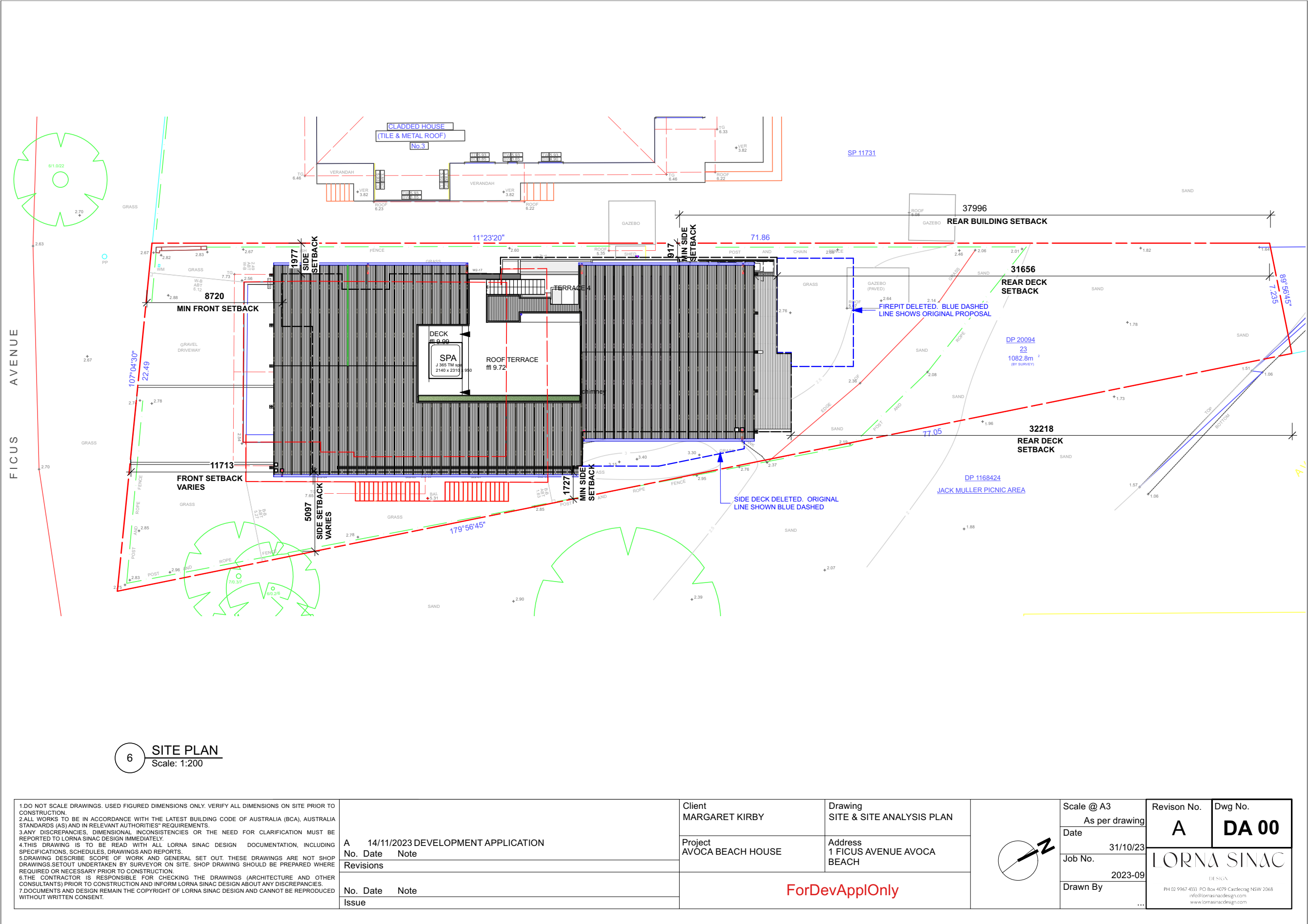
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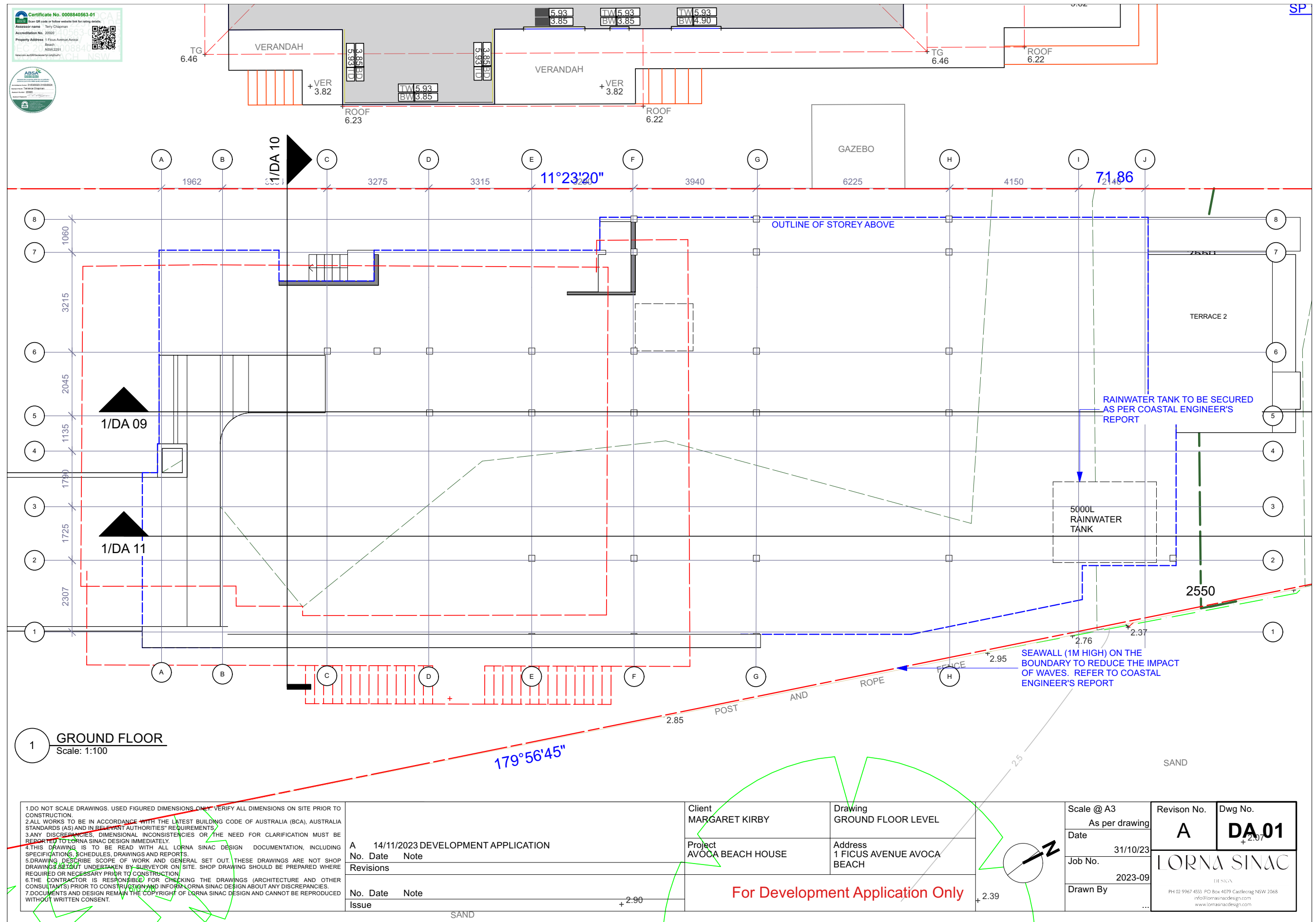
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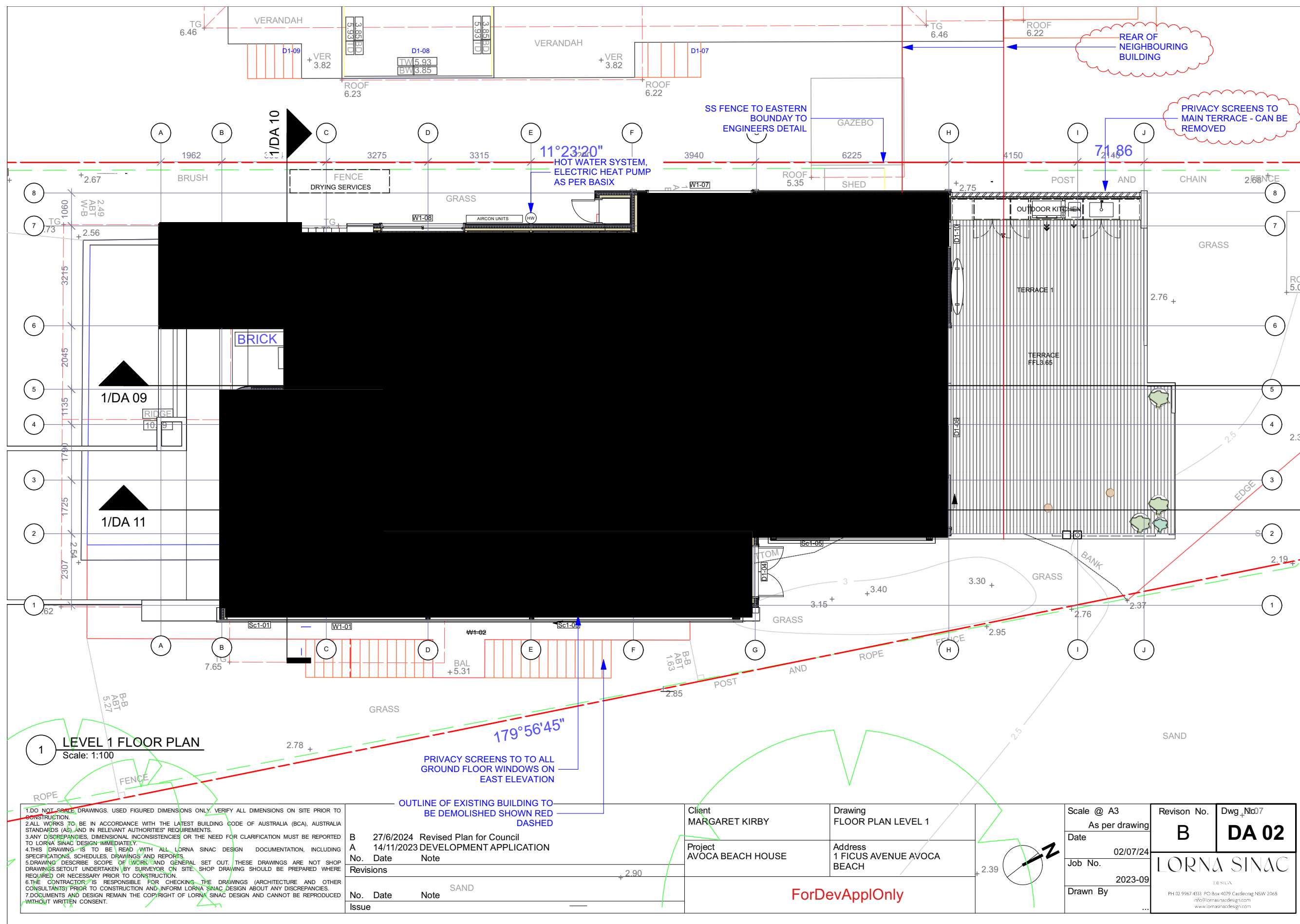


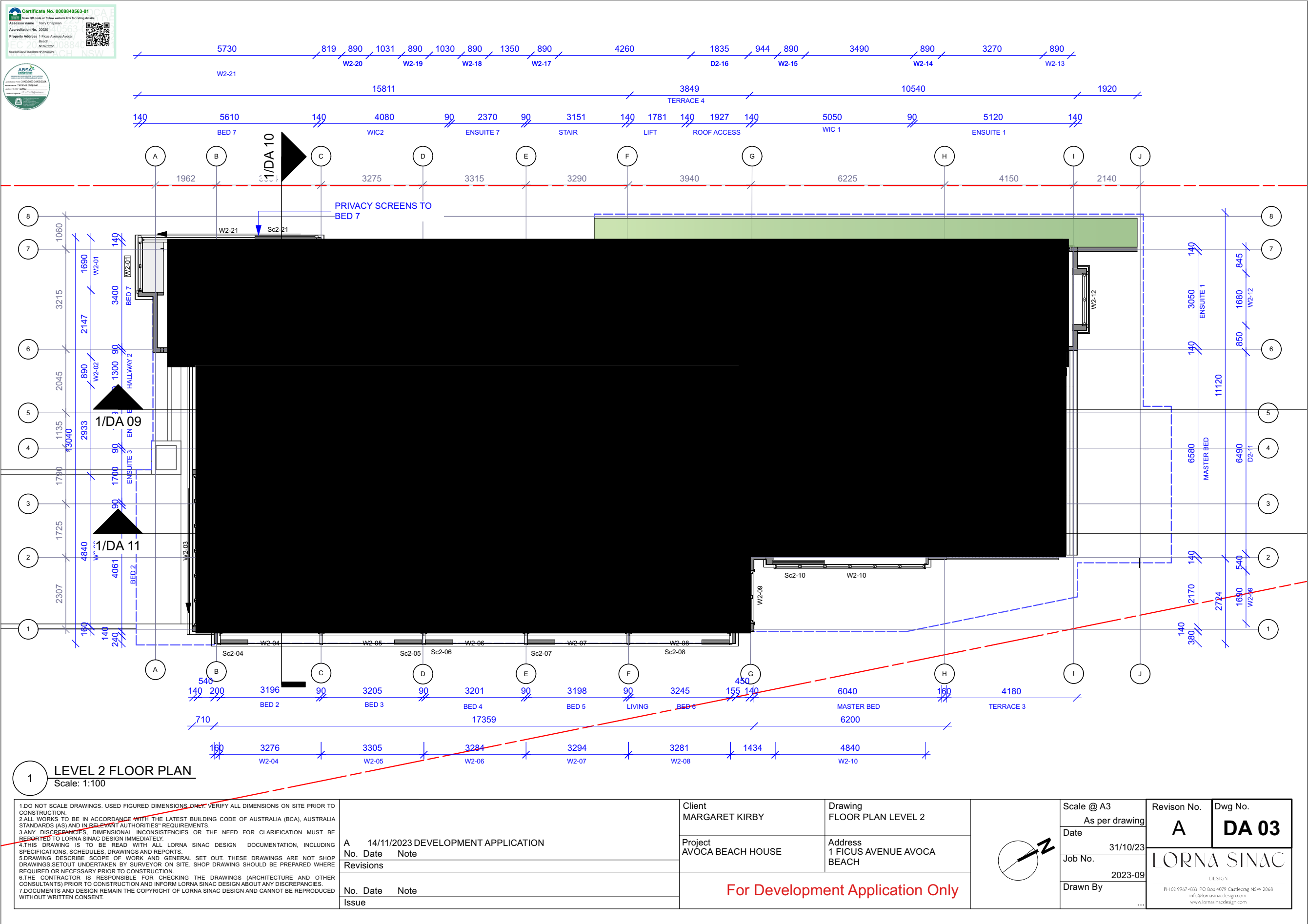
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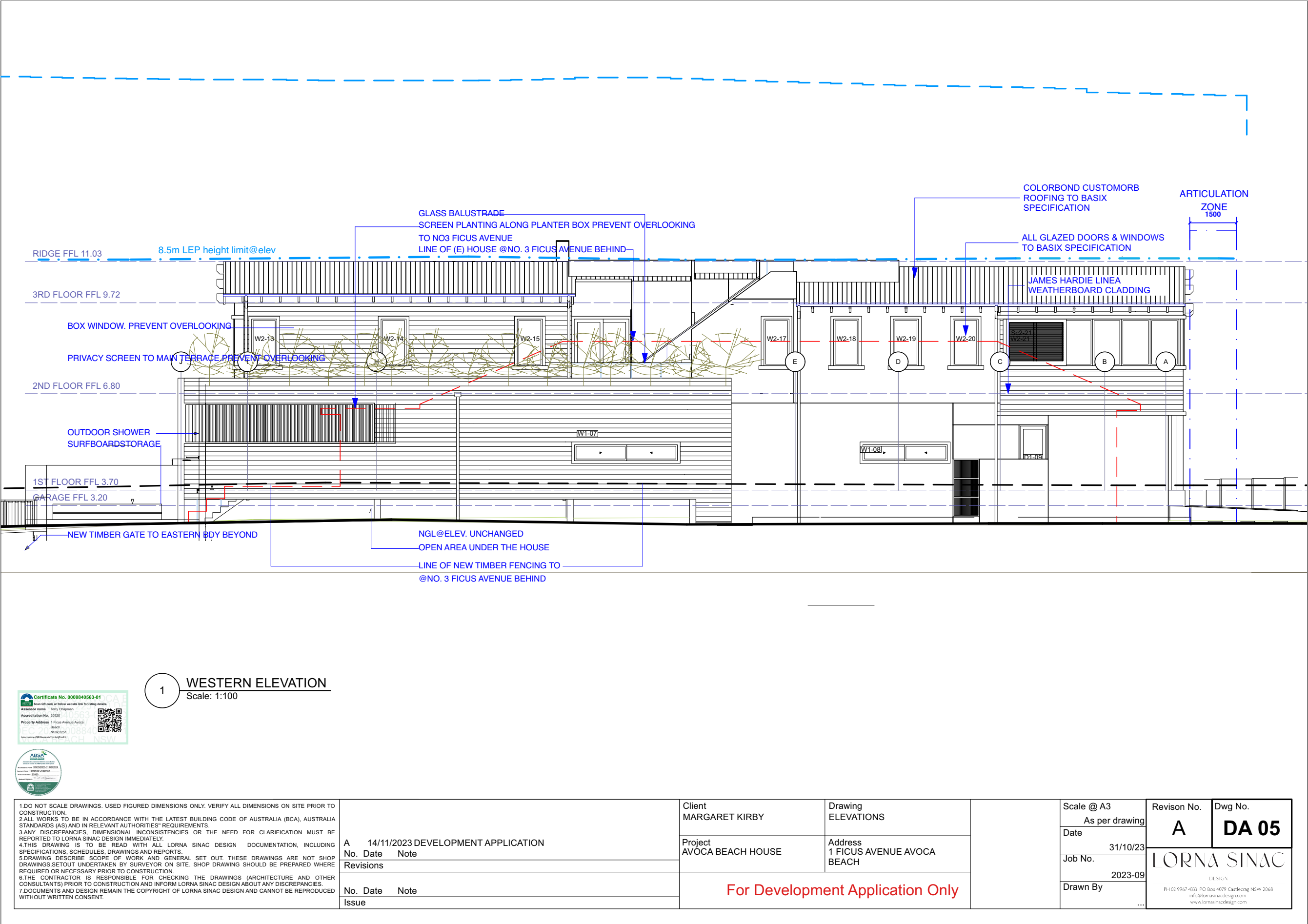


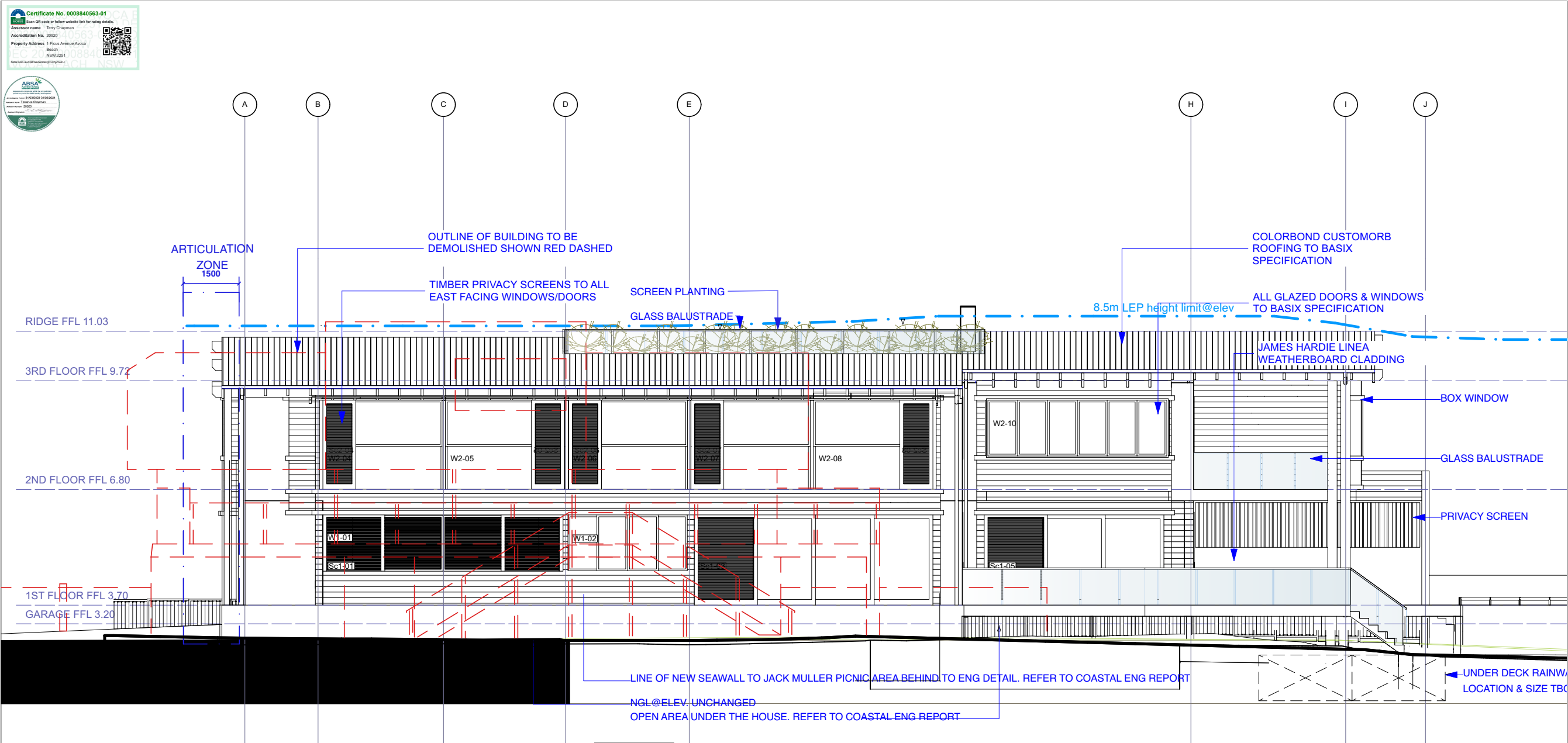












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Revisions		
No.	Date	Note
Issue		

Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

Drawing
ELEVATIONS

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BEACH

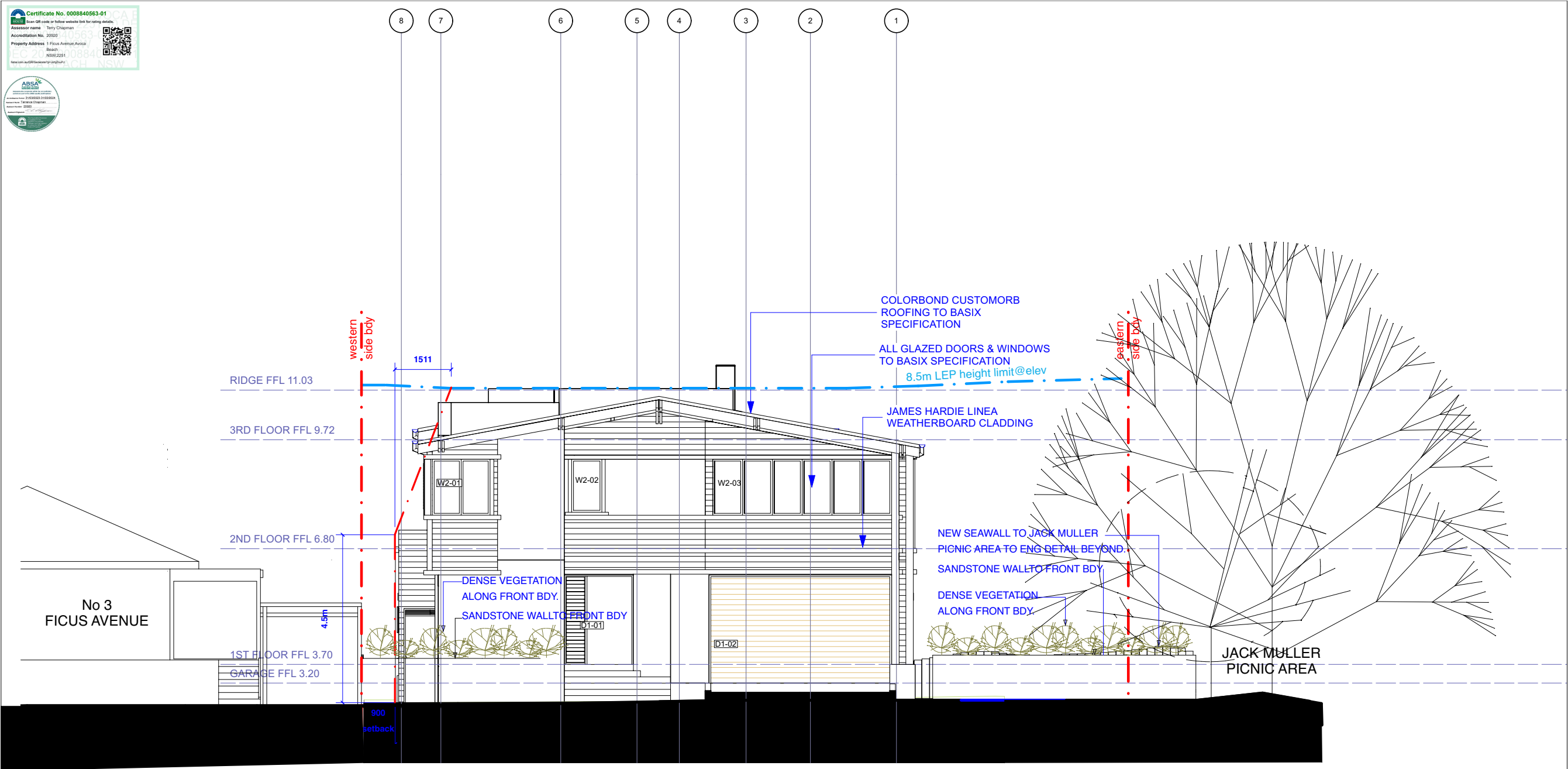
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Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

Drawing
ELEVATIONS

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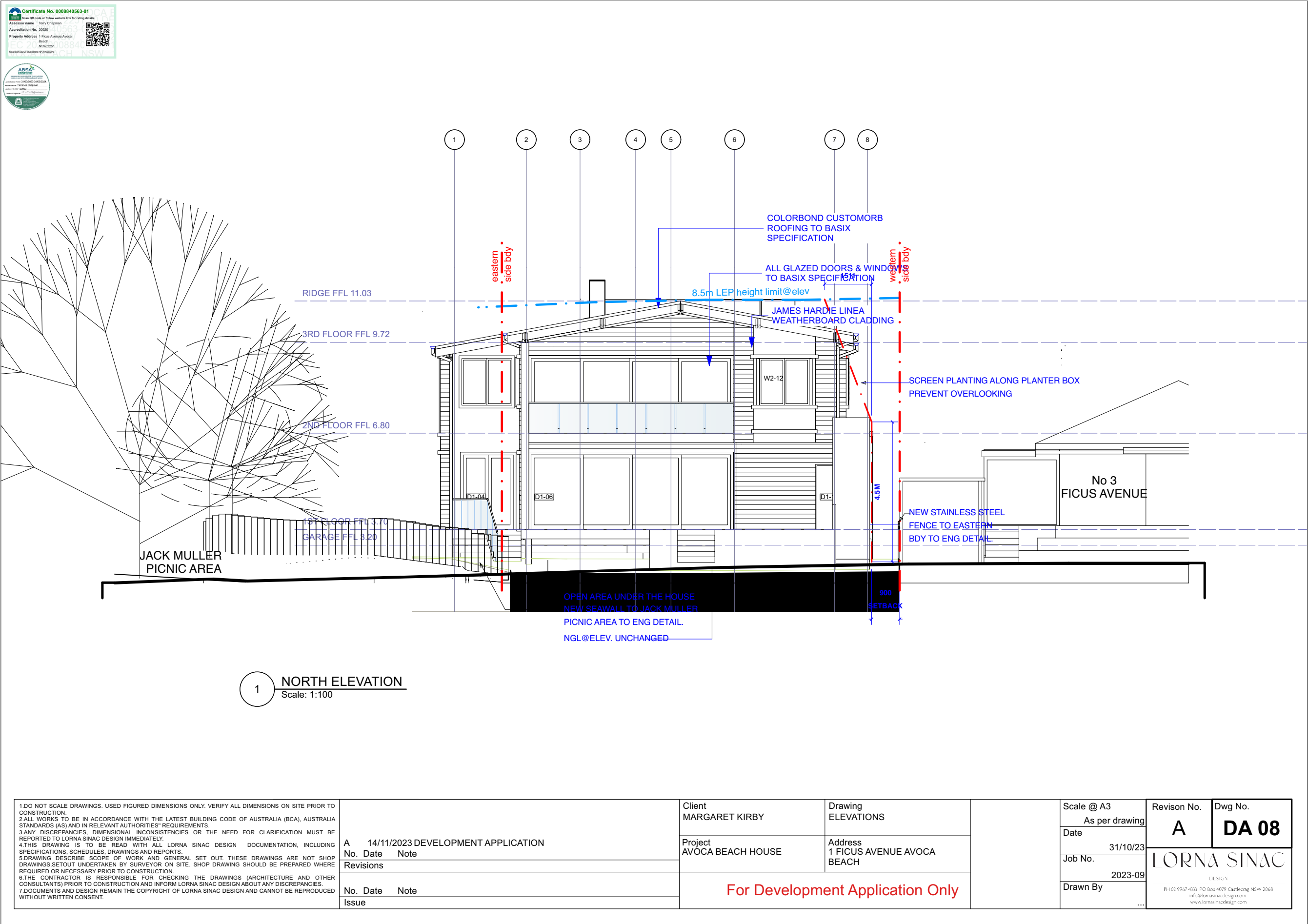
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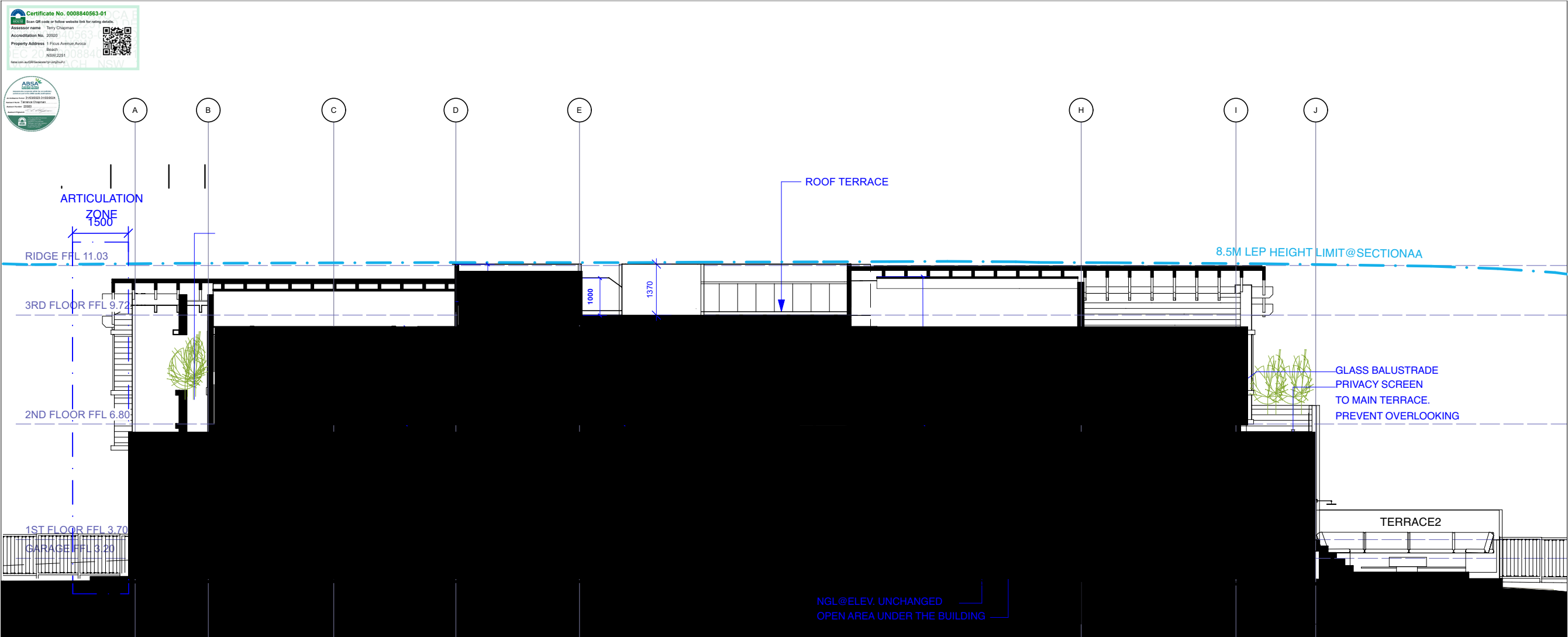
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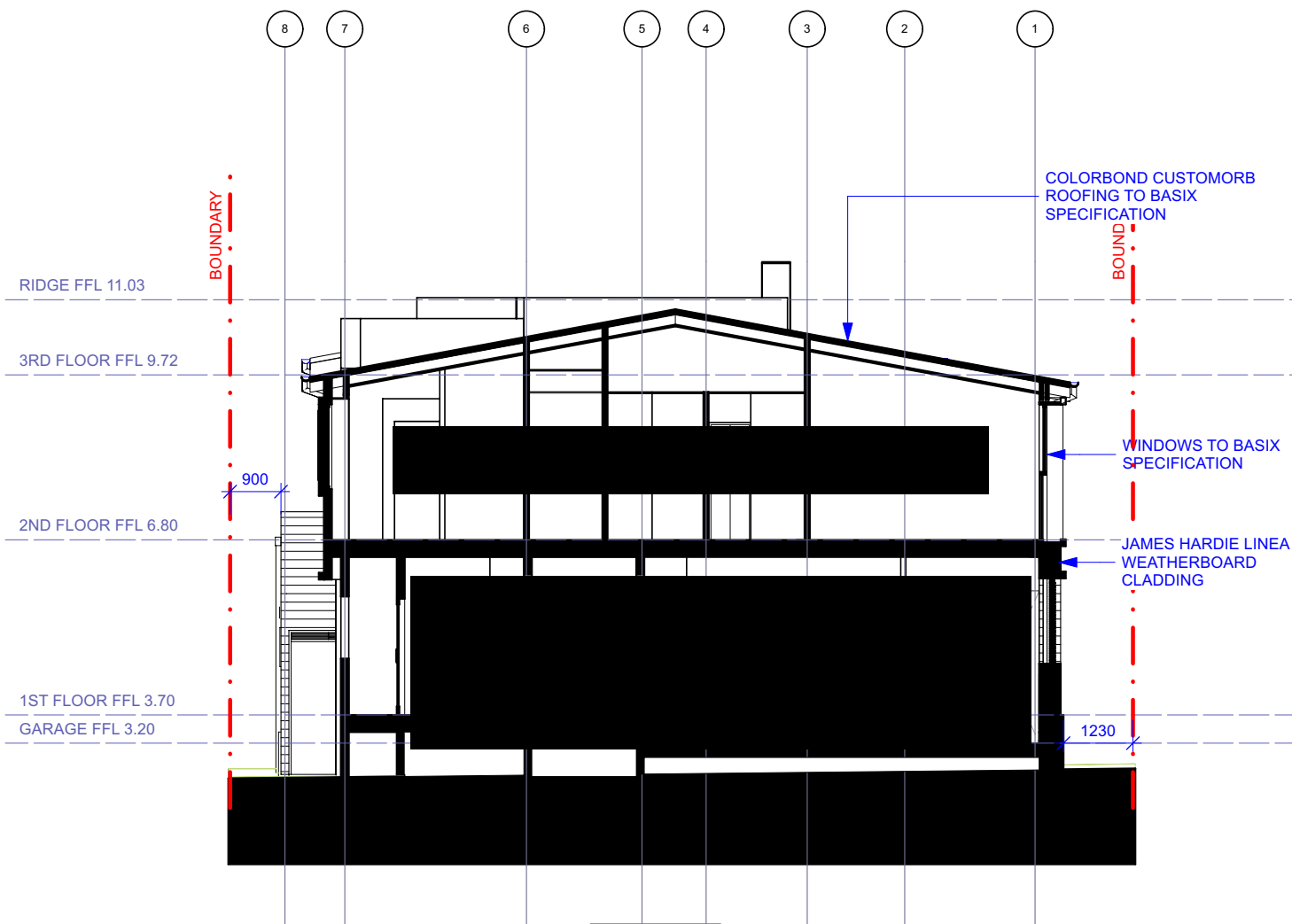
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Revisions		
No.	Date	Note
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Client MARGARET KIRBY	Drawing SECTION A
Project AVOCA BEACH HOUSE	Address 1 FICUS AVENUE AVOCA BEACH
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1 SECTION B
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BASIX Certificate

Building sustainability index www.basix.nsw.gov.au

Single Dwelling

Certificate number: 14120005_02

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability. It is valid in accordance with the requirements set out below. Terms used in this certificate, or in the commitments, have the meaning given to the document either BASIX Validation/Grant Information published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Wednesday, 20 December 2023
To be valid, this certificate must be signed within 3 months of the date of issue.



Project summary	
Project name	Lot 21 Ficus Avenue, 20
Street address	1 FICUS AVENUE AVOCA BEACH NSW
Local Government Area	Central Coast Council
Plot type and plan number	Quoted Plan N20091
Lot no.	20
Section no.	20
Project type	Dwelling house (detached)
Lot no.	20
Project Status	
Water	✓ 40 Target 40
Thermal Performance	✓ Pass Target Pass
Energy	✓ 80 Target 70
Materials	✓ 43 Target 40

Certificate Prepared by	
Name / Company Name	CHAMPAN ENVIRONMENTAL SERVICES PTY LTD
ABN or equivalent	6601911108

BA023 Department of Planning and Environment www.basix.nsw.gov.au Version: 4.0.1 BASIX/TPF02_02_01_0 Certificate No.: 14120005_02 Wednesday, 20 December 2023 page 1/10

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or sampling development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Fixtures			
The applicant must install showerheads with a maximum rating of 9 l/min (or 7.5 l/min in all showers in the development).		✓	✓
The applicant must install a toilet flushing system with a maximum rating of 4 star in each toilet in the development.		✓	✓
The applicant must install taps with a maximum rating of 4 star in the kitchen in the development.		✓	✓
The applicant must install basin taps with a maximum rating of 4 star in each bathroom in the development.		✓	✓
Alternative water			
Re-use water			
The applicant must install a re-use water tank of at least 2000 litres on the site. This re-use water must be used and be installed in accordance with the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the re-use water tank to collect rain runoff from at least 100 square metres of the roof area of the development (excluding the area of the roof which is used for a permanent use or purpose).	✓	✓	✓
The applicant must connect the re-use water tank to:			
• a hot water tank that supplies water to the development	✓	✓	✓
• at least one outdoor tap in the development (Note: NSW Health does not recommend that re-use water be used for human consumption in areas with possible water supply)	✓	✓	✓
• a hot water storage tank with 10 litres of water in the development	✓	✓	✓
Outdoor Spa			

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Thermal Performance and Materials commitments

Simulation Method	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Assessment details and thermal loads			
The applicant must provide the assessment referred to under "Assessment Details" on the front page of this BASIX Certificate (or "Assessment Certificate") for the proposed development to the Department of Planning and Environment (DPE) for approval. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format.	✓	✓	✓
The applicant must provide the assessment referred to under "Assessment Details" on the front page of this BASIX Certificate (or "Assessment Certificate") for the proposed development to the Department of Planning and Environment (DPE) for approval. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format.	✓	✓	✓
The applicant must provide the assessment referred to under "Assessment Details" on the front page of this BASIX Certificate (or "Assessment Certificate") for the proposed development to the Department of Planning and Environment (DPE) for approval. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format. The applicant must also provide the assessment Certificate to the relevant authority for the proposed development, in that authority's format.	✓	✓	✓

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Thermal Performance and Materials commitments

Details	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Glazing			
The applicant must install windows, glass doors and skylights as described in the table below, in accordance with the specifications listed in the table below.	✓	✓	✓
Framing			
Minimum	100	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
Roofs			
Minimum	100	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓

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Energy Commitments

Details	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Hot water			
The applicant must install a hot water system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Heating systems			
The applicant must install a heating system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Cooling systems			
The applicant must install a cooling system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Ventilation			
The applicant must install a ventilation system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Artificial lighting			
The applicant must install a lighting system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Natural lighting			
The applicant must install a natural lighting system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓

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Description of project

Project address	
Project name	Lot 21 Ficus Avenue, 20
Street address	1 FICUS AVENUE AVOCA BEACH NSW
Local Government Area	Central Coast Council
Plot type and plan number	Quoted Plan N20091
Lot no.	20
Section no.	20
Project type	Dwelling house (detached)
Lot no.	20
Project Status	
Water	✓ 40 Target 40
Thermal Performance	✓ Pass Target Pass
Energy	✓ 80 Target 70
Materials	✓ 43 Target 40

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New Commitments

Details	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
The applicant must install a hot water system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓

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Thermal Performance and Materials commitments

Details	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Glazing			
The applicant must install windows, glass doors and skylights as described in the table below, in accordance with the specifications listed in the table below.	✓	✓	✓
Framing			
Minimum	100	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
Roofs			
Minimum	100	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓
U-value	0.2	✓	✓

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Energy Commitments

Details	Drawn on DA plans	Show on CCDOC plans & specs	Compliance check
Hot water			
The applicant must install a hot water system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Heating systems			
The applicant must install a heating system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Cooling systems			
The applicant must install a cooling system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Ventilation			
The applicant must install a ventilation system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Artificial lighting			
The applicant must install a lighting system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓
Natural lighting			
The applicant must install a natural lighting system in the development, or a system with a higher energy rating, in accordance with the specifications listed in the table below.	✓	✓	✓

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B	20/12/2023	REVISED BASIX
A	14/11/2023	DEVELOPMENT APPLICATION
No.	Date	Note
Revisions		
No.	Date	Note
Issue		

Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

Drawing
SECTION B

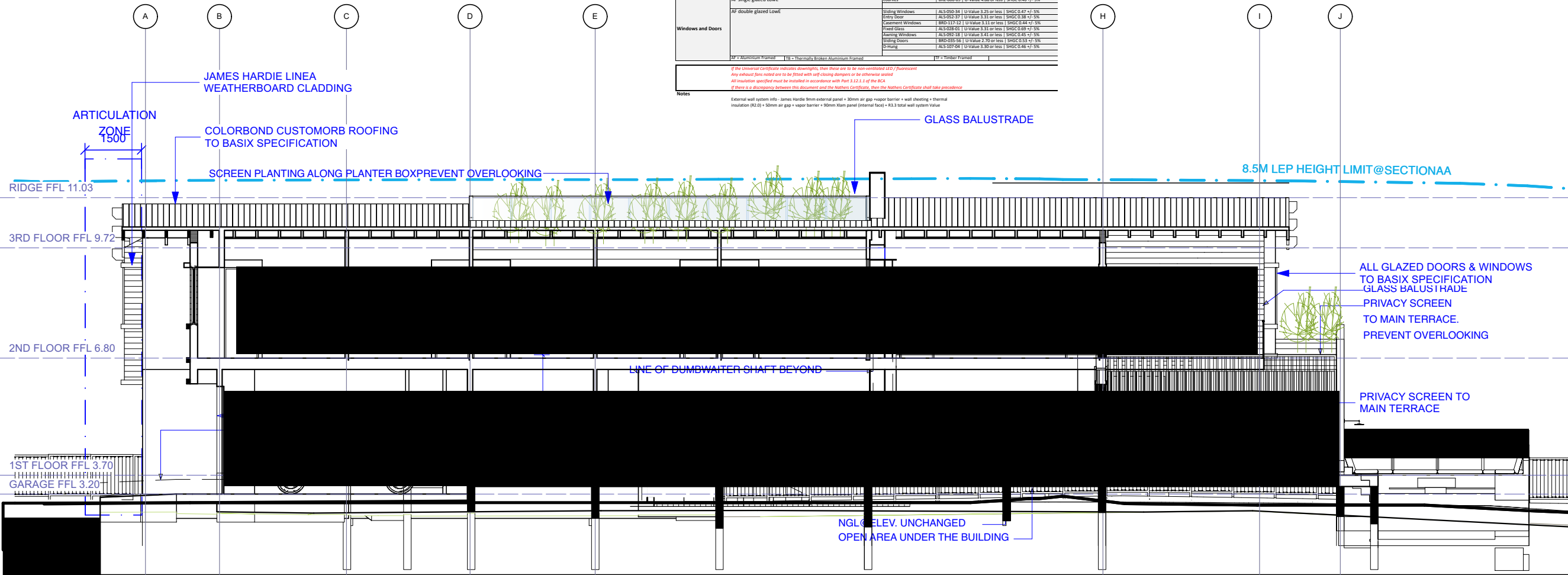
Address
1 FICUS AVENUE AVOCA BEACH

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Scale @ A3	As per drawing
Date	31/10/23
Job No.	2023-09
Drawn By	...

Revision No.	Dwg No.
B	DA 10
LORNA SINAC DESIGN	
PH 02 9967 4333 PO Box 4079 Castlereag NSW 2068 info@lornasinacdesign.com www.lornasinacdesign.com	

BASIX Requirements Summary			
New Dwelling Lot 23 Ficus Avenue Avoca Beach		Prepared by Chapman Environmental Services www.basixcertificates.com.au 1300 054 934	
NSW 2251		CHAPMAN	
Water Target	40	Water Score	80
Energy Target	70	Energy Score	80
Max H & C Loads are (MJ/m²)	5.1	Actual H & C Loads are (MJ/m²)	800.000000 Star Rating 7.1
Basic Commitments			
Landscaping	Total area of garden & lawn (m²)		230
	Area of indigenous/low water use plants (m²)		0
Fixtures	Shower heads	3 star (> 7.5 but <= 9 L/min)	Toilets 4 star All taps 4 star
Alternative Water	Minimum Rainwater tank size (L)		5000
	Collect run off from roof area of at least (m²)		170
Toilet connection	Yes	Laundry connection	Landscape connection
	Yes	Yes	Yes
Pool top up	Yes	Pool top up	Spa top up
	Yes	Yes	Yes
Spa	Max spa volume (kL)	8.7	Spa does not require a cover
	Spa heating	Solar (electric boosted)	Spa pump must have a timer
Energy	Hot water system	Electric heat pump - air sourced	Rating 2.5 to 2.5 STCs
	Bathroom ventilation	Individual fan, ducted to facade or roof	with Manual switch on/off
	Kitchen ventilation	Individual fan, ducted to facade or roof	with Manual switch on/off
	Laundry ventilation	Individual fan, ducted to facade or roof	with Manual switch on/off
	Cooling - living areas	3-phase air conditioning	Rating EER 3.0 - 3.5
	Cooling - bedrooms	3-phase air conditioning	Rating EER 3.0 - 3.5
	Heating - living areas	3-phase air conditioning	Rating EER 3.0 - 3.5
	Heating - bedrooms	3-phase air conditioning	Rating EER 3.0 - 3.5
	Alternate Energy	Photovoltaic system able to generate at least 5 peak kilowatts of electricity	
	Hot cooktop & electric oven	Outdoor cooktop/line required	No indoor cooktop/line required
Thermal Performance Assessment based on the following requirements			
Floor Types	Suspended timber - Lower Level	with R2.0 bulk insulation	
	Suspended timber - Upper Level	with R2.5 bulk insulation	
	Suspended concrete slab	with R1.1 under-slab insulation	
Floor Coverings	Tiles	Timber	Living Areas/bedrooms
	Carpet	Concrete	Garage
External Walls	Timber framed Fibro clad with Xlam Panel	with Sarking and R2.0 bulk insulation	Colour Light
Internal Walls	90mm Xlam CLT Panels	with No insulation required	
Ceiling (floor over)	Timber above plasterboard - Over Stairs/Bathrooms/Kitchen/Laundry/Pentry/Garage	with R3.1 bulk insulation	
	Xlam panels to R2.0	with R2.1 bulk insulation	
Ceilings (roof over)	Xlam Panel	with R2.0 bulk insulation	
	Timber above plasterboard - Over Stairs/Bathrooms	with R2.0 bulk insulation	
Roof	Metal	with R1.3 roof blanket	Colour Medium
Windows and Doors	AF single glazed LowE	Louvers	1 BR2-006-09 U-Value 4.88 or less SHGC 0.46 +/- 5%
	AF double glazed LowE	Sliding Windows	1 AL5-050-34 U-Value 3.25 or less SHGC 0.47 +/- 5%
		Entry Door	1 AL5-053-17 U-Value 3.31 or less SHGC 0.38 +/- 5%
		Common Windows	1 BR2-117-51 U-Value 3.11 or less SHGC 0.48 +/- 5%
		Fixed Glass	1 AL5-028-01 U-Value 1.31 or less SHGC 0.88 +/- 5%
		Roofing Windows	1 AL5-080-18 U-Value 3.41 or less SHGC 0.48 +/- 5%
		Sliding Doors	1 BR2-035-04 U-Value 2.76 or less SHGC 0.53 +/- 5%
		Ornament	1 AL5-101-04 U-Value 3.35 or less SHGC 0.46 +/- 5%
	AF = Aluminium Framed	FB = Thermally Broken Aluminium Framed	TR = Timber Framed
	If the Universal Certificate indicates downlights, then these are to be non-ventilated LED / fluorescent		
Any exhaust fans needed must be to be fitted with self-closing dampers or be otherwise sealed			
All insulation specified must be installed in accordance with Part 3.12.1.1 of the BCA			
If there is a discrepancy between this document and the National Certificate, then the National Certificate shall take precedence			
Notes			
External wall system info: James Hardie 9mm external panel + 30mm air gap + vapor barrier + wall sheeting + thermal insulation (R2.0) + 50mm air gap + vapor barrier + 90mm Xlam panel (external face) + R3.3 total wall system value			



1 SECTION C
Scale: 1:100

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A	14/11/2023	DEVELOPMENT APPLICATION
No.	Date	Note
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No.	Date	Note
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Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

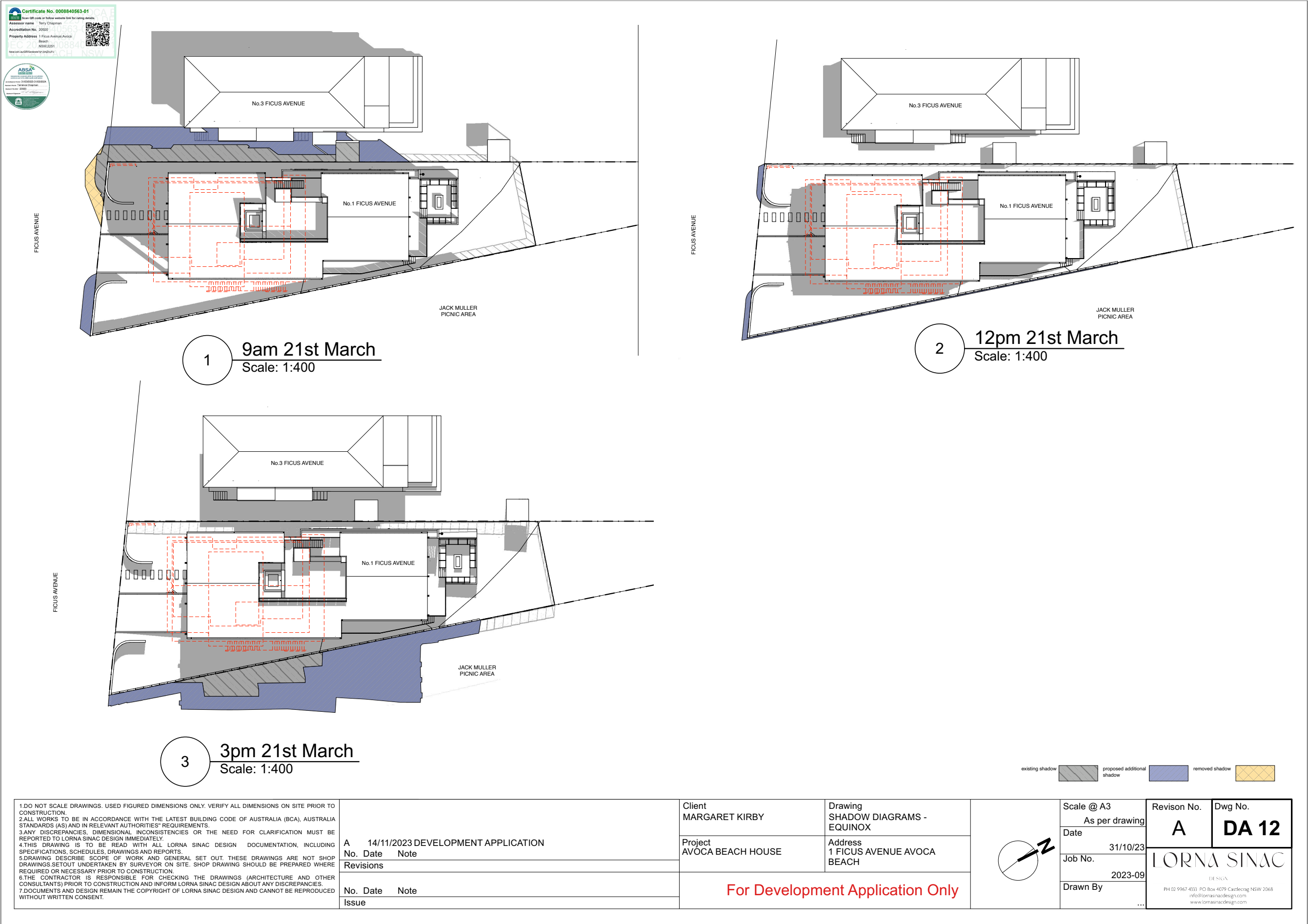
Drawing
SECTION C

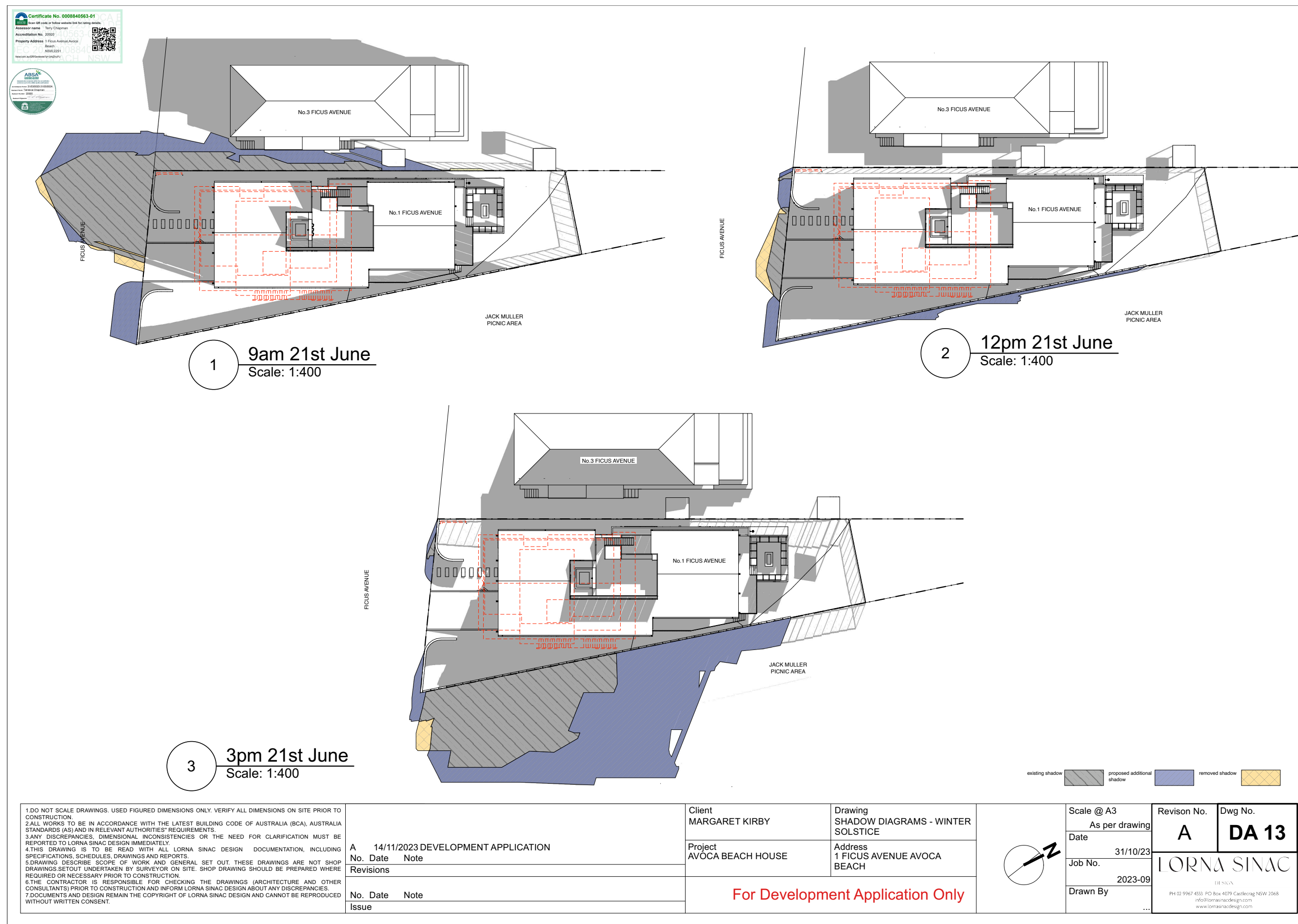
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BEACH

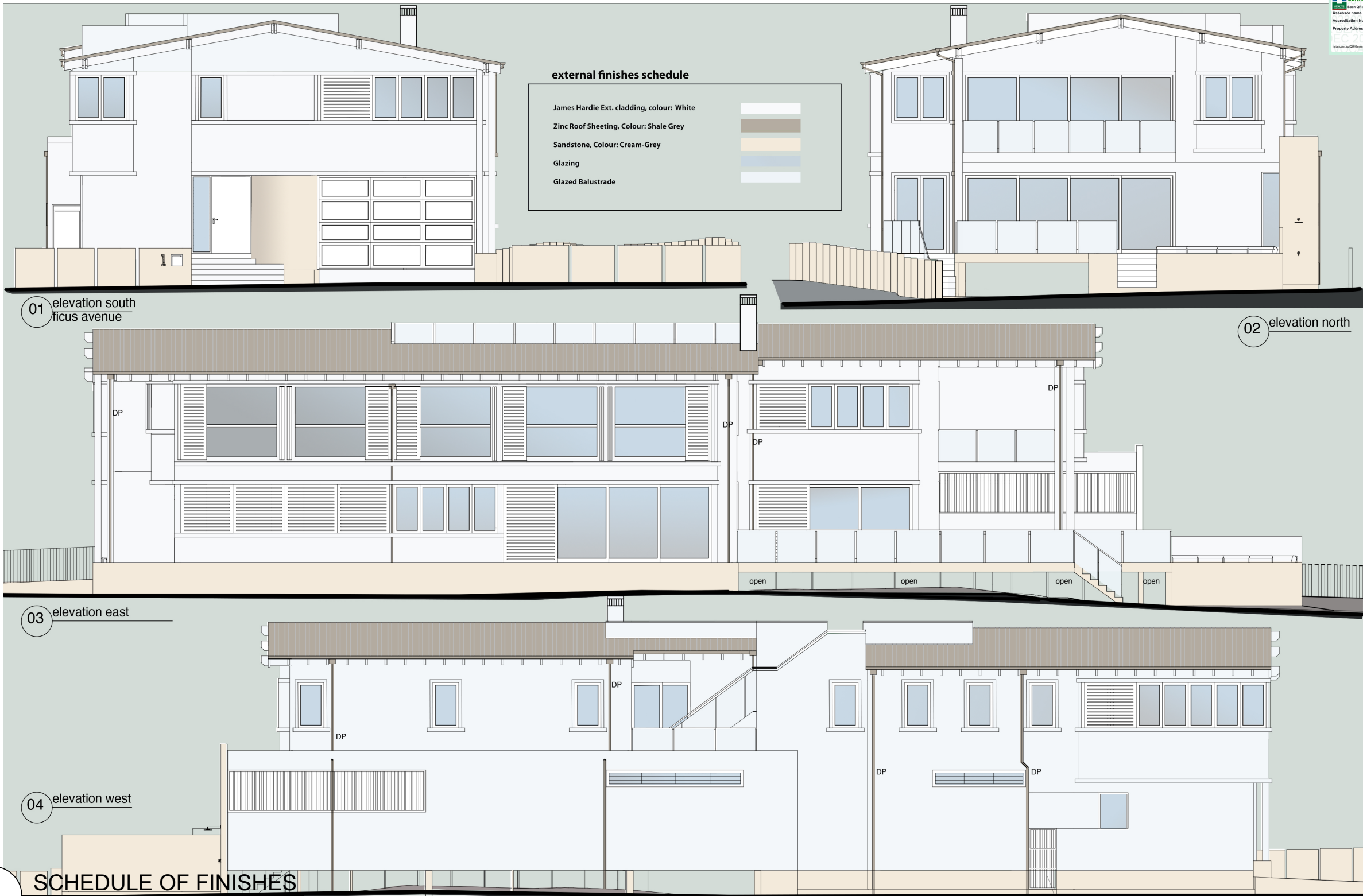
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Date	31/10/23
Job No.	2023-09
Drawn By	...

Revision No.	Dwg No.
B	DA 11
LORNA SINAC	
DESIGN	
PH 02 9967 4333 PO Box 4079 Castlereag NSW 2068	
info@lornasinacdesign.com	
www.lornasinacdesign.com	







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No.	Date	Note
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Client
MARGARET KIRBY

Project
AVOCA BEACH HOUSE

Drawing
SCHEDULE OF FINISHES

Address
1 FICUS AVENUE AVOCA
BEACH

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Scale @ A3
As per drawing

Date

31/10/23

Job No.

2023-09

Drawn By

...

Revision No.

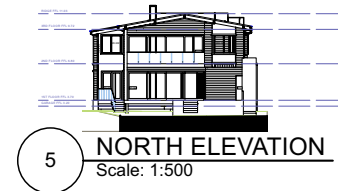
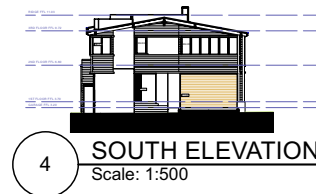
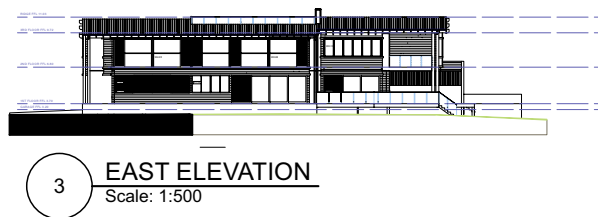
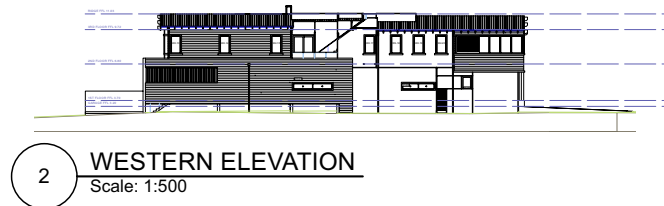
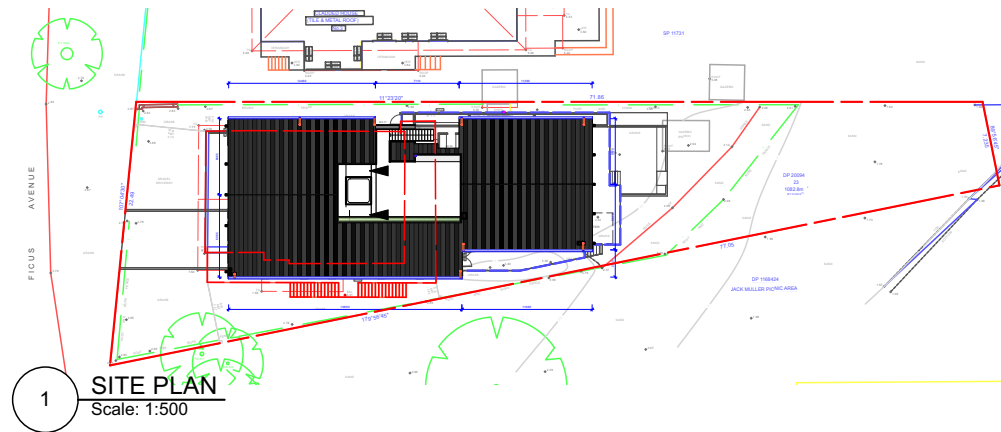
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Dwg No.

DA 14

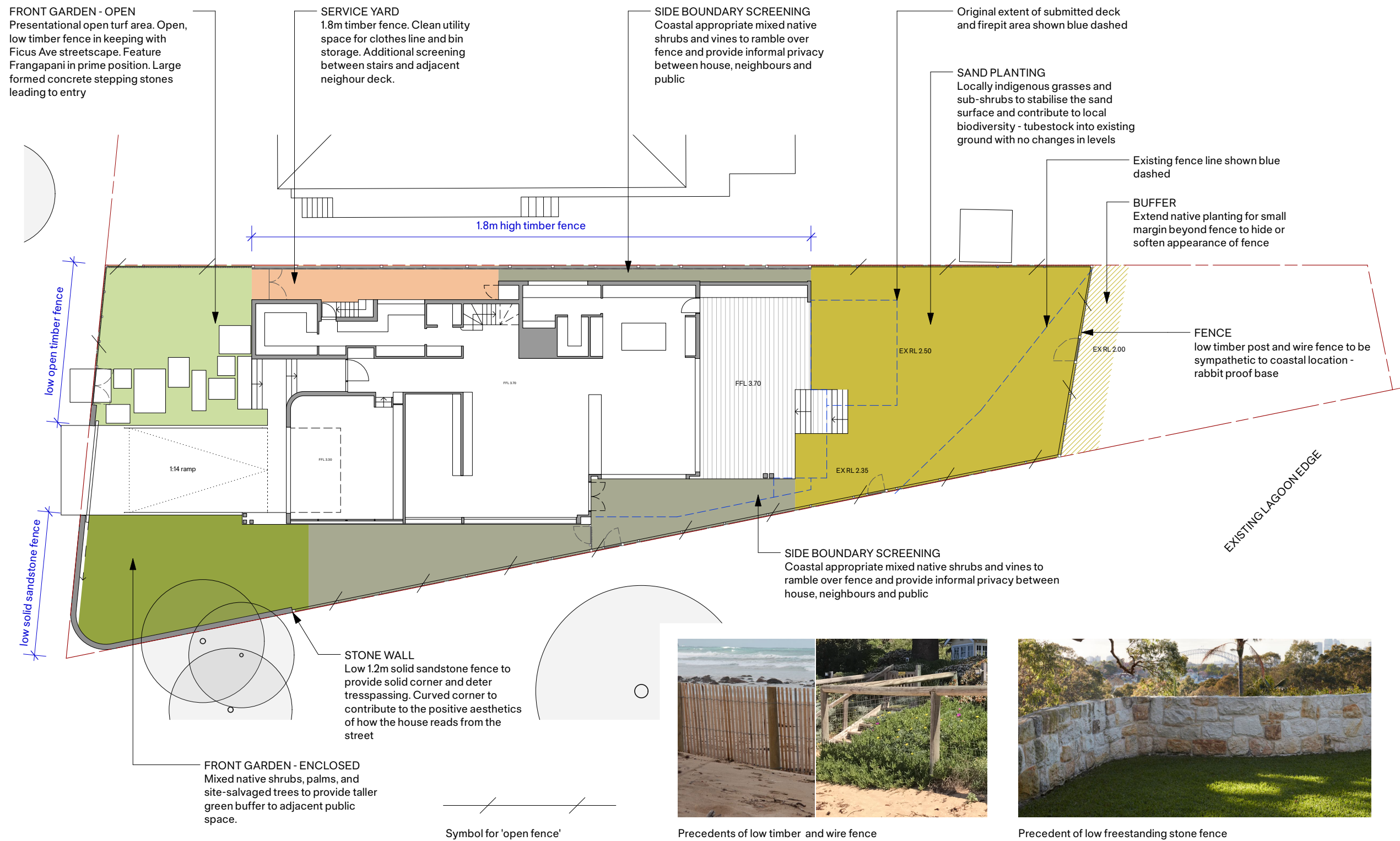
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	Project AVOCA BEACH HOUSE		Address 1 FICUS AVENUE AVOCA BEACH			Date 31/10/23	LORNA SINAC <small>(IN SINAC)</small> PH 02 9667 4113, PO Box 4079 Caringbah NSW, 2248 info@lornasinacdesign.com www.lornasinacdesign.com		
	No. Date Note		Job No. 2023-09			Drawn By			
	Revisions								
	No. Date Note								
	Issue								



Indicative Plant List

QTY	BOTANICAL NAME	COMMON NAME	TYPE	POT SIZE	NOTE
FRONT GARDEN [OPEN]					
	Beaumontia grandiflora	Easter lily vine	Vine	150mm	Growing on fence
	Hibbertia scandens	Snake vine	Vine	300mm	Growing on fence
	Plumeria sp.	Frangipani	Tree	>100L	Principal supplied item
	Zoysia 'Australis'	Zoysia Australis Lawn	Lawn	N/A	Lawn
FRONT GARDEN [ENCLOSED]					
	Archontophoenix cunninghamiana	Bangalow Palm	Palm Tree	45L	
	Backhousia myrtifolia	Grey Myrtle	Small tree	200mm	
	Banksia integrifolia	Coastal Banksia	Tree	45L	
	Banksia serrata	Old Man Banksia	Tree	45L	
	Doodia aspera	rasp fern	Fern	85mm	
	Dracaena draco	Dragon Tree	Tree	N/A	Salvaged from site
	Eucalyptus ficifolia 'Summer Beauty'	Eucalyptus 'Summer Beauty'	Small tree	45L	
	Hibiscus tiliaceus	Sea hibiscus	Tree	45L	
	Lomandra confertifolia 'Wingarra'	Wingarra Lomandra	Grass	150mm	
	Mixed palms	Mixed palms	Palm Tree	N/A	Salvaged from site
	Pandanus sp	Screw pine	Palm Tree	N/A	Salvaged from site
	Philotheca 'Winter Rouge'	Wax Flower	Shrub	150mm	
	Viola hederacea	Native Violet	Groundcover	85mm	
SIDE BOUNDARY					
	Acacia longifolia	Sydney Golden Wattle	Shrub	150mm	
	Acacia sophorae	Coastal Wattle	Shrub	150mm	
	Acacia suaveolens	Sweet Wattle	Shrub	150mm	
	Backhousia myrtifolia	Grey Myrtle	Small tree	200mm	
	Breynia oblongifolia	Coffee Bush	Shrub	150mm	
	Casuarina 'Green Wave'	Casuarina 'Green Wave'	Shrub	150mm	
	Dianella caerulea	Blue Flax Lily	Forb	150mm	
	Hardenbergia violacea 'Free n Easy'	White Coral Pea	Vine	300mm	Growing on fence
	Hardenbergia violacea 'Happy Wanderer'	Purple Coral Pea	Vine	300mm	Growing on fence
	Hibbertia scandens	Snake vine	Vine	300mm	Growing on fence
	Leptospermum spp.	Mixed tea trees	Shrub/tree	varies	
	Lomandra longifolia 'Nyalla'	Nyalla Lomandra	Grass	150mm	
	Melaleuca incana 'Sea Mist'	Honey Myrtle	Shrub	150mm	
	Pelargonium australe	Native storksbill	Forb	150mm	
	Philotheca 'Winter Rouge'	Wax Flower	Shrub	150mm	
	Tetragonia tetragonioides	Warrigal Greens / NZ Spinach	Forb	150mm	
	Westringia fruticosa	Coastal rosemary	Shrub	150mm	
SAND PLANTING					
	Acacia longifolia subsp. sophorae	Prostrate Sydney Golden Wattle	Shrub	Tube	
	Apium prostratum	Sea Celery	Forb	Tube	
	Carex longebrachiata	sedge	Grass	Tube	
	Carpobrotus glaucescens	Pig Face	Forb	Tube	
	Dichelachne crinita	longhair plume grass	Grass	Tube	
	Ficinia nodosa	Club Rush	Grass	Tube	
	Lomandra longifolia 'Nyalla'	Nyalla Lomandra	Grass	Tube	
	Pelargonium australe	Native storksbill	Forb	Tube	
	Senecio spathulatus	Coast Groundsel	Forb	Tube	
	Spinifex sericeus	Beach Spinifex	Grass	Tube	
	Sporobolus virginicus	Saltwater Couch	Grass	Tube	
	Tetragonia tetragonioides	Warrigal Greens / NZ Spinach	Forb	Tube	

NOTE:

- Plant list informed by
- advice from Central Coast Council Ecologist (email dated 07.07.2024 from Sevie Crayn)
 - Peate, N. et al (2006) *Grow What Where*. 3rd Edn. Blooming Books
 - Benson, D. and Howell, J. (1990) *Taken For Granted: the bushland of Sydney and its suburbs*. 1st edn. Royal Botanic Gardens, Sydney

For planting adjacent to lagoon, we welcome Council to condition appropriate additional or alternative species for this area.

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15 November 2023

Coastal Engineering and Rainfall-Runoff Related Flooding Advice on 1 Ficus Avenue Avoca Beach

1. INTRODUCTION AND BACKGROUND

It is proposed to demolish and rebuild a dwelling at 1 Ficus Avenue Avoca Beach, hereafter denoted as the 'site', for which a Development Application (DA) is to be submitted to Central Coast Council. Horton Coastal Engineering has prepared a report on coastal engineering and rainfall-runoff related flooding matters to be submitted as part of the DA, as set out herein.

The report author, Peter Horton [BE (Hons 1) MEngSc MIEAust CPEng NER], is a professional Civil Engineer with 31 years of coastal engineering and water engineering experience. He has postgraduate qualifications in coastal engineering and water engineering, and is a Member of Engineers Australia (MIEAust) and Chartered Professional Engineer (CPEng) registered on the National Engineering Register (NER) in the civil engineering area of practice. He is also a member of the National Committee on Coastal and Ocean Engineering (NCCOE) and NSW Coastal, Ocean and Port Engineering Panel (COPEP) of Engineers Australia.

Peter has completed many coastal engineering and flooding studies in the Central Coast area, and has inspected the area in the vicinity of the site on numerous occasions over the last few decades, including specific site inspections on 3 November 2022 and 2 July 2023 (and on 18 October 2017, 16 December 2017 and 12 January 2018 as part of a previous DA for the site).

All levels given herein are to Australian Height Datum (AHD). Zero metres AHD is approximately equal to mean sea level at present in the ocean immediately adjacent to the NSW mainland.

2. INFORMATION PROVIDED

Horton Coastal Engineering was provided with 20 Drawings of the proposed development prepared by Lorna Sinac Design (namely Drawings DA 01 to 19, plus a cover sheet), all dated 13 September 2023.

A site survey completed by Hill & Blume was also provided, Issue B and dated 13 May 2022 (Ref No 63839).

3. EXISTING SITE DESCRIPTION

Vertical and oblique aerial views of the site are provided in Figure 1 and Figure 2 respectively, with a site photograph in Figure 3. A rock revetment extends along most of Jack Muller Picnic Area to the east of the site, with this revetment having been mostly buried under sand since about 2018. The alignment of this revetment is shown in green in Figure 1. A photograph of the revetment when exposed in 2017 is provided in Figure 4.

Based on the site survey, ground elevations at the site vary from about 2.7m AHD at the southern boundary, 2.5m to 2.7m AHD surrounding the dwelling, 2.5m to 2.8m AHD over most of the lawn area north of the dwelling, 2.1m to 2.4m AHD at the northern edge of lawn, and 1.6m AHD at the Avoca Lagoon (northern) property boundary.

The entrance to Avoca Lagoon is located to the NE of the site. Elevations near the northern boundary and over the northern portion of the site are variable depending on Lagoon entrance processes. Avoca Lagoon is generally closed, only opening at times of rainfall-runoff, when freshwater flows scour out the sand berm at the entrance (usually assisted by mechanical entrance clearance). Wave processes tend to close the entrance again after opening.



Figure 1: Vertical aerial view of site (red outline) on 12 August 2023 (alignment of buried rock revetment in green)



Figure 2: Oblique aerial view of site (at arrow) on 9 June 2023, facing NW



Figure 3: View of site on 2 July 2023, facing SSW



Figure 4: View of site, with rock revetment in background, on 16 December 2017

4. PROPOSED DEVELOPMENT

It is proposed to construct a new dwelling over two levels plus a rooftop terrace, with finished floor levels as follows:

- garage at 3.20m AHD and adjacent ground floor (Level 1) at 3.70m AHD, with two terraces at 3.70m and 2.98m AHD respectively to the north (denoted as Terrace 1 and Terrace 2 respectively on the drawings); and
- upper floor (Level 2) at 6.8m AHD.

The entire development is to generally be suspended above natural ground, except for Terrace 2, to allow floodwaters to flow underneath. This gives a net gain in flood storage on the site for the 1% Annual Exceedance Probability (AEP) event, compared to the existing development¹.

A 1m high solid fence is proposed along a portion of the eastern property boundary to act as a 'trip' to wave action overtopping Avoca Beach. Given that the definition of "coastal hazard" in the *Coastal Management Act 2016* includes "coastal inundation", and the definition of "coastal protection works" includes "activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters, including (but not limited to) seawalls, revetments and groynes", this fence may also be classified as coastal protection works (given that the fence is being introduced to reduce the impact of the coastal hazard of coastal inundation)².

The location of the proposed development (including the wave trip fence) is in Figure 5.

¹ The existing development (enclosed structures) can be considered to provide no flood storage, as the storage inside the structures is not readily available.

² Avoca Lagoon itself is unlikely to be classified as "tidal waters", but as wave action is generated from the Pacific Ocean (which are tidal waters), and this is adjacent to the site to the east, the definition of the fence as "coastal protection works" may be considered to hold.



Figure 5: Outline of ground floor of proposed dwelling (solid blue), with outer edge of Terrace 1 dashed blue, proposed Terrace 2 in cyan, proposed wave trip fence in yellow, and approximate site boundary in red (aerial photograph taken 29 October 2023)

Open fencing is proposed along the western boundary, and in the north extending west from the northern extent of the wave trip fence on the eastern boundary. Solid fencing, with gaps, is proposed along the southern boundary outside the driveway and pedestrian entry.

5. DESIGN LIFE

A design life of 60 years has been adopted for the proposed development. As discussed in Horton et al (2014) and Horton and Britton (2015), a 60-year planning period is considered to be reasonable for an infill residential waterfront structure. It is consistent with Australian Standards for structural components, tax legislation, and community expectations.

6. SUBSURFACE CONDITIONS

A geotechnical classification of the site has been completed by Fortify Geotech Pty Ltd (2023). Based on a handheld hydraulic push-tube to 1.6m depth, this portion of the subsurface was found to be sand. Two dynamic cone penetrometer tests extended to about 2m depth, with medium dense to dense soils found at about 1.2m depth.

7. EROSION/RECESSION COASTAL HAZARDS

The site is not subject to typical erosion/recession processes as occur at the adjacent open coast Avoca Beach, and Council has not mapped the site as being affected by coastal erosion/recession. However, southern migration of the entrance breakout location would have the potential to cause scour of the northern portion of the site at times.

To allow for this scour, the dwelling north of the garage (including Terrace 1) should be designed to be supported on piles if erosion occurs down to 0.5m AHD. As part of detailed design, the structural and geotechnical engineers should consider the potential for differential settlement and any requirement for founding the entire development in similar materials.

The following foundation design requirements shall apply from a coastal engineering perspective:

- the piles shall be designed to support the loads of the structure and other conventional structural actions, plus should have an allowance for loading from a collapsing sand dune during or following storm erosion as per Nielsen et al (1992); and
- the sand slumping forces should be provided by a coastal engineer, and can be provided as part of detailed design.

With the foundations designed as outlined above, this is considered to provide an acceptably low risk of damage to the proposed development from erosion related to entrance migration over the acceptably long design life of 60 years.

8. RAINFALL-RUNOFF RELATED FLOODING

Based on a Flood Information Certificate supplied by Council on 16 September 2022, the site is affected by rainfall-runoff related flooding (also denoted simply as 'flooding' herein) from Avoca Lagoon going overbank. The following levels apply at the site:

- 1% AEP flood level of 2.99m AHD;
- maximum Probable Maximum Flood (PMF) level of 4.06m AHD; and
- minimum habitable floor level (Flood Planning Level, FPL) of 3.49m AHD, with land below this level (which covers the entire site) in the Flood Planning Area.

The finished floor level of the ground floor has been set at 3.7m AHD, ie 0.21m above the FPL. The floor level of the garage has been set at 3.2m AHD, ie 0.21m above the 1% AEP flood level.

The entire site is inundated in the 1% AEP event, with the development area generally having an H1 or H2 hazard categorisation, and a 'flood fringe' hydraulic categorisation, in this event³.

As noted in Section 4, most of the proposed development is to be suspended above natural ground to allow floodwaters to flow underneath, and to achieve a net gain in flood storage available at the site compared to the existing development.

Given that the site is a flood fringe area, and given that "flood fringe areas are not sensitive to changes in either flow conveyance or storage... where development will not impact on broad flood behaviour due to alteration of flow conveyance and storage" (Department of Planning

³ The northern 28m or so of the site, north of the development area, has an H3 hazard categorisation, and is classified as 'flood storage' (except for the northern tip, which is H4 and 'floodway').

and Environment, 2023), the solid fence on the eastern boundary is not considered to be significant in terms of flood impacts on adjacent areas⁴. The open eastern and northern fencing allows floodwaters on the flood fringe to enter the site unimpeded, with a gain in flood storage compared to the existing development.

The entire dwelling shall be designed to remain structurally sound if the PMF occurs. That is, the main structural elements shall be designed to resist hydrostatic, buoyancy and hydrodynamic (including debris) forces associated with flood flow in the PMF event. These forces shall be provided by a suitably qualified and experienced water engineer as part of detailed design.

9. OCEANIC INUNDATION AND WAVE RUNUP

The rainfall-runoff flooding considered in Section 8 relates to runoff flowing into Avoca Lagoon from the west, causing Lagoon water levels to rise, and then breaking out over the beach berm to discharge into the ocean, as discussed in Manly Hydraulics Laboratory [MHL] (2020). This study did not consider the effect of ocean waves overtopping the beach berm and flowing east towards the site.

As part of the *Avoca Beach Storm Wave Inundation Study* completed in 2007, this overtopping process was considered in detail. It was found that the 100 year Average Recurrence Interval (ARI) depth of wave overtopping inundation (including a sea level rise allowance of 0.3m) at the developed portion of the site was up to about 0.51m, which with a land level of 2.6m AHD and their recommended freeboard allowance of 0.5m (which is considered to be conservative) gives a wave overtopping level of 3.61m AHD. This is below the proposed ground floor level of 3.7m AHD, and hence is acceptable.

In WorleyParsons (2014), a present-day 100 year ARI wave runup level of 2.4 AHD was determined near the site. Taking projected sea level rise into account (using Council's adopted sea level rise values of 0.2m at 2050 and 0.74m at 2100), this could simplistically give design wave runup levels of about 2.6m AHD at 2050 and 3.1m AHD at 2100 (although in reality the behaviour is far more complex than that⁵), and hence an approximate wave runup level of 2.9m AHD at the end of the design life in 2083. This is again below the proposed ground floor level of 3.7m AHD, and allows a 0.8m freeboard, and hence is acceptable.

Based on Chapter 3.2.3.3.2(f) of *Central Coast Development Control Plan 2022* (DCP 2022), minimum building floor levels shall be 0.5m above the 1% AEP maximum wave inundation level, with no planning period stated and "maximum" assumed to mean "2% exceedance". This has regularly been noted by Horton Coastal Engineering as a technically flawed requirement, given that it does not consider the likely depth of wave overtopping and given that wave runup calculations assume an infinite height foreshore, but it can be noted that the proposed development meets this requirement, as outlined above.

To achieve an acceptably low risk of oceanic inundation and wave runup impacting on the proposed development over the design life, the structural engineer shall design the eastern fence to resist wave forces as advised by a coastal engineer in detailed design.

⁴ The wave trip fence will be solid unless required to have gaps due to flooding considerations. Any gaps would need to not impact on the effectiveness of the fence as a wave trip.

⁵ In reality, any waves that overtopped the foreshore seaward of the site would 'fold over' the berm or dune crest and travel as a sheet flow at shallow depth, spreading out and infiltrating over the landward areas. It is unlikely that wave runup depths would exceed about 0.5m above natural ground levels if the foreshore was overtopped, and wave overtopping flow depths would generally be expected to reduce moving further landward.

The main purpose of the fence is actually to trip wave energy associated with long-period oceanic inundation events not considered in either the *Avoca Beach Storm Wave Inundation Study* or MHL (2020). Such an event occurred in April 2022, see Figure 6. The site, and other properties to the west, were inundated with a high velocity and shallow depth surge of ocean inundation. The site, Jack Muller Picnic Area to the east of the site, and car park to the SE of the site were also inundated with sand washed in by this event.



Figure 6: Long-period oceanic inundation event at site in April 2022 (flow from left to right, site at arrow, three images about 3s apart getting later from top to bottom, facing SW)

10. ASSESSMENT OF IMPACTS OF PROPOSED DEVELOPMENT ON COASTAL PROCESSES**10.1 Assessment of Pile Impacts**

Using the conservative rule-of-thumb (Burcharth and Hughes, 2011) that the maximum depth of scour at a vertical pile is equal to twice the pile diameter (d), and applying an angle of repose of 33° , would mean that scour around the piles would extend in the order of $3.08d$ around each pile. This methodology was supported in *Odisho v Central Coast Council* (Land and Environment Court of NSW Proceedings 2022/192408). For example, if 450mm diameter piles were adopted in detailed design, erosion around the piles could extend about 1.4m.

This means that all piles on the site shall be located at least $3.08d$ from the side boundaries of the site. If so, any additional erosion caused by the piles would be expected to remain within the site.

The piles would not be expected to deflect waves or flows, with *the Coastal Engineering Manual* (Burcharth and Hughes, 2011) clearly stating that piles of the diameter proposed do not “significantly affect the incident wave” and do not cause significant reflection and diffraction. Any additional scour associated with the piles (caused by localised vortexes, vortex shedding and streamline convergence) has been calculated conservatively above. This is considered to be particularly conservative at the site as it is not subject to erosive wave action (oceanic wave events tends to inundate the site with sand), but rather associated with flooding causing entrance migration.

10.2 Assessment of Fence Impacts

The fence provides a benefit to adjacent properties to the west, by reducing the depth and velocity of oceanic inundation reaching these properties in storm events, particularly long-period events as depicted in Figure 6.

The fence would act to trip wave energy, converting horizontal momentum to vertical momentum and partially reflecting some wave energy back out to sea (as occurred naturally in the April 2022 event as that event receded, but only after inundating and damaging numerous properties). Some wave energy would also be deflected to the north, away from development. Due to the angle of the fence relative to the incoming wave energy direction from the ESE (fixed by the alignment of Avoca Beach), the deflection would always be expected to be to the north, as illustrated in Figure 7. This deflection has no impact on other properties, other development, Lagoon entrance processes, or the environment.



Figure 7: Effect of proposed fence on deflection of oceanic inundation (based on Figure 5, with magenta arrow showing incoming wave energy direction, green arrow showing deflected wave energy direction at the fence, and orange arrow showing deflected wave joining the incoming wave energy direction north of the fence)

11. MERIT ASSESSMENT OF COASTAL ENGINEERING MATTERS

11.1 State Environmental Planning Policy (Resilience and Hazards) 2021

11.1.1 Preamble

Based on *State Environmental Planning Policy (Resilience and Hazards) 2021*⁶ (SEPP Resilience) and its associated mapping, the site is within a “coastal environment area” (see Section 11.1.2) and “coastal use area” (see Section 11.1.3).

11.1.2 Clause 2.10

Based on Clause 2.10(1) of SEPP Coastal, “development consent must not be granted to development on land that is within the coastal environment area unless the consent authority

⁶ Encompassing the former *State Environmental Planning Policy (Coastal Management) 2018*.

has considered whether the proposed development is likely to cause an adverse impact on the following:

- (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,
- (b) coastal environmental values and natural coastal processes,
- (c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,
- (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,
- (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- (f) Aboriginal cultural heritage, practices and places,
- (g) the use of the surf zone".

With regard to (a), the proposed works are in a developed residential area, and would not be expected to adversely affect the biophysical, hydrological (surface and groundwater) and ecological environments.

Conventional stormwater management features are proposed, including roof downpipes connected to a 5kL rainwater tank, and piped drainage to a stormwater dispersal trench (level spreader) on the northern side of the site (as per drawings prepared by Adcar Consulting).

The proposed development would not be a source of pollution as long as appropriate construction environmental controls are applied, and it can be noted that a Sediment & Erosion Control Plan is included in the Adcar Consulting drawings. No significant vegetation is expected to be impacted by the proposed development.

With regard to (b), the proposed development would not be expected to adversely affect coastal environmental values or natural coastal processes over its design life, as it is at an acceptably low risk of damage from erosion/recession and oceanic inundation for an acceptably rare storm and over an acceptably long design life, and would be landward of typical coastal processes. The proposed fence reduces the landward extent of oceanic inundation in the development area, without adversely impacting on adjacent properties, and in fact positively impacting on properties to the west by providing a reduced risk of oceanic inundation damage.

With regard to (c), the proposed development would not adversely impact on water quality as long as appropriate construction environmental controls are applied, and it can be noted that a Sediment & Erosion Control Plan is included in the Adcar Consulting drawings.

With regard to (d), this is not a coastal engineering matter so is not necessarily definitively considered herein. That stated, there are no undeveloped headlands nor rock platforms in proximity to the proposed development, no marine vegetation in the area to be developed, and no known native vegetation of significance that would be affected at the site. No significant impacts on marine fauna and flora would be expected as a result of the proposed development, as the development would not be expected to interact with subaqueous areas.

With regard to (e), the proposed development would not impact on public open space and access to and along the foreshore, being entirely within private property.

With regard to (f), a search of the Heritage NSW “Aboriginal Heritage Information Management System” (AHIMS) was undertaken on 15 November 2023. This resulted in no Aboriginal sites nor Aboriginal places being recorded or declared within at least 50m of the site.

With regard to (g), the proposed development is entirely on private property and would not typically interact with the surf zone, so would not significantly impact on use of the public surf zone. The Avoca Beach surf zone is typically located about 250m east of the site.

Based on Clause 2.10(2) of SEPP Resilience, “development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

- (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or
- (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact”.

The proposed development has been designed and sited to avoid the adverse impacts referred to in Clause 2.10(1).

11.1.3 Clause 2.11

Based on Clause 2.11(1) of SEPP Resilience, “development consent must not be granted to development on land that is within the coastal use area unless the consent authority:

- (a) has considered whether the proposed development is likely to cause an adverse impact on the following:
 - (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
 - (ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,
 - (iii) the visual amenity and scenic qualities of the coast, including coastal headlands,
 - (iv) Aboriginal cultural heritage, practices and places,
 - (v) cultural and built environment heritage, and
- (b) is satisfied that:
 - (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or
 - (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
 - (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and
- (c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development”.

With regard to (a)(i), the proposed development would not impact on foreshore or beach access, as discussed previously.

With regard to (a)(ii), (a)(iii), (a)(v) and (c), these are not coastal engineering matters so are not considered herein.

With regard to (a)(iv), no Aboriginal sites nor Aboriginal places have been recorded or declared within at least 50m of the site, as noted in Section 11.1.2.

With regard to (b), the proposed development has been designed and sited to avoid any potential adverse impacts referred to in Clause 2.11(1).

11.1.4 Clause 2.12

Based on Clause 2.12 of SEPP Resilience, “development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land”.

As discussed in Section 10, the proposed development would not be expected to give rise to any increased coastal hazards on adjacent land, as long as foundation piles are located at least 3.08d from the side boundaries of the site, where d is the pile diameter.

11.1.5 Clause 2.13

Based on Clause 2.13 of SEPP Resilience, “development consent must not be granted to development on land within the coastal zone unless the consent authority has taken into consideration the relevant provisions of any certified coastal management program that applies to the land”.

The *Gosford Beaches Coastal Zone Management Plan (CZMP)* of WorleyParsons (2017), which applies as a certified coastal management program at the site, essentially allows for development to be constructed at the site with consideration of coastal hazards in accordance with DCP 2022. A merit assessment against DCP 2022 is provided in Section 11.2.

Management Action A22 in the CZMP was to undertake beach scraping to build the dune in front of the carpark and properties 165 Avoca Drive to 15 Ficus Avenue Avoca Beach, a Council responsibility. It is important that Council actions this item to reduce the risk of entrance migration and wave overtopping entering the site. It is also important that Council manages entrance berm levels and undertakes mechanical Lagoon breakout operations towards the centre of the entrance, to reduce the risk that entrance migration propagates towards the site.

11.1.6 Synthesis

The proposed development satisfies the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* for the matters considered herein.

11.2 Chapter 3.2 of DCP 2022 (Coastal Hazard Management)

11.2.1 Preamble

The site is identified as a lot potentially affected by coastal inundation in DCP 2022. A Coastal Building Line does not exist at the site.

11.2.2 Chapter 3.2.3.2(a)

Chapter 3.2.3.2(a) of DCP 2022 is not applicable as the Coastal Building Line does not exist at the site.

11.2.3 Chapter 3.2.3.3.2(b)

Based on Chapter 3.2.3.3.2(b) of DCP 2022, “all structures constructed within a designated Coastal Hazard Area shall:

- i) be compatible with the coastal hazards identified;
- ii) be founded landward of the coastal building line;
- iii) not give rise to any increased coastal hazard;
- iv) be designed to not be damaged by the designated hazard;
- v) give consideration to the effects of larger events than the designated hazard;
- vi) be constructed in a manner which overcomes any problem from the coastal hazards of run-up and inundation; and
- vii) be set back as far landward as practicable”.

The proposed development is at an acceptably low risk of damage over an acceptably long life as outlined in Section 7 (in relation to entrance migration, if piled as outlined) and Section 9 (in relation to oceanic inundation and wave runup, if the fence is designed to resist wave forces), and hence would be compatible with the coastal hazards identified, as per (i) and (iv).

