Nepean Geotechnics

ABN 45 626 934 389
15 Henry Place, Narellan Vale, NSW 2567
Email: info@nepeangeotechnics.com.au
PH: 0447 280 042

Geotechnical Investigation Report

Proposed Residential Development

1130 Pittwater Road, Collaroy NSW (Lot 1 on DP121939)

Report No. R23146.Rev2

Prepared for:

Azzwic Holdings Pty Ltd

23 May 2024

Table of Contents

Appendices

1. Introduction

This report presents the results of a geotechnical investigation undertaken for a residential development to be constructed at 1130 Pittwater Road, Collaroy. The job was undertaken in accordance with Nepean Geotechnics general terms of engagement.

The proposed development comprises the demolition of existing structures and construction of a residential dwelling within the allotment. Conceptual design drawings of the project, prepared by Map Architects (Project No.2_23_10), were provided and show the footprint of proposed development within the site. A copy of the drawings can be found in Appendix A. According to the drawings, the new dwelling does not include basement carparking and minor filling may be required for leveling the slab areas at the rear of the site.

The objectives of the investigation were to identify subsurface conditions and provide comments on the bearing capacity of subsurface material.

2. Site Description

The site is located at the eastern side of Pittwater Road and is bordered by residential properties to the north and south. The allotment occupies a rectangular shape area of approximately 385 m^2 and to the east is bounded by Collaroy Beach. The existing structures on site at the time of the field work comprised a one and two storey rendered and clad dwelling with timber deck at the rear. Site vegetation comprised grassed lawn at the front and rear yard.

The allotment had a fall of approximately 0.5 m to the east within the footprint of existing structures. We've been informed that due to severe surface erosion along the coastline in 2016, a sea wall has been constructed at the rear of the allotment and the approximate crest of the sea wall was 1.5 m above the existing ground surface across the allotment. The surface material across the sea wall consist of very loose beach sands.

3. Geology

According to the Sydney 1:100 000 Geological Series Sheet, the site is underlain by the Quaternary age alluvial consist of sands and sandy muds.

4. Field Work

The field work comprised drilling of two auger boreholes (BH1 and BH2) across the site. BH1 was drilled in a garden bead at the front of the allotment and BH2 was drilled in the sandy material across the crest of the sea wall at the rear of the site. The boreholes were drilled using a Hilux mounted Christie Engineering drilling rig and continued to the maximum reach of the equipment, 9.0 m.

Perth sand penetrometer (PSP) tests were carried out in BH1 and at the eastern corner of the site adjacent to the toe of the seawall to provide an indication of the penetration resistance of the near-surface soils. A marked-up site plan showing the approximate borehole locations is included in Appendix A.

Borehole logging, field testing and field work supervision were carried out by an experienced geotechnical engineer.

5. Subsurface Conditions

The subsurface material encountered in the boreholes comprised sands and silty sands in dry to moist conditions to the termination depth of boreholes. The subsurface sands included traces of shells fragments below approximate depth of 7 m in the boreholes. BH2 was drilled across the recently constructed seawall and fill material consisting of very loose sands continued to approximate depth of 2 m.

Based on the PSP test results, the sands were of very loose to loose and medium density to approximate depth of 3 m in BH1 and PSP2. Based on the site observations, the sands in BH2 were in dense conditions approximately at the same elevation encountered in BH1 and PSP2.

No groundwater seepage was encountered in the boreholes at the time of field work and shortly after the drilling before backfilling the boreholes. However, the sands appeared moist to wet below approximate depths of 7 m and 8 m in the boreholes.

6. Site Preparation

According to the provided design drawings, the proposed dwelling will be constructed above the existing ground level and the site preparation works would likely involve minor filling for levelling the construction areas.

Site preparation works should generally be carried out in accordance with AS3798-2007 'Guidelines on Earthworks for Commercial and Residential Developments'. Any structural fill material shall be placed in loose layers not greater than 250 mm thick at a moisture content in the range -1% to +3% of the standard optimum moisture content and be compacted to a minimum dry density ratio of 98% standard compaction (or minimum density index of 75% for cohesionless soils as suggested in Table 5.1 of AS3798).

7. Footings

The existing fill material and near surface loose sands shall not be considered suitable foundation material. High level pad and strip footings founded in the loose to medium dense natural sands may be designed based on an allowable bearing pressure of 100 kPa.

Based on the investigation findings, loose sands are likely to be founded to approximate depths varying between 0.7 m and 1.2 m in BH1 and PSP2. Fill material and loose sands continued to approximate depth of 2.5 m in BH2. Due to potential moisture variations and surface erosion, footings shall be extended to the underlying dense sands or better quality material (e.g. bedrock below the termination depth of boreholes).