Larger events than the design event could occur, as could tsunamis. However, the probabilities of these events are so low that the development remains at an acceptably low risk of damage, which is the desired outcome (zero risk is not possible), and this addresses (v). It is acceptable to design for the design event, by definition.

Item (ii) is not applicable, as there is no Coastal Building Line at the site.

With regard to (iii), the proposed development would not be expected to give rise to any increased coastal hazards on adjacent land, as discussed in Section 11.1.4.

With regard to (vi), it was noted in Section 9 that the proposed development is at an acceptably low risk of damage from runup and inundation if wave forces are allowed for in detailed design.

Item (vii) is not a coastal engineering matter and hence is not addressed herein. That stated, it is reiterated that the proposed development is at an acceptably low risk of damage from coastal erosion/recession (if piled as outlined in Section 7), and inundation (if wave forces are allowed for in detailed design).

11.2.4 Chapter 3.2.3.3.2(c)

Based on Chapter 3.2.3.3.2(c) of DCP 2022, “Council will not permit the redevelopment of existing buildings within the Coastal Hazard Area unless the foundation design is demonstrated to have been constructed to withstand designated coastal processes and is certified by a coastal and structural engineer”.

If founded as outlined in Section 7, the proposed development would be constructed to withstand the designated coastal processes over the design life. Certification can be provided as part of detailed design, and suitable consent conditions could facilitate this process.

11.2.5 Chapter 3.2.3.3.2(d)

Chapter 3.2.3.3.2(d) of DCP 2022 is not applicable to the proposed development, as a renovation is not proposed.

11.2.6 Chapter 3.2.3.3.2(e)

Chapter 3.2.3.3.2(e) of DCP 2022 is not applicable as there is no Coastal Building Line at the site.

11.2.7 Chapter 3.2.3.3.2(f)

Chapter 3.2.3.3.2(f) of DCP 2022 was discussed in Section 9.

11.2.8 Chapter 3.2.3.3.2(g)

Chapter 3.2.3.3.2(g) of DCP 2022 is not applicable to the proposed development, as maintenance is not proposed.

11.2.9 Chapter 3.2.3.3.2 (h) to (l)

Based on Chapter 3.2.3.3.2 (h) to (l) of DCP 2022:

- “(h): Structural design of buildings and foundations shall take into account storms greater than the design storm event, and that erosion/run-up/inundation may exceed the design storm event.
- (i): Building footings including strip-footings and/or isolated pier construction are to be designed to ensure safe bearing below or beyond the calculated zone of reduced foundation capacity.
- (j): Where structural consideration of coastal forces is required the engineer shall take into account the forces generated by coastal processes, possible dune slumping, loss of support, slope readjustment, changing water table as well as the normal structural and foundation considerations. Foundation design shall extend beyond the reduced foundation capacity zone of influence.
- (k): In areas of high or moderate cliff instability risk within a Coastal Hazard Area, a geotechnical engineer site assessment will need to demonstrate that the position of the building on the site and its design has taken into account any expected foundation impediments (Refer Cliffline Hazard Definition Study for Tudibaring Headland).
- (l): Any sand excavated during building works should, where possible, remain within the same embayment, and requires approval by Council to be reused in other beach locations. It should be demonstrated to Council that the sand is clean and free of deleterious matter”.

With regard to (h), factors of safety in design mean that structures can withstand storms greater than the design storm event prior to failure.

With regard to (i), the Zone of Reduced Foundation Capacity has been considered in developing the foundation design requirements in Section 7.

With regard to (j), relevant coastal forces have been considered in Section 7.

Item (k) is not applicable. The site is not in a (rocky) cliff area. The "Cliff Line Hazard Definition Study at Tudibaring Headland, Copacabana NSW" prepared in 1996 relates to Tudibaring Headland at the northern end of MacMasters Beach, and has no relevance to the subject DA.

With regard to (l), if the owner proposes to place excavated sand on the beach (and this is not currently proposed), and Council was willing to accept it, then testing could potentially be undertaken to assess its suitability (ie, that it is not contaminated). This could be enforced through a consent condition.

11.2.10 Synthesis

It can be concluded that the proposed development satisfies the DCP 2022 coastal engineering requirements.

11.3 Section 27 of the Coastal Management Act 2016

If the proposed wave trip fence along part of the eastern boundary is considered to be "coastal protection works" (see Section 4), Section 27 of the *Coastal Management Act 2016* applies.

Based on Section 27 of the *Coastal Management Act 2016*, "development consent must not be granted under the *Environmental Planning and Assessment Act 1979* to development for the purpose of coastal protection works, unless the consent authority is satisfied that:

- (a) the works will not, over the life of the works:
 - (i) unreasonably limit or be likely to unreasonably limit public access to or the use of a beach or headland, or
 - (ii) pose or be likely to pose a threat to public safety, and
- (b) satisfactory arrangements have been made (by conditions imposed on the consent) for the following for the life of the works:
 - (i) the restoration of a beach, or land adjacent to the beach, if any increased erosion of the beach or adjacent land is caused by the presence of the works,
 - (ii) the maintenance of the works".

With regard to Section 27(a), the fence would not ever unreasonably limit public access to or the use of a beach or headland. The proposed fence is entirely on private property, and would be for the life of the works. The fence would be designed to have an acceptably low risk of damage, and therefore pose an acceptably low threat to public safety.

With regard to Section 27(b)(i), the fence would not cause beach erosion. It is designed to deflect wave runup, in events that inundate the area with sand rather than causing beach erosion. It is therefore not appropriate or relevant to be applying a requirement for beach restoration at the site. Given the relatively low value of the proposed works and low consequence of any damage to the works, it may be unnecessary for the consent authority to apply a maintenance condition as per Section 27(b)(ii) in this case.

12. MERIT ASSESSMENT OF RAINFALL-RUNOFF FLOODING MATTERS

12.1 Clause 5.21 of Central Coast Local Environmental Plan 2022

Based on Clause 5.21(2) of *Central Coast Local Environmental Plan 2022* (LEP 2022), "development consent must not be granted to development on land the consent authority

considers to be within the flood planning area unless the consent authority is satisfied the development:

- (a) is compatible with the flood function and behaviour on the land, and
- (b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
- (c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
- (d) incorporates appropriate measures to manage risk to life in the event of a flood, and
- (e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses”.

With regard to (a), the ground floor level is 0.21m above the FPL, and the structure is to be designed to resist the PMF, which is considered to be compatible with the flood function and behaviour on the land.

With regard to (b), the proposed development would not adversely affect flood behaviour, as described in Section 8.

With regard to (c), the proposed development vastly improves the ability to safely occupy the site during severe flood events, compared to the existing situation. It is possible to shelter-in-place in the dwelling to beyond the 1% AEP event. The proposed development has no effect on evacuation routes or the efficiency of evacuation.

With regard to (d), elevating the ground floor to 0.21m above the FPL, and designing the structure to resist the PMF, are considered to be appropriate measures to manage risk to life in the event of a flood.

With regard to (e), there are no riparian areas or watercourses affected by the proposed development, and no flood-related erosion would be expected as a result of the development.

Based on Clause 5.21(3) of LEP 2022, “in deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters:

- (a) the impact of the development on projected changes to flood behaviour as a result of climate change,
- (b) the intended design and scale of buildings resulting from the development,
- (c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,
- (d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion”.

With regard to (a), from review of Appendix G of MHL (2020), it is evident that the climate change scenarios modelled do not significantly affect flood levels at the site. The scenarios that were modelled had rainfall intensity increases of 10%, 20% and 30% during the 1% AEP flood event, and sea level rises of 0.20m, 0.39m and 0.74m during the 1% AEP and PMF flood events. Therefore, the development is unlikely to be affected by changes in flooding due to climate change over the design life, and is unlikely to affect flood behaviour due to these changes.

With regard to (b), an existing dwelling within a flood fringe is being replaced with a new dwelling in a flood fringe, so of a similar scale and hazard. The ground floor of the dwelling is to be 0.21m above the FPL.

With regard to (c), this was discussed in relation to Clause 5.21(2)(c) and (d) above. In the PMF event, the oval to the west of the site (Heazlett Park) is above the PMF level, and Cape Three Points Road to the south of the oval is also accessible in the PMF based on MHL (2020).

With regard to (d), the proposed development has been designed to withstand flooding and coastal erosion (more correctly entrance migration), rather than be relocated or removed. This is reasonable as the development has an acceptably low risk of being damaged by coastal erosion (entrance migration), coastal inundation and flooding over an acceptably long life.

12.2 Clause 7.3 of Gosford Local Environmental Plan 2014

Based on Clause 7.23 of *Central Coast Local Environmental Plan 2022*, Clause 7.3 of *Gosford Local Environmental Plan 2014* (LEP 2014) must be addressed until 1 August 2024. However, Clause 7.3 of LEP 2014 does not apply to residential development as proposed at the site, so is not applicable.

12.3 Chapter 3.1.11.6 of DCP 2022

12.3.1 Preamble

Based on Table 4 of Chapter 3.1.11.6.4 of DCP 2022, urban residential buildings require consideration of Items B, C and G of that chapter, as discussed below.

12.3.2 Item B

Based on Item B, habitable floor levels are to be above the Flood Planning Level (FPL) for all new structures. As noted in Section 8, the proposed ground floor level is 0.21m above the FPL.

Also for Item B:

“Non-habitable floor levels: Garage, laundry, or public toilets/sporting amenities to have floor levels at least 300mm (desirable 500mm) above surrounding finished ground level. Materials, equipment or contents are not to be stored below the FPL unless they are flood compatible, capable of withstanding the forces of floodwater, debris and buoyancy, and not prone to causing pollution or an environment hazard”.

The proposed garage floor level of 3.2m AHD is about 600mm above surrounding natural ground levels. This item is satisfied if no materials, equipment or contents that could be damaged, polluting or become buoyant due to inundation are stored below the FPL of 3.49m AHD. It has already been noted in Section 8 that the proposed development (including the garage) is to be structurally designed to resist the PMF.

12.3.3 Item C

Based on Item C(i), “if the subject land falls within the area of an existing Floodplain Risk Management Plan, then the development must comply with specific conditions of the plan”. The *Coastal Lagoon Catchments Overland Flood Study* (MHL, 2020) covers the site, but no Floodplain Risk Management Plan has been completed for the area including the site as yet.

Based on Item C(ii), with numbering added herein for convenience, “the development must not:

1. Affect the safe occupation of any flood prone land.
2. Be sited on the land such that flood risk is increased.
3. Adversely affect flood behaviour by raising predevelopment flood level by more than 10mm.
4. Result in an increase in the potential of flooding detrimentally affecting other development or properties.
5. Significantly alter flow distributions and velocities to the detriment of other properties or the environment of the floodplain.
6. Significantly and detrimentally affect the floodplain environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of any riverbank or watercourse.
7. Be likely to result in unsustainable social and economic costs to the flood affected community or general community as a consequence of flooding (including: damage to public property and infrastructure, such as roads, stormwater, water supply, sewerage, and utilities).
8. Be incompatible with the flow of floodwaters on flood prone land (considering any structures, filling, excavation, landscaping, clearing, fences, or any other works).
9. Cause or increase any potential flood hazard (considering the number of people, their frailty, as well as emergency service and welfare personnel)”.

With regard to Item 1, the proposed development has an acceptably low risk of being adversely impacted by flooding over an acceptably long life, as discussed in Section 8, and substantially reduces the existing flood risk at the site.

With regard to Item 2, the proposed dwelling is in a flood fringe area as per the existing dwelling, and with a higher floor level and structural design to resist the PMF, substantially reduces flood risk compared to the existing situation.

With regard to Items 3-5, being in a flood fringe area, with increased flood storage, and with open fencing to the north and west, the proposed development would not be expected to adversely affect flood behaviour, nor detrimentally affect other development or properties, nor significantly alter flow distributions to the detriment of other properties.

With regard to Item 6, the proposed development is located well landward of the main Lagoon floodway, in a flood fringe area, and hence would not be expected to affect the stability of the watercourse or cause erosion. No riparian vegetation is to be altered as a result of the proposed works.

With regard to Item 7, the proposed development would not be expected to affect public property.

With regard to Item 8, the proposed development is in a flood fringe area, so is not incompatible with the flow of floodwaters.

With regard to Item 9, the proposed development reduces flood hazards compared to the existing development, as it is to be raised to the FPL and structurally designed to withstand the PMF.

Based on Item C(iii), with numbering added herein for convenience, the following shall apply:

1. "Limit use to that which is compatible with the level of flood hazard (considering likelihood and consequences of flooding).
2. Building components located below FPL are to maintain strength and durability when wet, facilitate easy cleaning after inundation, and resist the forces of floodwater, debris and buoyancy.
3. All electrical fixtures (including meter box) to be above the FPL
4. The sewer gully trap is to be located at or above the 100 year ARI flood level (without freeboard). All other internal sewer fixtures (floor waste, WC pans, rim of shower, bath, laundry tub, and basins) are to be located at least 150mm above this level.
5. Free standing Rainwater tanks are to be elevated above 100 year ARI flood level (without freeboard) or anchored to resist buoyancy and impact forces".

With regard to Item 1, the proposed development is at an acceptably low risk of being adversely impacted by flooding, so is compatible with the flood hazard. It is only affected by the lowest H1 (which is generally safe for vehicles, people and buildings) and H2 (which is unsafe for small vehicles) flood hazard in the 1% AEP event, and the H2 hazard does not apply where vehicles would be located in the garage as it is to be raised 0.21m above the 1% AEP flood level.

To satisfy Items 2-4 and other related matters, it will be necessary for:

- all building components below 3.49m AHD to be inundation compatible and designed to resist the forces of flood flow in the PMF event;
- all electrical items to be above 3.49m AHD, or waterproofed if below this;
- any items that could be damaged, polluting or become buoyant due to inundation by flooding to be located above 3.49m AHD; and
- the sewer gully trap to be located above 2.99m AHD, and all other internal sewer fixtures to be located at least above 3.14m AHD.

With regard to Item 5, the rainwater tank would need to be appropriately design to resist flood forces as part of detailed design.

With regard to Item C(iv), for which local overland flooding is considered, the site is affected by overbank discharge from the Lagoon rather than inundation by local runoff, so this is not applicable. That stated, minor overland flowpaths along the sides of the dwelling should not be obstructed by landscaping or other items.

With regard to Item C(v), no significant filling is proposed in the Flood Planning Area, and note that the proposed development increases flood storage at the site.

With regard to Item C(vi):

"For low-lying land below RL 4.0m AHD the development applications must assess the ongoing viability of the land, including the viability of road access to the land, associated with the adopted sea level rise figure for planning purposes of +0.9m by the year 2100, assuming a design life for the development. This will be particularly relevant for low-lying coastal or estuarine development".

As noted in Section 12.1, sea level rise does not significantly affect flood levels at the site, nor at surrounding roads. The proposed development has been found to be at an acceptably low risk

of being damaged by rainfall-runoff flooding, oceanic inundation and wave runup, and entrance migration over an acceptably long life of 60 years, including consideration of sea level rise.

12.3.4 Item G

The proposed development is not in a floodway, so fencing is permissible at the site. The proposed development is in a flood fringe area, "where development will not impact on broad flood behaviour due to alteration of flow conveyance and storage" (Department of Planning and Environment, 2023), so the proposed fencing as described in Section 4 and Section 8 is considered to be acceptable with regard to impacting on flood behaviour.

13. CONCLUSIONS

It is proposed to demolish and rebuild a dwelling at 1 Ficus Avenue Avoca Beach.

The site is not subject to typical open coast erosion/recession processes, and Council has not mapped the site as being affected by this. Southern migration of the Avoca Lagoon entrance breakout location would have the potential to cause scour of the northern portion of the site at times. To allow for this scour, the dwelling north of the garage (including Terrace 1) should be designed to be supported on piles if erosion occurs down to 0.5m AHD. If the foundation design requirements outlined in Section 7 are followed, the proposed development would have an acceptably low risk of damage to from erosion related to entrance migration over an acceptably long design life of 60 years.

The finished floor level of the ground floor has been set at 3.7m AHD (0.21m above the Flood Planning Level, FPL). Flood storage in the 1% AEP event is to be increased as a result of the proposed development. The entire dwelling shall be designed to remain structurally sound if the PMF occurs, considering forces advised by a water engineer in detailed design.

To achieve an acceptably low risk of oceanic inundation and wave runup impacting on the proposed development over the design life, the structural engineer shall design the development to resist wave forces as advised by a coastal engineer in detailed design.

No materials, equipment or contents that could be damaged, polluting or become buoyant due to inundation should be stored below the FPL. All building components below the FPL are to be inundation compatible, all electrical items are to be above the FPL or waterproofed if below this, and the sewer gully trap is to be located above 2.99m AHD, with all other internal sewer fixtures above 3.14m AHD.

The proposed development satisfies the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021*, Chapter 3.2 of *Central Coast Development Control Plan 2022* (DCP 2022), Section 27 of the *Coastal Management Act 2016*, Clause 5.21 of *Central Coast Local Environmental Plan 2022* and Chapter 3.1.11.6 of DCP 2022 for the matters considered herein.

14. REFERENCES

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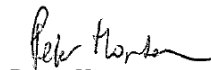
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15. SALUTATION

If you have any further queries, please do not hesitate to contact Peter Horton via email at peter@hortoncoastal.com.au or via mobile on +61 407 012 538.

Yours faithfully

HORTON COASTAL ENGINEERING PTY LTD



Peter Horton

Director and Principal Coastal Engineer

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16 July 2024

**Response to Central Coast Council Comments on *Water Management Act 2000* and
Dwelling Setback Matters in Relation to DA/2304/2023 for a New Dwelling at
1 Ficus Avenue Avoca Beach**

1. INTRODUCTION AND BACKGROUND

In a letter dated 13 May 2024, Central Coast Council advised that it required further information on DA/2304/2023, amongst other items, as follows:

7. The proposed rear setbacks and positioning of the development closer to the coastal lagoon is not considered to uphold the objectives set out in clause 2.1.3 of Chapter 2.1 DCP2022 nor meet the desired character requirements of Avoca 1: Ocean Beachfront – Desired of Chapter 2.17 of DCP 2022. The proposed development is not compatible with the setbacks of other development along the lagoon, nor takes into consideration the edge of the lagoon at time when full of water, delineated by the natural curvature of the grassed edge of the lagoon. The land is greatly exposed from surrounding public spaces and its bulk and scale is not sympathetic to surrounding single dwelling houses.

You are invited to revise the proposed design by significantly increasing the rear setback (at both levels) and further increasing (stepping back measured from the rear) the eastern portion of the development (at both levels) to recognise and be sympathetic with, the natural curvature of the lagoon delineated by the grassed edge of the lawn area.

In email dated 5 July 2024, Council advised (numbering added herein):

1. I note the landscape plans indicate works (timber fence and native planting) within the waterbody...Our advice was to remove all works from the waterbody. If the final revised plans continue to detail these works within the waterbody the application will be referred to the NSW Office of Water to obtain their advice and likelihood if they would issue a Controlled Activity Approval (CAA). Please provide greater detail of the fencing and elevations with the final plans.
2. I would also like to reiterate my concerns and comments at our recent Zoom meeting of the proposed position of the dwelling as included on the revised site plan will not be supported and you were invited to revised the plans with an increase in the setback of

the dwelling to align with the western neighbours northern wall and have a greater setback of the northeast component of the proposed dwelling to reflect the setbacks from the edge of the bank. I note this is your application and I will assess (sic) what proposed final design is submitted, however a planning report will not be supportive of the proposal.

The above three items are partially responded to herein, in relation to the 'site' at 1 Ficus Avenue Avoca Beach, with detailed discussion on the extent of waterfront land at the site in relation to the *Water Management Act 2000* in Section 2, and the response in Section 3.

The report herein has been prepared by Peter Horton [BE (Hons 1) MEngSc MIEAust CPEng NER], who is a professional engineer with 32 years of coastal engineering and water engineering experience. He has postgraduate qualifications in coastal engineering, and is a Member of Engineers Australia (MIEAust) and Chartered Professional Engineer (CPEng) registered on the National Engineering Register (NER). He is also a member of the National Committee on Coastal and Ocean Engineering (NCCOE) and NSW Coastal, Ocean and Port Engineering Panel (COPEP) of Engineers Australia. Peter prepared the coastal engineering and flooding report dated 15 July 2023 that was submitted to Council as part of DA/2304/2023.

2. WATERFRONT LAND

2.1 Definition of Waterfront Land

In the Dictionary of the *Water Management Act 2000* (WMA), "waterfront land" is defined as:

- (a) the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance inland of, the highest bank of the river, or
- (a1) the bed of any lake, together with any land lying between the bed of the lake and a line drawn parallel to, and the prescribed distance inland of, the shore of the lake, or
- (a2) the bed of any estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the estuary, or
- (b) if the regulations so provide, the bed of the coastal waters of the State, and any land lying between the shoreline of the coastal waters and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the coastal waters,

where the prescribed distance is 40 metres or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance. Land that falls into 2 or more of the categories referred to in paragraphs (a), (a1) and (a2) may be waterfront land by virtue of any of the paragraphs relevant to that land.

2.2 The Site and Adjacent Avoca Lagoon are not Necessarily Waterfront Land

In NSW Office of Water (2018), it is noted that "land adjacent to coastal waters....including the shoreline does not currently fall within the definition of waterfront land. In general, a controlled activity approval will not be required for controlled activities carried out on a beach".

That is, works adjacent to Avoca Beach to the east of the site would not be expected to be on waterfront land, nor require a controlled activity approval (CAA). Horton Coastal Engineering has observed this in practice in numerous open coast projects on the Central Coast and

elsewhere, ie that a CAA approval has not been required as this land is not considered to be waterfront land.

The WMA is not clearly formulated for waterways such as Avoca Lagoon, which (from a coastal processes perspective) is an Intermittently Closed and Open Lake or Lagoon (ICOLL). There is no consideration of the unique behaviour and variability of ICOLLs in the WMA.

The site is adjacent to Avoca Lagoon, south of where the waterway position constantly fluctuates due to variations in the Lagoon entrance position. This position varies due to natural processes (wave action, wind, and rainfall runoff) and also related to where artificial (mechanical) breakouts of the entrance are carried out by Council or illegally. Due to the fluctuating waterway position and varying sand levels, the area north of the site is unvegetated and exhibits no riparian features that would typically categorise a waterfront land site.

In Department of Planning and Environment (2024), it is noted that “where a watercourse does not exhibit the features of a defined channel with bed and banks, the department may determine that the watercourse is not waterfront land for the purposes of the WM Act”.

Given that the area near the site exhibits the regularly fluctuating aspects of an open-coast beach, without a defined waterway position, it is reasonable to expect that the NSW Office of Water would not consider the site and adjacent Lagoon to be waterfront land.

However, as Council is yet to refer this matter to the NSW Office of Water to make a determination, there is further discussion herein on how waterfront land should be defined if the NSW Office of Water unexpectedly finds that Avoca Lagoon should be considered as waterfront land adjacent to the site.

2.3 Bed of the Estuary (if the Office of Water Considers that Avoca Lagoon is Waterfront Land)

2.3.1 Estuary Definition in WMA

Although ICOLLs such as Avoca Lagoon do not entirely fit into any of the definitions of waterfront land in Section 2.1, the closest definition would be (a2), ie Avoca Lagoon is best defined as an “estuary” in relation to the WMA.

In the Dictionary of the WMA, an “estuary” is defined as:

- (a) any part of a river whose level is periodically or intermittently affected by coastal tides,
or
- (b) any lake or other partially enclosed body of water that is periodically or intermittently open to the sea, or
- (c) anything declared by the regulations to be an estuary,

but does not include anything declared by the regulations not to be an estuary.

Avoca Lagoon is best defined as (b) above, as it is intermittently open to the sea¹. There is nothing in the *Water Management (General) Regulation 2018* (the ‘regulations’) specifying that

¹ It is also known as a lake, which is part of that definition in (b), with the official name of Avoca Lagoon being “Avoca Lake”.

Avoca Lagoon is or is not an estuary, but it is recognised by the NSW Government as an estuary (Environment and Heritage, 2024).

Therefore, based on the (a2) definition in Section 2.1, the bed of the estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and 40m inland of², the mean high water mark (MHW) of the estuary defines waterfront land at the site (assuming that the NSW Office of Water determines that the Lagoon adjacent to the site is waterfront land).

2.3.2 MHW Cannot be Defined in Avoca Lagoon

However, this definition is problematic at Avoca Lagoon, as it is not mathematically valid to define MHW in an ICOLL such as Avoca Lagoon, as it is usually closed. When the Avoca Lagoon entrance is closed to the ocean, there is no tidal variation in the Lagoon, and when the Lagoon entrance is open the tidally-varying water levels (significantly attenuated compared to the ocean) are typically well below the median water level in the Lagoon. This is why Manly Hydraulics Laboratory [MHL] (2014), in defining water level statistics in Avoca Lagoon and other ICOLLs, did not determine tidal planes such as MHW.

Based on about 20 years of water level data collected every 15 minutes in Avoca Lagoon (688,166 observations), MHL (2014) found that the median water level in the Lagoon was 1.32m AHD, and that about 80% of values were within ± 0.5 m of that median. An example of water level variations in Avoca Lagoon from 1 July 2022 to 31 December 2022 is in Figure 1.

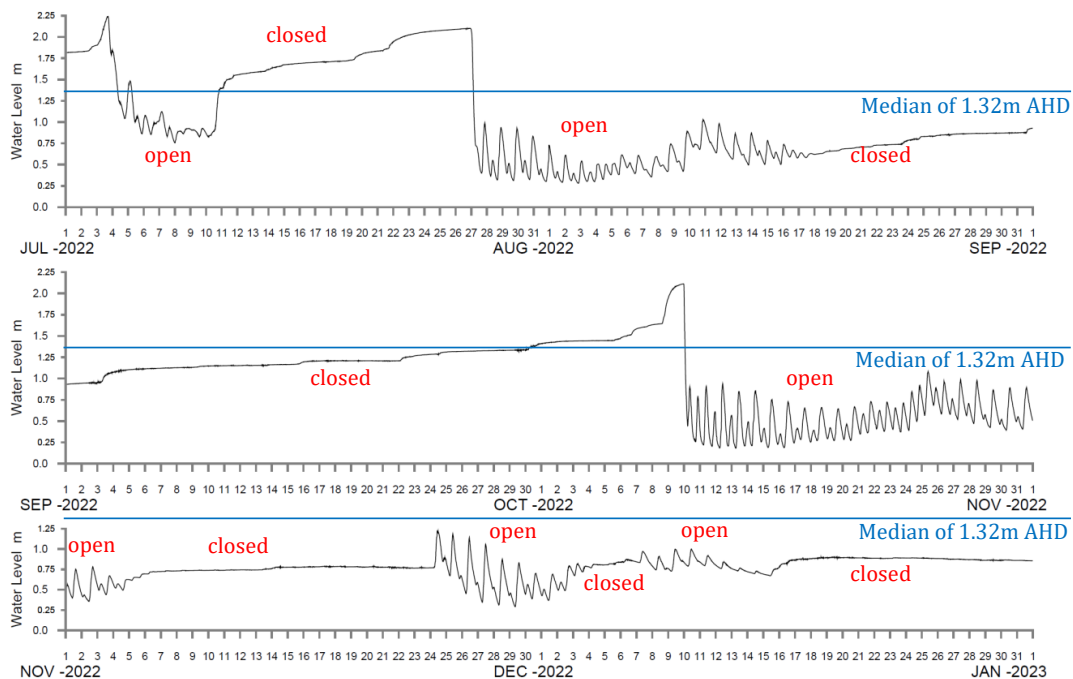


Figure 1: Water level variations in Avoca Lagoon from 1 July 2022 to 31 December 2022, modified³ from MHL (2024), showing open (tidally varying and with water levels typically well below the median level) and closed periods

² The prescribed distance is 40m at the site. There is nothing in the regulations specifying otherwise.

³ The modifications comprise the coloured (red and blue) features.

2.3.3 Median Water Level Appropriate to Define Extent of Estuary Bed

As part of Registrar General's Guidelines issued by the Office of the Registrar General (2024), it is evident that from a legal perspective, Avoca Lagoon would be classified as non-tidal, given that "most coastal lakes or lagoons have, at one time or another, been closed off from the sea and accordingly are classified as non-tidal", and Avoca Lagoon is usually closed off from the sea.

For non-tidal waterways such as Avoca Lagoon, Office of the Registrar General (2024) notes that "the bed of a lake or stream is defined by the average level of water to the bank, without reference to floods and/or droughts". Therefore, the median water level of 1.32m AHD, which is statistically similar to the average, should be used to define the extent of the bed of Avoca Lagoon in relation to the WMA (if the Office of Water considers that the Lagoon is waterfront land).

2.3.4 Location of Bed Extent at Avoca Lagoon

To determine the location of the median water level of 1.32m AHD at Avoca Lagoon (ie, the extent of the bed of Avoca Lagoon in relation to the WMA, if the Office of Water considers that the Lagoon is waterfront land), which varies over time due to variation in sand levels, LiDAR data of the Lagoon captured on various dates was used to define location of the 1.32m AHD contour in the Lagoon at that time. The 1.32m AHD contours on the dates analysed are depicted in Figure 2.

The sand/vegetation interface at the site, located at the arrow in Figure 2, is the "edge of the lagoon" and "grassed edge of the lawn area" at Item 7, edge of the "waterbody" at Item 1, and "edge of bank" at Item 2, referred to by Council in Section 1.

The dashed sections of the 7 July 2007 contour represent locations where the 1.32m AHD level was further towards the centre of the Lagoon (ie further north or east) of the LiDAR data extent, and hence was not captured (that is, had data been available, the 1.32m AHD contour would bend towards the centre of the Lagoon at these dashed locations). The 30 October 2023 contour does not propagate further upstream/west than shown, as the LiDAR data does not extend further upstream/west, but it is obvious that it would be well north of the site if it had.

It is evident from Figure 2 that the extent of the bed of Avoca Lagoon in relation to the WMA (if the Office of Water considers that the Lagoon is waterfront land) as defined by the 1.32m AHD contours is north of the sand/vegetation interface for all seven dates analysed from 2007 to 2023. The median position over these seven dates is about 15m north of the site and about 39m to 43m north of the sand/vegetation interface.

The sand/vegetation interface thus has no relationship to the median Lagoon water level, and cannot be used as a reference point for defining the bed of the estuary in relation to the WMA. It should also therefore not be referred to by Council as the "edge of the Lagoon", nor edge of the "waterbody", nor "edge of bank" as it was in the correspondence noted in Section 1.

It is evident from Figure 2 that the 1.32m AHD contour position is constantly varying north of the site. This further supports the assertion given in Section 2.1 that because the area near the site exhibits the regularly fluctuating aspects of an open-coast beach, without a defined waterway position, it is reasonable to expect that the NSW Office of Water would not consider the site and adjacent Lagoon to be waterfront land.

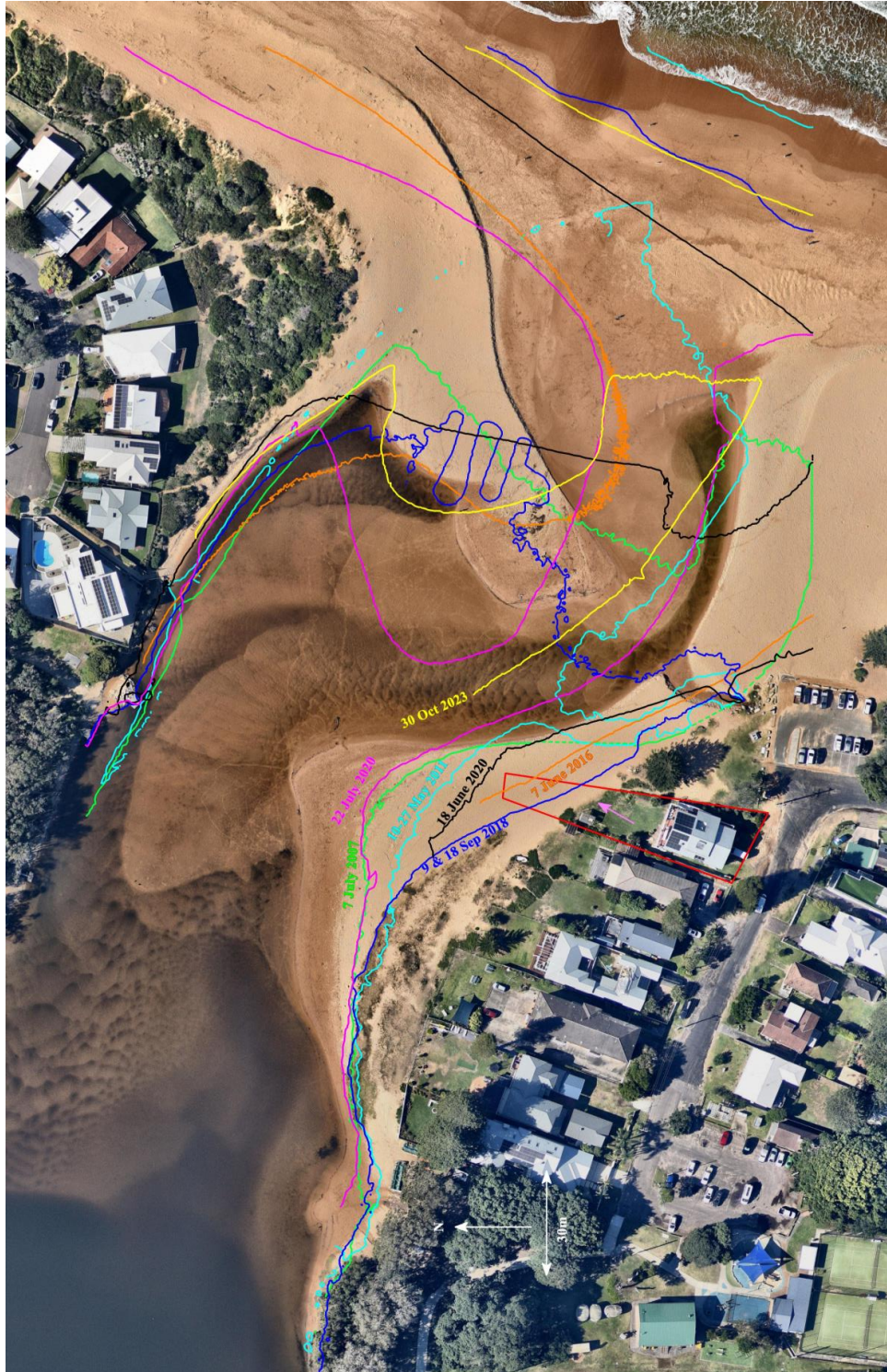


Figure 2: 1.32m AHD contour positions (defining the extent of the bed of Avoca Lagoon in relation to the WMA, if the Office of Water considers that the Lagoon is waterfront land) on various dates from 2007 to 2023, with site boundary in red (aerial photograph taken 22 May 2024)

Another method of determining the location of the median water level in Avoca Lagoon is by analysing the position of the water edge in the Lagoon in aerial photography. This was undertaken for 59 dates from 1965 to 2024 inclusive. It was found that the water edge was within the site on 29 dates, and north of the site on 30 dates.

Given that the extent of the water edge into the site on those 29 dates was generally within a few metres (and only near the sand/vegetation interface on 4 dates), and the extent of the water edge north of the site on those 30 dates was generally over 20m north, it can be confidently asserted that the median water edge position is well north of the site (consistent with the analysis based on the median water level summarised in Figure 2).

2.3.5 Relationship to Proposed Development

With the median position of the 1.32m AHD contour (representing the bed of the estuary in relation to the WMA, if the Office of Water considers that the Lagoon is waterfront land) from 2007 to 2023 found to be about 15m north of the site and about 39m to 43m north of the sand/vegetation interface, it can be noted that:

- as the proposed dwelling is over 40m from this median position, the dwelling works are not on waterfront land; and
- the proposed landscaping works near the sand/vegetation interface are at around the outer limit of waterfront land (if the Office of Water considers that the Lagoon is waterfront land).

It is expected that the Office of Water would not have any concerns with the proposed landscaping works around the sand/vegetation interface, and indeed would be expected to consider the works as a positive native revegetation activity. There is no obvious environmental reason why revegetation (with fencing required to protect it from trampling to allow it to establish) should be opposed.

It is also considered that there is no obvious reason (in relation to any legislation or environmental planning instruments) for the proposed landscaping works to be opposed by Council. Council is encouraged to refer the matter to the Office of Water to determine if a CAA is required for the proposed development. If a CAA is required, it is considered that Council should allow the landscaping works to be assessed on merit by the Office of Water as part of the CAA application, rather than opposing the works.

3. RESPONSE TO COUNCIL COMMENTS FROM SECTION 1

The sand/vegetation interface at the site, located at the arrow in Figure 2, is the “edge of the lagoon” and “grassed edge of the lawn area” at Item 7, edge of the “waterbody” at Item 1, and “edge of bank” at Item 2, referred to by Council in Section 1.

As noted in Section 2.3.4. the sand/vegetation interface has no relationship to the median Lagoon water level, and cannot be used as a reference point for defining the bed of the estuary in relation to the WMA. It should also therefore not be referred to by Council as the “edge of the Lagoon”, nor edge of the “waterbody”, nor “edge of bank”. The bed of the estuary as per the WMA is located about 15m north of the site.

The sand/vegetation interface position is not generally related to Lagoon water levels, and is not a “natural curvature”. It is most related to Council’s management of Lagoon breakout events, with more southern mechanical entrance openings leading to lowering of sand levels

near the site due to the breakout process, as well as penetration of wave action up the estuary that tends to smother vegetation with sand (as occurred in April 2022⁴) and prevents its northern propagation at the site (which combined with trampling by people and dogs using the private land at the site for unlawful public access, further prevents any further northern propagation of vegetation).

In Council's *Opening of Lagoons* policy, last updated in 16 July 2013, it is noted that:

"When openings are made in the lagoons, they should be made in a central area of the sandbar. The intent is to try to avoid a meandering outlet which in the past has caused difficulty to either bank of the outlet channel if it tends to meander when it runs out heavily. Openings offset from the centre seem to encourage meandering or scouring which could be problematic to nearby property".

If Council opened the Lagoon in accordance with this policy, and managed sand levels at the entrance to ensure that levels were higher on the edges and lower in the centre, it is considered that (with exclusion of people and animals) vegetation would propagate north at the site. There have been times in the past (eg, in 2011) when vegetation at the site has extended to near the northern site boundary, about 20m to 25m north of its current position. At these times, the Lagoon entrance was well north of the site.

At Item 2 in Section 1, Council advised that it would not support the proposed dwelling position, and stated that the setback from the 'edge of the bank' (actually sand/vegetation interface) should be increased. As noted previously, the sand/vegetation interface is not related to the bed of the estuary or its defined edge. The sand/vegetation interface is around 40m south of the estuary extent determined in Section 2.3.4, and at the outer limit of waterfront land (if the Office of Water considers that Avoca Lagoon is waterfront land).

There is no known legislation or environmental planning instrument that specifies a required setback of the dwelling from the sand/vegetation interface at the site. Indeed, the setbacks at the site noted in *Central Coast Development Control Plan 2022* are measured relative to the site boundaries, with the northern site boundary about 20m to 30m north of the sand/vegetation interface at present.

4. CONCLUSIONS

Council has noted that it will not support the proposed development at 1 Ficus Avenue Avoca Beach, requesting an increased setback of the dwelling from the sand/vegetation interface at the site.

Given that the area near the site exhibits the regularly fluctuating aspects of an open-coast beach (which is not waterfront land), without a defined waterway position (which thus may be determined not to be waterfront land), it is reasonable to expect that the NSW Office of Water would not consider the site and adjacent Avoca Lagoon to be waterfront land.

If the NSW Office of Water unexpectedly finds that Avoca Lagoon should be considered as waterfront land adjacent to the site, it is considered that the extent of the bed of the estuary in relation to the *Water Management Act 2000* (WMA) should be defined by the median water level in the Lagoon of 1.32m AHD, based on guidelines and advice from the Office of the

⁴ The sand /vegetation interface after April 2022 simply represents the extent of where the owner revegetated after this event, which covered the site (to the south of the sand/vegetation interface) with sand.

Registrar General. From a legal and coastal processes perspective, Avoca Lagoon is non-tidal, and Mean High Water cannot be defined in the Lagoon.

It is evident from Figure 2 that the extent of the bed of Avoca Lagoon as defined by the 1.32m AHD contours is north of the sand/vegetation interface for all 7 dates analysed from 2007 to 2023. The median position over these 7 dates is about 15m north of the site and about 39m to 43m north of the sand/vegetation interface. A similar outcome can be found by analysing the position of the water edge in aerial photography from 1965 to 2024.

The sand/vegetation interface thus has no relationship to the median Lagoon water level, and cannot be used as a reference point for defining the bed of the estuary in relation to the WMA. It should also therefore not be referred to by Council as the “edge of the Lagoon”, nor edge of the “waterbody”, nor “edge of bank”.

Given this, the dwelling works are not on waterfront land as the proposed dwelling is over 40m from this median position, and the proposed landscaping works near the sand/vegetation interface are at around the outer limit of waterfront land (if the Office of Water considers that the Lagoon is waterfront land).

It is expected that the Office of Water would not have any concerns with the proposed landscaping works around the sand/vegetation interface, and indeed would be expected to consider the works as a positive native revegetation activity. There is no obvious environmental reason why revegetation (with fencing required to protect it from trampling to allow it to establish) should be opposed.

The sand/vegetation interface position is not generally related to Lagoon water levels, and is not a “natural curvature”. It is most related to Council’s management of Lagoon breakout events, with more southern entrance openings leading to lowering of sand levels near the site due to the breakout process, as well as penetration of wave action up the estuary that tends to smother vegetation with sand and prevents its northern propagation at the site (which combined with trampling by people and dogs using the private land at the site for unlawful public access, further prevents any further northern propagation of vegetation).

Based on Council’s *Opening of Lagoons* policy, Lagoon openings should be at a central location in the entrance. If Council opened the Lagoon in accordance with this policy, and managed sand levels at the entrance to ensure that levels were higher on the edges and lower in the centre, it is considered that (with exclusion of people and animals) vegetation would propagate north at the site.

There is no known legislation or environmental planning instrument that specifies a required setback of the dwelling from the sand/vegetation interface at the site. Indeed, the setbacks at the site noted in *Central Coast Development Control Plan 2022* are measured relative to the site boundaries, with the northern site boundary about 20m to 30m north of the sand/vegetation interface at present.

5. REFERENCES

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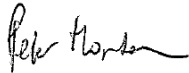
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6. SALUTATION

If you have any further queries, please do not hesitate to contact Peter Horton via email at peter@hortoncoastal.com.au or via mobile on +61 407 012 538.

Yours faithfully

HORTON COASTAL ENGINEERING PTY LTD



Peter Horton
Director and Principal Coastal Engineer

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10 August 2023

Our ref: JOE/S1974

Margaret Kirby

c/o Lorna Sinac Design

Via email: mahnaz@lornasinacdesign.com

Attention: Mahnaz Pejam

Proposed Knockdown Rebuild – 1 Ficus Avenue, Avoca Beach, NSW*Site Classification Report***1 Introduction**

At the request of Lorna Sinac Design, Fortify Geotech Pty Ltd carried out a geotechnical site classification in accordance with AS2870 "Residential Slabs & Footings", for the proposed knockdown rebuild at 1 Ficus Avenue, Avoca Beach, NSW. The site is bound by Ficus Avenue to the south, an existing residential development to the west, Avoca Lake to the north, and a park to the east. The site is currently occupied by a two-storey residential dwelling. Figure 1 shows the site locality.

To establish the site subsurface conditions, a handheld hydraulic push-tube was used to excavate one borehole designated 1A. Dynamic Cone Penetrometer (DCP) testing was conducted adjacent to the location of the borehole, and at the rear of the site. Figure 2 is an aerial photograph showing the approximate borehole and DCP locations. The subsurface profile was logged in accordance with the Unified Soil Classification System (USCS) and the borehole logs are attached.

2 Investigation Results**2.1 SUBSURFACE CONDITIONS**

The geological information provided by the Department of Regional NSW (Reference 1) indicates the area to be underlain by Holocene Age coastal deposits over Triassic Age Burralow Formation bedrock. Burralow Formation bedrock consists of fine-grained, micaceous, quartz to quartz-lithic sandstone; interbedded with siltstone, grey shale and red-brown claystone. Table 1 summarises the subsurface conditions encountered in borehole 1A.

TABLE 1 – Subsurface Conditions

Geological Profile	Depth Interval	Description
TOPSOIL	0m to 0.2m	SILTY SAND; fine to medium grained, dark brown with pale brown, dry to moist, loose.
MARINE	0.2m to >1.6m	SAND; fine to coarse grained, pale orange, dry to moist, moist, moist to wet, loose to medium dense, medium dense.

2.2 DYNAMIC CONE PENETROMETER (DCP) TESTING

To determine the density/relative consistency of the subsurface profile, Dynamic Cone Penetrometer (DCP) tests were conducted on the 31st of July 2023 in accordance with AS1289.6.3.2 "Determination of the penetration resistance of a soil – 9kg dynamic cone penetrometer test". The DCP results are shown in Table 2 below. The DCP tests were taken from existing ground surface levels. The approximate location of the DCP tests are shown in Figure 2.

TABLE 2 - DCP Testing Results

Depth below existing ground surface (m)	Blows per 100mm penetration	
	DCP 1	DCP 2
0.1	2	0
0.2	3	1
0.3	3	2
0.4	3	3
0.5	3	2
0.6	3	1
0.7	3	1
0.8	4	1
0.9	3	1
1.0	3	3
1.1	2	5
1.2	2	7
1.3	5	8
1.4	4	11
1.5	5	15
1.6	7	16
1.7	7	13
1.8	5	14
1.9	6	12
2.0	6	

The results for the DCP tests indicate the subsurface profile to comprise

DCP1: medium dense soils to 1.2m, over medium dense to dense soils at ~1.2m depth.

DCP2: loose soils to 0.9m, over medium dense to dense soils to 1.3m, over dense soils at ~1.3m depth.

2.3 GROUNDWATER

Groundwater was encountered within the borehole at 1.2m depth. The depth to groundwater is expected to correspond to sea level, and will vary with the tides. Temporary, perched seepages could be encountered at shallower depths following rainfall within the more pervious soils.

3 DISCUSSION & RECOMMENDATIONS

3.1 SITE CLASSIFICATION

The upper (low plasticity) soils are slightly reactive in terms of potential shrink-swell movements that may occur due to seasonal ground moisture changes. The characteristic ground surface movement "Ys", as defined by AS2870 for the range of extreme dry to extreme wet moisture conditions is estimated to be between 0mm to 20mm. The site is therefore Class "S" (slightly reactive).

Deemed-to-comply footing designs provided by AS2870 are applicable specifically to residential-style one and two-storey structures, or buildings with similar loads and superstructure stiffness.

3.2 STRUCTURE FOOTINGS

AS2870 provides "deemed-to-comply" footing/slab designs, which for a class "S" site includes stiffened rafts, stiffened footing slabs, waffle rafts, and strip and/or pad footings with above ground floors. Footings and slabs should be in accordance with the principles of AS2870.

Footings including thickened sections of slabs forming footings should be taken below the topsoil and loose to medium or moisture affected soils and founded in the medium dense marine soils. A footing depth of ~1.2m depth below existing surface levels may be required. Alternatively, piers extending to weathered bedrock can be used, however depth to bedrock is unknown. Due to the collapsible nature of the sandy soils, it is recommended that screw piers are used.

Recommended allowable end-bearing pressures and shaft adhesion values for various footing systems and likely foundation materials are provided in Table 3.

TABLE 3 – Recommended Allowable End-Bearing Pressures for Footings

Foundation Material Type	Depth Below Existing Surface Level	Allowable End-Bearing Pressure			Allowable Shaft Adhesion on Bored Piers and Anchors	
		Strips	Pads	Bored Piers	Downward Loading	Uplift
Newly Placed Controlled Fill	-	100kPa	125kPa	N.A	N.A	N.A
Medium Dense Marine Soils	~1.2m	100kPa	125kPa	150kPa	15kPa	7kPa

It is recommended that footings are inspected by a geotechnical engineer prior to the pouring of concrete to ensure that footings are founded in adequate material.

3.3 EXCAVATION CONDITIONS & USE OF EXCAVATED MATERIAL

It is understood that only minor excavations are required for the proposed development. The excavations are expected to be through existing topsoil and marine soils. The topsoil and marine soils are readily diggable by backhoe and medium sized excavator to at least ~1.6m depth. Moderately weathered and less weathered bedrock may be encountered below ~1.6m depth and would require heavy excavator, bulldozer ripping and rock hammering.

Any low/medium plasticity natural soils can be used in controlled fill construction of building platforms. Topsoil and existing uncontrolled fill material should not be used in controlled fill construction; however, it can be used for landscaping.

If imported fill is required, a suitable select fill material would include a low or medium plasticity soil such as clayey sand or gravelly clayey sand, containing between 25% and 50% fines less than 0.075mm size (silt and clay), and no particles greater than 75mm size.

3.4 SITE DRAINAGE

Groundwater was encountered during the investigation at 1.2m depth. Temporary, perched seepages may be present following rain but should be readily controllable with the use of pumps during construction.

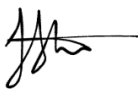
Suitable surface drainage should be provided to ensure rainfall run-off or other surface water cannot pond against buildings or pavements. Drainage should be provided behind all retaining walls, and subsoil drains should be installed along the upslope sides of access roads and carparks.

Should you require any further information, please contact our office.

Yours faithfully,

Fortify Geotech Pty Ltd

Written by;



Joe Stuart
Undergraduate Engineer

Reviewed by;



Jerome Sami
Geotechnical Engineer










REFERENCES

- Reference 1. Department of Regional NSW, NSW Seamless Geology -
<https://data.nsw.gov.au/data/dataset/nsw-seamless-geology> - Accessed on 10/08/2023

10/08/2023, 11:14

S1974_Proposed Knockdown Rebuild

FORTIFY GEOTECH			Fortify Geotech			Geotechnical Log - Borehole				
U2/538 Gardeners Road, Alexandria NSW 2015			Phone: 02 9188 4033			1A				
UTM : Easting (m) : 0 Northing (m) : 0 Ground Elevation : Not Surveyed Total Depth : 1.6 m BGL			Driller Rig : Handheld Pushtube Driller Supplier : Fortify Geotech Logged By : Joe Stuart Reviewed By : Date : 31/07/2023			Job Number : S1974 Client : Lorna Sinac Design Project : Proposed Knockdown Rebuild Location : 1 Ficus Avenue, Avoca Beach NSW Loc Comment :				
Drilling Method	Water	Depth (m)	Soil Origin	Graphic Log	Classification Code	Material Description	Moisture	Consistency/Density	Testing	Samples
									DCP	
		0.2	Topsoil		SM	Topsoil silty SAND: fine to medium grained, dark brown with pale brown.	M-D	L	2	
									3	
		0.5	Marine		SW	Marine SAND: fine to coarse grained, pale orange.	L-MD	3		
								3		
								3		
								3		
								3		
		1.0	Marine		SW	As above, but	M	3		
								4		
								3		
								3		
								2		
		1.2	Marine		SW	As above, but	W-M	MD	2	
									5	
									4	
1.5	Marine		SW	As above, but	W-M	MD	5			
							4			
							5			
								7		
								7		
								6		
								6		

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DESCRIPTION AND CLASSIFICATION OF SOILS

The methods of description and classification of soils used in this report are based on the Australian Standard 1726 – 1993, Geotechnical site investigations. In general, descriptions cover the following properties – soil type, colour, secondary grain size, structure, inclusions, strength or density and geological description.

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (e.g. sandy clay) on the following basis:

Classification	Particle Size
Clay	Less than 0.002mm
Silt	0.002mm to 0.06mm
Sand	0.06mm to 2.00mm
Gravel	2.00mm to 60.00mm
Cobbles	60mm (63mm) to 200mm
Boulders	>200mm

Soils are also classified according to the Unified Soil Classifications System which is included in this Appendix. Rock types are classified by their geological names.

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The terms are defined as follows:

Consistency	Shear Strength su(kPa) (Representative Undrained Shear)	
Very soft	< 12	<2 (~SPT "N")
Soft	12 - 25	2-4
Firm	25 - 50	4-8
Stiff	50 – 100	8-15
Very Stiff	100 – 200	15-30
Hard	> 200	>30

Non-cohesive soils are classified on the basis of relative density, generally from the results of in-situ standard penetration tests as below:

Term	Relative Density (%)	SPT Blows/300mm 'N'
Very loose	< 15	<4
Loose	15-35	4-10
Medium dense	35-65	10-30
Dense	65-85	30-50
Very Dense	>85	>50

SAMPLING

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are generally taken by one of two methods:

1. Driving or pushing a thin walled sample tube into the soil and withdrawing with a sample of soil in a relatively undisturbed state.
2. Core drilling using a retractable inner tube (R.I.T.) core barrel.

Such samples yield information on structure and strength in additions to that obtained from disturbed samples and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

PENETRATION TESTING

The relative density of non-cohesive soils is generally assessed by in-situ penetration tests, the most common of which is the standard penetration test. The test procedure is described in Australian Standard 1289 "Testing Soils for Engineering Purposes" Testing Soils for Engineering Purposes" – Test No. F3.1.

The standard penetration test is carried out by driving a 50mm diameter split tube penetrometer of standard dimensions under the impact of a 63 kg hammer having a free fall of 750mm.

The "N" value is determined as the number of blows to achieve 300mm of penetration (generally after disregarding the first 150mm penetration through possibly disturbed material). The results of these tests can be related empirically to the engineering properties of the soil.

The test is also used to provide useful information in cohesive soils under certain conditions, a good quality disturbed sample being recovered with each test. Other forms of in situ testing are used under certain conditions and where this occurs, details are given in the report.



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DEFINITIONS OF ROCK, SOIL, AND DEGREES OF CHEMICAL WEATHERING

GENERAL DEFINITIONS – ROCK AND SOIL

ROCK In engineering usage, rock is a natural aggregate of minerals connected by strong and permanent cohesive forces.

Note: Since “strong” and “permanent” are subject to different interpretations, the boundary between rock and soil is necessarily an arbitrary one.

SOIL In engineering usage, soil is a natural aggregate of mineral grains which can be separated by such gentle mechanical means as agitation in water, can be remoulded and can be classified according to the Unified Soil Classification System. Three principal classes of soil recognized are:

Residual soils: soils which have been formed in-situ by the chemical weathering of parent rock. Residual soil may retain evidence of the original rock texture or fabric or, when mature, the original rock texture may be destroyed.

Transported soils: soils which have been moved from their places of origin and deposited elsewhere. The principal agents of erosion, transport and deposition are water, wind and gravity. Two important types of transported soil in engineering geology and materials investigations are:

Colluvium – a soil, often including angular rock fragments and boulders, which has been transported downslope predominantly under the action of gravity assisted by water. The principle forming process is that of soil creep in which the soil moves after it has been weakened by saturation. It may be water borne for short distances.

Alluvium – a soil which has been transported and deposited by running water. The larger particles (sand and gravel size) are water worn.

Lateritic soils: soils which have formed in situ under the effects of tropical weathering include all reddish residual and non residual soils which genetically form a chain of material ranging from decomposed rock through clay to sesqui-oxide rich crusts. The term does not necessarily imply any compositional, textural or morphological definition; all distinctions useful for engineering purposes are based on the differences in geotechnical characteristics.

ROCK WEATHERING DEFINITIONS

Extremely Weathered (EW)	Rock substance affected by weathering to the extent that the rock exhibits soil properties, i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered (HW)	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of the chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered (MW)	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered (SW)	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance, usually by limonite, has taken place. The colour and texture of the fresh rock is recognisable.
Fresh (Fr)	Rock substance unaffected by weathering.

The degrees of rock weathering may be gradational. Intermediate stages are described by dual symbols with the prominent degree of weathering first (e.g. EW-HW).

The various degrees of weathering do not necessarily define strength parameters as some rocks are weak, even when fresh, to the extent that they can be broken by hand across the fabric, and some rocks may increase in strength during the weathering process.

Fresh drill cores of some rock types, such as basalt and shale may disintegrate after exposure to the atmosphere due to slaking, desiccation, expansion or contraction, stress relief or a combination of any of these factors.

AN ENGINEERING CLASSIFICATION OF SEDIMENTARY ROCKS

This classification system provides a standardised terminology for the engineering description of the sandstone and shales in the Sydney area, but the terms and definitions may be used elsewhere when applicable. Where other rock types are encountered, such as in dykes, standard geological descriptions are used for rock types and the same descriptions as below are used for strength, fracturing and weathering.

Under this system rocks are classified by Rock Type, Strength, Stratification Spacing, Degree of Fracturing and Degree of Weathering. These terms do not cover the full range of engineering properties. Descriptions of rock may also need to refer to other properties (e.g. durability, abrasiveness, etc) where these are relevant.



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ROCK TYPE DEFINITIONS

ROCK TYPE	DEFINITION
Conglomerate:	More than 50% of the rock consists of gravel sized (greater than 2mm) fragments.
Sandstone:	More than 50% of the rock consists of sand sized (0.06 to 2mm) grains.
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06mm) granular particles and the rock is not laminated.
Claystone:	More than 50% of the rock consists of silt or clay sized particles and the rock is not laminated.
Shale:	More than 50% of the rock consists of silt or clay sized particles and the rock is laminated.

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, e.g. clayey sandstone, sandy shale.

STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly Laminated	< 6mm
Laminated	6mm to 20mm
Very thinly bedded	20mm to 60mm
Thinly bedded	60mm to 0.2m
Medium bedded	0.2m to 0.6m
Thickly bedded	0.6m to 2m
Very thickly bedded	> 2m

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks.

Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter
Highly Fractured:	Core lengths are generally less than 20mm – 40mm with occasional fragments.
Fractured:	Core lengths are mainly 30mm – 100mm with occasional shorter and longer section.
Slightly Fractured:	Core lengths are generally 300mm – 1000mm with occasional longer sections and occasional sections of 100mm – 300mm.
Unbroken:	The core does not contain any fracture.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics.

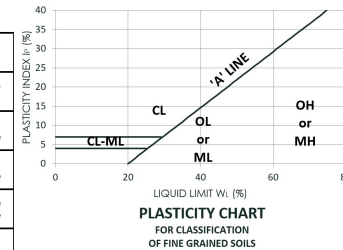
Term	Point Load Index Is(50) MPa	Field Guide	Approx qu MPa*
Extremely Weak:	0.03	Easily remoulded by hand to a material with soil properties.	0.7
Very Weak:	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.	2.4
Weak:	0.3	A piece of core 150mm long x 50mm dia. May be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	7
Medium Strong:	1	A piece of core 150mm long x 50mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	24
Strong: (SW)	3	A piece of core 150mm long x 50mm dia. core cannot be broken by unaided hands, can be slightly scratched or scored with knife.	70
Very Strong (SW)	10	A piece of core 150mm long x 50mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely Strong (Fr)	>10	A piece of core 150mm long x 50mm dia. is difficult to break with hand held hammer. Rings when struck with a hammer.	>240

The approximate unconfined compressive strength (qu) shown in the table is based on an assumed ratio to the point load index of 24:1. This ratio may vary widely.



Unified Soil Classification System (Metricated)
Data for Description Identification and Classification of Soils

MAJOR DIVISIONS	DESCRIPTION				FIELD IDENTIFICATION				LABORATORY CLASSIFICATION									
	Group Symbol	Graphic Symbol	TYPICAL NAME	DESCRIPTIVE DATA	GRAVELLS AND SANDS			Group Symbol	% [2] < 0.06mm	PLASTICITY OF FINE FRACTION		NOTES						
COARSE GRAINED SOILS	GRAVELLY SOILS More than 50% of coarse grains are greater than 2.0mm	GW	Well graded gravels and gravel-sand mixtures, little or no fines	Give typical name, indicate approximate percentages of sand and gravel, maximum size, angularity, surface condition and hardness of the coarse grains, local or geological name and other pertinent descriptive information, symbols in parenthesis.	COARSE GRAINED SOILS More than 1/2 of the material less than 4.75mm is larger than 0.06mm	GOOD	Wide range in grain size	"Clean" materials (not enough fines to band coarse grains)	None	GW	0-5	-	>4	Between 1 and 3	1. Identify Fines by the method given for fine grained soils.			
		GP	Poorly graded gravels and gravel-sand mixtures, little or no fines			POOR	Predominantly one size or range of sizes			GP	0-5	-	Fails to comply with above	2. Borderline classifications occur when the percentage of fines (fraction smaller than 0.06mm size) is greater than 5% and less than 12%.				
		GM	Silty gravels, gravel-sand-silt mixtures	For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics.		GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (I)	None to medium	GM	12-50	Below 'A' line and Ip > 7	-	-	Borderline classifications require the use of dual symbols eg SP-SM GW-GC			
		GC	Clayey gravels gravel-sand-clay mixtures					Fines are plastic (I)		GC	12-50	Above 'A' line and Ip > 7	-	-				
	SANDY SOILS More than 50% of coarse grains are greater than 2.0mm	SW	Well graded sands and gravelly sands, little or no fines	EXAMPLE: Silty Sand, gravelly, about 20% hard, angular gravel particles, 10mm maximum size, rounded and sub angular sand grains coarse to fine, about 15% non-plastic fines with low dry strength, wet compacted and moist in place, light brown alluvial sand, (SM)	GOOD	Wide range in grain size	"Clean" materials (not enough fines to band coarse grains)	None	SW	0-5	-	>6	between 1 and 3					
		SP	Poorly graded sands and gravelly sands, little or no fines		POOR	Predominantly one size or range of sizes			SP	0-5	-	Fails to comply with above						
		SM	Silty sand, sand-silt mixtures		GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (I)	None to medium	SM	12-50	Below 'A' line or Ip < 4	-	-					
		SC	Clayey sands, sand-clay mixtures				Fines are plastic (I)		SC	12-50	Above 'A' line and Ip > 7	-	-					
FINE GRAINED SOILS More than 50% by dry mass, less than 0.06mm is less than 0.06mm	Liquid Limit less than 50% More than 50% Liquid Limit	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.	Give typical name, indicate degree and character of plasticity, amount and maximum size of coarse grains, colour in wet condition, odour if any, local or geological name and other pertinent descriptive information, symbols in parenthesis.	FINE GRAINED SOILS More than 1/2 of the material less than 4.75mm is less than 0.06mm 0.06mm is about the smallest particle visible to the naked eye	SILT AND CLAY FRACTION			ML CL OL MH CH OH PT	Use the gradation curve of material passing 4.75mm for classification of fractions according to criteria given under "Major Division". None finer 50% passing 0.06mm	Below 'A' line Above 'A' line Below 'A' line Below 'A' line Above 'A' line Below 'A' line	CL-ML CL OL or ML OH or MH	LIQUID LIMIT Wt. (%) PLASTICITY CHART FOR CLASSIFICATION OF FINE GRAINED SOILS					
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.			FRACTION SMALLER THAN 0.075mm AS SIEVE SIZE												
	OL	Organic silts and organic silty clays of low plasticity	For undisturbed soil add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions.	DRY STRENGTH		DILATANCY	TOUGHNESS											
	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.		None to low		Quick to slow	None											
	CH	Inorganic clays of high plasticity, fat clays.	EXAMPLE: Clayey Silt, brown, low plasticity, small percentage of fine sand, numerous vertical root-holes, firm and dry in place, (H, ML).	Medium to high		None to very slow	Medium											
	OH	Organic clays of medium to high plasticity.		Low to medium		Slow	Low											
	PI	Peat muck and other highly organic soils.		High to very high		None	High	Low to medium						Low to medium				
				Medium to high		None to very slow	Low to medium											
			PI	Peat muck and other highly organic soils.			Really identified by colour, odour, spongy feel and generally by fibrous texture	PT						*Effervescence with H2O2				



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Limitations in the Use and Interpretation of this Geotechnical Report

Our Professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The geotechnical report was prepared for the use of the Owner in the design of the subject facility and should be made available to potential contractors and/or the Contractor for information on factual data only. This report should not be used for contractual purposes as a warranty of interpreted subsurface conditions such as those indicated by the interpretive boring and test pit logs, cross-sections, or discussion of subsurface conditions contained herein.

The analyses, conclusions and recommendations contained in the report are based on site conditions as they presently exist and assume that the exploratory borings, test pits, and/or probes are representative of the subsurface conditions of the site. If, during construction, subsurface conditions are found which are significantly different from those observed in the exploratory borings and test pits, or assumed to exist in the excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between the submission of this report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, this report should be reviewed to determine the applicability of the conclusions and the recommendations considering the changed conditions and time lapse.

The Summary Boring Logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the borings progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual.

The boring logs and related information depict subsurface conditions only at the specific locations and at the particular time designated on the logs. Soil conditions at the other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the soil conditions at these boring locations.

Groundwater levels often vary seasonally. Groundwater levels reported on the boring logs or in the body of the report are factual data only for the dates shown.

Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples, borings or test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

This firm cannot be responsible for any deviation from the intent of this report including, but not restricted to, any changes to the scheduled time of construction, the nature of the project or the specific construction methods or means indicated in this report: nor can our firm be responsible for any construction activity on sites other than the specific site referred to in this report.



MYRIAD

STATEMENT OF ENVIRONMENTAL EFFECTS

**Demolition of the Existing Dwelling and
Construction of a New Dwelling House with Double
Garage and New Landscaping**

**1 Ficus Avenue, Avoca Beach NSW 2251
Lot 23 DP 20094**

Prepared on behalf of Lorna Sinac Design

Project No. 2022104

Version: 1.1

November 2023

LORNA SINAC
DESIGN



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Statement of Validity

The preparation of this Statement is pursuant to Section 4.12 of the Environmental Planning and Assessment Act 1979 and Clause 50 of the Environmental Planning and Assessment Regulation 2021. It provides for an assessment of the development proposal, having regard to relevant legislation, contextual analysis, social, economic and environmental impacts, potential amenity impacts on the surrounding locality and the measures proposed to mitigate impacts.

Project No.	2022104		
Proposal	Demolition of the Existing Dwelling and Construction of a New Dwelling House with Double Garage and New Landscaping		
Site Address	1 Ficus Avenue, Avoca Beach NSW 2251 Lot 23 DP 20094		
Site Area	1,082.8m ²		
Council	Central Coast		
Zoning	R2 Low Density Residential		
Date	21 August 2023	18 October 2023	22 November 2023
Version	DRAFT 1	1.0	1.1
Comment	-	-	Minor updates to plans
Approved by	Craig Schulman Bachelor of Science (Resource and Environmental Management) Master of Urban and Regional Planning		

Signed



Disclaimer

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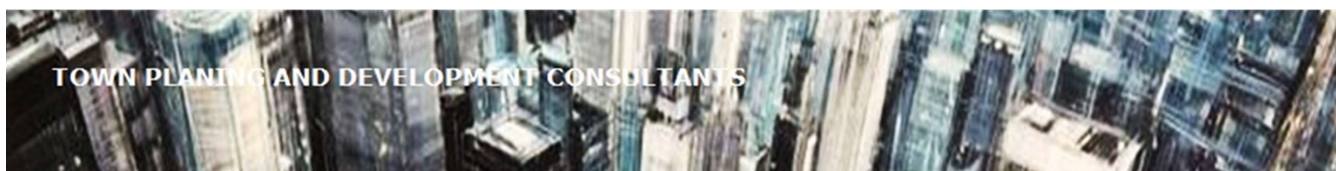
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Myriad Consulting respectfully acknowledges the Traditional Owners and Custodians of the land and waterways on which we work and live, the Gadigal People of the Eora nation. We pay our respects to their Elders, past and present, and remember that sovereignty was never ceded.



STATEMENT OF ENVIRONMENTAL EFFECTS

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STATEMENT OF ENVIRONMENTAL EFFECTS

1. INTRODUCTION

This Statement of Environmental Effects (SEE) has been prepared on behalf of Lorna Sinac Design to accompany a Development Application (DA) for demolition of the existing dwelling and construction of a new dwelling house with double garage and new landscaping at 1 Ficus Avenue, Avoca Beach.

The purpose of this document is to provide a comprehensive assessment of the project's potential effects on the surrounding environment, along with proposed mitigation measures to minimise any adverse impacts.

The report has been prepared in accordance with the provisions of the *Environmental Planning and Assessment Act 1979* (The Act) and *Environmental Planning and Assessment Regulation 2021* (The Regs) and provides the following:

- Description and analysis of the site and locality.
- Description of the proposed development.
- Assessment of relevant environmental planning matters required for consideration under Section 4.15 of The Act including compliance with relevant planning instruments and controls, environmental impacts, site suitability and the public interest.
- Conclusions on the environmental planning assessment and merits of the proposed development on which the DA can be supported by Council and granted consent.

The proposed development will result in a seven-bedroom, double-storey house with a total gross floor area (GFA) of 573m² and a private open space area of 230m².

The larger dwelling with additional bedrooms and larger open plan kitchen, living and dining area will accommodate for a growing family and guests in a highly sought-after area that is close to a range of services, a number of public transport options, schools and recreational areas.

The proposed development is considered to be consistent with the emerging, existing density and the emerging contemporary character of Avoca BGeach, providing a built scale and form which is consistent with the applicable development standards and controls. The proposed new dwelling comprises a contemporary architectural design and provides visual interest through the use of articulation, unique roof form and high quality materials and finishes.

The dwelling incorporates numerous sustainable features, such as solar panels discreetly integrated into the roof, rainwater harvesting systems, energy-efficient insulation, and smart climate control. These elements not only reduce the environmental footprint but also contribute to lower utility bills.

The proposed new dwelling is permissible within the *R2 Low Density Residential* zone and is consistent with the zone objectives, in that there are no significant adverse impacts on the amenity of the adjoining or adjacent properties in terms of solar access, visual bulk and privacy.

An assessment of the proposed development has not identified any unreasonable adverse environmental impacts likely to arise as a result of the proposal. It is therefore recommended that consent for the proposed development is granted subject to Council's standard conditions.

STATEMENT OF ENVIRONMENTAL EFFECTS

This report must be considered in conjunction with the following plans and inputs:

- Architectural Plans prepared Lorna Sinac Design.
- Site Survey prepared by Hill and Blume Consulting Surveyors.
- Coastal Engineering Report prepared by Horton Coastal Engineering Pty Ltd.
- Stormwater Concept Plans prepared by Adcar Consulting.
- Geotechnical Site Classification Report prepared by Fortify Geotech Pty Ltd.
- Structural Report prepared by Rise Engineering.
- BASIX Certificate and NatHERS prepared by Chapman Environmental Services Pty Ltd.
- Waste Management Report prepared by MRA Consulting.

STATEMENT OF ENVIRONMENTAL EFFECTS

2. SITE ANALYSIS**2.1 Surrounding Area**

The site is located at Avoca Beach in the Central Coast Council Local Government Area (LGA). Avoca Beach is seaside suburb characterised by a range of low to medium density residential land uses of various styles and designs including single dwellings, dual occupancies, townhouses and residential flat buildings with a small local centre.

Ficus Avenue is a residential road which extends off Avoca Drive providing access to beach parking, the Jack Muller Picnic Area and Heazlett Park.

Ficus Avenue is characterised by a mix of quaint beach cottages and modern coastal homes in a variety of architectural styles.

Due to the location of Ficus Avenue, being adjacent to the beach, a number of dwellings have direct beach and lagoon/lake access from the rear.

**Figure 1**

**Aerial of the site and
surrounding area (site outlined
in red and shaded yellow)**

(Source: SixViewer)

**Figure 2**

**View of Ficus Avenue to the
north from the intersection of
Avoca Drive**

STATEMENT OF ENVIRONMENTAL EFFECTS



Figure 3

**View of Ficus Avenue to the
east from the near the carpark
adjacent to Heazlett Park**



Figure 4

**View of Ficus Avenue to the west
from the beach parking area**



Figure 5

**Aerial oblique view of the site
and surrounding neighbouring
properties from over Avoca
Lagoon/Lake**

STATEMENT OF ENVIRONMENTAL EFFECTS

2.2 Site Description

The site is located at 1 Ficus Avenue, Avoca Beach and legally described as Lot 23 DP 20094. It is generally rectangular in shape with a wide frontage to Avoca Avenue of 22.49m, a frontage to the Jack Muller Picnic Reserve and beach of 77.05m and rear boundary width of 7.235m to the beach and lagoon/lake with a total site area of 1,082.8m².

The site currently contains a two-storey, six-bedroom dwelling with four car spaces.

The site has direct rear access to the beach and Avoca lagoon/lake.

The rear portion of the site comprises a mix of turf and sand as well as water at high tide.

There is currently an open style rope fence along the Jack Muller Picnic Area.



Figure 6

Aerial of site and surrounding properties (site outlined in red and shaded yellow)

(Source: SIXViewer)

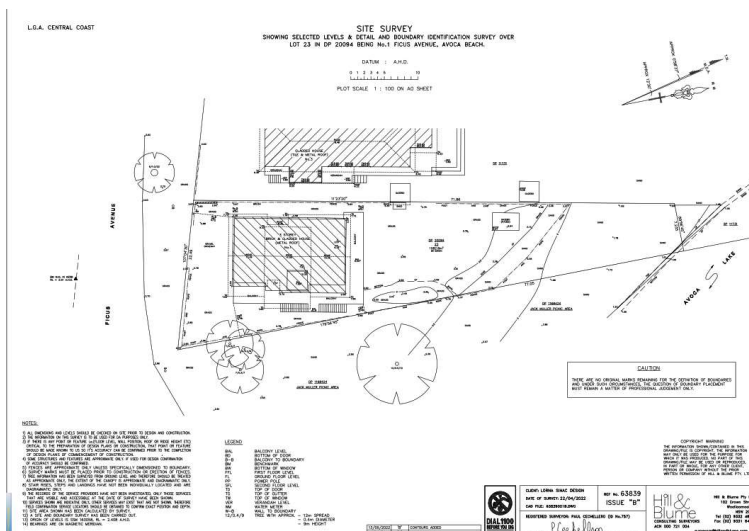


Figure 7

Extract of the site survey

STATEMENT OF ENVIRONMENTAL EFFECTS

**Figure 8**

**View of the subject site and
neighbouring properties from
Ficus Avenue**

**Figure 9**

**View of the side of the site and
existing dwelling from the
beach carpark adjacent to the
Jack Muller Picnic Area**

**Figure 10**

**View of the rear of site and
existing dwelling**

STATEMENT OF ENVIRONMENTAL EFFECTS

3. PROPOSAL

The proposed development includes the demolition of the existing dwelling and construction of a new two-storey dwelling with a double garage and new landscaping.

The larger dwelling with additional bedrooms and larger open plan kitchen, living and dining area will accommodate for the growing family in a highly sought-after area that is close to a range of services, a number of public transport options, schools and recreational areas.

The proposed development will result in a seven bedroom, double-storey house with a total gross floor area (GFA) of 573m², a private open space area of 230m².

The main entry and dwelling will front Ficus Avenue with a presence and address to the Jack Muller Picnic Area.

The ground floor level will comprise kitchen, living and dining area opening out to the rear terraces and private open space area, separate TV/rumpus room, study, laundry and storage area.

The first floor will comprise seven bedrooms with ensuites and a rear terrace.

Access to the first floor will be provided to the roof terrace and spa.

The dwelling will remain well below the maximum permissible height and will maintain the two-storey presentation to the street.

A high level of environmental sustainability is provided through passive design techniques such as good shading, cross ventilation and thermal mass.

The proposed development will create a more liveable home by creating space for additional bedrooms, increased soft landscaped area and accommodate a more functional and useable living area that opens out onto the rear private open space and landscaped area enhancing the indoor-outdoor living experience.

3.1 Design Development

The skillful design and massing of the proposed building envelope has been undertaken having regard to the irregular shape of the site, the adjoining public reserve, the rear frontage to the beach and lagoon/lake, the tidal inundation and flooding requirements the neighboring properties, and surrounding built environment.

The design incorporates contemporary elements that reflect the changing nature of the area and the more recent developments along Ficus Avenue. There is a focus on sustainable living, creating a building that blends into its surroundings while exuding a distinct presence.

The two-storey dwelling design maximises access to natural light and ventilation to the living area while minimising these impacts on the neighbouring properties as well as maintaining the amenity of adjoining properties, particularly in relation to solar access, privacy, and views.

The architects have focused on creating a high quality built form, which has carefully considered building articulation and modulation to minimise the potential impact on adjoining dwellings and maximising the private open and landscaped areas whilst still making efficient and economic use of the site.

The proposed development is considered to be consistent with the emerging density and emerging contemporary character of Avoca, providing a built scale and form which is consistent with the applicable development standards and controls. The

STATEMENT OF ENVIRONMENTAL EFFECTS

proposed new dwelling comprises a contemporary architectural design and provides visual interest through the use of articulation, unique roof form and high quality materials and finishes.



Figure 11

Montage of the proposed development

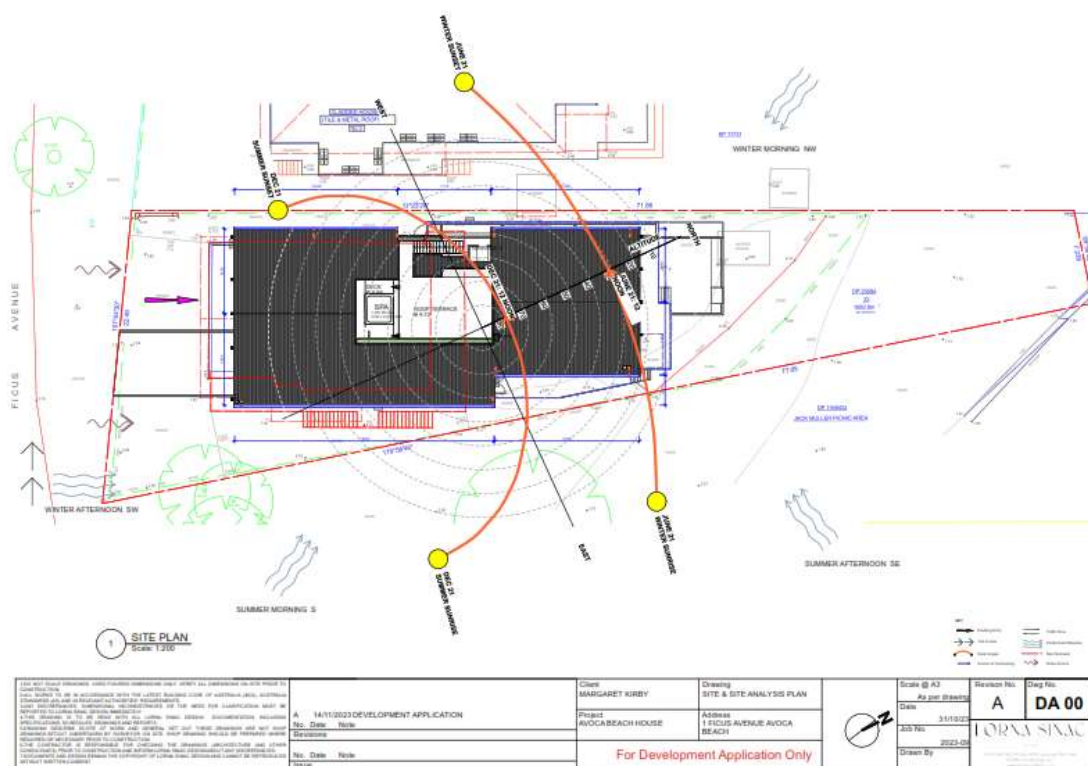


Figure 12

Extract of the proposed site and roof plan

STATEMENT OF ENVIRONMENTAL EFFECTS

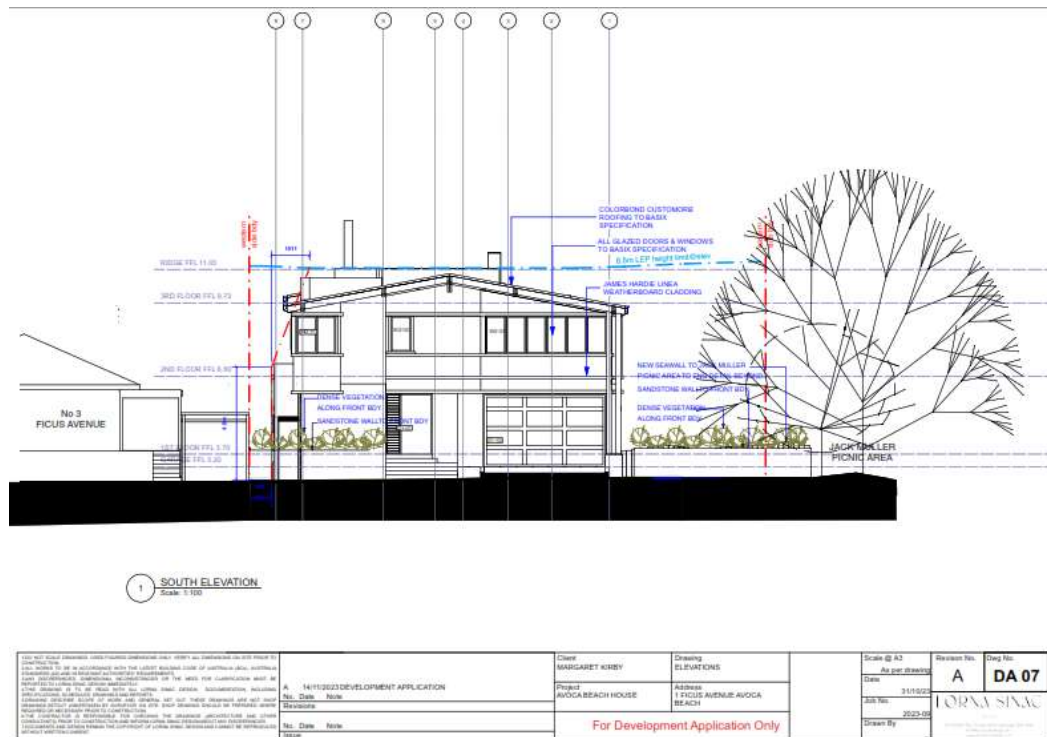


Figure 13

Extract of the proposed front elevation

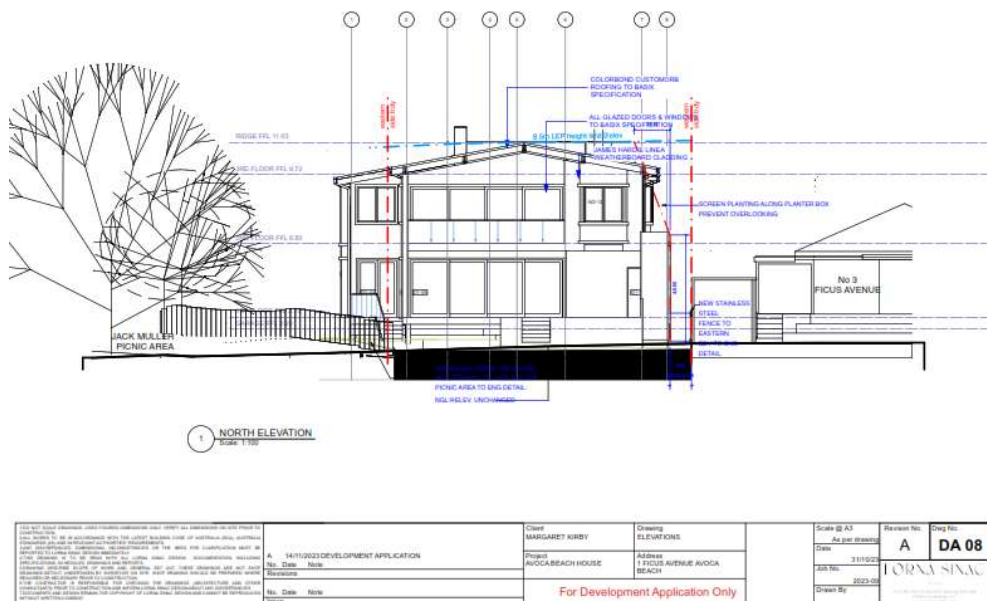


Figure 14

Extract of the proposed rear elevation

STATEMENT OF ENVIRONMENTAL EFFECTS

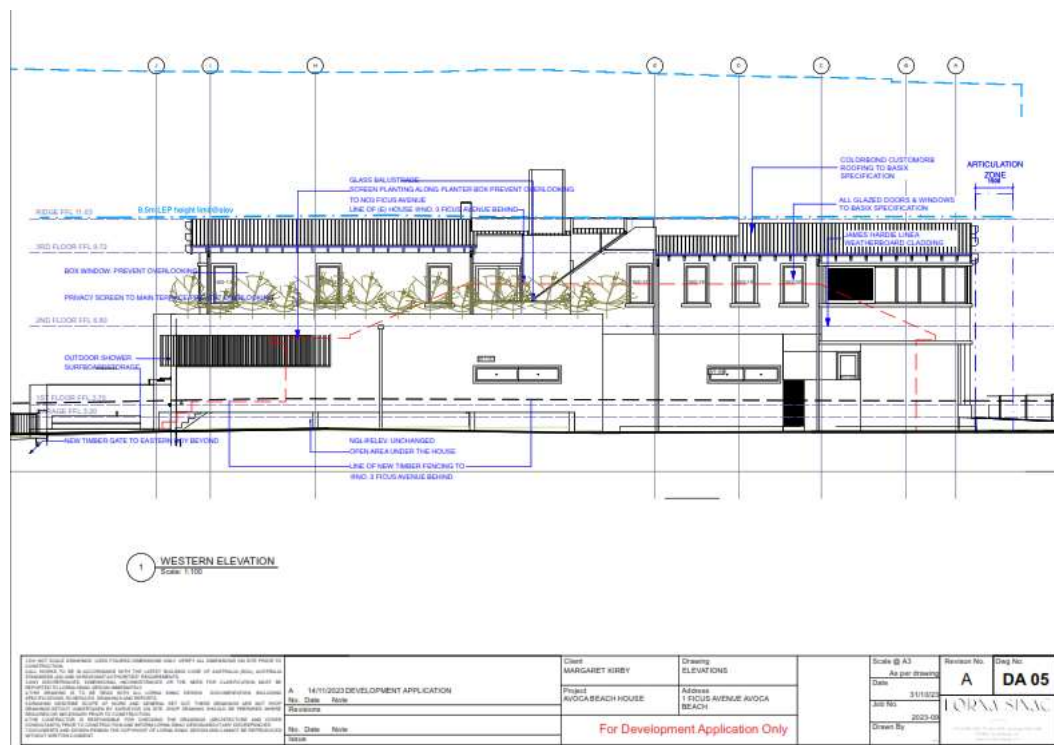


Figure 15
Extract of the proposed side (west) elevation

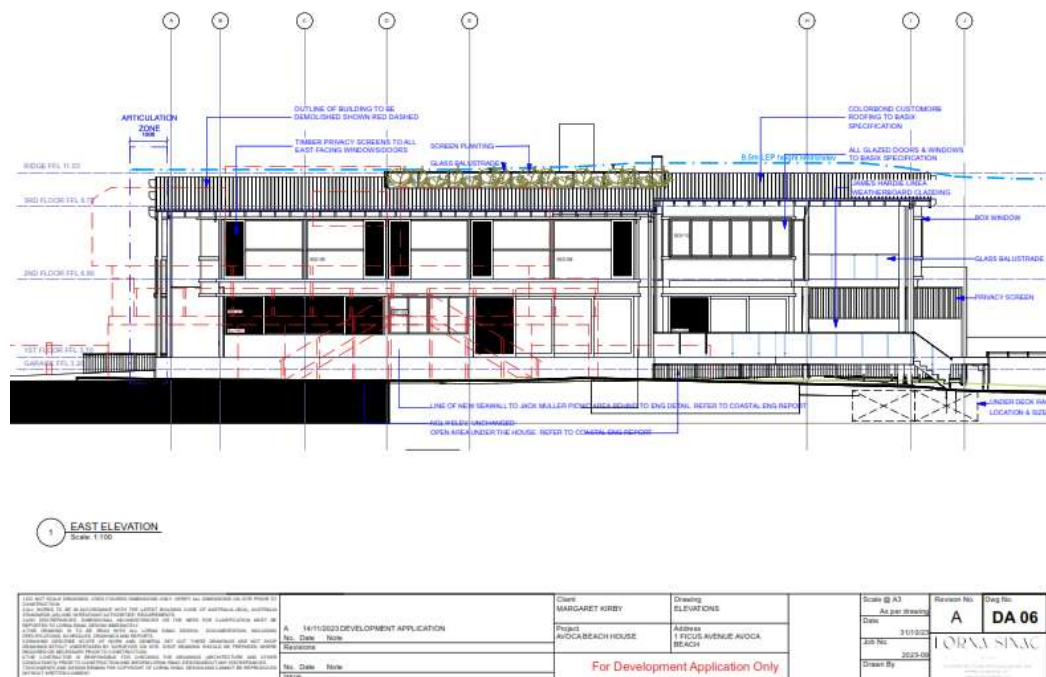


Figure 16
Extract of the proposed (east) elevation

STATEMENT OF ENVIRONMENTAL EFFECTS

4. SECTION 4.15 (1)(A)(I) ENVIRONMENTAL PLANNING INSTRUMENTS**4.1 Environmental Planning and Assessment Act 1979**

The *Environmental Planning and Assessment Act 1979* (The Act) establishes the planning and approvals process in NSW. The Act provides for the making of Environmental Planning Instruments (EPIs) including Local Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs), which set out requirements for particular locations and/or particular types of development. The applicable EPIs and the Regulations made under The Act determine the relevant planning approval pathway and the associated environmental assessment requirements for proposed development activities.

This development application is submitted in accordance with Division 4.3 of The Act (Development that needs consent).

Under Section 4.15 of The Act, a consent authority is to take into consideration the provisions of any relevant EPIs and the matters prescribed by the *Environmental Planning and Assessment Regulation 2021* (The Regulation). Further, the consent authority must consider the likely impacts of the development, including environmental impacts on the natural and built environments, and social and economic impacts in the locality.

The relevant EPIs are addressed within this section of the report. The likely impacts of the development on the natural and built environment, including environmental mitigation measures are addressed throughout this report.

4.2 Environmental Planning and Assessment Regulation 2021

The *Environmental Planning and Assessment Regulation 2021* (The Regs) contains key operational provisions for the NSW planning system. This includes procedures relating to development applications, requirements for environmental assessments, environmental impact assessments, building regulations and other miscellaneous matters.

Schedule 1 of The Regulation outlines the information to be included as part of a development application. A development application must be accompanied by a SEE for development other than designated development or State significant development.

In accordance with section 2(4) of Schedule 1, a SEE must indicate the following matters:

- (a) *the environmental impacts of the development*
- (b) *how the environmental impacts of the development have been identified*
- (c) *the steps to be taken to protect the environment or to lessen the expected harm to the environment*
- (d) *any matters required to be indicated by any guideline issued by the Secretary for the purposes of this clause.*

The environmental impacts of the proposed development, including measures taken to protect or lessen the expected harm to the environment, are addressed throughout this report.

STATEMENT OF ENVIRONMENTAL EFFECTS

4.3 Central Coast Local Environmental Plan 2022

A summary of the relevant development standards in the *Central Coast Local Environmental Plan (CCLEP) 2022* are summarised in the following table and discussed in more detail in the following Sections of this report as required.

DEVELOPMENT STANDARD	PROPOSED	COMPLIES
<u>Clause 1.2 Aims of Plan</u>	<p>The proposed development is consistent with the aims and objectives of the WLEP 2012 in that:</p> <ul style="list-style-type: none"> The proposed development includes the demolition of the existing dwelling and construction of a new dwelling that will provide a high level of internal amenity, increase the access to natural light and ventilation and meet the necessary BASIX requirements, resulting in a development that applies the principles of ecologically sustainable development. The proposal has been designed to address the site constraints and opportunities and improve the livability of the premises and to accommodate for a growing family in a highly sought after area close to a number of services and amenities. The proposal has been architecturally designed and incorporates a variety of contemporary materials and finishes that will result in a high standard of urban design. The new dwelling has been designed to address the coastal setting and related environmental impacts. The proposal has considered the effects on the natural, social, economic, physical and historical environment. It will not impact on natural systems, existing trees or any other element of the natural environment. 	✓
<u>Clause 2.1 Land Use Zones</u>	<p>The site is zoned <i>R2 Low Density Residential</i> and permits dwelling houses.</p> <p>Refer to Section 5.2 of this report for further discussion on zoning and permissibility.</p>	✓
<u>Clause 4.3 Height of Buildings</u>	<p>The maximum permissible height for the site is 8.5m.</p> <p>The proposed maximum height is 8.45m and complies with the maximum permissible height development standard.</p>	✓
<u>Clause 4.4 Floor Space Ratio</u>	There is no maximum permissible FSR specified in the CCLEP 2022.	N/A
<u>Clause 5.10 Heritage Conservation</u>	The site is not a heritage item and is not located within a heritage conservation area.,	✓
<u>Clause 5.21 Flood Planning</u>	<p>The site has been identified as being on flood prone land.</p> <p>Refer to the Coastal Engineering and Flood Report prepared by Horton Coastal Engineering Pty Ltd submitted with this application for further details on flood related matters.</p>	✓
<u>Clause 7.1 Acid Sulfate Soils</u>	<p>The has been identified as containing Class 5 Acid Sulfate Soils.</p> <p>The earthworks proposed are for a smaller scale residential development and will not impact on the subsurface soil and watertable.</p>	✓

STATEMENT OF ENVIRONMENTAL EFFECTS

4.3.1 Zoning and Permissibility

The subject site is zoned *R2 Low Density Residential*.

The R2 zone states:

Zone R2 Low Density Residential**1 Objectives of zone**

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To encourage best practice in the design of low density residential development.
- To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.
- To maintain and enhance the residential amenity and character of the surrounding area.

2 Permitted without consent

Home occupations; Recreation areas

3 Permitted with consent

Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Educational establishments; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Sewage reticulation systems; Shop top housing; Tank-based aquaculture; Water recycling facilities; Water reticulation systems; Water storage facilities

4 Prohibited

Any development not specified in item 2 or 3

A dwelling house is permissible with consent within the R2 zone.

The proposal is consistent with the objectives of the R2 zone in that:

- It accommodates for a new low density dwelling providing improved housing needs for a growing family within a residential area.
- Is located within a highly sought after area in close proximity to a number of services and amenities.
- Is consistent with the emerging and existing density and the emerging contemporary character of Avoca Beach, providing a built scale and form which is consistent with key development standards and controls.
- The proposed new dwelling comprises a contemporary architectural design and provides visual interest through the use of articulation and high quality materials and finishes.
- Does not cause any significant or unreasonable impacts on the neighbouring properties and environment.

STATEMENT OF ENVIRONMENTAL EFFECTS

**Figure 15**

Extract of the Zoning Map showing the R2 zoning of the site and zoning of the surrounding area

(Source: NSW ePlanning Spatial Viewer)

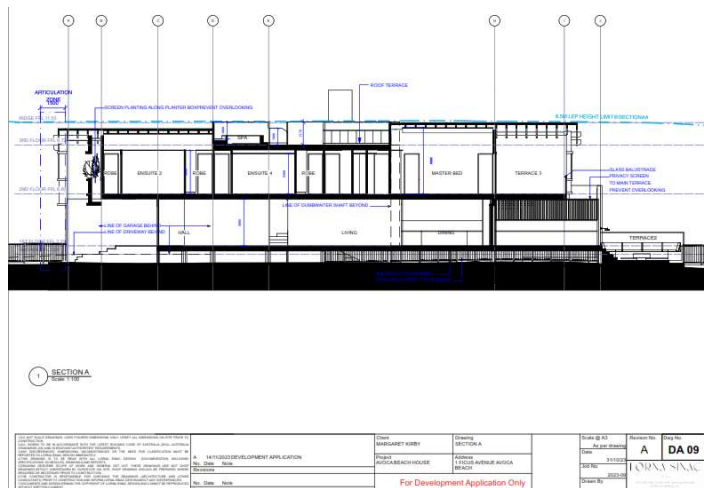
4.3.2 Height of Buildings

The site has a maximum permissible height of 8.5m. The maximum proposed height is 8.45m.

The majority of the dwelling is elevated with an open area under the house to address the flooding and tidal inundation requirements. Regardless, the dwelling has maintained a compliant height limit.

The proposed development is consistent with the objectives of the height standard in that the new dwelling:

- Is below the maximum permissible height, presenting a good correlation between the height, floor area, private open space and landscaping.
- The new dwelling provides a high quality architecturally designed building, maximising access to natural light and ventilation.
- Does not present any significant or unreasonable privacy, amenity or overshadowing impacts on the neighbouring dwellings.
- Maintains the key setback controls to ensure the bulk and scale of the development will positively complement and contribute to the physical definition of the street network and public spaces.

**Figure 16**

Extract of the proposed long section with the 8.5m height plane showing the open area beneath the dwelling with the maximum proposed height at 8.5m

STATEMENT OF ENVIRONMENTAL EFFECTS

4.4 SEPP (Building Sustainability Index: BASIX) 2004

BASIX, the Building Sustainability Index, ensures residential developments are designed to use less potable water and are responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for houses and units.

The dwelling incorporates numerous sustainable features, such as solar panels discreetly integrated into the roof, rainwater harvesting systems, energy-efficient insulation, and smart climate control. These elements not only reduce the environmental footprint but also contribute to lower utility bills.

A BASIX Certificate and Nathers has been prepared by Chapman Environmental Services Pty Ltd and submitted with the development application that lists measures to satisfy the relevant BASIX requirements which have been incorporated in the proposal.

4.5 SEPP (Resilience and Hazards) 2021**4.5.1 Chapter 2 Coastal Management**

State Environmental Planning Policy (Coastal Management) 2018 The State Environmental Planning Policy (Coastal Management) 2018 (SEPP Coastal Management)

The provisions of *Chapter 2 Coastal Management* in *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) require Council to consider the aims and objectives of the SEPP when determining an application within the Coastal Management Area.

The Coastal Management SEPP aims to promote an integrated and coordinated approach to land use planning in the coastal zone in line with the objectives of the Coastal Management Act 2016:

- (a) managing development in the coastal zone and protecting the environmental assets of the coast, and
- (b) establishing a framework for land use planning to guide decision-making in the coastal zone, and
- (c) mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the Coastal Management Act 2016.

The Coastal Management Area is an area defined on maps issued by the NSW Department of Planning and Environment and the subject property falls within the mapped coastal management areas. The subject property is within the Coastal Environment area and Coastal Use area.

In this instance, the proposal continues to be a single dwelling house and is being constructed on already developed land. It will be connected to reticulated sewer and stormwater will be managed on-site in accordance with the stormwater management plans prepared by Adcar Consulting.

Erosion and sediment control will be in place during demolition and construction. Additionally, the existing foredune is to remain untouched, maintaining the dune vegetation that provides protection from storm surges and shoreline erosion.

Refer to the Coastal Engineering and Flood Report prepared by Horton Coastal Engineering Pty Ltd submitted with this application for further details on coastal management related matters.

STATEMENT OF ENVIRONMENTAL EFFECTS

4.5.2 Chapter 3 Hazardous and Offensive Development

Chapter 3 Hazardous and offensive development of State Environmental Planning Policy (Resilience and Hazards) 2021 requires Council to consider whether land is contaminated prior to granting consent to carrying out of any development on that land.

Should the land be contaminated Council must be satisfied that the land is suitable in a contaminated state for the proposed use. If the land required remediation to be undertaken to make the suitable for the proposed use, Council must be satisfied that the land will be remediated before the land is used for that purpose.

The site history indicates a history of a residential nature. Therefore, it is not likely that the site has experienced any contamination.

In accordance with Chapter 3 of SEPP (Resilience and Hazards) 2021, Council is able to conclude that no further assessment of contamination is necessary.

4.6 SEPP (Biodiversity and Conservation) 2021**4.6.1 Chapter 2 Vegetation in Non-Rural Areas**

Chapter 2 (Vegetation in Non-Rural Areas), of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* sets the rules for the clearing of vegetation in NSW on land zoned for urban and environmental purposes that is not linked to a development application.

The SEPP ensures that if the clearing of native vegetation on land zoned for urban or environmental purposes exceeds entry thresholds, the Biodiversity Offset Scheme will apply. The SEPP also allows councils to manage vegetation clearing in their local area through a permit system and allows certain routine clearing activities on land used for primary production.

The aims of this policy are:

- To protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and
- To preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

The subject site is located with an urban area and is zoned *R2 Low Density Residential* zone.

No large trees or other significant vegetation is required to be removed to accommodate the proposed development.

New and extensive landscaping is proposed throughout the site, including new plantings within the front setback and at the rear of the site. The proposed plants will be predominantly native and have been chosen as they are generally the most drought tolerant species.

The proposed development is consistent with the objectives and requirements of Chapter 2 of SEPP (Biodiversity and Conservation) 2021.

STATEMENT OF ENVIRONMENTAL EFFECTS

5. SECTION 4.15 (1)(A)(III) DEVELOPMENT CONTROL PLANS

A development control plan provides detailed planning and design guidelines to support the planning controls in the Waverly Local Environmental Plan 2012.

The principal purpose of a development control plan is to provide guidance to persons proposing to carry out development to:

- Give effect to the aims of the Local Environmental Plan that applies to the development.
- Facilitate development that is permissible under the LEP.
- Achieve the objectives of the land zones under the LEP.

The provisions of a development control plan are not statutory requirements but are a head of consideration for development evaluations under s4.15 of the Environmental Planning and Assessment Act, 1979. DCPs are not legally binding in the same way as planning instruments, but they are used as a reference by council officers when assessing development applications.

An assessment of the relevant sections of the Central Coast Development Control Plan (DCP) 2022 is provided below.

5.1 Chapter 2: Development Provisions




The relevant controls of *Chapter 2: Development Provisions* of the Central Coast DCP have been addressed in the following table.

CONTROL	PROPOSED	COMPLIES
Chapter 2.1: Dwelling Houses, Secondary Dwellings and Ancillary Development		
Building Scale		
Building Height	<p>The maximum permissible height for the site is 8.5m.</p> <p>The maximum proposed height is 8.45m.</p> <p>The DCP also states that the maximum building height should not exceed two-storeys.</p> <p>The proposed dwelling is two-storeys with a roof terrace area.</p> <p>The majority of the dwelling is elevated with an open area under the house to address the flooding and tidal inundation requirements. Regardless, the dwelling has maintained a compliant height limit and remains two storeys</p> <p>The proposed height is considered appropriate for the site and locality in that it corresponds with the topography of the site and area, does not impact any views enjoyed by neighbouring and nearby properties.</p> <p>The proposed first-floor addition reflects the scale and bulk of other similar dwellings in the locality and does not unreasonably impact on the views, overshadowing and general amenity of neighbouring dwellings.</p>	✓
Site Coverage	<p>The maximum permitted site coverage for a lot with an area of 1,082.8m² is 40% of the site area.</p> <p>The proposed site coverage is 4230m² or 39% of the site area.</p>	✓
Floor Space Ratio	There is no maximum permitted FSR for the site.	N/A

STATEMENT OF ENVIRONMENTAL EFFECTS

CONTROL	PROPOSED	COMPLIES
Setbacks		
Setbacks – Residential Lots	<p><u>Front boundary (primary frontage)</u></p> <p>The DCP states that the front boundary setback is the average distance of the setbacks of the nearest 2 dwelling houses having the same primary road boundary and located within 40m of the lot on which the dwelling house is erected, or 4.5m if 2 dwelling houses are not located within 40m of the lot.</p> <p>The proposed front boundary setback is a minimum of 8.48m which relates to the average distance of the nearest two dwellings.</p> <p>The front setback area will comprise of a driveway, pedestrian entry pathway and soft landscaping, consistent with the general character along Ficus Avenue.</p>	✓
	<p><u>Rear boundary setbacks</u></p> <p>The DCP requires the following rear boundary setbacks:</p> <ul style="list-style-type: none"> A minimum rear setback for a single storey development of 900mm for a maximum width 50% of the length of the rear boundary. For any part of the building with a height of up to 4.5m - 3m. For any part of the building with a height greater than 4.5m – 6m. <p>The proposed height is greater than 4.5m.</p> <p>The proposed rear boundary setback from the building line is 39m and the proposed rear boundary setback from the rear terrace is 27m.</p>	✓
	<p><u>Side Boundary setback</u></p> <p>The DCP requires a minimum side setback of the following for lots greater than 12.5m wide at the building line:</p> <ul style="list-style-type: none"> for any part of the building with a height of up to 4.5m—0.9m, and for any part of the building with a height of more than 4.5m—0.9m plus one-quarter of the height of the building above 4.5m. <p>The proposed side setback of the main dwelling at the building line extends from a minimum of 900mm up to 4.5m up to 1.511m and is contained within the building envelope.</p> <p>Part of the eaves extend past the building envelope up to a maximum of 450mm.</p>	✓
	<p><u>Secondary boundary setback (on corner lots)</u></p> <p>The site is not strictly a corner lot.</p>	N/A
	<p><u>Waterfront setback (absolute water frontage)</u></p> <p>The site is not located within a Foreshore Building Line Area or the provisions Clause 7.3 of Central Coast LEP 2022.</p>	N/A
Articulation Zones	<p><u>Primary Road Articulation for Dwelling Houses</u></p> <p>No part of the dwelling extends into the articulation zone.</p>	✓
	<p><u>Garage Door Articulation</u></p> <p>No part of the garage extends into the articulation zone.</p>	✓

STATEMENT OF ENVIRONMENTAL EFFECTS

CONTROL	PROPOSED	COMPLIES
Residential Amenity		
Views	<p>The proposed new dwelling has been designed to maintain the height and massing from the street to preserve the expansive views to the beach and ocean from the dwellings across Ficus Avenue.</p> <p>The building complies with the applicable front, side and rear setbacks and will not impact the key beach and ocean views from the neighbouring properties along the northern side of Ficus Avenue, specifically 3 Ficus Avenue. Each of these neighbouring dwellings have absolute beach and lagoon/lake views directly from the rear.</p>  <p>Figure 17 <i>View of the subject site (to the right of the image) and existing dwellings located directly opposite, across Ficus Avenue (to the left of the image)</i></p>  <p>Figure 18 <i>View from Ficus Avenue showing the subject site with expansive beach and ocean views around the building</i></p>  <p>Figure 19 <i>View of the rear of several properties on the northern side of Ficus Avenue (highlighting 3 Ficus Avenue) showing the absolute beach frontage and expansive views</i></p>	✓

STATEMENT OF ENVIRONMENTAL EFFECTS

CONTROL	PROPOSED	COMPLIES
Visual Privacy	<p>The proposed development has been designed to minimise any potential privacy and acoustic impacts on the neighbouring dwellings by minimising the number of large windows located on the side elevations.</p> <p>Extensive screening has been integrated into the overall design of the new dwelling including operable screens across the side elevations to maximise privacy to and from the dwelling.</p> <p>The west elevation has integrated planter boxes and landscaping on the first floor to further maintain privacy to the neighbouring property at 3 Ficus Avenue.</p> <p>The rear terraces have integrated screening along the sides and step down to the rear.</p> <p>The proposed roof terrace and spa has been centred in the roof area and includes planter boxes and landscaping as well as higher balustrading to minimise the potential of overlooking the neighbouring properties and to the maximise the privacy of the occupants.</p> <p>The main private open space is located at the rear of the site on the ground-floor.</p> <p>The proposal will not produce noise over and above those of a normal residential development and is therefore not deemed acoustically intrusive to the adjoining dwellings and public areas.</p>	✓
Private Open Space Areas	<p>The DCP requires a minimum private open space area of 24m² with a minimum dimension of 3m for lots with a width greater than 10m wide at the building line.</p> <p>The proposed private open space area at the rear of the site is at least 210m² and comprises of terraces, lawn and sand.</p> <p>The rear principal private open space areas is directly accessible from and adjacent to the main ground floor living areas.</p>	✓
Sunlight Access	<p>Due to the north facing site and north facing rear principal private open space area, the subject dwelling will receive sunlight access throughout the day.</p> <p>The proposal seeks to maximise the access to natural and direct sunlight by having larger full height windows and sliding doors where appropriate. In addition, due to the north facing site and north facing rear principal private open space area of the neighbouring dwellings and the location of the reserve to the east there is minimal additional overshadowing over the neighbouring properties and over the reserve.</p>	✓
Car Parking and Access		
Minimum off-street car parking provisions	<p>The DCP requires two car spaces if the dwelling has four or more bedrooms.</p> <p>The proposed dwelling will have more than four bedrooms and will provide two car spaces within the double garage.</p> <p>The garage will be integrated into the building design and will be located behind the primary road setback.</p>	✓
Earthworks, Structural Support and Drainage		
Earthworks	<p>The proposed earthworks include minor excavation to accommodate for the new support columns and slab, minor internal retaining walls and swimming pool.</p> <p>It is considered that the proposed earthworks and excavation will not have a detrimental impact on environmental functions and</p>	✓

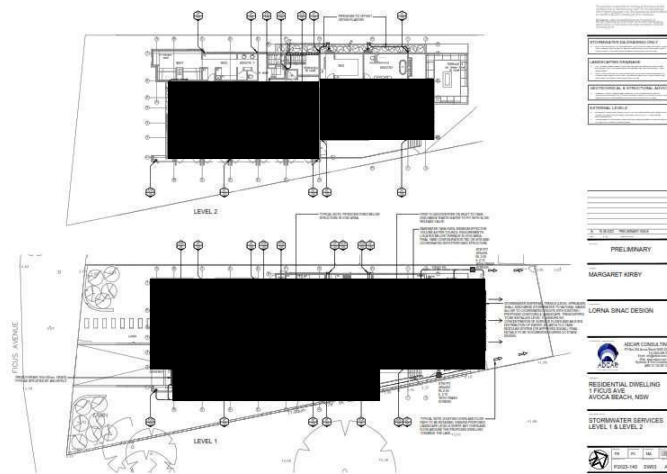
STATEMENT OF ENVIRONMENTAL EFFECTS

CONTROL	PROPOSED	COMPLIES
	processes of the site and surrounding area. Refer to the Geotechnical Site Classification Report prepared by Fortify Geotech Pty Ltd and submitted with this application for further details on the subsurface conditions and proposed earthworks	
Retaining Walls and Structural Support	No retaining walls or structural support is proposed.	✓

Drainage

The proposed drainage system includes rain harvesting of 170m², a 5000L water tank and a stormwater dispersal trench near the rear of the site.

Refer to the Stormwater Management Concept Plans prepared by Adcar Consulting and submitted with this application.

**Figure 20****Extract of the proposed stormwater management system**

Ancillary Development		
Fencing	Refer to the Coastal Engineering and Flood Report prepared by Horton Coastal Engineering Pty Ltd submitted with this application for further details on the proposed fencing and relation to the tidal inundation and flood requirements.	✓
Chapter 2.13: Transport and Parking		
Calculation of Car Parking Spaces		
Car Parking Requirements	As previously outlined, the DCP requires two car spaces if the dwelling has four or more bedrooms. The proposed dwelling will have more than four bedrooms and will provide two car spaces within the double garage.	✓
Dimensions of Parking Spaces	The proposed driveway and garage have been designed in accordance with the Australian Standard – AS 2890.1 and 2980.6 as amended.	✓
Chapter 2.14: Site Waste Management		
Waste Management Controls	<u>Demolition and Construction</u> It is proposed to demolish the existing dwelling and all other structures on the site to accommodate the new dwelling.	✓

STATEMENT OF ENVIRONMENTAL EFFECTS

CONTROL	PROPOSED	COMPLIES
	<p>All demolition works will be undertaken in accordance with the provisions of Australian Standard – AS 2601.</p> <p>Demolition materials will be utilised in the new built where possible.</p> <p>Refer to the Waste Management Report prepared by MRA Consulting and submitted with this application for further details on the construction and ongoing waste management.</p>	
	<p><u>Ongoing Management</u></p> <p>It is proposed to provide a new bin storage area along the western side.</p> <p>The new bin storage area has been integrated into the building design and will have direct, level access to the street.</p>	✓

5.2 Chapter 3: Environmental Controls

The relevant controls of *Chapter 3: Environmental Controls* of the Central Coast DCP 2022 have been addressed in the following table.

5.2.1 Chapter 3.1: Floodplain Management/Water Cycle Management

Refer to the Coastal Engineering and Flood Report prepared by Horton Coastal Engineering Pty Ltd submitted with this application for further details on flood related matters.

5.2.2 Chapter 3.5: Tree and Vegetation Management

New and extensive landscaping is proposed throughout the site, including new plantings within the front setback and at the rear of the site.

The proposed plants will be predominantly native and have been chosen as they are generally the most drought tolerant species.

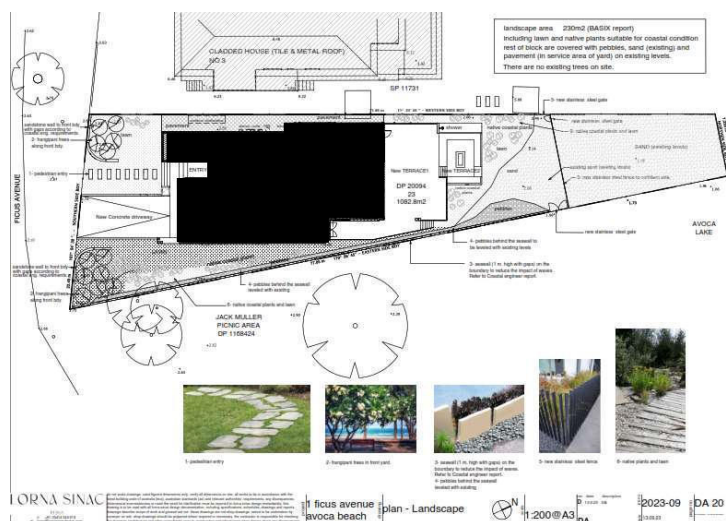


Figure 21

Extract of the proposed landscape plan

STATEMENT OF ENVIRONMENTAL EFFECTS

6. SECTION 4.15 (1)(B) IMPACT ON THE ENVIRONMENT

Pursuant to Section 4.15(B) of the Act, 'the likely impacts of that development' have been considered as follows:

6.1 Character and Context

The proposed new dwelling within an R2 residential zone is permissible with consent and is consistent with the maximum permissible FSR, height, setbacks and general private open space and landscaping requirements.

The proposed new dwelling will provide a significant improvement to the existing building and front facade including a new front building design, new balconies and landscaping facing the street and a new separate pedestrian entry.

The skillful design and massing of the proposed building envelope has been undertaken having regard to the environmental constraints, coastal setting, surrounding built forms, topography of the site and the contribution of the building to the streetscape. It has also been designed to maintaining the amenity of adjoining properties, particularly in relation to solar access, privacy, and views.

The proposed contemporary design and materials are consistent with other recent developments in the locality and will provide an overall improvement to the street and locality in general. The new design achieves a high standard of architectural and utilises a range of high quality and modern materials and finishes that will enhance the streetscape.

**Figure 22**

View of dwellings located directly opposite the site at 2 and 4 Ficus Avenue

**Figure 23**

View of more recent contemporary dwellings at 163 and 165 Avoca Drive

**Figure 24**

View of a more recent contemporary dwelling at 105 Avoca Drive

**Figure 25**

View of several more recent contemporary dwellings along Bareena Avenue

STATEMENT OF ENVIRONMENTAL EFFECTS

6.2 Crime Prevention Through Environmental Design

The proposed new dwelling has been designed to maximise a safe environment for residents and visitors.

The new well defined pedestrian entrance and separate garage will be clearly defined and easily identified from the street.

The dwelling has been designed with a number of windows and balconies that overlook the street, providing improved passive surveillance over the street.

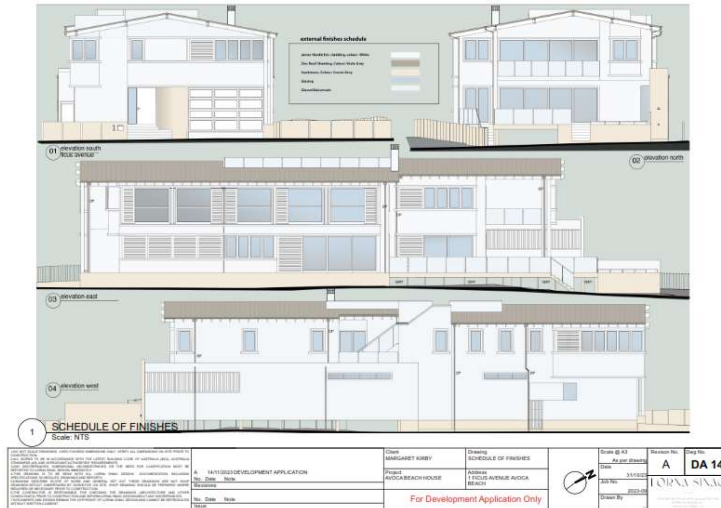
The proposed dwelling will present a more contemporary design for the site and a significant improvement and presentation to Ficus Street, the Jack Muller Picnic Area and the beach.

The proposal is sensitive to the existing streetscape, beach and lagoon/lake and is considered to be integrated with the topography of the site and surrounding area.

It includes a mix of new modern materials and high-quality screening embellished with new landscaping that will enhance the site and streetscape.

6.3 Materials and Finishes

The proposed development includes a range of high quality materials and finishes that are consistent with the coastal setting of the site and other recent developments in the locality.

**Figure 26**

Extract of the proposed materials and finishes including sandstone, white cladding and zinc roof sheeting

6.4 Environmental Impact

It is considered that the proposal will have no significant detrimental effect relating to environmental, heritage, social or economic impacts on the locality, subject to appropriate conditions being imposed.

6.5 Site Contamination

There is no record of any risk to health or safety from the existing or likely future contamination of the development site or proposed building on the site.

STATEMENT OF ENVIRONMENTAL EFFECTS

6.6 Erosion and Sedimentation Control

Prior to commencement of any site works including the removal of vegetation, excavation or other site preparation, the property shall be protected from erosion and sedimentation transfer.

The soil shall be prevented from being washed away, blown, or otherwise carried or deposited away from the site and into adjoining premises, roads, kerbs and gutters.

It is proposed to adopt sedimentation control measures to prevent and minimise the soil disturbance.

6.7 Water and Air Quality Impacts

With implementation of the proposed stormwater management plan, the proposed development is unlikely to result in any adverse effects on the locality in terms of water and air quality. Stormwater and runoff will be managed in accordance with the Stormwater Engineer's recommendations and any Council conditions of consent.

6.8 Building Sustainability

A BASIX Certificate has been submitted with the development application that lists measures to satisfy the relevant BASIX requirements which have been incorporated in the proposal.

6.9 Site Suitability

The site and surrounding locality do not present any significant physical, ecological, heritage, technological or social constraints on the proposed development. In summary, there are limited constraints on the development of the site and minimal conflicts will occur with surrounding land uses.

6.10 Public Submissions and the Public Interest

The proposed development will not significantly impact on the environment and is consistent with the applicable planning controls for the site. It will provide positive social benefits and is therefore considered to be in the public interest.

STATEMENT OF ENVIRONMENTAL EFFECTS

7. CONCLUSION

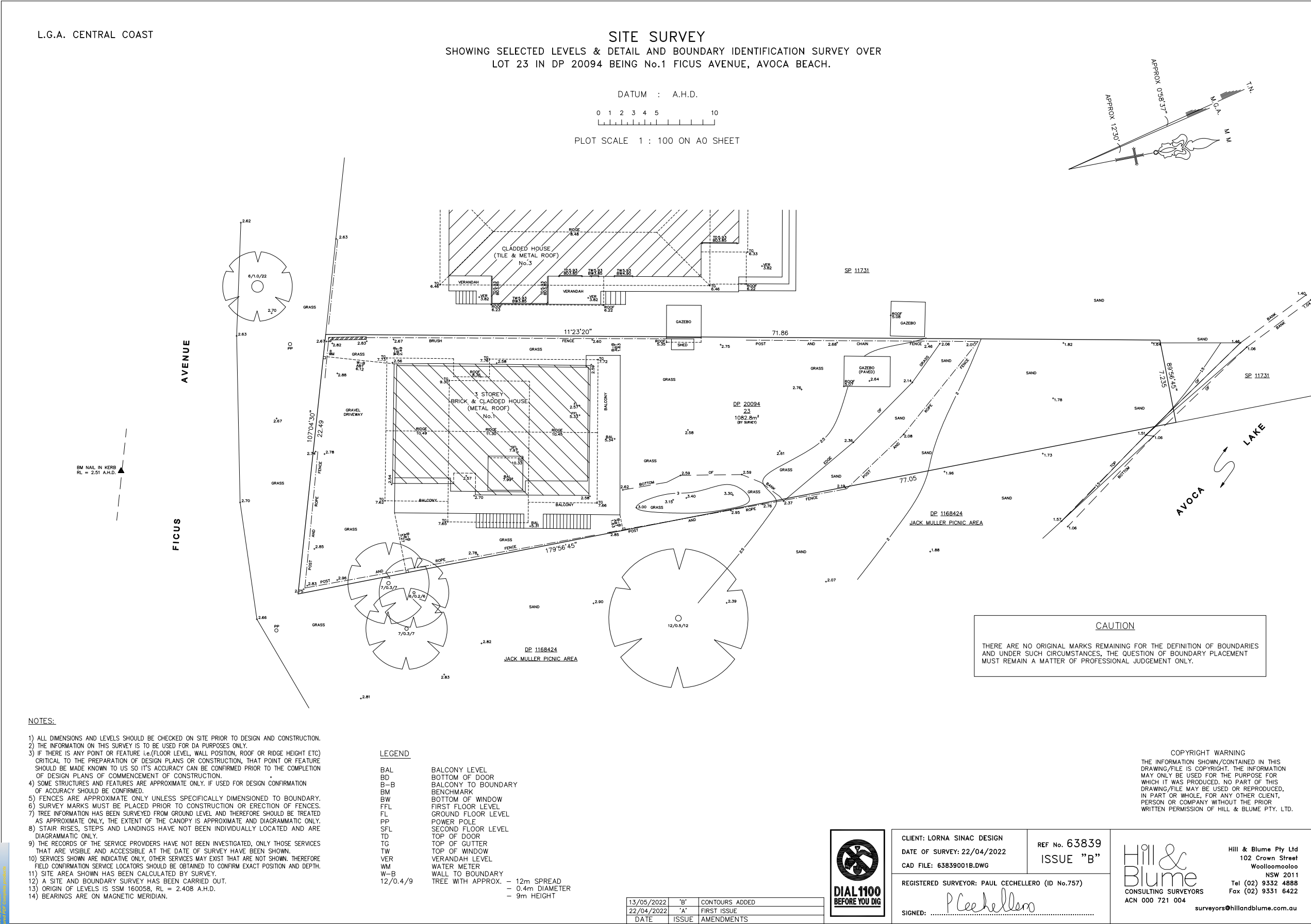
This Statement of Environmental Effects has been prepared to assess the proposed demolition of the existing dwelling and construction of a new dwelling, at 1 Ficus Avenue, Avoca Beach.

The proposal has planning merit in that it:

- Is permissible within the *R2 Low Density Residential* zone.
- Is consistent with the applicable development standards and is below the maximum permissible height for the site.
- Has been designed to address the flood impacts and today inundation.
- Is generally consistent with and maintains the existing applicable development controls in relation to setbacks, private open space and landscaping.
- Provides an overall improvement and positive contribution to the streetscape.
- Provide a high level of environmental sustainability through good passive design techniques such as good shading, cross ventilation and thermal mass.
- Is consistent and compatible with neighbouring properties and land uses and will not generate any unacceptable impacts on surrounding properties and residents.

Having regard to the analysis and assessment within this report, it is therefore recommended that the application be supported and granted consent.





Nationwide House Energy Rating Scheme® NatHERS® Certificate No. 0008840563-01

Generated on 20 Dec 2023 using BERS Pro v5.1.7 (3.22)

Property

Address 1 Ficus Avenue,
Avoca Beach , NSW , 2251

Lot/DP Lot 23 DP 20094

NCC class* 1a

Floor/all Floors G of 2 floors

Type New Home

Plans

Main plan 2022-03

Prepared by Lorna Sinac Design

Construction and environment

Assessed floor area [m2]*

Conditioned*	485.5	Exposure type	Exposed
Unconditioned*	14.9	NatHERS climate zone	15 Williamtown
Total	545.7		
Garage	45.4		



Accredited assessor

Name Terry Chapman

Business name CHAPMAN ENVIRONMENTAL SERVICES
PTY LTD

Email terry@basixcertificates.com.au

Phone 0414 265 292

Accreditation No. 20920

Assessor Accrediting Organisation
ABSA

Declaration of interest Declaration completed: no conflicts

NCC Requirements

NCC provisions Volume Two

Strate/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance Star rating



**NATIONWIDE
HOUSE**
ENERGY RATING SCHEME®

50.1 MJ/m²

Predicted annual energy load for
heating and cooling based on standard
occupancy assumptions.

For more information on
your dwelling's rating see:
www.nathers.gov.au

Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	32.7	17.4
Load limits	N/A	N/A

Features determining load limits

Floor Type (lowest conditioned area)	CSOG
NCC climate zone 1 or 2	No
Outdoor living area	No
Outdoor living area ceiling fan	No

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate.

Verification

To verify this certificate,
scan the QR code or visit
[hstar.com.au/QR/Generate?](http://hstar.com.au/QR/Generate?p=JvhjZnuPJ)
[p=JvhjZnuPJ](http://hstar.com.au/QR/Generate?p=JvhjZnuPJ).
When using either link,
ensure you are visiting
hstar.com.au



0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the *ABC Standard 2022: NatHERS heating and cooling load limits* for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting Options:

Floor Type:

CSOG – Concrete Slab on Ground
SF – Suspended Floor (or a mixture of CSOG and SF)
NA – Not Applicable

NCC Climate Zone 1 or 2:

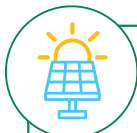
Yes
No
NA – Not Applicable

Outdoor Living Area:

Yes
No
NA – Not Applicable

Outdoor Living Area Ceiling Fan:

Yes
No
NA – Not Applicable



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Energy use

No Whole of Home performance assessment conducted for this certificate

Greenhouse gas emissions

No Whole of Home performance assessment conducted for this certificate

Cost

No Whole of Home performance assessment conducted for this certificate

* Refer to glossary.

0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and by whom each item should be checked. It is not mandatory to complete this checklist.

	Approval Stage		Construction Stage		Occupancy/Other
	Assessor checked	Consent Authority/ Surveyor checked	Builder checked	Consent Authority/ Surveyor checked	
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match what is shown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Refer to glossary.

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Certificate check

Continued

Approval Stage		Construction Stage		
Assessor checked	Consent Authority/ Surveyor checked	Builder checked	Consent Authority Surveyor checked	Occupancy/Other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Insulation installation method

Has the insulation been installed according to the NCC requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the hot water system meet the additional requirements specified in the NCC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

External wall system info - James Hardie 9mm external panel + 30mm air gap + vapor barrier + wall sheeting + thermal insulation + 50mm air gap + vapor barrier + 90mm Xlam panel (internal face)

* Refer to glossary.

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Internal walls will have an R Value of R0.9 for Xlam CLT Panels

Room schedule

Room	Zone Type	Area [m ²]
Garage	Garage	45.36
Laundry	Unconditioned	14.89
Storage	Daytime	11.66
WC	Daytime	3.18
Lift	Daytime	3.63
Pantry	Daytime	14.18
Kitchen/Living	Kitchen/Living	66.95
Tv Room	Living	14.44
Study	Daytime	7.78
Living	Living	77.79
L1 Stairs	Daytime	13.31
L2 Hall P	Daytime	17.23
Master Bed	Bedroom	40.58
Ensuite	Nighttime	17.03
WIR	Nighttime	16.28
Bedroom 2	Bedroom	22.51
Ensuite 2	Nighttime	6.1
Bedroom 3	Bedroom	17.05
Ensuite 3	Nighttime	6.55
Bedroom 4 P	Bedroom	5.34
Ensuite 4 P	Nighttime	6.17
Bedroom 5 P	Bedroom	5
Ensuite 5 P	Nighttime	6.05
Bedroom 6 P	Bedroom	4.78
Ensuite 6 P	Nighttime	6.26
Bedroom 7	Bedroom	19.71
WIR 7	Nighttime	12.79
Ensuite 7	Nighttime	7.72
L2 Stairs	Daytime	10.05

* Refer to glossary.

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Room	Zone Type	Area [m ²]
Hallway 2	Daytime	8.24
Bedroom 4	Bedroom	12.63
Bedroom 5	Bedroom	13.45
Bedroom 6	Bedroom	15.28
L2 Lift	Daytime	3.34

Window and glazed door type and performance

Default windows*

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom windows*

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
ALS-028-01 A	50mm Carinya Classic Fixed Window DG 4/10/4	3.3	0.69	0.66	0.72
ALS-050-34 A	50mm Carinya Classic Sliding Window DG 008_AGG PLUS Clr 4_10_4	3.3	0.47	0.45	0.49
ALS-052-37 A	92mm Carinya Select Hinged Door DG 003_AGG PRIME Clr 6_12_6	3.3	0.38	0.36	0.40
ALS-092-18 A	Carinya Plus 65mm Awning Window DG 008_AGG PLUS Clr 4_10_4	3.4	0.45	0.43	0.47
ALS-107-04 A	ProVista Sashless Double Hung Window DG LightBridge_ClrSO_5-8-5	3.3	0.46	0.44	0.48
BRD-035-56 A	SIG Sliding Door (100mm) DG 008_AGG PLUS Clr 4_10_4	2.7	0.53	0.50	0.56
BRD-117-12 A	ESS Casement 52 DG 012_AGG PLUS Clr 6_12_6	3.1	0.44	0.42	0.46
BRZ-006-09 A	Easyscreen Altair Louvre SG 6mm Sunergy	4.9	0.46	0.44	0.48

Window and glazed door schedule

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Garage	ALS-050-34 A	W1	1500	5700	Sliding	45	SE	Yes
Laundry	ALS-052-37 A	W10	2100	900	Casement	90	NW	No
Laundry	BRZ-006-09 A	W9	520	2700	Louvre	90	NW	No

* Refer to glossary.

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Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Pantry	BRZ-006-09 A	n/a	520	4000	Louvre	90	NW	No
Kitchen/Living	ALS-052-37 A	W7	2400	900	Casement	90	NE	No
Kitchen/Living	BRD-035-56 A	W6	2400	6400	Sliding	45	NE	No
Kitchen/Living	BRD-035-56 A	W5	2400	4800	Sliding	45	SE	Yes
Study	ALS-050-34 A	W2	1500	3200	Sliding	45	SE	No
Living	ALS-052-37 A	n/a	2400	1690	Casement	90	NE	No
Living	ALS-050-34 A	W4	2400	6400	Sliding	45	SE	Yes
Living	ALS-028-01 A	n/a	2400	550	Fixed	00	SW	No
L2 Hall P	BRD-035-56 A	W54	2400	1900	Sliding	10	NW	No
Master Bed	BRD-035-56 A	W18	2400	6400	Sliding	70	NE	No
Master Bed	BRD-117-12 A	W48	1400	4800	Casement	10	SE	Yes
Ensuite	BRD-117-12 A	W47	1400	1600	Casement	10	NE	No
Ensuite	ALS-092-18 A	W46	1400	800	Awning	10	NW	No
Ensuite	ALS-092-18 A	W45	1400	800	Awning	10	NW	No
WIR	ALS-092-18 A	n/a	1400	800	Awning	10	NW	No
Bedroom 2	ALS-107-04 A	W52	2150	2740	Double Hung	45	SE	Yes
Bedroom 2	BRD-117-12 A	W39	1400	4800	Casement	10	SW	Yes
Bedroom 3	ALS-107-04 A	W51	2150	2740	Double Hung	45	SE	Yes
Bedroom 7	BRD-117-12 A	W37	1400	1600	Casement	10	SW	No
Bedroom 7	BRD-117-12 A	W38	1400	5600	Casement	10	NW	Yes
WIR 7	ALS-092-18 A	W41	1400	800	Awning	10	NW	No
WIR 7	ALS-092-18 A	W40	1400	800	Awning	10	NW	No
Ensuite 7	ALS-092-18 A	W42	1400	800	Awning	10	NW	No
L2 Stairs	ALS-092-18 A	W43	1400	800	Awning	10	NW	No
Hallway 2	BRD-117-12 A	W15	1400	800	Casement	10	SW	No
Bedroom 4	ALS-107-04 A	W50	2150	2740	Double Hung	45	SE	Yes
Bedroom 5	ALS-107-04 A	W26	2150	2740	Double Hung	45	SE	Yes
Bedroom 6	BRD-117-12 A	W25	1400	1600	Casement	10	NE	No
Bedroom 6	ALS-107-04 A	W49	2150	2740	Double Hung	45	SE	Yes

* Refer to glossary.

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**Roof window* type and performance value**

Default roof windows*

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom roof windows*

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* schedule

Location	Window ID	Window no.	Opening %	Height [mm]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m ²]	Orientation	Outdoor shade	Diffuser
No Data Available							

External door schedule

Location	Height [mm]	Width [mm]	Opening %	Orientation
Garage	2900	4800	90	SW
Living	2400	1220	90	SW

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
EW-1	Fibro Timber Stud Frame Panel on Battens	0.304790588235294		Foil, Anti-glare one side + Bulk Insulation R3.3	No

* Refer to glossary.

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External wall schedule

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature [yes/no]
Garage	EW-1	3000	6463	SE	0	No
Garage	EW-1	3000	6500	SW	800	No
Garage	EW-1	3000	447	SW	1006	No
Garage	EW-1	3000	583	W	5730	No
Garage	EW-1	3000	2600	NW	5500	No
Laundry	EW-1	2800	1625	SE	9100	No
Laundry	EW-1	2800	3163	NW	1300	No
Laundry	EW-1	2800	1000	SW	7300	No
Laundry	EW-1	2800	2863	NW	0	No
Storage	EW-1	2800	900	NE	0	No
Storage	EW-1	2800	3700	SE	9100	No
Storage	EW-1	2800	3200	SW	0	No
Storage	EW-1	2800	3700	NW	400	No
WC	EW-1	2800	2125	NW	0	No
Pantry	EW-1	2800	1100	SW	0	No
Pantry	EW-1	2800	4663	NW	0	No
Kitchen/Living	EW-1	2800	4300	NE	5000	No
Kitchen/Living	EW-1	2800	6700	NE	5000	No
Kitchen/Living	EW-1	2800	6263	SE	0	No
Kitchen/Living	EW-1	2800	5463	NW	0	No
Study	EW-1	2800	3225	SE	0	No
Living	EW-1	2800	2500	NE	0	No
Living	EW-1	2800	7163	SE	0	No
Living	EW-1	2800	1863	SW	4100	No
L1 Stairs	EW-1	2800	3125	NW	0	No
L2 Hall P	EW-1	2400	1825	NW	500	No
Master Bed	EW-1	3960	6563	NE	4600	No
Master Bed	EW-1	3960	6263	SE	700	No
Ensuite	EW-1	3050	600	NE	500	No

* Refer to glossary.

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Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature [yes/no]
Ensuite	EW-1	3050	500	NW	1200	No
Ensuite	EW-1	3050	2000	NE	0	No
Ensuite	EW-1	3050	500	SE	7900	No
Ensuite	EW-1	3050	600	NE	500	No
Ensuite	EW-1	3050	4100	SE	7300	No
Ensuite	EW-1	3050	5063	NW	600	No
WIR	EW-1	3050	2000	SW	3900	No
WIR	EW-1	3050	5263	NW	600	No
Bedroom 2	EW-1	2600	3263	SE	500	No
Bedroom 2	EW-1	2400	800	SE	500	No
Bedroom 2	EW-1	2400	5100	SW	1700	No
Bedroom 2	EW-1	2400	800	NW	8200	No
Bedroom 2	EW-1	3960	2563	SW	2500	No
Bedroom 3	EW-1	2600	3225	SE	500	No
Bedroom 7	EW-1	2600	300	NE	6500	No
Bedroom 7	EW-1	2600	2100	SE	9600	No
Bedroom 7	EW-1	2600	1700	SW	400	No
Bedroom 7	EW-1	2600	400	SE	11300	No
Bedroom 7	EW-1	2600	1900	SW	0	No
Bedroom 7	EW-1	2600	5800	NW	600	No
WIR 7	EW-1	2700	4025	NW	900	No
Ensuite 7	EW-1	3960	2425	NW	900	No
L2 Stairs	EW-1	2400	1600	NE	3900	No
L2 Stairs	EW-1	2400	3163	NW	0	No
Hallway 2	EW-1	3960	1325	SW	2500	No
Bedroom 4	EW-1	2400	3125	SE	500	No
Bedroom 5	EW-1	2400	3325	SE	500	No
Bedroom 6	EW-1	2400	2500	NE	0	No
Bedroom 6	EW-1	2400	3763	SE	500	No
L2 Lift	EW-1	3960	500	NE	12800	No
L2 Lift	EW-1	3960	1995	NW	0	No

* Refer to glossary.

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Internal wall type

Wall ID	Wall type	Area [m ²]	Bulk insulation
IW-001	Timber Stud Frame, Direct Fix Plasterboard	591.44	No insulation

Floor type

Location	Construction	Area [m ²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Garage	Suspended Concrete Slab 150mm	45.36	Very Open	Bulk Insulation in Contact with Floor R1.1	Bare
Laundry	Suspended Floor Timber Frame 19mm	14.89	Very Open	Bulk Insulation in Contact with Floor R6	Ceramic Tiles 8mm
Storage	Suspended Floor Timber Frame 19mm	11.66	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
WC	Suspended Floor Timber Frame 19mm	3.18	Very Open	Bulk Insulation in Contact with Floor R6	Ceramic Tiles 8mm
Lift	Suspended Floor Timber Frame 19mm	3.63	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
Pantry	Suspended Floor Timber Frame 19mm	14.18	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
Kitchen/Living	Suspended Floor Timber Frame 19mm	66.95	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
Tv Room	Suspended Floor Timber Frame 19mm	14.44	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm

* Refer to glossary.

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Location	Construction	Area [m ²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Study	Suspended Floor Timber Frame 19mm	7.78	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
Living	Suspended Floor Timber Frame 19mm	77.79	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
L1 Stairs	Suspended Floor Timber Frame 19mm	13.31	Very Open	Bulk Insulation in Contact with Floor R6	Cork Tiles or Parquetry 8mm
L2 Hall P / Pantry	Timber Framed Timber Above Plasterboard 19mm	2.42		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
L2 Hall P / Living	Timber Framed Timber Above Plasterboard 19mm	15.17		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Master Bed / Kitchen/Living	Timber Framed Timber Above Plasterboard 19mm	40.57		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite / Kitchen/Living	Timber Framed Timber Above Plasterboard 19mm	3.12		Bulk Insulation R3.1	Ceramic Tiles 8mm
Ensuite	Suspended Floor Timber Frame 19mm	13.84	Totally Open	Bulk Insulation in Contact with Floor R2.5	Ceramic Tiles 8mm
WIR / Kitchen/Living	Timber Framed Timber Above Plasterboard 19mm	15.79		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 2 / Garage	Timber Framed Timber Above Plasterboard 19mm	17.67		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 2	Suspended Floor Timber Frame 19mm	4.76	Totally Open	Bulk Insulation in Contact with Floor R2.5	Cork Tiles or Parquetry 8mm
Ensuite 2 / Garage	Timber Framed Timber Above Plasterboard 19mm	4.53		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite 2 / Living	Timber Framed Timber Above Plasterboard 19mm	2.77		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm

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Location	Construction	Area [m ²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Ensuite 2	Suspended Floor Timber Frame 19mm	2.75	Totally Open	Bulk Insulation in Contact with Floor R2.5	Ceramic Tiles 8mm
Bedroom 3 / Garage	Timber Framed Timber Above Plasterboard 19mm	15.02		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 3 / Living	Timber Framed Timber Above Plasterboard 19mm	2.68		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite 3 / Garage	Timber Framed Timber Above Plasterboard 19mm	6.55		Bulk Insulation R3.1	Ceramic Tiles 8mm
Bedroom 4 P / Tv Room	Timber Framed Timber Above Plasterboard 19mm	4.88		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 4 P / Living	Timber Framed Timber Above Plasterboard 19mm	2.83		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite 4 P / Tv Room	Timber Framed Timber Above Plasterboard 19mm	3.09		Bulk Insulation R3.1	Ceramic Tiles 8mm
Ensuite 4 P / Living	Timber Framed Timber Above Plasterboard 19mm	4.28		Bulk Insulation R3.1	Ceramic Tiles 8mm
Bedroom 5 P / Living	Timber Framed Timber Above Plasterboard 19mm	5.00		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite 5 P / Tv Room	Timber Framed Timber Above Plasterboard 19mm	2.81		Bulk Insulation R3.1	Ceramic Tiles 8mm
Ensuite 5 P / Living	Timber Framed Timber Above Plasterboard 19mm	3.81		Bulk Insulation R3.1	Ceramic Tiles 8mm
Bedroom 6 P / Living	Timber Framed Timber Above Plasterboard 19mm	4.79		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Ensuite 6 P / Living	Timber Framed Timber Above Plasterboard 19mm	6.25		Bulk Insulation R3.1	Ceramic Tiles 8mm
Bedroom 7 / Laundry	Timber Framed Timber Above Plasterboard 19mm	3.60		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 7 / Storage	Timber Framed Timber Above Plasterboard 19mm	11.38		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm

* Refer to glossary.

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Location	Construction	Area [m ²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 7	Suspended Floor Timber Frame 19mm	4.11	Totally Open	Bulk Insulation in Contact with Floor R2.5	Cork Tiles or Parquetry 8mm
WIR 7 / Laundry	Timber Framed Timber Above Plasterboard 19mm	10.01		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
WIR 7 / Living	Timber Framed Timber Above Plasterboard 19mm	1.79		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
WIR 7	Suspended Floor Timber Frame 19mm	1.83	Totally Open	Bulk Insulation in Contact with Floor R2.5	Cork Tiles or Parquetry 8mm
Ensuite 7 / Laundry	Timber Framed Timber Above Plasterboard 19mm	2.09		Bulk Insulation R3.1	Ceramic Tiles 8mm
Ensuite 7 / WC	Timber Framed Timber Above Plasterboard 19mm	2.90		Bulk Insulation R3.1	Ceramic Tiles 8mm
Ensuite 7 / L1 Stairs	Timber Framed Timber Above Plasterboard 19mm	3.65		Bulk Insulation R3.1	Ceramic Tiles 8mm
L2 Stairs / L1 Stairs	Timber Framed Timber Above Plasterboard 19mm	4.51		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Hallway 2 / Living	Timber Framed Timber Above Plasterboard 19mm	3.79		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Hallway 2	Suspended Floor Timber Frame 19mm	3.78	Totally Open	Bulk Insulation in Contact with Floor R2.5	Cork Tiles or Parquetry 8mm
Bedroom 4 / Tv Room	Timber Framed Timber Above Plasterboard 19mm	4.81		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 4 / Study	Timber Framed Timber Above Plasterboard 19mm	7.28		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 5 / Living	Timber Framed Timber Above Plasterboard 19mm	13.44		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm
Bedroom 6 / Living	Timber Framed Timber Above Plasterboard 19mm	15.28		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm

* Refer to glossary.

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0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



Location	Construction	Area [m ²]	Sub-floor ventilation	Added insulation [R-value]	Covering
L2 Lift / Lift	Timber Framed Timber Above Plasterboard 19mm	0.79		Bulk Insulation R3.1	Cork Tiles or Parquetry 8mm

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap* [yes/no]
Garage	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Laundry	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Storage	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
WC	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Lift	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Pantry	Plasterboard on Timber	Bulk Insulation R6	
Pantry	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Kitchen/Living	Plasterboard on Timber	Bulk Insulation R6	
Kitchen/Living	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Tv Room	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Study	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
Living	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
L1 Stairs	Timber Framed Timber Above Plasterboard	Bulk Insulation R3.1	
L2 Hall P	Plasterboard on Timber	Bulk Insulation R6	
Master Bed	Plasterboard on Timber	Bulk Insulation R6	
Ensuite	Plasterboard on Timber	Bulk Insulation R6	
WIR	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 2	Plasterboard on Timber	Bulk Insulation R6	
Ensuite 2	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 3	Plasterboard on Timber	Bulk Insulation R6	
Ensuite 3	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 4 P	Plasterboard on Timber	Bulk Insulation R6	
Ensuite 4 P	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 5 P	Plasterboard on Timber	Bulk Insulation R6	
Ensuite 5 P	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 6 P	Plasterboard on Timber	Bulk Insulation R6	

* Refer to glossary.

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0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap* [yes/no]
Ensuite 6 P	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 7	Plasterboard on Timber	Bulk Insulation R6	
WIR 7	Plasterboard on Timber	Bulk Insulation R6	
Ensuite 7	Plasterboard on Timber	Bulk Insulation R6	
L2 Stairs	Plasterboard on Timber	Bulk Insulation R6	
Hallway 2	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 4	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 5	Plasterboard on Timber	Bulk Insulation R6	
Bedroom 6	Plasterboard on Timber	Bulk Insulation R6	
L2 Lift	Plasterboard on Timber	Bulk Insulation R6	

Ceiling penetrations*

Location	Quantity	Type	Diameter [mm]	Sealed/unsealed
Laundry	4	Downlights - LED	150	Sealed
Laundry	1	Exhaust Fans	300	Sealed
Storage	4	Downlights - LED	150	Sealed
WC	1	Downlights - LED	150	Sealed
WC	1	Exhaust Fans	300	Sealed
Pantry	4	Downlights - LED	150	Sealed
Kitchen/Living	17	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
Tv Room	2	Downlights - LED	150	Sealed
Study	1	Downlights - LED	150	Sealed
Living	16	Downlights - LED	150	Sealed
L1 Stairs	2	Downlights - LED	150	Sealed
L2 Hall P	4	Downlights - LED	150	Sealed
Master Bed	8	Downlights - LED	150	Sealed
Ensuite	4	Downlights - LED	150	Sealed
Ensuite	1	Exhaust Fans	300	Sealed
WIR	5	Downlights - LED	150	Sealed
Bedroom 2	4	Downlights - LED	150	Sealed
Ensuite 2	2	Downlights - LED	150	Sealed

* Refer to glossary.

0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



Location	Quantity	Type	Diameter [mm]	Sealed/unsealed
Ensuite 2	1	Exhaust Fans	300	Sealed
Bedroom 3	4	Downlights - LED	150	Sealed
Ensuite 3	2	Downlights - LED	150	Sealed
Ensuite 3	1	Exhaust Fans	300	Sealed
Bedroom 4 P	2	Downlights - LED	150	Sealed
Ensuite 4 P	2	Downlights - LED	150	Sealed
Ensuite 4 P	1	Exhaust Fans	300	Sealed
Bedroom 5 P	2	Downlights - LED	150	Sealed
Ensuite 5 P	2	Downlights - LED	150	Sealed
Ensuite 5 P	1	Exhaust Fans	300	Sealed
Bedroom 6 P	2	Downlights - LED	150	Sealed
Ensuite 6 P	2	Downlights - LED	150	Sealed
Ensuite 6 P	1	Exhaust Fans	300	Sealed
Bedroom 7	4	Downlights - LED	150	Sealed
WIR 7	2	Downlights - LED	150	Sealed
Ensuite 7	1	Downlights - LED	150	Sealed
Ensuite 7	1	Exhaust Fans	300	Sealed
L2 Stairs	2	Downlights - LED	150	Sealed
Hallway 2	4	Downlights - LED	150	Sealed
Bedroom 4	2	Downlights - LED	150	Sealed
Bedroom 5	2	Downlights - LED	150	Sealed
Bedroom 6	2	Downlights - LED	150	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
Kitchen/Living	2	1200
Tv Room	1	1200
Study	1	1200
Living	1	1200
Master Bed	1	1200
Bedroom 2	1	1200
Bedroom 3	1	1200

* Refer to glossary.

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7.1 Star Rating as of 20 Dec 2023



Location	Quantity	Diameter [mm]
Bedroom 7	1	1200
Bedroom 4	1	1200
Bedroom 5	1	1200
Bedroom 6	1	1200

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade[colour]
Corrugated Iron Timber Frame	Foil, Gap Above, Reflective Side Down, Anti-glare Up	0.5	Medium
Waterproofing Membrane	No Added Insulation, No air Gap	0.5	Medium
Corrugated Iron Timber Frame	Bulk, Reflective Side Down, No Air Gap Above R1.3	0.43	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
No Data Available				

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m² is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Data Available				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Data Available				

Hot water system

Appliance/ system type	Fuel type	Hot Water CER Zone	Minimum efficiency /STC	Zone 3 STC	Zone 3 Substitution tolerance ranges	Assessed daily load [litres]
No Data Available						

* Refer to glossary.

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7.1 Star Rating as of 20 Dec 2023



Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Data Available			

Onsite Renewable Energy Schedule

System Type	Orientation	System Size Or Generation Capacity
No Data Available		

Battery Schedule

System Type	Size [Battery Storage Capacity]
No Data Available	

0008840563-01 NatHERS Certificate

7.1 Star Rating as of 20 Dec 2023



Explanatory notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the home's energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary.

Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and

are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

AFRC	Australian Fenestration Rating Council
Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
COP	Coefficient of performance
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your home's rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure	see exposure categories below.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – protected	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – suburban	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulator (CER)
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick or continuous thermal breaks such as polystyrene insulation sheeting or plastic strips
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

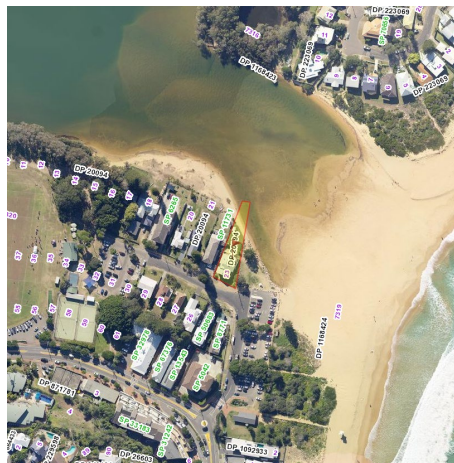
* Refer to glossary.



1 FICUS AVENUE, AVOCA BEACH NSW 2251

Brief STRUCTURAL REPORT

DA Submission



SITE LOCATION PLAN

Prepared for: Margaret Kirby
C/- Lorna Sinac Design/Lorna Sinac
E: lorna@lornasinacdesign.com
P: 02 9967 4333

RISE CONSULTING ENGINEERS Pty Ltd

G03 / 15-19 Atchison St,
St Leonards, NSW 2065

02 8057 9109
admin@riseengineers.com.au
riseengineers.com.au





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Rev	Date
A	09 October 2023
B	29 Nov 2023
C	08 Dec 2023

Fri 08 Dec 2023

Job No: 23046

Margaret Kirby
C/- Lorna Sinac Design/Lorna Sinac
E: lorna@lornasinacdesign.com
P: 02 9967 4333

Re: Brief Structural Report for 1 Ficus Avenue, Avoca Beach NSW 2251

1. Introduction

Rise Consulting Engineers Pty Ltd has been engaged by the client Ms Margaret Kirby as the Structural Engineers for the proposed knockdown rebuild of a residential building at 1 Ficus Avenue, Avoca Beach. The proposed architectural plans by Lorna Sinac Design rev A, dated 14th Nov 2023 were provided as the basis for assessment of suitable structural system. The proposed residential development consists of a two-storey house bound by Ficus Avenue to the south, an existing residential to the west, a public park to the east and Avoca Lake to the north.

2. Flooding

With the proposed residential building being immediately adjacent to Avoca Beach from the north and the east, it has been identified that the site remains prone to flooding. In particular, the ground floor of the building will be raised in order to mitigate such flood risks. We understand that the flood forces will be provided by the coastal engineer to allow for design of the subfloor / footing structure at the detailed design stage of the structure.

3. Proposed Structural System

3.1 Geotechnical Report

A geotechnical investigation report was prepared by Fortify Geotech Pty Ltd dated 10th August 2023. The subject geotechnical report classifies the site as Class "S" (slightly reactive) and provides an allowable end bearing capacity of ~100-125kPa for strip and pad footings founded on medium dense marine soils at a depth of ~1.2m below existing ground level.

3.2 Footings

Given the low-capacity soil profile presented in the geotechnical report prepared by Fortify Geotech Pty Ltd dated 10th August 2023, the footings are likely be a piered/piled footing system to transfer loads to a firm stratum as required. Strip and pad footings can be supported on either screw or concrete piles to support subfloor structure. If piers are required to be founded /socketed to rock, concrete piers/piles may be an appropriate option. Further geotechnical investigation works may be required to be carried out at the detailed design stage of the structure.



3.3 Ground Floor Slab

The proposed ground floor slab will be suspended on subfloor wall structure as required to allow for flood waters to flow under as/when required. The ground floor slab will consist of a proprietary metal sheet form work such as 'bondek' system for ease of construction. The bondek will only be used as sacrificial formwork. Random openings within subfloor walling structure at the base can be considered as required to allow for flood waters to flow through. The garage will be a slab on ground structure.

3.4 First Floor & Roof Framing

The proposed first floor framing will be a combination of steel frames & Cross Laminated Timber (CLT) panels used as both walling as well as flooring system. The roof framing will also be a combination of steel frame and XLam CLT panels.

This submission is for DA application and assessment. Detailed structural design will be prepared at the CC stage of the project. This is to confirm that the proposed residential building will have sufficient capacity to withstand external forces including coastal flooding. We understand that a flood study will be prepared to confirm flow depth and velocities which will be taken in to consideration for the final structural design and documentation.

We trust this report is satisfactory for your requirements. Please do not hesitate to contact the undersigned should you have any further requirements.

Yours sincerely,

Rise Consulting Engineers

A handwritten signature in black ink, appearing to read "Omid Safai", written over a light blue rectangular background.

Omid Safai

B. Eng. (Civil), M.E., M.I.E(Aust),
C.P.Eng, N.E.R, APEC Engineer IntPE(Aus), Building
Practitioner VBA, RPEQ
Director

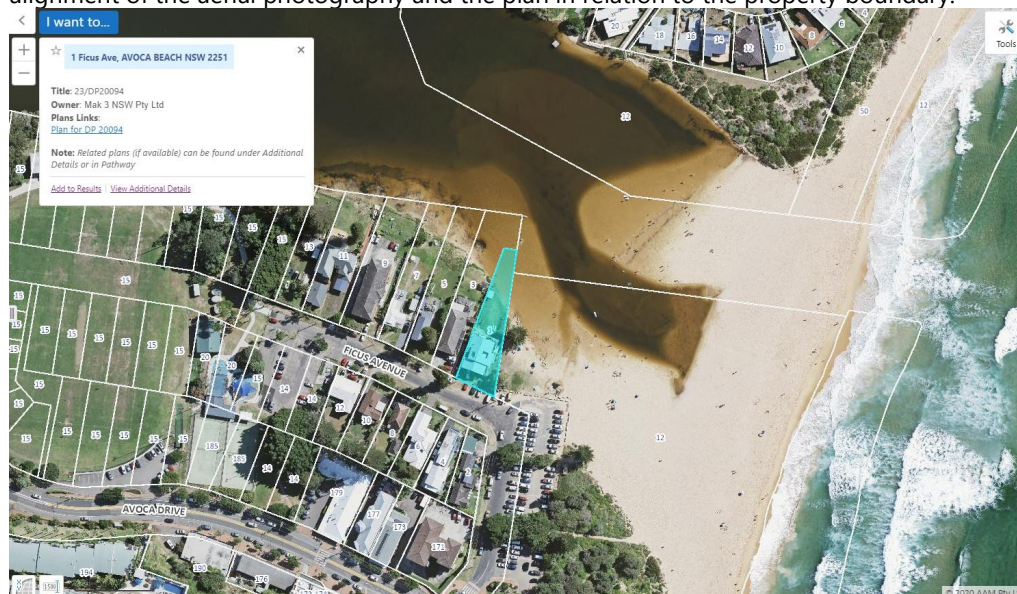
Comments from Coastal Management

To	Stephen Goodworth
From	Toan Dam Senior Coastal Planning Officer
Date	21-Feb-2024
DA Number	21-Feb-2024
Proposed	Dwelling & Demolition of Existing Dwelling
Property	1 Ficus Avenue, AVOCA BEACH NSW 2251
Site Inspection	No
Site Inspection Date	N/A /
Recommendation	Not supported

Comments:

Coastal Hazard and Catchment Flood on Property

Figure below shows the location of subject property. There is some discrepancy between the alignment of the aerial photography and the plan in relation to the property boundary.



As the subject property located at the entrance of Avoca Lagoon, it's subject to both coastal hazards and catchment floods, including:

- Entrance instability
- Tidal and ocean inundation
- Erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters.

As per Flood Information Certificate (provide by Council dated 16 September 2022), the subject property is defined as a Flood Control Lot, located within Flood Storage Area, and located within a High Hazard Area.

DA application documents including Development Plans, Statement of Environmental Effect, Geotechnical Report, Coastal Report, and other DA documentations have been reviewed and considered.

Recommendations

- 1 With only one DCP1 (terminated at 1.6m in marine sand) and no information and geotechnical log for DCP2, the Site Classification Report did not provide enough information for both geotechnical assessment and coastal assessment. This report does not meet the requirements for Geotechnical Report as per DCP 2022 Chapter 3.7, for High Hazard Area.
- 2 It's assessed that the proposed development would obstruct the catchment flood flow, raise flood stages, increase flood velocities, retard the movement of floodwaters. The proposed development (both the main building and the wave trip fence) would also increase the coastal hazard at the site, to the neighbouring properties, and to the adjacent public space (e.g. Jack Muller Picnic Area). The proposal does not comply with DCP 2022 Cl. 3.2.3.3.2.b.(iii) and Cl. 3.2.3.3.2.b.(vi).
- 3 The proposal is NOT suitable to process with the confines in Chapter 3.2 of the current DCP 2022 from coastal engineering perspective.

1.. PARAMETERS OF THIS CONSENT

2.. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

3.. PRIOR TO ISSUE OF ANY SUBDIVISION WORKS CERTIFICATE

4.. PRIOR TO COMMENCEMENT OF ANY WORKS

5.. DURING WORKS

6.. PRIOR TO ISSUE OF ANY OCCUPATION CERTIFICATE

7.. PRIOR TO ISSUE OF ANY SUBDIVISION CERTIFICATE

8.. ONGOING

ADVISORY NOTES

-

Comments from Engineering

To	Stephen Goodworth
From	Oscar Palma Development Assessment Engineer
Date	05-May-2024
DA Number	DA/2304/2023
Proposed	Dwelling & Demolition of Existing Dwelling
Property	1 Ficus Avenue, AVOCA BEACH NSW 2251
Site Inspection	No
Site Inspection Date	N/A
Recommendation	Not supported

Introduction:

DA/2304/2023 has been submitted to Central Coast Council for demolition of the existing dwelling and construction of a new Residence with Garage at H1 Ficus Avenue, Avoca Beach, as shown on the drawings attached to the DA.

Access:

The land is levelled; construction of an internal driveway and parking areas should not be a problem.

Geotechnical:

Fortify Geotech Pty Ltd carried out a geotechnical site classification in accordance with AS2870 "Residential Slabs & Footings", for the proposed knockdown rebuild at 1 Ficus Avenue, Avoca Beach, NSW.

The site is bound by Ficus Avenue to the south, an existing residential development to the west, Avoca Lake to the north, and a park to the east. The site is currently occupied by a two-storey residential dwelling. Figure 1 shows the site locality.

The subsurface profile was logged in accordance with the Unified Soil Classification System (USCS) and the borehole logs prepared by dated 06/12/2023 was submitted to Central Coast Council.

The geotechnical recommendations included in Fortify Geotech Pty Ltd.

Report are to be considered/implemented in the same way as Central Coast Council's conditions.

Flooding:

As per Flood Information Certificate (provided by Council dated 16 September 2022), the subject property is defined as a Flood Control Lot, located within Flood Storage Area, and located within a High Hazard Area.

- The site is affected by control flooding levels. (Coastal Lagoons Catchment Overland Flood Study, 2020).
- The 1% AEP is RL 2.99m AHD and the FPL is RL 3.49m AHD.
- The subject property is defined as a Flood Control Lot, located within a Flooding Hydraulic Flood Storage Area, and within a High Hazard Area. The proposed dwelling being open underfloor bearers and joists type of structure helps to address this situation.
- The property is also located within a High Hazard Flooding Area.
- A revised Related Coastal Assessment Report prepared by Horton Coastal Engineering dated 06/12/2023 has been submitted to Central Coast Council. The engineering recommendations detailed in Horton's Coastal Report are to be considered/implemented in the same way as Central Coast Council's conditions.

Conclusion:

The Development Assessment Engineer recommends **not to support** this development. Even though the site property design in reference to flooding assessment is reasonable, the number of bedrooms shown is not reasonable for a domestic domiciliary property located at Avoca Beach (Recreational Area).

Also, the number of garages shown on the plans fall way short of the vehicular parking required for the proposed full occupancy off the residential dwelling. This situation will create a large on-street parking problem, possible tensions among Ficus Avenue occupants and potentially street traffic problems (caused by on street parking).

This proposed large development is not suitable for a location such as Ficus Avenue in Avoca Beach.

O. Palma
Development Assessment Engineer
05/05/2024

1.. PARAMETERS OF THIS CONSENT

2.. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

➤ Geotechnical Engineering Report:

A revised Geotechnical Report prepared by Fortify Geotech Pty Ltd 29/09/2023 was submitted to Central Coast Council on 06/12/2023.

The recommendations presented in this report are based on site preliminary observation. It is recommended that geotechnical inspections during construction be carried out to provide geotechnical recommendations on design of the footings of the proposed residence.

Furthermore, the Geotechnical Engineer must provide written certification to the Principal Certifier that all works have been carried out in accordance with the recommendations contained within the geotechnical report(s) on completion of the works.

The geotechnical recommendations detailed in Fortify Geotech Report are to be considered/implemented in the same way as Central Coast Council's conditions.

A revised Coastal Engineering Report prepared by Horton Coastal Engineering dated 06/12/2023 has been submitted to Central Coast Council.

- The engineering recommendations detailed in Horton's Coastal Report are to be considered/implemented in the same way as Central Coast Council's conditions. The minimum floor level of all habitable rooms in the development must be RL 3.49m AHD.
- Building materials used or located below RL 3.49m AHD must be of a type to withstand the effects of immersion.
- Non-habitable floor levels: Garage, shed, deck, laundry, or public toilets/sporting amenities to have floor levels at least 300mm preferably 500mm above surrounding finished ground level. Materials, equipment, or contents are not to be stored below the FPL unless they are flood compatible, capable of withstanding the forces of floodwater, debris and buoyancy, and not prone to causing pollution or an environment hazard. (Refer to DCP 2013 Part 6.7.7.6.4 B and to Brisbane Water Risk Management Plan).

Detailed design drawings and design reports acceptable to the Accredited Certifier must be included in the Construction Certificate documentation.

3.. PRIOR TO ISSUE OF ANY SUBDIVISION WORKS CERTIFICATE**4.. PRIOR TO COMMENCEMENT OF ANY WORKS****5.. DURING WORKS**

- 5.1. Submit to Council as the Roads Authority an application for a vehicle access crossing including payment of the application fee.
- a) Construction of earthworks including all excavation and filling including treatment of cut and fill surface for permanent stability. The earthworks design must be endorsed by a practising Geotechnical Engineer or be in accordance with the recommendation of a practising Geotechnical Engineer. The endorsement or recommendations must only be made following an investigation of the site by the practising Geotechnical Engineer.
 - b) Locate all electrical fixtures (including meter box) and/or gas outlets associated with the proposed works at a minimum height of RL 3.49m AHD. Alternatively, all electrical outlets and fixtures located between RL 3.49m AHD (minimum floor level) and RL 2.99m AHD (1% AEP flood level) can be protected by a residual current device (safety switch).

These details and any associated reports must be certified and included in the Construction Certificate.

6.. PRIOR TO ISSUE OF ANY OCCUPATION CERTIFICATEInternal engineering works

Complete the civil engineering works within the development site in accordance with the detailed design drawings and design reports plans within the Construction Certificate

7.. PRIOR TO ISSUE OF ANY SUBDIVISION CERTIFICATE**8.. ONGOING****ADVISORY NOTES**

Department of Planning and Environment



Contact: Department of Planning and Environment-Water
Phone: 1300081047
Email: waterlicensing.servicedesk@dpie.nsw.gov.au

Our ref: IDAS-2024-10500
Your ref: DA/2304/2023

10 September 2024

The General Manager
CENTRAL COAST COUNCIL
91-99 Mann Street, Gosford NSW 2250

Attention: Stephen Goodworth

Uploaded to the ePlanning Portal

Dear Sir/Madam

Re: IDAS-2024-10500 - Controlled Activity Approval Exemption
Dev Ref: DA/2304/2023
Description: Demolition of existing dwelling and erection of an elevated 2 storey house with rooftop terrace
Location: Lot 23, DP20094, 1 FICUS AVENUE AVOCA BEACH 2251

The Department of Planning and Environment-Water has reviewed documents for the above development application and considers that, for the purposes of the Water Management Act 2000 (WM Act), the proposed works are exempt from the need to obtain a controlled activity approval and no further assessment by this agency is necessary.

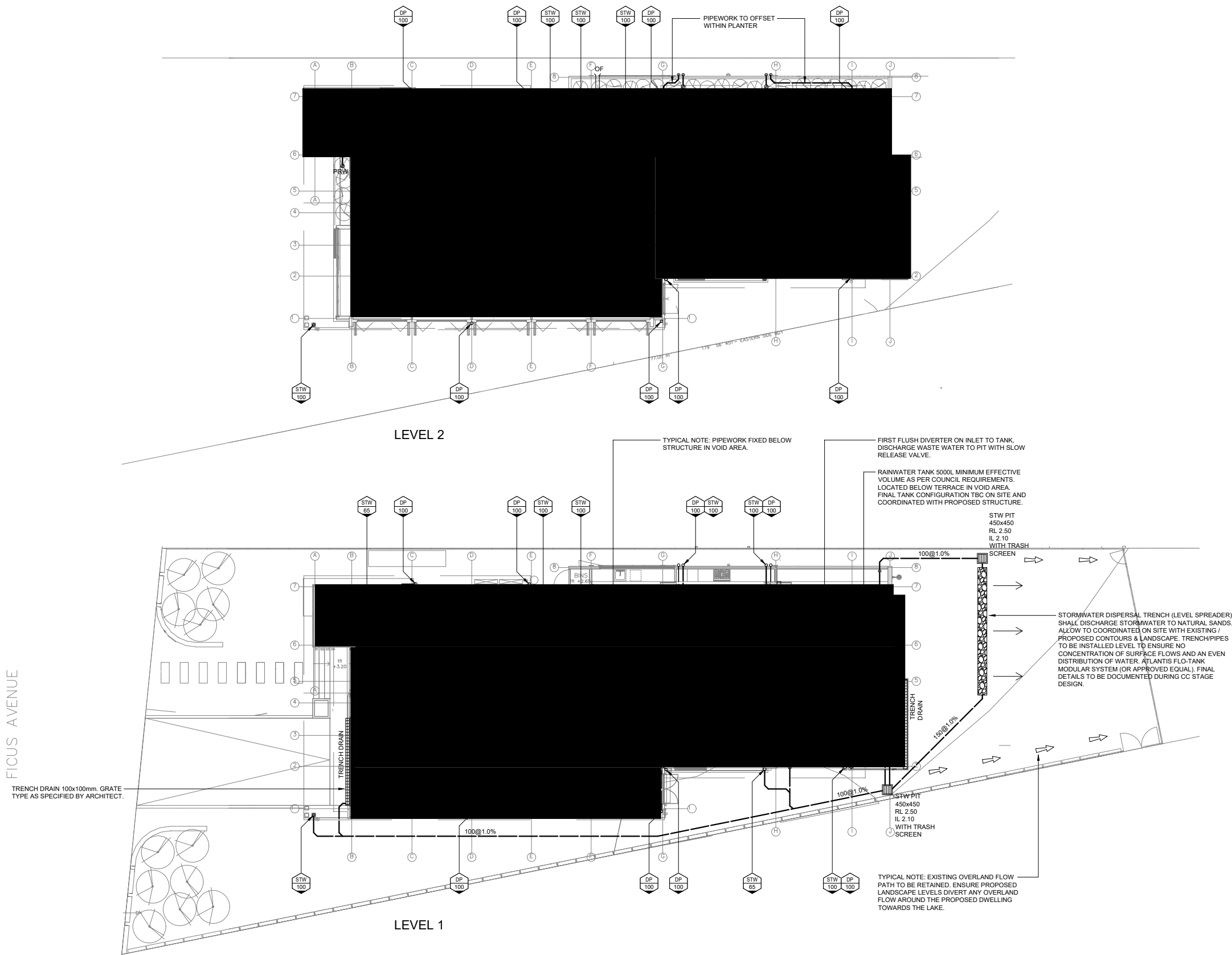
Exemption

Water Management (General) Regulation 2018 Schedule 4, 29 - Activities with respect to dwellings

If you have any questions regarding this correspondence, please use Water Assist to obtain further information or make an enquiry:
<https://www.dpie.nsw.gov.au/water/water-assist>

Yours Sincerely

For
Patrick Pahlow
Team Leader
Licensing and Approvals
Department of Planning and Environment-Water



The contractor is responsible for checking all dimensions and site conditions prior to commencing any work. Do not scale drawings, refer to figured dimensions only. Any discrepancies shall immediately be referred to ADCAR Consulting Pty Ltd for clarification.

All drawings, plans and specifications are the property of ADCAR Consulting Pty Ltd and must not be used, reproduced or copied wholly or in part without the written permission of ADCAR Consulting Pty Ltd.

STORMWATER DA DRAWING ONLY

- FINAL LOCATION OF ALL DOWNPIPES, PITS, RAINWATER OUTLETS, PIPEWORK AND SUBSOIL DRAINAGE TO BE CO-ORDINATED WITH ARCHITECTURAL, STRUCTURAL AND SERVICES DURING CONSTRUCTION STAGE.

LANDSCAPING DRAINAGE

- ALL LANDSCAPED AREAS LOCATED ABOVE CONCRETE SLABS TO BE EQUIPPED WITH WATERPROOFING MEMBRANE, DRAINAGE CELL AND GEOTEXTILE.
- FINAL LOCATION OF ALL DRAINAGE PITS, OUTLETS AND PIPEWORK IN LANDSCAPE AREAS SHALL BE CO-ORDINATED WITH THE LANDSCAPE ARCHITECT DURING CONSTRUCTION STAGE.

GEOTECHNICAL & STRUCTURAL ADVICE

- SUBSOIL UPLIFT PRESSURE, VERTICAL WALL DRAINAGE AND PIT CONSTRUCTION DETAILS TO BE CO-ORDINATED WITH STRUCTURAL AND GEOTECHNICAL ENGINEERS DURING CONSTRUCTION STAGE.

EXTERNAL LEVELS

- EXTERNAL SURFACE LEVELS SHALL HAVE STEP DOWN AND ADEQUATE SLOPE AS PER NCC 2019 BCA VOLUME TWO PART 3.1.3 DRAINAGE REQUIREMENTS.
- THE EXTERNAL FINISHED SURFACE MUST BE DRAINED TO MOVE SURFACE WATER AWAY FROM THE BUILDING.

REV	DATE	DESCRIPTION
D	01.07.2024	DA ISSUE
C	27.06.2024	DA ISSUE
B	24.08.2023	DA ISSUE
A	16.08.2023	PRELIMINARY ISSUE

STATUS

DA ISSUE

CLIENT

MARGARET KIRBY

ARCHITECT

LORNA SINAC DESIGN

HYDRAULIC CONSULTANT

ADCAR CONSULTING
PO Box 204 Avoca Beach NSW 2251
Tel 0404 488 695
Email info@adcar.com.au
Web www.adcar.com.au
Hydraulic & Fire Consultants
ABN 12 152 581 587

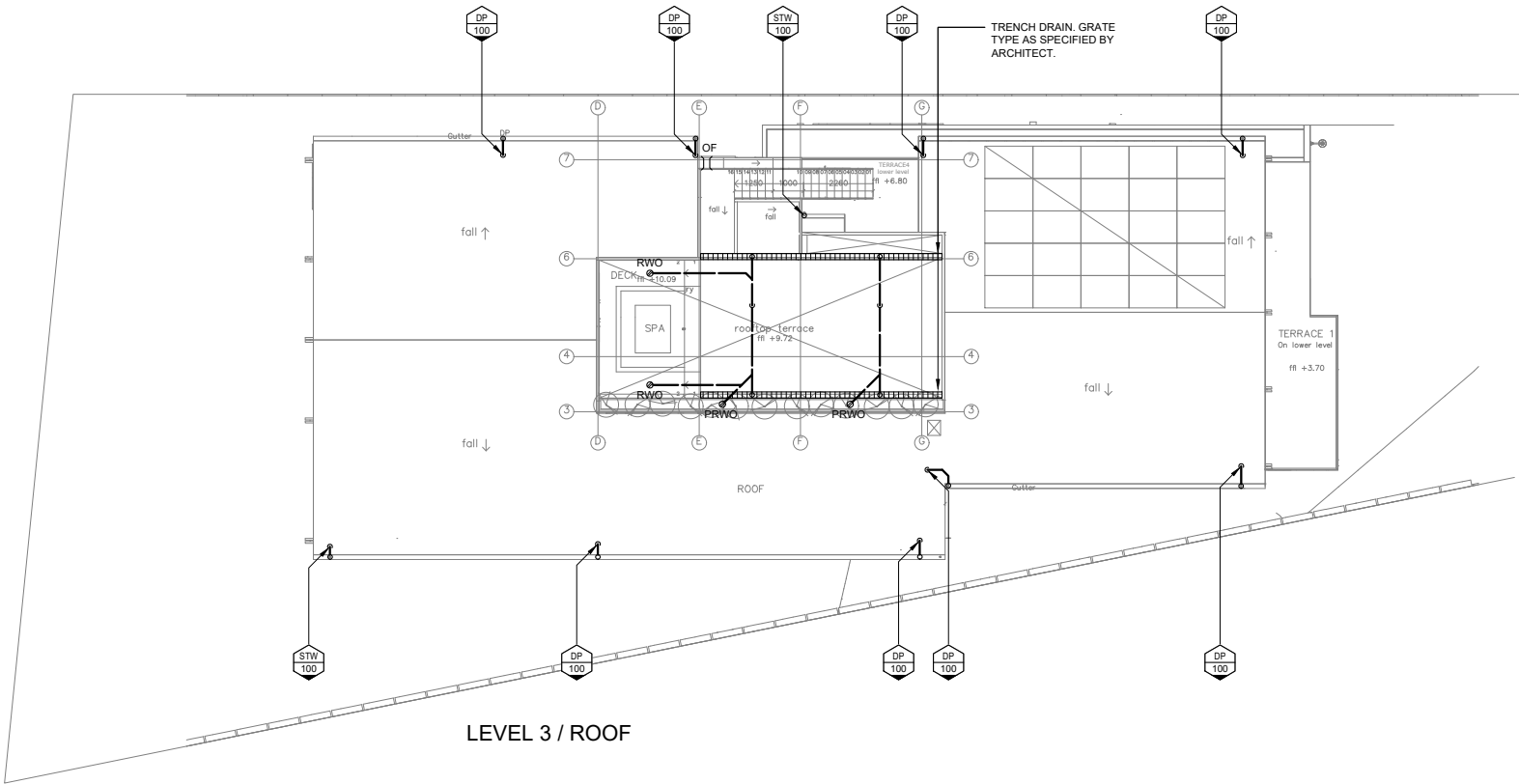
PROJECT

RESIDENTIAL DWELLING
1 FICUS AVE
AVOCA BEACH, NSW

DRAWING TITLE

STORMWATER SERVICES
LEVEL 1 & LEVEL 2

DRAWN	ENGINEER	CHECKED	SCALE
PB	PC	MA	1:100@A1 1:200@A3
PROJECT No.	DRAWING No.	REVISION	
P2023-140	SW03	D	



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DA ISSUE

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ARCHITECT

LORNA SINAC DESIGN

HYDRAULIC CONSULTANT

ADCAR CONSULTING
PO Box 204 Avoca Beach NSW 2251
Tel 0404 438 695
Email info@adcar.com.au
Web www.adcar.com.au
Hydraulic & Fire Consultants
ABN 12 152 581 587

PROJECT

RESIDENTIAL DWELLING
1 FICUS AVE
AVOCA BEACH, NSW

DRAWING TITLE

STORMWATER SERVICES
LEVEL 3 / ROOF PLAN

	DRAWN	ENGINEER	CHECKED	SCALE
	PB	PC	MA	1:100@A1 1:200@A3
PROJECT No.		DRAWING No.		REVISION
P2023-140		SW04		D

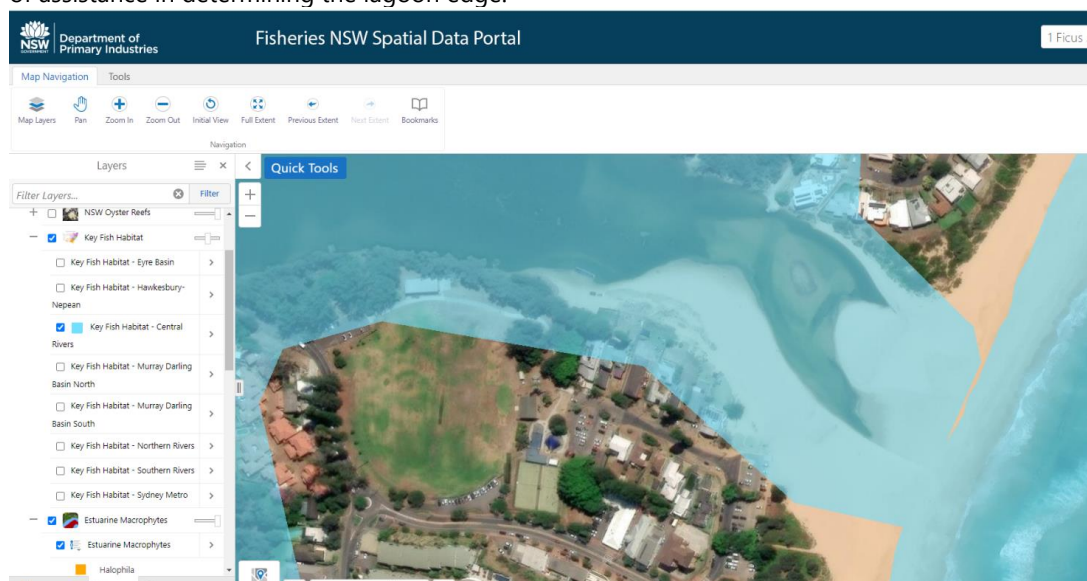
Comments from Environment

To	Stephen Goodworth
From	Danielle Allen Ecologist
Date	31-Oct-2024
DA Number	DA/2304/2023
Proposed	Dwelling & Demolition of Existing Dwelling
Property	1 Ficus Avenue, AVOCA BEACH NSW 2251
Site Inspection	Yes
Site Inspection Date	24 th October 2024
Recommendation	Not supported/Insufficient Information

Comments

The application was referred to Ecology for "comments in relation to the proposed works within the Avoca lagoon".

The site is outside the mapped SEPP Coastal Wetland and associated buffer. The NSW DPI Key Fish Habitat map for Avoca Lagoon extends well into these developed properties, so not of assistance in determining the lagoon edge:



Near Map images show that sometimes the water level close to the existing grass and fence.

The water level at the site on the date of site inspection (24th October 2024) is shown in the photograph below. Councils "Live Water Level Monitoring" gave the water level in the lagoon as 1.855m, with the trigger for opening being 2.09m AHD.



Defining the edge of the lagoon at this location is more related to coastal processes than it is about ecological communities, particularly given the native vegetation and landforms in the area of the site have been highly modified. My understanding is that Councils Environmental Management Unit has not provided definitive advice on where the edge of the lagoon should be measured. NSW DPI Water have also advised the lagoon is not regulated under the WM Act. Toan Dam | Senior Coastal Planning Officer has provided comment and not supported the application. His comments (21-Feb-2024) include:

As the subject property located at the entrance of Avoca Lagoon, it's subject to both coastal hazards and catchment floods, including:

- *Entrance instability*
- *Tidal and ocean inundation*
- *Erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters.*

The species previously recommended by Councils Ecologist (CM D16474862– and included below) are suitable for planting on higher on the foreshore, however these species would not all be suitable for areas that are regularly inundated, or may be subject to high water velocities when the lagoon is open. The placement of fencing in this area would be of more concern than planting, particularly if fencing ends up washing away and causing entanglement issues for marine or estuarine wildlife.

Councils Estuary Management Team may be better placed than Ecology to provide any further comment on this application, particularly in relation to where the "edge" of the lagoon could be defined and what development within that area is suitable.

Coastal Foredune Wattle Scrub Species:Tree Species

Banksia integrifolia (Coastal Banksia)

Banksia serrata (Saw Banksia)

Cupaniopsis anacardioides (Tuckeroo)

Shrubs

Acacia sophorae (Coastal Wattle)

Breynia oblongifolia (Coffee Bush)

Scaevola calendulacea (Dune Fan Flower)

Grasses and Grass like

Ficinia nodosa (Club Rush)

Lomandra longifolia (Spiny Headed Mat Rush)

Imperata cylindrica (Bladey Grass)

Spinifex sericeus (Beach Spinifex)

Sporobolus virginicus (Saltwater Couch)

Forbs

Carpobrotus glaucescens (Pig Face)

Tetragonia tetragonioides (New Zealand Spinach)

Apium prostratum (Sea Celery)

Senecio spathulatus (Coast Groundsel – yellow flower)

Dianella caerulea (Blue Flax Lily)

Pelargonium australe (Native Storksbill)

1.. PARAMETERS OF THIS CONSENT**2.. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE****3.. PRIOR TO ISSUE OF ANY SUBDIVISION WORKS CERTIFICATE****4.. PRIOR TO COMMENCEMENT OF ANY WORKS****5.. DURING WORKS****6.. PRIOR TO ISSUE OF ANY OCCUPATION CERTIFICATE****7.. PRIOR TO ISSUE OF ANY SUBDIVISION CERTIFICATE****8.. ONGOING****ADVISORY NOTES**

Item No: 4.1
Title: Operation of the Local Planning Panel in 2025
Department: Environment and Planning

Central Coast
Local Planning Panel

28 November 2024 Local Planning Panel Meeting

Reference: F2020/02502 - D16487583
Author: Andrew Roach, Unit Manager. Development Assessment
Unit Manager: Andrew Roach, Unit Manager. Development Assessment

Recommendation

That the Central Coast Local Planning Panel note the information in the report and adopt the proposed schedule of meeting dates for 2024, noting that additional meetings can be called by the Chair as required, depending on workload and application volume.

Summary of 2024 Local Planning Panel Activity

During the 2024 calendar year, 13 meetings of the Local planning Panel were scheduled to accommodate the anticipated volume of applications required to be reported to the Panel. Additional meetings were called as required, and a total of 16 Local Planning Panel meetings have been held (January to end November, including the meeting of 28 November 2024).

The following details the outcomes of matters referred to the Panel thus far in 2024:

- 38 Development Applications considered and determined by the Panel from January 2024 until end November 2024.
- 2 Planning Proposals were considered by the Panel for advice (in the period from January to November).

At the time of writing of this report there is a further meeting scheduled for 12 December 2024, which will bring the total meetings held in 2024 to 17. There are currently 5 Development Applications tentatively scheduled to be considered by the Panel at the remaining meeting on 12 December.

Meeting Format

Since the inception of the Central Coast Local Planning Panel in 2020, all Central Coast Local Planning Panel meetings (apart from one meeting in 2023) have been held remotely (online). Feedback from the Panel, Council staff and applicants and others who have attended the remote meetings, has been positive. Remote meetings have continued to provide greater flexibility, including the option for applicants and others to attend the meeting during business hours and at various location within and outside of the Local Government area, including having specialist consultants 'call in' to the meeting from across Australia.

During 2024, no meetings were held 'in person' at Central Coast Council Administration Centre at Wyong.

Whilst the legislative framework that permitted online meetings was initially a temporary measure implemented by NSW Government as a result of the COVID-19 pandemic, legislative amendments during 2022 mean that Panels can hold their meetings entirely online (something that was not permitted prior to legislative interventions that occurred during the pandemic). For clarity, Schedule 2 of the *Environmental Planning and Assessment Act 1979* (Section 25(4)) states:

'A planning body may carry out any of the planning body's business at a meeting held wholly or partly by audio link, audio visual link or other electronic means, but only if a member who speaks on a matter before the meeting or the part of the meeting can be heard by the other members.'

The use of video-conference software (Zoom or similar) helps to facilitate compliance with legislative requirements including the requirement that meetings must be recorded and made publicly available (on the Council's website or website of the Planning Panel) in accordance with Section 25(3) of Schedule 2 of the Act.

The Panel may choose to commence face-to-face meetings (in lieu of the current practice of utilising video conferencing). If such a change was to be made, meetings would need to be accommodated at Council's Administration Centre in Wyong or another suitable location, noting that meetings will still need to be held in a location that provides for recording and live streaming.

Note that it remains open to the Chair to elect an 'in person' meeting at any time.

Meeting Schedule

Council staff have reviewed the schedule structure and propose the following:

- Generally, one meeting per month, commencing in February 2025 (noting previous practice not to have Panel meetings in January) with an additional meeting scheduled in June (end of financial year) and at the end of the calendar year (November or

4.1 Operation of the Local Planning Panel in 2025 (cont'd)

December) to allow for anticipated demand during those periods.

- Meetings to be held on a Thursday as per previous schedule arrangements, with Panel site inspections and remote site discussions (as required) on the Tuesday prior to the meeting (or as otherwise arranged in conjunction with the meeting Chair).
- Meetings online via videoconference, as has been current practice.
- The Chair to call 'in person' meetings in any particular circumstance that warrant them.
- Additional public meetings may be held where there is a need to avoid unreasonable delay in the determination of applications. These meetings would be held on a date mutually agreed by Council staff and the Panel Chair.

Council staff have reviewed the schedule structure and propose a draft meeting schedule for 2025 as follows:

<i>Date</i>	<i>Month</i>
20	February
13	March
10	April
15	May
5	June
19	June
17	July
14	August
18	September
16	October
6	November
27	November
11	December

Panel Member Terms of Appointment

It is noted that no Panel member appointments are due to expire throughout 2025.

Attachments

Nil.

Item No: 4.2
Title: DA/1355/2023 - 76 Tramway Road, North Avoca -
Alterations and additions to an existing residential
dwelling
Department: Environment and Planning

Central Coast
Local Planning Panel

28 November 2024 Local Planning Panel Meeting

Reference: DA/1355/2023 - D16499216
Author: Alexandra Allouche, Senior Development Planner Employment and Urban Release
Section Manager: Emily Goodworth, Section Manager Employment and Urban Release
Unit Manager: Andrew Roach, Unit Manager Development Assessment

Summary

The subject development application seeks consent for the alterations and addition to No. 76 Tramway Road, North Avoca, NSW, 2260. The application has been assessed having regard to the matters for consideration detailed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* and other statutory requirements.

The application is referred to the Local Planning Panel in accordance with the Ministerial Direction dated 6 March 2024 as:

- The application seeks a variation greater than 10%, being 24.71%, to the maximum permissible height limit (8.5m) under Clause 4.3 of the Central Coast Local Environmental Plan 2922,

The application is recommended for approval, subject to conditions.

Applicant	H K Hillis
Owner	H K Hillis and D J Koerber
Application No	DA/1355/2023
Description of Land	Lot 3471 DP 520890 No. 76 Tramway Road, North Avoca
Proposed Development	Alterations and additions to an existing residential dwelling
Site Area	550.00 m ²
Zoning	R2 – Low Density Residential
Existing Use	Residential
Employment Generation	No
Estimated Value	\$980,000

Recommendation

- 1** *That the Local Planning Panel grant consent to DA/1355/2023 for No. 76 Tramway Road, North Avoca, for the alterations and additions to the existing residential dwelling subject to the conditions detailed in the schedule attached to the report and having regard to the matters for consideration detailed in Section 4.15 of the Environmental Planning and Assessment Act 1979.*
- 2** *The Local Planning Panel agrees that the applicant's clause 4.6 written request demonstrates that compliance with the height of building development standard is unnecessary in the circumstances of the case, that compliance with the height standard would be unreasonable in the circumstances of the case and that there are sufficient environmental planning grounds to justify contravening that development standard.*

Further, the Local Planning Panel considers that the proposed development will be in the public interest because it is consistent with the objectives of the development standard and the objectives for development within the R2 – Low Density Residential zone in which the development is proposed to be carried out.