The end bearing capacity of piers founded in the granular material will vary depending on the relative density of foundation material and overburden pressure and typically increases with depth. As a guide, piers founded in the natural dense sands, with a diameter of 450 mm and minimum depth of 3 m below the final ground surface, may be proportioned based on an allowable bearing capacity of 300 kPa. It is noted that due to presence of loose granular soils, cast in-site bored piles may not be suitable for this site and consideration should be given to alternative piling techniques such as steel screw piles or continuous flight auger (CFA) piles.

If steel screw piles are adopted, the piles shall be constructed by contractors with experience in the same geological conditions. A copy of this report and borehole logs may be provided to the contractor to assist them in the planning and design of the piles. The design and constructions of screw piles shall be undertaken by the contractor using the design working loads for the piles.

Settlements up to 20 mm may be expected for the footings founded in the loose to medium dense sands.

All piers and footings will need to be inspected by a qualified geotechnical engineer during construction to confirm the foundation material are suitable for the estimated design parameters.

It is understood that the surcharge load of the proposed dwelling in relation to slope stability of the existing rock revetment was considered by JK Geotechnics (2017) as part of the rock revetment DA. According to the stability analysis modelling output provided in the JK Geotechnics's report (Ref No.30578ZR), a surcharge load of 100 kPa has been adopted for the proposed dwelling and returned a Factor of Safety of 1.6.

The footings for the proposed dwelling shall be extended below the zone of influence of the revetment, which extends up at 1H:1V from the toe of the revetment and invert level of any underground services in the area. Provided that the footings are extended below the zone of influence, the proposed development would not be expected to place an unacceptable surcharge load on the revetment.

8. General Notes

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 project and should be made available to potential contractors 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 borehole 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 boreholes 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 boreholes, or assumed to exist in the excavations, Nepean Geotechnics should be advised immediately to review these conditions and review 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 recommendations considering the changed conditions and time lapse.

The borehole logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the field work progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual.

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

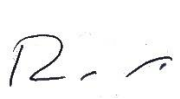
Groundwater levels often vary seasonally. Groundwater levels reported on the borehole logs or in the body of the report are factual data only for the dates shown.

Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples or boreholes. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project.

Nepean Geotechnics 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.

We trust the above is sufficient for your requirements. Please do not hesitate to contact the undersigned should you require further information or need to discuss any aspect of this report.

Yours sincerely,



Rasoul Machiani
Senior Geotechnical Engineer (MIEAust, NER, CPEng)
For and on behalf of Nepean Geotechnics