Key Issues

- Clause 4.3 – Building Height
- Clause 4.6 – Exceptions to Development Standards
- Stormwater and drainage, connection to easement

Precis:

Proposed Development	Alterations and additions to the existing residential dwelling.
Permissibility and Zoning	R2 – Low Density Residential. The proposed development constitutes permissible development within the aforementioned zone.
Relevant Legislation	<ul style="list-style-type: none">• <i>Rural Fires Act 1997</i>• <i>State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004</i>• <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>• <i>Central Coast Local Environmental Plan 2022</i>
Current Use	Residential
Integrated Development	No
Submissions	Nil

Variations to Policies

Clause	Clause 4.3 – Height of Buildings
Standard	8.5m
LEP/DCP	Central Coast Local Environmental Plan, 2022
Departure basis	2.1m variation, equating to 24.7%

The Site

The site, located on the southern side of Tramway Road, is an irregular shaped lot with a primary frontage of 20.905m, total site area of 550sqm and formally identified as Lot 3471 in DP 520890. The site is currently occupied by a three-storey rendered dwelling house with a metal roof, sloping southward heavily vegetated towards The Arena.

There is an existing Council easement to drain water down the side boundary. Council has no drainage pipes in this easement. Council records indicate the site is not affected by 1% AEP flooding or minimum floor level requirements.



Figure 1. Aerial of subject site.

Surrounding development comprises of detached residential dwellings in all directions, Avoca beach directly south, Erina to the north-west and Terrigal town centre to the north.

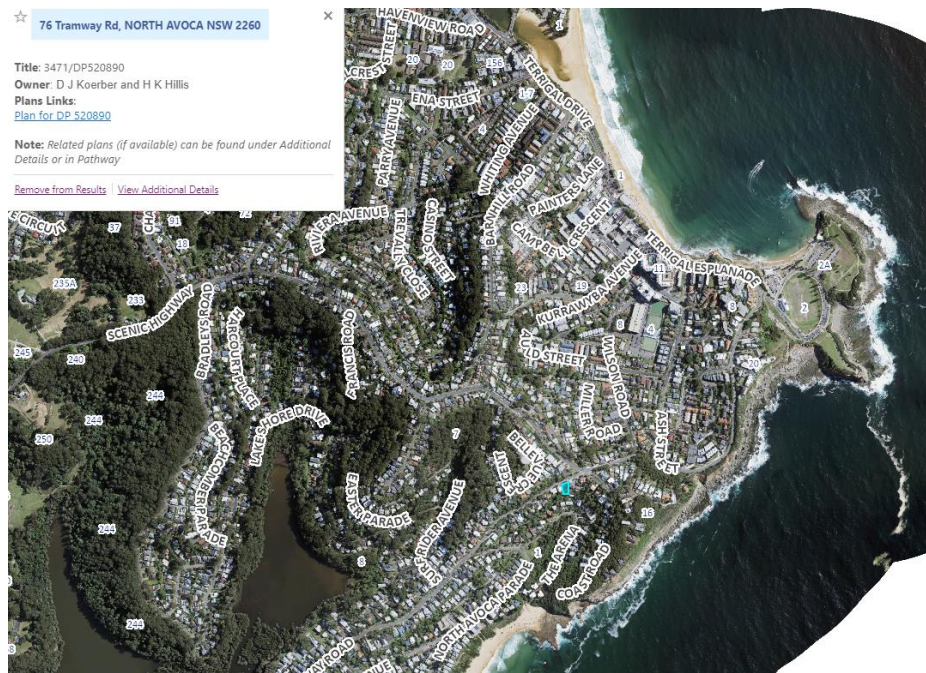


Figure 2. Location Plan



Figure 3. The subject site, No. 76 Tramway Road.



Figure 4. North western elevation of subject dwelling.



Figure 5. Rear of subject site and adjoining dwelling, looking west.



Figure 6. Eastern side boundary of subject dwelling with adjoining dwelling, looking north.



Figure 7. Front terrace and garage, looking east.



Figure 8. Subfloor area.



Figure 9. Views looking south.



Figure 10. Views looking south.

The Proposed Development

The proposed development seeks consent for the alterations and additions to the existing dwelling to reconfigure the internal layout, creating a four bedroom plus study. Reference is made to the Architectural Plans, at **Attachment 1**. Specifically, the proposed development will comprise of the following:

Roof	A new metal roof to the north-western portion of the roof.
	New metal roof sheeting to the remainder of the roof.
	A new operable roof to the rear deck.
Lower Level	Retain the existing undercroft area.
	Installation of new rainwater tanks to the undercroft, a new storage room, terrace, deck, and external staircase. Note: The Applicant advised via email on 7 November 2024 that they are no longer seeking consent for the spa component and this portion of the development is omitted.
Level 1	Convert the existing living room to a pool room with bathroom and wet bar.
	Demolish the existing laundry and reconfigure the existing bedrooms, to create bedrooms 2 and 3.
	Demolish the existing staircase and construct a new staircase to access Level 2.

	Demolish the existing bathroom and construct a new bathroom, hallway linen, cupboard and study.
	Demolish the rear balcony and external staircase and construct new balconies.
	Installation of new windows and doors.
Level 2	Infill the west facing window to the retained living room.
	Refurbish the existing kitchen and dining room.
	Extend the dwelling to the north and west to create a hallway, pantry/laundry and rumpus room.
	New decking to the retained front terrace.
	Demolish the existing staircase and construct a new staircase to access Level 1.
	Demolish the internal walls to the bedrooms and bathrooms and extend the dwelling to the north, to create 1 bedroom, bathroom, WIR, ensuite and rumpus room.
	Demolish the rear balcony and external staircase and construct new balconies.
Garage floor	Retain the existing double garage.
	Infill the stair void and extend south to create a study.
	A new porch, entry and skillion roof with highlight windows.

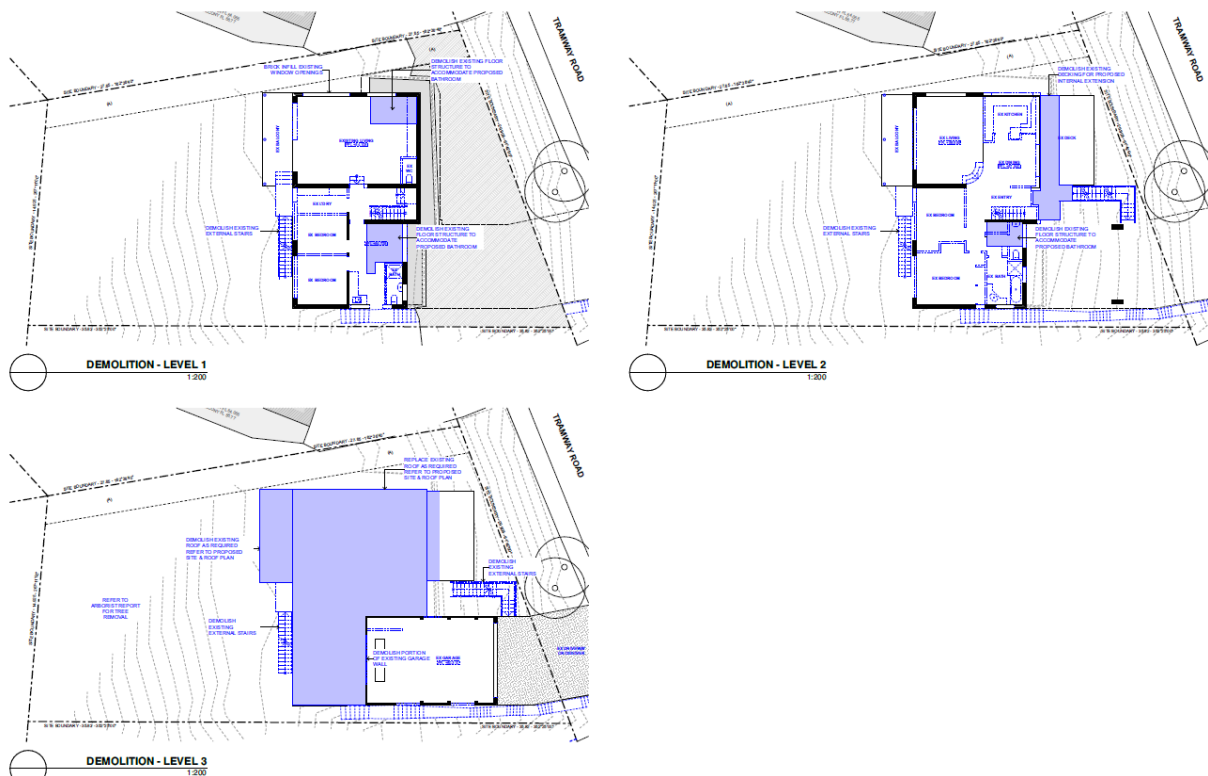


Figure 11. Proposed Demolition Plan.

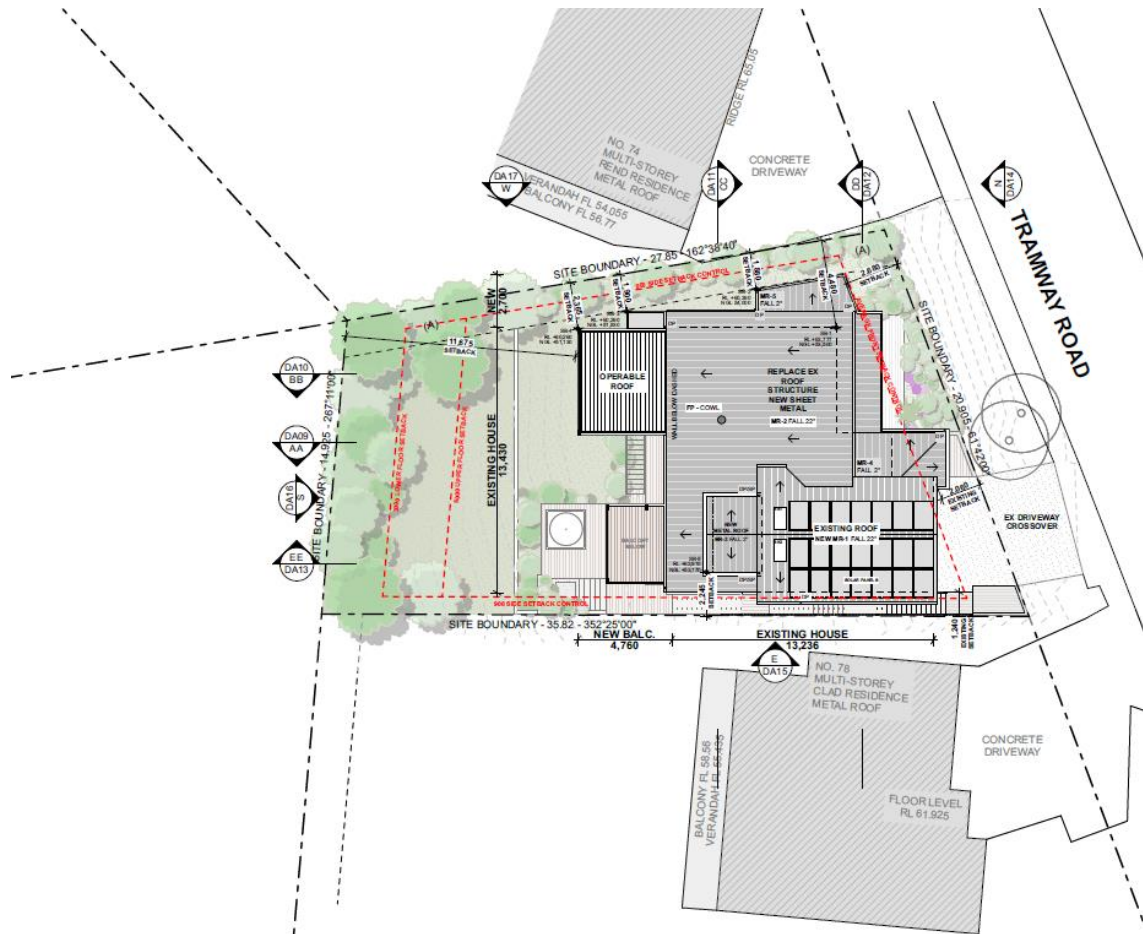


Figure 12. Proposed Site Plan.

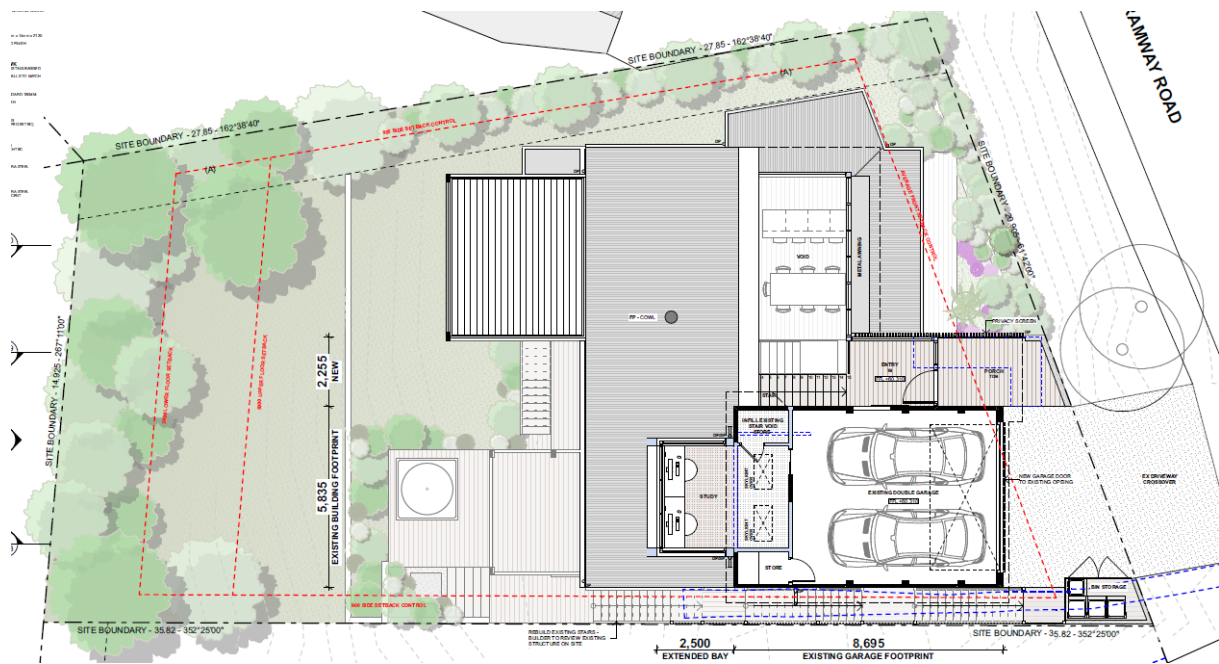


Figure 13. Proposed Garage Floor Plan.

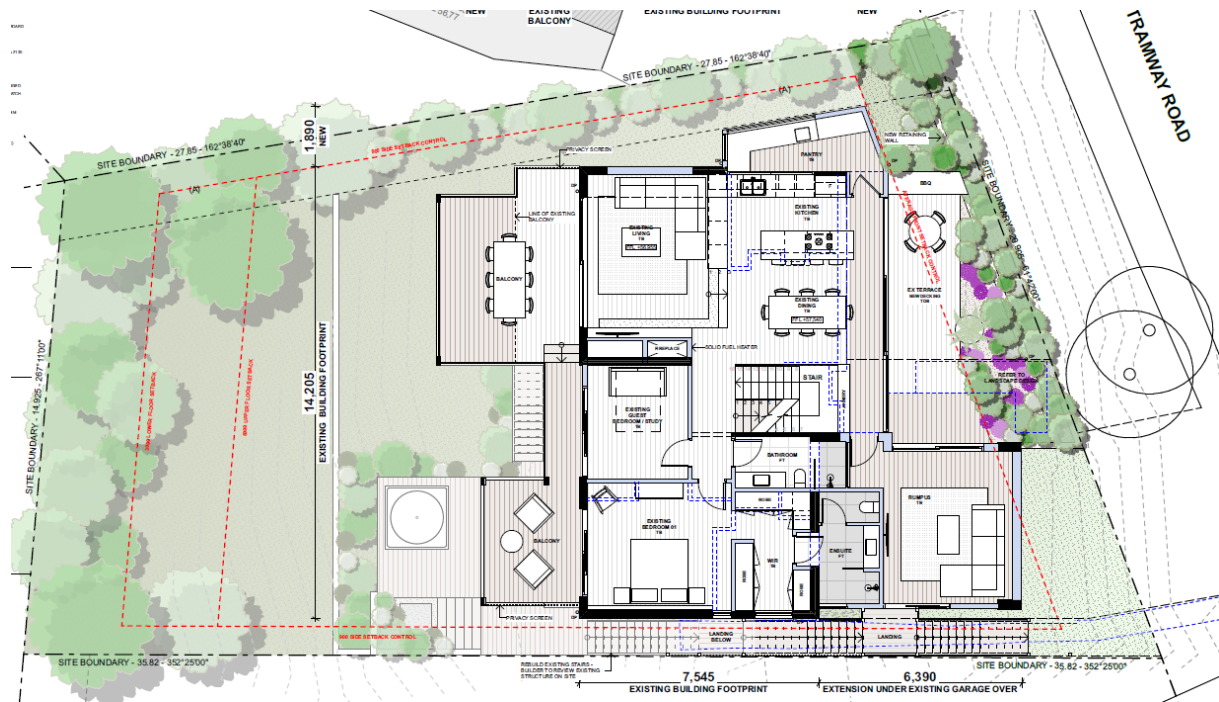
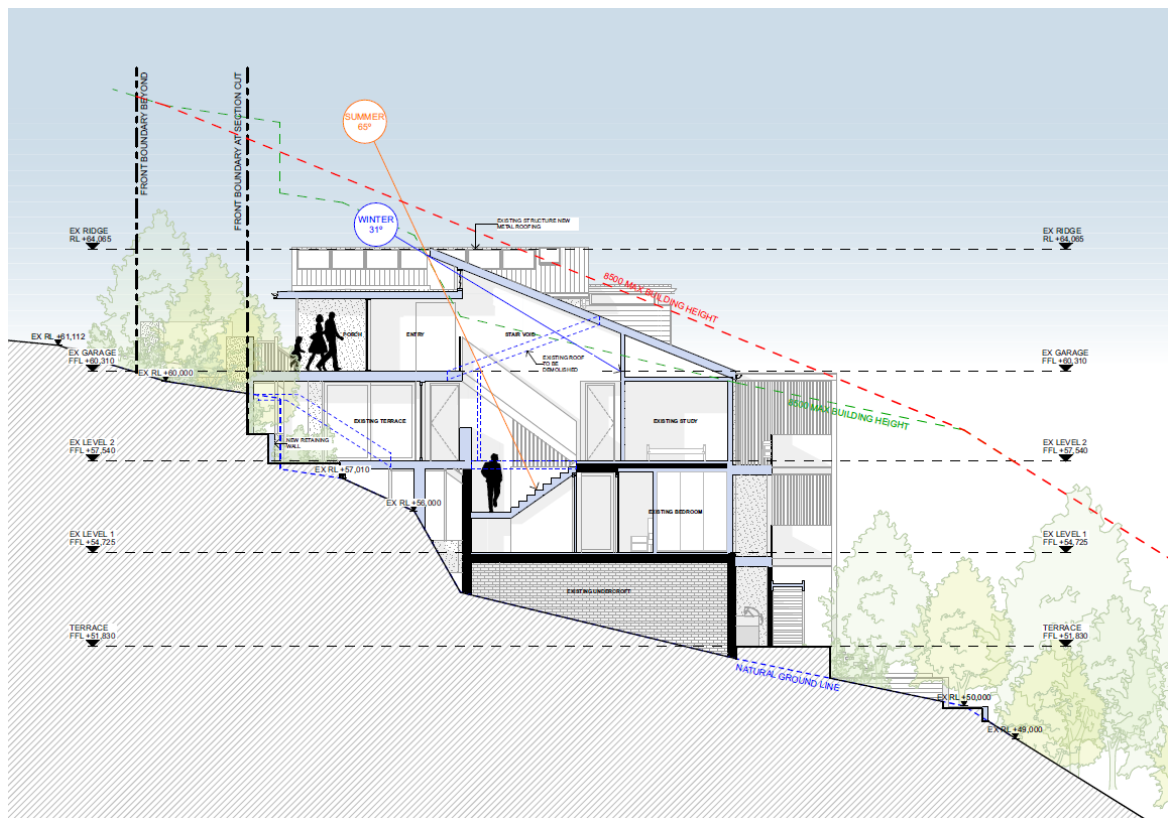
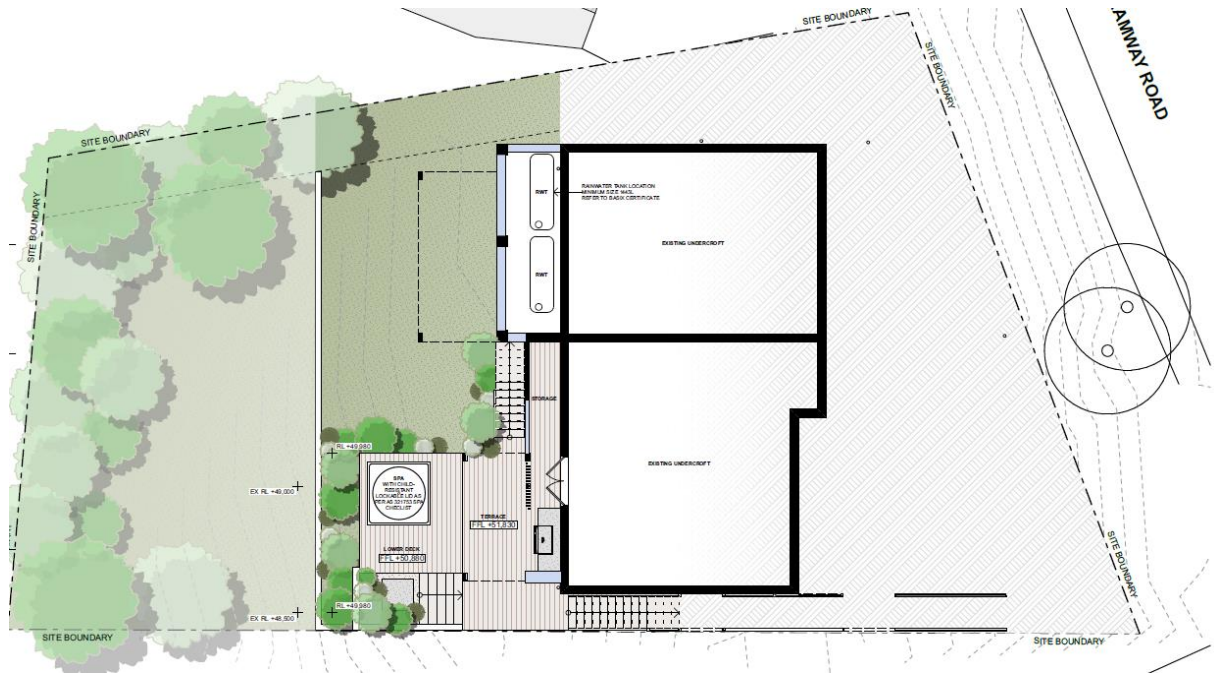


Figure 14. Proposed Level 2 Plan.



Figure 15. Proposed Level 1 Plan.



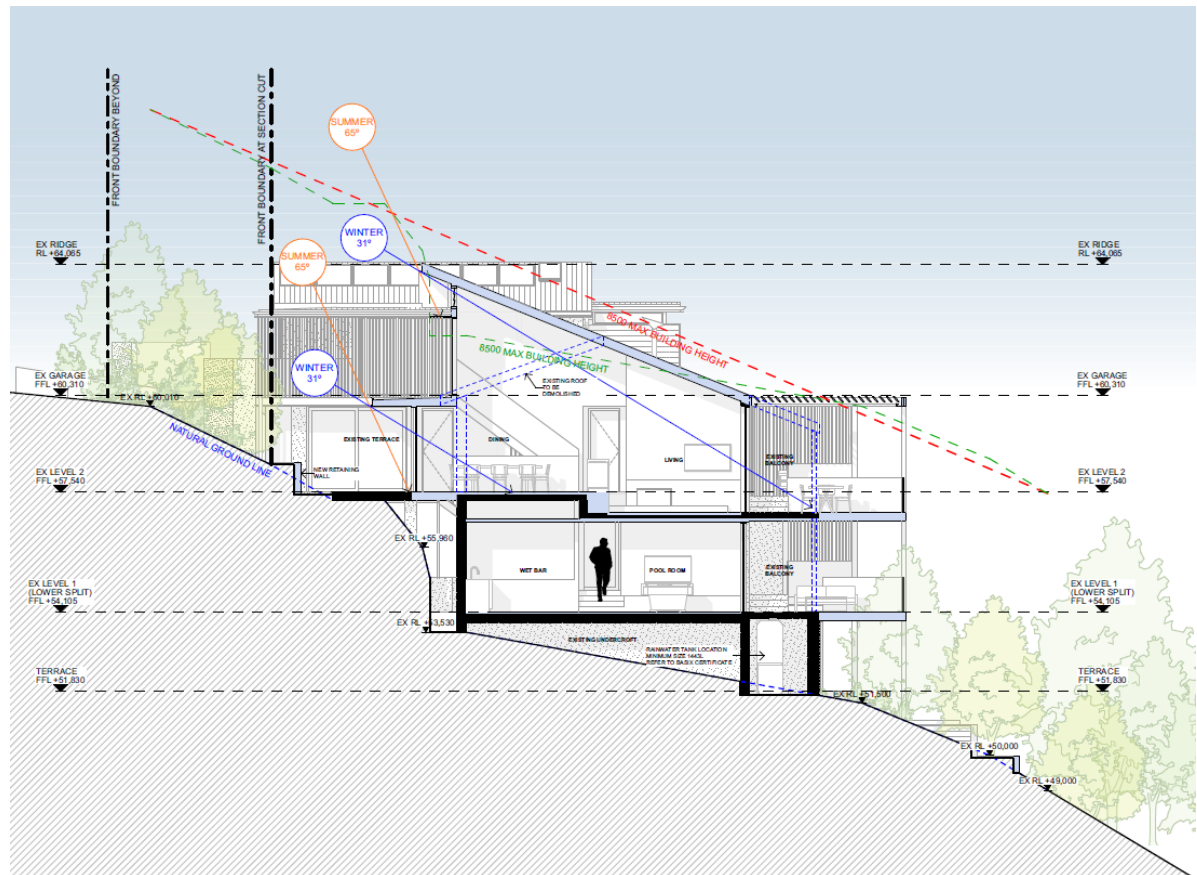


Figure 18. Proposed Section B-B.

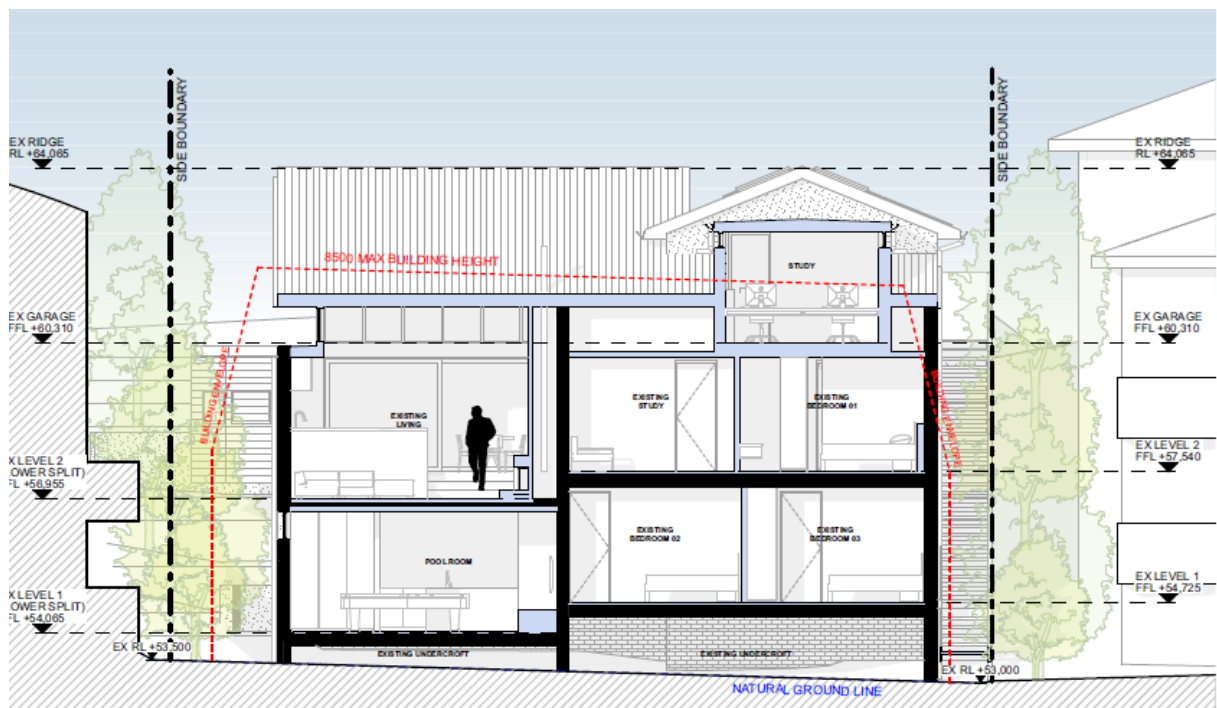


Figure 19. Proposed Section C-C.

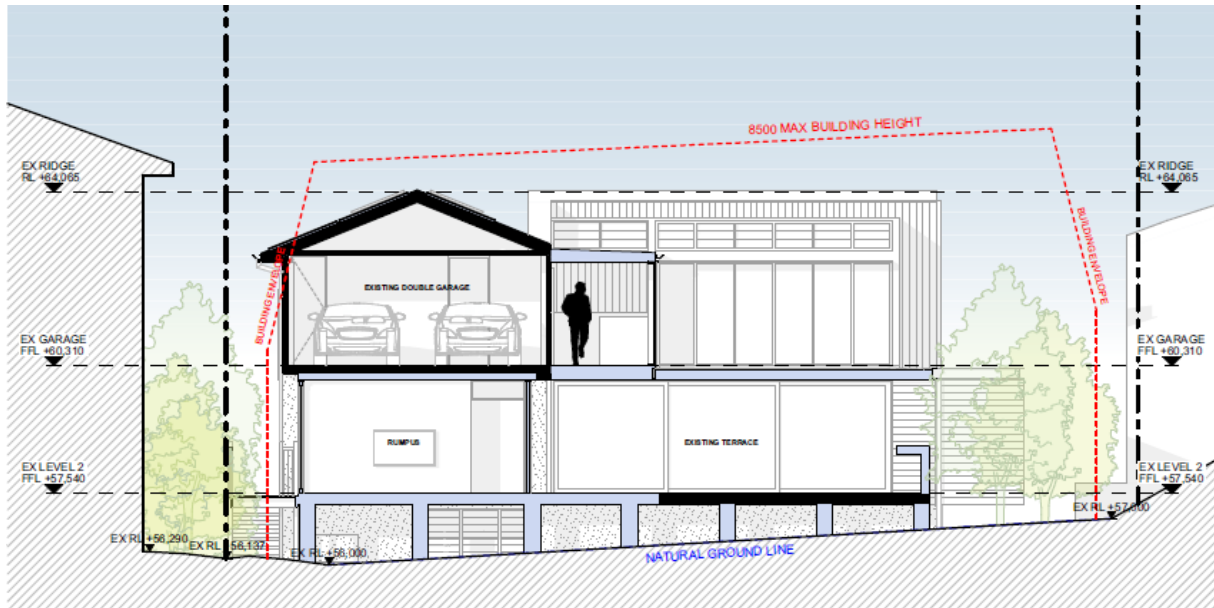


Figure 20. Proposed Section D-D.

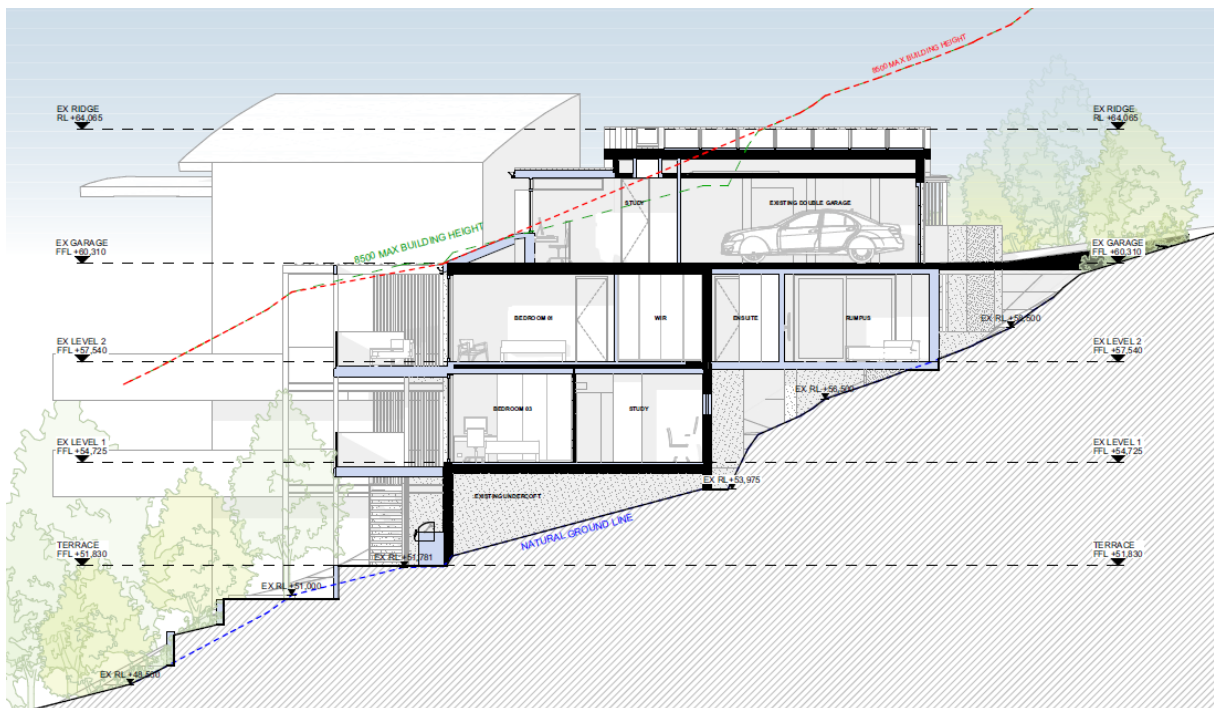


Figure 21. Proposed Section E-E.

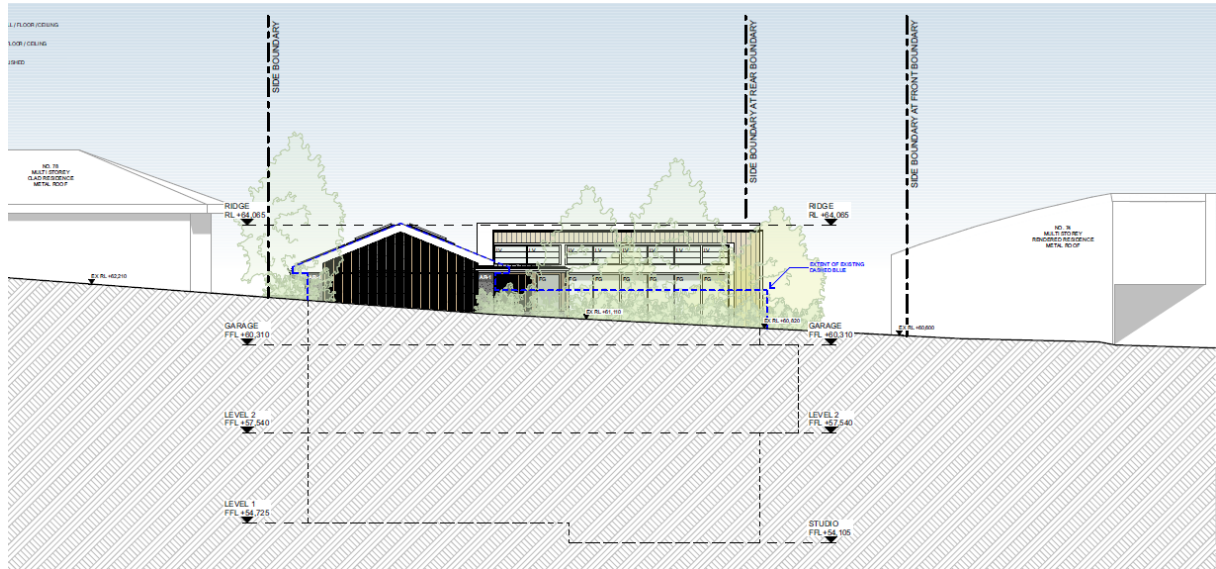


Figure 22. Northern Elevation.

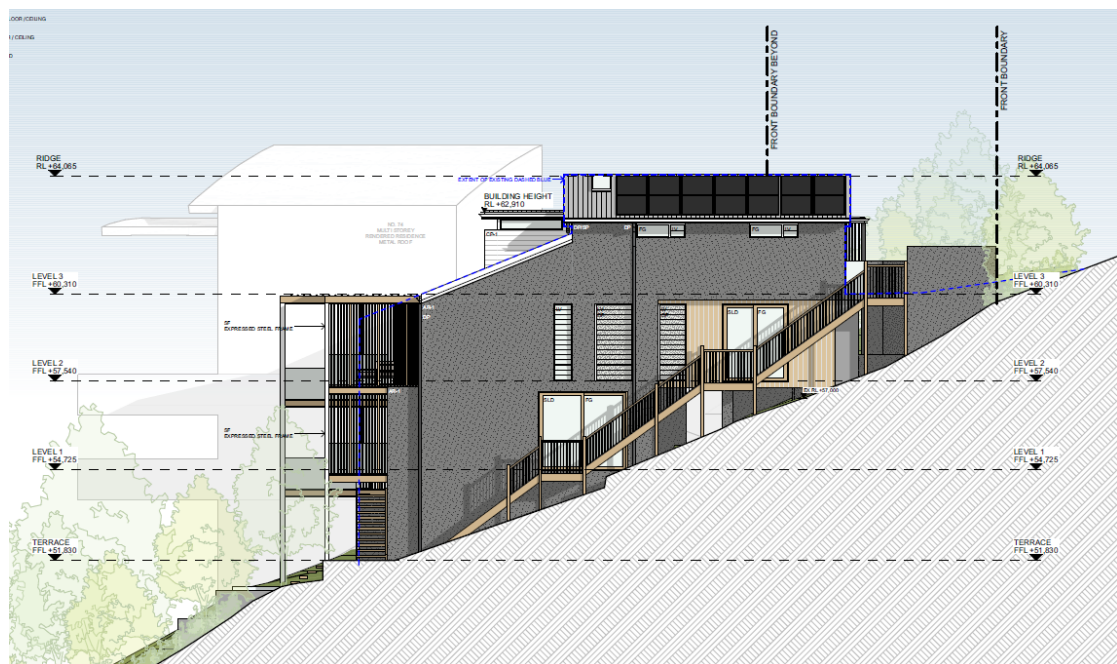


Figure 23. Eastern Elevation.

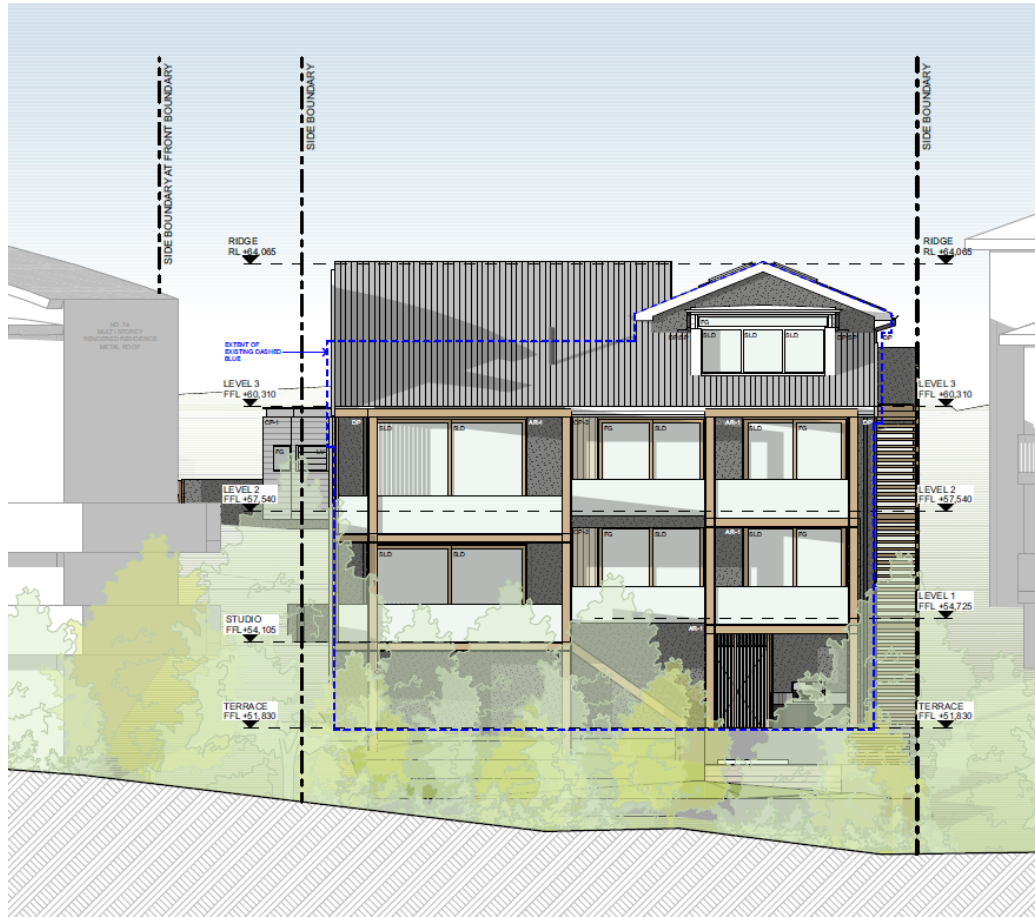


Figure 24. Southern Elevation.

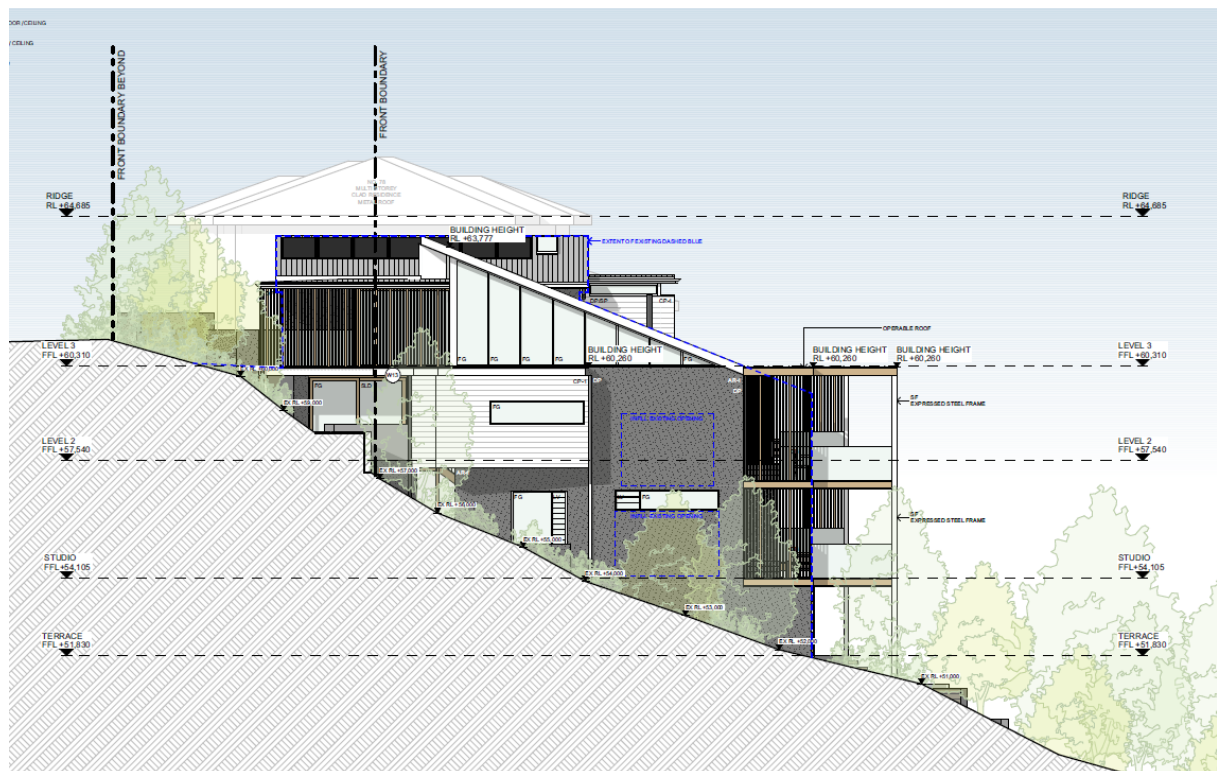


Figure 25. Western Elevation.

Summary

Having regard for the matters for consideration detailed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* and other statutory requirements, Council's policies and Section 10.7 Certificate details, the assessment has identified the following key issues, which are elaborated upon for Council's information.

Site History

The following applications have previously been considered in relation to the subject site:

- Building Information Certificate BC/3105/2001 refused on 14 March 2001.
- Plumbing and Drainage PD/44314/2007 completed on 1 February 2007.

Internal Consultation

Tree

The application was referred to Council's Tree Assessment Officer who noted that several planted ornamentals located within the primary setback may require removal. These trees are relatively small and mostly a result of a lightly maintained yard.

Lopped Gum trees located within the road reserve will not be impacted by the works, and nor will existing trees located near the property boundary.

The application is supported, subject to recommended conditions.

Water Assessment

The application was referred to Council's Technical Officer Water Assessment who advised that water and sewer is available to the land and sewer relining is not required. The applicant will be required to obtain a Section 307 Certificate of Compliance under the *Water Management Act 2000*.

The application is supported, subject to recommended conditions.

Infrastructure and Access Crossing Officer

The application was referred to Council's Infrastructure and Access Crossing Officer who advised that as no works will be undertaken to the existing vehicle crossing on the road reserve, no referral is required.

The applicant confirmed this via email on 5 November 2024.

Development Engineer

The application and revised stormwater plans prepared by Cubo Consulting were referred to Council's Development Assessment Engineer for review and comment. The development proposes to direct stormwater to an existing system in Lot 349, DP16963 via 10000L rainwater tanks. The connection is through an interallotment system burdening Lot 3472, DP520890.

DRAINS calculations have been provided; however, it is unclear from the labelling the location of the nodes in relation to the proposed system.

The proposed system is supported with owner consent (from Lot 3472, DP520890) and the development limits the total Post Development Discharge Rates to 25l/s during 1% AEP events.

The application is supported, subject to recommended conditions.

Ecologically Sustainable Principles

The proposal has been assessed having regard to ecologically sustainable development principles and is consistent with the principles.

The proposed development is considered to incorporate satisfactory stormwater, drainage and erosion control and the retention of vegetation where possible and is unlikely to have any significant adverse impacts on the environment and will not decrease environmental quality for future generations. The proposal does not result in the disturbance of any endangered flora or fauna habitats and is unlikely to significantly affect fluvial environments.

Climate Change

The potential impacts of climate change on the proposed development have been considered by Council as part of its assessment of the application.

This assessment has included consideration of such matters as potential rise in sea level; potential for more intense and/or frequent extreme weather conditions including storm events, bushfires, drought, flood and coastal erosion; as well as how the proposed development may cope / combat / withstand these potential impacts and is demonstrated to be acceptable in this instance.

Environmental Planning Instruments, Proposed Instrument, Development Control Plan, Planning Agreements and the Regulations

The relevant environmental planning instruments, proposed instruments, development control plans, planning agreements and the matters for consideration under the Regulation are considered below.

a) **SECTION 4.15(1)(a)(i) – PROVISIONS OF ENVIRONMENTAL PLANNING INSTRUMENTS**

The following pieces of legislation are relevant to this application:

- *Rural Fires Act 1997*
- *State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004*
- *State Environmental Planning Policy (Resilience and Hazards) 2021*
- *Central Coast Local Environmental Plan 2022*

Consideration of the relevant SEPPs is further outlined below.

Rural Fires Act 1997

The subject site is identified as bushfire prone land in accordance with the Central Coast Council Bush Fire Prone Land Map as shown below. The subject development is not a listed *Special Fire Protection Purpose* and is not classified as integrated development under Section 4.46 of the *Environmental Planning and Assessment Act 1979* and therefore does not require a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*.



Figure 26. Bushfire Prone Land Map.

In accordance with the provisions of Section 4.14 of the *Environmental Planning and Assessment Act 1979*, consent cannot be granted unless the consent authority is satisfied the development conforms to the relevant specification and requirements of Planning for Bushfire Protection 2019 (PBP) (s.4.14(1)(a)) or alternatively, that certification stating the

development conforms to the relevant specifications and requirements from an appropriately qualified person is provided to the consent authority (s.4.14(1)(b)).

Accordingly, the application is accompanied by a *Bushfire Assessment Report*, prepared by David Peterson dated 2 April 2023 (**Attachment 2**). The Report undertakes an assessment of the proposed development by a consultant accredited by the Fire Protection Association of Australia's BPAD (Accreditation No. BPC-L3-18882) and acts as a certificate as described under Clause 4.14(1)(b) of the EP&A Act 1979.

Subject to the conclusions and recommendations contained therein, including that all external building works are to be designed and constructed to comply with BAL-12.5 of *Australian Standard AS3959-2018 Construction of Buildings in Bushfire Prone Areas* (AS3959), the Panel can be satisfied that the proposed development will comply with *Planning for Bush Fire Protection 2019*.

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

The application is accompanied by BASIX Certificate No. A498439 and dated Tuesday 27 June 2023 (**Attachment 3**). The Certificate demonstrates that the proposed development satisfies the relevant thermal, energy and water requirements of the SEPP, subject to compliance with the commitments contained therein.

Subject to recommended conditions, the Panel can be satisfied that the provisions of the SEPP are satisfied in this instance.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2: Coastal Management

The subject site is located within the coastal use area as shown in the figure below. Section 2.11 is to be taken into consideration with further assessment below.

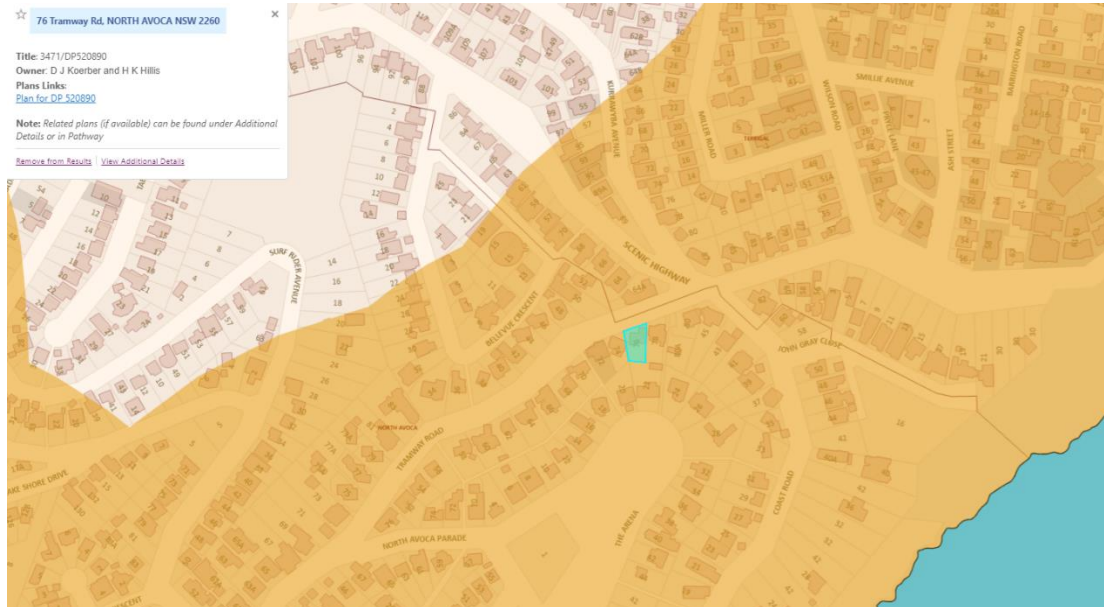


Figure 27. Coastal use affectation.

Clause 2.11 – Coastal Use Area

Matters for Consideration	Compliance
(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority:	
(a) has considered whether the proposed development is likely to cause an adverse impact on the following:	
(i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,	The site is not in proximity to public open space and does not impact existing safe access to and along the foreshore for members of the public
(ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,	The proposal will not result in unreasonable overshadowing, wind funnelling or loss of views from any public places to foreshores.
(iii) the visual amenity and scenic qualities of the coast, including coastal headlands,	The proposal does not impact visual amenity or scenic qualities of the coastal area
(iv) Aboriginal cultural heritage, practices and places,	The proposal is not likely to cause an adverse impact on Aboriginal cultural heritage, practices and places. Standard conditions are imposed to stop works and report the findings to the AHO if any Aboriginal Engravings or Relics are unearthed.
(v) cultural and built environment heritage, and	The site is within a developed urban area and the proposed development is unlikely to adversely impact the cultural and built environment heritage

(b) is satisfied that—	
<i>(i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or</i>	The proposed development has been designed, sited to avoid any adverse impact referred to in paragraph (a).
<i>(ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</i>	N/A
<i>(iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and</i>	N/A
(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.	The proposed development has taken into account the surrounding coastal and built environment. The proposed bulk, scale and size of the development is demonstrated to be acceptable.

Based on the above, the Panel can be satisfied that the requirements of Part 2 of the SEPP are satisfied in this instance.

Chapter 4: Remediation of Land

Clause 4.6 requires the approval authority to consider whether the land is contaminated and if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be made suitable after remediation) for the purpose for which the development is proposed to be carried out.

Further under clause 4.6(2), before determining an application for consent to carry out development that would involve a change of use of land, the approval authority must consider a report specifying the findings of a preliminary investigation of the land concerned, carried out in accordance with the contaminated land planning guidelines.

Having regard for the site historically being used for residential purposes, and the fact that the development does not result in a change of use to which the Contaminated Land Planning Guidelines refers to, it is considered that the site is and remains suitable for the proposed development.

The Panel can be satisfied that the requirements of Chapter 4 of the SEPP are satisfied in this instance.

Central Coast Local Environmental Plan 2022

The relevant local environmental plan applying to the site is the *Central Coast Local Environmental Plan 2022* (CCLEP 2022). The aims of the CCLEP 2022 are to promote a high

standard of urban design that responds appropriately to the existing or desired future character of areas.

Zoning and Permissibility (Part 2)

The site is zoned R2 – Low Density Residential pursuant to Clause 2.2 of the CCLEP 2022.

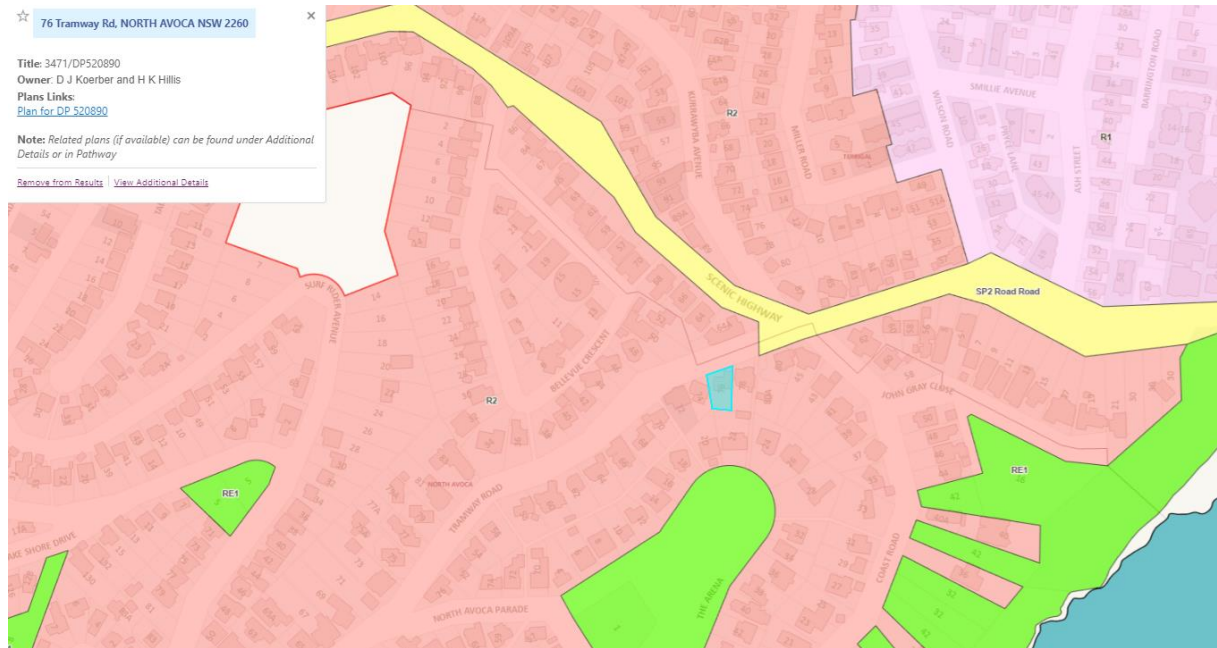


Figure 28. Land Use Map.

The objectives of the R2 – Low Density Residential zone are as follows:

- *To provide for the housing needs of the community within a low-density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To encourage best practice in the design of low-density residential development.*
- *To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.*
- *To maintain and enhance the residential amenity and character of the surrounding area.*

The proposed alterations and additions to the existing dwelling house are permitted with consent and considered to satisfy the objectives of the zone as it continues to provide for the housing needs of the North Avoca community within a low-density residential environment, whilst maintaining and enhancing the residential amenity and character of the area.

Clause 2.7 Demolition requires development consent

The proposed development seeks demolition of nominated structures as shown in the below figure. Subject to appropriate conditions, including compliance with AS2061, Council can be satisfied the provisions of this Clause have been met.

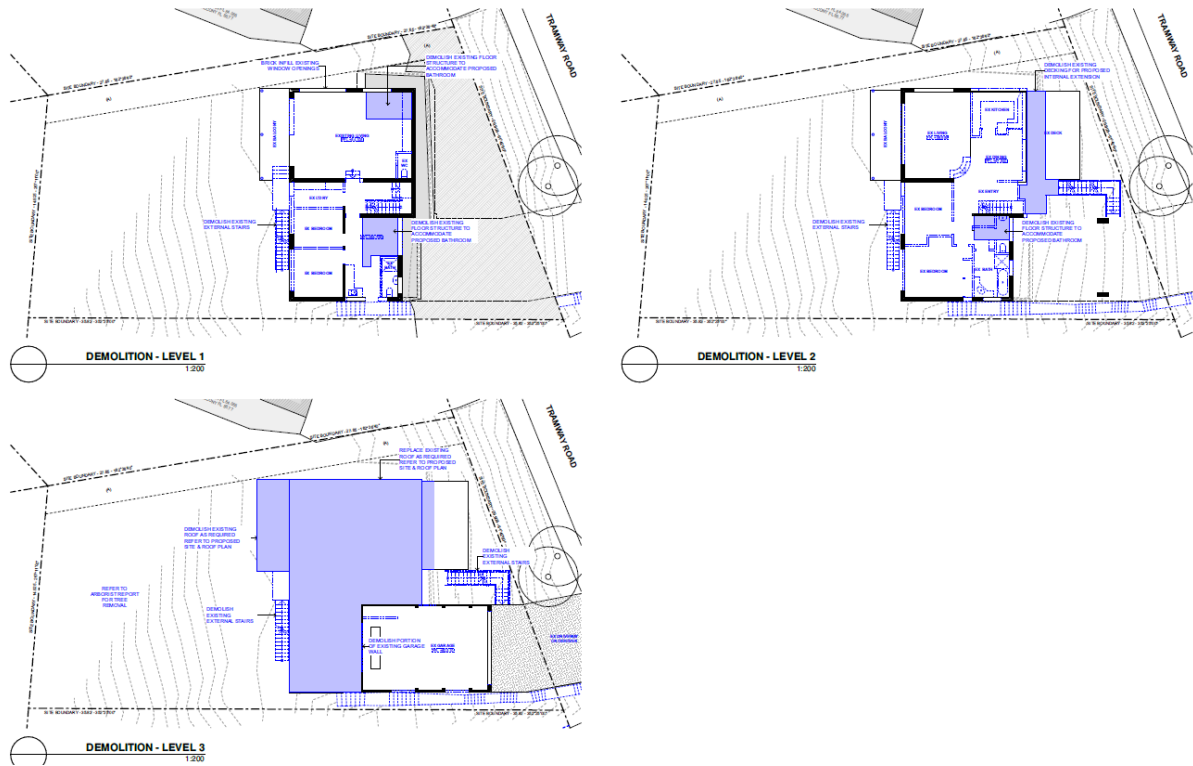


Figure 29. Proposed Demolition Plan.

Part 4 Principal Development Standards

The following table provides an assessment of the proposed development against other relevant clauses of the CCLEP 2022, including consideration of Principal Development Standards.

Development Standard	Required	Proposed	Complies with numerical controls	Variation	Complies with objectives
4.3 – Height of Buildings	Maximum permitted building height is 8.5m.	10.6m (skillion roof), 10.4m (study), 9.5m (rear balcony roof).	No – refer below.	2.1m or 24.7%	Yes – refer below.
4.4 – Floor Space Ratio	The site is not subject to a prescribed FSR.	N/A	N/A	N/A	N/A

4.6 – Exceptions to development standards	Development consent must not be granted to development that contravenes a development standard unless the consent authority is satisfied the applicant has demonstrated that compliance is unreasonable or unnecessary in the circumstances and there are sufficient environmental planning grounds to justify the contravention of the development standard.	The application is accompanied by a written justification seeking to vary the numerical requirements of Clause 4.3 – Height of Buildings in accordance with the provisions of Clause 4.6.	Further discussion below.	Further discussion below.	Further discussion below.
5.10 – Heritage	<p>The objectives of Clause 5.10 of the CCLEP are as follows:</p> <ul style="list-style-type: none"> • <i>To conserve the environmental heritage of the Central Coast,</i> • <i>To conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,</i> • <i>To conserve archaeological sites,</i> 	<p>There are no heritage items within or adjoining the site. The site is not mapped as a heritage conservation area.</p> <p>An AHIMS search does not identify the site as containing Aboriginal objects, or Aboriginal places of heritage significance.</p>	N/A	N/A	N/A

	<i>To conserve Aboriginal objects and Aboriginal places of heritage significance.</i>				
7.1 – Acid Sulfate Soils	Various	The site is subject to Class 5 Acid Sulfate Soils. The site and proposed development are not within 500m of adjacent Class 1, 2, 3 or 4 Acid Sulfate Soils and therefore not required to be considered further.	N/A	N/A	N/A
7.6 Essential Services	Essential services must be made available or adequate arrangements be made to make them available.	The following essential services remain available to the site – the supply of water, electricity, disposal and management of sewage, stormwater drainage, suitable vehicular access and the collection and management of waste.	Yes	No	Yes

Clause 4.3 – Height of Buildings

The objectives of this Clause are as follows:

- (a) *To establish a maximum height of buildings to enable appropriate development density,*
- (b) *To ensure that the height of buildings is compatible with the character of the locality.*

Clause 4.3(2) permits a maximum building height of 8.5m for the subject site. The existing dwelling has a non-compliant building height of 10.8m and the proposed development seeks consent for an overall building height of 10.4m on the eastern elevation at its highest point, which exceeds the maximum permitted in accordance with this Clause.

The application is accompanied by a written Clause 4.6 justification seeking to vary the numerical provisions of Clause 4.3(2) for the 2.1m or 24.7% height exceedance (**Attachment 4**). This is discussed further below.

Clause 4.6 – Exceptions to Development Standards

Clause 4.6 provides flexibility in applying development standards. The proposed development seeks consent for an overall building height of 10.6m to the skillion roof, 10.4m to the study and 9.5m to the rear balcony roof, which exceeds the maximum permitted under Clause 4.3(2) by 2.1m or 24.7% at the highest point.

On 15 September 2023, the NSW Government published a package of amendments that changed the operation of Clause 4.6 across standard instrument local environmental plans, including the *Central Coast Local Environmental Plan 2022*. The SEPP Amendment and amendment to the EPA Regulation included savings provisions and development applications made on or before 1 November 2023 are to be determined as if changes had not commenced.

From 1 November 2023, clause 4.6(3) -(5) and (7) of the Standard Instrument -Principal Local Environmental Plan were omitted. However, this application is subject to the provisions of clause 4.6 prior to amendments made from 1 November 2023.

To demonstrate that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, the Five (5) Part Test established in *Winten v North Sydney Council* and expanded by Justice Preston in *Wehbe v Pittwater* [2007] NSW LEC 827 is considered:

The five ways outlined in *Wehbe* include:

- 1. That the objectives of the standard are achieved notwithstanding non-compliance with the standard.**

The objectives of the standard are:

- (a) To establish a maximum height of buildings to enable appropriate development density.*

Applicant comment

The proposed development is appropriate to the site and will not result in a building height, greater than the existing 10.8 metre maximum height of the dwelling. The new works propose a maximum height of 10.6 metres, when measured in accordance with the Merman Investments Pty Ltd v Woollahra Municipal Council [2021] NSWLEC 1582.

The existing building and the majority of the proposed works comply with the maximum height control, when considered against an interpolated height plane, as previously applied by the Bettar judgement.

- (b) To ensure that the height of buildings is compatible with the character of the locality.*

Applicant comment

As the proposed works sit below the existing maximum building height, the works remain compatible with the existing building height. The new works are largely located to the rear of the site and below the existing garage, ensuring the presentation of the dwelling to the street remains in keeping with the character of the street.

It is considered this objective is met, despite the numerical variation.

2. The underlying objective or purpose of the standard is not relevant to the development and therefore compliance is unnecessary.

Applicant comment

This exception to development standards request does not rely upon this reason.

3. The underlying object or purpose would be defeated or thwarted if compliance was required and therefore compliance is unreasonable.

Applicant comment

This exception to development standards request does not rely upon this reason.

4. The development standard has been virtually abandoned or destroyed by the Council's own actions in granting consents departing from the standard and hence compliance with the standard is unnecessary and unreasonable.

Applicant comment

This exception to development standards request does not rely upon this reason.

5.The zoning of the particular land is unreasonable or inappropriate so that a development standard appropriate for that zoning is also unreasonable and unnecessary as it applies to the land and compliance with the standard would be unreasonable or unnecessary. This is, the particular parcel of land should not have been included in the particular zone.

Applicant comment

This exception to development standards request does not rely on this reason.

Further, this clause 4.6 variation request establishes that compliance with the development standard is unreasonable or unnecessary in the circumstances of the proposed development because the objectives of the standard are achieved and accordingly justifies the variation to the height of buildings control pursuant to the First Way outlined in Wehbe.

Thus it is considered that compliance with Clause 4.6(3)(a) is satisfied.

Clause 4.6(3)(b) – Are there sufficient environmental planning grounds to justify contravening the development standard?

The Applicant provides the following grounds/reasons for the proposed variation to the development standard:

1.Detail of variation:

- a. The existing dwelling has a non-compliant maximum height of 10.8 metres and the new works propose a maximum height of 10.6 metres. The proposed variation is the result of the building height being measured in accordance with the recent Merman Judgement. The existing building and the majority of the proposed works comply with the maximum height when measured in accordance with the previously applied interpolated height set out in the Bettar judgement.*
- b. The proposed variation is largely the result of taking into account the existing excavated lower levels, which is acknowledged in the Merman judgement to distort the height of buildings development standard plane overlaid above the site, when compared to the topography of the hill. The judgement acknowledges that this distortion can be described as an environmental planning ground within the meaning of cl 4.6(3)(b) of LEP 2022.*
- c. The variation is for a limited area and the vast majority of the building complies with the height control. The apparent bulk through the variation is negligible and the resulting development remains consistent with the streetscape, satisfying Cl1.3(g).*

2.Neighbour amenity:

- a. Compliance with the height control would not result in a building which has a significantly lesser bulk as the new works are located at a lesser height than the existing maximum building height. A numerically complaint building height would*

have no material impact to neighbour, accordingly compliance with the development standard in this instance is unreasonable.

b.Solar access impacts as a result of the small height variation are negligible. The subject site and both adjoining properties do not currently achieve compliant solar access to private open space, which is located on south facing balconies to capture ocean views. The development is considered to have an appropriate impact, as it will not exacerbate the existing non-compliant solar access.

c.The proposed height variation has no impact on privacy for neighbours, accordingly, the variation is reasonable in the circumstances of the case.

3. *Site constraints:*

a.The variation to the height is largely the result of the revised building height measurement definitions set out in the Merman judgement. The minor variation allows for the orderly and economic use of the site and allows for an ecologically sustainable development satisfying Cl1.3(g) and (f).

4. *Design and streetscape appeal:*

a.Strict numerical compliance with the height control would not result in a better urban design outcome. The architectural character proposed will result in appealing alterations to this property. Compliance with the development standard based on this would be unreasonable.

b.The proposed development will not present with excessive bulk from the public domain with surrounding dwellings presenting with a consistent form and scale.

5. *Consistent with zone objectives:*

a.The extent of the variation is considered to be in the public interest as the proposal remains consistent with the objectives of the zone, ensuring that appropriate and reasonable housing is proposed. Compliance with the development standard based on this would be unreasonable.

6. *Natural environment:*

a.The inclusion of the small height variation has no impact on the natural environment. No landscape area is lost or impacted through the minor height variation satisfying Cl1.3(b). The natural environment is unaffected by the small departure to the development standard and it would be unreasonable for the development to be refused on this basis.

7. *Environmentally sustainable development:*

a.The proposal represents an environmentally sustainable design allowing for extension of the life on an existing dwelling satisfying Cl1.3(f). Compliance with the development standard based on this would be unreasonable.

8. *Social and economic welfare:*

a.The small variation to the height as detailed above will have no social impacts for the site or local area satisfying Cl1.3(b) and accordingly refusal of the development based on this reason would be unreasonable.

b.The small variation to the height as detailed above will have no economic impacts for the site or the local area satisfying Cl1.3(b) and accordingly refusal of the development based on this reason would be unreasonable.

9. *Appropriate environmental planning outcome:*

a.The development proposed is not an overdevelopment of the site and satisfies the objectives of the zone and the development standard.

b. The variation does not result in a roof form or height beyond that of the existing dwelling. The small variation will be compatible within the context in which it sits and is reasonable in the circumstances of the case satisfying Cl1.3(c). Compliance with the development standard based on this would be unreasonable.

c. Removal of the non-compliance would not substantially alter the perceived bulk and scale due to the minor nature, siting, and topography.

Council comment

The minor numerical non-compliance is acceptable in this instance as it will complement the existing development and not unreasonably contribute to building bulk, scale or height, or adverse impacts to the streetscape or surrounding residential properties. The non-compliant height components are below the existing building height of 10.8m.

The written request has suitably demonstrated the proposal will not result in adverse privacy, overshadowing or view impacts for surrounding properties with ample setbacks, and no direct overlooking into key living areas. Passive overlooking is experienced only due to the sloping nature of the site; however, this is not intensified from the proposed development. Notwithstanding this, the Applicant has implemented into the design the use of skylights, highlight windows and privacy screening to the balconies.

The written request has identified, and adequately justified, sufficient environmental planning grounds, and the reasons provided have demonstrated circumstances which relate to the specific contravention of the maximum permitted building height and how the objectives of the standard can be achieved even though it will not be a wholly compliant development (*Al Maha Pty Ltd v Huajun Investments Pty Ltd* [2018] NSWCA 245). Accordingly, the consent authority is satisfied as to those matters stated in clause 4(3) of CCLEP 2022 (*RebelIMH Neutral Bay Pty Limited v North Sydney Council* [2019] NSWCA 130).

Clause 4.6(4)(a) identifies matters of satisfaction for the consent authority to grant development. These are:

- That the written request has adequately addressed the above requirements of the written request contained at 4.6(3).*

The Panel can be satisfied the written request has adequately addressed the provisions of cl.4.6(3).

- That the proposed development is in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out, and*

As identified in the above body of this report, the proposal is consistent with the stated objectives of the development standard as it ensures the development density and character

is commensurate with the residential zone in which it exists, whilst minimising adverse environmental effects on the use or enjoyment of adjoining properties.

Having regard for the decision in *Wehbe v Pittwater Council* [2007] NSWLEC827 and repeated in *Initial Action Ltd v Woollahra Municipal Council* [2008] NSWLEC118, it is considered the objectives of the standard are achieved notwithstanding numerical non-compliance with the standard. The Panel can be satisfied that the written requires to vary the maximum permitted building height is in the public interest because it is consistent with the objectives of the standard and the existing and desired future character of the residential zone in which it is located.

- *The concurrence of the Planning Secretary has been obtained.*

The application is reported to the Central Coast Local Planning Panel in accordance with Schedule 2 of the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consents* as the development contravenes a development standard by more than 10%.

- *Any State or regional significant planning matters raised by contravening the standard.*

There are no state or regional matters that arise because of the contravention of the standard.

- *The public benefit of maintaining the standard.*

In this instance, the variation would not contravene the public benefit if the standard were not maintained in this instance.

Clauses 4.6(6) and 4.6(8) provide circumstances under which the provisions of clause 4.6 cannot be utilised. These circumstances do not arise within this development application.

Having regard for the written request provided by the applicant and the above assessment, the proposed development is considered to satisfy the requirements of clause 4.6, achieving a better outcome for and from the development within the circumstances.

Clause 7.1 – Acid Sulfate Soils

The site is mapped as Class 5 Acid Sulfate Soils and the proposed development does not involve excavation that impacts upon acid sulfate soils in any other class. The Panel, as the consent authority can be satisfied that the relevant considerations of this Clause have been satisfied and that no further consideration is required in this regard.

Clause 7.6 – Essential Services

The Panel can be satisfied that the proposed development has adequate essential servicing available to the development having regard for water, sewer, electricity, stormwater drainage, waste collection and vehicular access. No further consideration is required in this regard.

b) SECTION 4.15(1)(a)(ii) – PROVISIONS OF ANY PROPOSED INSTRUMENTS

There are no draft instruments for consideration in this regard.

c) SECTION 4.15(1)(a)(iii) – PROVISION OF ANY DEVELOPMENT CONTROL PLAN

The following Development Control Plan is relevant to this application:

Central Coast Development Control Plan 2022 (CCDCP 2022)

The following Chapters of the CCDCP 2022 are relevant to this application:

- Chapter 1.2 – Notification of Development Proposals
- Chapter 2.1 – Dwelling Houses, Secondary Dwellings and Ancillary Development
- Chapter 2.13 – Transport and Parking
- Chapter 2.14 – Site Waste Management
- Chapter 3.5 - Tree and Vegetation Management
- Chapter 3.7 – Geotechnical Requirements

An assessment is provided below.

Chapter 1.2: Notification of Development Proposals

The application was notified in accordance with the requirements of Chapter 1.2 of the CCDCP 2022 from 14 to 28 July 2023. No submissions were received, and the Panel is advised that no further consideration of this Chapter is required in this regard.

Chapter 2.1 – Dwelling Houses, Secondary Dwellings and Ancillary Development

The following table provides an assessment of the proposed development against relevant sections of the Chapter 2.1.

Requirement	Proposal	Complies?
2.1.2 Building Scale		

Maximum building height 10m unless mapped by LEP (2.1.2.1b)	10.6m at its maximum point.	No – refer below.
Generally not to exceed 2 storeys (2.1.2.1c)	Existing three storey development.	Yes – existing non-compliance.
2.1.2.2 Site Coverage		
Maximum site coverage of: • 450m ² but <900m ² = 50%	166.8sqm or 30.3%	Yes
2.1.2.3 Floor Space Ratio		
Maximum floor space ratio as mapped by LEP (2.1.2.3a)	The site has no prescribed FSR.	N/A
2.1.3 Setbacks		
2.1.3.1 Setbacks – Residential Lots (R1, R2, R3 or RU5)		
Front Boundary		
Lots >300m ² = average distance between nearest 2 houses OR 4.5m	2.7m required. The proposed development seeks a 3.3m setback to the new entry on the ground level fronting Tramway Road. No changes are proposed to the existing arrangement.	Yes – no changes to existing arrangement.
Garage or carport – minimum 1m behind front building setback	3.7m required. 2.060m proposed.	No – no changes to existing arrangement.
Rear Boundary		
To private allotment = 0.9m for maximum 50% of length of boundary for single storey. 3m up to 4.5m high. >4.5m high = 6m	The proposed development provides a compliant minimum rear setback of 10.7m to the rear deck.	Yes
Side Boundary		
Lots >12.5m wide = 0.9m up to 4.5m. for building >4.5m = 0.9m plus ¼ of height above 4.5m	SB-1 – Required 2.344m Proposed 4.48m SB-2 – Required 1.340m Proposed 1.880m SB-3 – Required 1.882m Proposed 1.90m SB-4 – Required 2.057m Proposed 2.365m SB-5 – Required 2.210m Proposed 2.245m	Yes.

	Existing non-compliances are deemed acceptable insofar there are no changes to the existing built	
2.1.4 Residential Amenity		
2.1.4.1 Views		
Where relevant, applications must address the NSW Land and Environment Court Planning Principles relating to view sharing.	An assessment of view impacts in accordance with the NSW Land and Environment Court Planning Principles is provided below.	Yes – refer below.
Development is sited and designed to enable a sharing of views with surrounding private properties, particularly from habitable rooms.	The proposed alterations and additions to the existing dwelling are undertaken in a manner which enables view sharing for adjoining and surrounding residential dwellings.	Yes
Development steps down the hillside on a sloping site.	The proposed development steps down the hillside towards the south in accordance with the natural topography of the land.	Yes
The design of the roof form provides for view sharing. This may be achieved by consideration of the roof pitch and type (including flat roofs), increasing the setback on an upper level or by lowering the proposal in whole or in part.	The proposed skillion roof of 2 and 22 degrees and flat operable roof over the decking areas ensure minimal impact to existing and surrounding residential dwellings, with increased side setbacks.	Yes
2.1.4.2 Visual Privacy		
All development is to minimise visual impact to adjoining development	<p>Privacy will be retained for neighbours with ample setbacks and no direct overlooking into any key living areas.</p> <p>There is some existing overlooking between properties, due to the slope of the site, which will not be exacerbated by the proposed development.</p> <p>A number of privacy measures have been implemented into the design including the use of skylights, highlight windows and privacy screening to the balconies for both the eastern and western elevations.</p>	Yes
2.1.4.3 Private Open Space Areas		
Private open space to be directly accessible	The proposed development incorporates a minimum of 60.8sqm of rear, private open space,	Yes.

from and adjacent to a habitable room other than a bedroom and shall be provided in accordance with the following: i. Lot width <10m = 16m ² ii. Lots >10m = 24m ² iii. Minimum dimension = 3m	excluding any decking area, with a minimum width of 14.925m.	
2.1.4.4 Sunlight Access		
At least 50% of POS should receive at least 3 hours sunlight between 9am and 3pm	The application is accompanied by shadow diagrams for both the subject site and directly adjoining which demonstrate the existing solar access provisions in comparison to the resultant shadow impacts from the proposed development. The application is also accompanied by solar diagrams of the same. Both diagrams demonstrate that the extent of overshadowing resulting from the proposed development is negligible as the development is already overshadowed from respective and existing dwelling houses due to the orientation and topography of Tramway Road, with the steep 16m slope towards the south. The principal private open space of all properties is located on south facing balconies to capture the broad ocean views. The development will not alter the existing shadowing to the balconies of No. 78 Tramway Road and will result in a minor decrease in shadowing to the balcony of No. 74 Tramway Road at 9am, with existing shadowing retained at 12pm and 3pm. The development is considered to have an appropriate impact, given it does not exacerbate the existing non-compliant solar access and results in a minor improvement to solar access for No. 74 Tramway Road at 9am.	
At least 50% of POS on adjoining land should receive at least 3 hours sunlight between 9am and 3pm		
2.1.5 Car Parking and Access		
3 bedrooms or less = 1 space 4 or more bedrooms = 2 spaces	No changes to the existing double garage or access arrangements.	N/A
2.1.6 Earthworks, Structural Support and Drainage		
2.1.6.1 Earthworks		

Excavation for the purposes of development not to exceed a max depth measured from existing ground level of 1m if less than 1m from boundary, or 3m if located more than 1m from any boundary	The proposed development includes minimal earthworks to prepare the site for construction including cut to a maximum depth of 0.4m and fill to a maximum depth of 0.3m. Subject to recommended conditions regarding standard erosion and sediment control measures, the provisions of this Part are satisfied.	Yes, subject to recommended conditions.
Fill for the purpose of erecting a dwelling not to exceed 1m above existing ground level. No retaining wall for fill to be within 1m of a side or rear boundary unless within 1.5m of any external wall of a dwelling.		
Where a property is burdened by stormwater or water and sewerage mains Council will generally preclude any excavation or filling within that easement		
2.1.6.2 Retaining Walls and Structural Support		
Retaining walls that are >600mm above or below existing ground level and within 1m of any boundary, or more than 1m above or below existing ground level in any other location, must be designed by a professional engineer	The application is accompanied by a Geotechnical Report prepared by Douglas Partners and dated April 2023. The Report includes a set of recommendations pertaining to retaining walls. Subject to these, and other recommended conditions imposed on the draft Notice of Determination, the provisions of this Part have been met.	Yes, subject to recommended conditions.
2.1.6.3 Drainage		
All stormwater drainage collecting as a result of the erection of, or alterations or additions to, a dwelling, outbuilding or ancillary development must be conveyed by a gravity	The development proposes to direct stormwater to an existing system in Lot 349, DP16963 via 10000L rainwater tanks. The connection is through an interallotment system burdening Lot 3472, DP520890. DRAINS calculations have been provided; however, it is unclear from the labelling the location of the	Yes, subject to recommended conditions.

fed or charged system to a public drainage system, or an inter-allotment drainage system, or an on-site disposal system	<p>nodes in relation to the proposed system.</p> <p>The proposed system is supported with owner consent (from Lot 3472, DP520890) and the development limits the total Post Development Discharge Rates to 25l/s during 1% AEP events.</p>	
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Part 2.1.4.1 Views

In considering the impact to views because of the proposed development, the planning principles contained within *Tenacity Consulting v Waringah* [2004] are provided below:

- *Assessment of views to be affected. Water views are valued more highly than land views. Iconic views (eg of the Opera House, the Harbour Bridge or North Head) are valued more highly than views without icons. Whole views are valued more highly than partial views, eg a water view in which the interface between land and water is visible is more valuable than one in which it is obscured.*

No. 76 Tramway Road -subject site

Unencumbered views are currently obtained from a sitting and standing position from the living spaces as per the below image, over the subject site in a southerly direction, towards Avoca Beach.



Figure 30. Existing views from loungeroom of subject site, looking south.



Figure 31. View from northern lot boundary of subject site, looking south.

No. 78 Tramway Road

Unencumbered views are enjoyed from the ground floor level in a sitting and standing position also over the site in a southerly direction from the rear outdoor deck as per Figure 31, the first floor level as per Figure 32, and presumed from the upper floor level however this was not accessible during the time of inspection.



Figure 32. View from rear outdoor deck of No. 78 Tramway, looking south.



Figure 33. View from first floor level of No. 78 Tramway, looking south.

No. 74 Tramway Road

Unencumbered views are also obtained from No. 74 Tramway from all levels also in a sitting and standing position also over the site in a southerly direction towards Avoca Beach as per the below Figures.



Figure 34. View from upper level of No. 74 Tramway, looking south.



Figure 35. View from upper level of No. 74 Tramway, looking east (subject development barely visible in left portion of image)

- *The extent of the impact. This should be done for the whole of the property, not just for the view that is affected. The impact on views from living areas is more significant than from bedrooms or service areas (though views from kitchens are highly valued because people spend so much time in them). The impact may be assessed quantitatively, but in many cases this can be meaningless. For example, it is unhelpful to say that the view loss is 20% if it includes one of the sails of the Opera House. It is usually more useful to assess the view loss qualitatively as negligible, minor, moderate, severe or devastating.*

As demonstrated in the above images, views are currently enjoyed from the rear elevation of the subject site and those adjoining which comprise mainly of living areas and rear decks. As provided in the planning principle, views from the living areas are more significant than those from bedrooms or service areas. Both the subject site and adjoining developments enjoy an unencumbered view in a southerly direction towards Avoca Beach from all levels of respective dwellings, which remain unimpacted due to its steep topography and gradient and its orientation towards Avoca Beach in addition to the varying side setbacks of No. 74, 76 and 78 Tramway Road.

It is considered that the impact to existing and uninterrupted views of Avoca Beach will be minimised and maintained for all dwellings.

- *The reasonableness of the proposal that is causing the impact. A development that complies with all planning controls would be considered more reasonable than one that breaches them. Where an impact on views arises as a result of non-compliance with one or more planning controls, even a moderate impact may be considered unreasonable. With a complying proposal, the question should be asked whether a more skilful design could provide the applicant with the same development potential and amenity and reduce the impact on the views of neighbours. If the answer to that question is no, then the view impact of a complying development would probably be considered acceptable and the view sharing reasonable.*

The proposed development is generally compliant, except for a 2.1m building height exceedance, equating to a 24.7% variation to the maximum 8.5m permitted under Clause 4.3(2) of the *Central Coast Local Environmental Plan 2022*. In this instance, the building height variation does not result in view loss to existing and surrounding residential dwellings and can be attributed to the slope of the site. The proposed height of the development will be less than the height of the current dwelling house. Uninterrupted southerly views to Avoca Beach will be maintained for No. 74, 76 and 78 Tramway Road. It is also noted that the objectives of Part 3.1.4.1 of the CCDCP 2022 provides the following:

- *To encourage view sharing as a means of ensuring equitable access to views from private property.*
- *To facilitate reasonable view sharing whilst not restricting the reasonable development from the site.*

As previously discussed in the above body of this report, the proposed development is considered acceptable insofar as it ensures equitable access to views in a southerly direction towards Avoca Beach and ensures reasonable view sharing amongst residential dwellings whilst not restricting the reasonable development of the site.

Having regard to the above planning principles, the Panel can be satisfied that the potential impacts to all views from the redevelopment of No. 76 Tramway Road are minimised with existing views from surrounding residential dwellings maintained and enjoyed from respective levels in a sitting and standing position.

Chapter 2.13 – Transport and Parking

The proposed development remains compliant with the car parking requirements as required by Part 2.13.3.2 that dwellings with 4 or more bedrooms retain 2 spaces per dwelling.

This is maintained within the existing double garage accessed via Tramway Road.

The Panel is advised the requirements of Chapter 2.13 are satisfied in this instance.

Chapter 2.14 – Site Waste Management

The application is accompanied by a Waste Management Plan which details the site preparation/demolition, construction, and ongoing operation of the residential dwelling in accordance with the requirements of this Chapter.

Subject to recommended conditions, the Panel can be satisfied that the requirements of Chapter 2.14 have been met.

Chapter 3.5 - Tree and Vegetation Management

As detailed within the accompanied Arborist Report, an assessment of the trees within and adjacent to the subject site was undertaken by William Dunlop of *Temporal Tree Management P/L* on 13/04/2023 (**Attachment 5**). All trees inside and within five metres of the property boundaries of the subject site were assessed. As stipulated in *Chapter 3.5.1 of the Central Coast DCP (2022)*, woody vegetation is prescribed as a 'tree' if it was measured to have a height of or greater than 3 metres, and 27 trees were identified and assessed according to Chapter 3.5.

Trees 1-7 are positioned on the northern side of the existing dwelling. Trees 1 and 2 are positioned adjacent to the north-western boundary while Trees 6 and 7 are positioned adjacent to the eastern boundary. The ownership of these trees is unclear. Trees 3 and 4 are positioned within the northern boundary of the subject site. Tree 5 is positioned within a steep embankment adjacent to the northern boundary that forms part of the Tramway Road reserve. Trees 8-27 are positioned on the southern side of the existing dwelling within a heavily vegetated and steep portion of land. Trees 12 and 25 are positioned adjacent to the

south-western boundary and appear to be within the property of 74 Tramway Road. Trees 14-16 are positioned outside the south-eastern boundary and are within the property of 78 Tramway Road.

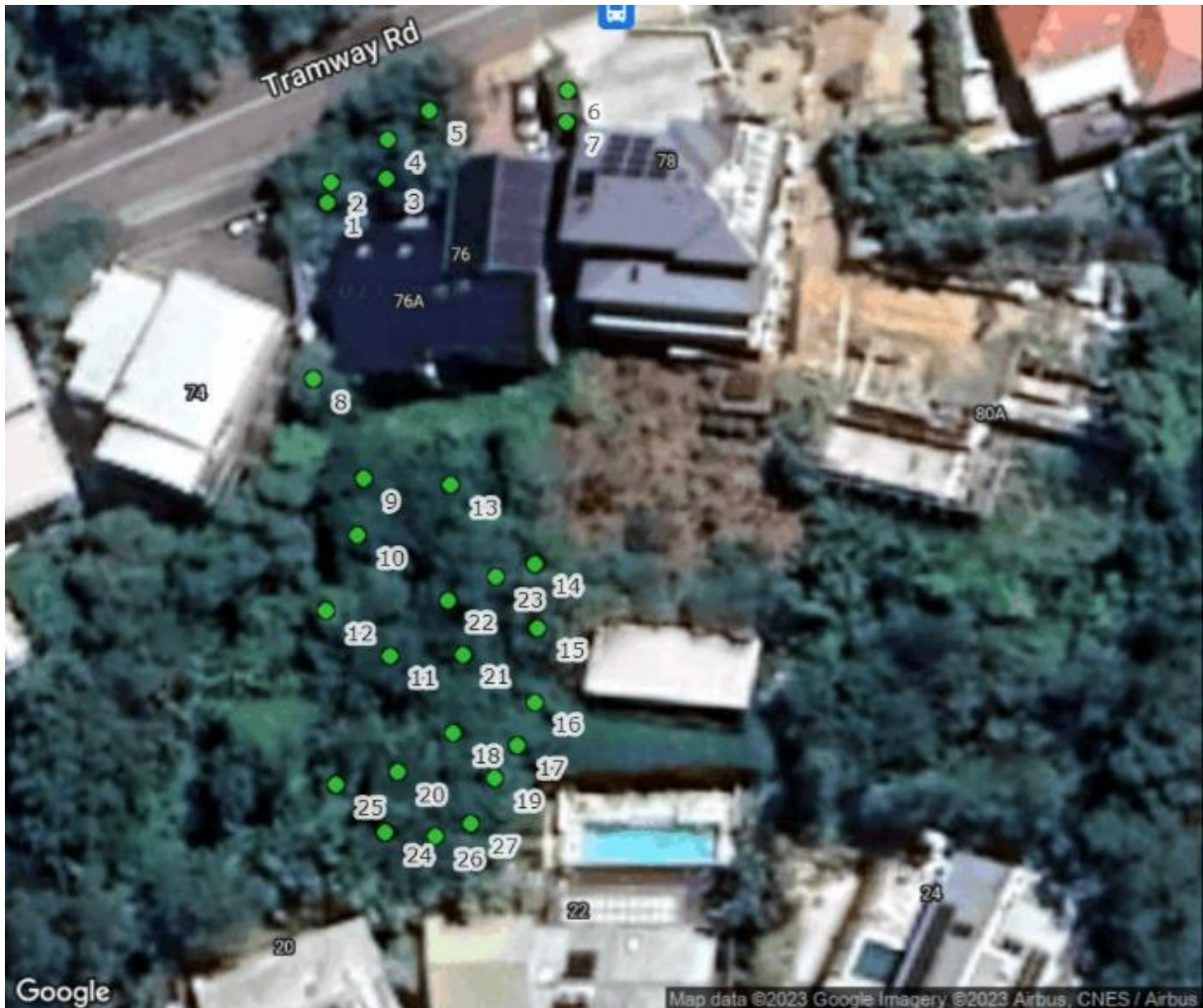


Figure 30. Location of 27 assessed trees as contained within the Arborist Report, prepared by William Dunlop.

The proposed development plans within the subject site involve alterations and additions to the existing three-storey dwelling. Demolition of internal walls and external steps and landscape structures will be required to facilitate the proposed development. The footprint of the proposed renovated dwelling will be extended on the southern side. The existing garage, vehicle crossing and driveway adjacent to the north-eastern boundary will be retained under the proposed design.

As advised by the consultant arborist, Tree 3 will be directly impacted by the proposed development due to the position of its stem within the footprint of the proposed outdoor entertaining area. Trees 1, 2 and 4-8 may be directly impact due to their close proximity to the proposed works areas. The remaining specimens (Trees 9-27) are more suitably distanced from the proposed development works and are unlikely to be directly impacted.



Figure 31. Proposed development in relation to assessed trees, as contained within the Arborist Report, prepared by William Dunlop.

The Report advises that the following trees are recommended for removal or retention in accordance with this Chapter:

Recommended Removal/Retention for Twenty-seven Assessed Trees	
Retain	Remove
1, 2, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27.	3, 8, 9, 10, 11, 13, 22, 23.

Council's Tree Assessment Officer has considered the above and confirmed that determined the proposed development satisfactory with regards to Chapter 3.5.

Chapter 3.7 – Geotechnical Requirements

The application is accompanied by a Geotechnical Report for the proposed development undertaken by Douglas Partners Pty Ltd and dated April 2023 (**Attachment 6**). The Report undertakes an assessment of the subsurface soil and groundwater conditions at specified test locations and a slope stability assessment in accordance with the requirements of Chapter 3.7.

Based on local topographical information, the site slopes approximately 60m AHD from the northern site boundary down to 44m AHD at the south-eastern corner of the site.

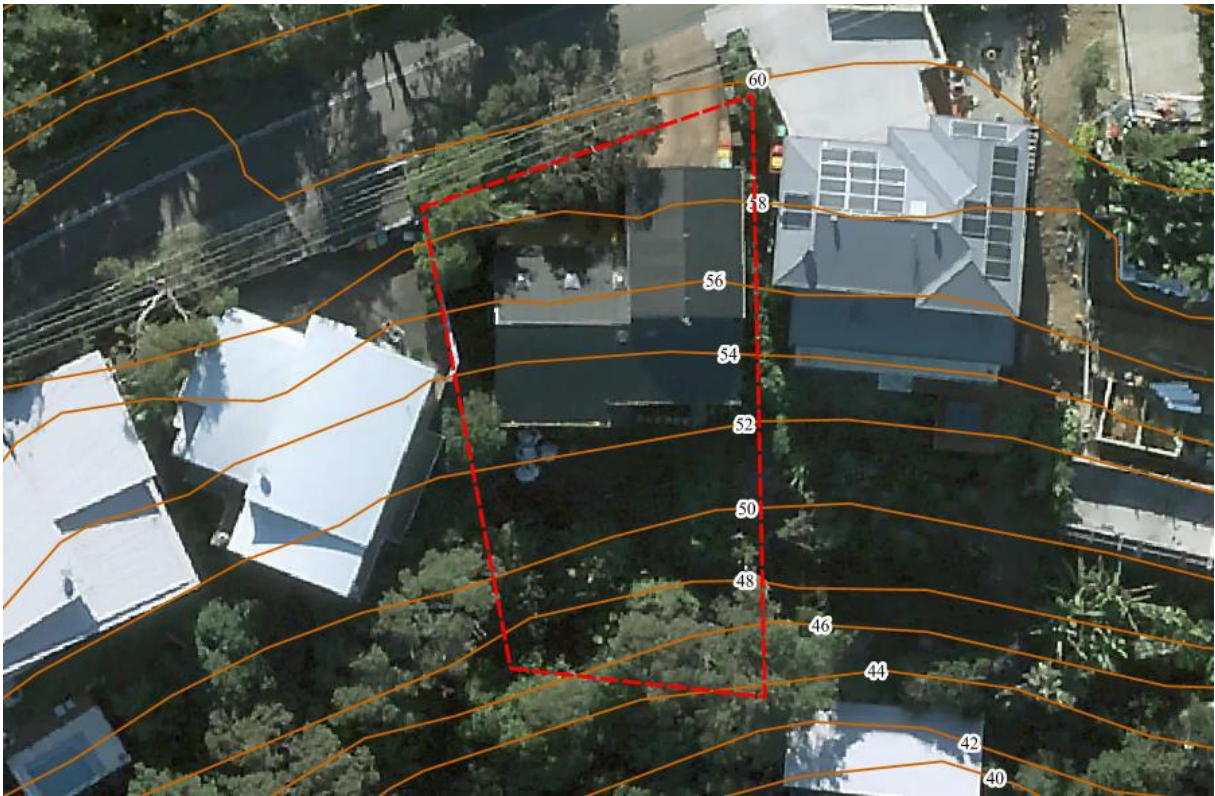


Figure 32. Subject site with elevational contours.

The Report provides a qualitative assessment of the likelihood of occurrence of a landslide, post construction, or mass ground movements and its consequence and risk to the property. The Report contains several recommendations to footings, excavation support including batter slopes, retaining walls and drainage.

Subject to the recommendations contained therein, which are imposed as recommended conditions of consent, the Panel can be satisfied the requirements of Chapter 3.7 have been met.

d) SECTION 4.15(1)(a)(iiia) – PLANNING AGREEMENTS UNDER SECTION 7.4 OF THE EP&A ACT

There are no planning agreements or draft planning agreements entered or proposed for the site. No further consideration is required in this regard.

e) SECTION 4.15(1)(a)(iv) – PROVISIONS OF REGULATIONS

Section 23 Persons who may make development applications

The Panel can be assured that correct owner's consent has been made in accordance with Section 23 of the Regulations.

Section 61 Additional matters that consent authority must consider.

Section 61 of the Regulations, contains matters that must be taken into consideration by a consent authority in determining a development application, with the following matters relevant to the proposal:

- If demolition of a building is proposed, provisions of *AS2601* apply.

The proposed development seeks to undertake partial demolition in accordance with the proposed demolition plan.

Subject to relevant conditions regarding waste management being imposed on any consent granted for the proposed development, the Panel can be satisfied Section 61 of the Regulations have been met.

f) SECTION 4.15(1)(b) – LIKELY IMPACTS OF DEVELOPMENT

The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality must be considered. In this regard, potential impacts related to the proposal have been considered in response to SEPPs, LEP and DCP controls outlined above and the Key Issues section below.

The consideration of impacts on the natural and built environments includes the following:

- *Locality and streetscape*

The proposal will not adversely impact on the character and amenity of the locality and streetscape. The scale, form, character, and density of the development is considered acceptable within the locality having regard for the low-density character of the area and the built form of surrounding dwellings.

The design and appearance of the development is of a high design that is of an architectural appearance which is satisfactory within the future character of the streetscape. The form and scale of the development is consistent with that envisaged for the site under the R2 zoning for low density development. The built form is well articulated and composed, includes a suitable materials palette including timber cladding of spotted gum, white finished linear weatherboard, and shale grey colourbond steel and has considered the relationship to surrounding properties and the opportunities presented by the location of the site.

- *Context and setting*

The site is located within a low-density residential area consisting of mainly single and two storey dwellings. As previously discussed in the report, the proposed development is in keeping with the character, built form and scale of surrounding development and as such is considered satisfactory regarding context and setting.

- *Privacy, overlooking and boundary treatments*

Nearby dwellings to the east, south and west are the most sensitive of potentially affected neighbouring properties that are most likely to be impacted by privacy and amenity. Overlooking has been minimised through the orientation of dwelling windows and balconies, towards the rear of the site, to avoid direct conflict. The incorporation of privacy screening and obscure glazing on both the eastern and western elevations will ensure that any potential privacy impacts are further minimised.

- *Built environment.*

A thorough assessment has been undertaken with regards to the physical, built environment under the Central Coast Local Environmental Plan and Development Control Plan with physical impacts considered to be reasonable within the context of the site.

- *Natural environment*

There will be no significant impact upon the natural environment because of the proposed development.

g) SECTION 4.15(1)(c) – SUITABILITY OF THE SITE

Having regard to the above, the site is considered suitably for the proposed form of development.

h) SECTION 4.15(1)(d) – PUBLIC SUBMISSIONS

The application was notified from 14 to 28 July 2023. No submissions were received, and the Panel is advised that no further consideration is required in this regard.

The Public Interest:

The proposed development is consistent with relevant planning provisions with no matters of concern that would indicate that the proposal is contrary to the public interest.

Other Matters for Consideration

Political Donations

There were no political donations declared by the applicant, applicant's consultants, or property owner.

Contributions

Council's Principal Strategic Planner Infrastructure advised on 11 November 2024 that alterations and additions to an existing dwelling house are excluded from Council's Section 7.12 Contributions Plan.

No contributions are payable in this instance.

Conclusion







This development application has been considered in accordance with the requirements of the *Environmental Planning and Assessment Act 1979* and the Regulations, as outlined in this report. The following is a summary of prerequisite conditions for the granting of development consent that have been considered in the assessment report and provided as part of the conclusion, for the benefit of the Panel:

- Having regard for Sections 2.11 of the *State Environmental Planning Policy (Resilience & Hazards) 2021*, the Panel can be satisfied that the proposed development is designed, sited, and will be managed to avoid an adverse impact referred to in s.2.11(1), and the development is not likely to cause increased risk of hazards on the subject site or other land.
- The Panel can be satisfied that the land is suitable for the proposed development as referenced in Section 4.6(4) of the *State Environmental Planning Policy (Resilience and Hazards) 2021* nor does it involve a change of use of the land. Accordingly, the development is satisfactory having regard for the provisions of Section 4.6 of the same SEPP.
- The Panel can be satisfied that the proposed development is satisfactory with regards to the R2 – Low Density Residential zone and its objectives in accordance with the *Central Coast Local Environmental Plan 2022*.
- There are no significant issues or impacts identified with the proposal under Section 4.15 of the *Environmental Planning and Assessment Act 1979*.
- Having regard for the prerequisite conditions to the granting of consent under the *Central Coast Local Environmental Plan 2022*, the Panel can be satisfied that:
 - Clause 7.6 – Essential Services
All services essential for the proposed development to be undertaken remain available to the site.
- Subject to the imposition of appropriate conditions, the proposed development is not expected to have any adverse environmental, social, or economic impact.

RECOMMENDATION

That Development Application No. DA/1355/2023 for the alterations and addition to No. 76 Tramway Road, North Avoca, NSW, 2260 be APPROVED pursuant to Section 4.16(1)(a) of the *Environmental Planning and Assessment Act 1979* subject to the draft conditions attached to this report at Attachment 1.

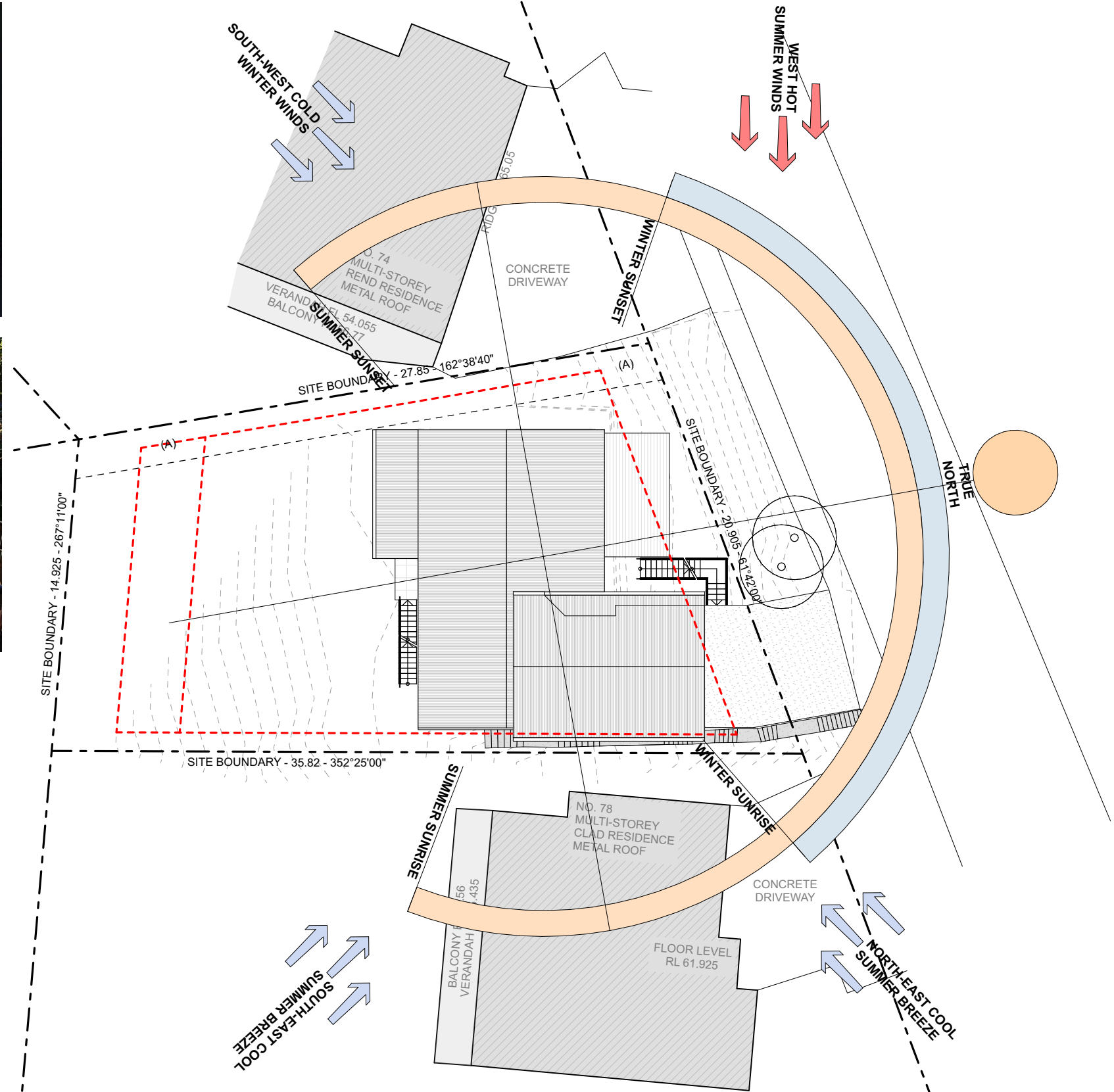
Attachments

1	Final Architectural Plans for No. 76 Tramway Road, as amended	Provided Under Separate Cover	D16510207
2 	Final Architectural Plans for No. 76 Tramway Road, as amended - REDACTED		D16525804
3 	Bushfire Assessment Report		D15751730
4 	BASIX Certificate		D15751731
5 	Clause 4.6 Written Request to Vary a Development Standard		D15751741
6 	Arboricultural Impact Assessment		D15751736
7 	Geotechnical Report		D15751723



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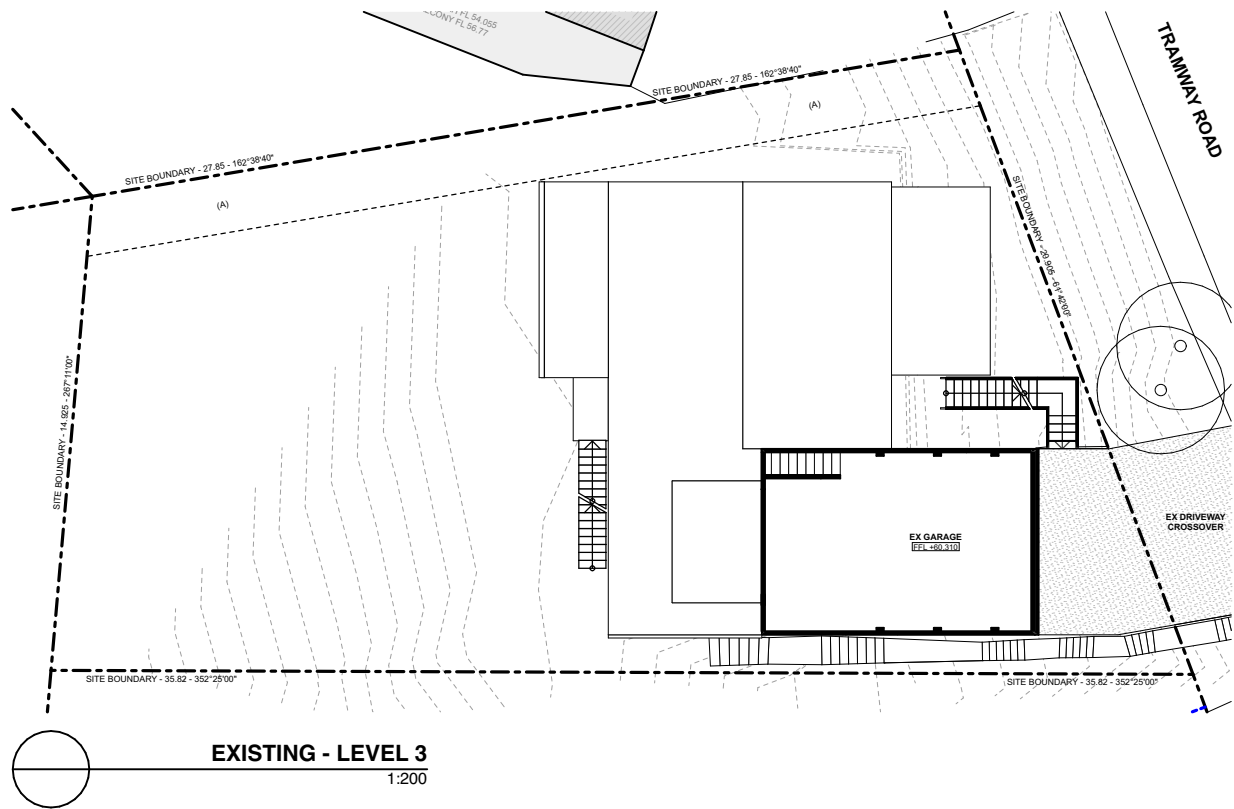
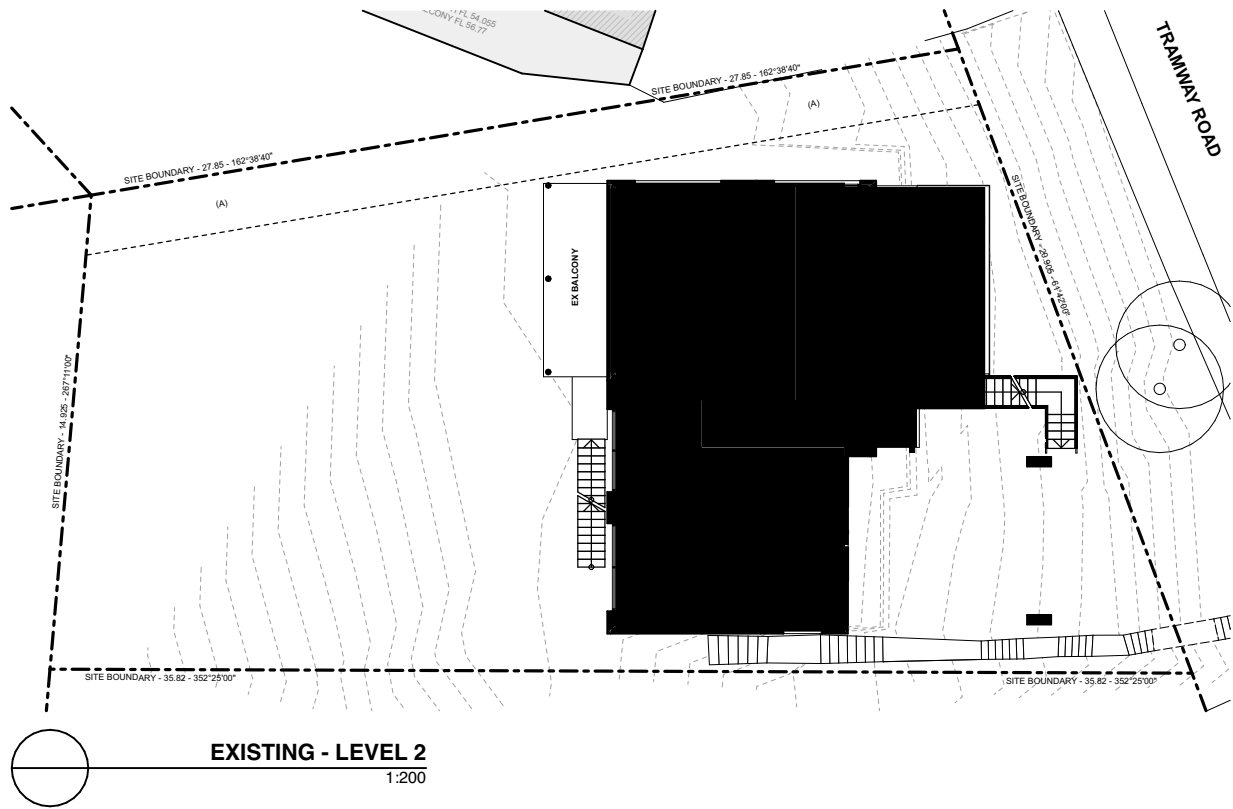
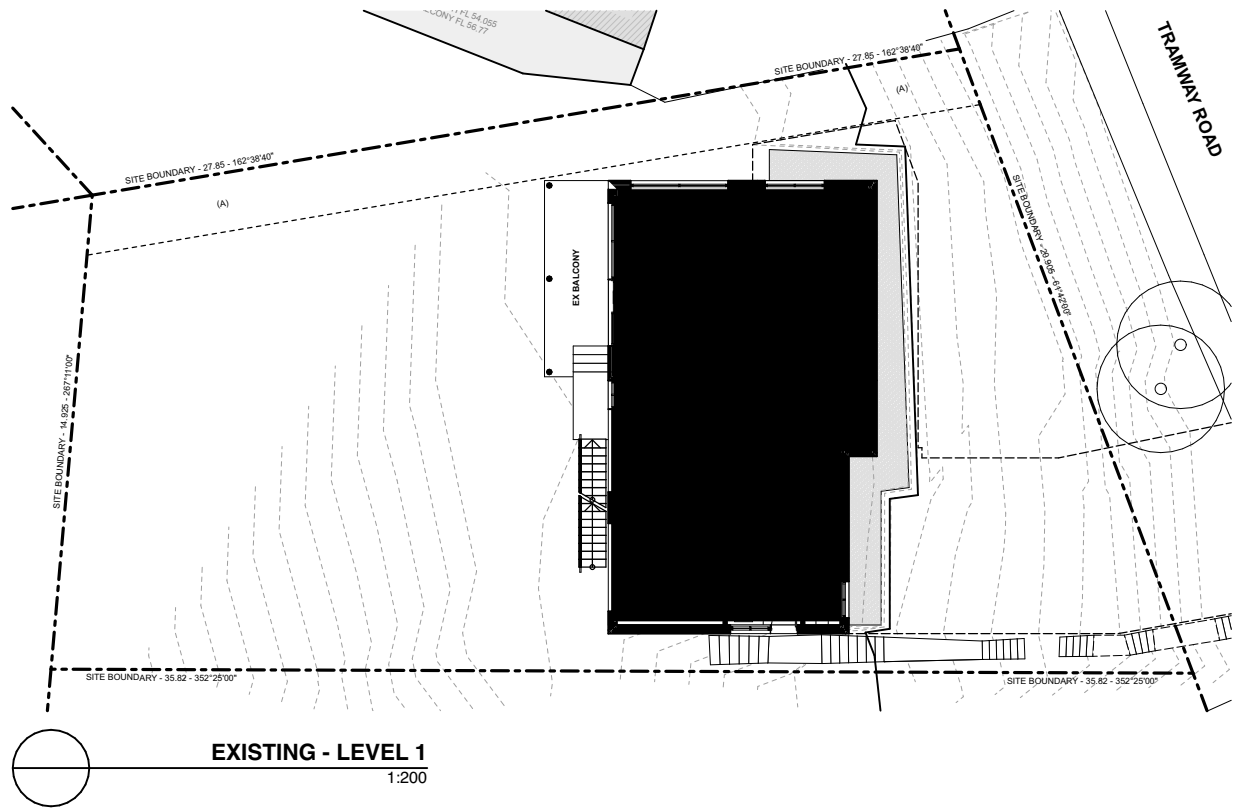


ISSUE FOR
D Development Application

DATE
21/6/2023

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CLIENT: D. Koerber & H. Hillis
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SITE ANALYSIS
SHEET: DA01
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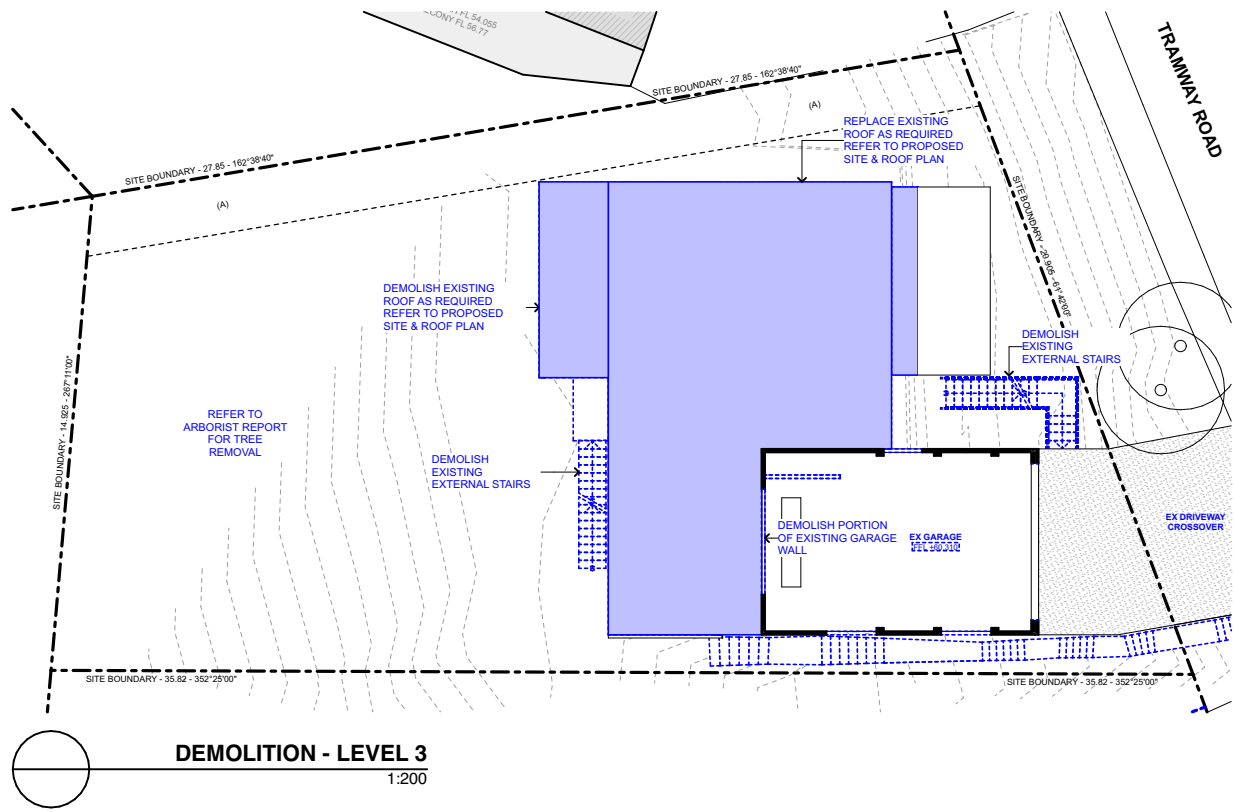
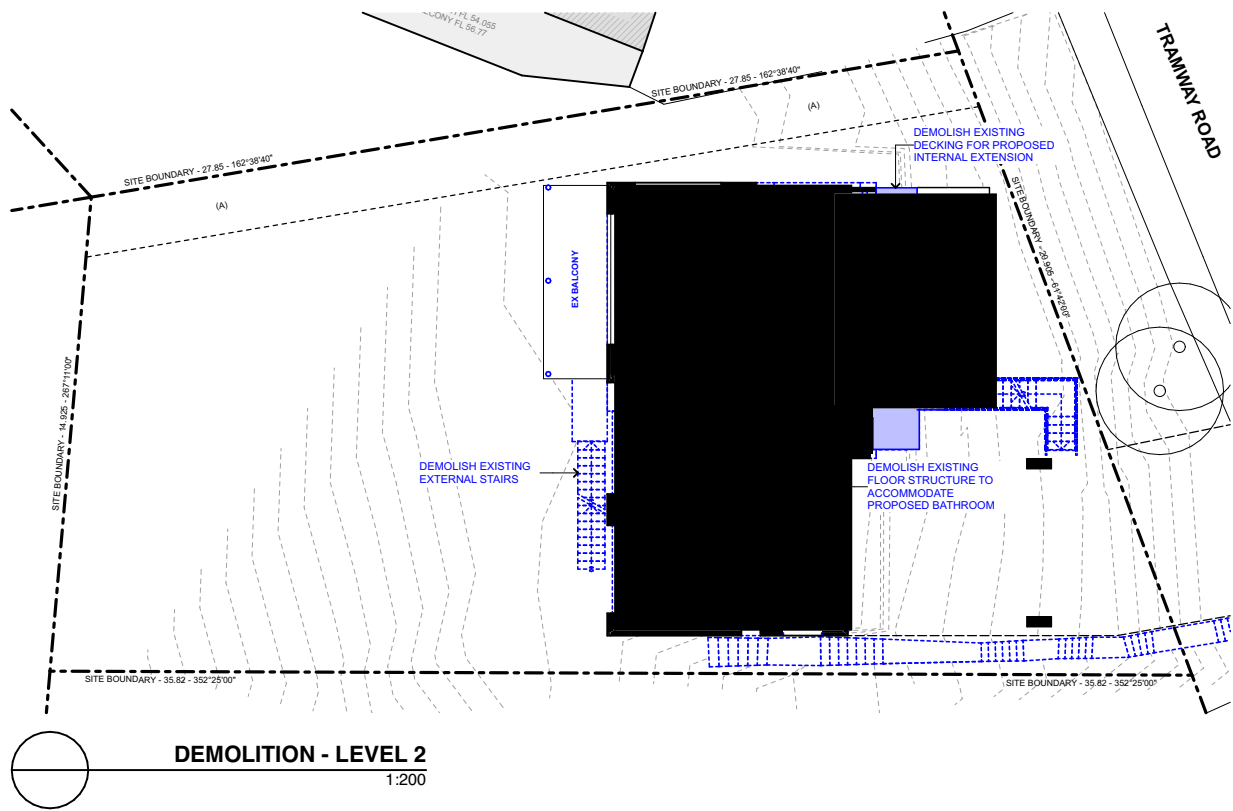
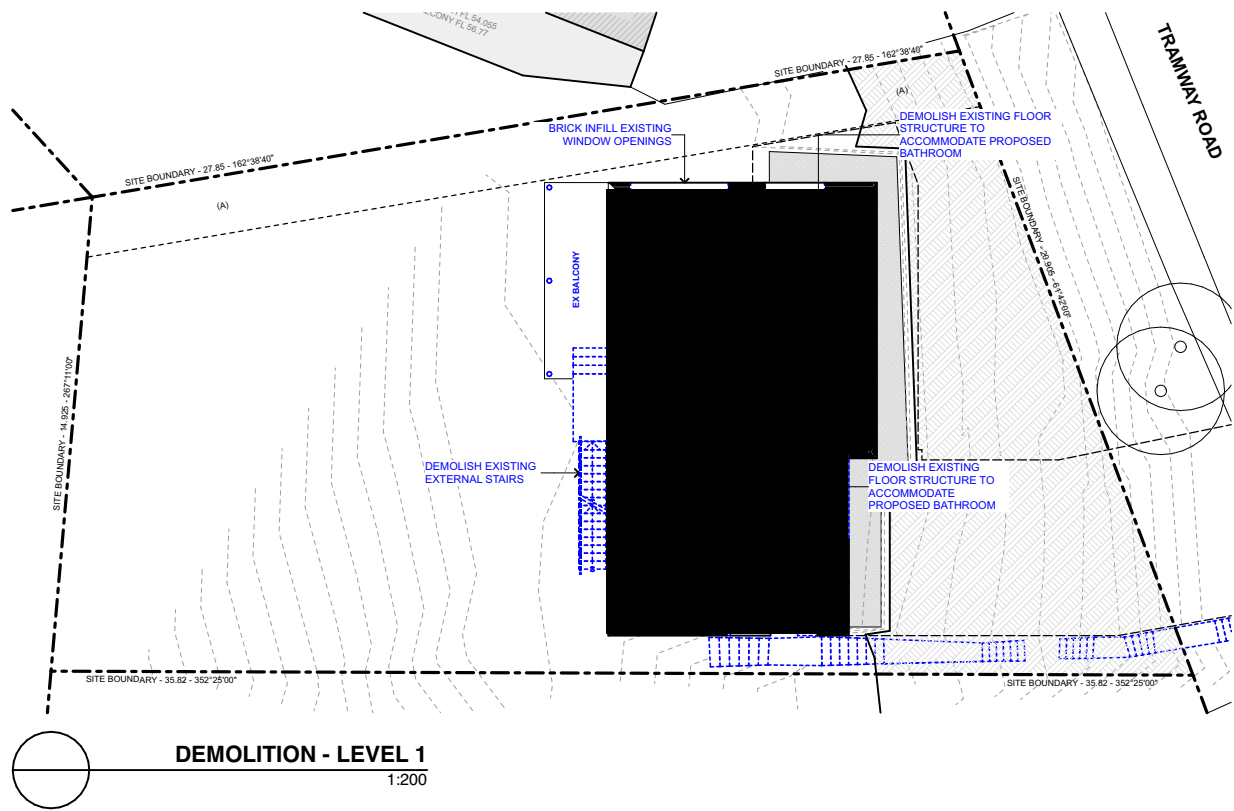


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EXISTING PLAN
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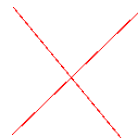


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DEMOLITION PLAN
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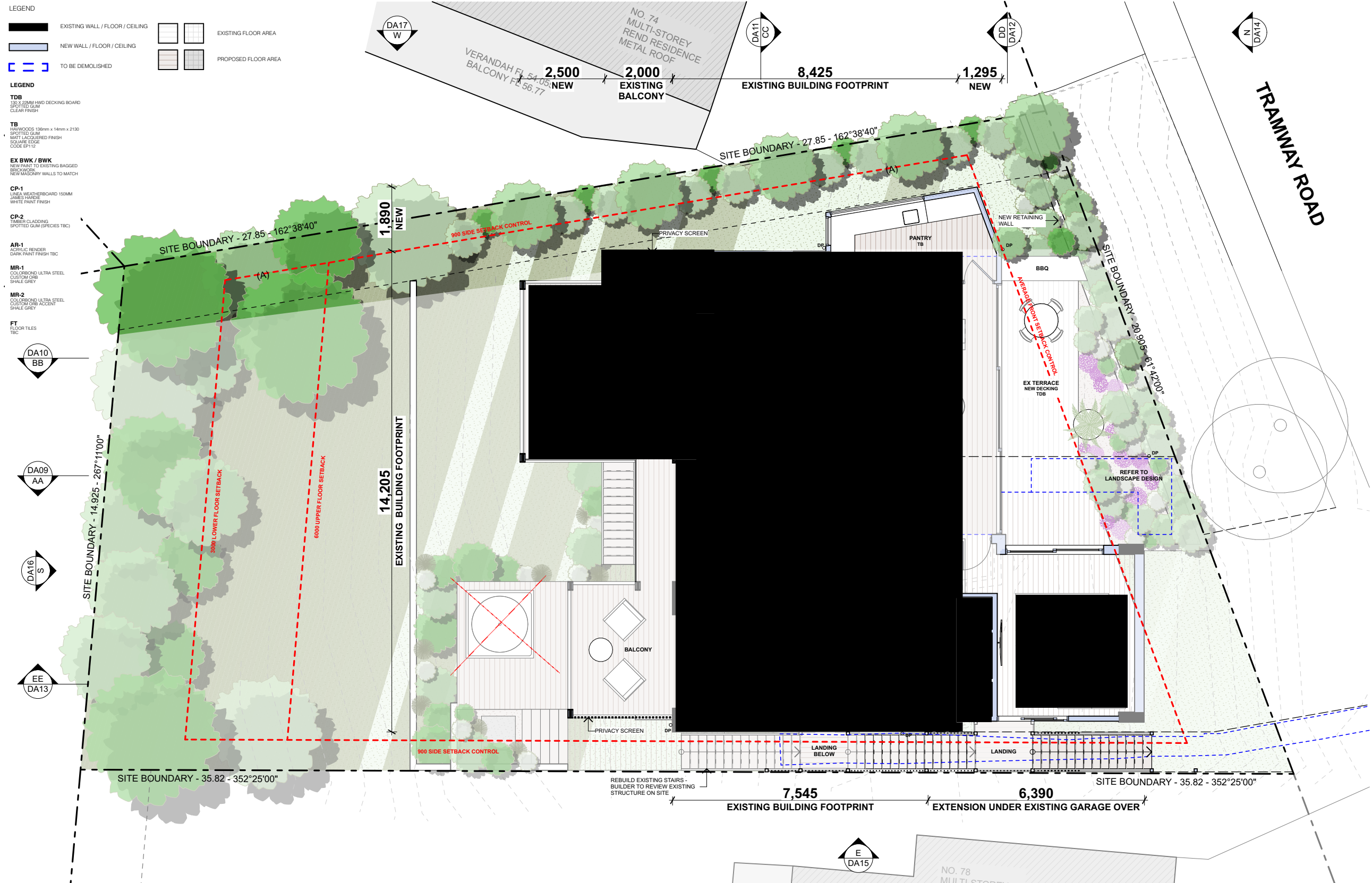
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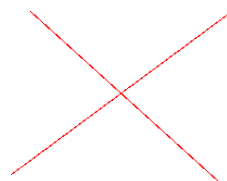
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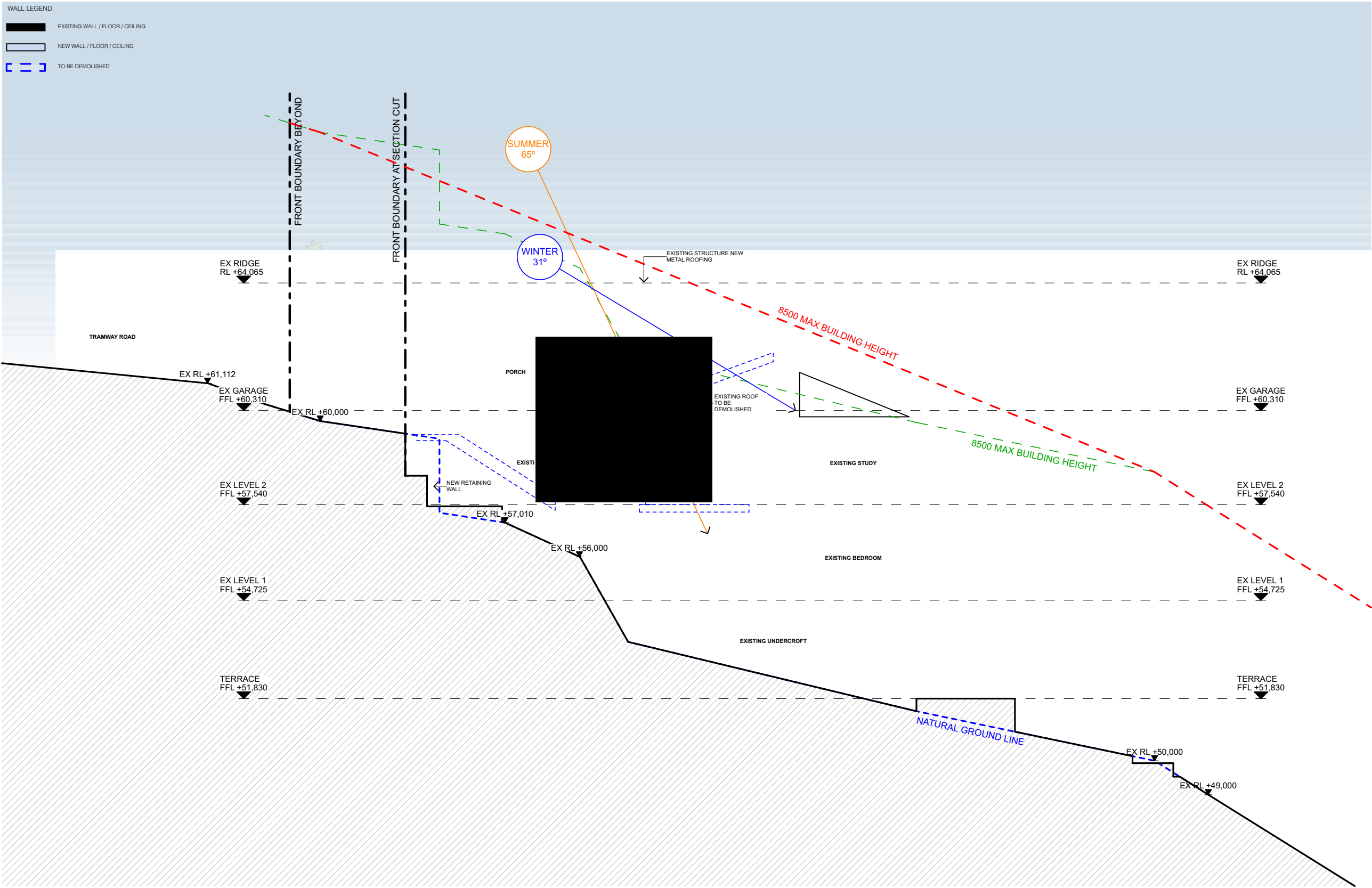
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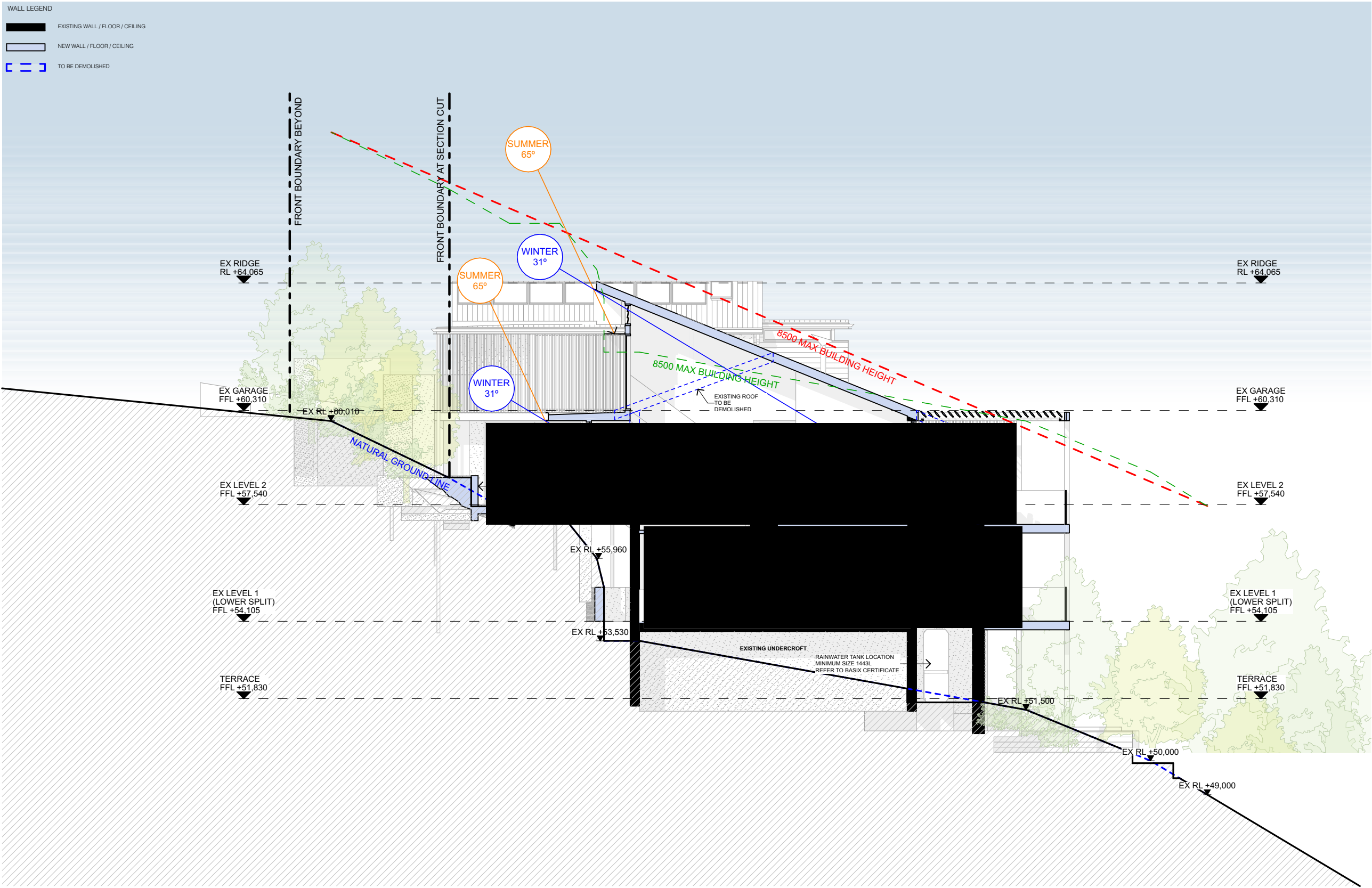
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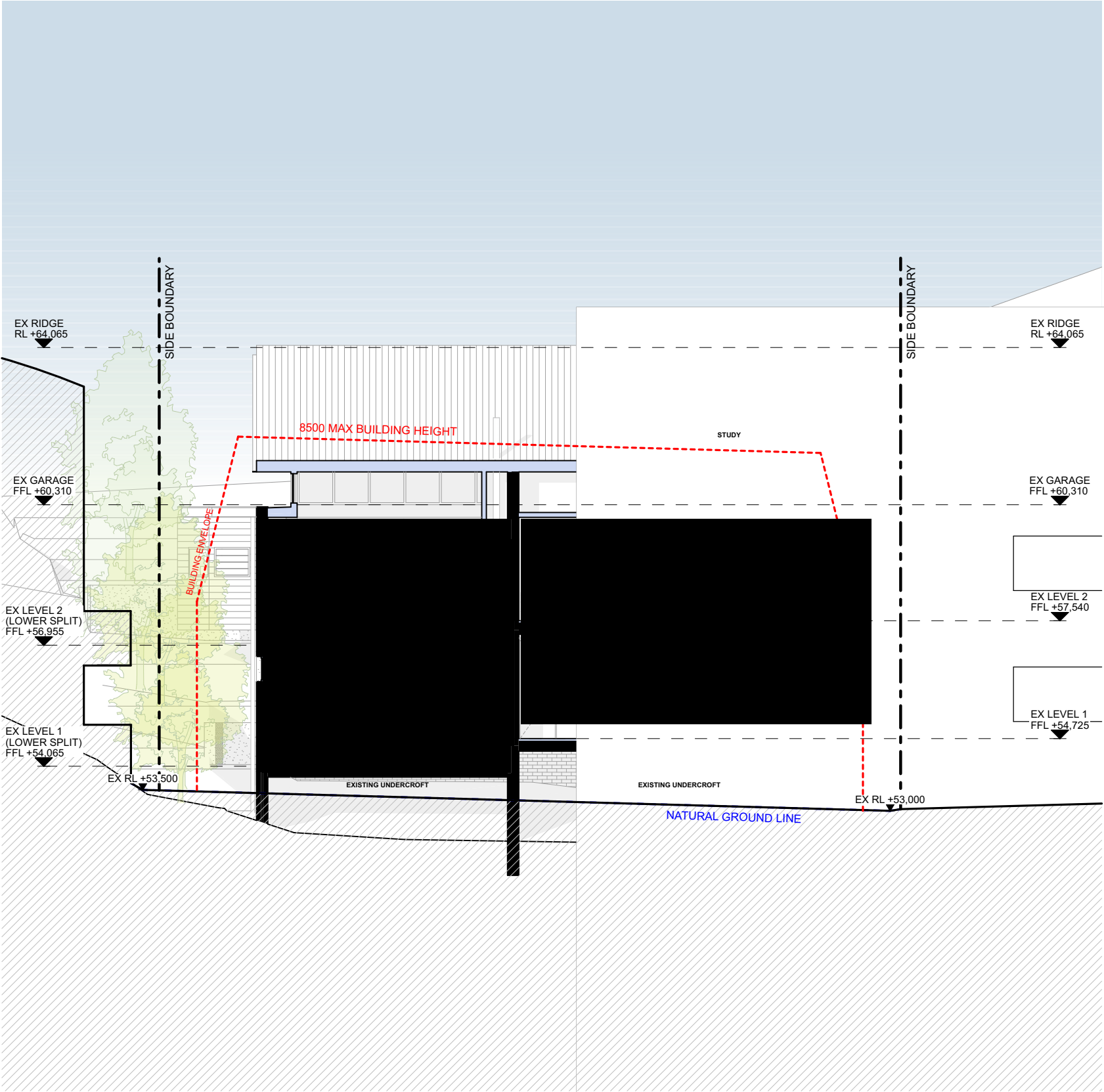
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WALL LEGEND

EXISTING WALL / FLOOR / CEILING

NEW WALL / FLOOR / CEILING

TO BE DEMOLISHED

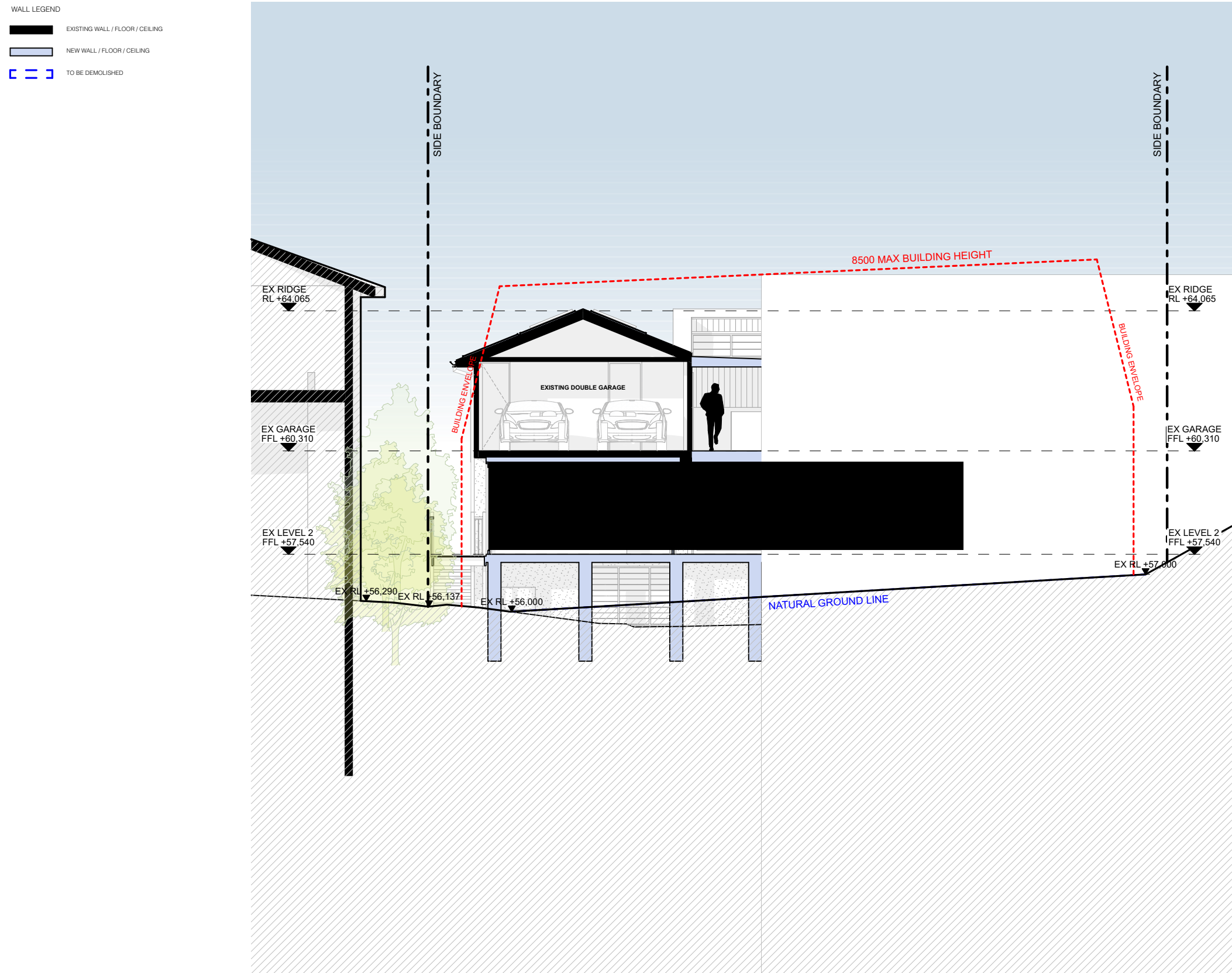


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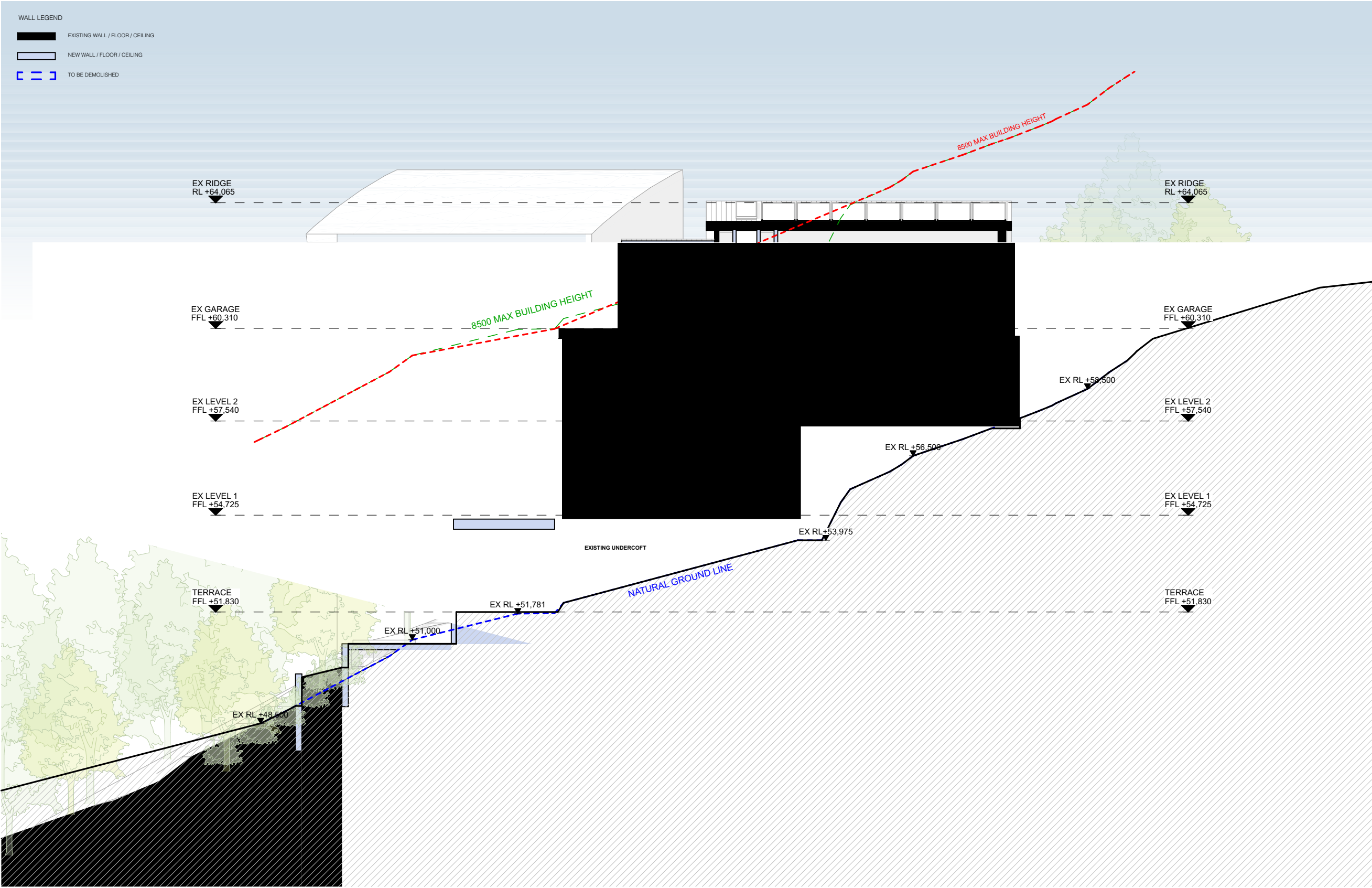
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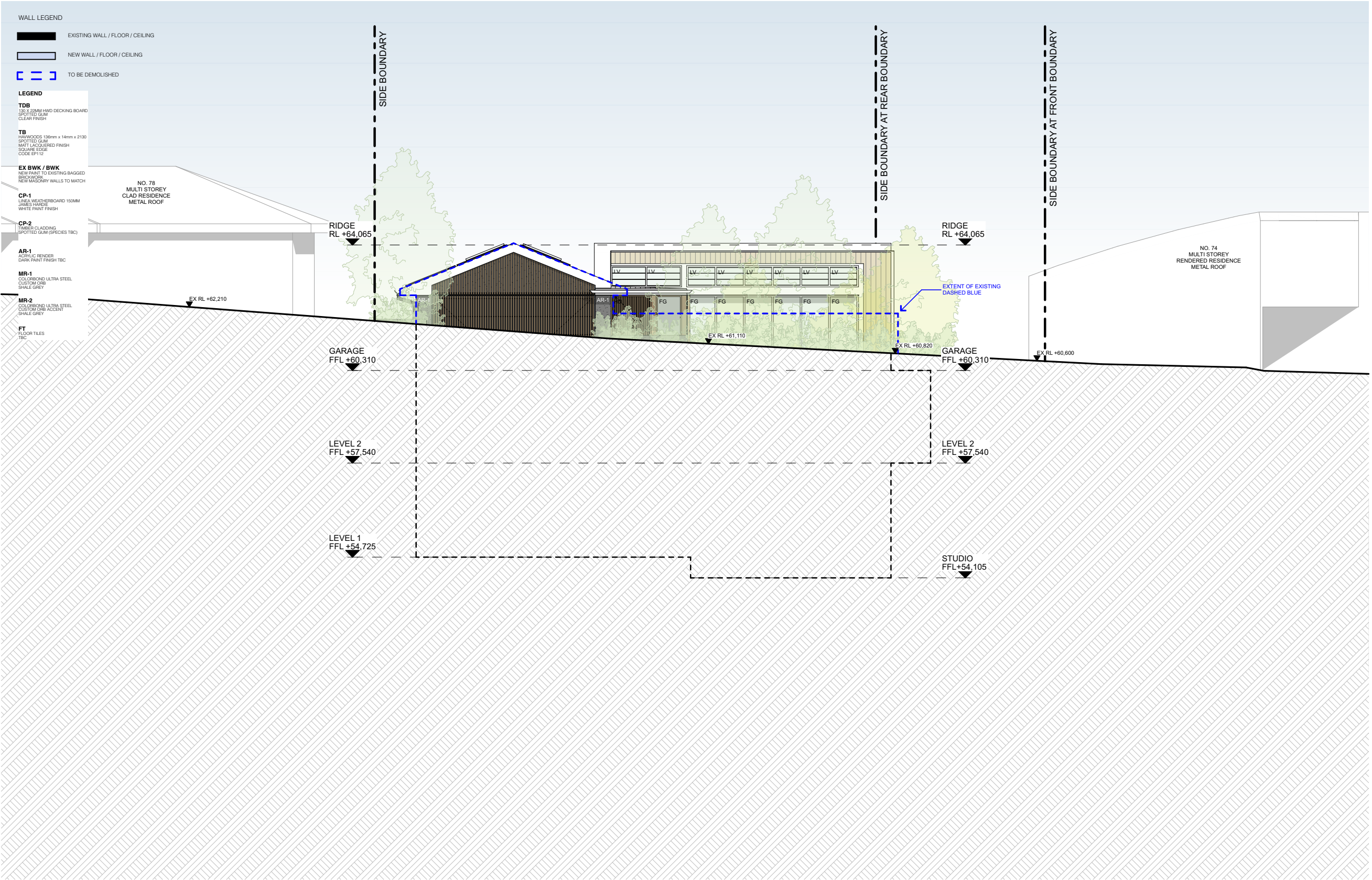
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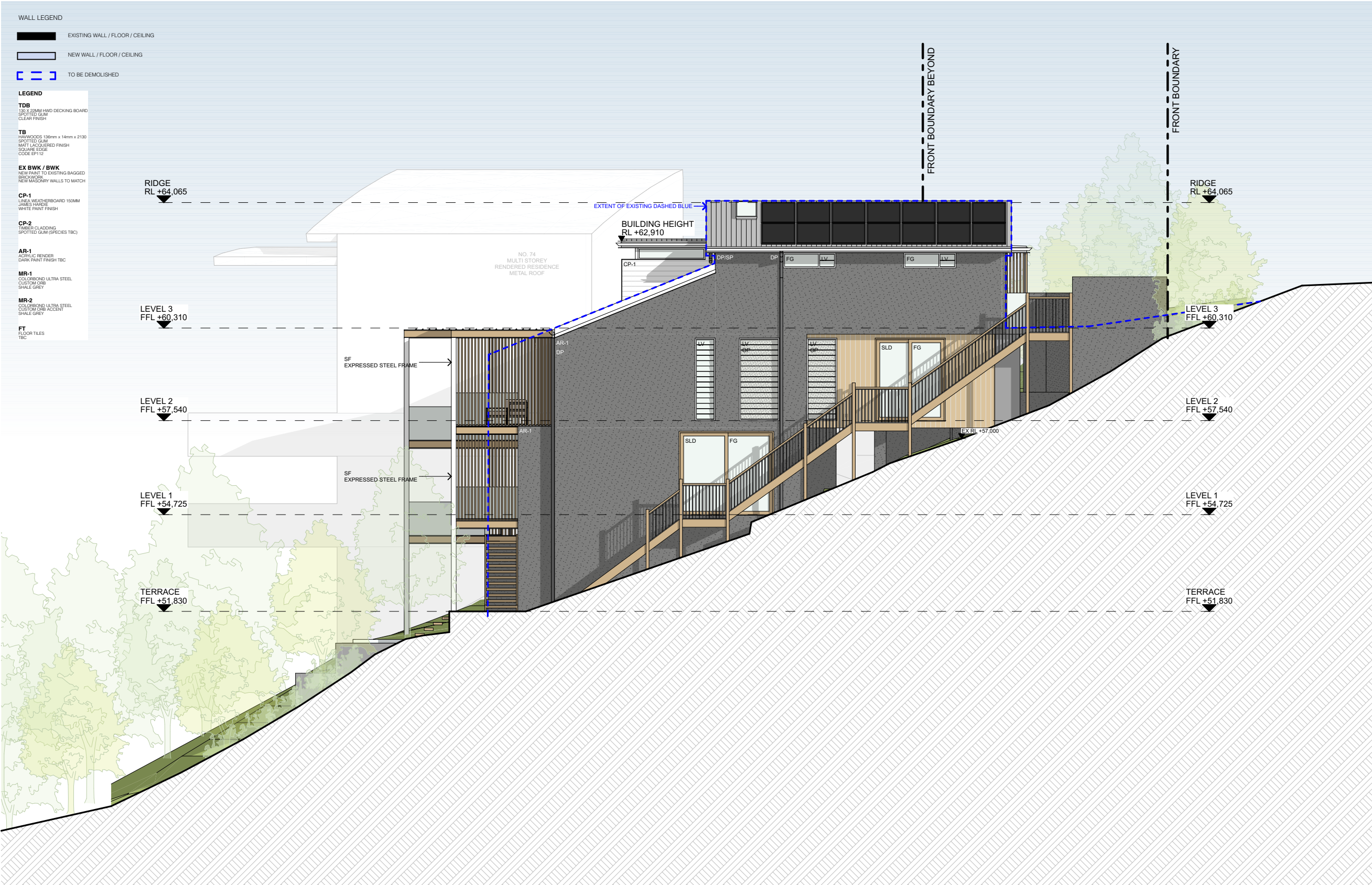
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NORTHERN ELEVATION
SHEET: DA14
ISSUE: D



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EASTERN ELEVATION
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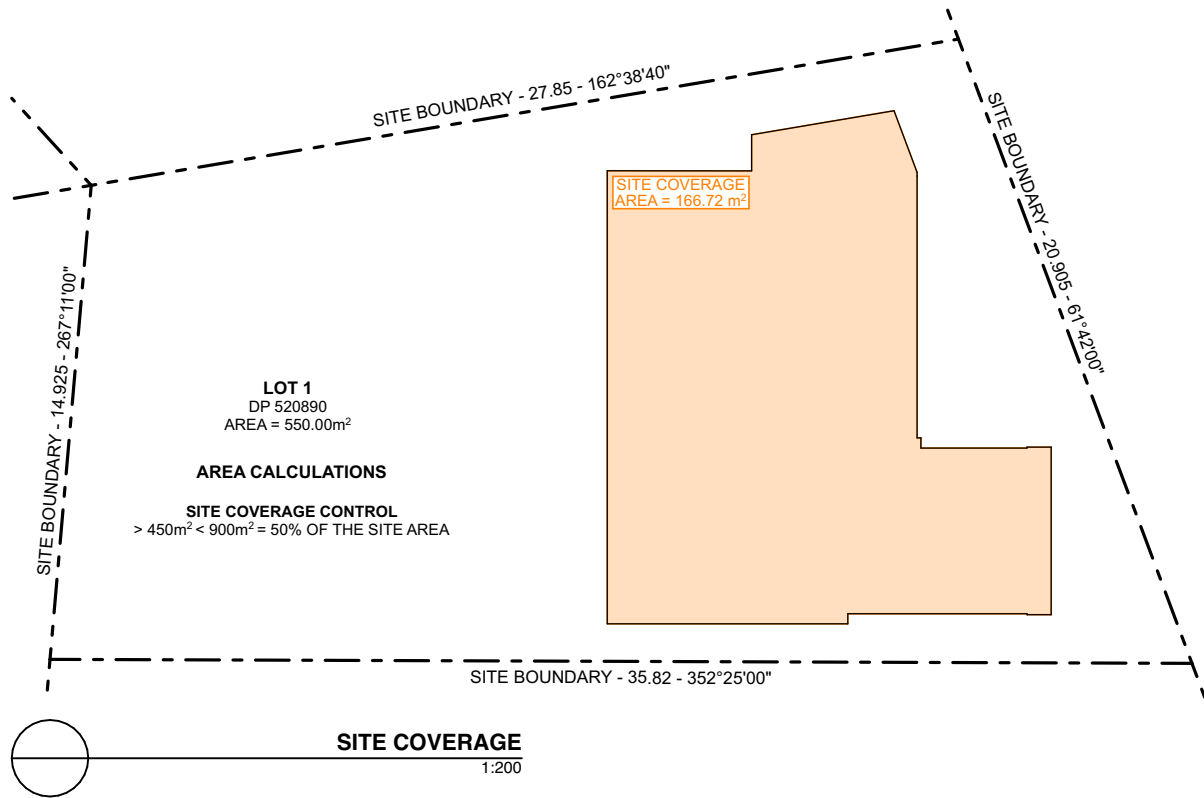
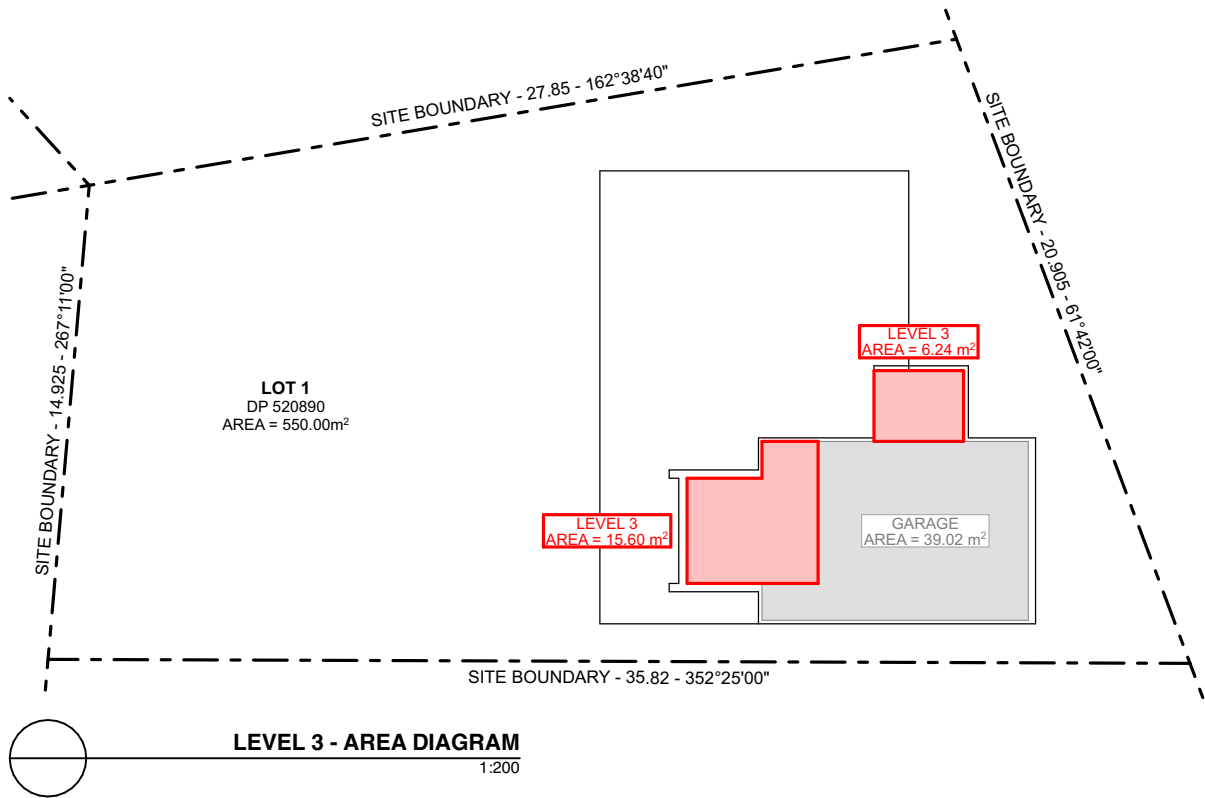
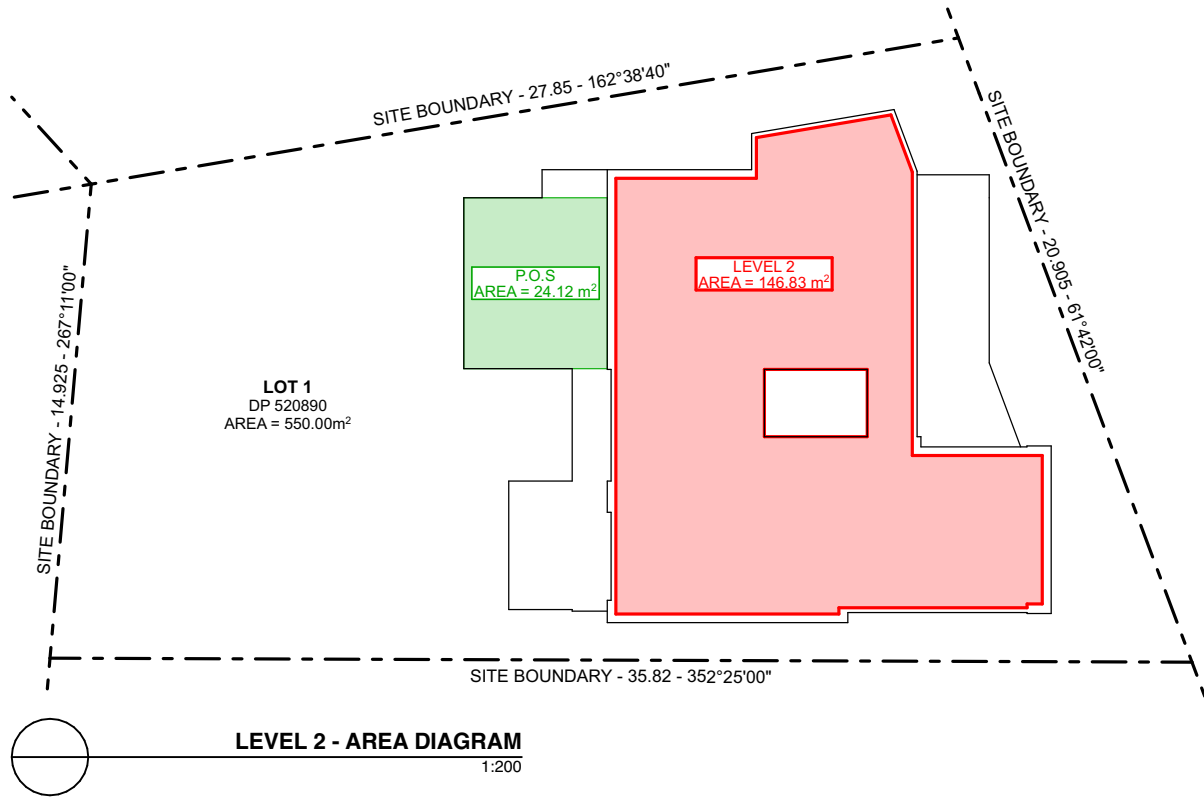
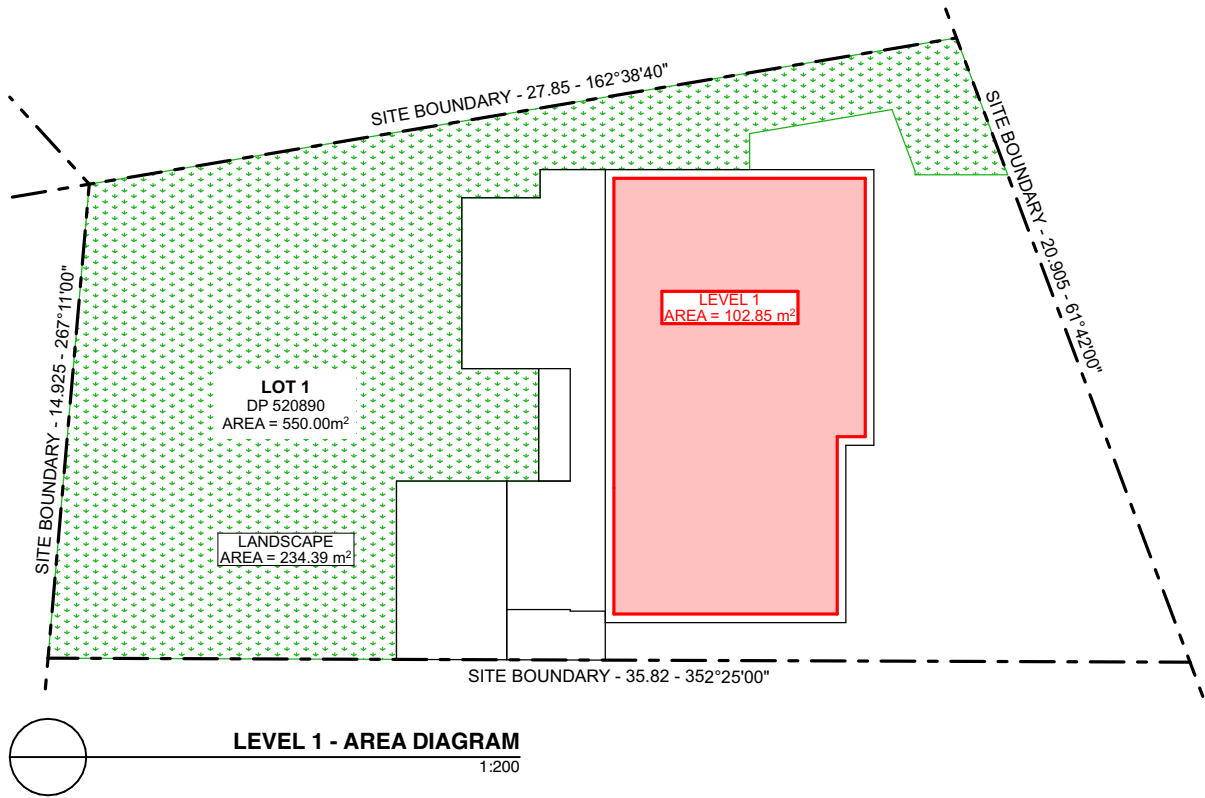
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SOUTHERN ELEVATION
SHEET: DA16
ISSUE: D



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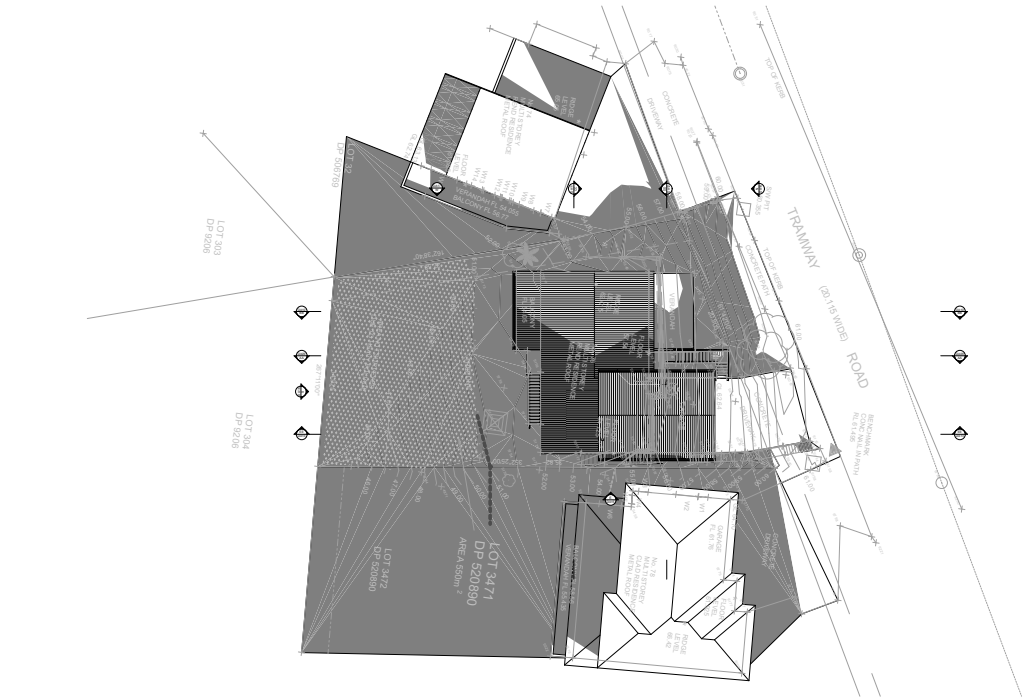


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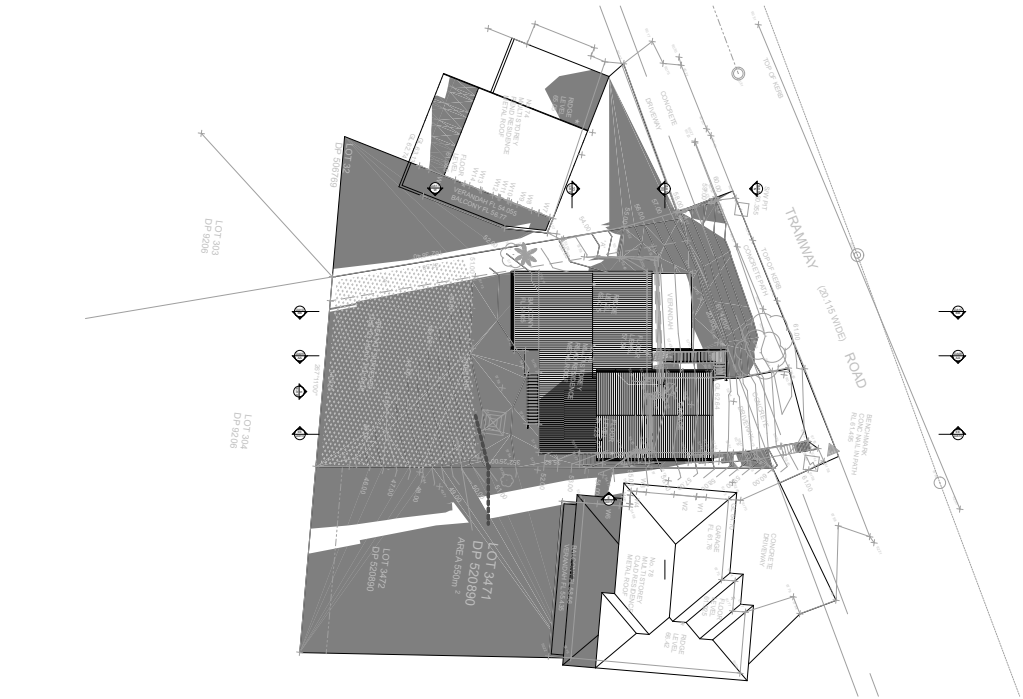
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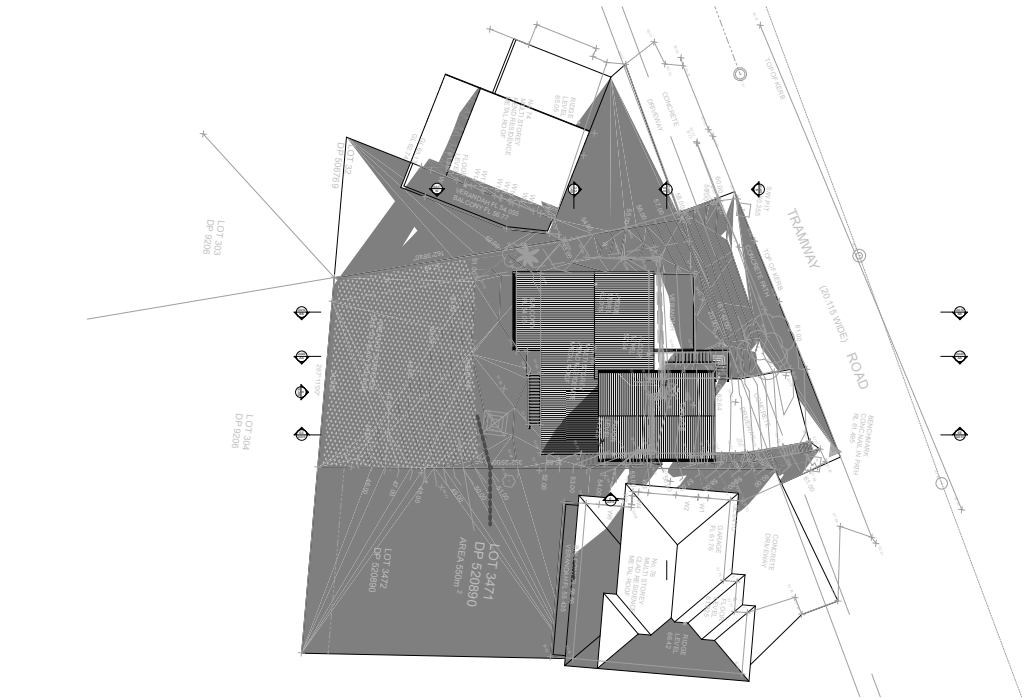
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ISSUE: **D**



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EXISTING - 12PM
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EXISTING - 3PM
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Watershed\Architects

Nominated Architect Mark Korgul No. 6221 Studio 9977 1076 Address Level 1, 167 Pittwater Road Manly NSW 2095

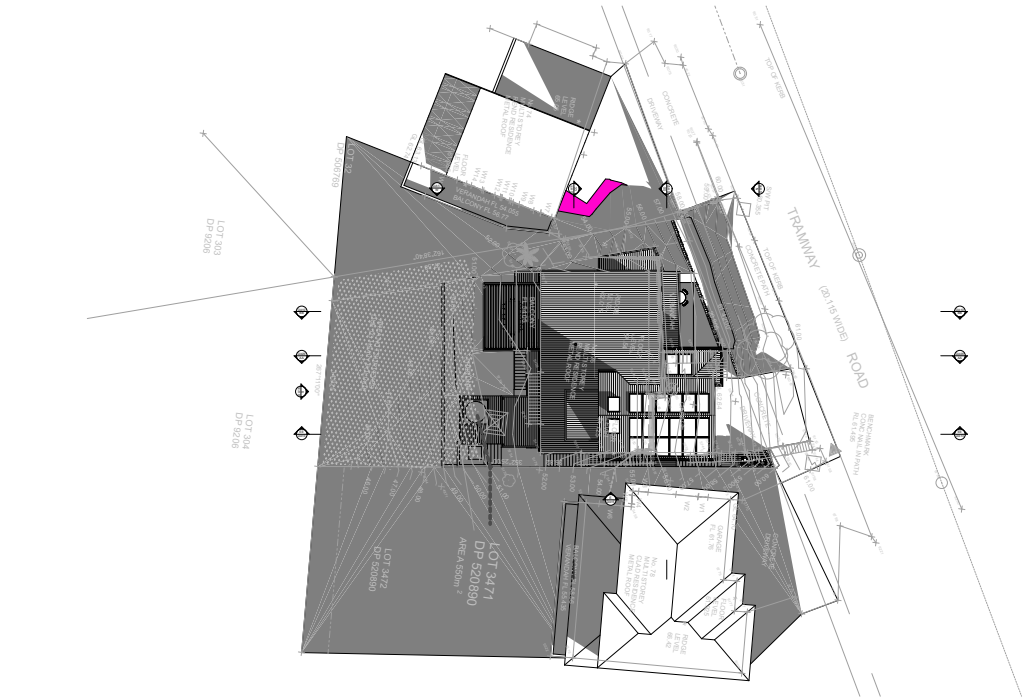


ISSUE FOR
D Development Application

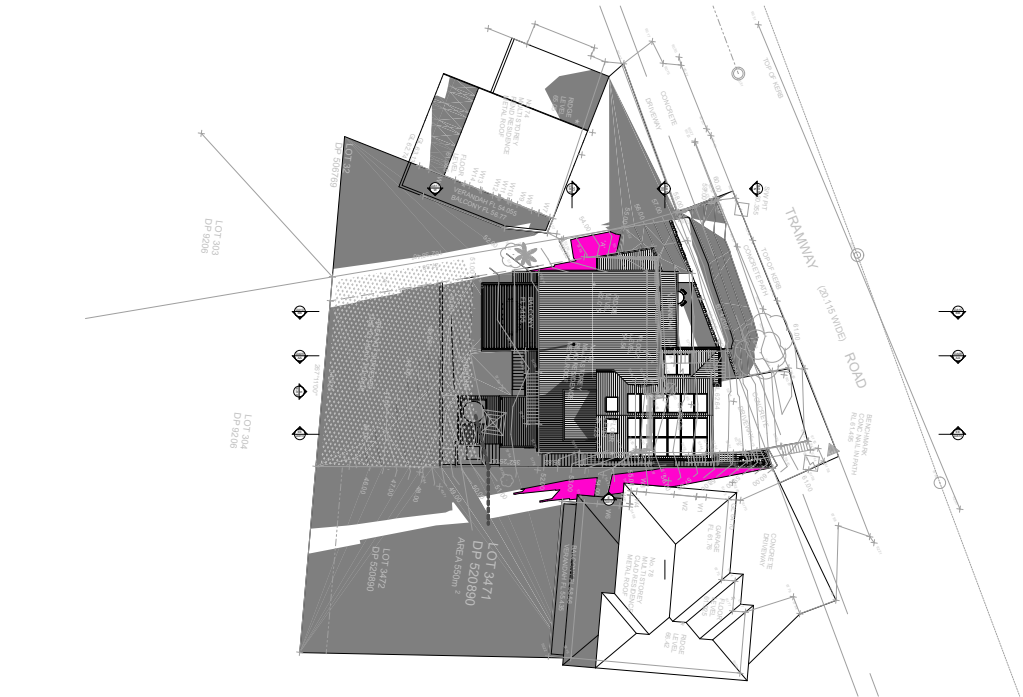
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21/6/2023

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CLIENT: D. Koerber & H. Hillis
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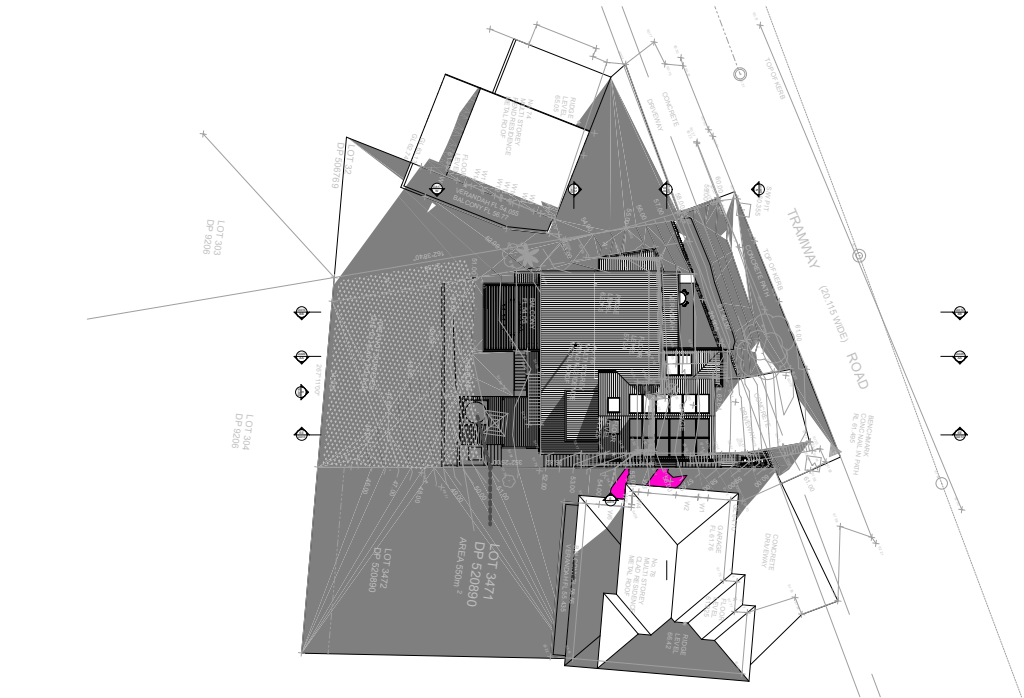
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Watershed\Architects