Appendix A

Approximate Borehole Locations

Architectural Design Drawings

Proposed Residential Dwelling

1130 Pittwater ROAD, Collaroy NSW

Project No: **R23146**

Date: **21 July 2023**

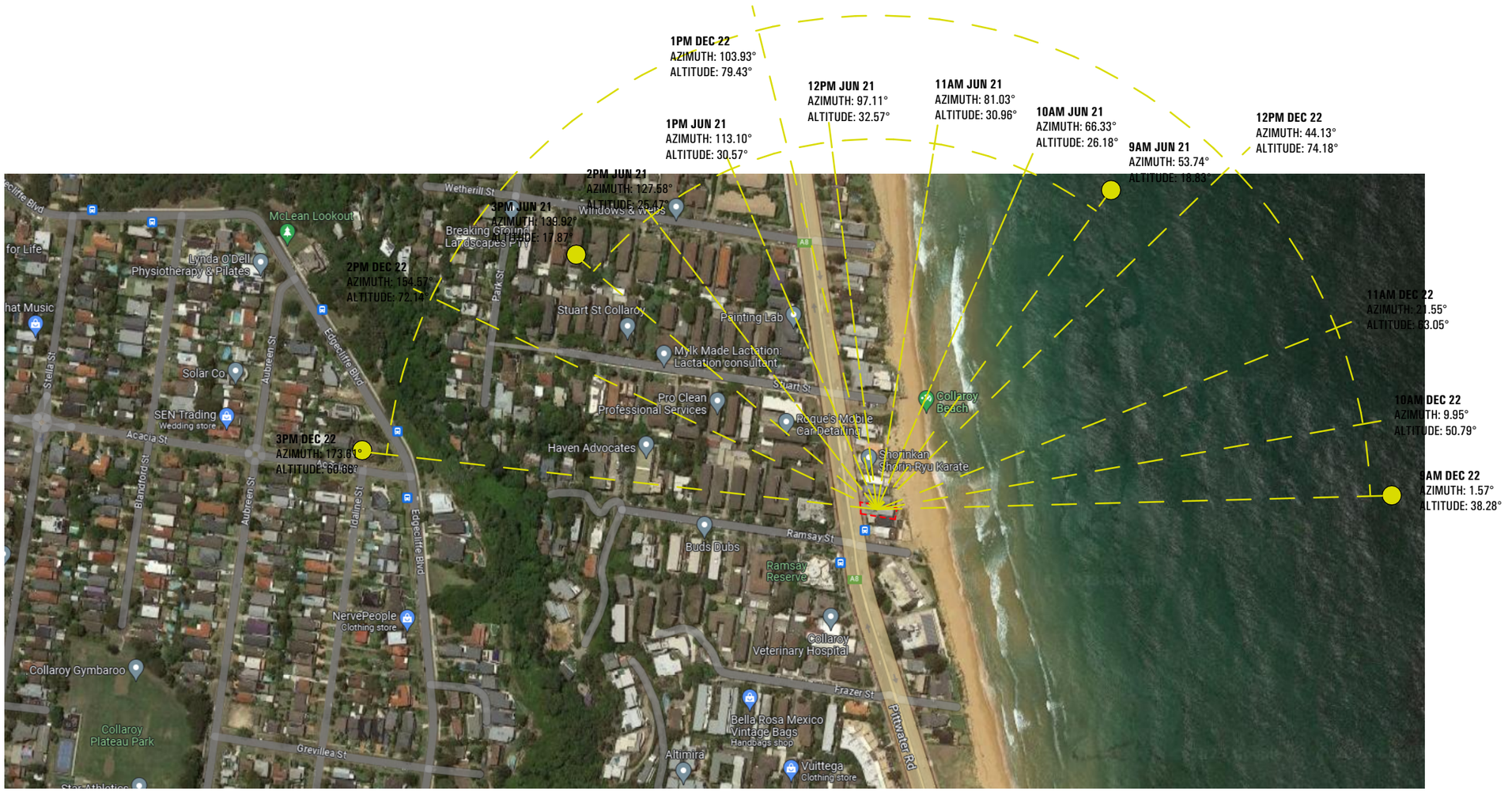
N

Nepean Geotechnics

ABN 45 626 934 389
15 Henry Place, Narellan Vale NSW 2567
Email: info@nepeangeotechnics.com.au
Phone: 0447 280 042

S4.55 MODIFICATION

Drawing No.	Title
D0000	COVER SHEET
D0001	BUILDING SPECIFICATIONS
D0002	BASIX
D0003	SITE PLAN
D1000	DEMOLITION PLAN
D2100	GROUND PLAN
D2101	FIRST FLOOR PLAN
D2102	ROOF PLAN
D3000	NORTH/EAST ELEVATION
D3001	SOUTH/WEST ELEVATION
D3002	COURTYARD ELEVATIONS
D3100	SECTION AA
D3101	SECTION BB
D3102	SECTION CC/DD
D4000	SHADOW DIAGRAMS
D5000	AREA SCHEDULE
D5001	WINDOW/DOOR/SKYLIGHTS SCHEDULE



DEVELOPMENT SCHEDULE

SITE AREA 385.70m²

BUILDING FOOTPRINT

ALLOWABLE:	128.40m²	(33.3% x SITE AREA)
EXISTING:	125.38m²	(32%)
PROPOSED:	184.35 m²	(48%)

No. 1130 PITTWATER ROAD COLLAROY - EXISTING REAR ELEVATION

No. 1130 PITTWATER ROAD COLLAROY - FRONT ELEVATION

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS

Nominated NSW Architects Reg. 9401 · Mark P. Alves

Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110

ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD
COLLAROY

drawing COVER SHEET

drawn SM / PC checked MA

date 09.02.24 scale @ A3

project no 2_23_10 drawing no D0000 issue D

SPECIFICATION

PROJECT ADDRESS:

1130 PITTWATER RD COLLAROY

2.0 STATUTORY REQUIREMENTS

2.1 The Works

All works shall be carried out and completed to comply with the appropriate construction standards and the Local Government Act (as amended)

2.2 Regulations, Notices and Fees

The Contractor is to comply with Local Government (Approvals) Regulations 1993 and Local Government (Orders) Regulation 1993 under the Local Government Act 1993 (as amended) or the Building Code of Australia; the requirements of legally constituted authorities for local government and/or for services: and the provisions of the Building Services Corporation Act (as amended). The Contractor is to give all Notices, obtain all Permits and pay all Fees required by such authorities.