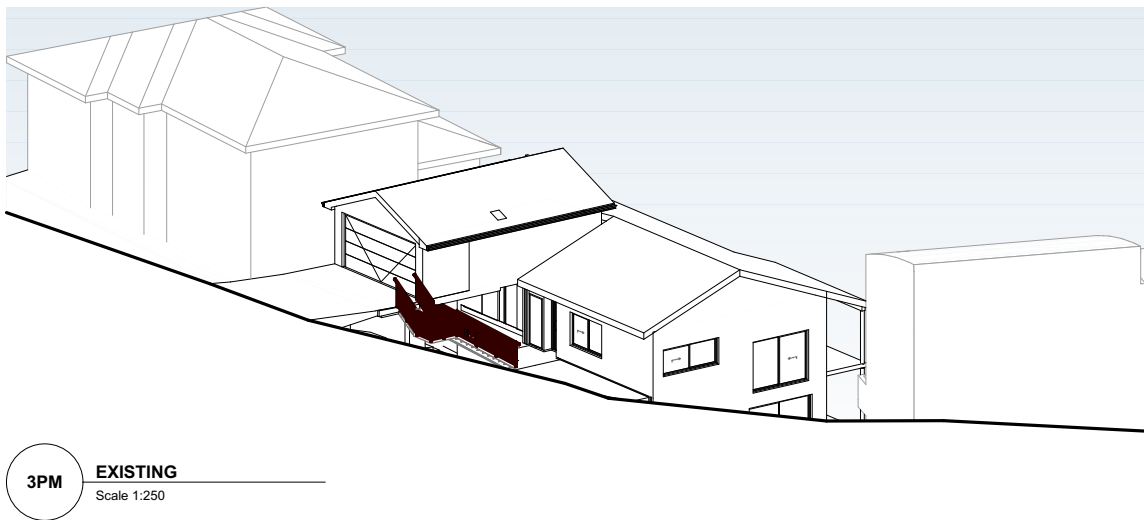
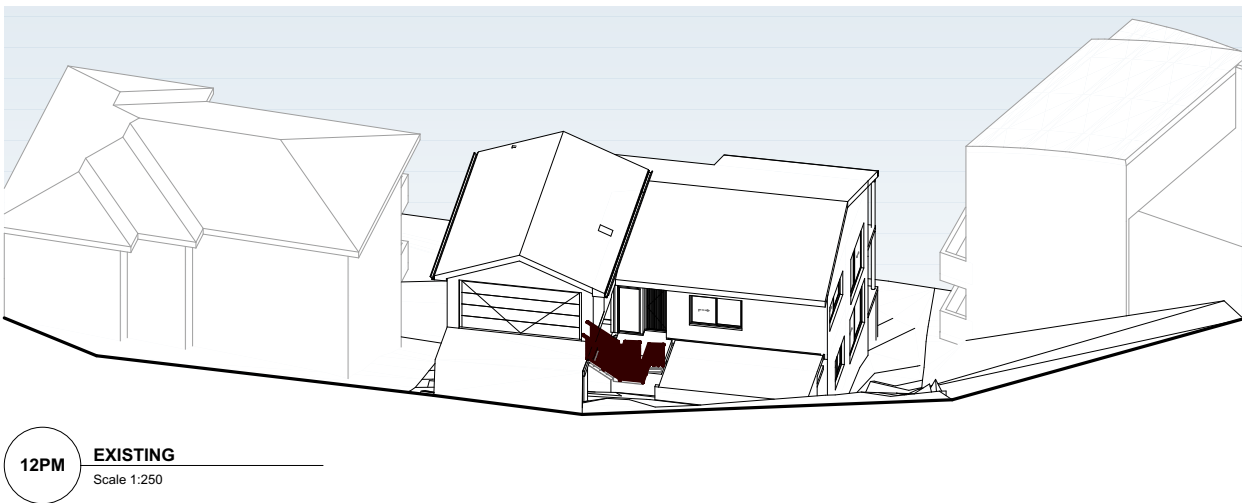
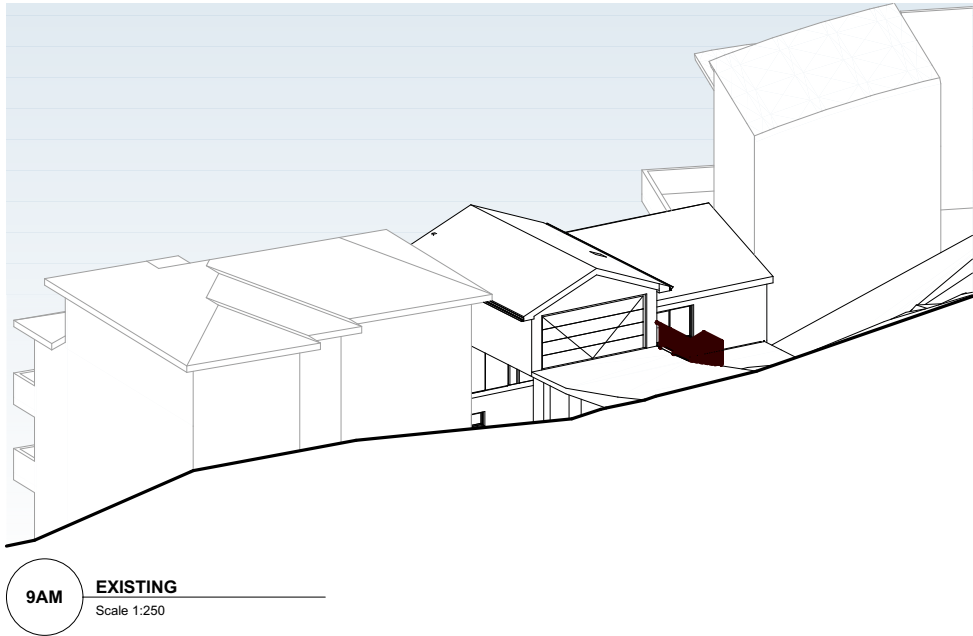
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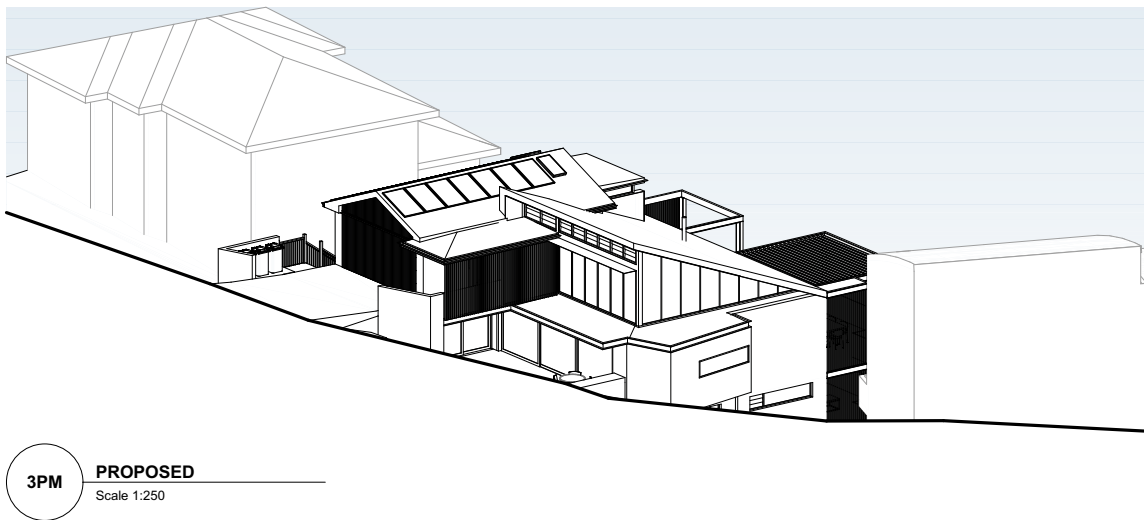
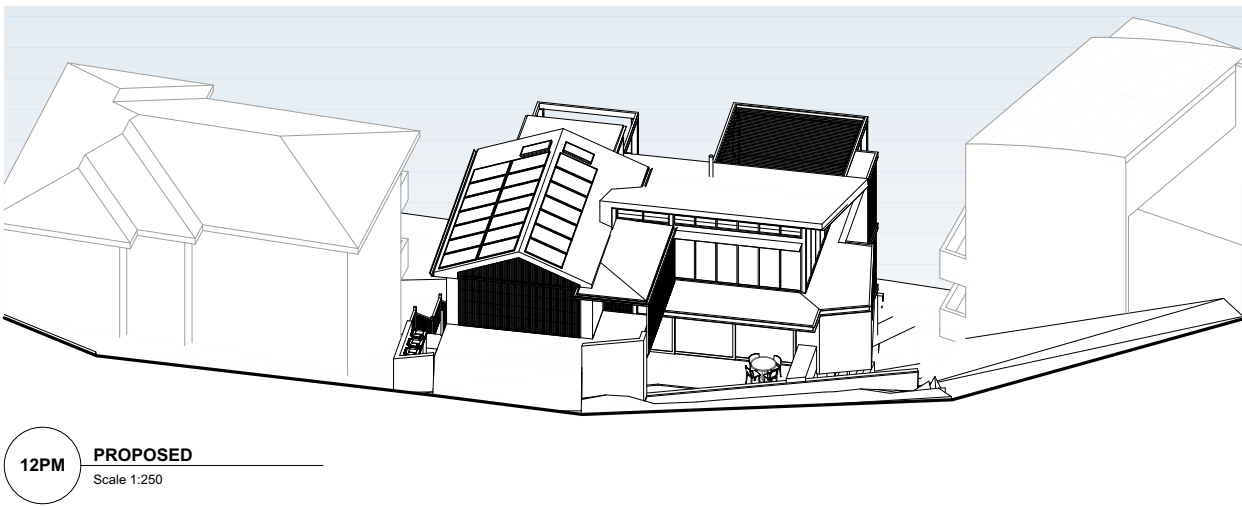
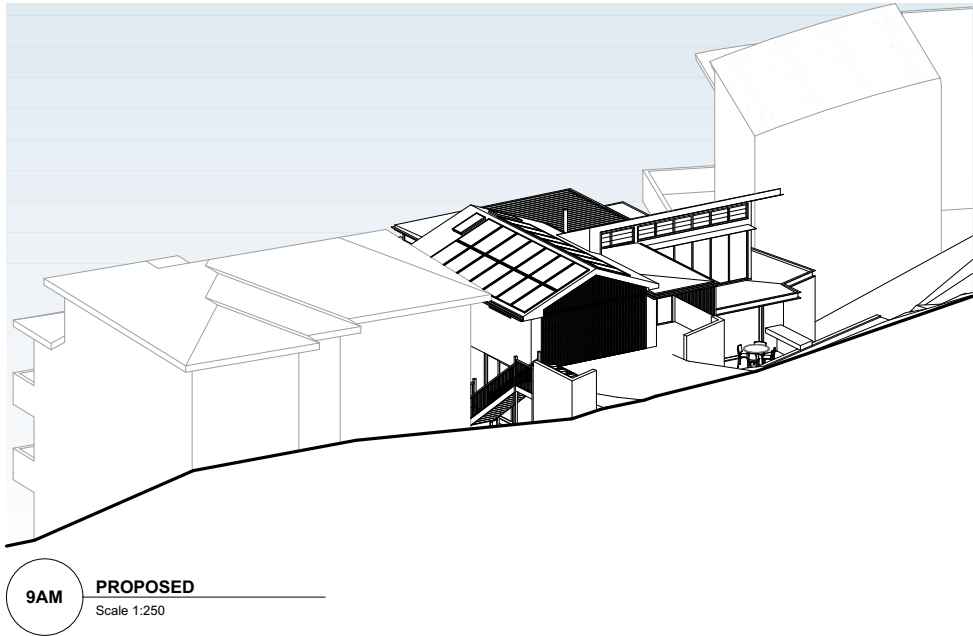
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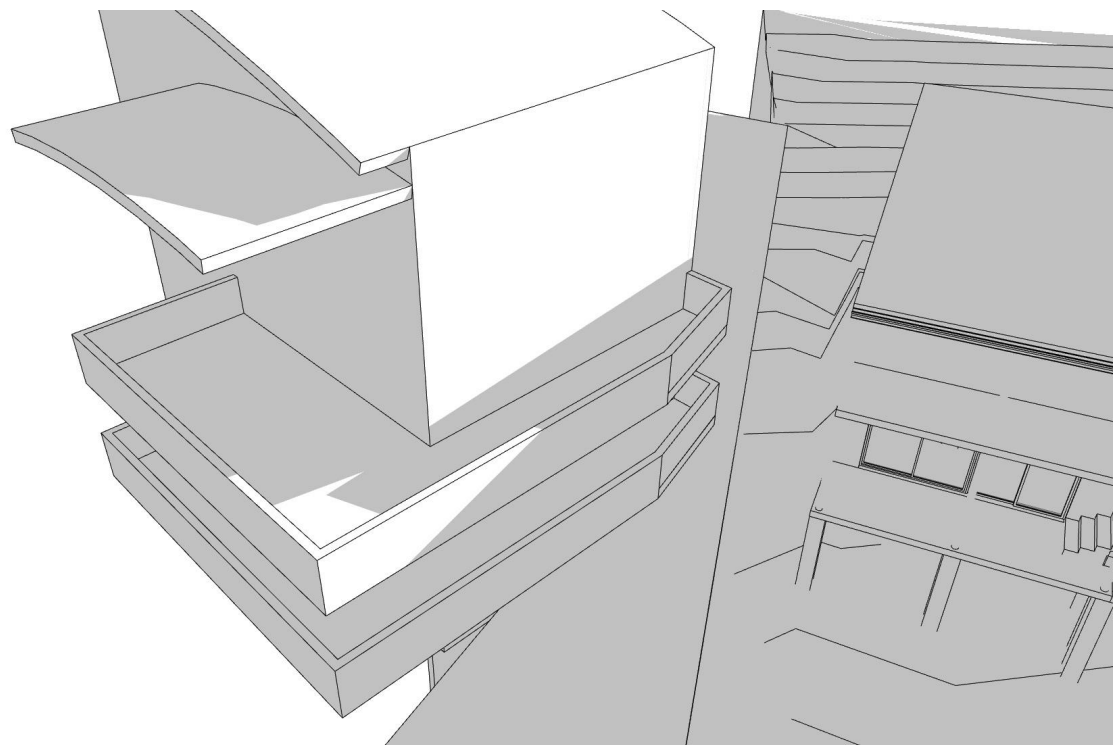
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21/6/2023

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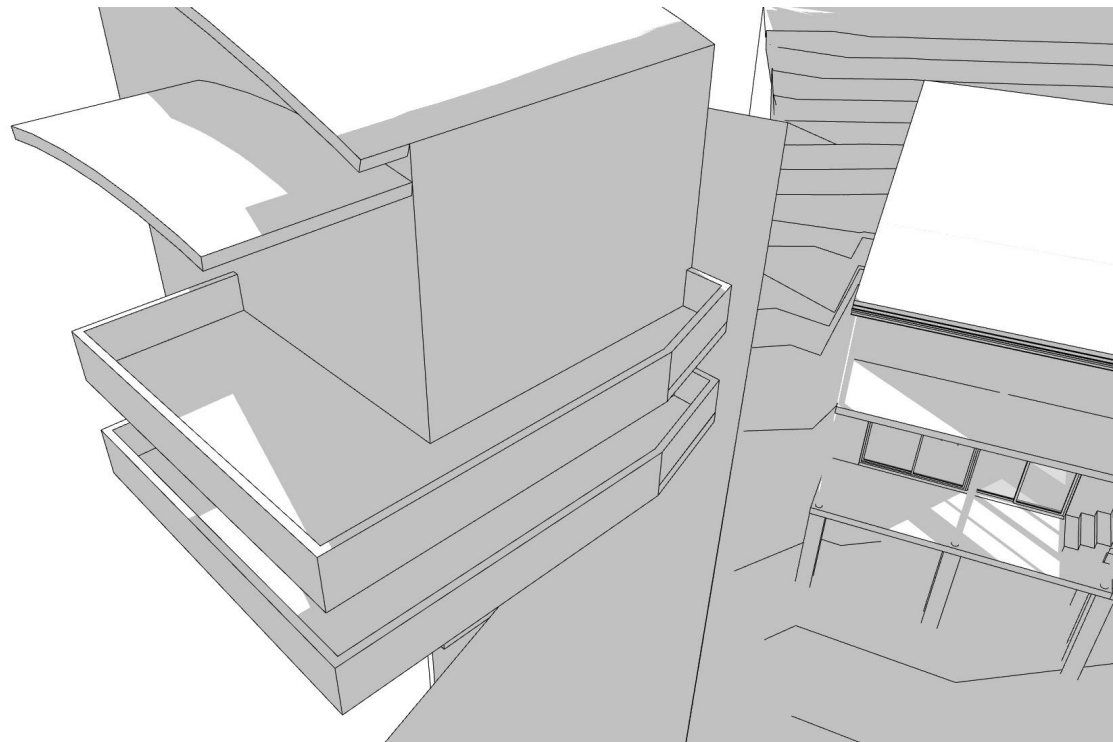
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ISSUE: D



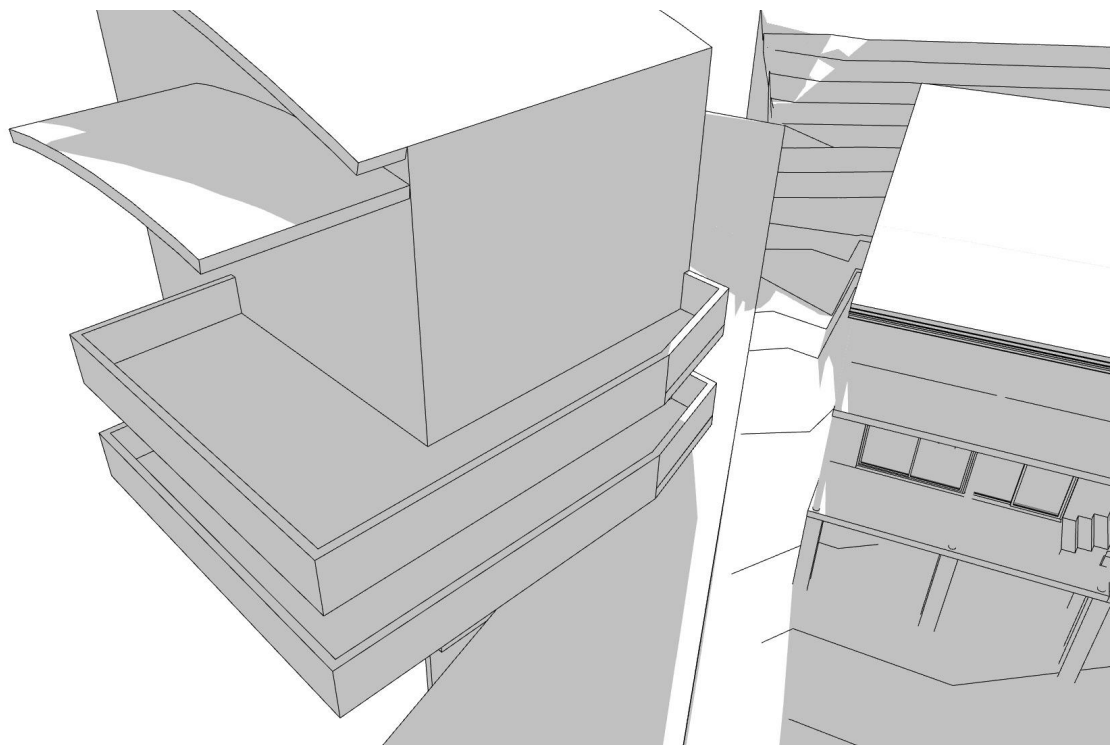




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3pm Existing Shadows
Scale 1:333.33



12pm Existing Shadows
Scale 1:333.33

Watershed\\Architects

Nominated Architect Mark Korgul No. 6221 Studio 9977 1076 Address Level 1, 167 Pittwater Road Manly NSW 2095

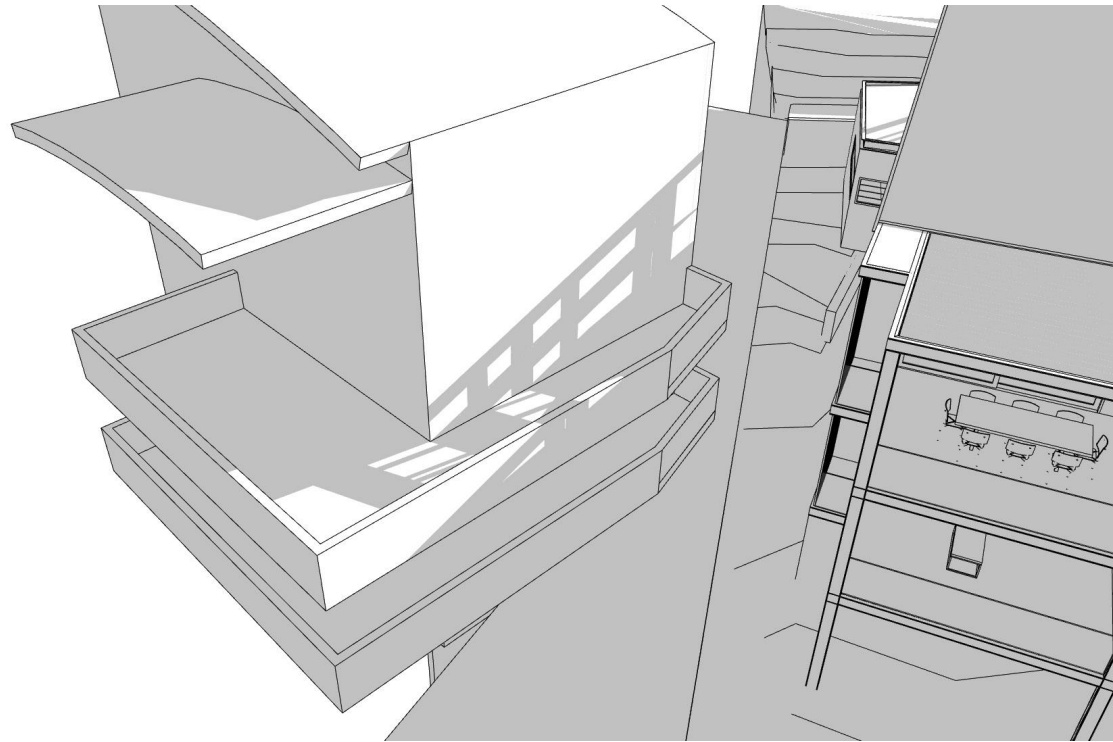


ISSUE FOR
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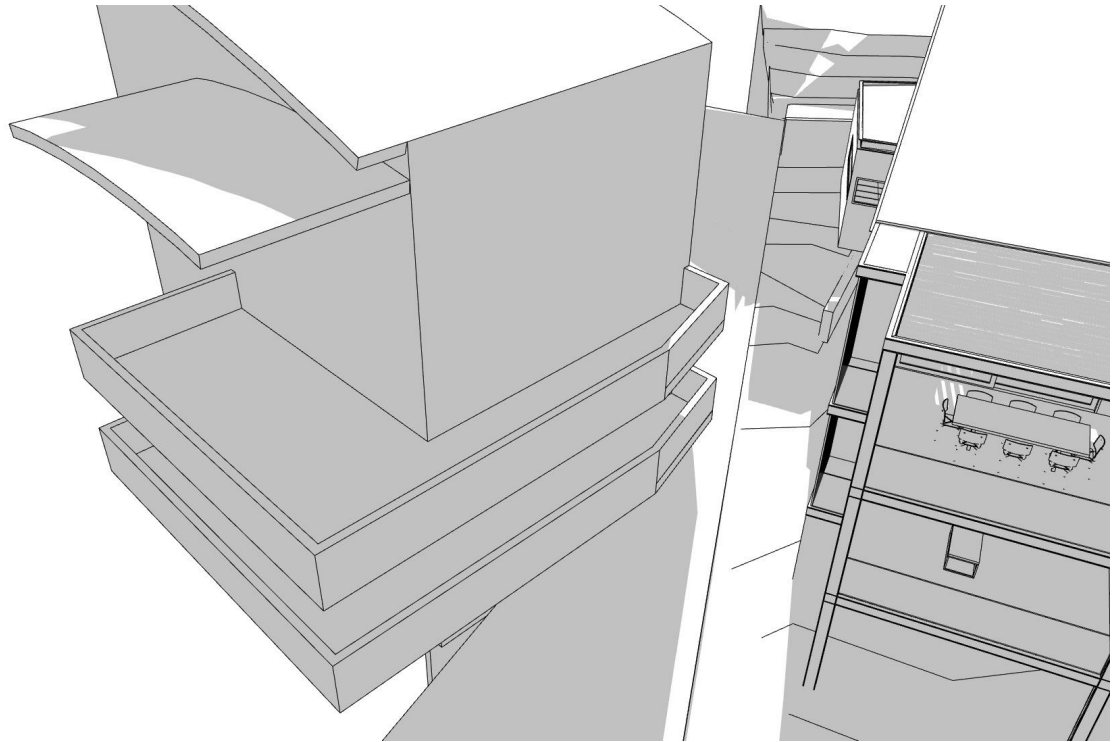
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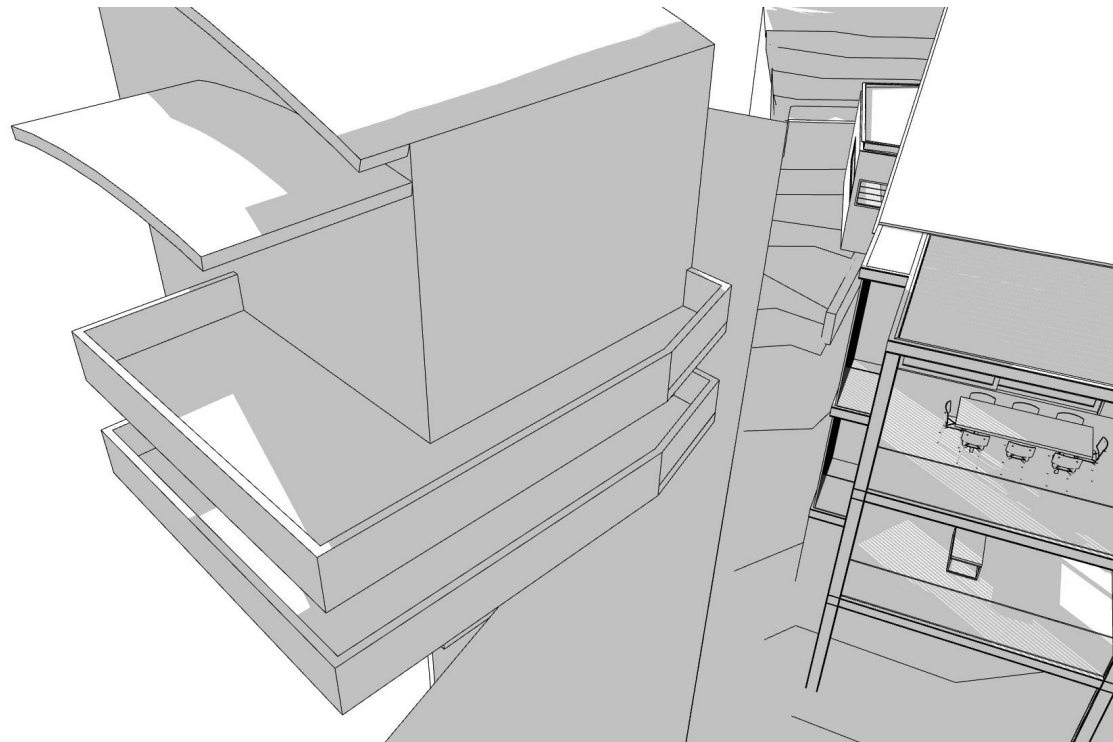
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Watershed\Architects

Nominated Architect Mark Korgul No. 6221 Studio 9977 1076 Address Level 1, 167 Pittwater Road Manly NSW 2095

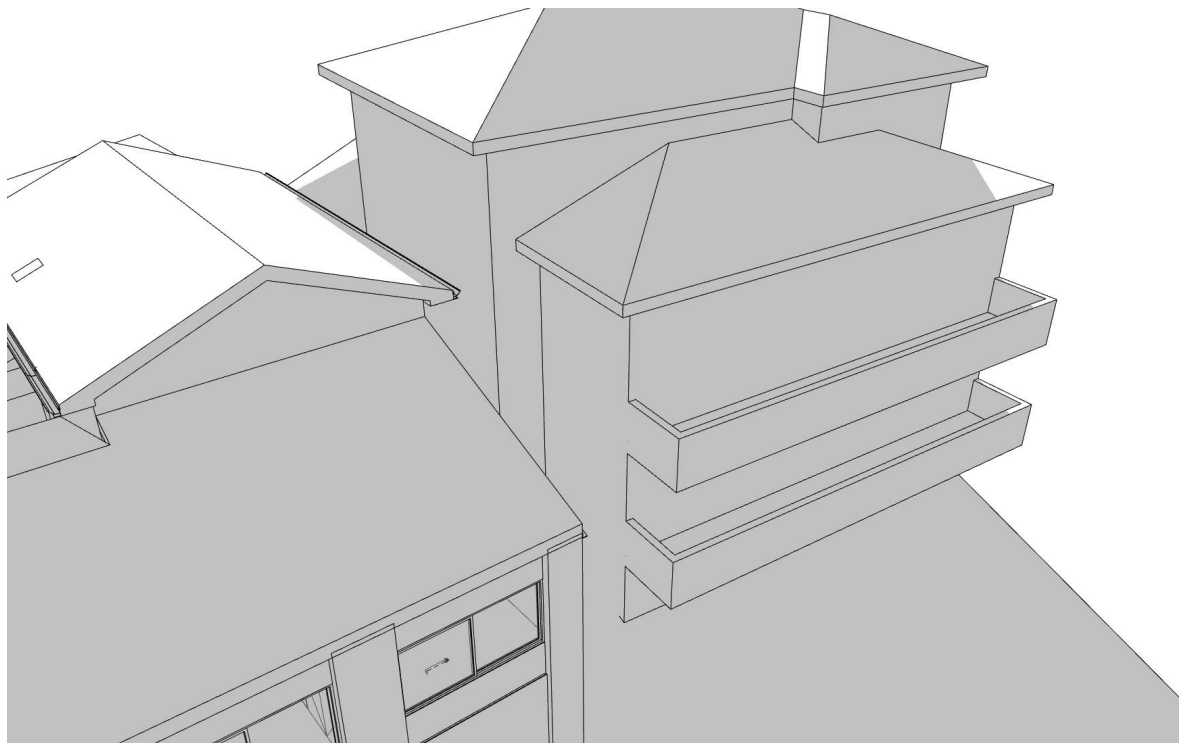


ISSUE FOR
D Development Application

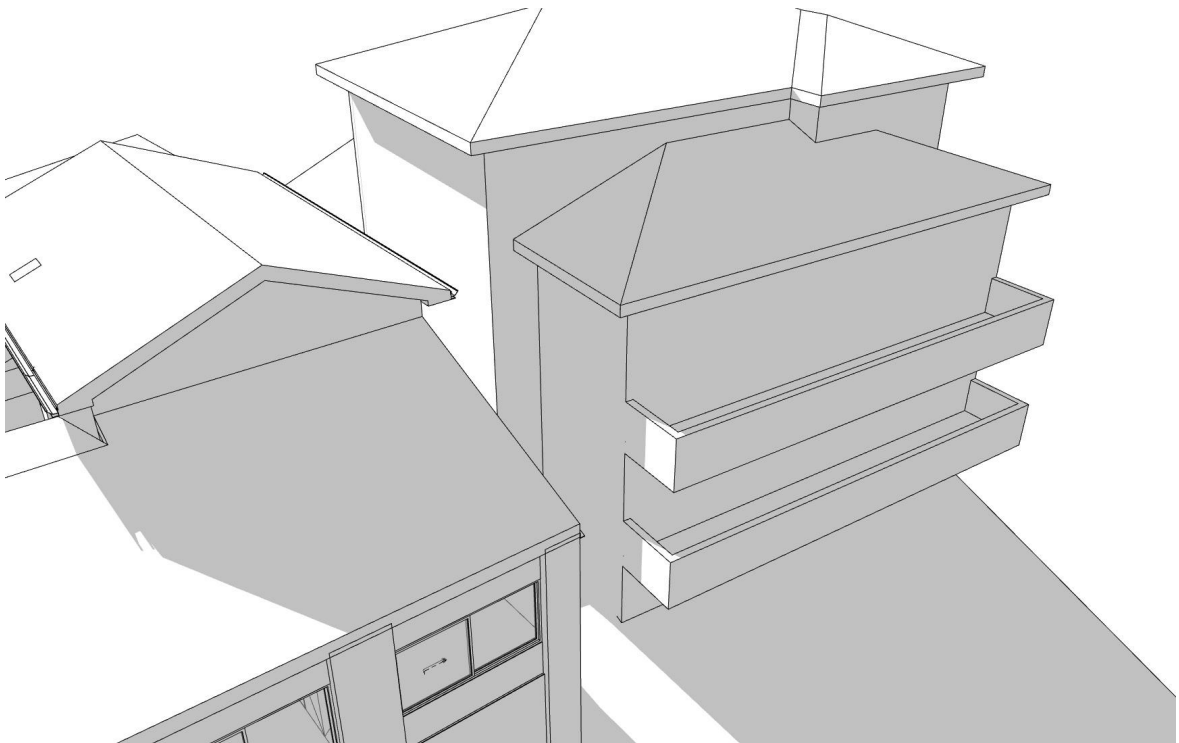
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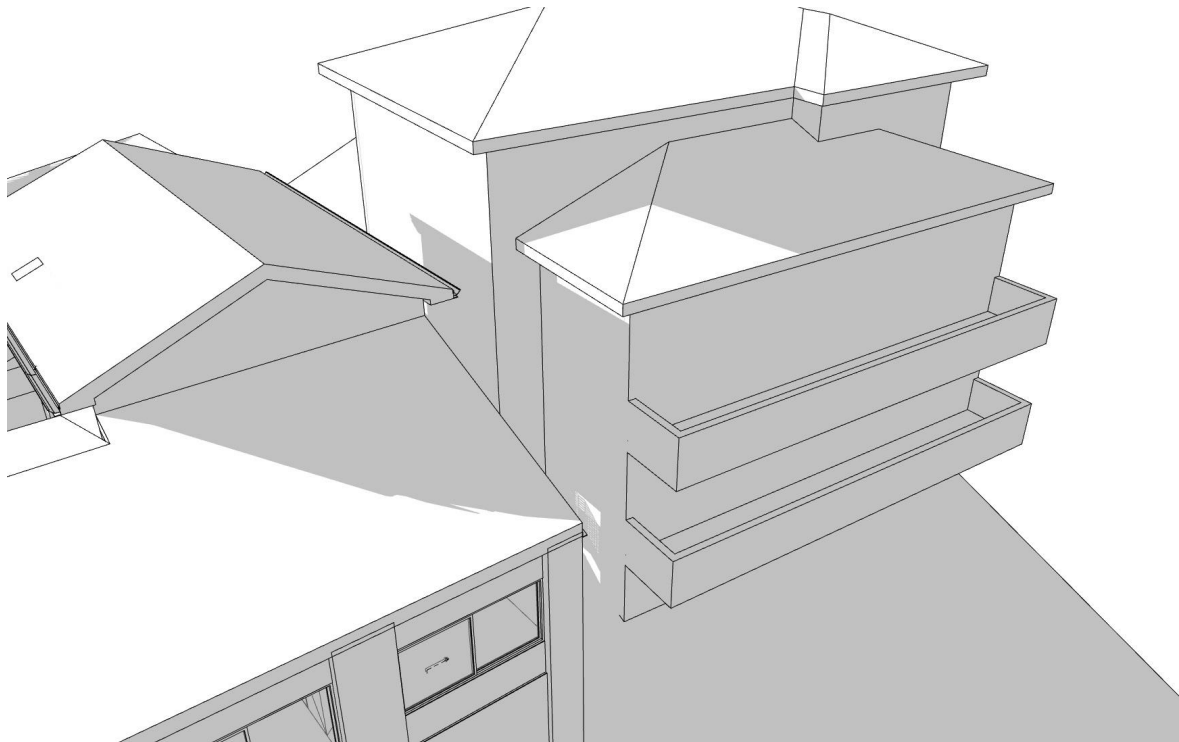
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Watershed\\Architects

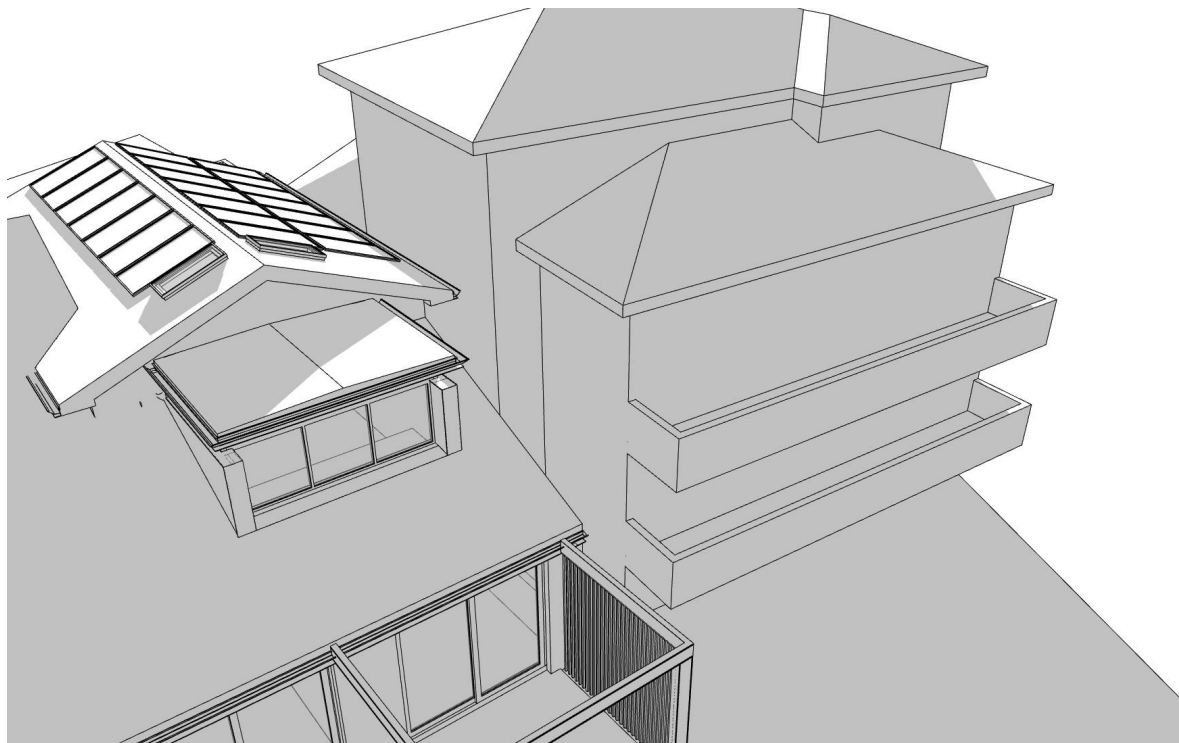
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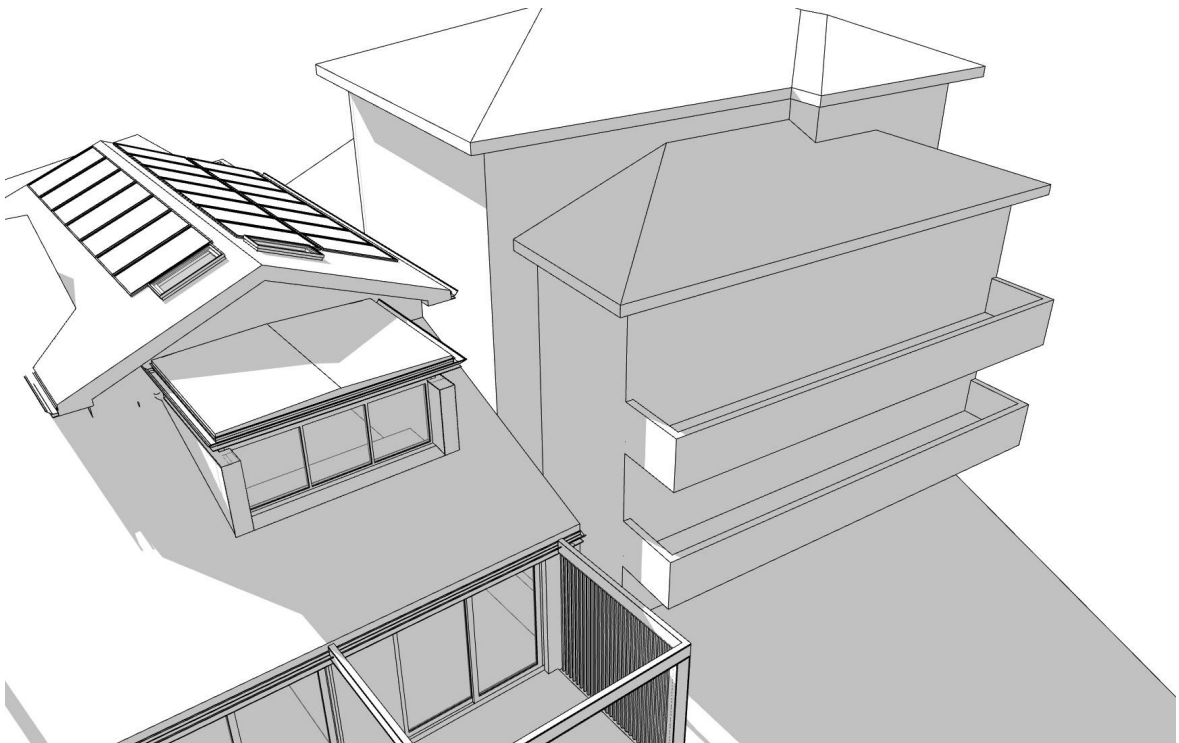
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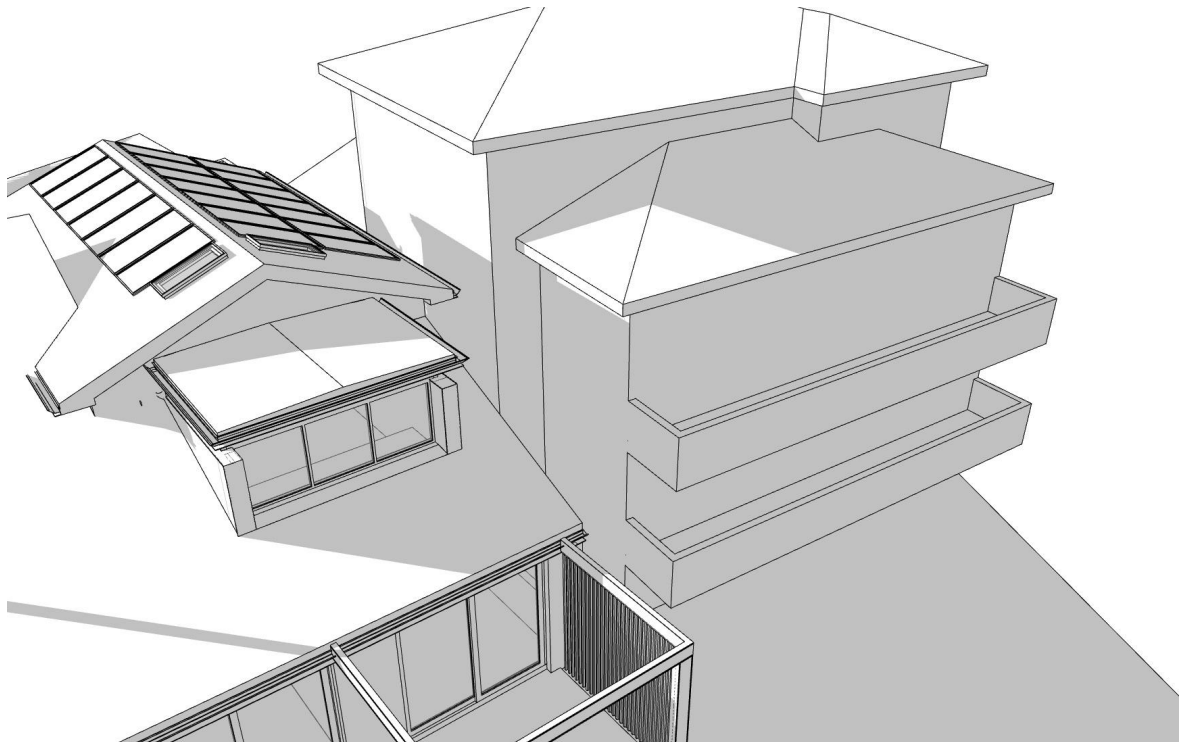
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12pm
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Scale 1:333.33



3pm
Proposed Shadows
Scale 1:333.33

Watershed\Architects

Nominated Architect Mark Korgul No. 6221 Studio 9977 1076 Address Level 1, 167 Pittwater Road Manly NSW 2095

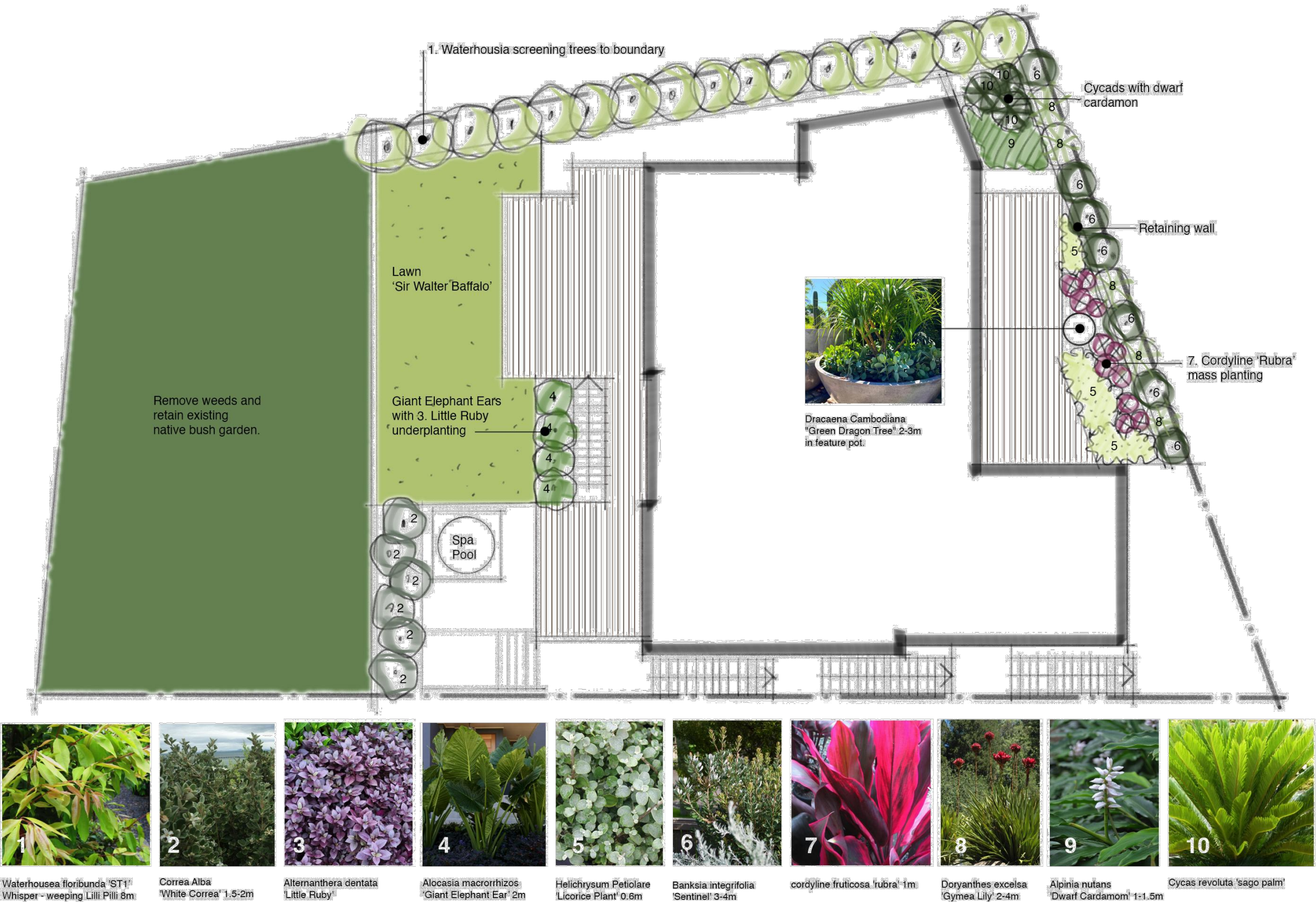


ISSUE FOR
D Development Application

DATE
21/6/2023

JOB NO: 22004
ADDRESS: 76 Tramway Road North Avoca
CLIENT: D. Koerber & H. Hillis
SCALE: 1:333.33 @ A3

NO. 78 PROPOSED BALCONY SHADOWS
SHEET: DA26
ISSUE: D



Watershed\Architects

Nominated Architect Mark Korgul No. 6221 Studio 9977 1076 Address Level 1, 167 Pittwater Road Manly NSW 2095



ISSUE FOR DATE
D Development Application 21/6/2023

JOB NO: 22004
ADDRESS: 76 Tramway Road North Avoca
CLIENT: D. Koerber & H. Hillis
SCALE: 1:1 @ A3

LANDSCAPE DESIGN
SHEET: LD01
ISSUE: D



Bushfire Assessment

Proposed alterations and
additions to dwelling

76 Tramway Road,
North Avoca

Damien Koerber & Heidi Hillis

02 April 2023

(Ref: 23025)

report by
david peterson

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petersonbushfire.com.au

FPA AUSTRALIA (NO.BPAD18882)
BPAD LEVEL 3 ACCREDITED PRACTITIONER
ABN 28 607 444 833

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1 Introduction

Street or property name:	76 Tramway Road		
Suburb, town or locality:	North Avoca	Postcode:	2260
Lot/DP no:	Lot 3471 DP 520890		
Local Government Area:	Central Coast Council		
Type of development:	Additions to existing dwelling		

1.1 Background

Damien Koerber and Heidi Hillis commissioned Peterson Bushfire to prepare a Bushfire Assessment Report for a proposed development at the above address, which is identified as 'bushfire prone land'.

This assessment has been prepared by a consultant accredited by the Fire Protection Association of Australia's BPAD scheme (Accreditation No. BPD-L3-18882). It demonstrates that the proposal complies with the NSW Rural Fire Service document *Planning for Bush Fire Protection 2019*.

This report acts as a certificate as described under Clause 4.14(1)(b) of the *Environmental Planning & Assessment Act 1979* whereby the proposed development, inclusive of the recommendations listed within, conforms with the relevant specifications and requirements (i.e. *Planning for Bush Fire Protection 2019*).

1.2 Location of subject land and development proposal

The subject land is located at the northern end of North Avoca as shown on Figure 1. It is entirely surrounded by residential properties with the nearest bushfire hazard being a small, coastal remnant located greater than 50 m to the south.

The development consists of alterations and additions to the existing residential dwelling. A development site plan is included as Figure 2.

1.3 Assessment requirements

The subject land is identified as being bushfire prone land on the Central Coast Council Bush Fire Prone Land Map as shown on Figure 3. Therefore, the proposed development is to be assessed by Council under the requirements of Section 4.14 of the *Environmental Planning and Assessment Act 1979* which includes the consideration of the NSW Rural Fire Service (RFS) document *Planning for Bush Fire Protection 2019* (NSWRFS 2019), referred to as 'PBP' throughout this report.



Figure 1: Location of subject land (Base image source: SIX Maps)



Figure 2: Development site plan (Source: Watershed Architects)

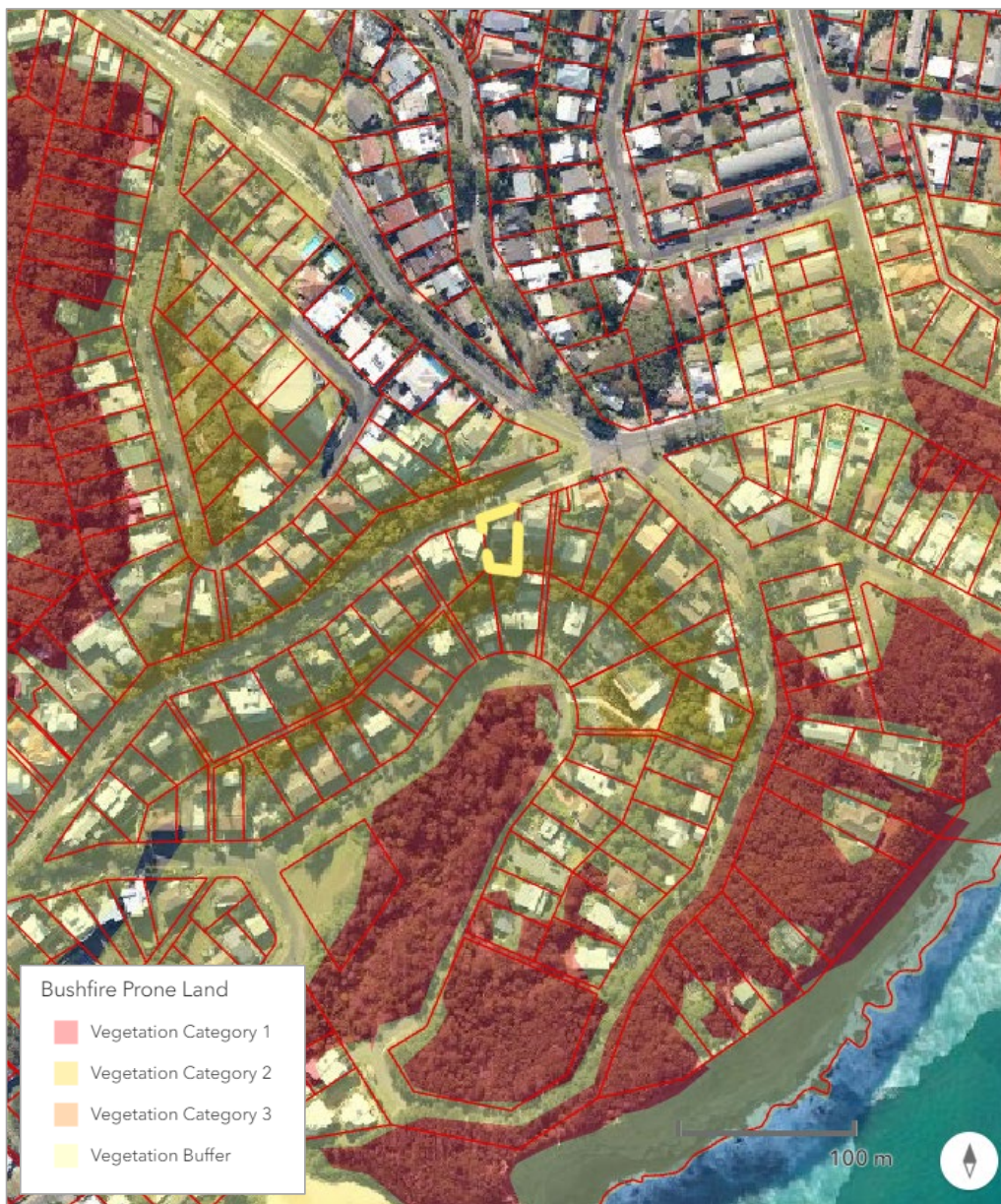


Figure 3: Bushfire prone land mapping (Source: NSW ePlanning Spatial Viewer)

2 Bushfire hazard assessment

This section describes the bushfire hazard. An understanding of the hazard is necessary in order to determine the application of bushfire protection measures required by PBP, such as Asset Protection Zones (APZ) and Bushfire Attack Levels (BAL).

In accordance with PBP, the bushfire hazard is a combination of slope and vegetation which gives rise to the bushfire threat in the context of the development. A description of predominant vegetation and effective slope is provided below.

The subject land and bushfire hazard were inspected on 1st March 2023. Photographs are included at Appendix A.

2.1 Vegetation types

The only bushfire hazard within the 140 m assessment area measured from the subject land is a coastal remnant of Sydney Coastal Dry Sclerophyll Forest located greater than 50 m to the south of the subject land. The coastal remnant is approximately 1.3 hectares in size and is situated within a Council bushland reserve along a gully confined between The Arena and North Avoca Parade.

The bushfire prone land mapping (refer to Figure 3) shows low risk vegetation (Vegetation Category 2) extending through rear yards between residences along Tramway Road and The Arena as well as other areas throughout the immediate locality. These mapped areas are within residential properties and are classified as 'low threat vegetation' or 'managed land'. Neither are classified as bushfire hazards and therefore do not require consideration for APZ or BAL determination.

2.2 Effective slope

The effective slope approaching the subject land within the 100 m assessment area is within the PBP slope class of 'downslope 5-10 degrees'. The slope can be appreciated from the 2 m contour layer shown on Figure 4.

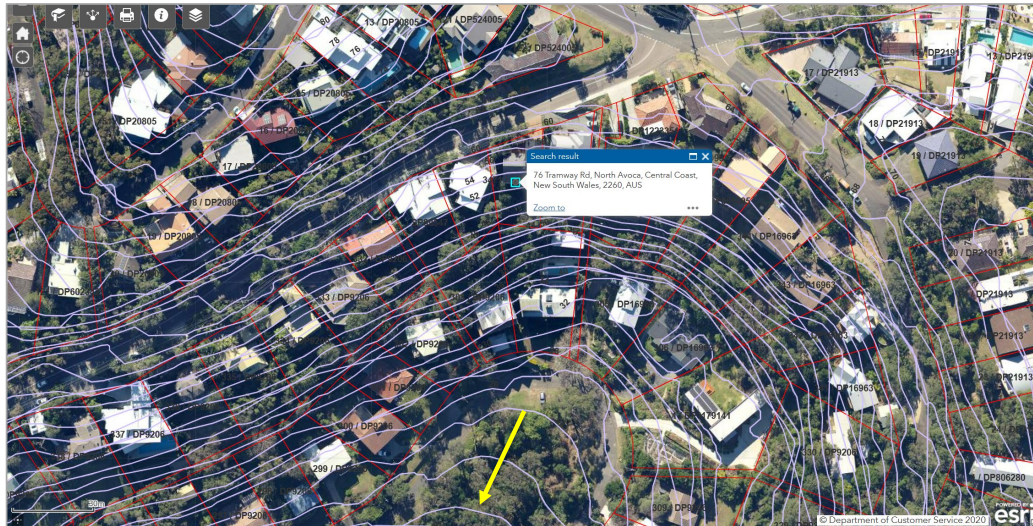


Figure 4: Effective slope determination with 2 m contour intervals (Source: Spatial Map Viewer)

3 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total provide an adequate level of protection for residential development. The measures required to be assessed are listed in Table 1 below and are discussed in detail in the remainder of this section.

Table 1: PBP bushfire protection measures

Bushfire protection measures	Considerations
Asset Protection Zones (APZ)	Location and dimension of APZ building setbacks from vegetation including prescriptions of vegetation management within the APZ.
Building construction standards	Determination of the Bushfire Attack Level (BAL) to apply to corresponding construction specifications listed in AS 3959.
Access	Assessment to include access and egress and standards of roads.
Water supply and other utilities	List requirements for reticulated water supply and hydrant provisions, and any static water supplies for fire-fighting.

3.1 Asset Protection Zone (APZ)

Using the hazard parameters of vegetation and slope presented in Section 2, the required Asset Protection Zone (APZ) from the bushfire hazard has been determined using Table A1.12.2 of PBP. Table 2 below lists the APZ results.

As shown on Figure 5 on the following page, the available hazard separation exceeds the minimum APZ requirement. Additional APZ establishment is not required for the proposal.

Table 2: Determination of APZ and BAL

Direction ¹	Vegetation ²	Slope ³	PBP APZ ⁴	Available APZ ⁵	AS3959 Bushfire Attack Level (BAL) ⁶
South	Forest	Downslope 5-10°	36 m	65-100 m	BAL-12.5
Remaining directions	Managed	Not required	Not required	>100 m	BAL-LOW

¹ Direction of assessment from development.

² Predominant vegetation classification over 100 m from development.

³ Effective slope assessed over 100 m from development site where the bushfire hazard occurs.

⁴ Minimum APZ required by PBP acceptable solution for residential development.

⁵ APZ proposed to be established and/or provided by existing management arrangements.

⁶ Bushfire Attack Level (BAL) corresponding to AS 3959-2018 'Construction of buildings in bushfire-prone areas'.



Figure 5: Available hazard separation (Source: Nearmap)

3.2 Vegetation management

The vegetation within the subject land and any proposed landscaping is to comply with the standard of an Inner Protection Area (IPA) as listed at Section A4.1.1 of PBP. The IPA requirements stated within PBP are repeated below:

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

- **Trees**
 - tree canopy cover should be less than 15% at maturity;
 - trees at maturity should not touch or overhang the building;

- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.
- **Shrubs**
 - create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
 - shrubs should not be located under trees;
 - shrubs should not form more than 10% ground cover; and
 - clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
- **Grass**
 - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
 - leaves and vegetation debris should be removed.

3.3 Bushfire Attack Level (BAL)

As shown in Table 2, all external aspects of the proposed development will be within 100 m of the identified bushfire hazard and therefore rated BAL-12.5. The rating has been determined in accordance with PBP (Table A1.12.5).

All external building works are to be designed and constructed to comply with BAL-12.5 of Australian Standard AS 3959-2018 *Constructions of buildings in bushfire-prone areas* (AS 3959). The NSW variation to AS 3959 is also to be applied to the BAL requirements. The variation can be found at Section 7.5.2 of PBP.

3.4 Water supply and utilities

3.4.1 Water supply

The nearest hydrant is located directly in front of the subject land. The dwelling and proposed works will be within the required distance of the hydrant as specified by PBP and AS 2419.1-2005 *Fire hydrant installations - System design, installation and commissioning*. An additional water supply for fire-fighting is not required.

3.4.2 Electrical supply

The vegetation clearance distances to any overhead powerline servicing the subject land are to comply with *ISSC 3 Guideline for Managing Vegetation Near Power Lines* (Industry Safety

Steering Committee 2005). The guidelines specify a clearance distance of 0.5 m for a typical connection for residential dwellings.

3.4.3 Gas supply

Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2014 The storage and handling of LP gas*.

3.5 Access

A standard residential driveway provides the access to the subject land and therefore complies with PBP. There are no specific standards for private property access whereby the dwelling will be within the required distance of a hydrant (refer to Section 3.4.1 above). Fire tankers will not need to enter the driveway or the property. They would stand on the street when attending to a fire at the subject land. Additional access provisions for fire-fighting are not required.

4 Conclusion and recommendations

The proposal consists of additions and alterations to an existing dwelling on land identified as bushfire prone. The available hazard separation distance between the proposed development and the identified bushfire hazard exceeds the minimum requirements resulting in a BAL-12.5 construction requirement. The existing vegetation, utility and access arrangements comply.

Recommendations made within this report are provided to achieve compliance. Four recommendations have been made as repeated below:

1. All external building works are to be designed and constructed to comply with BAL-12.5 of Australian Standard AS 3959-2018 *Constructions of buildings in bushfire-prone areas* (AS 3959). The NSW variation to AS 3959 is also to be applied to the BAL requirements. The variation can be found at Section 7.5.2 of PBP.
2. Existing vegetation and any proposed landscaping are to comply with the standard of an Inner Protection Area (IPA) as listed at Section A4.1.1 of PBP.
3. The vegetation clearance distances to any overhead powerline servicing the subject land are to comply with *ISSC 3 Guideline for Managing Vegetation Near Power Lines* (Industry Safety Steering Committee 2005). The guidelines specify a clearance distance of 0.5 m for a typical connection for residential dwellings.
4. Any gas services are to be installed and maintained in accordance with AS/NZS 1596-2014 *The storage and handling of LP gas*.

In the author's professional opinion, the proposed development will comply with *Planning for Bush Fire Protection 2019* with the adoption of the above recommendations.



David Peterson



References

Industry Safety Steering Committee. 2005. *ISSC 3 Guideline for Managing Vegetation Near Power Lines*. (updated from Energy Australia. 2002. *Network Standard NS 179 (Vegetation Safety Clearances)*).

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities and Developers*. State of New South Wales through the NSW Rural Fire Service.

Standards Australia. 2005. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Standards Australia International Ltd, Sydney.

Standards Australia. 2014. *The storage and handling of LP Gas*, AS/NZS 1596-2014, Standards Australia International Ltd, Sydney.

Standards Australia. 2018. *Construction of buildings in bushfire-prone areas*, AS 3959, Standards Australia International Ltd, Sydney.

Appendix A – Photographs



Photograph 1: Front of subject land showing maintained landscaping



Photograph 2: Rear of dwelling proposed to be modified



Photograph 3: Rear yard requiring maintenance to comply with IPA standard



Photograph 4: Hydrant located directly in front of subject land

BASIX[®]Certificate

Building Sustainability Index www.basix.nsw.gov.au

Alterations and Additions

Certificate number: A498439

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Alterations and Additions Definitions" dated 06/10/2017 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Tuesday, 27, June 2023

To be valid, this certificate must be lodged within 3 months of the date of issue.



Planning,
Industry &
Environment

Description of project

Project address	
Project name	Tramway Road
Street address	76 Tramway Road North Avoca 2260
Local Government Area	Central Coast Council
Plan type and number	Deposited Plan 520890
Lot number	3471
Section number	
Project type	
Dwelling type	Separate dwelling house
Type of alteration and addition	My renovation work is valued at \$50,000 or more, and includes a pool (and/or spa).

Certificate Prepared by (please complete before submitting to Council or PCA)

Name / Company Name: Watershed Architects

ABN (if applicable): 85156335812

BASIX Certificate number: A498439

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Pool and Spa	Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Rainwater tank			
The applicant must install a rainwater tank of at least 1443 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the rainwater tank to collect rainwater runoff from at least 10 square metres of roof area.		✓	✓
The applicant must connect the rainwater tank to a tap located within 10 metres of the edge of the outdoor spa.		✓	✓
Outdoor spa			
The spa must not have a capacity greater than 1.5 kilolitres.	✓	✓	✓
The spa must have a spa cover.		✓	✓
The applicant must install a spa pump timer.		✓	✓
The applicant must install the following heating system for the outdoor spa that is part of this development: electric heat pump.		✓	✓

BASIX Certificate number: A498439

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Fixtures and systems	Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Hot water			
The applicant must install the following hot water system in the development: electric heat pump system that is eligible to create Renewable Energy Certificates under the (Commonwealth) Renewable Energy (Electricity) Regulations 2001 (incorporating Amendment Regulations 2005 (No. 2)).	✓	✓	✓
Lighting			
The applicant must ensure a minimum of 40% of new or altered light fixtures are fitted with fluorescent, compact fluorescent, or light-emitting-diode (LED) lamps.		✓	✓
Fixtures			
The applicant must ensure new or altered showerheads have a flow rate no greater than 9 litres per minute or a 3 star water rating.		✓	✓
The applicant must ensure new or altered toilets have a flow rate no greater than 4 litres per average flush or a minimum 3 star water rating.		✓	✓
The applicant must ensure new or altered taps have a flow rate no greater than 9 litres per minute or minimum 3 star water rating.		✓	

BASIX Certificate number: A498439

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Construction			Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Insulation requirements					
The applicant must construct the new or altered construction (floor(s), walls, and ceilings/roofs) in accordance with the specifications listed in the table below, except that a) additional insulation is not required where the area of new construction is less than 2m2, b) insulation specified is not required for parts of altered construction where insulation already exists.			✓	✓	✓
Construction	Additional insulation required (R-value)	Other specifications			
concrete slab on ground floor.	nil				
suspended floor with enclosed subfloor: framed (R0.7).	R0.60 (down) (or R1.30 including construction)				
floor above existing dwelling or building.	nil				
external wall: brick veneer	R1.16 (or R1.70 including construction)				
external wall: cavity brick	nil				
external wall: framed (weatherboard, fibro, metal clad)	R1.30 (or R1.70 including construction)				
internal wall shared with garage: plasterboard (R0.36)	nil				
raked ceiling, pitched/skillion roof: framed	ceiling: R2.54 (up), roof: thermocellular reflective	medium (solar absorptance 0.475 - 0.70)			
flat ceiling, flat roof: framed	ceiling: R3.00 (up), roof: foil/sarking	medium (solar absorptance 0.475 - 0.70)			

BASIX Certificate number: A498439

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Glazing requirements	Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Windows and glazed doors			
The applicant must install the windows, glazed doors and shading devices, in accordance with the specifications listed in the table below. Relevant overshadowing specifications must be satisfied for each window and glazed door.	✓	✓	✓
The following requirements must also be satisfied in relation to each window and glazed door:		✓	✓
Each window or glazed door with standard aluminium or timber frames and single clear or toned glass may either match the description, or, have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below. Total system U-values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions.		✓	✓
Each window or glazed door with improved frames, or pyrolytic low-e glass, or clear/air gap/clear glazing, or toned/air gap/clear glazing must have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below. Total system U-values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions. The description is provided for information only. Alternative systems with complying U-value and SHGC may be substituted.		✓	✓
For projections described in millimetres, the leading edge of each eave, pergola, verandah, balcony or awning must be no more than 500 mm above the head of the window or glazed door and no more than 2400 mm above the sill.	✓	✓	✓
For projections described as a ratio, the ratio of the projection from the wall to the height above the window or glazed door sill must be at least that shown in the table below.	✓	✓	✓
Pergolas with polycarbonate roof or similar translucent material must have a shading coefficient of less than 0.35.		✓	✓
External louvres and blinds must fully shade the window or glazed door beside which they are situated when fully drawn or closed.		✓	✓
Pergolas with fixed battens must have battens parallel to the window or glazed door above which they are situated, unless the pergola also shades a perpendicular window. The spacing between battens must not be more than 50 mm.		✓	✓
Overshadowing buildings or vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column in the table below.	✓	✓	✓
Windows and glazed doors glazing requirements			

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Glazing requirements							Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing		Shading device	Frame and glass type			
			Height (m)	Distance (m)					
W1	W	1.84	6.5	4	projection/height above sill ratio ≥0.23	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W2	W	2.69	0	0	eave/verandah/pergola/balcony ≥900 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W3	N	4.07	1.6	1	eave/verandah/pergola/balcony ≥900 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W4	S	0.6	0	0	none	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W5	W	1.96	6.5	9	projection/height above sill ratio ≥0.36	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W6	E	2.22	7	3.3	none	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W7	E	2.96	7	4.1	none	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W8	E	1.48	7	4	none	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W9	W	23.83	0	0	eave/verandah/pergola/balcony ≥900 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W10	N	11.57	0	0	projection/height above sill ratio ≥0.36	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W11	N	3.28	0	0	eave/verandah/pergola/balcony ≥900 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W12	N	1.34	0	0	eave/verandah/pergola/balcony ≥900 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W13	W	5.99	0	0	external louvre/blind (fixed)	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			

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Glazing requirements							Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing		Shading device	Frame and glass type			
			Height (m)	Distance (m)					
W14	N	1.71	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
W15	E	0.71	2.5	3.3	eave/verandah/ pergola/balcony >=600 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W16	E	0.71	2.5	3	eave/verandah/ pergola/balcony >=600 mm	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W17	E	0.88	0	0	projection/height above sill ratio >=0.29	standard aluminium, single pyrolytic low-e, (U-value: 5.7, SHGC: 0.47)			
W18	S	3.96	0	0	projection/height above sill ratio >=0.23	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W19	S	1.34	0	0	projection/height above sill ratio >=0.23	standard aluminium, single clear, (or U-value: 7.63, SHGC: 0.75)			
W20	W	0.88	0	0	projection/height above sill ratio >=0.29	improved aluminium, single pyrolytic low-e, (U-value: 4.48, SHGC: 0.46)			
D07	E	7.09	7	3.8	none	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D08	S	6.89	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D09	S	7.11	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D10	S	10.6	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D18	S	12.55	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D19	S	7.04	0	0	none	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			

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Glazing requirements							Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing		Shading device	Frame and glass type			
			Height (m)	Distance (m)					
D20	S	6.82	0	0	none	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D21	E	5.19	5	3.5	none	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D22	W	7.14	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
D23	N	18.29	0	0	eave/verandah/ pergola/balcony >=900 mm	timber or uPVC, single clear, (or U-value: 5.71, SHGC: 0.66)			
Skylights									
The applicant must install the skylights in accordance with the specifications listed in the table below.							✓	✓	✓
The following requirements must also be satisfied in relation to each skylight:								✓	✓
Each skylight may either match the description, or, have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below.								✓	✓
External awnings and louvres must fully shade the skylight above which they are situated when fully drawn or closed.								✓	✓
Skylights glazing requirements									
Skylight number	Area of glazing inc. frame (m2)	Shading device		Frame and glass type					
S1	0.7	no shading		aluminium, moulded plastic single clear, (or U-value: 6.21, SHGC: 0.808)					
S2	0.7	external fixed louvre		aluminium, moulded plastic single clear, (or U-value: 6.21, SHGC: 0.808)					

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Legend

In these commitments, "applicant" means the person carrying out the development.

Commitments identified with a "✓" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).

Commitments identified with a "✓" in the "Show on CC/CDC plans & specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.

Commitments identified with a "✓" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate for the development may be issued.



**76 TRAMWAY ROAD
NORTH AVOCA**

**CLAUSE 4.6 VARIATION REQUEST (HEIGHT) FOR
ALTERATIONS AND ADDITIONS TO A DWELLING**



Report prepared for
Heidi Hills
June 2023

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1. Introduction

1.1 This is a Clause 4.6 variation request to Clause 4.3, *Height of Buildings* of the Central Coast Local Environmental Plan 2022, for alterations and additions to an existing dwelling house at 76 Tramway Road North Avoca.

1.2 This report has been prepared with reference to the following:

- Site visit,
- Site survey prepared by Cahill & Cameron,
- Architectural Plans prepared by Watershed Architects,
- BASIX Certificate prepared by Watershed Architects,
- Bushfire Report prepared by Peterson Bushfire,
- Arborist Report prepared by Temporal Tree Management,
- Statement of Environmental Effects prepared by Watermark Planning.

2. The site and its locality

2.1 The subject site is located on the southern side of Tramway Road, approximately 55 metres west of its intersection with Scenic Highway. It is legally described as Lot 3471 DP 520890 and is known as 76 Tramway Road.

2.2 It is an irregular shaped lot with boundaries of 20.905 metres (north – Tramway Road frontage), 14.925 metres (south - rear boundary), 27.85 metres (west – side boundary) and 35.82 metres (east – side boundary).

2.3 The lot has an area of 550m² and is currently occupied by a 3-storey rendered dwelling house with a metal roof. It is set within a steeply sloping site, which slopes to the south (towards the rear of the lot). The subject site and surrounding properties have broad water views across the Pacific Ocean to the south-east.

2.4 The property is surrounded by detached residential dwellings in all directions. It is located in close proximity to shops and services in Terrigal to the north, Avoca to the south and Erina to the north-west.



Figure 1. The site and its immediate surrounds

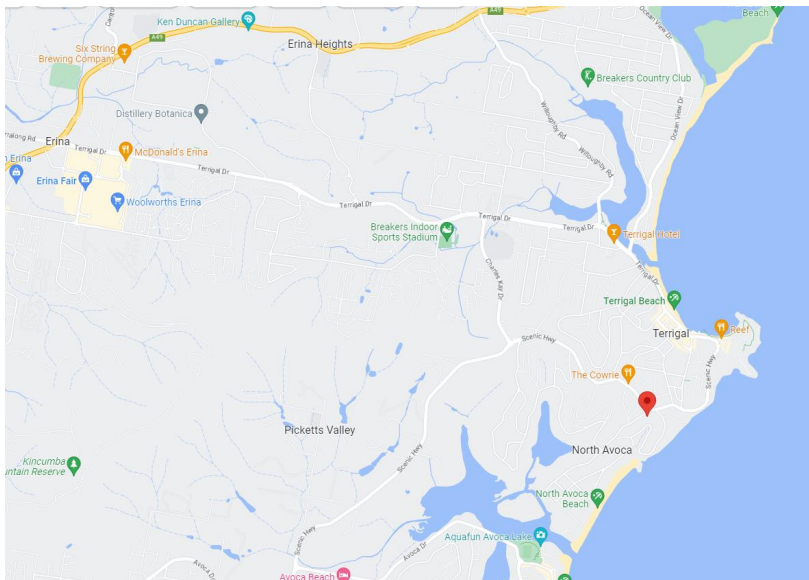


Figure 2. The site within the locality

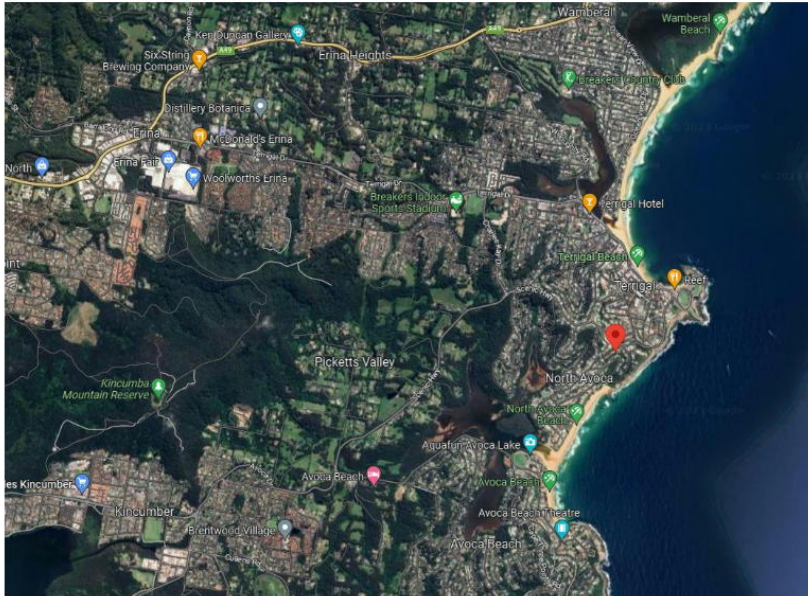


Figure 3. Aerial Image of the site within the locality

3. Site Photos



Figure 4. The subject site, looking south from Tramway Road.

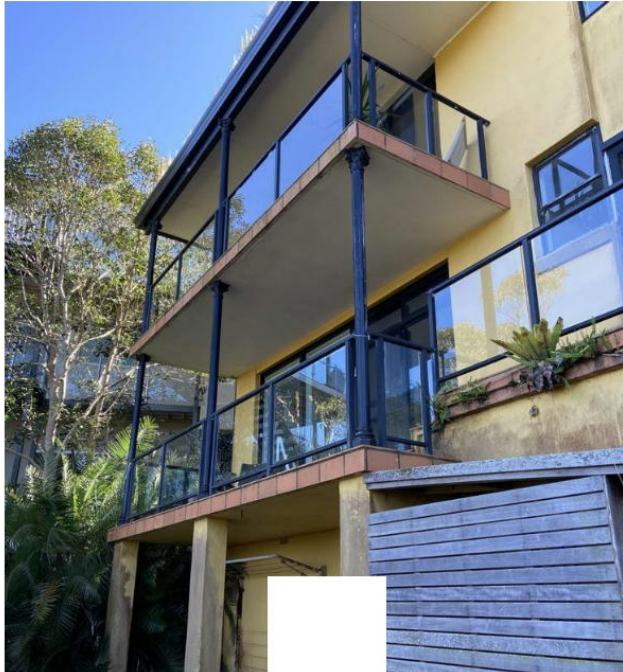


Figure 5. The rear of the dwelling, looking north-west.



Figure 6. The rear of the subject site and adjoining dwelling, looking west.



Figure 7: The east side boundary and adjoining dwelling, looking north.



Figure 8: The front terrace and garage above, looking east.



Figure 9: The subfloor area and location of proposed rumpus room and ensuite.



Figure 11: Views from the living room, looking south.



Figure 12: Views from the living room, looking south.



4. Proposed Development

- 4.1 The proposed development is for alterations and additions to the existing dwelling, to reconfigure the internal layout, creating a 4 bedroom, plus study dwelling on the site.
- 4.2 The development will retain views and amenity for the subject site and surrounding properties, while providing a modern, functional layout for the residents. The proposal is consistent with Council controls, considerate of the residential neighbourhood and is appropriate for the subject site.
- 4.3 The proposed alterations and additions will be made up as follows:

Site

- A new metal roof to the north-west portion of the roof,
- New metal roof sheeting to the remainder of the roof,
- A new operable roof to the rear deck.

Lower Level

- Retain the existing undercroft area,
- New rainwater tanks to the under-croft area, a new storage room, terrace, deck, spa and external staircases.

Level 1

- Convert the existing living room to a pool room with bathroom and wet bar,
- Demolish the existing laundry and reconfigure the existing bedrooms, to create bedrooms 2 & 3,
- Demolish the existing staircase and construct a new staircase to access level 2,
- Demolish the existing bathroom and construct a new bathroom, hallway, linen cupboard and study,
- Demolish the rear balcony and external staircase and construct new balconies,
- New windows and doors as indicated.

Level 2

- Infill the west facing window to the retained living room,
- Refurbish the existing kitchen and dining room,



- Extend the dwelling to the north and west to create a hallway, pantry / laundry and rumpus room,
- New decking to the retained front terrace,
- Demolish the existing staircase and construct a new staircase to access level 1,
- Demolish the internal walls to the bedrooms and bathroom and extend the dwelling to the north, to create 2 bedrooms, bathroom, WIR, ensuite and rumpus room.
- Demolish the rear balcony and external staircase and construct new balconies.

Garage Floor

- Retain the existing double garage,
- Infill the stair void and extend to the south to create a study,
- A new porch, entry and skillion roof with highlight windows.



5. Clause 4.6 Exceptions to Development Standards – Building Height

1. Introduction

Clause 4.6 of the Central Coast Local Environmental Plan 2022 permits departures from development standards in certain circumstances. In this case, it is necessary to consider if compliance with the development standard is consistent with the aims of the policy and, in particular, does compliance with the development standard tend to hinder the attainment of the objects specified in section 1.3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) being:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

The aims and objectives of Central Coast LEP 2022 Clause 4.6 are as follows:

(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,



(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.

Under Clause 4.6(3) and (4) of the MLEP 2013, consent for a development that contravenes a development standard must not be granted unless the consent authority is satisfied that:

(3)(a) compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and

(3)(b) there are sufficient environmental planning grounds to justify contravening the development standard.

(4)(a)(ii) the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out,

These matters, along with case law judgements from the NSW Land and Environment Court, are addressed below.

2. Environmental Planning Instrument Details

2.1 What is the name of the environmental planning instrument that applies to the land?

Central Coast Local Environmental Plan 2022

2.2 What is the zoning of the land?

R2 – Low Density Residential

2.3 What are the objectives of the zone?

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To encourage best practice in the design of low density residential development.*
- *To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.*
- *To maintain and enhance the residential amenity and character of the surrounding area.*

2.4 What is the development standard being varied?

Cl 4.3 - Height of Buildings



2.5 Under what clause is the development standard listed in the environmental planning instrument?

CI 4.3 of the Central Coast Local Environmental Plan 2022

2.6 What are the objectives of the development standard?

(1) *The objectives of this clause are as follows:*

- (a) *to establish a maximum height of buildings to enable appropriate development density,*
- (b) *to ensure that the height of buildings is compatible with the character of the locality.*

2.7 What is the numeric value of the development standard in the environmental planning instrument?

The numeric value of the height of buildings development standard applicable to the subject site is a maximum of 8.5m.

2.8 What is proposed numeric value of the development standard in your development application?

The numeric value of the building height proposed is 10.6 metres (when measured in accordance with *Merman Investments Pty Ltd v Woollahra Municipal Council [2021] NSWLEC 1582*).

The existing dwelling has a non-compliant maximum height of 10.8 metres and the new works propose a maximum height of 10.6 metres (skillion roof), 10.4 metres (study), 9.5 metres (rear balcony roof). The existing building and the majority of the proposed works comply with the maximum height control when considered against an interpolated height plane.

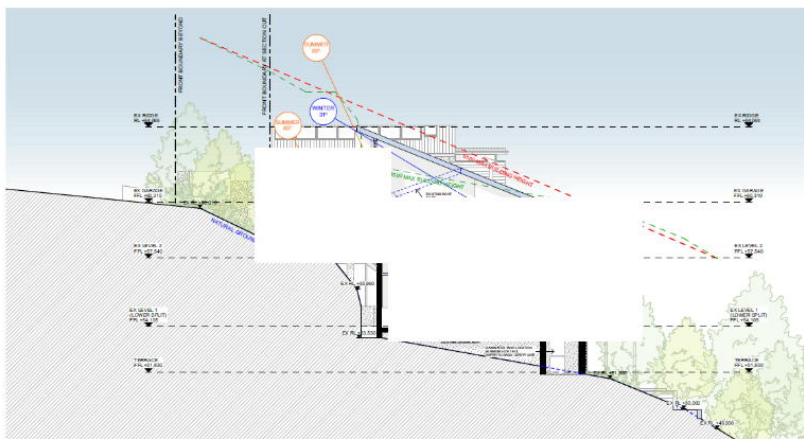


Figure 13: Plan Extract – Section BB with height measurements



2.9 What is the percentage variation (between your proposal and the environmental planning instrument)?

The development proposes a variation of 2.1 metres or 24.7%.

3. NSW Land and Environment Court Case Law

Several key Land and Environment Court (NSW LEC) judgements have refined the manner in which variations to development standards are required to be approached. The key findings and direction of each of these matters are outlined in the following discussion.

3.1 *Wehbe v Pittwater* [2007] NSW LEC 827

The decision of Justice Preston in *Wehbe v Pittwater* [2007] NSW LEC 827, (expanded on the findings in *Winten v North Sydney Council*), identified 5 ways in which the applicant might establish that compliance with a development standard is unreasonable or unnecessary. It was not suggested that the five ways were the only ways that a development standard could be shown to be unreasonable or unnecessary.

The five ways outlined in *Wehbe* include:

1. *The objectives of the standard are achieved notwithstanding non-compliance with the standard (First Way).*
2. *The underlying objective or purpose of the standard is not relevant to the development and therefore compliance is unnecessary (Second Way).*
3. *The underlying object or purpose would be defeated or thwarted if compliance was required and therefore compliance is unreasonable (Third Way).*
4. *The development standard has been virtually abandoned or destroyed by the Council's own actions in granting consents departing from the standard and hence compliance with the standard is unnecessary and unreasonable (Fourth Way).*
5. *The zoning of the particular land is unreasonable or inappropriate so that a development standard appropriate for that zoning is also unreasonable and unnecessary as it applies to the land and compliance with the standard would be unreasonable or unnecessary. That is, the particular parcel of land should not have been included in the particular zone (Fifth Way).*

In the Micaul decision Preston CJ confirmed that the requirements mandated by SEPP 1 (as discussed in *Wehbe*) are only relevant in demonstrating that compliance with a development standard is unreasonable or unnecessary for the purpose of Clause 4.6(3)(a).



3.2 Four2Five Pty Ltd v Ashfield Council [2015] NSW LEC

In the matter of *Four2Five Pty Ltd v Ashfield Council [2015] NSW LEC*, initially heard by Commissioner Pearson, upheld on appeal by Justice Pain, it was found that an application under Clause 4.6 to vary a development standard must go beyond the five (5) part test of *Wehbe V Pittwater [2007] NSW LEC 827* and demonstrate the following:

1. Compliance with the particular requirements of Clause 4.6, with particular regard to the provisions of subclauses (3) and (4) of the LEP;
2. That there are sufficient environment planning grounds, particular to the circumstances of the proposed development (as opposed to general planning grounds that may apply to any similar development occurring on the site or within its vicinity);
3. That maintenance of the development standard is unreasonable and unnecessary on the basis of planning merit that goes beyond the consideration of consistency with the objectives of the development standard and/or the land use zone in which the site occurs;
4. All three elements of clause 4.6 have to be met and it is best to have different reasons for each but it is not essential.

3.3 Randwick City Council v Micaul Holdings Pty Ltd [2016] NSWLEC 7

In *Randwick City Council v Micaul Holdings*, the Court allowed a departure from development standards, provided the processes required by clause 4.6 are followed, a consent authority has a broad discretion as to whether to allow a departure from development standards under clause 4.6, even where the variation is not justified for site or development specific reasons.

Preston CJ noted that *the Commissioner did not have to be satisfied directly that compliance with each development standard was unreasonable or unnecessary in the circumstances of the case, but only indirectly by being satisfied that the appellant's written request had adequately addressed the matter in clause 4.6(3)(a) that compliance with each development standard was unreasonable or unnecessary.*

3.4 Zhang v City of Ryde

Commissioner Brown reiterated that clause 4.6 imposes three preconditions which must be satisfied before the application could be approved:

1. The consent authority must be satisfied that the proposed development will be consistent with the objectives of the zone;
2. The consent authority must be satisfied that the proposed development will be consistent with the objects of the standard which is not met; and
3. The consent authority must be satisfied that the written request demonstrates that compliance with the development standard is unreasonable or unnecessary in the



circumstances and there are sufficient environmental planning grounds to justify contravening the development standard.

It is only if all of these conditions are met that consent can be granted to the application, subject to an assessment of the merits of the application.

The Commissioner applied the now familiar approach to determining consistency with zone objectives by considering whether the development was antipathetic to the objectives.

In contrast to *four2five*, the reasons relied on to justify the departure from the standards in this case were not necessarily site specific.

3.5 Action Pty Ltd v Woollahra Municipal Council [2018]

In *Action Pty Ltd v Woollahra Municipal Council*, the court demonstrated the correct approach to the consideration of clause 4.6 requests, including that the clause does not require that a development that contravenes a development standard, must have a neutral or better environmental planning outcome than one that does not.



4. Consideration

Several key Land and Environment Court (NSW LEC) judgements have refined the manner in which variations to development standards are required to be approached. The key findings and direction of each of these matters are outlined in the following discussion.

Clause 4.6(3)(A) - Is compliance with the development standard unreasonable or unnecessary in the circumstances of the case (and is a development which complies with the development standard unreasonable or unnecessary in the circumstances of the case)?

In order to demonstrate that compliance with the development standard is unreasonable or unnecessary, in the circumstances of the case, the Five (5) Part Test established in *Winten v North Sydney Council* and expanded by Justice Preston in *Wehbe v Pittwater* [2007] NSW LEC 827 is considered:

The five ways outlined in *Wehbe* include:

5.1 Five (5) Part Test - *Wehbe v Pittwater*

1. *The objectives of the standard are achieved notwithstanding non-compliance with the standard (First Way).*

The objectives of the standard are:

(a) to establish a maximum height of buildings to enable appropriate development density,

Comment

The proposed development is appropriate to the site and will not result in a building height, greater than the existing 10.8 metre maximum height of the dwelling. The new works propose a maximum height of 10.6 metres, when measured in accordance with the *Merman Investments Pty Ltd v Woollahra Municipal Council* [2021] NSWLEC 1582.

The existing building and the majority of the proposed works comply with the maximum height control, when considered against an interpolated height plane, as previously applied by the *Bettar* judgement.

(b) to ensure that the height of buildings is compatible with the character of the locality.

Comment

As the proposed works sit below the existing maximum building height, the works remain compatible with the existing building height. The new works are largely located to the rear of



the site and below the existing garage, ensuring the presentation of the dwelling to the street remains in keeping with the character of the street.

It is considered this objective is met, despite the numerical variation.

2. *The underlying objective or purpose of the standard is not relevant to the development and therefore compliance is unnecessary (Second Way).*

This exception to development standards request does not rely on this reason.

3. *The underlying object or purpose would be defeated or thwarted if compliance was required and therefore compliance is unreasonable (Third Way).*

This exception to development standards request does not rely on this reason

4. *The development standard has been virtually abandoned or destroyed by the Council's own actions in granting consents departing from the standard and hence compliance with the standard is unnecessary and unreasonable (Fourth Way).*

This exception to development standards request does not rely on this reason.

5. *The zoning of the particular land is unreasonable or inappropriate so that a development standard appropriate for that zoning is also unreasonable and unnecessary as it applies to the land and compliance with the standard would be unreasonable or unnecessary. That is, the particular parcel of land should not have been included in the particular zone (Fifth Way).*

This exception to development standards request does not rely on this reason.

This clause 4.6 variation request establishes that compliance with the development standard is unreasonable or unnecessary in the circumstances of the proposed development because the objectives of the standard are achieved and accordingly justifies the variation to the height of buildings control pursuant to the First Way outlined in Wehbe.

Thus it is considered that compliance with Clause 4.6(3)(a) is satisfied.

5.2 Clause 4.6(3)(B) – Are there sufficient environmental planning grounds to justify contravening the development standard?

There are sufficient grounds to permit the variation of the development standard. The development has been considered below with particular reference to the Objects of the Environmental Planning and Assessment Act 1979, which are accepted as the best gauge of *environmental planning grounds*. In particular:



Detail of Variation

- The existing dwelling has a non-compliant maximum height of 10.8 metres and the new works propose a maximum height of 10.6 metres. The proposed variation is the result of the building height being measured in accordance with the recent *Merman* Judgement. The existing building and the majority of the proposed works comply with the maximum height when measured in accordance with the previously applied interpolated height set out in the *Bettar* judgement.
- The proposed variation is largely the result of taking into account the existing excavated lower levels, which is acknowledged in the *Merman judgement* to distort *the height of buildings development standard plane overlaid above the site, when compared to the topography of the hill*. The judgement acknowledges that this distortion can be described as an environmental planning ground within the meaning of cl 4.6(3)(b) of LEP 2022.
- The variation is for a limited area and the vast majority of the building complies with the height control. The apparent bulk through the variation is negligible and the resulting development remains consistent with the streetscape, satisfying Cl1.3(g).

Neighbour Amenity

Fulfillment of each of the criteria below demonstrates a development satisfying Cl1.3(g).

- Compliance with the height control would not result in a building which has a significantly lesser bulk as the new works are located at a lesser height than the existing maximum building height. A numerically compliant building height would have no material impact to neighbour, accordingly compliance with the development standard in this instance is unreasonable.
- Solar access impacts as a result of the small height variation are negligible. The subject site and both adjoining properties do not currently achieve compliant solar access to private open space, which is located on south facing balconies to capture ocean views. The development is considered to have an appropriate impact, as it will not exacerbate the existing non-compliant solar access.
- The proposed height variation has no impact on privacy for neighbours, accordingly, the variation is reasonable in the circumstances of the case.

**Site Constraints**

- The variation to the height is largely the result of the revised building height measurement definitions set out in the *Merman judgement*. The minor variation allows for the orderly and economic use of the site and allows for an ecologically sustainable development satisfying Cl1.3(g) and (f).

Design and Streetscape Appeal

- Strict numerical compliance with the height control would not result in a better urban design outcome. The architectural character proposed will result in appealing alterations to this property. Compliance with the development standard based on this would be unreasonable.
- The proposed development will not present with excessive bulk from the public domain with surrounding dwellings presenting with a consistent form and scale.

Consistent with Zone Objectives

- The extent of the variation is considered to be in the public interest as the proposal remains consistent with the objectives of the zone, ensuring that appropriate and reasonable housing is proposed. Compliance with the development standard based on this would be unreasonable.

Natural Environment

- The inclusion of the small height variation has no impact on the natural environment. No landscape area is lost or impacted through the minor height variation satisfying Cl1.3(b). The natural environment is unaffected by the small departure to the development standard and it would be unreasonable for the development to be refused on this basis.

Environmentally Sustainable Development

- The proposal represents an environmentally sustainable design allowing for extension of the life on an existing dwelling satisfying Cl1.3(f). Compliance with the development standard based on this would be unreasonable.



Social and economic welfare

- The small variation to the height as detailed above will have no social impacts for the site or local area satisfying Cl1.3(b) and accordingly refusal of the development based on this reason would be unreasonable.
- The small variation to the height as detailed above will have no economic impacts for the site or the local area satisfying Cl1.3(b) and accordingly refusal of the development based on this reason would be unreasonable.

Appropriate Environmental Planning Outcome

- The development proposed is not an overdevelopment of the site and satisfies the objectives of the zone and the development standard.
- The variation does not result in a roof form or height beyond that of the existing dwelling. The small variation will be compatible within the context in which it sits and is reasonable in the circumstances of the case satisfying Cl1.3(c). Compliance with the development standard based on this would be unreasonable.
- Removal of the non-compliance would not substantially alter the perceived bulk and scale due to the minor nature, siting and topography.

The environmental planning ground set out above, reflect the unique circumstances for the subject site and proposed development, including an assurance of reasonable bulk and scale and retention of amenity.

The sufficient environmental planning grounds stipulated above demonstrate that the proposal aligns with the relevant objects of the EP&A Act i.e. the development is an orderly and economic and development of the land, notwithstanding the height variation.

5.3 Clause 4.6(4)(A)(ii) – Will the proposed development be in the public interest because it is consistent with the objectives of the particular standard and objectives for development within the zone which the development is proposed to be carried out.

The proposed development is consistent with the objectives of the standard (see Cl 4.6(3)(A). An assessment of consistency with the objectives of the Zone is provided below:



Zone – R1 General Residential

Objectives of zone

- *To provide for the housing needs of the community within a low density residential environment.*

Consistent. The proposal is for alterations and additions to an existing dwelling and retains the existing low density residential land use.

- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*

Not relevant. The proposal is for a residential land use.

- *To encourage best practice in the design of low density residential development.*

Consistent. The proposed height variation is a lesser height than the existing approved building height. The new works are largely located to the rear of the site and the dwelling retains the presentation of a single dwelling house to the street.

- *To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.*

Not relevant. The proposal is for a residential land use.

- *To maintain and enhance the residential amenity and character of the surrounding area.*

Consistent. The consistent nature of the proposal with the existing dwelling and surrounding development, ensures the character of the area is maintained. There will be no negative impacts on privacy, solar access or general amenity for surrounding properties.

Despite the proposal seeking an exception to the building height clause, the bulk and scale of the building will have minimal effects as it represents a minor exceedance and is consistent with surrounding development.

The proposed development is not contrary to the public interest, because it is consistent with the objectives of the standard (see Cl 4.6(3)(A)) and objectives for development within the zone.



5.4 Clause 4.6(5)(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning,

The non-compliance will not raise any matter of State or Regional Significance.

5.5 Clause 4.6(5)(b) the public benefit of maintaining the development standard,

The proposed development is not contrary to the public interest, accordingly there can be no quantifiable or perceived public benefit in maintaining the standard.

5.6 Clause 4.6(5)(c) any other matters required to be taken into consideration by the Secretary before granting concurrence,

N/A

5.7 How would strict compliance hinder the attainment of the objects specified in Section 1.3 of the Act.

Strict compliance with the standard would hinder the attainment of the objects specified in section 1.3 of the Act

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,



(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

Strict compliance with the 8.5 metre height development standard would hinder the development for the purpose of *promoting the orderly and economic use and development of land, promoting good design and amenity of the built environment and promoting the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.*

Conclusion

The proposed development is for alterations and additions to an existing dwelling on land zoned R2 – Low Density Residential.

As stated above the non-compliance between the proposal and the environmental planning instrument is 2.1 metres or 24.7% , when measured in accordance with *Merman Investments Pty Ltd v Woollahra Municipal Council [2021] NSWLEC 1582*. The existing dwelling has a non-compliant maximum height of 10.8 metres and the new works propose a maximum height of 10.6 metres (skillion roof), 10.4 metres (study), 9.5 metres (rear balcony roof). The existing building and the majority of the proposed works comply with the maximum height control when considered against an interpolated height plane.

The proposed variation is largely the result of taking into account the existing excavated lower levels, which is acknowledged in the *Merman judgement* to distort *the height of buildings development standard plane overlaid above the site, when compared to the topography of the hill*. The judgement acknowledges that this distortion can be described as an *environmental planning ground within the meaning of cl 4.6(3)(b) of LEP 2022*.

The variation does not result in any unreasonable impacts in regards to view loss, loss of privacy or increase in shadowing for neighbouring properties and will result in a development of a similar scale development to surrounding properties and a lesser height than the existing approved dwelling.

Strict numerical compliance is considered to be unnecessary and unreasonable given that the proposed variation sought is consistent with the underlying objectives of the control despite the numerical variation, of which have been reasonably satisfied under the provisions of Clause 4.6. The proposed variation satisfies the objectives of the zone, underlying intent of Clause 4.6 and Clause 4.3, and therefore the merits of the proposed variation are considered to be worthy of approval.



Planner Declaration

This report was prepared by:

Senior Planner: Naomi Lyons

Report Version: Final

Document Control Table

Document Purpose:	Clause 4.6 Variation Request	
Date	Prepared by	Approved by
22/06/2023	Naomi Lyons Senior Planner	Sarah McNeilly Director

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ABN 41 340 109 262



Arboricultural Impact Assessment



76 Tramway Road, North Avoca
3471/-/DP520890

01/05/2023

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Arboricultural Impact Assessment

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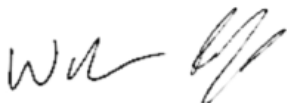
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DISCLAIMER

The provision of this report is for *the* Property Owners and Project Architect (*Watershed Architects*) for a proposed development within the boundaries of 76 Tramway Road, North Avoca. The purpose of this report is to assess the impact associated with the proposed development plans on twenty-seven trees positioned inside and within 5 metres of the property boundaries. The author of this report is *Temporal Tree Management Pty Ltd*. This report is not designed for any other purpose. The author accepts no responsibility for the use of this report for purposes other than as an Arboricultural Impact Assessment or if used by any other person / party.