2.3 Insurance

Insurance cover the works against risk for Fire, Theft, Malicious Damage and Materials on site are to be effected by the Contractor at the Contractor's expense. The Contractor shall also at his expense adequately insure Public Liability and arrange Worker's Compensation cover in respect of any liability under the Worker's Compensation Act or New South Wales.

2.4 Labour and Materials

The Contractor is to provide all labour and materials to construct the complete the building to the stage as specified in the contract documents. Materials to be of the standard specified. Workmanship in each trade to be performed by tradespeople of that particular trade and in conformity with adequate building practice. Building materials surplus to requirements of the works shall be and remain the property of the Contractor.

2.5 Electricity

Available on site

2.6 Sanitary Accommodation

Toilet facilities exist on Site.

3.0 OWNERS OBLIGATIONS

3.1 Surveyor's Certificate

The Owner's shall obtain a certified survey of the Site. If no survey is required, the Owner hereby certifies that the placement of the existing survey pegs or fences on the Site is correct.

3.2 Engineer's Recommendations

The Owner shall provide the Contractor with reports and recommendation (including soil classification) as to the foundations and/or footings requires for the works prepared by an Engineer.

3.4 Items Supplied by the owner

For all items referred to in the specification to be supplied by the Owner, it is the responsibility of the Owner to arrange payment for delivery of and protection against damage and theft of all these items.

Delivery is to be made when requested by the Builder to the site. If not available when required the Owner shall be obliged to make an alternative selection.

3.5 Water Supply

The Owner shall, at the Owner's expense, supply adequate water to the Site for construction purposes.

3.6 Sanitation

Unless otherwise specified, the Owner shall, at the Owner's expense.

4.0 PLANS, PERMITS AND APPLICATION FEES

4.1 Permits and Fees

The Owner shall pay all necessary application notices and lodge plans and details with the Local Authority for approval prior to commencement of construction

4.2 Setting Out

The Contractor shall accurately set out the works in accordance with the site plan and within the boundaries of the site.

8.0 EFFLUENT DISPOSAL/DRAINAGE

8.2 Storm Water Drainage

Existing

9.0 TIMBER FRAMING GENERALLY

9.1 Timber Framing

All timber framework sizes, spans, spacing, notching, checking and fixing shall comply with the provisions of AS 1684 or the NSW Timber Framing Manual as amended or Part 3.4.3 BCA 96 Housing Provisions. Alternative structural framing to Structural Engineer's details and certification.

The work shall be carried out in a proper and tradesperson like manner and shall be in accordance with recognised and acceptable trade practices.

9.2 Floor Framing

All floors not specified to be concrete are to be framed at level shown. Span and spacing of bearers is to conform to the requirements of the span tables for the appropriate member size. Deep joists to upper floors, where shown, are to be fitted with solid blocking or herringbone strutting as required. All sizes and stress grades of timber members and tie down methods are to be in accordance with AS 1684 or NSW Timber Framing Material.

9.3 Wall Framing

Plates are to be tranches to a depth not exceeding 10mm to provide uniform thickness where studs occur. Where plates are machine gauged to a uniform thickness, trenching may be omitted. Wall framing is to be erected plumb and straight and securely fastened to floor framing. Provide a clear space of 40mm between outer face of wall frame and inner face if brick veneer walls to studs with approved veneer ties. Ties are to slope downwards towards the veneer wall.

Studs in each panel of walling shall be stiffened by means of solid noggings or bridging pieces at not more than 1,350mm centres over the height of the wall. Bottom plates shall be fixed to the concrete slab with or in accordance with AS 4055.

9.4 Heads Over Opening (Lintels)

All sizes, stress grade and bearing area shall conform to AS 1684 or NSW Timber Framing Manual. Heads exceeding 17mm in depth shall be seasoned or low shrinkage timber species use. Plywood web lintels conforming to the requirements of Plywood Association of Australia may be used. Glue Laminated beams conforming with AS 1328 or if approved by the Lending Authority. Laminated Veneer Lumber beams to manufacturers specification and data sheets may be used.

9.6 Bracing

Timber frames must be braces in accordance with Clause 3.4.3.8 BCA Housing Provisions. Bracing units shall be determined as appropriate for the design wind velocity for the building Type "A" and/or "B" units are to be evenly distributed throughout the building.

9.7 Flooring

Cover floor joists with strip or sheet flooring as shown on plan. Thickness of flooring to be appropriate for the floor joist spacing. With particular regard to ground clearance and installation in wet areas, structural sheet flooring shall be used strictly in accordance with the manufacturer's recommendations or Part 3.4.3 BCA 96 Housing Provisions.

Fixing shall be in accordance with the applicable flooring Code.

When specified, floors shall be sanded to provide an even surface and shall be left clean throughout.

9.10 Corrosion Protection

All metal brackets, facing plats and other associated fixings used in structural timber joints and bracing must have appropriate corrosion protection.

10.0 STEEL FRAMING GENERALLY

10.1 Steel Framing

Steel floor, wall or roof framing approved by the Local Authority shall be installed in accordance with the manufacturer's recommendations as AS 3623 or Part 3.4.2. BCA 96 Housing Provisions

12.0 MASONRY

12.1 Bricks

All clay bricks and brickwork shall comply with AS 1225, AS 1226 and AS 3700.

13.0 CLADDING AND LININGS

13.1 External Claddings and Linings

Sheet materials or other external cladding shall be fixed in accordance with the manufacturer's recommendations and any applicable special details.

13.2 Internal Wall and Ceilings Linings.

Provide gypsum plasterboards or other selected materials to walls and ceilings. Plasterboard sheets to have recessed edges and be a minimum of 10mm thick. Fixings is to be strictly in accordance with the manufacturer's recommendations. Internal angles from floor to ceiling to be set. Set corners or provide cornices for ceilings as required. The lining of wet area walls in brick veneer and timber frame buildings shall be constructed as per AS 3740 or Part 3.8.1 BCA 96 Housing Provisions. Lining to be fixed in accordance with the manufacturer's recommendations.

Where required in open verandas, porches and eaves soffits, material indicated on the drawing shall be installed. The ceiling access hole shall be of similar material to the adjacent ceiling. Suitable cornice moulds, where required, shall be fixed at the junction of the walls and ceilings.

13.3 Waterproofing

All internal wet areas and balconies over internal habitable rooms to be water proofed as AS 3740 or Part 3.8.1 BCA 96 Housing Provisions

14.0 JOINERY

14.1 General

All joinery work (metal and timber) shall be manufactured and installed according to good trade practices.

14.2 Door frames

Timber used in external door frames shall be a minimum of 32mm thick fitted with 10mm thick door stops. Internal timber jamb linings shall be a minimum of 18mm thick fit with 10mm thick door stops. Metal door frames shall be installed in accordance with the Manufacturer's Recommendations.

14.3 Door and Doorsets

All internal and external timber door and door sets shall be installed in accordance with AS 1909 timber Door and Door sets and shall be manufactured in accordance with AS 2588 and AS 2689.

14.4 Window and Sliding Doors

Sliding and other timber windows and sliding doors shall be manufactured in accordance with AS 2047 and installed in accordance with AS 2048.All glazing shall comply with AS 1288 or Part 3.6 BCA 96 Housing Provisions. Glazier to provide safety glass compliance certificates.

14.5 Architraves and Skirting

Provide architraves and skirting as nominated on the drawings.

14.6 Stairs and Barriers

Provide handrails and balustrades to any change in level and to at least one side of ramps and stairs as per Part 3.9.1 & 3.9.2 of BCA Housing Provisions.

15.0 SERVICES

15.1 Plumbing

All plumbing shall comply with the requirements of the Supply Authority and the work is to be carried out by a licensed plumber. Fittings shall be supplied and installed as specified.

15.2 Electrical

Provide all labour and materials necessary for the proper installation of electricity service by a licensed electrician in accordance with As 3000, AS 3006 and the requirements of the local Supply Authority. Unless otherwise specified, the electrical service shall be 240 vlot, single phase supply.

15.3 Gas

An installation (including LPG) shall be carried out in accordance with the rules and requirements of the Supply Authority.

15.4 Smoke Detectors

Provide and install smoke alarms manufactured in accordance with AS 3786 as specified or as indicated on plan and in accordance with Part 3.7.2 BCA 96 Housing Provisions.

16.0 TILING

16.1 Materials

Cement mortar and other adhesives shall comply with AS 3958.1 according to trade practices.

16.2 Installation

Installation of tiles shall be in accordance with AS 3958.

All vertical and horizontal joints between walls and fixtures e.g. Bench-top, bath, etc to be filled with flexible mould resistant grout. Where practicable spacing between tiles should be even and regular. Provide expansion joints where necessary. As tiles are made of natural products, a slight variation in colour is to be anticipated.

16.3 Walls

Cover specified wall faces with selected neatly grouted tiles. Tiles are to be fixed to wall sheeting with approved adhesives. Provide all necessary strips, vent tiles and recess fittings.