All observations, recommendations and advice expressed in this report are based on *the Australian Standard for the Protection of Trees on Development Sites (AS 4970 2009)*, the professional experience of the author, information gathered during the site assessments and information provided by the clients. Trees are dynamically growing organisms that change over time. All recommendations are provided based on the ground-based data collected on the day of assessment. No guarantee is implied with respect to future tree condition or safety beyond the advice and recommendations within the report.



William Dunlop

Director of *Temporal Tree Management Pty Ltd*.

B. Sc (Adv.), Grad. Dip (Arb) (AQF Level 8), M. UrbHort.

1 May 2023



Arboricultural Impact Assessment
76 Tramway Road, North Avoca

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1. Executive Summary

The purpose of this report is to provide an Arboricultural Impact Assessment for the trees located inside and within 5 metres of the property boundaries of 76 Tramway Road, North Avoca. Twenty-seven trees are included in this assessment. An assessment of the trees within and adjacent to the subject site was undertaken by William Dunlop of *Temporal Tree Management P/L* on 05/05/2023. The trees were located, identified and their retention value assessed using the Tree Retention Values Assessment Methodology (Morton 2011).

Trees 12, 14, 15 and 20 were determined to be of High Retention Value within the surrounding landscape. The retention of these four trees is a priority for the proposed development within the subject site. Trees 1, 5, 6, 24, 25 and 26 were determined to be of Moderate retention value. These six trees should be retained as part of the planned development works if reasonably practicable. Trees 2, 3, 4, 7, 16, 17, 18, 19, 21 and 27 were determined to be of Low retention value. Trees 8, 9, 10, 11, 13, 22 and 23 were determined to be of Very Low retention value. The retention of these seventeen trees should not obstruct or cause alteration to the planned development.

Trees 3, 6 and 7 will sustain major TPZ encroachments that will have a Severe impact as part of the proposed development works within the subject site. Tree 4 will sustain a major TPZ encroachments that will have a High impact while Trees 5, 8 and 13 will sustain minor encroachments that will have a Minor impact. The impact of the encroachments sustained by Trees 4, 5, 6 and 7 will be diminished by the sloped landscape and replacement of existing impermeable surfaces / hard landscape features.

Tree 3 will require removal to facilitate the construction of the proposed deck. It is also recommended that Trees 8, 9, 10, 11, 13, 22 and 23 are removed due to their Very Low retention value.

Trees 1, 2, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26 and 27 can be suitably retained as part of the proposed development. Stem protection measures compliant with *Section 4.5.3 of AS4970 (2009)* must be installed on Trees 4, 5, 6 and 7. A fenced protection zone must be established 400mm from the edge of the embankment within the southern portion of the site in order to protect Trees 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26 and 27. Fencing and signage requirements outlined in *Section 4.3 of AS4970 (2009)* must be complied with in establishing this fenced protection zone. Tree protection measures must be installed prior to the commencement of practical works and remain in place for the duration of the proposed development.

01/05/2023

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2. Location

2.1. Site Location

The subject site for this Arboricultural Impact Assessment is 26 Tramway Road, North Avoca (3471/-/DP520890). The land within and surrounding this site is zoned for low-density residential use.

2.2. Relevant Policy Controls

The subject site is located within the Central Coast Council local government area. The subject site falls within an R2 Low-density Residential zone (Planning NSW 2023). The environmental policy regulations relevant to the trees (woody vegetation taller than 5 metres) within the subject site are drawn from the NSW State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021. The policy controls governing the management of the trees within and adjacent to the subject site are outlined in *Chapter 3.5: Tree and Vegetation Management* of the *Central Coast DCP (2022)* (Central Coast Council 2023). This policy control draws from *the Australian Standard for the Protection of Trees on Development Sites* (AS4970 2009) and *the Australian Standard for Pruning Amenity Trees* (AS4373 2007).

This property is not a heritage item and does not fall within a heritage conservation zone (Planning NSW 2023). No Endangered Ecological Communities or Threatened Species were observed within the assessment area (SEED 2023). The subject site falls within a Bushfire Prone Land Zone (Planning NSW 2023) (Figure 1). The Rural Fire Service 10/50 Vegetation Clearing Scheme and the *Planning for Bush Fire Protection Guide (2019)* are therefore also relevant to the management of the assessed trees.



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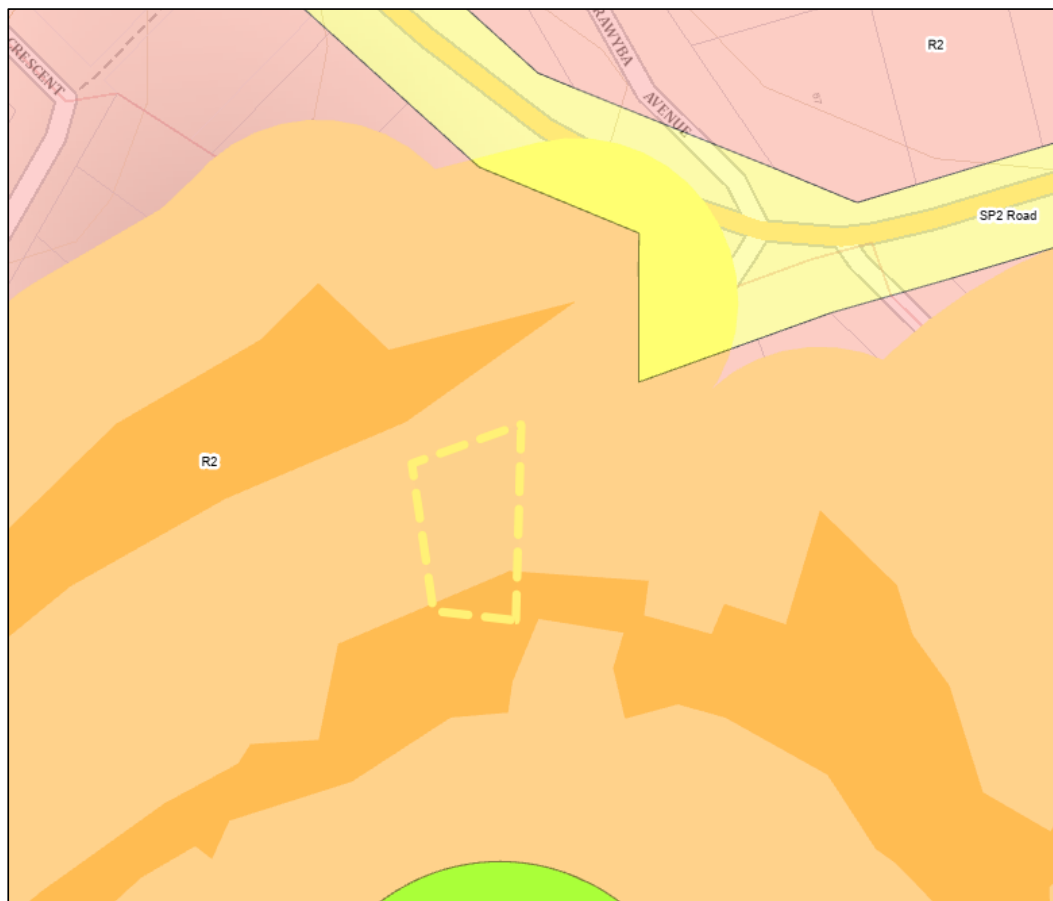
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Figure 1. Subject site (dotted yellow line indicates property boundaries) within an R2 Low-density Residential zone and Bushfire Prone Land (Orange). Image sourced from Planning NSW (2023).

2.3. Tree Locations

An assessment of the trees within and adjacent to the subject site was undertaken by William Dunlop of *Temporal Tree Management P/L* on 13/04/2023. All trees inside and within five metres of the property boundaries of the subject site were assessed. As stipulated in *Chapter 3.5.1 of the Central Coast DCP (2022)*, woody vegetation is prescribed as a 'tree' if it was measured to have a height of or greater than 3 metres. Twenty-seven trees were included in this assessment (Figure 2).

Trees 1-7 are positioned on the northern side of the existing dwelling. Trees 1 and 2 are positioned adjacent to the north-western boundary while Trees 6 and 7 are positioned adjacent to the eastern boundary. The ownership of these trees is unclear. Trees 3 and 4 are positioned within the northern



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boundary of the subject site. Tree 5 is positioned within a steep embankment adjacent to the northern boundary that forms part of the Tramway Road reserve (Figure 3 and Figure 4). Trees 8-27 are positioned on the southern side of the existing dwelling within a heavily vegetated and steep portion of land. Trees 12 and 25 are positioned adjacent to the south-western boundary and appear to be within the property of 74 Tramway Road. Trees 14-16 are positioned outside the south-eastern boundary and are within the property of 78 Tramway Road (Figure 5 and Figure 6).



Figure 2. Location of twenty-seven assessed trees. Image sourced for Google (2023).



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Figure 3. Position of Trees 1-4 on the north-western side of the existing dwelling.



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Figure 4. Position of Trees 3-5 on the northern side of the existing dwelling.



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Figure 5. Position of Trees 8-12 on south-western side of dwelling.



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Figure 5. Position of Trees 13-27 on south-eastern and southern side of dwelling.



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3. Site Development Plans

The proposed development plans within the subject site involve alteration and addition to the existing three-storey dwelling (Figure 7). Demolition of internal walls and external steps and landscape structures will be required to facilitate the proposed development. The footprint of the proposed renovated dwelling will be extended on the southern side. The existing garage, vehicle crossing and driveway adjacent to the north-eastern boundary will be retained under the proposed design.

Tree 3 will be directly impacted by the proposed development due to the position of its stem within the footprint of the proposed outdoor entertaining area. Trees 1, 2 and 4-8 may be directly impact due to their close proximity to the proposed works areas (Figure 7). The remaining specimens (Trees 9-27) are more suitably distanced from the proposed development works and are unlikely to be directly impacted.



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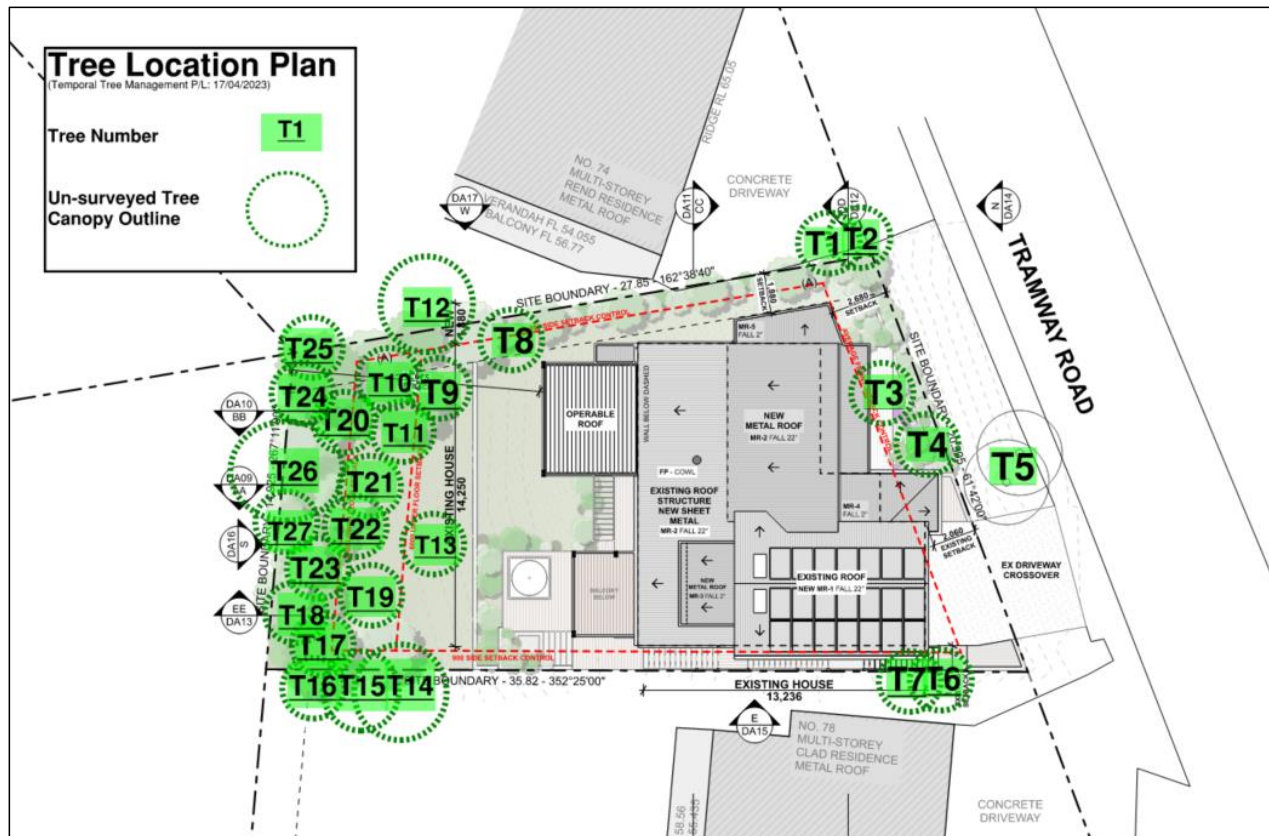


Figure 7. Planned development works within subject site in relation to the assessed trees (T1-T27). Proposed Site and Roof Plan (Drawing DA04 Issue D-WP) drawn by *Watershed Architects* [Job 22004], annotated by *Temporal Tree Management P/L* (17/04/2023).

01/05/2023

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4. Preliminary Assessment

4.1 Assessment Methodology

A ground-based visual assessment of Trees 1-27 was undertaken by William Dunlop of *Temporal Tree Management Pty Ltd* on 13/04/2023. The data collected include:

Ø Tree Number: Tree schedule determined in Figure 2 and Figure 7.

Ø Scientific Name: Vegetation was identified and described using botanical names.

Ø Common Name: One common is provided.

Ø Maturity: **Juvenile, Semi – mature, Mature or Over Mature**. Judgement on these four categories was determined by professional knowledge and research on the species present.

Ø Canopy Radius: Estimated in **metres** as an average in metres of two directional planes.

Ø Height: Estimated in **metres**.

Ø Diameter at Breast Height (DBH): DBH was measured at 1.4 metres height using a diameter tape and is described in **centimetres**. This measurement was used to determine the Tree Protection Zone for each tree. DBH was estimated for Trees 1, 2, 6, 7, 12, 14-16 and 25 due to the position of these trees outside the property boundaries of the subject site.

Ø Diameter at Root Flare (DRF): DRF was measured using a diameter tape at the height of the trees' root flare and is described in **centimetres**. This measurement was used to determine the Structural Root Zone for each tree. DRF was estimated for Trees 1, 2, 6, 7, 12, 14-16 and 25 due to the position of these trees outside the property boundaries of the subject site.

Ø Condition: **Dead, Poor, Fair, Good or Excellent**. Professional experience along with the visual vitality index established by Johnston et al. (2012) was used to underpin this category (**Appendix A**).



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Ø **Structure:** **Failed, Very Poor, Poor, Fair, Good or Excellent.** Professional experience along with Visual Tree Assessment methodology established by Mattheck and Breloar (1994) was used to underpin this category.

Ø **Useful Life Expectancy (ULE):** This estimate provides an important estimate of a tree's remaining safe life span within a landscape (Barrell 1996). Estimates are based on species knowledge and an individual's structure, health and position within the landscape. ULE estimate categories used were: **Long** (>40 years), **Medium** (between 15 and 40 years), **Short** (between 5 and 15 years), **Transient** (Less than 5 years), **Dead or Hazardous** (less than 12 months). A framework for the ULE determination methodology is provided in **Appendix D** (Barrell 1996).

Ø **Landscape Value:** **Significant** (1), **Very High** (2), **High** (3), **Moderate** (4), **Low** (5), **Very Low** (6), **Insignificant** (7). These categories account for each tree's size, ecological significance as a food or habitat resource, structural integrity, visual prominence within the landscape and any additional heritage or protection controls that may be relevant to it. A framework for the Landscape Significance determination methodology is provided in **Appendix C** (Morton 2011).

Ø **Retention Value:** **High, Moderate, Low and Very Low.** ULE and Landscape Significance categories were used for each tree to determine their retention value (Figure 8). A framework for the Retention Value priorities is provided in **Appendix B** (Morton 2011).

	Landscape Significance Reading						
Tree Sustainability	1	2	3	4	5	6	7
Greater than 40 years	High Retention Value						
15 to 40 years				Moderate			
5 to 15 years				Low			
Less than 5 years					Very Low Retention Value		
Dead or hazardous							

Figure 8. Tree retention values assessment methodology. Matrix modified by A. Morton (2011) Tree Retention Values Table Footprint Green Pty Ltd, Sydney Australian. Accessed from the Newcastle Urban Forest Technical Manual (2018).



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Ø Tree Protection Zone Radius (R_{TPZ}): This measure provides the principle means of protecting trees on construction sites. A TPZ radius (R_{TPZ}) may be calculated using the equation from the Australian Standard for the Protection of Trees on Development Sites (AS 4970 2009):

$$R_{(TPZ)} = DBH \times 12.$$

A minimum R_{TPZ} measure of 2 metres was calculated for this assessment. Once a TPZ is established, all construction activity should be excluded from within its borders. Encroachments may occur under further arboricultural assessment, advice and supervision.

Ø Structural Root Zone Radius (R_{SRZ}): This measure provides an indication of the portion of a tree's root plate that is considered fundamentally important for the maintenance of structural integrity. An SRZ radius (R_{SRZ}) may be calculated using the equation from the *Australian Standard for the Protection of Trees on Development Sites* (AS 4970 2009):

$$R_{(SRZ)} = (DRF \times 50)^{0.42} \times 0.64$$



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5. Tree Data Summary

Table 1. Summarised retention value data for twenty-seven trees assessed on 13/04/2023 within the subject site. Trees determined to be of High retention value are annotated in Green, trees determined to be of Moderate retention value are in Orange, trees determined to be of Low retention value are in Yellow and trees of Very Low retention value are annotated in Red. Detailed Tree Data Tables are provided in **Appendix E**.

Retention Values for Twenty-seven Assessed Trees			
Very Low	Low	Moderate	High
8, 9, 10, 11, 13, 22, 23.	2, 3, 4, 7, 16, 17, 18, 19, 21, 27.	1, 5, 6, 24, 25, 26.	12, 14, 15, 20.

Of the twenty-seven assessed trees, four were determined to be of High Retention Value within the surrounding landscape, six were determined to be of Moderate Retention Value, ten were determined to be of Low Retention Value and seven were determined to be of Very Low Retention Value (Table 1) (Figure 9).

Trees 12, 14, 15 and 20 were determined to be of High Retention Value within the surrounding landscape. These trees' larger size, indigenous species significance and visual prominence render them of High landscape significance. These four trees were observed to be in mostly good condition, which underpinned their Long ULE estimates. The retention of these four trees is therefore a priority for the proposed development within the subject site. Protection measures compliant with *the Australian Standard for the Protection of Trees on Development Sites (AS4970 2009)* must be established for these trees where necessary.

Trees 1, 5, 6, 24, 25 and 26 were determined to be of Moderate retention value. This primarily reflects the external ownership and / or larger size of these specimens. Observations of reduced health or structural suppression from neighbouring trees underpinned the reduced Landscape Significance and / or ULE estimates determined for these trees. These six trees should be retained as part of the planned development works if reasonably practicable. If their retention is not feasible, these trees are suitable for removal provided they are adequately replaced as part of the proposed development. If retained, protection measures compliant with *the Australian Standard for the Protection of Trees on Development Sites (AS4970 2009)* must be established for these trees where necessary.



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Trees 2, 3, 4, 7, 16, 17, 18, 19, 21 and 27 were determined to be of Low retention value within the surrounding landscape. These ten trees were observed to be of smaller size, in poor condition and / or be fully suppressed by neighbouring trees. Trees 8, 9, 10, 11, 13, 22 and 23 were determined to be of Very Low retention value. Tree 13 has partially failed and has had its canopy removed. The remaining trees are *Ligustrum lucidum* specimens, which is a scheduled weed specie under Weeds Australia (2023). The retention of these seventeen trees should not obstruct or require alteration to the proposed development plans for this property. If retained, protection measures compliant with *the Australian Standard for the Protection of Trees on Development Sites (AS4970 2009)* must be established for these trees where necessary.

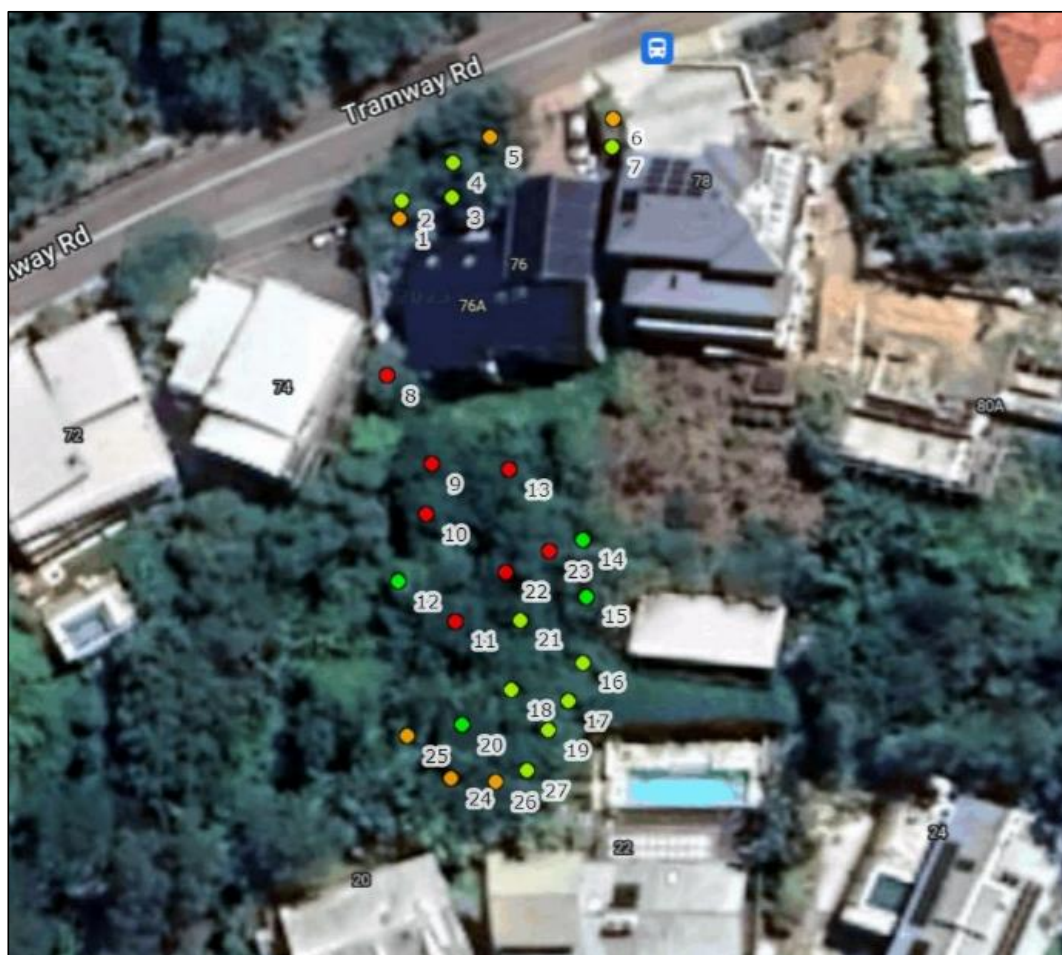


Figure 9. Retention values determined for 27 assessed trees. Trees of High retention value are annotated in Green, trees of Moderate retention value are annotated in Orange, trees of Low retention value are annotated in Yellow and trees of Very Low retention value are annotated in Red. Image sourced from Google (2023).



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6. Tree Protection Zones (TPZs)

6.1. Tree Protection Zones

Tree Protection Zones are aimed at preventing soil compaction, contamination and physical damage to trees above and below ground (Matheny and Clark 1994). The tree protection zone radius (R_{TPZs}) and structural root zone radius (R_{SRZs}) were calculated as per *AS4970 (2009)* (Figure 10). TPZ and SRZ radii for Trees 1-27 are provided in Figure 11, **Appendix E** and **Appendix F**.

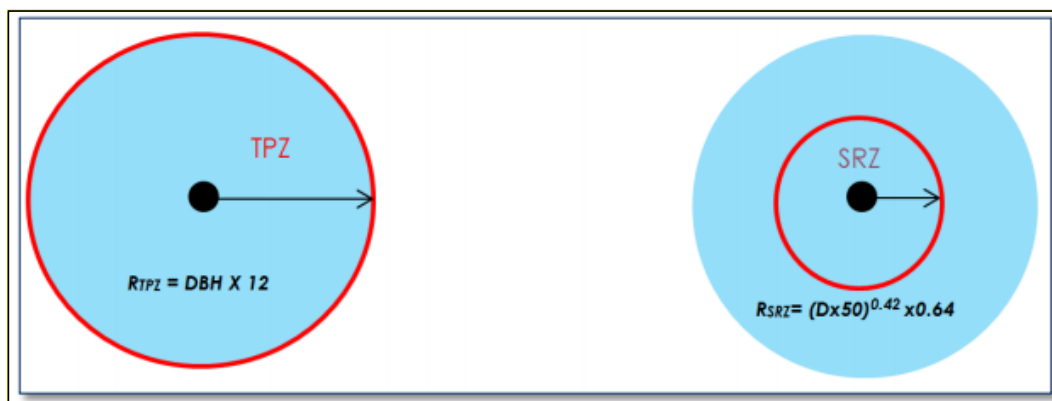


Figure 10. TPZ and SRZ radial measurement equations.

6.2. TPZ Encroachments

A TPZ encroachment is the proportional area of a tree's TPZ that will be absorbed, disturbed or exposed as part of a development. As defined in *Sections 3.3.2 and 3.3.3 of AS4970 (2009)*, minor TPZ encroachments are less than 10% of a trees' TPZ area while major TPZ encroachments exceed 20%.

Encroachments of less than 10% of the total TPZ area may occur without the site presence of the Project Arborist providing there is an equal compensation of area elsewhere within the TPZ. The impact of a TPZ encroachment that is less than 10% is defined as Low in this assessment.

TPZ Encroachments of 10-20% are considered to be acceptable providing the tree's condition is shown to be Good/Fair. Mitigation strategies including tree protection measures and / or design alterations should be utilised to reduce the impact associated with major encroachments within this range. The impact of a TPZ encroachment that is between 10-20% is defined as Moderate in this assessment.



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Major encroachments of between 20-30% are likely to negatively impact a tree's health and structure. Retention under such major encroachments will require a root mapping assessment, modified design to the encroaching structure and/or specific consultation from the Project Arborist relating to excavation monitoring and major root cutting. The impact of a TPZ encroachment that is between 20-30% is defined as High in this assessment.

Major encroachments of greater than 30%, or any encroachment that breaches a tree's SRZ, are highly likely to impact a tree's health and the structural integrity of their root plate. Retention under such encroachments is not advised. The impact of a TPZ encroachment that is between greater than 30% is defined as Severe in this assessment (Table 2).



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6.2.1. Site Specific Encroachments

Table 2. Summarized impacts of TPZ encroachments associated with the proposed development calculated for Trees 1-27. Negligible TPZ encroachments (0%) are annotated in Blue, Low impact encroachments (<10%) are annotated in Green, Moderate impact encroachments (10-20%) are annotated in Yellow, High impact encroachments (20-30%) are annotated in Orange and Severe impact encroachments (>30%) are annotated in Red. See **Appendix F** for TPZ Encroachment Data table.

Impact of TPZ Encroachments on Twenty-seven Assessed Trees				
N/A (0%)	Low (<10%)	Moderate (>10%<20%)	High (>20%<30%)	Severe (>30%)
1, 2, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27.	5, 8, 13.			4, 3, 6, 7.

Trees 3, 6 and 7 will sustain major TPZ encroachments that will have a Severe impact as part of the proposed development works within the subject site. All trees will sustain an encroachment within their SRZs. The proposed works on the southern side of Tree 3 will encroach within an undeveloped garden area and will severely impact this tree. The reconstruction of the stairway adjacent to the eastern boundary will replace the existing stairway, which is within the SRZs of Trees 6 and 7. The replacement of the existing stairway will negate the need for significant additional excavation within the TPZs and SRZs of these two trees. This will significantly mitigate the impact they will sustain (Table 2) (Figure 11).

Tree 4 will sustain a major TPZ encroachment that will have a High impact as part of the proposed development works within the subject site. The proposed works on the southern side of Tree 4 will encroach within a steep embankment that is retained by a stone wall. This will reduce the requirement for additional excavation, which will reduce the potential impact this tree will sustain (Table 2) (Figure 11).

Trees 5, 8 and 13 will sustain minor TPZ encroachments that will have a Low impact. The encroachments sustained by Trees 5 and 8 are considered to be acceptable. Tree 13 has died. The TPZ encroachment sustained by this tree is therefore not considered to be relevant to the potential impact it will sustain.

Trees 1, 2, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 will not sustain a TPZ encroachment under the proposed design plan.



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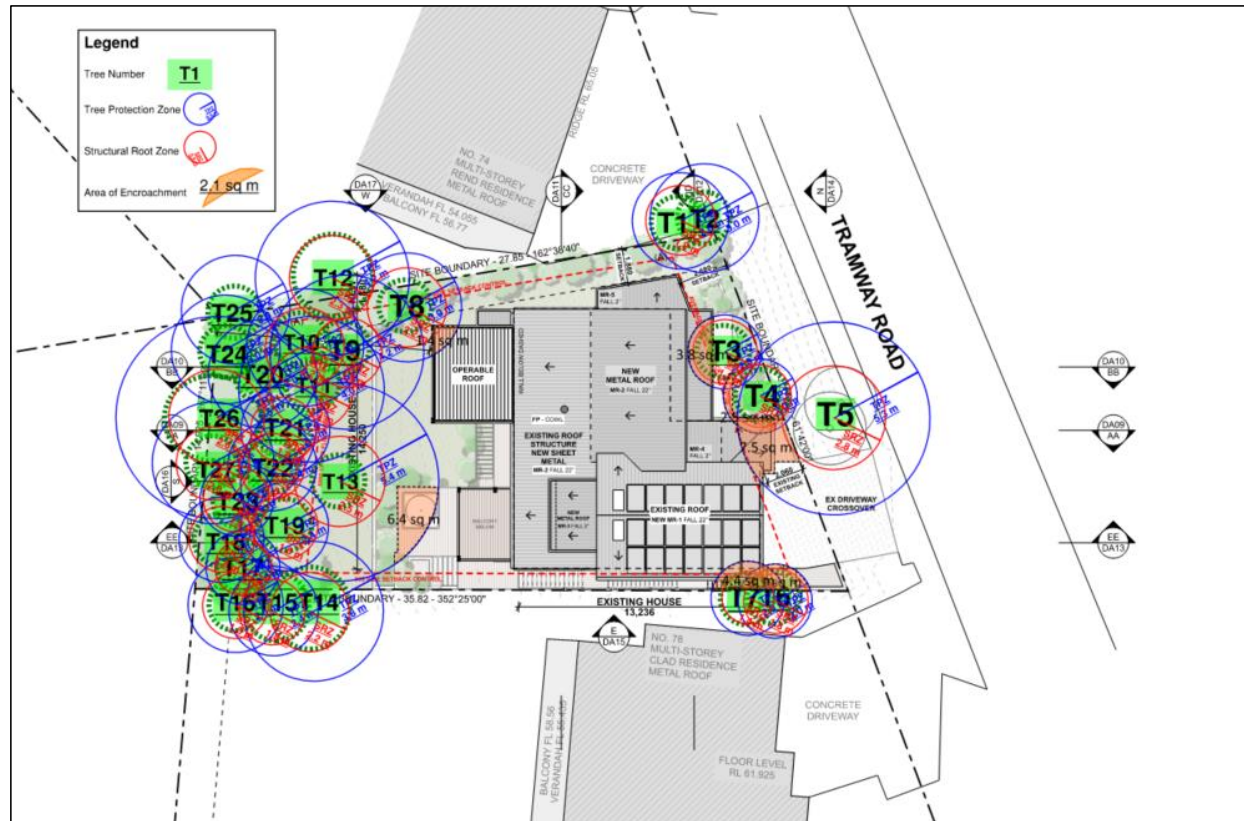


Figure 11. TPZs, SRZ and encroachments associated with proposed development for Trees 1-27. Proposed Site and Roof Plan (Drawing DA04 Issue D-WP) drawn by *Watershed Architects* (Job 22004), annotated by *Temporal Tree Management P/L* (17/04/2023).

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7. Tree Protection / Removal Plan

7.1. Recommended Tree Removal / Pruning

Table 3. Recommended removal/retention for twenty-seven assessed trees.

Recommended Removal/Retention for Twenty-seven Assessed Trees	
Retain	Remove
1, 2, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27.	3, 8, 9, 10, 11, 13, 22, 23.

Tree 3 will require removal to facilitate the construction of the proposed deck and outdoor entertaining area (Figure 14). This tree will sustain a severe TPZ encroachment that will absorb permeable garden area on the southern side of its stem. Tree 3 was determined to be of Low retention value in Section 4.2 of this report (Table 1). The removal of this tree as part of the proposed development is supported in this assessment. Consent for the removal of Tree 3 is required (Table 3).

Trees 8, 9, 10, 11, 13, 22 and 23 were determined to be of Very Low retention value in Section 4.2 of this report. Tree 13 is a large tree that has failed, died and been partially removed. Trees 2, 8, 9, 10, 11, 22 and 23 are *Ligustrum lucidum* specimens, which is a tree species listed as an invasive weed (Weeds Australia 2023). These seven trees are exempt from the tree protection controls outlined in Chapter 3.5 of the Central Coast DCP (2022) as per Chapter 3.5.3.2 of the DCP (2022). Consent for the removal of Tree 8, 9, 10, 11, 13, 22 and 23 is therefore not required (Table 3).

All tree removal works should be undertaken by a suitably qualified arborist (minimum AQF Level 3) and in compliance with the *Work Safe Guide to Managing Risks of Tree Trimming and Removal Work* (2016).



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7.2. Tree Protection Measures

The tree protection zone should be enclosed by 1.8 metre steel fencing that is securely fixed to the ground as stated in Section 4.3 of AS4970 (2009) (Figure 12). Signage stating the purpose of these exclusion zones should be fixed to the fencing so that it is visible from all points within the site. Stem protection measures must be installed on retained trees in situations where the establishment of protection fencing is not feasible. Stem protection measures compliant with Section 4.5.2 of AS4970 (2009) may be installed using hessian or carpet underlay padding wrapped around the trees' stems and fixed in place using duct tape. Timber battens (20mm x 100mm) must then be spaced no greater than 150 mm around the stems and fixed to one another using steel strapping. Timber battens must not be fixed directly to the trees' stems (Figure 13). Ground protection measures may be required to allow access within retained trees' TPZs (Figure 13).

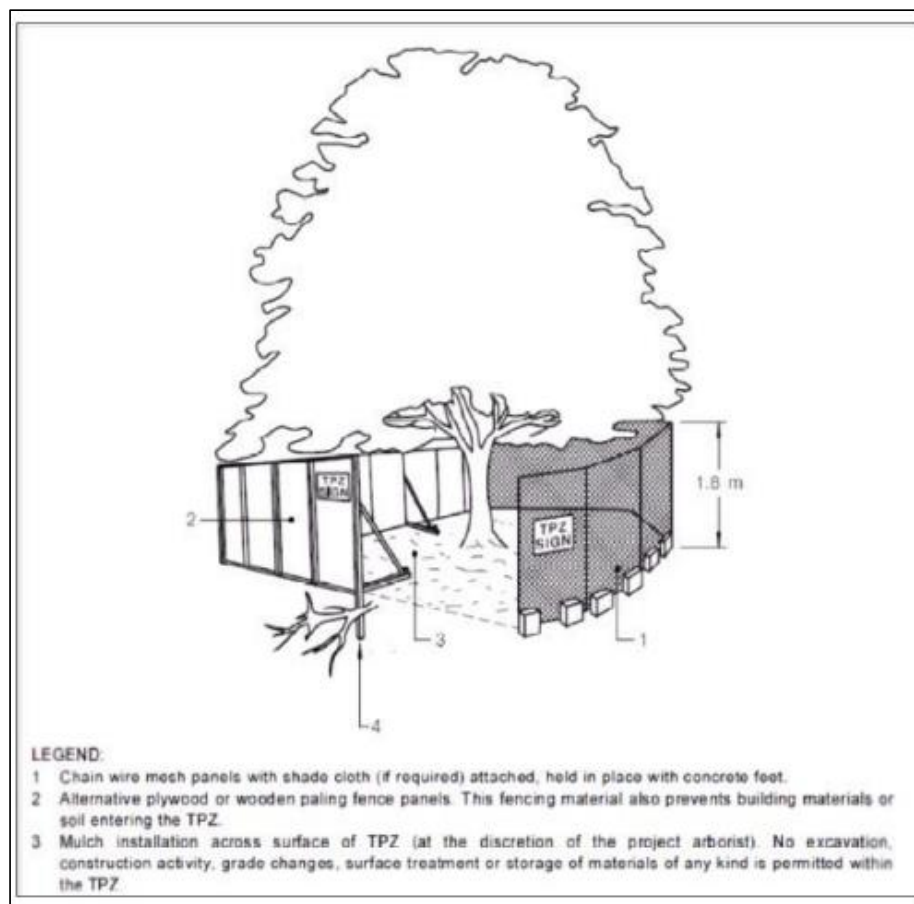


Figure 12. Steel fencing should be erected around the perimeter of TPZs in accordance with Section 4.5 of AS4970 (2009).



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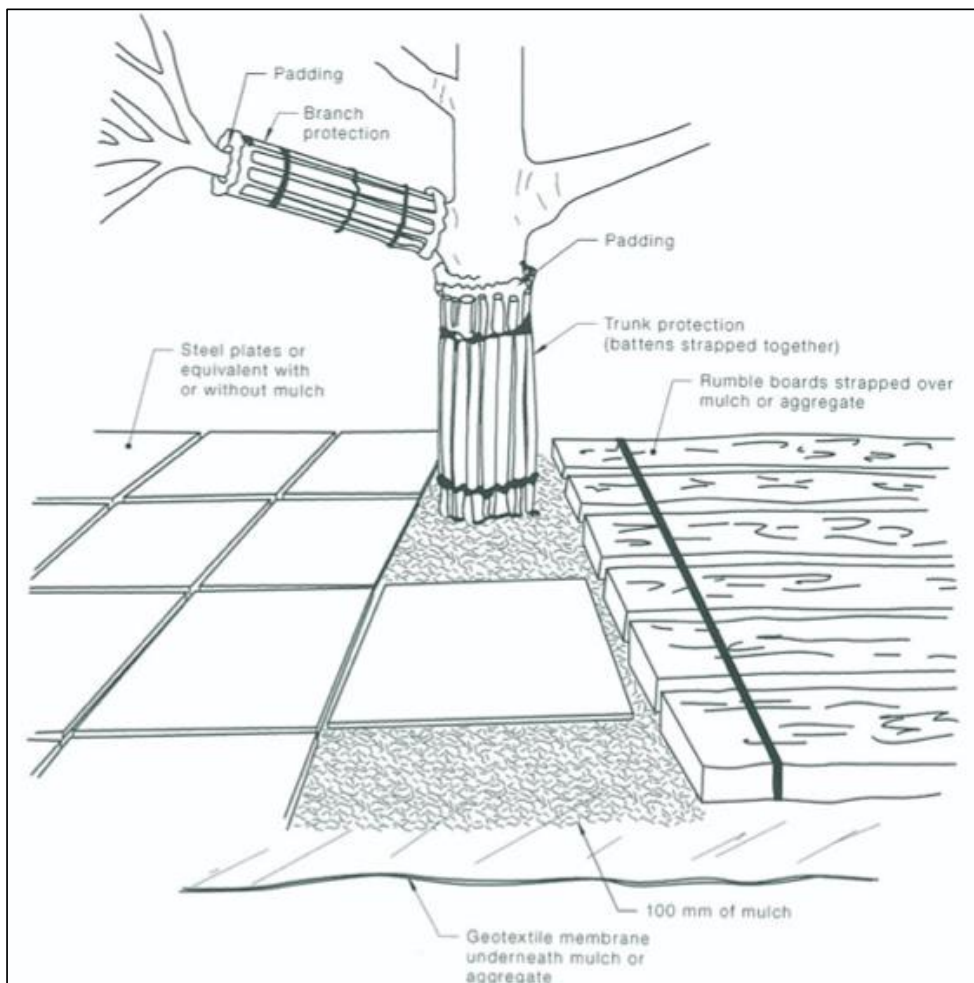
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Figure 13. Stem and ground protection measures specified in Section 4.5.3 of *AS4970 (2009)* for temporary access within TPZ.



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7.3. Site Specific Tree Protection Measures

Trees 1, 2, 4, 5, 6, 7, 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26 and 27 will sustain tolerable or negligible impacts under the proposed design plan. The retention of these nineteen trees as part of the development is supported providing the following protection measures are implemented (Figure 14):

- The steep topography of the subject site will restrict the suitability of the installation of fenced protection zones.
- Trees 1 and 2 can be suitably retained without the installation of protection measures due to their elevated position and suitable distance from the proposed works areas.
- It is therefore recommended that stem and branch protection measures compliant with *Section 4.5.3 of AS4970 (2009)* are installed on Trees 4, 5, 6 and 7 (Figure 14).
- A large, fenced protection zone should be established within the southern portion of the subject site after the completion of recommended tree removal works from this area.
- A line of exclusion fencing should be established 400mm from the edge of the steep embankment area (Figure 15). This fencing must extend from the eastern property boundary of the subject site to the western boundary.
- All fencing and signage requirements outlined in *Section 4.3 of AS4970 (2009)* must be complied with in the installation of this fenced exclusion zone.
- There must be no major root (diameter of or greater than 40mm) cutting during the excavation required for proposed development. Any tree roots encountered must be preserved and inspected by the Project Arborist.
- Any required root pruning must be undertaken by the Project Arborist in compliance with *Section 3.3.3 of AS4970 (2009)*.
- The most suitable location for the waste and material storage area is within the north-eastern boundary corner on the existing driveway (Figure 14).



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Figure 14. Tree Protection / Removal Plan for proposed development. Proposed Site and Roof Plan (Drawing DA04 Issue D-WP) drawn by *Watershed Architects* (Job 22004), annotated by *Temporal Tree Management P/L* (17/04/2023).

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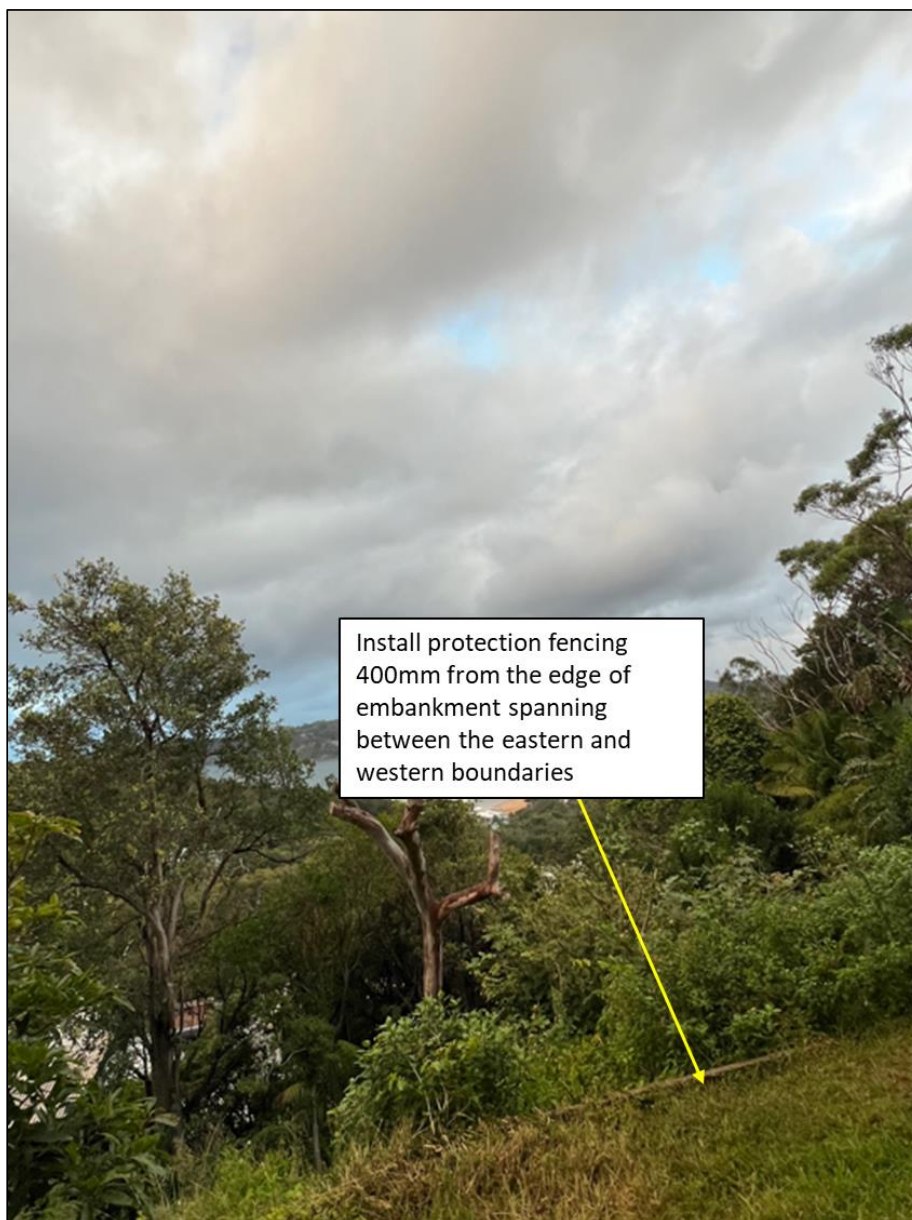
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Figure 15. Position of fencing required to establish large exclusion zone within southern boundary.



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7.4. Certifications

To ensure the proposed development meets the objectives of the Tree Removal/Protection Plan, monitoring and certification process will be undertaken at the following hold points in line with *AS4970 (2009)*. A Project Arborist must be appointed for the duration of this development to ensure compliance with the requirements outlined in Section 7 of this report.

- Tree Removal – Inspection and certification by the Project Arborist of the removal of only Trees 3, 8, 9, 10, 11, 13, 22 and 23 as specified in Section 7.1 of this report. This hold point must be complete prior to the commencement of demolition works and prior to the installation of specified tree protection measures.
- Installation of Tree Protection Measures – Inspection and certification by the Project Arborist of the stem protection measures specified for Trees 4, 5, 6 and 7 and the fenced exclusion zone within the southern portion of the subject site for Trees 12, 14-21 and 23-27 as recommended in Section 7.3 of this report. This hold point must be complete prior to the commencement of demolition works.
- Certification of Required Root Pruning – Inspection and certification by the Project Arborist of any major roots encountered during excavation work. Any major roots that require pruning must be severed by the Project Arborist using a hand saw as specified in *Section 3.3.3 of AS4970 (2009)*. This hold point must be carried at any stage during the development as required.
- Final Arboricultural Inspection – Final inspection by Project Arborist and certification of compliance with Tree Protection Plan as specified in Section 8.3 of this report. All specified protection measures outlined in Section 8.3 must remain in place until this final inspection.



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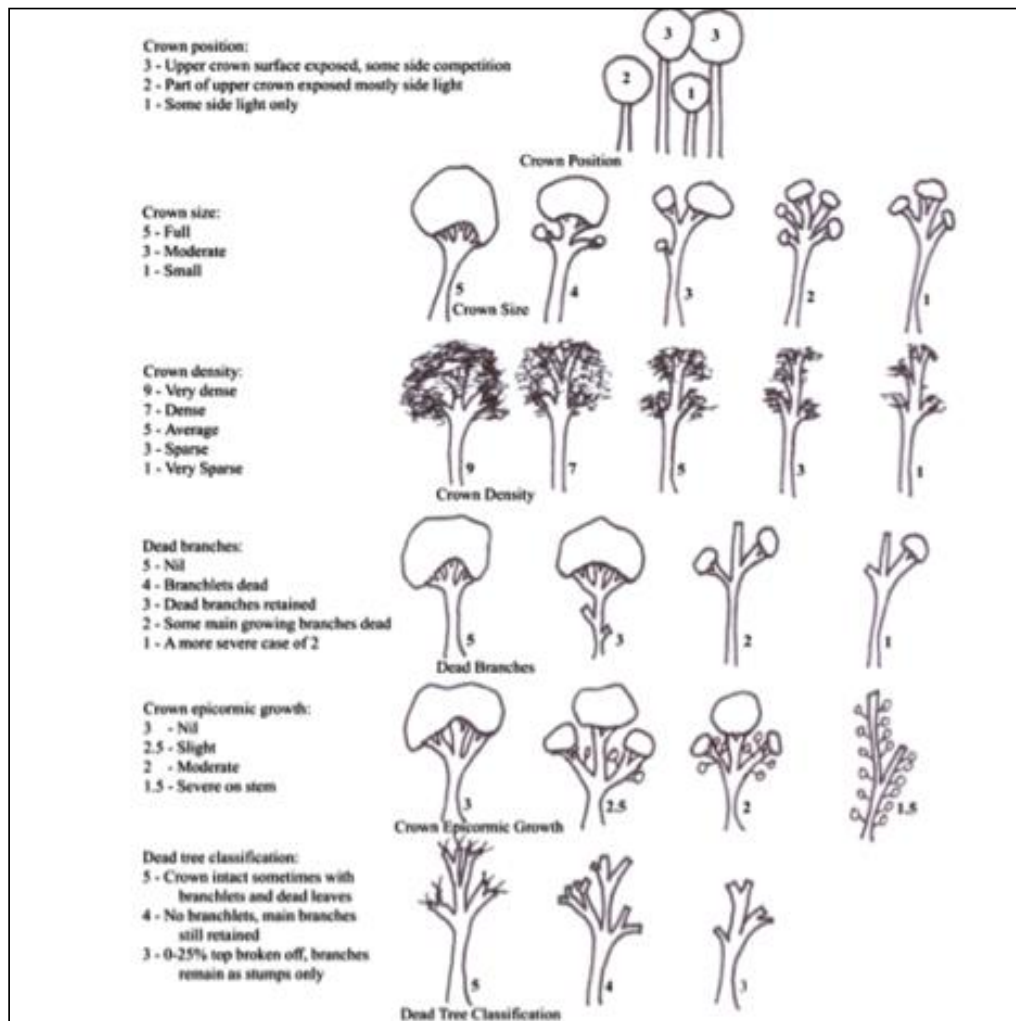
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Appendix A: Vitality using Visual Vitality Index (Johnstone et al. 2012).

VVI = 3/3 (Upper crown exposed) + 5/5 (Good crown size) + 8/9 (Good crown density) + 4/5 (Very little deadwood) + 2/3 (Moderate epicormic growth) + 5/5 (Crown in tact).

=26/30.



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Appendix B: Tree Retention Values Priority Requirements

From Morton (2011). Accessed via the Leichardt Council Tree Technical Manual.

Retention value	Recommended action
"High"	<ul style="list-style-type: none"> These trees are considered worthy of preservation; as such careful consideration should be given to their retention as a priority. Proposed site design and placement of buildings and infrastructure should consider the Tree Protection Zones as discussed in the following sections to minimise any adverse impact. In addition to Tree Protection Zones, the extent of the canopy (canopy drip-line) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"Moderate"	<ul style="list-style-type: none"> The retention of these trees is desirable. These trees should be retained as part of any proposed development if possible, however these trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replacement Policy to compensate for loss of amenity.
"Low"	<ul style="list-style-type: none"> These trees are not considered worthy of any special measures to ensure their preservation, due to current health, condition or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially
	<p>diminished due to their SULE.</p> <ul style="list-style-type: none"> These trees should not be considered as a constraint to the future development of the site.
"Very Low"	<ul style="list-style-type: none"> These trees are considered potentially hazardous or very poor specimens, or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development.



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Appendix C: Landscape Significance Definitions

From Morton (2011). Accessed via the Leichardt Council Tree Technical Manual.

Rating	Heritage value	Ecological value	Amenity value
1. SIGNIFICANT	The subject site is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed as a Significant Tree.	The subject tree is scheduled as a Threatened Species as defined under the <i>Threatened Species Conservation Act 1995 (NSW)</i> or the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> .	The subject tree has a very large live crown size exceeding 100m ² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species.
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has important association with that item.	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species.	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity.
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event.	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area.	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a Heritage Item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 60m ² ; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area.

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Rating	Heritage value	Ecological value	Amenity value
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence.	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value.	The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); the subject tree is visible from the street and/or surrounding properties and makes a positive contribution to the visual character and the amenity of the area.
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this Development Control Plan.	<p>The subject tree has a medium live crown size exceeding 25m²; the tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and</p> <p>The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.</p>
5. LOW	The subject tree detracts from heritage values or diminishes the value of a Heritage Item.	The subject tree is scheduled as exempt (not protected) under the provisions of this Development Control Plan due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 25m ² and can be replaced within the short term (5-10 years) with new tree planting.
6. VERY LOW	The subject tree is causing damage to a Heritage Item.	The subject tree is listed as an Environment Weed Species in the Leichhardt Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).

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Appendix D: Useful Life Expectancy Definitions

From Barrell (1996). Accessed via the Leichardt Council Tree Technical Manual.

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 - 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 - 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years	Trees which can be reliably moved or replaced.
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
B	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability or recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in height.
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
D		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
				Trees that may live for more than 5 years but should be	

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Appendix E: Tree Data

Summarised retention value data for twenty-seven trees assessed on 13/04/2023 within the subject site. Trees determined to be of High retention value are annotated in Green, trees determined to be of Moderate retention value are in Orange, trees determined to be of Low retention value are in Yellow and trees of Very Low retention value are annotated in Red.

Tree	Scientific Name	Common Name	Maturity	Height [m]	Canopy Width [m]	DBH [cm]	DRF [cm]	Condition	Canopy Structure	Useful Life Expectancy	Landscape Value	Retention Value	R _{TP2} [m]	R _{SR2} [m]	Tree Comments
1	Elaeocarpus reticulatus	Blueberry Ash	Mature	7	2	22	26	Poor	Poor	Short	Moderate	Moderate	2.6	1.9	Tree positioned adjacent to north western boundary within neighbouring property. Growing in steep embankment. Ownership unclear. Canopy with signs of dieback. External ownership renders tree of increased Landscape Significance.
2	Phoenix canariensis	Canary Island Date Palm	Semi mature	7	2	50	65	Fair	Fair	Short	Moderate	Low	6.0	2.8	Suppressed palm growing in steep embankment. Ownership unclear.
3	Elaeocarpus reticulatus	Blueberry Ash	Mature	5	1	16	24	Good	Fair	Medium	Low	Low	1.9	1.8	Small tree growing within subject site on northern side of dwelling.
4	Triadica sebifera	Chinese Tallow Tree	Mature	4	2	16	21	Good	Poor	Medium	Low	Low	2.0	1.7	Tree growing in steep embankment within subject site on northern side of dwelling. Canopy has been lopped in past.
5	Eucalyptus botryoides	Southern Mahogany	Mature	5	3	44	65	Fair	Poor	Short	High	Moderate	5.3	2.8	Tree positioned within subject site on steep embankment on northern side of dwelling. Stem trifurcates at ground level. Canopy has been lopped in past to facilitate power lines. Tree ownership unclear, appears to be in road reserve.
6	Leptospermum petersonii	Lemon-scented Tea-tree	Mature	5	1	14	22	Fair	Fair	Medium	Moderate	Moderate	1.7	1.8	Small tree positioned adjacent to north-eastern boundary. Ownership unclear. Potential external ownership renders tree of increased landscape significance.
7	Viburnum sp.	Viburnum	Mature	5	1	10	14	Fair	Fair	Short	Moderate	Low	1.2	1.4	Tree positioned adjacent to north eastern boundary. Ownership unclear. Canopy with signs of dieback. Potential external ownership renders tree of increased Landscape Significance.
8	Ligustrum lucidum	Privet	Mature	11	1	25	37	Good	Poor	Transient	Low	Very Low	3.0	2.2	Tree of undesirable species positioned within eastern boundary on south-western side of dwelling.
9	Ligustrum lucidum	Privet	Mature	5	1	35	28	Good	Poor	Transient	Low	Very Low	4.2	1.9	Tree of undesirable species positioned within eastern boundary on south-western side of dwelling.
10	Ligustrum lucidum	Privet	Mature	9	1	27	36	Good	Poor	Transient	Low	Very Low	3.2	2.2	Tree of undesirable species positioned within western boundary.
11	Ligustrum lucidum	Privet	Mature	12	1	33	40	Good	Poor	Transient	Low	Very Low	4.0	2.3	Tree of undesirable species positioned within western boundary.

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12	Eucalyptus saligna	Sydney Blue Gum	Mature	17	4	35	44	Fair	Fair	Long	High	High	4.2	2.3	Larger tree of native species significance positioned adjacent to south-western boundary. Ownership unclear.
13	Eucalyptus saligna	Sydney Blue Gum	Over mature	16	2	45	50	Dead	Has Failed	Remove	Negligible	Very Low	5.4	2.5	Dead tree with partially failed root plate remains after having had canopy removed.
14	Syncarpia glomulifera	Turpentine	Semi mature	14	2	32	36	Fair	Fair	Long	High	High	3.8	2.2	Larger tree of indigenous species significance positioned adjacent to south-eastern boundary. Ownership unclear. Potential external ownership renders tree of increased landscape significance.
15	Syncarpia glomulifera	Turpentine	Semi mature	19	2	20	24	Fair	Fair	Long	High	High	2.4	1.8	Larger tree of indigenous species significance positioned adjacent to south-eastern boundary. Ownership unclear. Potential external ownership renders tree of increased landscape significance.
16	Pittosporum undulatum	Sweet Pittosporum	Mature	8	2	21	25	Poor	Poor	Short	Moderate	Low	2.5	1.8	Smaller tree positioned adjacent to south-eastern boundary. Ownership unclear. Potential external ownership renders tree of increased landscape significance. Canopy with signs of major dieback.
17	Pittosporum undulatum	Sweet Pittosporum	Semi mature	7	1	13	15	Fair	Poor	Short	Moderate	Low	1.6	1.5	Small, suppressed tree within heavily vegetated area in southern boundary.
18	Pittosporum undulatum	Sweet Pittosporum	Mature	7	2	19	23	Fair	Poor	Short	Moderate	Low	2.3	1.8	Small, suppressed tree within heavily vegetated area in southern boundary.
19	Pittosporum undulatum	Sweet Pittosporum	Mature	8	2	20	25	Fair	Poor	Short	Moderate	Low	2.4	1.8	Small, suppressed tree within heavily vegetated area in southern boundary.
20	Livistona australis	Cabbage Fan-palm	Mature	12	2	45	44	Good	Fair	Long	High	High	5.4	2.3	Larger palm of indigenous species significance within heavily vegetated area in southern boundary.
21	Pittosporum undulatum	Sweet Pittosporum	Mature	9		20	26	Fair	Poor	Short	Moderate	Low	2.4	1.9	Small, suppressed tree within heavily vegetated area in southern boundary.
22	Ligustrum lucidum	Privet	Mature	8	1	20	25	Good	Poor	Transient	Low	Very Low	2.4	1.8	Tree of undesirable species within heavily vegetated area inside southern boundary.
23	Ligustrum lucidum	Privet	Mature	8	2	1	23	Good	Poor	Transient	Low	Very Low	0.1	1.8	Tree of undesirable species within heavily vegetated area inside southern boundary.
24	Livistona australis	Cabbage Fan-palm	Mature	8	2	40	45	Good	Fair	Long	Moderate	Moderate	4.8	2.4	Palm of indigenous species significance suppressed within heavily vegetated area within southern boundary.
25	Livistona australis	Cabbage Fan-palm	Mature	8	2	40	45	Good	Fair	Long	Moderate	Moderate	4.8	2.4	Palm of indigenous species significance suppressed within heavily vegetated area within southern boundary.
26	Glochidion ferdinandi	Cheese Tree	Mature	17	5	46	58	Poor	Poor	Short	Moderate	Moderate	5.5	2.6	Larger tree at southern edge of heavily vegetated area. Heavily suppressed by Ivy. Canopy with signs of dieback.
27	Pittosporum undulatum	Sweet Pittosporum	Mature	7	2	27	30	Fair	Poor	Short	Moderate	Low	3.3	2.0	Smaller tree at southern edge of heavily vegetated area suppressed by larger neighbouring tree.

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Arboricultural Impact Assessment

76 Tramway Road, North Avoca

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Appendix F: TPZ Encroachment Data

TPZ encroachments associated with the proposed development calculated for Trees 1-27. Negligible TPZ encroachments (0%) are annotated in Blue, Low impact encroachments (<10%) are annotated in Green, Moderate impact encroachments (10-20%) are annotated in Yellow, High impact encroachments (20-30%) are annotated in Orange and Severe impact encroachments (>30%) are annotated in Red.

Tree	R _{TPZ} [m]	R _{SRZ} [m]	TPZ Area (m ²)	Encroachment Area (m ²)	Encroachment (%)	SRZ Encroachment
1	2.6	1.9	21.9	0	0.0	N/A
2	3.0	N/A	28.3	0	0.0	N/A
3	2.0	1.8	12.6	3.8	30.3	Yes
4	2.0	1.7	12.0	2.5	20.9	Yes
5	5.3	2.8	86.7	7.5	8.7	Yes
6	2.0	1.8	12.6	3.9	31.1	Yes
7	2.0	1.4	12.6	4.4	35.0	Yes
8	3.0	2.2	28.3	1.4	5.0	Yes
9	4.2	1.9	55.4	0	0.0	N/A
10	3.2	2.2	33.0	0	0.0	N/A
11	4.0	2.3	49.2	0	0.0	N/A
12	4.2	2.3	55.4	0	0.0	N/A
13	5.4	2.5	91.6	6.4	7.0	No
14	3.8	2.2	46.3	0	0.0	N/A
15	2.4	1.8	18.1	0	0.0	N/A
16	2.5	1.8	19.9	0	0.0	N/A

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17	2.0	1.5	12.6	0	0.0	N/A
18	2.3	1.8	16.3	0	0.0	N/A
19	2.4	1.8	18.1	0	0.0	N/A
20	3.0	N/A	28.3	0	0.0	N/A
21	2.4	1.9	18.1	0	0.0	N/A
22	2.4	1.8	18.1	0	0.0	N/A
23	2.0	1.8	12.6	0	0.0	N/A
24	3.0	N/A	28.3	0	0.0	N/A
25	3.0	N/A	28.3	0	0.0	N/A
26	5.5	2.6	95.7	0	0.0	N/A
27	3.3	2.0	33.8	0	0.0	N/A

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Report on
Slope Stability Assessment

Proposed Alterations and Additions
76 Tramway Road, North Avoca

Prepared for
Damien Koerber and Heidi Hillis

Project 221279.00
April 2023

Integrated Practical Solutions





Document History

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author		27 April 2023
Reviewer		27 April 2023



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Executive Summary

The information provided in Table 1, below, summarises the results of the geotechnical investigation and slope stability assessment carried out in accordance with Chapter 3.7 of CCC (2022).

Table 1: Summary of Geotechnical Data (in accordance with Chapter 3.7 of CCC, 2022)

Site Data	The Site
Lot No.	Lot 3471 in DP520890
Street No.	76
Street Name	Tramway Road
Suburb	North Avoca
Assessed by	Tim Warriner
Assessment Date	31 March 2023
Site Classification (AS 2870 – 2011)	P (due to site surface slopes)
Footings	Refer to Section 5.4. Footings socketed at least 0.5 m into very stiff or stronger residual clay or weathered bedrock.
Excavation Conditions and Support	Refer to Sections 5.2 and 5.5
Land Slope (degrees)	Natural slopes of 25° to 35°, with locally steeper sections
Geological Abbreviation (of underlying rock)	Rnt (Terrigal Formation)
Description of Surficial Soil	Fill and colluvium overlying stiff to very stiff residual clay.
Type of Stability Risk	Soil creep, deep seated failure, mass movement, failure of boundary retaining wall, instability of temporary excavation faces and failure of new retaining walls.
Risk Assessment (AGS – 2007)	Low
Geotechnical Inspections required during construction	Yes
Risks from Adjoining Land	None identified



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Appendix A:	About This Report
	AGS Appendix C – Landslide Risk Assessment
	Geoguide LR7 – Landslide Risk
	Geoguide LR8 – Construction Practice
	CSIRO Building Technology File 18
Appendix B:	Drawing 1 - Test Location Plan
Appendix C:	Borehole Logs
	Sampling, Testing and Excavation Methodology
	Soil Descriptions
	Terminology, Symbols and Abbreviations



Report on Slope Stability Assessment Proposed Alterations and Additions 76 Tramway Road, North Avoca

1. Introduction

This report presents the results of a slope stability assessment undertaken by Douglas Partners Pty Ltd (DP) for proposed alterations and additions at 76 Tramway Road, North Avoca. The investigation was commissioned by Damien Koerber and was undertaken in accordance with DP proposal 221279.00.P.001.Rev1 dated 28 March 2023.

For the purpose of this assessment, DP was provided with preliminary architectural drawings prepared by Watershed Architects (Job No 22004, Sheets Sk01 to SK15, dated 25 January 2023). Based on the provided drawings, it is understood that the proposed development will include the following:

- Excavation under the existing garage to facilitate construction of an ensuite and rumpus room. It is anticipated that excavation up to 0.5 m depth, into the hill side, will be required along with piling to support a suspended floor;
- New entry porch, stairs, patio and terrace to the front of the residence;
- Replacement of an existing retaining wall located along the northern property boundary; and
- New balconies to the rear to the property.

The aim of the geotechnical investigation was to provide comment on the following:

- Subsurface soil and groundwater conditions at test locations;
- Slope stability assessment in accordance with Chapter 3.7 of Central Coast Council's (CCC) Development Control Plan 2022 (CCC, 2022);
- Recommendations on site preparation, excavation conditions and earthworks;
- Site classification with reference to AS 2870 (2011);
- Recommended founding materials and preliminary geotechnical parameters for the design of footings and retaining walls; and
- Safe batter slopes.

The assessment comprised a walkover inspection of the site by an engineering geologist to review the geomorphology and geology, followed by subsurface investigation. The results of the investigation are presented herein along with a slope stability risk assessment and comments on design and construction.

2. Site Description

The site is located at 76 Tramway Road, North Avoca and is identified as Lot 3471 in DP520890. It is a trapezoidal shaped block with an area of approximately 570 m². The site is located on the southern side of Tramway Road and is bordered to the east, west and south by residential lots.

At the time of investigation, an existing split level residence was located within the northern half of the site, whilst the southern half of the site generally comprised a small level area of lawn then sloping garden. More detailed comments relating to site features are provided in Section 4.2.1.

Figure 1 shows a recent aerial photograph of the site with approximate lot boundary.



Figure 1: Aerial View of the site showing approximate boundary (red line)

(Image sourced from MetroMap, with NSW 2m Elevation Contours overlay)

Based on local topographic information, surface levels fall from approximately 60 m AHD near the northern site boundary down to approximately 44 m AHD at the south-eastern corner of the site.

3. Regional Soil and Geology Landscape Mapping

Reference to the Gosford-Lake Macquarie 1:100,000 Soil Landscape Sheet indicates that the site is mapped as being underlain by erosional (colluvium) of the Erina soil landscape. The colluvium is anticipated to comprise sand and silt over residual soils.

Reference to regional geological mapping (GSNSW, 2019) indicates that the site is underlain by the Buralow Formation (often referred to as the Terrigal Formation), which is part of the Narrabeen Group. The Buralow Formation typically comprises fine grained sandstone interbedded with siltstone, shale and claystone and typically weathers to form residual sandy clay and clay soils.



4. Field Work

4.1 Field Work Methods

Field work for the investigation was undertaken on 31 March 2023 and included a site walkover inspection by an engineering geologist, followed by the drilling of three boreholes (designated Bores 1 to 3) to refusal at depths ranging from 1.1 m to 1.8 m. The boreholes were drilled using 75 mm diameter hand augers, due to access restrictions.

Dynamic cone penetrometer (DCP) testing was carried out at adjacent the boreholes to provide information on the relative strengths and densities of the subsurface soils.

The location and surface levels of Bores 1 and 3 were recorded to Map Grid of Australia (MGA94) using a differential held GPS which generally has an accuracy of ± 100 mm, depending on satellite coverage hence. The coordinates and elevations are considered approximate. Bore 2 was located under the existing garage and therefore the location and elevation of this borehole were estimated. The coordinates and surface levels are given in the borehole logs, in Appendix C, and the approximate locations of the boreholes are shown on Drawing 1, in Appendix B.

4.2 Field Work Results

4.2.1 Site Walkover Inspection

The following observations were made during the site walkover:

- Surface levels within the site generally fall from approximately 60 m AHD near the northern site boundary down to approximately 44 m AHD at the south-eastern corner of the site. The northern half of the site and area of the residence was generally terraced, however the average gradient was estimated to be approximately 25° . Downslope of the lawn, within the southern half of the site, surface gradients were estimated to be approximately 30° to 35° ;
- An existing split level residence, with suspended garage, was located within the northern half of the site. The founding conditions of the residence and garage are unknown to DP. The exterior of the residence was rendered and was generally considered to be in a good condition (refer Figures 2 and 3), however, cracking of the render was observed between the upstairs windows of the western side of the building (refer Figure 4). No further cracking of the render was observed at the time of the walkover;



Figure 2: View of the front of the residence, looking south-west under the garage.



Figure 3: View of the rear of the residence, looking north-west.



Figure 4: View of the cracked render on the western side of the residence.

- The lower ground floor level for the rear of the residence had a suspended timber floor supported by brick piers and a brick curtain wall (refer Figure 5). No signs of recent displacement were detected, with the observed floor joist and beams appeared to be connected to the piers with no visible gaps or misalignment;



Figure 5: View of the cracked render on the western side of the residence.

- The front of the residence was located within an area of cut excavation. The excavation face was supported by a core filled block wall, measured to be up to 2.4m in height (refer Figure 6). No cracking or displacement of the retaining wall was observed;

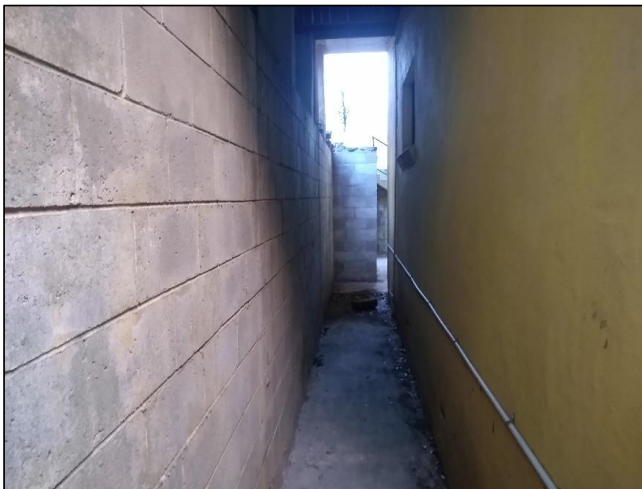


Figure 6: View of the core filled retaining wall, looking east.

- Along the northern boundary of the site was a tiered retaining wall, generally comprising cemented stone (refer Figure 7). The wall was angled back into the slope at approximately 40°, and was measured to be approximately 2.5 m in height. Upslope of the wall was a garden bed then a footpath. The material behind the wall is anticipated to generally comprised fill, placed during the construction of Tramway Road. At the time of the inspection, numerous cracks were observed within the face of the retaining wall, concentrated near trees. The cracking is considered to be as a result of root jacking as opposed to signs of significant mass movement;



Figure 7: View of the front retaining wall, looking north.

- A water feature with cemented stone rockery was observed under the suspended slab of the garage, within the front of the site (refer Figure 8). Cracking observed within the rockery was concentrated around area of vegetation and is therefore considered likely to be as a result of soil reactivity, due to changes in moisture content, and root jacking as opposed to signs of slope instability;
- No signs of significant overland flow of stormwater and erosion was noted within the site; and
- No groundwater seepage was observed within or upslope of the site, although it is noted that the site inspection was preceded by a period of dry weather.



4.2.2 Boreholes and In-situ Testing

Details of the subsurface conditions encountered in the bores are presented in the borehole log sheets in Appendix C. These should be read in conjunction with the accompanying explanatory notes, also in Appendix C, which define the descriptive terms and classification methods used in the report.

A summary of the subsurface conditions encountered in the bores are presented in Table 2.

Table 2: Inferred Subsurface Profile

Description	Borehole and Depth to Base of Strata (m)		
	1	2	3
FILL Dark brown silty sand topsoil, brown mottled orange brown silty clay with sand and gravel, grey silty sand	1.25	0.50	0.30
COLLUVIUM Grey sandy silt with gravel and clay, in a stiff condition	1.65	-	-
RESIDUAL Pale brown silty sandy clay with gravel, in a stiff to very stiff condition	1.80 (Ref)	1.10 (Ref)	1.10 (Ref)
Depth achieved with DCP testing	2.50	2.20	1.55

Notes: Ref: Refusal

-: Strata not encountered

It is noted that the DCP testing undertaken adjacent to the boreholes were able to penetrate to depths greater than that achieved by the respective boreholes (refer Table 2), which indicated that refusal of boreholes was likely due to granular material within the clay as opposed to refusal on bedrock.

No free groundwater was observed within the boreholes during drilling. It should be noted that groundwater levels are variable and can be affected by factors such as soil permeability and recent climatic conditions, and can vary with time.



5. Comments

5.1 Slope Stability Assessment for DCP 2022

Average surface gradients within the site were estimated to be in the range of 25° to 35°, with locally steeper sections. Based on the Terrigal Formation underlying the site and with reference to Table M2 of Chapter 3.7 of CCC (2022), the site is considered to be “Category 4 – Immediate High Hazard Area” with respect to landslip hazards.

5.1.1 Identified Hazards and Inferred Consequences

The site has been assessed with reference to AGS (2007) and the following hazards have been identified in connection with the proposed development:

Hazard 1 relates to the extremely slow creep of the colluvial soils and any fill present at the site and has been assessed as “almost certain”. The consequences of creep would be “insignificant” provided advice relating to footings in Section 5.4 of this report is incorporated into the design of the development.

Hazard 2 relates to a slow deep seated failure and has been assessed to be “barely credible” owing to the geological setting of the site, the presence of shallow residual soils of generally stiff to very stiff consistency. The consequences of a deep seated failure would be “catastrophic” as reconstruction costs would be expected to be in the range 100% to 200% of the existing/future developments.

Hazard 3 relates to mass movement initiating within the rear garden of the site and progressing back to the residence. The likelihood of failure has been assessed to be “unlikely” providing that captured stormwater is not discharged to this area of the site and that a surface covering of deep and shallow rooting vegetation is maintained. The consequences of a mass movement would be “minor” provided advice relating to footings in Section 5.4 of this report is incorporated into the design of the development.

Hazard 4 relates to a large scale failure of the existing cemented stone wall located along the front boundary of the site. Whilst scaling of individual stones is considered to be “almost certain”, the likelihood of mass movement has been assessed to be “possible”. The consequences of a mass movement is considered to have a “medium” consequence to the proposed development. However failure may impact the stability of the upslope pavement, which may have a higher level of consequence.

Hazard 5 relates to instability of temporary excavation faces during construction. The failure likelihood has been assessed as “unlikely” provided advice relating to excavation support in Section 5.5 of this report is followed. It is anticipated that the temporary excavation faces would be present for a relatively short period of time during the early stages of construction and therefore the consequence of failure, to a partially constructed building is expected to be a “minor” level of damage. Consideration should also be given to construction of the new retaining wall in-front of the existing wall, therefore negating the need to remove the existing wall during construction.

Hazard 6 relates to the failure of new retaining walls for the proposed development. The failure likelihood category is considered to be “rare” provided that the walls are designed by a structural engineer in accordance with the recommendations outlined in this report. Should failure occur, then the consequence is expected to be a “medium” level of damage.



5.1.2 Risk to Property

The site has been assessed with reference to AGS (2007); Table 3 summarises the results of this assessment, together with a qualitative assessment of the likelihood of occurrence of a landslide (after construction), or mass ground movements and its consequence and risk to the property. This table presents levels of risks following construction based on the requirement that the structure is designed and constructed taking into account the advice and recommendations presented in this report.

Table 3: Risk Assessment for Property – Proposed Development

Hazard	Likelihood	Consequence	Risk to Proposed Development
1. Slow creep of fill and colluvial soils	Almost Certain	Insignificant	Low
2. Deep seated failure beneath proposed development	Barely Credible	Catastrophic	Low
3. Mass movement	Unlikely	Minor	Low
4. Failure of boundary retaining wall	Possible	Medium	Moderate
5. Instability of excavation faces	Unlikely	Minor	Low
6. Failure of proposed new retaining walls	Rare	Medium	Low

Reference to AGS (2007) indicates that for residential structures, for which an importance Level 2 applies, a “low” risk level is usually acceptable to society and regulators.

The risk of failure of the upslope boundary retaining wall (Hazard 4) has been assessed to be “moderate”. Providing that this retaining wall is replaced as part of the proposed development then this hazard would be eliminated (Hazard 4 becomes Hazard 6).

5.2 Excavation Conditions

The subsurface conditions identified within the boreholes generally comprised fill and colluvium over residual clay soils. Bulk excavations of such materials are anticipated to be readily moved with conventional earthmoving equipment such as hydraulic excavators. The presence of boulders however cannot be discounted and therefore provisions should be made by the builder for excavation of such materials (i.e. breaker attachments and ripping tyres for excavators and rock augers for pier holes).

No free groundwater was observed during the investigation. Water seepage, however, cannot be discounted from excavation faces and therefore provision should be made for management of groundwater flows, especially following periods of rainfall. Areas of cut should be graded to shed water and suitable surface drainage systems should be provided in the design. Surface water should not be allowed to crest over excavation batters and therefore upslope diversion bunds are advised.

Material requiring off-site disposal would need to be assessed in accordance with NSW EPA (2014).

It is understood that approximately 0.5 m of excavation is proposed beneath the existing garage. The depth of the foundations for the suspended garage slab has not been confirmed as part of this



investigations. Care should be taken when excavating near existing foundations to ensure that damage or undermining does not occur.

5.3 Site Classification

Site classification of residential sites, as described in AS 2870 (2011), is partly based on ground movement limits, which are defined by the characteristic surface movement (y_s). Site classification also has to consider other factors such as the presence of uncontrolled filling, steep slopes and weak soils.

Where development is to be carried out on a slope where downhill foundation movement is a design consideration, AS 2870 (2011) requires sites to be classified as 'Class P'. Based on the risk posed by slope instability, the site is considered to be 'Class P' and footings should be designed in accordance with engineering principles, with reference to the recommendations presented in Section 5.4, of this report.

It should be noted that the site classification is also dependent on proper site maintenance, which should be carried out in accordance with AS 2870 (2011) and with CSIRO Building Technology File 18: Foundation Maintenance and Footing Performance – A Homeowner's Guide, which is attached within Appendix A. Furthermore, the building should be appropriately articulated with reference to TN61 (CCAA, 2008).

5.4 Footings

Based on the conditions encountered during the investigation, it is recommended that new footings for the proposed development should be taken socketed at least 0.5 m in to very stiff (or stronger) residual clay soil, below any topsoil/fill/colluvium as inferred from the following depths:

- Bore 1 – below 1.65 m;
- Bore 2 – below 0.5 m; and
- Bore 3 – below 0.9 m.

Following bulk excavation and where very stiff (or stronger) residual clay is exposed, then the use of high level strip or pad footings may be appropriate. Strip or pad footings, founded within very stiff (or stronger) natural clay could be proportioned for a maximum allowable bearing pressure of 150 kPa.

Uncased bored piles socketed at least 0.5 m into the very stiff (or stronger) residual clay could be designed based on a maximum allowable bearing pressure of 300 kPa, provided that the ratio of pile length to diameter is ≥ 3 .

Higher bearing capacity could be expected within the underlying bedrock, however the depth to, and strength of, the underlying bedrock has not been proven as part of this investigation. Based on DP's knowledge of the local area, the depth to bedrock is anticipated to vary between approximately 3 m to 6 m and can change abruptly. Additional geotechnical investigation could be undertaken to confirm the depth to, and strength of, the underlying bedrock prior to detailed design or starting construction activities.



Differential movement should be expected between the existing and new development and therefore appropriate articulation should be incorporated into the building design.

New footings should be taken below the zone of influence (ZOI) of existing retaining walls. A ZOI of 1H:1V could be assumed for very stiff or stronger residual clay.

All footing excavations should be inspected by a geotechnical engineer / engineering geologist prior to casting of concrete. Pier holes should be cleaned and free of water and loose debris prior to concreting, otherwise the capacity of the piers would be adversely affected.

5.5 Excavation Support

5.5.1 Batter Slopes

For reconstruction of the northern boundary retaining wall it is advised that consideration should also be given to construction of the new retaining wall in-front of the existing wall, therefore negating the need to remove the existing wall during construction.

Where the existing wall is to be removed and any excavation is sufficiently distant from the site boundary, existing structures or private in-ground services, a short term (construction) batter slope may be appropriate, subject to regular inspection by a geotechnical engineer or engineering geologist. A short term temporary batter, for excavations up to 2.5 m in height, of 1.5H:1V could be adopted in the fill and colluvium, and 1H:1V for stiff or stronger residual clay. However, consideration should also be given to Council and commercial in-ground services, where a ZOI of 2H:1V may apply. It is also recommended that excavation should not be undertaken within 2H:1V of the pavement within Tramway Road, without first consulting with the Council and under the full time supervision by a geotechnical engineer. The use of temporary excavation support may be required.

It should be noted that the safe batter slopes given above assume that no water will be allowed to flow over the crest of the batter. Hence, appropriate surface drainage should be provided to control surface water. DP should be asked to reassess the safe batter slope should water ingress along the batter face. Batters should be protected against erosion.

Loads should not be applied to the crest of the temporary batter, suggested above, as this may initial instability. It is therefore recommended that plant and any materials be located at least 1 m back from the crest of the temporary batter.



5.5.2 Retaining Walls

For the design of retaining walls, a triangular earth pressure distribution can be adopted to calculate earth pressures. Design of retaining walls should be based on the parameters given in Table 4. It should be noted that the parameters provided in Table 4 are ultimate values and a suitable factor of safety should be applied to design. Furthermore, the parameters provided are based on the assumption that the angle of friction of the wall is 0° .

Table 4: Retaining Wall Design Parameters - Unfactored

Material	Active Earth Pressure Coefficient, $K_a^{(1)}$	Passive Earth Pressure Coefficient, K_p or Passive Pressure $P_p^{(2)}$	Bulk Unit Weight, γ_b (kN/m ³)
Fill, colluvium	0.4	-	20
Residual soils	0.4	$K_p = 2.5$	20
Very low or stronger strength sandstone	0.2	$P_p = 400$ kPa	22

Note 1: Design parameters based on level ground being in front of the wall. The K_a values should be increased to account for any sloping ground behind the retaining wall.

2: Passive pressures are subject to geotechnical inspection and review - may be controlled by jointing.

- Not applicable

Where retaining walls are not able to tolerate deflections, then they should be designed based on 'at rest' conditions rather than 'active' conditions. The active earth pressure coefficient should be increased by 50% to determine suitable 'at rest' parameters, although the design of the retaining walls should also account for any surcharge loads, such as from any proposed structures located behind the wall.

The earth pressure design parameters given in Table 4 are based on the requirement for full drainage behind the retaining walls. All retaining walls, regardless of height, should be provided with geotextile encapsulated free draining backfill (such as 10 mm or 20 mm single size aggregate) with a slotted drainage pipe at the base of the wall for the relief of hydrostatic pressures. Water collected by the drainage system should be discharged to a formal stormwater drainage system downslope of the proposed building. If drainage is not provided behind retaining walls, then the walls should be designed to withstand hydrostatic pressures over the full height of the respective walls.

It is noted that the material to be retained by the new retaining wall, i.e. material behind the existing retaining wall, has not been confirmed as part of this investigation.

Consideration should also be given, by the designer, to loads that may be applied to the crest of the wall during and post construction, and also loads that may be applied within the ZOI of the wall by traffic within Tramway Road, if applicable.



5.6 Drainage

From a slope stability management perspective, drainage of the hillside is an essential part of reducing the likelihood of slope movement. Drainage measures should include the following:

- Stormwater runoff should be collected by a stormwater drainage system and discharged to an off-site reticulated stormwater drainage system; and
- Retaining walls for any proposed structures or for landscaping should have geotextile encapsulated free draining gravel (e.g. 10 mm or 20 mm single-size aggregate) over the full height of the rear of the wall, with drainage pipes in the free-draining backfill behind the wall. Water collected by the drains is to be piped away from the hillside.

On-site infiltration pits or trenches are not recommended for the disposal of stormwater at this site.

6. References

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GSNSW (2019). *NSW Seamless Geology*. Geological Survey NSW Web Map Service.

7. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 76 Tramway Road, North Avoca in accordance with DP's proposal 221279.00.P.001.Rev1 dated 28 March 2023 and acceptance received from Damien Koerber and Heidi Hillis dated 30 March 2023. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Damien Koerber and Heidi Hillis for this project only and for the purposes as described in the report. It should not be used by or be relied upon for other projects or purposes on the same or another site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the



work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Douglas Partners Pty Ltd

Appendix A

About This Report

AGS Appendix C – Landslide Risk Assessment

Geoguide LR7 – Landslide Risk

Geoguide LR8 – Construction Practice

CSIRO Building Technology File 18

About this Report



November 2020

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

continued next page

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

APPENDIX C: LANDSLIDE RISK ASSESSMENT

QUALITATIVE TERMINOLOGY FOR USE IN ASSESSING RISK TO PROPERTY

QUALITATIVE MEASURES OF LIKELIHOOD

Approximate Annual Probability		Implied Indicative Landslide Recurrence Interval		Description	Descriptor	Level
Indicative Value	Notional Boundary					
10 ⁻¹	5x10 ⁻²	10 years	20 years	The event is expected to occur over the design life.	ALMOST CERTAIN	A
10 ⁻²		100 years		The event will probably occur under adverse conditions over the design life.	LIKELY	B
10 ⁻³	5x10 ⁻³	1000 years	200 years	The event could occur under adverse conditions over the design life.	POSSIBLE	C
10 ⁻⁴		10,000 years		The event might occur under very adverse circumstances over the design life.	UNLIKELY	D
10 ⁻⁵	5x10 ⁻⁵	100,000 years	20,000 years	The event is conceivable but only under exceptional circumstances over the design life.	RARE	E
10 ⁻⁶		1,000,000 years		The event is inconceivable or fanciful over the design life.	BARELY CREDIBLE	F

Note: (1) The table should be used from left to right; use Approximate Annual Probability or Description to assign Descriptor, not *vice versa*.

QUALITATIVE MEASURES OF CONSEQUENCES TO PROPERTY

Approximate Cost of Damage		Description	Descriptor	Level
Indicative Value	Notional Boundary			
200%	100%	Structure(s) completely destroyed and/or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.	CATASTROPHIC	1
60%		Extensive damage to most of structure, and/or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequence damage.	MAJOR	2
20%	40%	Moderate damage to some of structure, and/or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequence damage.	MEDIUM	3
5%		Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works.	MINOR	4
0.5%	1%	Little damage. (Note for high probability event (Almost Certain), this category may be subdivided at a notional boundary of 0.1%. See Risk Matrix.)	INSIGNIFICANT	5

- Notes:** (2) The Approximate Cost of Damage is expressed as a percentage of market value, being the cost of the improved value of the unaffected property which includes the land plus the unaffected structures.
- (3) The Approximate Cost is to be an estimate of the direct cost of the damage, such as the cost of reinstatement of the damaged portion of the property (land plus structures), stabilisation works required to render the site to tolerable risk level for the landslide which has occurred and professional design fees, and consequential costs such as legal fees, temporary accommodation. It does not include additional stabilisation works to address other landslides which may affect the property.
- (4) The table should be used from left to right; use Approximate Cost of Damage or Description to assign Descriptor, not *vice versa*

PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

APPENDIX C: – QUALITATIVE TERMINOLOGY FOR USE IN ASSESSING RISK TO PROPERTY (CONTINUED)

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY

LIKELIHOOD		CONSEQUENCES TO PROPERTY (With Indicative Approximate Cost of Damage)				
	Indicative Value of Approximate Annual Probability	1: CATASTROPHIC 200%	2: MAJOR 60%	3: MEDIUM 20%	4: MINOR 5%	5: INSIGNIFICANT 0.5%
A – ALMOST CERTAIN	10 ⁻¹	VH	VH	VH	H	M or L (5)
B – LIKELY	10 ⁻²	VH	VH	H	M	L
C – POSSIBLE	10 ⁻³	VH	H	M	M	VL
D – UNLIKELY	10 ⁻⁴	H	M	L	L	VL
E – RARE	10 ⁻⁵	M	L	L	VL	VL
F – BARELY CREDIBLE	10 ⁻⁶	L	VL	VL	VL	VL

Notes: (5) For Cell A5, may be subdivided such that a consequence of less than 0.1% is Low Risk.

(6) When considering a risk assessment it must be clearly stated whether it is for existing conditions or with risk control measures which may not be implemented at the current time.

RISK LEVEL IMPLICATIONS

Risk Level		Example Implications (7)
VH	VERY HIGH RISK	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to Low; may be too expensive and not practical. Work likely to cost more than value of the property.
H	HIGH RISK	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to Low. Work would cost a substantial sum in relation to the value of the property.
M	MODERATE RISK	May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low. Treatment options to reduce to Low risk should be implemented as soon as practicable.
L	LOW RISK	Usually acceptable to regulators. Where treatment has been required to reduce the risk to this level, ongoing maintenance is required.
VL	VERY LOW RISK	Acceptable. Manage by normal slope maintenance procedures.

Note: (7) The implications for a particular situation are to be determined by all parties to the risk assessment and may depend on the nature of the property at risk; these are only given as a general guide.

AUSTRALIAN GEOGUIDE LR7 (LANDSLIDE RISK)

LANDSLIDE RISK**Concept of Risk**

Risk is a familiar term, but what does it really mean? It can be defined as "a measure of the probability and severity of an adverse effect to health, property, or the environment." This definition may seem a bit complicated. In relation to landslides, geotechnical practitioners (GeoGuide LR1) are required to assess risk in terms of the likelihood that a particular landslide will occur and the possible consequences. This is called landslide risk assessment. The consequences of a landslide are many and varied, but our concerns normally focus on loss of, or damage to, property and loss of life.

Landslide Risk Assessment

Some local councils in Australia are aware of the potential for landslides within their jurisdiction and have responded by designating specific "landslide hazard zones". Development in these areas is often covered by special regulations. If you are contemplating building, or buying an existing house, particularly in a hilly area, or near cliffs, go first for information to your local council.

Landslide risk assessment must be undertaken by a geotechnical practitioner. It may involve visual inspection, geological mapping, geotechnical investigation and monitoring to identify:

- potential landslides (there may be more than one that could impact on your site)
- the likelihood that they will occur
- the damage that could result
- the cost of disruption and repairs and
- the extent to which lives could be lost.

Risk assessment is a predictive exercise, but since the ground and the processes involved are complex, prediction tends to lack precision. If you commission a

landslide risk assessment for a particular site you should expect to receive a report prepared in accordance with current professional guidelines and in a form that is acceptable to your local council, or planning authority.

Risk to Property

Table 1 indicates the terms used to describe risk to property. Each risk level depends on an assessment of how likely a landslide is to occur and its consequences in dollar terms. "Likelihood" is the chance of it happening in any one year, as indicated in Table 2. "Consequences" are related to the cost of repairs and temporary loss of use if a landslide occurs. These two factors are combined by the geotechnical practitioner to determine the Qualitative Risk.

TABLE 2: LIKELIHOOD

Likelihood	Annual Probability
Almost Certain	1:10
Likely	1:100
Possible	1:1,000
Unlikely	1:10,000
Rare	1:100,000
Barely credible	1:1,000,000

The terms "unacceptable", "may be tolerated", etc. in Table 1 indicate how most people react to an assessed risk level. However, some people will always be more prepared, or better able, to tolerate a higher risk level than others.

Some local councils and planning authorities stipulate a maximum tolerable level of risk to property for developments within their jurisdictions. In these situations the risk must be assessed by a geotechnical practitioner. If stabilisation works are needed to meet the stipulated requirements these will normally have to be carried out as part of the development, or consent will be withheld.

TABLE 1: RISK TO PROPERTY

Qualitative Risk		Significance - Geotechnical engineering requirements
Very high	VH	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to Low. May be too expensive and not practical. Work likely to cost more than the value of the property.
High	H	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to acceptable level. Work would cost a substantial sum in relation to the value of the property.
Moderate	M	May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low. Treatment options to reduce to Low risk should be implemented as soon as possible.
Low	L	Usually acceptable to regulators. Where treatment has been needed to reduce the risk to this level, ongoing maintenance is required.
Very Low	VL	Acceptable. Manage by normal slope maintenance procedures.

AUSTRALIAN GEOGUIDE LR7 (LANDSLIDE RISK)

Risk to Life

Most of us have some difficulty grappling with the concept of risk and deciding whether, or not, we are prepared to accept it. However, without doing any sort of analysis, or commissioning a report from an "expert", we all take risks every day. One of them is the risk of being killed in an accident. This is worth thinking about, because it tells us a lot about ourselves and can help to put an assessed risk into a meaningful context. By identifying activities that we either are, or are not, prepared to engage in we can get some indication of the maximum level of risk that we are prepared to take. This knowledge can help us to decide whether we really are able to accept a particular risk, or to tolerate a particular likelihood of loss, or damage, to our property (Table 2).

In Table 3, data from NSW for the years 1998 to 2002, and other sources, is presented. A risk of 1 in 100,000 means that, in any one year, 1 person is killed for every 100,000 people undertaking that particular activity. The NSW data assumes that the whole population undertakes the activity. That is, we are all at risk of being killed in a fire, or of choking on our food, but it is reasonable to assume that only people who go deep sea fishing run a risk of being killed while doing it.

It can be seen that the risks of dying as a result of falling, using a motor vehicle, or engaging in water-related activities (including bathing) are all greater than 1:100,000 and yet few people actively avoid situations where these risks are present. Some people are averse to flying and yet it represents a lower risk than choking to death on food. Importantly, the data also indicate that, even when the risk of dying as a consequence of a particular event is very small, it could still happen to any one of us any day. If this were not so, no one would ever be struck by lightning.