16.4 Floors

Lay selected floor tiles in sand and cement mortar or approved adhesive to specified areas. If required fit approved edge strips to exposed edges in doorways or hobless showers. Provide adequate and even fall to wastes where necessary.

17.0 PAINTING

17.1 General

All paint used shall be of a quality suitable for the purpose intended and the application shall be as per the manufacturer's recommendations. The colours used shall be specified. All surfaces to be painted shall be properly sanded and prepared.

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS

Nominated NSW Architects Reg. 9401 - Mark P. Alves

Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110

ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD COLLAROY

drawing BUILDING SPECIFICATIONS

drawn SM / PC checked MA

date 09.02.24 scale @ A3

project no 2_23_10 drawing no D0001 issue D

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Single Dwelling

Certificate number: 1412073S_02

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 Definitions" dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

This certificate is a revision of certificate number 1412073S lodged with the consent authority or certifier on 04 October 2023 with application DA2023/1438.

It is the responsibility of the applicant to verify with the consent authority that the original, or any revised certificate, complies with the requirements of Schedule 1 Clause 2A, 4A or 6A of the Environment Planning and Assessment Regulation 2000

Secretary
Date of issue: Monday, 12 February 2024
To be valid, this certificate must be lodged within 3 months of the date of issue.

Project summary	
Project name	1130 Pittwater Rd HEC1482_02
Street address	1130 PITTWATER ROAD COLLAROY 2097
Local Government Area	Northern Beaches Council
Plan type and plan number	Deposited Plan 121939
Lot no.	1
Section no.	-
Project type	separate dwelling house
No. of bedrooms	4

Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 51	Target 50

Certificate Prepared by
Name / Company Name: House Energy Certified
ABN (if applicable): 81601166561

Project address	
Project name	1130 Pittwater Rd HEC1482_02
Street address	1130 PITTWATER ROAD COLLAROY 2097
Local Government Area	Northern Beaches Council
Plan type and plan number	Deposited Plan 121939
Lot no.	1
Section no.	-
Project type	
Project type	separate dwelling house
No. of bedrooms	4
Site details	
Site area (m²)	386
Roof area (m²)	126
Conditioned floor area (m²)	252.0
Unconditioned floor area (m²)	7.0
Total area of garden and lawn (m²)	132
Roof area of the existing dwelling (m²)	0

Assessor details and thermal loads	
Assessor number	DMN/18/4423
Certificate number	HR-A9EO3G-02
Climate zone	56
Area adjusted cooling load (MJ/m².year)	25
Area adjusted heating load (MJ/m².year)	38
Ceiling fan in at least one bedroom	No
Ceiling fan in at least one living room or other conditioned area	Yes
Project score	
Water	✔ 40 — Target 40
Thermal Comfort	✔ Pass — Target Pass
Energy	✔ 51 — Target 50

Water Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Fixtures			
The applicant must install showerheads with a minimum rating of 4 star (> 6 but <= 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.		✔	✔
The applicant must install a toilet flushing system with a minimum rating of 4 star in each toilet in the development.		✔	✔
The applicant must install taps with a minimum rating of 4 star in the kitchen in the development.		✔	
The applicant must install basin taps with a minimum rating of 4 star in each bathroom in the development.		✔	
Alternative water			
Rainwater tank			
The applicant must install a rainwater tank of at least 2000 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 rain runoff from at least 100 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).			
The applicant must connect the rainwater tank to: • all toilets in the development • at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)			
Thermal Comfort Commitments			
Simulation Method			
Assessor details and thermal loads			
The applicant must attach the certificate referred to under "Assessor Details" on the front page of this BASIX certificate Certificate") to the development application and construction certificate application for the proposed development (or, if t applying for a complying development certificate for the proposed development, to that application). The applicant must at Assessor Certificate to the application for an occupation certificate for the proposed development.			
The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX certificate, including the Cooling and Heating loads shown on the front page of this certificate.			
The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Assessor Certificate requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor to certify that this is the case. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			✔
The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
The applicant must show on the plans accompanying the development application for the proposed development, the locations of ceiling fans set out in the Assessor Certificate. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.	✔	✔	✔

Thermal Comfort Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Construction			
Where there is an in-slab heating or cooling system, the applicant must install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab, and underneath the slab if it is a suspended floor.	✔	✔	✔
The applicant must construct the floors and walls of the dwelling in accordance with the specifications listed in the table below.	✔	✔	✔

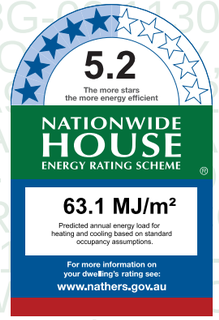
Floor and wall construction	Area
floor - concrete slab on ground	117.0 square metres
floor - suspended floor/enclosed subfloor	6.0 square metres

Energy Commitments	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, or a system with a higher energy rating: gas instantaneous with a performance of 5 stars.	✔	✔	✔
Cooling system			
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning; Energy rating: 2.5 Star (old label)		✔	
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning; Energy rating: 2.5 Star (old label)			
Heating system			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: electric floor heating; Energy rating: n/a			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning; Energy rating: 2.5 Star (old label)			
Ventilation			
The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, ducted to façade or roof; Operation control: manual switch on/off Kitchen: individual fan, ducted to façade or roof; Operation control: manual switch on/off Laundry: individual fan, ducted to façade or roof; Operation control: manual switch			
Artificial lighting			
The applicant must ensure that the "primary type of artificial lighti following rooms, and where the word "dedicated" appears, th light emitting diode (LED) lamps: • at least 4 of the bedrooms / study; dedicated			✔

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
• at least 1 of the living / d		✔	✔
• the kitchen; de		✔	✔
• all b		✔	✔
		✔	✔
		✔	✔
	✔	✔	✔
opment for natural lighting.	✔	✔	✔
enerate at least 1.5 peak kilowatts of electricity as part of the opment's electrical system.	✔	✔	✔
in the kitchen of the dwelling.		✔	

Nationwide House Energy Rating Scheme
NatHERS Certificate No. #HR-A9EO3G-02

Generated on 12 Feb 2024 using Hero 3.1.0.6



Property

Address 1130 Pittwater Road, Collaroy, NSW, 2097
Lot/DP 1/121939
NCC Class* 1a
Type New

Plans

in Plan 2-23-10
red by MA/JG

ction and environment

r area (m²)*	Exposure Type
252.1	Exposed
7.1	NatHERS climate zone
298.1	56 - Mascot AMO
38.9	

Thermal Performance

Heating	Cooling
37.8 MJ/m²	25.4 MJ/m²

redited assessor

d	Paul Gradwell
Business name	House Energy Certified
Email	paul@houseenergycertified.com
Phone	+61 410315381
Accreditation No.	DMN/18/4423
Assessor Accrediting Organisation	DMN
Declaration of interest	No Conflict of Interest

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit http://www.hero-software.com.au/pdf/HR-A9EO3G-02. When using either link, ensure you are visiting http://www.hero-software.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

* Refer to glossary.
Generated on 12 Feb 2024 using Hero 3.1.0.6 for 1130 Pittwater Road, Collaroy, NSW, 2097

or Construction Summary

Issued for information only - refer to the NatHERS Certificate(s).

dress: 1130 Pittwater Road Collaroy NSW 2097 — **File Ref:** HEC1482

Name: Azzwic Holdings Pty Ltd — **Designer:** Map Architects Pty Ltd

Assessor: **Name:** Paul Gradwell — **Company:** House Energy Certified
Address: PO BOX 3136 Tamarama NSW 2026 — **Number:** DMN/18/4423
Contact: 02 9130 2068 — **Email:** paul@houseenergycertified.com

	Construction	Insulation	Colour	Details
Ext. Walls:	Cavity Brick	25mm Kooltherm K8 or equiv (R1.1)	Light	As per plans
	Metal Clad	R2.5 added	Dark	As per plans

	Construction	Insulation	Details
Int. Walls:	Plasterboard on Stud	R2.5 added	To garage

	Construction	Insulation	Details
Floors:	Concrete	R1.0 added	To slab edge where underfloor heating
	Concrete	R1.1 added	Where open below/Above cellar
	Concrete	R4.0 added	Above garage

	Construction	Insulation	Details
Ceilings:	Plasterboard	R4.0 added	Where flat
	Plasterboard	R2.5 added	Where raked

	Construction	Insulation	Colour	Details
Roof:	Concrete	90mm PIR or equiv (R4.1)	Medium	Ground floor roof
	Metal Deck	60mm Anticon (R1.3)	Dark	First floor roof

Windows:	Product ID	Glass	Frame	Uw/SHGCw	Details
Group A	ALM-003-03 A	Double Clear	Aluminium	4.3/0.47	Casement, Entry Door
Group B	ALM-004-03 A	Double Clear	Aluminium	4.3/0.53	Fixed, Sliding
Group B	ALM-002-01 A	Single Clear	Aluminium	6.7/0.70	Louvre

Skylights:	Product ID	Glass	Type	Uw/SHGCw	Details
	VEL-011-01 W	Double Fixed	Roof Light	2.6/0.24	As per plans