Most local councils and planning authorities that stipulate a tolerable risk to property also stipulate a tolerable risk to life. The AGS Practice Note Guideline recommends that 1:100,000 is tolerable in newly

developed areas, where works can be carried out as part of the development to limit risk. The tolerable level is raised to 1:10,000 in established areas, where specific landslide hazards may have existed for many years. The distinction is deliberate and intended to prevent the concept of landslide risk management, for its own sake, becoming an unreasonable financial burden on existing communities. Acceptable risk is usually taken to be one tenth of the tolerable risk (1:1,000,000 for new developments and 1:100,000 for established areas) and efforts should be made to attain these where it is practicable and financially realistic to do so.

TABLE 3: RISK TO LIFE

Risk (deaths per participant per year)	Activity/Event Leading to Death (NSW data unless noted)
1:1,000	Deep sea fishing (UK)
1:1,000 to 1:10,000	Motor cycling, horse riding , ultra-light flying (Canada)
1:23,000	Motor vehicle use
1:30,000	Fall
1:70,000	Drowning
1:180,000	Fire/burn
1:660,000	Choking on food
1:1,000,000	Scheduled airlines (Canada)
1:2,300,000	Train travel
1:32,000,000	Lightning strike

More information relevant to your particular situation may be found in other AUSTRALIAN GEOGUIDES:

- GeoGuide LR1 - Introduction
- GeoGuide LR2 - Landslides
- GeoGuide LR3 - Landslides in Soil
- GeoGuide LR4 - Landslides in Rock
- GeoGuide LR5 - Water & Drainage
- GeoGuide LR6 - Retaining Walls
- GeoGuide LR8 - Hillside Construction
- GeoGuide LR9 - Effluent & Surface Water Disposal
- GeoGuide LR10 - Coastal Landslides
- GeoGuide LR11 - Record Keeping

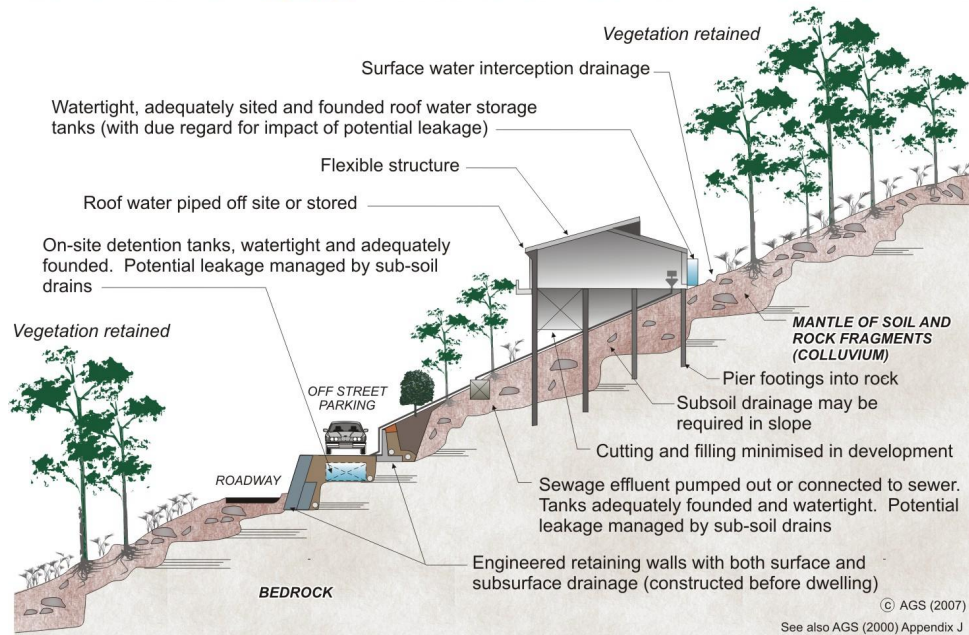
The Australian GeoGuides (LR series) are a set of publications intended for property owners; local councils; planning authorities; developers; insurers; lawyers and, in fact, anyone who lives with, or has an interest in, a natural or engineered slope, a cutting, or an excavation. They are intended to help you understand why slopes and retaining structures can be a hazard and what can be done with appropriate professional advice and local council approval (if required) to remove, reduce, or minimise the risk they represent. The GeoGuides have been prepared by the [Australian Geomechanics Society](#), a specialist technical society within Engineers Australia, the national peak body for all engineering disciplines in Australia, whose members are professional geotechnical engineers and engineering geologists with a particular interest in ground engineering. The GeoGuides have been funded under the Australian governments' National Disaster Mitigation Program.

AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

HILLSIDE CONSTRUCTION PRACTICE

Sensible development practices are required when building on hillsides, particularly if the hillside has more than a low risk of instability (GeoGuide LR7). Only building techniques intended to maintain, or reduce, the overall level of landslide risk should be considered. Examples of good hillside construction practice are illustrated below.

EXAMPLES OF GOOD HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES GOOD?

Roadways and parking areas - are paved and incorporate kerbs which prevent water discharging straight into the hillside (GeoGuide LR5).

Cuttings - are supported by retaining walls (GeoGuide LR6).

Retaining walls - are engineer designed to withstand the lateral earth pressures and surcharges expected, and include drains to prevent water pressures developing in the backfill. Where the ground slopes steeply down towards the high side of a retaining wall, the disturbing force (see GeoGuide LR6) can be two or more times that in level ground. Retaining walls must be designed taking these forces into account.

Sewage - whether treated or not is either taken away in pipes or contained in properly founded tanks so it cannot soak into the ground.

Surface water - from roofs and other hard surfaces is piped away to a suitable discharge point rather than being allowed to infiltrate into the ground. Preferably, the discharge point will be in a natural creek where ground water exits, rather than enters, the ground. Shallow, lined, drains on the surface can fulfil the same purpose (GeoGuide LR5).

Surface loads - are minimised. No fill embankments have been built. The house is a lightweight structure. Foundation loads have been taken down below the level at which a landslide is likely to occur and, preferably, to rock. This sort of construction is probably not applicable to soil slopes (GeoGuide LR3). If you are uncertain whether your site has rock near the surface, or is essentially a soil slope, you should engage a geotechnical practitioner to find out.

Flexible structures - have been used because they can tolerate a certain amount of movement with minimal signs of distress and maintain their functionality.

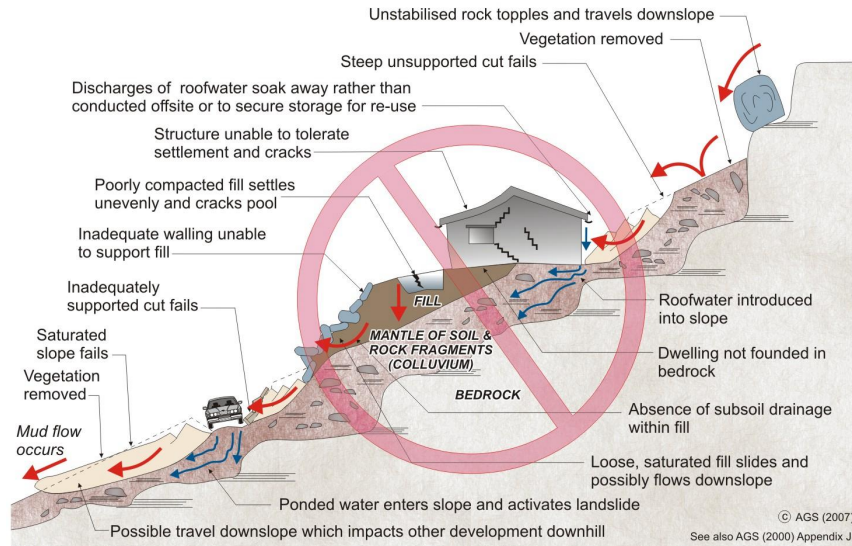
Vegetation clearance - on soil slopes has been kept to a reasonable minimum. Trees, and to a lesser extent smaller vegetation, take large quantities of water out of the ground every day. This lowers the ground water table, which in turn helps to maintain the stability of the slope. Large scale clearing can result in a rise in water table with a consequent increase in the likelihood of a landslide (GeoGuide LR5). An exception may have to be made to this rule on steep rock slopes where trees have little effect on the water table, but their roots pose a landslide hazard by dislodging boulders.

Possible effects of ignoring good construction practices are illustrated on page 2. Unfortunately, these poor construction practices are not as unusual as you might think and are often chosen because, on the face of it, they will save the developer, or owner, money. You should not lose sight of the fact that the cost and anguish associated with any one of the disasters illustrated, is likely to more than wipe out any apparent savings at the outset.

ADOPT GOOD PRACTICE ON HILLSIDE SITES

AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

EXAMPLES OF **POOR** HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES POOR?

Roadways and parking areas - are unsurfaced and lack proper table drains (gutters) causing surface water to pond and soak into the ground.

Cut and fill - has been used to balance earthworks quantities and level the site leaving unstable cut faces and added large surface loads to the ground. Failure to compact the fill properly has led to settlement, which will probably continue for several years after completion. The house and pool have been built on the fill and have settled with it and cracked. Leakage from the cracked pool and the applied surface loads from the fill have combined to cause landslides.

Retaining walls - have been avoided, to minimise cost, and hand placed rock walls used instead. Without applying engineering design principles, the walls have failed to provide the required support to the ground and have failed, creating a very dangerous situation.

A heavy, rigid, house - has been built on shallow, conventional, footings. Not only has the brickwork cracked because of the resulting ground movements, but it has also become involved in a man-made landslide.

Soak-away drainage - has been used for sewage and surface water run-off from roofs and pavements. This water soaks into the ground and raises the water table (GeoGuide LR5). Subsoil drains that run along the contours should be avoided for the same reason. If felt necessary, subsoil drains should run steeply downhill in a chevron, or herring bone, pattern. This may conflict with the requirements for effluent and surface water disposal (GeoGuide LR9) and if so, you will need to seek professional advice.

Rock debris - from landslides higher up on the slope seems likely to pass through the site. Such locations are often referred to by geotechnical practitioners as "debris flow paths". Rock is normally even denser than ordinary fill, so even quite modest boulders are likely to weigh many tonnes and do a lot of damage once they start to roll. Boulders have been known to travel hundreds of metres downhill leaving behind a trail of destruction.

Vegetation - has been completely cleared, leading to a possible rise in the water table and increased landslide risk (GeoGuide LR5).

DON'T CUT CORNERS ON HILLSIDE SITES - OBTAIN ADVICE FROM A GEOTECHNICAL PRACTITIONER

More information relevant to your particular situation may be found in other Australian GeoGuides:

- | | |
|-------------------------------------|--|
| • GeoGuide LR1 - Introduction | • GeoGuide LR6 - Retaining Walls |
| • GeoGuide LR2 - Landslides | • GeoGuide LR7 - Landslide Risk |
| • GeoGuide LR3 - Landslides in Soil | • GeoGuide LR9 - Effluent & Surface Water Disposal |
| • GeoGuide LR4 - Landslides in Rock | • GeoGuide LR10 - Coastal Landslides |
| • GeoGuide LR5 - Water & Drainage | • GeoGuide LR11 - Record Keeping |

The Australian GeoGuides (LR series) are a set of publications intended for property owners; local councils; planning authorities; developers; insurers; lawyers and, in fact, anyone who lives with, or has an interest in, a natural or engineered slope, a cutting, or an excavation. They are intended to help you understand why slopes and retaining structures can be a hazard and what can be done with appropriate professional advice and local council approval (if required) to remove, reduce, or minimise the risk they represent. The GeoGuides have been prepared by the [Australian Geomechanics Society](#), a specialist technical society within Engineers Australia, the national peak body for all engineering disciplines in Australia, whose members are professional geotechnical engineers and engineering geologists with a particular interest in ground engineering. The GeoGuides have been funded under the Australian governments' National Disaster Mitigation Program.

FOUNDATION MAINTENANCE AND FOOTING PERFORMANCE

Understanding and preventing soil-related building movement



This Building Technology Resource is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking.

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the home owner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

SOIL TYPES

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. Table 1 below is a reproduction of Table 2.1 from Australian Standard AS 2870-2011, Residential slabs and footings.

CAUSES OF MOVEMENT

SETTLEMENT DUE TO CONSTRUCTION

There are two types of settlement that occur as a result of construction:

- ▶ Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- ▶ Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction but has been known to take many years in exceptional cases.

These problems may be the province of the builder and should be taken into consideration as part of the preparation of the site for construction.

EROSION

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

SATURATION

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume,

particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

SEASONAL SWELLING AND SHRINKAGE OF SOIL

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below, from AS 2870). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

SHEAR FAILURE

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- ▶ Significant load increase.
- ▶ Reduction of lateral support of the soil under the footing due to erosion or excavation.

In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

TREE ROOT GROWTH

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- ▶ Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.

TABLE 1. GENERAL DEFINITIONS OF SITE CLASSES.

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
F	Extremely reactive sites, which may experience extreme ground movement from moisture changes

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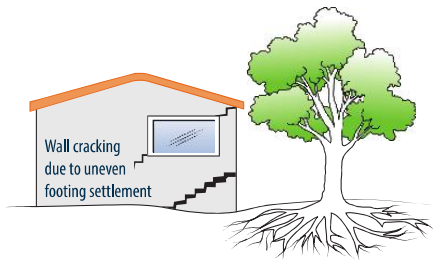


FIGURE 1 Trees can cause shrinkage and damage.

- ▶ Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

UNEVENNESS OF MOVEMENT

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- ▶ Differing compaction of foundation soil prior to construction.
- ▶ Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior through absorption. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Shrinkage usually begins on the side of the building where the sun's heat is greatest.

EFFECTS OF UNEVEN SOIL MOVEMENT ON STRUCTURES

EROSION AND SATURATION

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- ▶ Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- ▶ Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpendes).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

SEASONAL SWELLING/SHRINKAGE IN CLAY

Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers

and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated, and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry, and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

MOVEMENT CAUSED BY TREE ROOTS

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

COMPLICATIONS CAUSED BY THE STRUCTURE ITSELF

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

EFFECTS ON FULL MASONRY STRUCTURES

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also

exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

EFFECTS ON FRAMED STRUCTURES

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

EFFECTS ON BRICK VENEER STRUCTURES

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

WATER SERVICE AND DRAINAGE

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- ▶ Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- ▶ Corroded guttering or downpipes can spill water to ground.
- ▶ Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

SERIOUSNESS OF CRACKING

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. Table 2 below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

PREVENTION AND CURE

PLUMBING

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

GROUND DRAINAGE

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject may be regarded as an area for an expert consultant.

PROTECTION OF THE BUILDING PERIMETER

It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill.

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

CONDENSATION

In buildings with a subfloor void, such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

TABLE 2. CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS.

Description of typical damage and required repair	Approximate crack width limit	Damage category
Hairline cracks	<0.1 mm	0 – Negligible
Fine cracks which do not need repair	<1 mm	1 – Very Slight
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2 – Slight
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired.	5–15 mm (or a number of cracks 3 mm or more in one group)	3 – Moderate
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 mm but also depends on number of cracks	4 – Severe

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Warning: Although this Building Technology Resource deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- ▶ Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- ▶ High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders, and mould.
- ▶ Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

THE GARDEN

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

EXISTING TREES

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

INFORMATION ON TREES, PLANTS AND SHRUBS

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information.

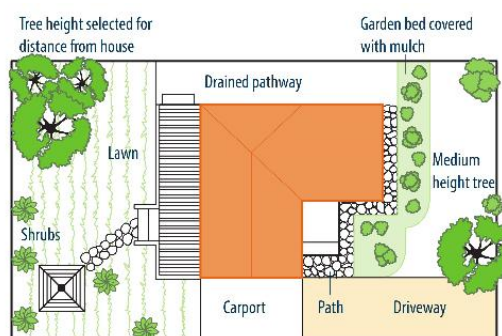


FIGURE 2 Gardens for a reactive site.

EXCAVATION

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

REMEDICATION

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the home owner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.



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TERMS AND CONDITIONS: BUILDING TECHNOLOGY RESOURCES

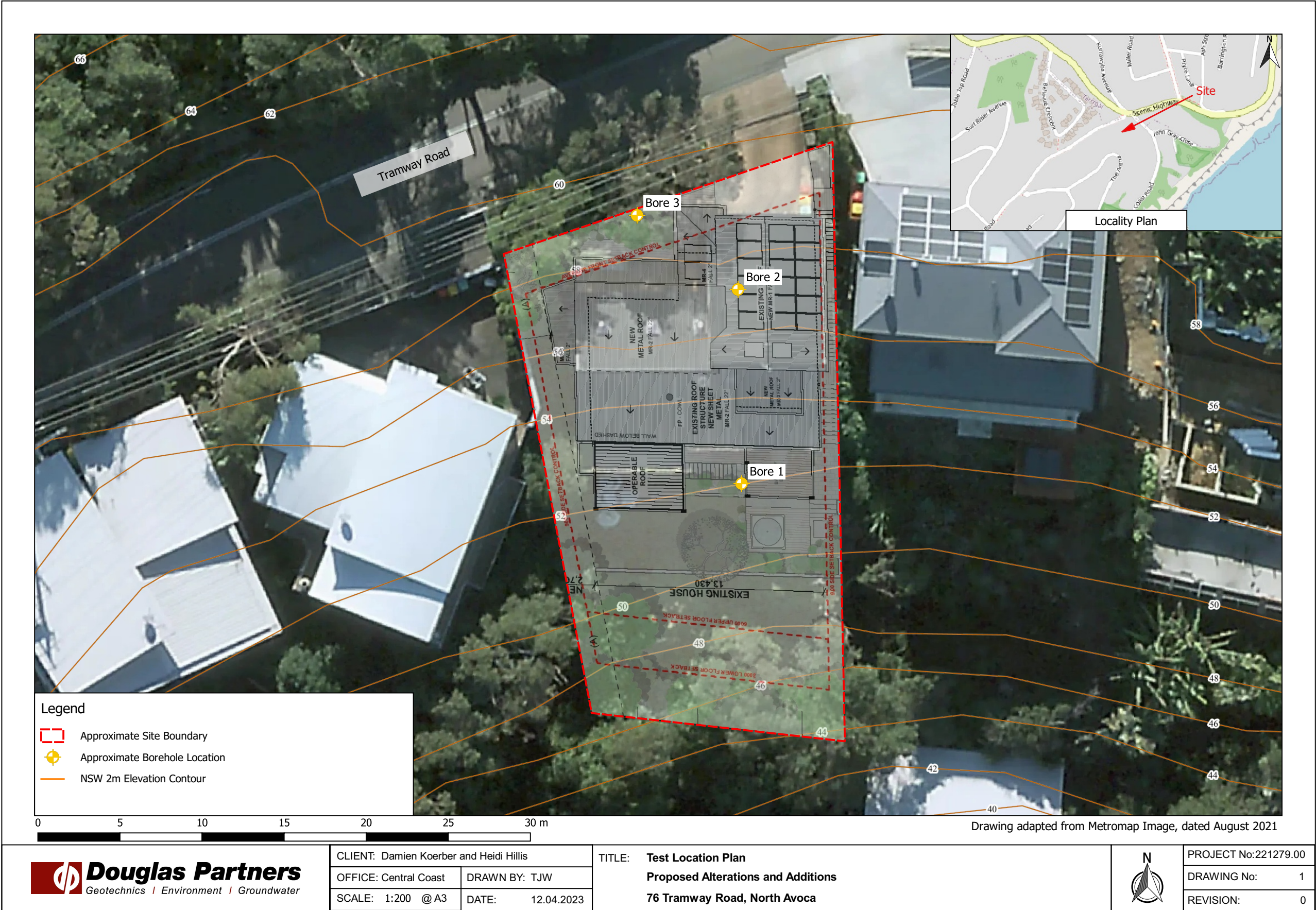
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Appendix B

Drawing 1 - Test Location Plan



Appendix C

Borehole Logs

Sampling Methods

Soil Descriptions

Symbols and Abbreviations

BOREHOLE LOG

CLIENT: Damien Koerber & Heidi Hillis
PROJECT: Proposed Alterations and Additions
LOCATION: 76 Tramway Road, North Avoca

SURFACE LEVEL: 51.9 AHD
COORDINATE E:355234 **N:** 6297290.4
DATUM/GRID: MGA94 Zone 56 H
DIP/AZIMUTH: 90°/---

LOCATION ID: 1
PROJECT No: 221279.00
DATE: 31-03-23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN ^(#)	CONSIS. ^(*)	DENSITY ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS						
RL (m)																			
31-03-23, No free groundwater observed	0.0	FILL/ Silty SAND; orange-brown; fine to medium; with organics, (topsoil)		FILL		NA	M					DCP/150		5	10	15	37		
	0.05	FILL/ Silty CLAY, with gravel, trace sand; brown mottled orange-brown; trace organics		<PL															
				=PL															
	5								D	0.5									
	1						=PL				1								
	1.25	(ML) Sandy SILT, trace gravel, trace clay; grey; silt fraction low plasticity; sand fraction fine to coarse; trace organics		COL	ST			D	1.5										
	1.65	(Cl) Silty Sandy CLAY, trace gravel; pale brown; clay fraction low plasticity; sand fraction fine; trace cobbles		RES	VST	<PL		D	1.75										
	1.8	Borehole discontinued at 1.80m depth refusal on cobbles																	
	50	2										2							
	49																		

NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: 75mm diameter Hand Auger
REMARKS:

OPERATOR: TJW
CASING:

LOGGED: TJW

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Damien Koerber & Heidi Hillis
PROJECT: Proposed Alterations and Additions
LOCATION: 76 Tramway Road, North Avoca

SURFACE LEVEL: 58 AHD
COORDINATE E:355233.8 **N:** 6297302.2
DATUM/GRID: MGA94 Zone 56 H
DIP/AZIMUTH: 90°/---

LOCATION ID: 2
PROJECT No: 221279.00
DATE: 31-03-23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (1) DENSITY: (2)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS		
	RL (m)													
31-03-23, No free groundwater observed	0.0	FILL/ Silty SAND, with gravel; grey; fine to coarse		FILL	NA	D				0.2				
	0.5	(Cl) Silty CLAY, trace sand, trace gravel; pale brown												RES
57	1.0									1.0				
	1.1	Borehole discontinued at 1.10m depth refusal on cobbles												
56	2.0									2				

NOTES: (1)Soil origin is "probable" unless otherwise stated. (2)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: 75mm diameter Hand Auger
REMARKS:

OPERATOR: TJW
CASING:

LOGGED: TJW

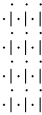
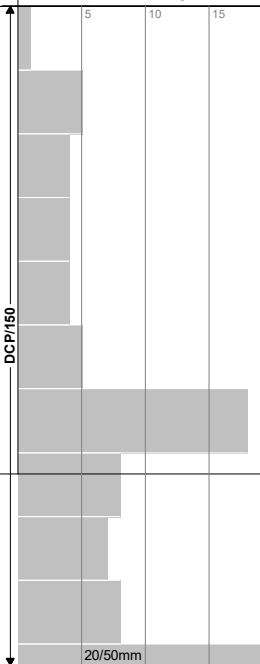
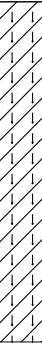
Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Damien Koerber & Heidi Hillis
PROJECT: Proposed Alterations and Additions
LOCATION: 76 Tramway Road, North Avoca

SURFACE LEVEL: 57.8 AHD
COORDINATE E:355227.7 **N:** 6297306.7
DATUM/GRID: MGA94 Zone 56 H
DIP/AZIMUTH: 90°/---

LOCATION ID: 3
PROJECT No: 221279.00
DATE: 31-03-23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN ^(#)	CONSIS. ⁽¹⁾ DENSITY: ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS		
31-03-23, No free groundwater observed	0.0	FILL/ Silty SAND; dark brown; with organics, (topsoil)		FILL	NA	D to M				0.1	DCP/150			
	0.3	(Cl) Silty CLAY, trace sand, trace gravel; pale brown		RES	ST	<PL				1.0				
	1.1	Borehole discontinued at 1.10m depth refusal on cobbles												
	57													
	56													
	2									2				
	55													

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ⁽¹⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: 75mm diameter Hand Auger
REMARKS:

OPERATOR: TJW
CASING:

LOGGED: TJW

Refer to explanatory notes for symbol and abbreviation definitions

Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations



November 2020

Sampling and Testing

A record of samples retained and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:

SAMPLE			TESTING	
SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE
	SPT	1.0 1.45		SPT
				4,9,11 N=20
			RESULTS AND REMARKS	

Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Sample from SPT test	SPT
Environmental sample	E
Gas sample	G
Jar sample	J
Undisturbed tube sample	U ¹
Water sample	W
Piston sample	P
Core sample for unconfined compressive strength testing	UCS

¹ – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y = x blows for y mm penetration HB = hammer bouncing	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT ()
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	Observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Excavator/backhoe bucket	B ¹
Toothed bucket	TB ¹
Mud/blade bucket	MB ¹
Ripping tyne/ripper	RT
Rock breaker/hydraulic hammer	RB
Hand auger	HA ¹
NMLC series coring	NMLC
HMLC series coring	HMLC
NQ coring	NQ
HQ coring	HQ
PQ coring	PQ
Push tube	PT ¹
Rock roller	RR ¹
Solid flight auger. Suffixes: (TC) = tungsten carbide tip, (V) = v-shaped tip	SFA ¹
Sonic drilling	SON ¹
Vibrocure	VC ¹
Wash bore (unspecified bit type)	WB ¹
Existing exposure	X
Hand tools (unspecified)	HT
Predrilled	PD
Specialised bit (refer report)	SPEC ¹
Diatube	DT ¹
Hollow flight auger	HFA ¹
Vacuum excavation	VE

¹ – numeric suffixes indicate tool diameter/width in mm

Soil Descriptions

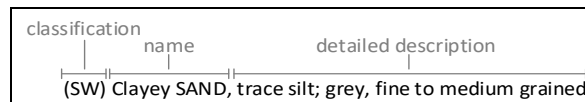
Terminology
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November 2020

Introduction

All materials which are not considered to be "in-situ rock" are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The "classification" comprises a two character "group symbol" providing a general summary of dominant soil characteristics. The "name" summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about the soil's composition, condition, structure, and origin.

Classification, naming and description of soils requires the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either "fine grained" (also known as "cohesive" behaviour) or "coarse grained" ("non cohesive" behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Fraction	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as "oversize"	
Cobble	63 - 200		
Gravel ¹	2.36 - 63	Coarse	>65%
Sand ¹	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

¹ – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer "component proportions" below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a "Sandy CLAY", this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on its influence over the soils behaviour.

Component Proportion Designation	Definition ¹	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor ²	Present in the soil, but not significant to its engineering properties	All other components	All other components

¹ As defined in AS1726-2017 6.1.4.4

² In the detailed material description, minor components are split into two further sub categories. Refer "identification of minor components" below

Composite Materials

In certain situations a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example "INTERBEDDED Silty CLAY AND SAND".

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Classification

The soil classification comprises a two character group symbol. The first symbol identifies the primary component. The second symbol identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component ¹	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

¹ – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters "(?)", with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterize due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type	Particle size (mm)	
	Gravel	Sand
Coarse	19 - 63	
Medium	6.7 - 19	
Fine	2.36 - 6.7	
Coarse		0.6 - 2.36
Medium		0.21 - 0.6
Fine		0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular particle size with the range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

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Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	<PL
	Near plastic limit	Can be moulded	≈PL
	Wet of plastic limit	Water residue remains on hands when handling	>PL
	Near liquid limit	"oozes" when agitated	≈LL
	Wet of liquid limit	"oozes"	>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code **NDF**, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Rock

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered rock origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description

Quantitative engineering performance of these materials may be determined by laboratory testing, or estimated by correlated field tests (for example penetration or shear vane testing). In some cases performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example **(VS)**.

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	ST
Very stiff	Indented by thumbnail	>100 - ≤200	VST
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	FR

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15-≤35	L
Medium dense	>35-≤65	MD
Dense	>65-≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

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Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MCE
Weakly cemented	WKCE
Cemented	CE
Strongly bound	SB
Weakly bound	WB
Unbound	UB

Extremely Weathered Rock

AS1726-2017 considers weathered rock material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. very low strength rock). These materials may be identified as "extremely weathered rock" in reports and by the abbreviation code **XWR** on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RES
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per AS1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LCS
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or sea shore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be "oversize" may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with "MIXTURE OF".

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Terminology, Symbols and Abbreviations



November 2020

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style **XW**. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example 'PL' is used for plastic limit in the context of soil moisture condition, as well as in 'PL(A)' for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Item No: 4.3
Title: DA/539/2024 - 1CR Oleander Street, CANTON BEACH - Temporary Use of Land for Community Event (5 years)
Department: Environment and Planning

Central Coast
Local Planning Panel

28 November 2024 Local Planning Panel Meeting

Reference: DA/539/2024 - D16473547
Author: Emilia Ellis, Development Planner, Employment and Urban Release
Manager: Emily Goodworth, Section Manager Employment and Urban Release
Executive: Andrew Roach, Unit Manager. Development Assessment

Summary

An application has been received for the Temporary use of land for Community Events to be held on a Public Reserve. The application has been examined having regard to the matters for consideration detailed in section 4.15 of the *Environmental Planning and Assessment Act 1979* and other statutory requirements with the issues requiring attention and consideration being addressed in the report.

This application is referred to the Central Coast Local Planning Panel in accordance with Schedule 2 of the *Local Planning Panels Direction – Development Applications and Applications to Modify Development Consents*, dated 6 March 2024 as the land is under the care and control of Council - Council is the designated Devolved Trust Manager of 1CR Oleander Street, Canton Beach.

The application was notified as required, and no submissions were received.

The application is recommended for approval.

Applicant	Scripture Union NSW – Rydalmere
Owner	Crown Land – Central Coast Council
Application No	DA/539/2024
Description of Land	Lot 3 DP 755266, 1CR Oleander Street, CANTON BEACH
Proposed Development	Temporary Use of Land for an annual Community Event over the next five years
Site Area	46,550m ²
Zoning	RE1 Public Recreation and C2 Environmental Conservation
Existing Use	Public Reserve
Employment Generation	N/A
Estimated Value	N/A

Recommendation

- 1 That the Local Planning Panel grant consent to DA/539/2024 for the Temporary Use of Land for Community Events in Public Reserve at 1CR Oleander Street, Canton Beach, subject to the conditions detailed in the schedule attached to the report and having regard to the matters for consideration detailed in Section 4.15 of the Environmental Planning and Assessment Act 1979.**

Precis:

Proposed Development	Temporary use of Land for Community Events within the Public Reserve
Permissibility and Zoning	RE1 Public Recreation C2 Environmental Conservation Temporary Use of Land Clause 2.8
Relevant Legislation	<i>Environmental Planning and Assessment Act 1979</i> <i>Environmental Planning and Assessment Regulation 2021</i> <i>Local Government Act 1993</i> <i>Crown Land Management Act 2016</i> <i>Crown Land Management Regulations 2018</i> <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> <i>SEPP (Exempt and Complying Development Code) 2008</i> <i>Central Coast Local Environmental Plan 2022</i> <i>Central Coast Development Control Plan 2022</i>
Current Use	Public Reserve
Integrated Development	No
Submissions	Nil

Variations to Policies

There are no variations to report.

The Site

The subject site is legally identified as Lot 497 DP 755266 and is part of the waterfront reserve known as the Canton Beach Reserve fronting Tuggerah Lake. The subject site is adjacent to the Canton Beach Holiday Park to the north and south-east. Access to the site is via Oleander Street and between the two caravan sites. The site is currently used as a recreation area and contains a public visitor parking area for the Caravan Park accessed directly from Oleander Street, and a separate access driveway for the caravan park to the south-east. The subject site is heavily vegetated to the southern portion of the site which contains an existing wetland area. The subject application is proposed to the northern end of the site which is sparsely vegetated with a portion of cleared land. The site is relatively flat with a minor slope towards the west. The subject application is seeking to occupy the cleared portion of land for event purposes.



Figure 1: *The site as viewed from the north-east entry point to the site from the existing carparking and access road traversing the site*



Figure 2: *The site as viewed from the northern end of the clearing to the south, with the dense vegetation surrounding.*

Surrounding Development

The site located at 1CR Oleander Street, Canton Beach, is part of the waterfront reserve. It is adjacent to Canton Beach Holiday Park to the north and west, and a low-density residential area to the northeast and 300 metres from Darren Kennedy Oval to the east. Further south-east of the site is Long Khanh Lakefront Retirement Village which adjoins the rear of the subject site.

It is noted the subject site, Canton Beach Holiday Park and the other surrounding lots are under the land ownership of Crown Lands with Central Coast Council as the appointed Crown Land Manager. However, the subject site is devolved to Council but still resides in the care of Central Coast Council, but Council is not the appointed Crown Land manager under the *Crown Land Management Act 2016*. This is discussed later in the report under the relevant legislation.



Figure 3: Aerial view of the subject site (in blue) and surrounds

The Proposed Development

The proposal is for a temporary pop-up scripture event to be held in the cleared area on the Northern end of the Public Reserve opposite the Canton Beach Caravan Park, at the western end of Oleander Street, Canton Beach. The event is proposed over a period of 13 days between Christmas and New Year to run for five consecutive years. The event is to be hosted by Scripture Union Family Mission (SUFM) which has held the event in this location for several decades and has a history of other events nearby in Budgewoi and Toowoyn Bay over the same period.

The temporary event will hold recreation and entertainment activities on site for the local community. The activities will include scripture-based summer holiday programs for children and teenagers in addition to music and coffee for adults. Some of the daily activities include puppet theatres, children's games, and crafts. The event activities will require the installation of eight temporary gazebos on site and the reserve will remain open to the public throughout the event.

All activities are proposed to be held daily within the following session times:

- 10:00am to 10:30am,
- 4:00am to 5:00pm,
- 7:00am to 9:00pm.

Waste is proposed to be collected on site by event organisers who will supply their own bins during the event and collected waste is to be stored in the adjacent Caravan Park's skip bins for collection after each event. An agreement between the parties has been provided to Council in supporting documentation for the waste storage and collection.

No camping or accommodation is proposed on the site which differs from previous events in the past. It is presumed, based off previous events, most attendees will seek accommodation within the adjoining caravan park. Single day attendees can access the designated visitor parking area and walk to the reserve for the event. The designated parking area is established at the northern end of the subject site and is part of the Canton Beach Holiday Park which also includes the emergency assembly area for the park and event on site.

Self-contained Porta-loos, Portable toilets with hand washing facilities are provided for participants attending the event.

The activities are proposed to continue to take place annually over a period of five years with the event running for a total of 13 days each year. The following dates are proposed as part of this application:

- *26 December 2024 to 7 January 2025,*
- *26 December 2025 to 7 January 2026,*
- *26 December 2026 to 7 January 2027,*
- *26 December 2027 to 7 January 2028,*
- *26 December 2028 to 7 January 2029.*

Below are plans of the proposal:

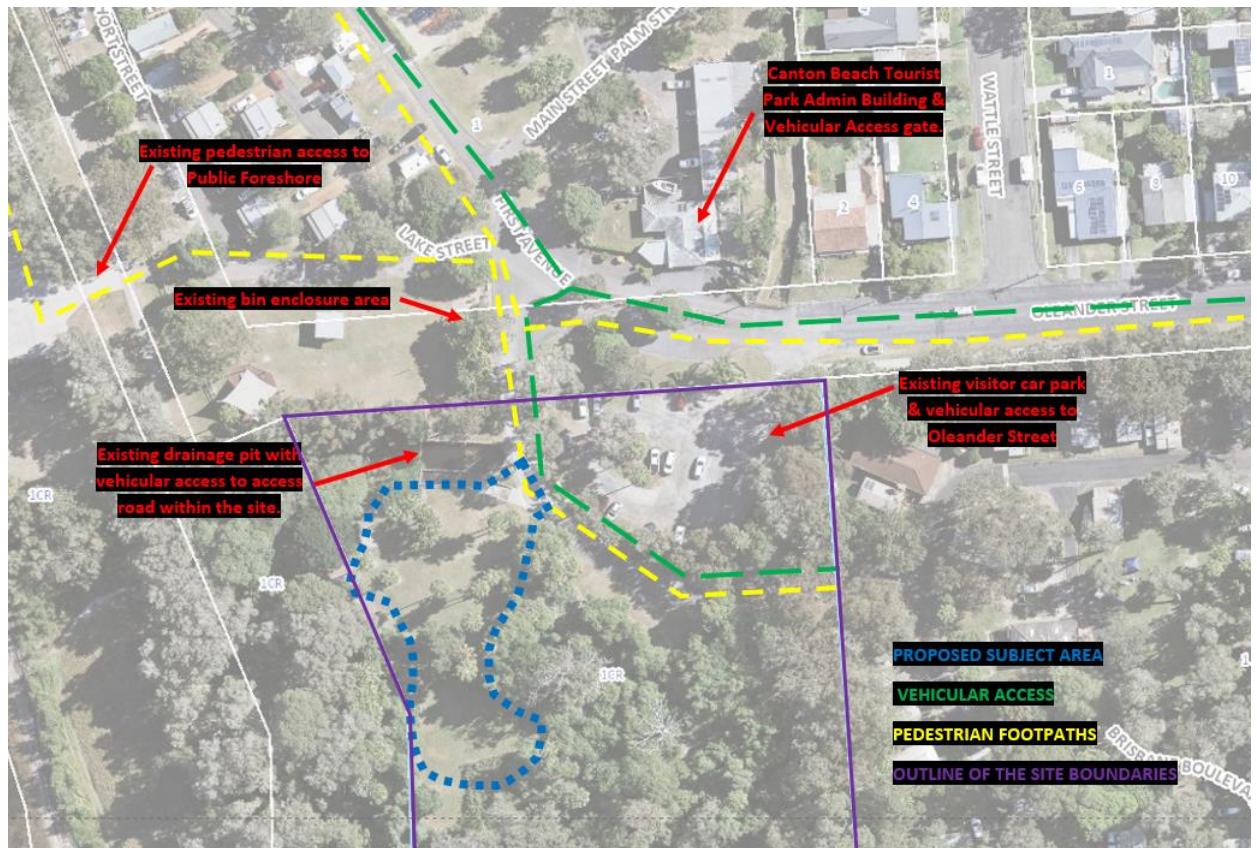


Figure 4: Aerial view of the proposal area and surrounding context



Figure 5: Image of gazebo set up from previous event



Figure 6: Proposed site plan for the event area on site

History

The SUFM activities have taken place successfully on the subject site for over 60 years with activities generally commencing over the Christmas and New Year period. Formal consent was first granted on the site in 2008 for three years, and subsequent approvals as detailed below show this has continued up until 2022 prior to the lodgment of this application. It is also noted the event has also operated from the Budgewoi Tourist Park and Swadling Park, Toowoyn Bay, over the same dates in previous years.

- DA/1019/2017 – Application for temporary use of Public Reserve from 26 December to 7 January for 5 consecutive years ending in 2022 was approved on 12 October 2017.

4.3 DA/539/2024 - 1CR Oleander Street, CANTON BEACH - Temporary Use of Land for Community Event (5 years) (cont'd)

- DA/801/2017 – Application for temporary use of Public Reserve was returned on 6 July 2017.
- DA/821/2011/B – Consent modified on 14 November 2013 which sought an extension of time on the consent for an additional 4 years ending in 2017.
- DA/821/2011/A – Consent modified on 27 September 2012 to change the hours of operation from 9:30am to 7:30pm each day of the event and cap the persons staying overnight to be a maximum of 15 persons.
- DA/821/2011 – Application for temporary use of Public Reserve from 26 December to 7 January for 3 consecutive years ending in 2014 was approved on 24 October 2011.
- DA/902/2008 – Application for temporary use of Public Reserve from 26 December to 7 January for 3 consecutive years ending in 2011 was approved on 28 October 2008.

Assessment:

Having regard for the matters for consideration detailed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* and other statutory requirements, Council's policies and Section 10.7 Certificate details, the assessment has identified the following key issues, which are elaborated upon for Council's information. Any tables relating to plans or policies are provided as an attachment.

Provisions of Relevant Instruments/Plans/Policies:

Relevant Legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

Section 9B Council-related development applications

The Conflict-of-Interest Regulation took effect on 3 April 2023. Clause 9B (2) of Schedule 1 to the EP&A Act defines council-related development applications as:

(2) *In this clause–*

Council-related development application means a development application, for which a council is the consent authority, that is–

(a) *made by or on behalf of council, or*

(b) *for development on land, other than a public road within the meaning of the Local Government Act 1993–*

(i) *of which the council is an owner, a lessee or a licensee, or*

(ii) *otherwise vested in or under the control of the council.*

Note– Land vested in or under the control of the council includes public land within the meaning of the LG Act.

Accordingly, the subject site is recognized as being vested in or under the control of the Council, as the appointed Devolved Trust Manager. As such, the application is referred to the Central Coast Local Planning Panel for determination. For the purposes of Section 22 of the EP&A Act, Clause 9B(1) of Schedule 1 requires that the minimum public exhibition period for a council-related development application is 28 days. The application has been notified for 28 days.

Local Government Act 1993 (LG Act)

The subject site is identified as a Public Reserve as defined under the LG Act, and is situated amongst surrounding Crown Land owned sites within the vicinity. However, the subject site is noted as being devolved land, while the surrounding sites are under a Crown Land Manager (refer to figure 7 below for reference to the specific sites).

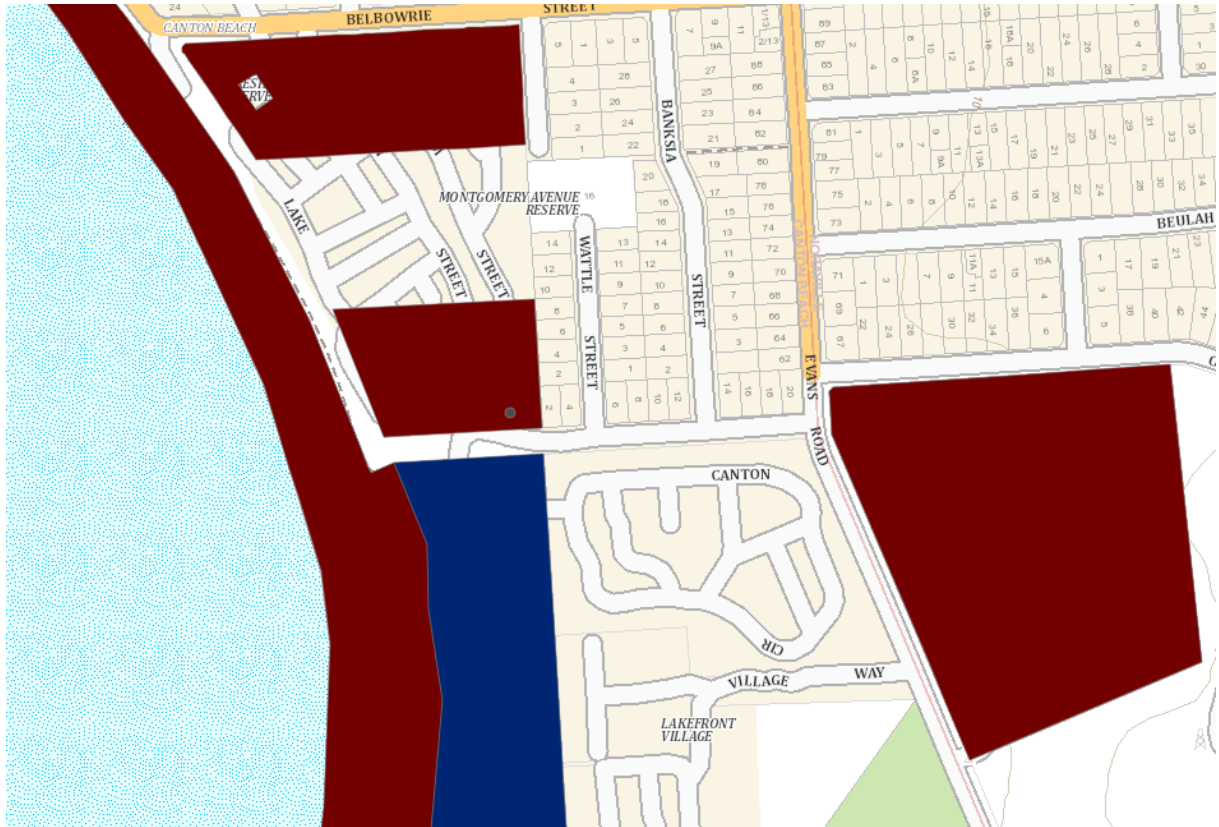


Figure 7: Aerial view of the Crown Land within the vicinity of the subject site (blue)

Devolved crown land are Crown reserves dedicated or reserved for public recreation or for a public cemetery that devolve to Council as the devolved trust manager if no other trustee is appointed under Section 48 of the LG Act. The subject site is identified as a reserve with the specific purpose of Public Recreation, and was devolved to Council to manage under Section 48 of the LG Act, which states:

- (1) *except as provided by section 2.22 of the Crown Land Management Act 2016, a council has the control of–*
 - (a) *public reserves that are not under the control of or vested in any other body or persons and are not held by a person under lease from the Crown, and*
 - (b) *public reserves that the Governor, by proclamation, places under the control of the council.*
- (2) *If any doubt arises as to whether any land comes within operation of this section, or as to the boundaries of a public reserve, the Governor may, by proclamation determine the matter.*

Whilst a site is managed under Section 48, and designated as devolved land, the devolved trust manager (i.e. Council) has a limited role as manager in comparison to the other sites where Council is recognized as the designated Crown Land Manager. Crown Land devolved under Section 48 of the LG Act do not require plans of management under the *Crown Land Management Act 2016* and generally the manager takes a caretaker position of the land and does not hold any authority over the land.

In this instance, Council's role is to maintain the site for general upkeep and is not able to issue any lease, tenure or license over the site. To permit this application Department of Planning, Housing, and Infrastructure – Crown Lands has issued consent for the application as the landowner.

Crown Land Management Act 2016 (CLM Act)

The *Crown Land Management Act 2016* (CLM Act) allows councils to manage Crown land under the provisions of the *Local Government Act 1993* (LG Act) for public land. Council currently manages many Crown land sites including two adjoining properties as seen in Figure 7 above, as the appointed crown land manager responsible for managing the affairs of a reserve trust.

Section 3.21 of the CLM Act requires the management of these lands to be in accordance with the LG Act. Where Council is identified as the crown land manager, they are authorised to classify and manage its dedicated and reserved Crown land as if it were public land. This requires the land to be designated as either community or operational land.

Once receiving this designation, a Plan of Management is required under Clause 3.23(2). However, as the subject site is devolved, the role of manager differs to that as if Council were the crown land manager and a Plan of Management is not required. Council is required to manage devolved reserves consistent with the reserve purpose and can undertake minor improvements, restoration work, maintenance or works for public safety. However, they are unable to grant any tenures over this land.

In this instance, Councils role on the site is to maintain the land and complete works where required for public safety. Where the land is devolved, the designated category is the purpose of land when it was gazetted and is to be managed as such under Section 48 of the LG Act solely as the CLM Act is not applicable in that instance.

Relevant Regulations

Crown Land Management Regulations 2018 (CLMR)

The *Crown Land Management Regulations 2018* applies to all land crown land. The purpose of the land is to provide for consistent, efficient, fair, and transparent management of Crown Land for the benefit of the public.

The letter from the Department of Planning Housing and Infrastructure -Crown Land, submitted as part of the development application has granted consent for the lodgement of the development application.

There are no further requirements under the CLMR that require further discussion.

Environmental Planning and Assessment Regulations 2021 (Regs)

The *Environmental Planning and Assessment Regulation 2021* applies to all development applications regarding items such as application type, compulsory contributions, notification of development applications and a range of many other details regarding development application requirements.

Section 23(1) required a development application to be accompanied by the written consent of the owner of the land to which a development application relates. The applicant has provided Crown Lands consent as the appropriate landowner for the parcel of land to which this application relates.

It is noted Council is the designated devolved trust manager of the site and under Section 66A of the Regulations requires that Council related development applications must not be determined by the consent authority unless:

- a) *The Council has adopted a Conflict-of-interest policy, and*
- b) *The Council considers the policy in determining the application.*

Central Coast Council's Council Related Development Applications Conflict of Interest Protocol, Revision 1, was adopted by Council on 30 May 2023, in response to Section 66A of the Regulations.

The protocol aims to manage potential conflicts of interest and increase transparency at all stages of the development process for council-related development. In this instance, there is no specific management strategy as the application will be determined by the Central Coast Local Planning Panel.

The application was notified for a period of 28 days from 18 October 2024 to 15 November 2024 with no submissions received.

The relevant provisions of the Regulations have been satisfied and no further consideration is required in this regard.

State Environmental Planning Policies (SEPP)*State Environmental Planning Policy (Exempt and Complying Development) 2008*

The proposed development includes the erection of several temporary structures including several tents of varying sizes. The proposed tents are to remain open and easily accessible without need for specified distances or separation. Consent is not being sought under this development application for these temporary structures as they can be erected under the provisions of exempt development subject to an approval being in place for the use of the land.

Notwithstanding the above, a condition of consent has been recommended to ensure the tents and temporary structures are removed in their entirety at the conclusion of the event.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 Coastal Management

The site is situated within the Coastal Environment Area and the Coastal Use Area under the SEPP (Resilience and Hazards) 2021 Chapter 2 Coastal Management.

In accordance with section 2.10 and 2.11 of the SEPP, the matters for consideration by the consent authority when it determines a development application to carry out development on land to which this Chapter of the SEPP applies. The proposed development has satisfactorily addressed the matters of consideration outlined in sections 2.10 and 2.11.

A summary of the matters for consideration pursuant to Sections 2.10 and 2.11 have been included below and there have been no matters identified that warrant the refusal of the proposed development.

Clause 2.10 – Coastal Environment Area

Matters for Consideration	Compliance
<i>(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:</i>	
<i>(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment</i>	The proposal will not have any significant impact upon the biophysical, hydrological and ecological environment.
<i>(b) coastal environmental values and natural coastal processes</i>	The site is approximately 100m from the beach and is unlikely to have impact upon coastal environmental values and natural coastal processes.
<i>(c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1</i>	The site is not located within a marine estate and the proposal will not result in an adverse impact on the water quality of the sensitive coastal lakes.
<i>(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms</i>	The proposal will not result in an adverse impact on the native vegetation or fauna, their habitats, or underdeveloped headlands and rock platforms due to the distance from the event site to the lake.
<i>(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability</i>	The site is currently publicly available and will continue to have public and safe access during the temporary event. The surrounding reserves and access will remain unaffected by this proposal along the foreshore for members of the public not connected to the event.
<i>(f) Aboriginal cultural heritage, practices and places</i>	There are no identified aboriginal cultural heritage items on the site. With no physical works or permanent structures on the site, the proposal is unlikely to trigger impacts to the Aboriginal cultural heritage, practices and places in this instance.

<i>(g) use of the surf zone.</i>	There will be no impact on the use of the surf zone.
<i>(2) Development consent must not be granted to development on land to which this clause applies unless the consent is satisfied that:</i>	
<i>(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1)</i>	The proposed development has been designed, sited to avoid any adverse impact referred to in subclause (1).
<i>(b) if that impact cannot be reasonably avoided - the development is designed, sited and will be managed to minimise that impact</i>	N/A
<i>(c) if that impact cannot be minimised - the development will be managed to mitigate that impact</i>	N/A

In accordance with s.2.10(2), the consent authority must be satisfied that –

- (a) the development is designed, sited, and will be managed to avoid an adverse impact referred to in subsection (1), or
- (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

The Panel can be satisfied the temporary use of the land for the proposed event will be managed to avoid any adverse impact on those matters referred to in subsection 2.10(1).

Further the development proposal is consistent with relevant provisions in section 2.11 in respect of the Coastal Use Area in that it is not likely to cause an adverse impact on the following matters for consideration.

Clause 2.11 – Coastal Use Area

Matters for Consideration	Compliance
<i>(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority:</i>	
<i>(a) Has considered whether the proposed development is likely to cause adverse impact on the following:</i>	
<i>(i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,</i>	The proposal does not impede public access to the foreshore as the proposal would allow the existing public footpath to still be available to the public whilst the event is occurring. The proposal is not directly located within the public foreshore area, and access to the site will continue to be available.
<i>(ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,</i>	The proposal does not give rise to any significant overshadowing or view loss to public places.
<i>(iii) the visual amenity and scenic qualities of the coast, including coastal headlands,</i>	The proposal will maintain the visual amenity and scenic quality of the locality as no permanent structures are to be installed as part of this proposal.

	The operator will also be required to return the site to its existing state at the completion of the event.
(iv) <i>Aboriginal cultural heritage, practices and places,</i>	The site does not contain any Aboriginal cultural items on the surface and no excavation is proposed.
(v) <i>cultural and built environment heritage, and</i>	There is no cultural heritage on or in the vicinity of the site. There would therefore be no impacts on heritage.
(b) <i>Is satisfied that—</i>	
(i) <i>the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or</i>	The proposal does not is of a temporary nature and does not include any structures that are to be placed permanently at the site.
(ii) <i>if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</i>	N/A
(iii) <i>if that impact cannot be minimised—the development will be managed to mitigate that impact, and</i>	N/A
(c) <i>Has taken into account the surrounding coastal and built environment, and the bulk scale and size of the proposed development.</i>	The proposal does not is of a temporary nature and does not include any structures that are to be placed permanently at the site.

Section 2.11 requires the consent authority to consider those matters outlined in s.2.11(1)(a)(i)-(v) as discussed in the table above, and be satisfied that (s.2.11(1)(b))-

- (i) the development is designed, sited, and will be managed to avoid an adverse impact referred to in paragraph (a), or
- (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact

The Panel can be satisfied the temporary use of the land for the proposed event will be managed to avoid any adverse impact on those matters referred to in subsection 2.11(1).

In addition, the provisions of s.2.11(1)(c) require the consent authority to take into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development. The scale and size of the proposed event will not adversely impact on the surrounding coastal and built environment as it is contained within the reserve and is of a temporary nature.

The relevant matters have been considered in the assessment of this application and the application is consistent with the stated aims, objectives, and relevant provisions in Chapter 2 of the SEPP.

Chapter 4 Remediation of Land

Section 4.6 (1) (a) of *SEPP Resilience and Hazards (2021) Chapter 4 Remediation of Land* requires the Consent Authority to consider whether land is contaminated. If the land is contaminated, the Consent Authority needs to be satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purposes for which the development is proposed to be carried out.

In this regard, the proposed development is for the temporary use of land for a community event that will include the erection of temporary structures. The site has a history of being used for public recreation purposes, and no other purpose is known to have been carried out on this site.

The development does not involve a change of use of any of the land specified in subsection (4) therefore a preliminary investigation of the land is not required. As such, the Panel can be satisfied the proposed development is suitable regarding the provisions of s.4.6(1)(a) and (b).

Local Environmental Planning Policies (LEPs)

Central Coast Local Environmental Plan 2022 (CCLEP 2022)

- Permissibility

The subject site is zoned E2 Environmental Conservation and RE1 Public Recreation under the CCLEP 2022. The proposal is solely located within the RE1 zoning on the northern end of the site as shown in Figure 8 below. The proposed development is defined as a Temporary use of land for an Outdoor Event which is not a permissible use within the zone and therefore, is reliant on Clause 2.8 Temporary Use of Land of the CCLEP 2022 for permissibility which is discussed in further detail below.

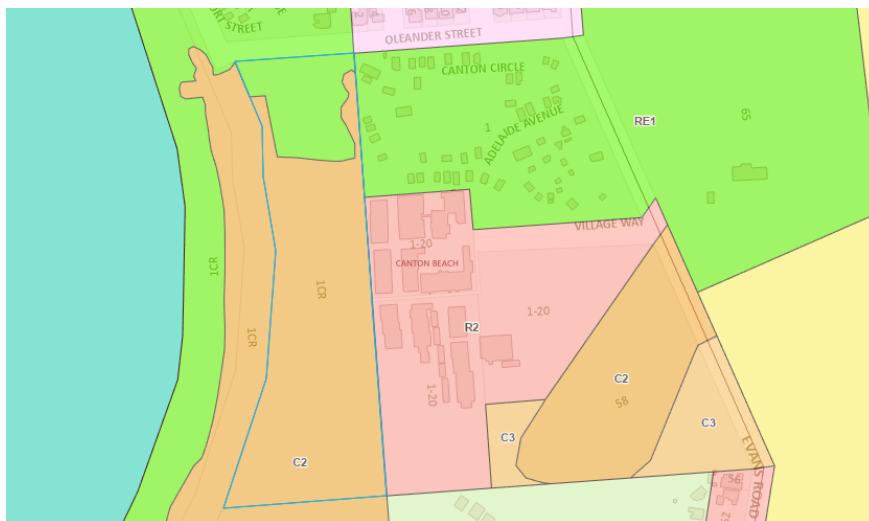


Figure 8: Aerial view of the land zoning across the site (in blue) and surrounds

- Clause 2.3 – Zone Objectives and Land Use Table

Subclause 2.3(2) of the CCLEP 2022 requires the consent authority to have regard to the objectives for development in a zone when determining the development application. The objective of the RE1 Public Recreation zone are as follows:

- *To enable land to be used for public open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*
- *To identify areas suitable for development for recreation and cultural purposes.*
- *To provide space for integrated stormwater treatment devices for flow and water quality management.*

The proposal is for a community event to be held annually which take advantage of the existing site and environment, complementing the land for recreational purposes. The proposed development will not prevent the site from being utilized by other recreational uses. The proposal is designed to be of minimal impact and cohesive with the surrounding natural environment. In this regard the proposed development is in keeping with the objectives of the relevant zone.

Relevant Clauses

The development application has been assessed against the following relevant clauses of the CCLEP 2022.

- Clause 2.8 – Temporary Use of Land

Clause 2.8 allows for the temporary use of land so long as the use does not compromise future development of the land or have a detrimental economic, social, amenity or environmental effects on the land. Further, this clause permits the temporary use of land for development despite the land zoning for a temporary use for a maximum of 28 days in any period of 12 months.

Per subclause (2), development consent is not able to be granted unless the consent authority is satisfied that–

- (a) the temporary use will not prejudice the subsequent carrying out of development on the land in accordance with this Plan and any other applicable environmental planning instrument, and*
- (b) the temporary use will not adversely impact on any adjoining land or the amenity of the neighbourhood, and*
- (c) the temporary use and location of any structures related to the use will not adversely impact on environmental attributes or features of the land, or increase the risk of natural hazards that may affect the land, and*

(d) at the end of the temporary use period the land will, as far as is practicable, be restored to the condition in which it was before the commencement of the use.

The development involves the use of the site for a period of 13 days between 26 December to 7 January annually for a period of five years ending in 2029, which is consistent with the requirements of the above clause.

The primary use of the land is a reserve with the intent of public recreation. The proposed event is not out of character with the purpose of the site and has been operating on the land for a number of years previous to this application. The proposal is considered to provide a benefit to the community through the provision of social events that will not prejudice the subsequent carrying out of development on the land under any other environmental planning instrument.

The proposed use is unlikely to have a detrimental impact upon the amount of public space available to the community and most of the site will remain available whilst an event is being held. Given the scale, type and frequency of the development proposed it is unlikely to impact upon the amenity of the adjoining land and local area.

The applicant estimates a maximum of 100 patrons (including staff and volunteers) to be present for the duration of the festivities based on previous years events. The use of the land is scattered with different activities and event times, which allow for peaks in attendance throughout the day. The event is to be held in the existing cleared areas of the site, with a speaker to amplify sound and music during these periods. The impact to the natural environment was reviewed by Council's Ecologist and determined as insignificant for the immediate and long-term impacts of the surrounding ecology due to the small and brief nature of the event. The proposal is situated clear of existing trees and vegetation with no tree removal and minimal impact proposed. The event is located away from the dense portion of wetlands at the rear southern end of the site thus minimizing the impact on the dense habitats.

The proposal is set to meet the above criteria and a suitable plan of management is in place for the event to ensure compliance with the temporary use arrangements and restoration to the current condition at the conclusion of each event to the pre-existing condition. The land is capable of being restored to the condition before the commencement of use after each event. The Panel can be satisfied the proposed development is consistent with the requirements of clause ((a) –(d)) and development consent can be granted for the temporary use of land for the outdoor entertainment events.

- Clause 5.21 – Flood Planning

In accordance with Clause 5.21 of the CCLEP 2022, the consent authority must not grant consent to development on land identified as flood planning area unless the consent authority is satisfied that the development–

(a) is compatible with the flood function and behaviour on the land, and

- (b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
- (c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
- (d) incorporates appropriate measures to manage risk to life in the event of a flood, and
- (e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.

The subject site is identified as being affected by the flood planning area and maximum probable flood as the majority precinct across the subject site. However, it is noted parts of the site and surroundings are mapped as flood storage areas and these appear to align with the drainage line and direct road network connecting the Caravan Park. In this instance the development is for the temporary use of land for an event which runs for 13 days with no permanent structures proposed. The mapped flood area is only partially identified within the clearing used for the event.

It is considered the proposal is compatible with the flood function and behaviour on site. In the event of a flood, the organisers will either cancel the event, or if the event was being held, organisers and participants would have sufficient time to evacuate. A plan of management has been recommended as a condition of consent to address cancellation and suitable evacuation procedures in the event of a natural event. The risk to human life is considered low in this instance and suitable evacuation is available in the event of an emergency. The Panel can be satisfied that given the temporary nature of the land and the fact there is sufficient time for event participants to evacuate, the proposed use will not adversely affect flood function and behaviour, and there will be appropriate measures in place via a plan of management to manage risk to life in a flood event.

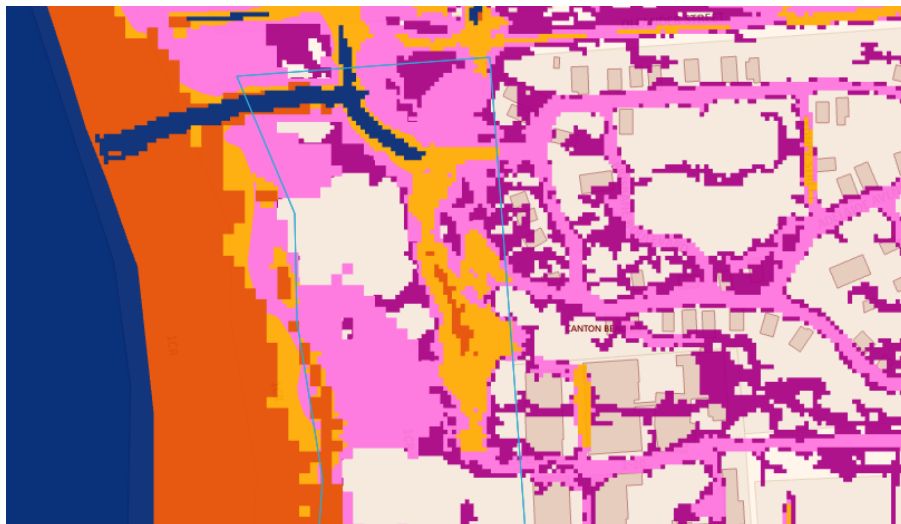


Figure 9: Aerial view of the mapped flooding precincts across the northern end of the site-Navy =floodway, Pink = Flood Planning Area, Purple =PMF (Source: Council Maps)

- Clause 7.1 – Acid Sulfate Soils

Clause 7.1 applies to development that has the potential to disturb, expose or drain acid sulfate soils. This land has been identified as containing Class 3 soils as identified on the Acid Sulphate Soils Map. However, the proposal includes no ground works in accordance with subclause (6), and there is no disturbance of soils less than 1 tonne and there are no works likely to lower the water table. In this instance the development is for the temporary use of land with no ground works proposed. The panel can be satisfied that an acid sulfate soils management plan was not required for the proposed temporary use of land.

- Clause 7.6 – Essential Services

Under the provisions of Clause 7.6 of CCLEP 2022, Council must ensure that the following services can be adequately provided before issuing a development consent. The proposal can provide the below services as per the following:

Access for Services (water, electricity, and sewage)

Water

The subject site does not have reticulated water and the proposal is not seeking water services to be connected for the event.

Electricity

A temporary power pole is proposed on the site to enable the use of power for the duration of the event. The pole is to be located within the northern end of the site and distanced from the existing vegetation. The pole will be removed, and power disconnected, at the completion of each event as per previous events.

Sewage

Temporary toilets are proposed to be provided on the site within the cleared area for the duration of the event per previous years. At the completion of the event the services are to be removed and ground rehabilitated to the pre-existing condition.

Stormwater drainage and on-site conservation

The proposal does not include any fixed or permanent structures on the site which would require collection into a suitable stormwater system. In lieu of this, the proposed structures are minimal and the runoff from these structures are not anticipated to increase the portable water on site.

Suitable vehicular access

The subject site currently contains the visitor parking area for the Canton Beach Tourist Park and the access driveway to the south-eastern portion of the Caravan Park. The proposed cleared area to be utilized does not have direct vehicular access and pedestrian access is required directly from the existing access driveway and footpath connecting the sites. The designated carpark is available for use directly north of the clearing for the temporary event. This carpark is easily accessible for pedestrian movement to and from the site, with many participants accommodated on-site within the adjoining camping sites of the Canton Beach Tourist Park.

Collection of waste

Event organisers have arranged for temporary waste bins to be stored around the site and collected three times each day. All collected waste will be stored under agreement with the adjoining Canton Beach Tourist Park's on-site skip bins which will continue their usual schedule for pick up.

The panel can be satisfied that all necessary services can be provided for the site as per the above.

Local Environmental Planning Policies (LEPs)

Central Coast Development Control Plan 2022 (CCDCP 2022)

The following chapters of the CCDCP 2022 are relevant to this application:

- Chapter 1.2 Notification of Development Proposals

The application was notified in accordance with Chapter 1.2 of the Central Coast Development Control Plan from 10 May to 24 May (14 days) inclusive with no submissions received during this time. At the time of lodgment, it was presumed the site was solely owned by Crown Lands and Council was not the land manager in any capacity.

However, once Council was identified as Devolved Trust Manager, re-notification was required to ensure compliance with Central Coast Council's Council Related Development Applications Conflict of Interest Protocol and the requirements of the *Environmental Planning & Assessment Regulation* which set out that applications on Council controlled land must be notified for a period not less than 28 days (the original notification being only for 14 days) . The application was subsequently re-notified for the required 28-days between 18 October 2024 and 15 November 2024 inclusive with no submissions received.

- Chapter 2.13 – Transport and Parking

Part 2.13.3.13 relates to Special Events or Regular Casual Uses and requires details to be provided for how parking demands will be met, and a traffic management plan may be required for any event that likely to have a significant impact on safe traffic movement and efficient parking.

In this instance, a traffic management plan is not considered warranted. The existing visitor car park is located approximately 20 metres from the event area and has capacity to hold approximately 49 vehicles.

The event is anticipated to generate an average of 40 – 60 participants with a majority of visitors attending multiple days staying within the adjoining Canton Beach Holiday Park. As such, these visitors staying on site will not utilize this carpark, but rather can park adjacent to their on-site accommodation.

The event is set up to run between the hours of 10:00 am and 9:30pm, each day. However, the key activities which generate the visitors and traffic are between the following times:

- 10:00am to 10:30am,
- 4:00am to 5:00pm,
- 7:00am to 9:00pm.

In between these sessions, the site is still open to visitors however this is mostly to be used by volunteers who are setting up the next session time. It is anticipated participants visiting the site will be coming and going in accordance with the available sessions and activities present.

It is estimated a maximum of 100 participants could be present on site at any time, this includes visitors, volunteers, and staff. It is noted the nature of the event is targeted to families and specifically children where the number of participants would be travelling in groups, therefore reducing the parking rate.

Public transport is available to the site with bus stops located in the adjoining street network, additional parking spaces can also be found in the adjoining Darren Kennedy Oval for additional parking, approximately 300 metres from the site.

The available parking is considered suitable to the desired use of the site and with minimal adverse impacts identified to surrounding properties.

- Chapter 2.14 – Site Waste Management

It is noted no public waste bins are available within the reserve. Event organisers are proposing to provide their own temporary bins on site for the duration of the event. Waste generation is anticipated to be domestic waste use consisting of paper, food scraps and the like.

A pre-existing arrangement has been provided with the adjacent Caravan Park's manager to enable the event to use their large skip bins to hold the collected waste. At the completion of each event the reserve is to return the reserve to the same condition prior to the event taking

place. A condition of consent is recommended to ensure this is complied with for the duration of the event.

Likely Impacts of the Development:

Built Environment

A thorough assessment of the aspects of the proposed development on the built environment has been undertaken in terms of DCP compliance.

As a result, the proposed development is considered satisfactory in terms of impacts on the built environment.

Access and Transport

As previously discussed, the existing transport arrangements for the site are suitable to cater for the proposed events. There is also a possibility that those attending the event would also be utilizing the Canton Beach Tourist Park on the same days which would further reduce any parking demands on the site during the events. Overall, there is sufficient parking on the site, surrounding the site and alternative transport modes available, to cater for patrons attending the proposed events.

Context and Setting

The site provides recreational activities for both residents and visitors to the area. The proposed development would allow the continued activation of the site for the community.

Natural Environment

- Biodiversity and Ecology

The subject site intersects with areas identified on the Biodiversity Vales Map, and significant habitat for the critically endangered *Lathamus discolor* (Swift Parrot). An analysis of the vegetation habitat present indicates that the site is constrained by the presence of two Plant Community Types (PCTs). The first being *Melaleuca biconvexa* - Swamp Mahogany - Cabbage Palm swamp forest of the Central Coast (PCT1723) and the second being Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast (PCT1724).

Melaleuca biconvexa - Swamp Mahogany - Cabbage Palm swamp forest is associated with the Threatened Ecological Community Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and Southeast Coast Bioregions. Aside from cleared patches, the site is majority identified as being in "Moderate-Good" condition and is mapped as Core Habitat for threatened species on Council's Geospatial Information System.

An analysis of the BioNet Threatened Species records indicate that the site is known to support a variety of threatened flora and fauna species, including but not limited to *Lathamus discolor* (Swift Parrot), *Syzygium paniculatum* (Magenta Lilly Pilly), *Pandion cristatu* (Eastern Osprey), *Glossopsitta pusilla* (Little Lorikeet) and *Crinia tinnula* (Wallum Froglet).

The proposal has been reviewed and considered against the previous consents issued for the events on site. Previous applications outlined that the proposal was established with Ecologically Sustainable principles in mind with no requirement to remove any trees or vegetation. All activities, structures and tents will be established away from trees and habitat, minimising direct impacts to vegetation. The proposal does not result in the disturbance of any endangered flora or fauna habitats and is unlikely to significantly affect fluvial environments.

As no vegetation is proposed for removal, and the temporary nature of the event with a short duration and the activities are generally contained to the cleared portion of the site, impacts to significant biodiversity values are minimal. The proposed site plan provides adequate avoidance to habitat features and established vegetation, assuring Council's Ecologist that immediate and long-term impacts to ecology will be insignificant. As such recommended conditions of consent proposed ensure compliance with the proposed event is upheld and continued throughout the entirety of the event period.

- Noise

The event is proposed with attendance between 40 to 60 people across the entire event however, a maximum of 100 people (including volunteers) can be anticipated at peak times. Generally, the daily activities are crafts, children's games, and puppet theatres. The volume and amplification of sound is anticipated to fluctuate with the number of participants and each activity. An acoustic report has been provided with the application, which estimates these activities at approximately 60 decibels, which can be likened to a common conversation. As the activities are proposed at a small gathering scale, the type of activities is designed to be intimate and reduce the sound amplification away from the clearing. The existing vegetation assists in providing a noise buffer to stop the amplification of sound.

A PA system is to be used to make announcements for the event primarily but is also available for the use of amplifying musical instruments as required by attendance. The provided acoustic report acknowledges a separating mixing desk to be set up nearby the PA system to monitor the sound levels and always control these levels. The sound levels are projected to run at approximately, 70 decibels dissipating to 50 decibels at 150 metres.

It is considered the sound levels are minimal and have the ability to monitor and control these levels during the event. As such, it is recommended a condition of consent is adopted to ensure the PA system and all noise control measures are be operated as stated in the Acoustic Report.

- Bushfire and Flooding

The site is impacted by bushfire and flooding, however the cleared area the subject of this event location is minimally impacted by these natural events. It is generally considered the property is suitable for the proposal with a suitable plan of management in place to manage the site in the case of such emergency events.

All other issues regarding likely impacts of the development has been discussed throughout this report. Generally, the site is considered suitable for the proposal given approval is issued with suitable conditions of consent.

Suitability of the Site for the Development:

A review of Council's Land Information mapping has identified bushfire and flooding as site constraints however, given the nature of the proposal, being for temporary use of land, these constraints can be appropriately managed through a suitable plan of management. The site is therefore suitable for development.

The proposed event is located within the curtilage of the subject site and adjoins the neighbouring Canton Beach Tourist Park. The proposed development is compatible with the existing development in the locality and would likely be utilised predominantly by residents and visitors for the holiday season.

As previously discussed within the report, the proposal is not likely to have any impacts on the amenity of the local residents as the location of the site is distanced from the local residential catchment. Additionally, the hours of operation are sporadic and align with the surrounding Caravan Park which would have activities and uses at this time and therefore, the proposal is not considered out of character to the surrounding land uses and development. The site is generally considered suitable for the proposed development.

Any Submission made in Accordance with this Act or Regulations*Submissions from the public*

The application was notified in accordance with Chapter 1.2 from 10 May to 24 May inclusive with no submissions received during this time. At the time of lodgment, it was presumed the site was solely owned by Crown Lands and Council was not the land manager in any capacity. However, once Council was identified as Devolved Trust Manager, re-notification was required to ensure compliance with Central Coast Council's Council Related Development Applications Conflict of Interest Protocol and the requirements of the Environmental Planning & Assessment Regulations which specify a minimum 28 day notification period for applications on land in the care and control of Council. The application was then re-notified for the required 28-days between 18 October 2024 and 15 November 2024 inclusive with no submissions received.

Submissions from Public Authorities

- Rural Fire Service (NSW RFS)

The application was referred to the Rural Fire Service (NSW RFS) in accordance with section 4.14 of the *Environmental Planning and Assessment Act 1979* who requested a bushfire report to accompany the application for comment. Recommended conditions were provided by NSW RFS which related to the provision of a suitable Bush Fire Emergency Management and Evacuation Plan to be provided in accordance with Table 6.8d and Section 8.3.8 of Planning for Bush Fire Protection 2019. Further recommendations are provided for the applicant to provide a copy of the completed report to the Local Emergency Management Committee for its information prior to the first event.

Crown Lands

The application was referred to Crown Lands, however no comment has been provided to date however it is noted they have granted land owners consent to the application.

Internal Consultation

Environmental Health Officer	Supported subject to conditions 3 and 14.
Ecologist	Supported subject to conditions 12, 13 and 19.
Waste Officer	Supported, with no comments provided.
Recreation Passive Parks	Notified, with no comments provided.

External Consultation

NSW Rural Fire Service	Supported, subject to condition 2.
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Ecologically Sustainable Principles:

The proposal has been assessed having regard to ecologically sustainable development principles and is considered to be consistent with the principles.

The proposed development is considered to incorporate satisfactory stormwater, drainage and erosion control and the retention of vegetation where possible and is unlikely to have any significant adverse impacts on the environment and will not decrease environmental quality for future generations. The proposal does not result in the disturbance of any endangered flora or fauna habitats and is unlikely to significantly affect fluvial environments.

Climate Change

The potential impacts of climate change on the proposed development have been considered by Council as part of the assessment of the application.

This assessment has included consideration of such matters as potential rise in sea level, potential for more intense and/or frequent extreme weather conditions including storm events, bushfires, drought, flood, and coastal erosion; as well as how the proposed development may cope, combat, withstand these potential impacts. In this particular case, the following matters are considered to warrant further discussion, as provided below:

Bushfire Protection: The site is identified as bushfire prone land and was referred to the NSW RFS for comment who recommended conditions relating to bushfire emergency and evacuation arrangements to be included with any consent granted.

Rising Sea Level: The site is identified as part flood affected. In a flood event it is considered group organisers and visitors would have sufficient time to evacuate and delay/cancel the event if flooding occurred. Part of the event planning is ensuring an appropriate plan of management is in place to address cancellation and evacuation in the event of a flood. The risk to human life associated with flooding can be alleviated through early intervention.

Planning Agreements

The proposed development is not subject to a Planning Agreement or Draft Planning Agreement.

The Public Interest (s4.15(1)(e)):

The proposed event is to be run for 13 days over five years commencing from 26 December 2024. While the date is within peak holiday times, the location and scale of the temporary event will not impede or restrict use of the waterfront reserve. The event provides social benefits and activation for the local community and encourages tourism. The proposal does not contravene the public interest.

Other Matters for Consideration

Contributions

Given the type of development proposed, Sections 7.11 and 7.12 Contributions are not applicable.

Conclusion:

The application has been assessed under the heads of consideration of Section 4.15 of the *Environmental Planning and Assessment Act 1979* and all relevant instruments and policies. The potential constraints have been assessed and it is considered suitable against the nature and use of the site and surroundings.











The application is commended for approval pursuant to Section 4.16 of the *Environmental Planning and Assessment Act 1979* for the following reasons:

1. The proposal is satisfactory having regard for the relevant environmental planning instruments, plans and policies.

4.3 DA/539/2024 - 1CR Oleander Street, CANTON BEACH - Temporary Use of Land for Community Event (5 years) (cont'd)

2. There are no significant issues or impacts identified with the proposal under Section 4.15 of the *Environmental Planning and Assessment Act 1979*.
3. The proposal satisfies the provisions of Chapter 2 and 4 of *SEPP (Resilience and Hazards) 2021*.
4. The proposal is satisfactory with regard to Clauses 2.8, 5.21, 7.1 and 7.6 of the *Central Coast Local Environmental Plan 2022*.
5. The proposal will provide a social benefit to the community.

Attachments

 1  Draft Notice Of Determination - DA/539/2024 - PAN-422458 - 1CR Oleander Street, CANTON BEACH	D16496937
 2  PUBLIC - Site Map - PAN-422458 - 1 Oleander Cres Canton Beach - DA/539/2024	D16157555
 3  PUBLIC - Coastal Assessment Report - PAN-422458 - 1 Oleander Cres Canton Beach - DA/539/2024	D16157566
 4  PUBLIC - REVISED - Portal Doc - 1CR Oleander Street, CANTON BEACH NSW 2263 - DA/539/2024 - Acoustic report	D16360807
 5  RFS Referral Comments_DA20240501001729-Original-1 - 04-09-2024 16_10_30 - Determination Letter_A-88208	D16391926



NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

Application number	DA/539/2024 PAN-422458
Applicant	Hannah Kidson 223-227 Victoria Road, RYDALMERE NSW 2116
Description of development	Temporary Use of Land for Community Event (5 years)
Property	1 Oleander Street Canton Beach Lot 497 DP/SP755266
Determination	Approved Consent Authority -
Date of determination	
Date from which the consent operates	

Under section 4.18(1) of the EP&A Act, notice is given that the above development application has been determined by the granting of consent using the power in section 4.16(1)(a) of the EP&A Act, subject to the conditions specified in this notice.

Right of appeal / review of determination

If you are dissatisfied with this determination:

Request a review

You may request a review of the consent authority's decision under section 8.3(1) of the EP&A Act. The application must be made to the consent authority within 6 months from the date that you received the original determination notice provided that an appeal under section 8.7 of the EP&A Act has not been disposed of by the Court.

Rights to appeal

You have a right under section 8.7 of the EP&A Act to appeal to the Court within 6 months after the date on which the determination appealed against is notified or registered on the NSW planning portal.

The Dictionary at the end of this consent defines words and expressions for the purposes of this determination.

Person on behalf of the consent authority

Terms and Reasons for Conditions

Under section 88(1)(c) of the EP&A Regulation, the consent authority must provide the terms of all conditions and reasons for imposing the conditions other than the conditions prescribed under section 4.17(11) of the EP&A Act. The terms of the conditions and reasons are set out below.

General Conditions

1	Approved Plans and Supporting Documents			
	Development must be carried out in accordance with the following approved plans and supporting documentation (stamped by Council), except where the conditions of this consent expressly require otherwise.			
	Plan No.	Revision No.	Plan Title	Drawn By.
	1 of 5	-	Site Map	-
	Lodged on Planning Portal on 09/04/2024			
	Document Title.	Version No.	Prepared by.	Dated.
	Statement of Environmental Effects	2	Scripture Union Family Mission	Lodged on Planning Portal on 19/08/2024
	Coastal Assessment Report	-	Scripture Union Family Mission	Lodged on Planning Portal on 09/04/2024
	Bush Fire Assessment Report	2	Building Code & Bushfire Hazard Solutions Pty Ltd	09/08/2024
	Acoustic Report	-	Scripture Union Family Mission	Lodged on Planning Portal on 19/08/2024
In the event of any inconsistency between the approved plans and the supporting documentation, the approved plans prevail. In the event of any inconsistency between the approved plans and a condition of this consent, the condition prevails.				
<i>Note: An inconsistency occurs between an approved plan and supporting documentation or between an approved plan and a condition when it is not possible to comply with both at the relevant time.</i>				
Condition reason: To ensure all parties are aware of the approved plans and supporting documentation that apply to the development.				

2

Other Authorities Approval

Comply with the General Conditions from the Authorities as listed below and attached as a schedule of this consent.

Government Agency / Department / Authority	Description	Ref No	Date
NSW Rural Fire Service	General Conditions	DA20240501001729-Original-1	05/09/2024

Condition reason: To ensure all parties are aware of the General Terms of Approval / requirements from other Authorities.

3

Hours of Operation

For the purposes of preserving the amenity of neighboring occupants and residents, hours of operation are restricted to between:

9:00 am and 9:00pm, for the approved period.

Set up and pack down activities on event days are restricted to 7:00am and 9:30pm.

Note: Any variation to these hours of operate requires the prior consent of Council.

Condition reason: To maintain amenity with the surrounding land uses.

4

Approved Period

The activity approved under this consent is limited to the following periods only:

- 26 December 2024 to 7 January 2025,
- 26 December 2025 to 7 January 2026,
- 26 December 2026 to 7 January 2027,
- 26 December 2027 to 7 January 2028,
- 26 December 2028 to 7 January 2029.

Condition reason: To facilitate ongoing orderly development associated with this consent.

5

Approved Area

The event activities are restricted to the area shown in the approved site plan.

Condition reason: To ensure minimal impact to the surrounding environmentally sensitive area.

Change of use

Ongoing use for change of use

6	Approved parking area
	All car parking is to be within the existing parking area, no vehicles are permitted to be parked on the reserve clearing at any time.
	Condition reason: To ensure the protection and vitality of the reserve and amenity to surrounding land uses.
7	Maximum attendance
	The maximum number of people attending each event is not to exceed 100 at any one time.
	Condition reason: To ensure the amenity of the surrounding land uses.
8	Emergency evacuation plan
	An emergency evacuation plan must be prepared, maintained, and implemented for the event. Organisers are to be briefed and familiar with the required evacuation plan prior to commencement of each event.
	Condition reason: To ensure appropriate measures are in place in the event of an emergency situation.
9	Minimal impact to the public reserve
	The management, maintenance and operation of the event is to always be conducted in a manner that the public reserve area will not become unsightly, untidy or in such a state as to become a danger to the health and safety of the public.
	Condition reason: To ensure the environmental protection and vitality of the public reserve.
10	Installation of temporary structures
	All temporary structures are to be erected on the site in accordance with the requirements of temporary structures under <i>State Environmental Planning Policy (Exempt and Complying Developments) 2008</i> .
	Condition reason: To ensure appropriate measures are in place for the stability of the temporary structures.
11	Clearance of public trees
	Nothing is to be nailed or tied to any tree within the reserve.
	Condition reason: To ensure the protection of the existing public trees.

12	Restoration of land post each event
	The reserve must be left clean, and any damage must be repaired before each event concludes. No vegetation should be damaged or disturbed by the proposed activities.
	Condition reason: To ensure environmental protection to the surrounding vegetation.
13	No access through vegetation
	No access to the lake foreshore is to occur through the vegetation adjoining.
	Condition reason: To ensure environmental protection to the surrounding vegetation.
14	Noise generation
	For the purpose of preserving the amenity of the neighbouring occupants and residents, the System is to be directed towards the carpark in accordance with (D) Sound Spillage from PA Attachment 4 in Acoustic Report Scripture Union Family Mission (SUFM).
	Condition reason: To minimise impact to surrounding land uses.
15	Operate in accordance with approved Acoustic Report
	Construct, operate and manage the site in accordance with the Acoustic Report, prepared by Scripture Union Family Mission, provided to Council on 19 August 2024.
	Condition reason: To ensure minimal environmental impact to the vicinity.
16	Minimise external lighting
	Operate and maintain all external lighting to not impact adjoining areas and minimizes overspill into retained vegetated areas.
	Condition reason: To ensure minimal impact to the surrounding environmentally sensitive area.
17	Waste Management
	Suitable waste and bins are to be provided throughout the site in order to ensure the appropriate control of waste materials during the event. Such waste bins are to be emptied on a regular basis to the approved Waste Storage area per the approved Statement of Environmental Effects, provided to Council on 19 August 2024.
	Condition reason: To facilitate orderly development.
18	Site Manager
	To address any potential concerns from event patrons, residents, Council or emergency service personnel, a designated event contact person is to be provided prior to each event commencing. This designated contact person is to be always readily available during the events hours of operations for the approved period.

	Condition reason: To ensure suitable management and coordination for the duration of the event.
19	Ecological Impact Mitigation
	The event is to comply with ecological impact mitigation measures and recommendations as stated in the Statement of Environmental Effects (<i>Scripture Union NSW</i>). Where these recommendations contained within the Ecological Assessment Report and Arboricultural Impact Assessment are inconsistent, the conditions of consent prevail.
	Condition reason: To ensure environmental protection of the site and surrounding land.

General advisory notes

This consent contains the conditions imposed by the consent authority which are to be complied with when carrying out the approved development. However, this consent is not an exhaustive list of all obligations which may relate to the carrying out of the development under the EP&A Act, EP&A Regulation and other legislation. Some of these additional obligations are set out in the [Conditions of development consent: advisory notes](#). The consent should be read together with the *Conditions of development consent: advisory notes* to ensure the development is carried out lawfully.

The approved development must be carried out in accordance with the conditions of this consent. It is an offence under the EP&A Act to carry out development that is not in accordance with this consent.

A document referred to in this consent is taken to be a reference to the version of that document which applies at the date the consent is issued, unless otherwise stated in the conditions of this consent.

Dictionary

The following terms have the following meanings for the purpose of this determination (except where the context clearly indicates otherwise):

Approved plans and documents means the plans and documents endorsed by the consent authority, a copy of which is included in this notice of determination.

AS means Australian Standard published by Standards Australia International Limited and means the current standard which applies at the time the consent is issued.

Certifier means a council or a person that is registered to carry out certification work under the *Building and Development Certifiers Act 2018*.

Construction certificate means a certificate to the effect that building work completed in accordance with specified plans and specifications or standards will comply with the requirements of the EP&A Regulation and *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021*.

Council means CENTRAL COAST COUNCIL.

Court means the Land and Environment Court of NSW.

EPA means the NSW Environment Protection Authority.

EP&A Act means the *Environmental Planning and Assessment Act 1979*.

EP&A Regulation means the *Environmental Planning and Assessment Regulation 2021*.

Independent Planning Commission means Independent Planning Commission of New South Wales constituted by section 2.7 of the EP&A Act.

Local planning panel means Central Coast Local Planning Panel

Occupation certificate means a certificate that authorises the occupation and use of a new building or a change of building use for an existing building in accordance with this consent.

Principal certifier means the certifier appointed as the principal certifier for building work or subdivision work under section 6.6(1) or 6.12(1) of the EP&A Act respectively.

Site work means any work that is physically carried out on the land to which the development the subject of this development consent is to be carried out, including but not limited to building work, subdivision work, demolition work, clearing of vegetation or remediation work.

Stormwater drainage system means all works and facilities relating to:

- the collection of stormwater,
- the reuse of stormwater,
- the detention of stormwater,
- the controlled release of stormwater, and
- connections to easements and public stormwater systems.

Strata certificate means a certificate in the approved form issued under Part 4 of the *Strata Schemes Development Act 2015* that authorises the registration of a strata plan, strata plan of subdivision or notice of conversion.

Sydney district or regional planning panel means Hunter and Central Coast Regional Planning Panel.

Site Map

Scripture Union Family Mission (SUFM) at Canton Beach Reserve

1 Oleander St Canton Beach NSW 2263

Lot 497 DP 755266

Event Dates: 26/12/24 - 7/1/25, 26/12/25-7/1/26, 26/12/26 - 7/1/27, 26/12/27 - 7/1/28, 26/12/28 - 7/1/29



Site Map 1



ATTACHMENTS

(A) Aerial Event Site area



(B) Dimensions of Event Tents



B, continued



(C) Photo of PA set up



COASTAL PROTECTION DOCUMENT

Scripture Union Family Mission (SUFM) at Canton Beach Reserve

1 Oleander St Canton Beach NSW 2263

Lot 497 DP 755266

Event Dates: 26/12/24 - 7/1/25, 26/12/25 - 7/1/26, 26/12/26 - 7/1/27, 26/12/27 - 7/1/28, 26/12/28 - 7/1/29

Please see attachment (A) showing a Google aerial map of the Event site Lot 497. As can be seen from this map, this is a grassed reserve within the bounds of Canton Beach Holiday Park and is maintained by their maintenance staff. The area is grass on a sand based soil and offers exceptional drainage. Because of this sand base, pedestrian traffic wear is kept to a minimum. Areas of high pedestrian traffic are protected with artificial grass matting. As the area is regularly mowed by Canton Beach Holiday Park staff, there is no disturbance to surrounding vegetation with no impact on surrounding flora and fauna.

All wastewater is stored in 'wheelie bins' and taken off the reserve site 3 times a day to the park waste dump points.

All household rubbish is collected in general waste and recycling bins, and taken off the reserve 3 times per day to the waste disposal bins in the Holiday Park.

Self-contained Porta-loos, Portable toilets, with hand washing facilities are provided for participants attending the event.

All event tents are lightweight and portable and do not require any earth moving, foundations or trenches for their erection. Consequently, there is no disturbance to the soil or surrounding flora.

Vehicle traffic is limited to 4 lightweight vehicles at any one time for the purpose of set up deliveries and pack up. There is no through traffic on the site and so the integrity of the grass area is maintained.

At the end of the event a thorough inspection of the site is carried out in the form of an 'emu parade' checking and clearing the land for all rubbish and debris.

In summary

This grass area is regularly maintained and protected by the park management for recreational use for all visitors to the Park. The above actions and precautions by Scripture Union have and will continue to maintain the site in line with the Coastal Protection Policy.

Site Map

Scripture Union Family Mission (SUFM) at Canton Beach Reserve

1 Oleander St Canton Beach NSW 2263

Lot 497 DP 755266

Event Dates: 26/12/24 - 7/1/25, 26/12/25 - 7/1/26, 26/12/26 - 7/1/27, 26/12/27 - 7/1/28, 26/12/28 - 7/1/29



Site Map 1



ATTACHMENTS

(A) Aerial Event Site area



ACOUSTIC REPORT

Scripture Union Family Mission (SUFM) at Canton Beach Reserve

1 Oleander St Canton Beach NSW 2263

Lot 497 DP 755266

Event Dates: 26/12/24 - 7/1/25, 26/12/25 - 7/1/26, 26/12/26 - 7/1/27, 26/12/27 - 7/1/28, 26/12/28 - 7/1/29

Hours of Event Operation:

Events will run between 10am to 11:30 am, 4 to 5pm and 7 to 9pm. It is anticipated that the events will host on average 40 to 60 people, with an upper likely attendance of approximately 100 people including volunteers.

Location of the Event Site:

Please see the attachment (D). The event site is located on a grass reserve surrounded by natural bush on 3 sides. The fourth side faces a road and car park. The site is situated at least 300 metres from any residents or park sites. The daily activities include puppet theatres, children's games and craft. The noise level from these activities is approximately 60 decibels, but due to the surrounding flora, the sound is dispersed and does not travel beyond the event site. The PA is primarily used for announcements.

PA hours of operation:

Please see attachment (C) This attachment shows our PA set up in previous years of operation. The hours of operation are between 10am to 11:30am, 4pm -5pm and 7 pm to 9pm.

The PA system is set up to direct any excess sounds spillage to the adjacent car park as per attachment (D). The 'Bose' PA allows for speakers to be directed towards the car park and bush reducing any sound spillage. A separate mixing desk is set up in front of the PA and is managed throughout the event. This allows for constant monitoring and sound levels to be controlled at all times. PA sound levels run at approximately 70 decibels dissipating to 50 decibels at the distance of 150 metres. All amplified musical instruments are played through the PA, allowing for constant monitoring and sound control. Sound spillage is indicated in Attachment (D). Within the events site the PA is controlled to 70 decibels and dissipates to 50 decibels by the isometric mark in the car park. Please see attachment (E) to show relative noise scale.

In summary

SU has been running events in this area within these parameters for 25 years and these noise controls have resulted in no complaints by patrons or park management in these times.



RFS



Central Coast Council
PO Box 20
WYONG NSW 2259

Your reference: CNR-68385 DA/539/2024
Our reference: DA20240501001729-Original-1

ATTENTION: Dev Assess Admin

Date: Thursday 5 September 2024

Dear Sir/Madam,

Development Application

s4.14 – Other – Recreation Facility

1 Oleander Street Canton Beach Lot 497 DP/SP755266, 1//DP1271706, 497//DP755266

I refer to your correspondence dated 22/08/2024 seeking advice regarding bush fire protection for the above Development Application in accordance with section 4.14 of the *Environmental Planning and Assessment Act 1979*.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted and provides the following recommended conditions:

General Conditions

The intent of measure is to provide suitable emergency and evacuation arrangements for occupants.

1. A Bush Fire Emergency Management and Evacuation Plan must be prepared in accordance with Table 6.8d of *Planning for Bush Fire Protection 2019* and be consistent with the following

- The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;
- include planning for the early relocation of occupants;
- contact details for the local Rural Fire Service office; and
- detailed plans of all emergency assembly areas, including on-site and off-site arrangements.

The Bush Fire Emergency Management and Evacuation Plan must consider Section 8.3.8 of *Planning for Bush Fire Protection 2019* (outdoor events in bush fire prone areas) to include:

- a suitable method of evacuation, ensuring that evacuation flow is directed through different areas of the site, moving from areas of higher risk to lower risk;
- expected evacuation timeframes;
- advance warning to patrons identifying that the event is located on bush fire prone land and giving advice on any fire restrictions;
- ability to cease and override P.A. and audio systems to announce emergency; warnings, alerts or safety information; and
- a prescribed ratio of trained fire wardens to participants.

1

Postal address

NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address

NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

**RFS**

A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to the occupation of the development.

For any queries regarding this correspondence, please contact Nicole Van Dorst on 1300 NSW RFS.

Yours sincerely,

Joshua Calandra
**Supervisor Development Assessment & Plan
Built & Natural Environment**