Other:	Orientation	Terrain	Rangehood	Recessed Downlights	Software Version
	0	Exposed	Ducted	Sealed LED - 1 per 2.5m²	HERO

Notes
R2.5 added to the walls to roof space
Add 1 x 1200 mm ceiling fan to Living room

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

PLIES WITH BUILDING CODE A 2022 & ABCB HOUSING FOR CONSTRUCTION

MAP ARCHITECTS

Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD
COLLAROY
drawing BASIX

drawn SM / PC checked MA
date 09.02.24 scale @ A3
project no 2_23_10 drawing no D0002 issue D

AS1926.1-2012, SWIMMING POOL SAFETY - SAFETY BARRIERS FOR SWIMMING POOLS.
AS1926.2-2007, SWIMMING POOL SAFETY - LOCATION OF SAFETY BARRIERS FOR SWIMMING POOLS.
AS/NZS 2416.1:2010, WATER SAFETY SIGNS AND BEACH SAFETY FLAGS

- EARTHWORK IS TO COMPLY WITH BCA 2016 TABLE 3.1.1.1 AS REFERENCED IN FIG 3.1.2.1 & CLAUSE 3.1.1.0(B) FOR DETERMINATION OF A NORMAL SITE AS REFERENCED BY CLAUSE 3.2.1.
- DRAINAGE IS TO COMPLY WITH AS/NZS 3500.3-2015 OR SECTION 5 OF AS/NZS 3500.5 2012.
- TERMITE MANAGEMENT IS TO COMPLY WITH BCA 2016 PART 3.1.3 AND AS 3660.1-2014. A DURABLE NOTICE IS TO BE INSTALLED IN ACCORDANCE WITH BCA 2016 PART 3.1.3(b). WHERE A CHEMICAL TERMITE MANAGEMENT SYSTEM IS USED, THE CHEMICAL MUST BE INCLUDED ON THE APPROPRIATE AUTHORITY'S PESTICIDES REGISTER. A.

SITE ACCESS
PROVIDE A SINGLE STABILISED ENTRY/EXIT POINT.
SEDIMENT OR BUILDING WASTE SHOULD BE REMOVED FROM THE ROAD BY SWEEPING, SHOVELLING OR SPONGING: NOT WASHING.

DIVERSION OF WATER
DIVERT RUN OFF AWAY FROM DISTURBED AREAS AND STOCKPILES USING BANKS AND CHANNELS.
RUN OFF SHOULD BE TREATED (BY SEDIMENT FENCE OR THE LIKE) BEFORE LEAVING THE SITE.

ROOF WATER DRAINAGE
CONNECT TEMPORARY OR PERMANENT DOWNPIPES TO THE STORM WATER SYSTEM AS SOON AS THE ROOF IS COMPLETE, TO REDUCE SITE WETNESS.

DUST CONTROLS
MINIMISE DISTURBANCES.
COVER STOCKPILES.
USE WATER WHEN NECESSARY, BUT CONTROL RUN OFF.

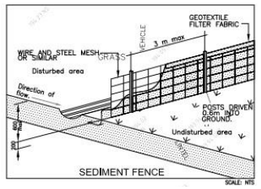
ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA). ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS/EQUIPMENT.

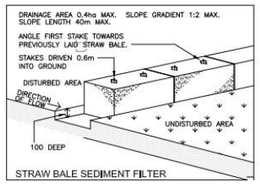
DETAIL 1
SEDIMENTATION FENCES
FENCES SHOULD BE INSTALLED DOWN SLOPE TO TREAT SITE RUN-OFF.
TO BE EFFECTIVE, THEY NEED TO BE INSTALLED PROPERLY AND MAINTAINED REGULARLY.

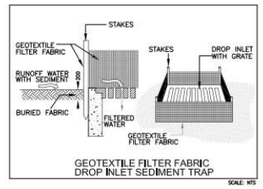
DETAIL 2
GUTTER PROTECTION
GRAVEL SAUSAGES, GRAVEL BAGS OR SAND BAGS SHOULD BE INSTALLED AROUND STORM WATER INLETS TO REDUCE THE RISK OF UNTREATED RUN OFF ENTERING THE WATERWAYS.

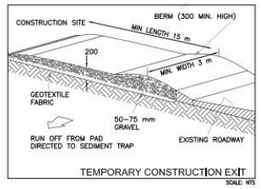
DETAIL 3
STOCKPILES
STOCKPILES SHOULD BE LOCATED UPSLOPE AWAY FROM DRAINAGE LINES.
RUN OFF SHOULD BE DIVERTED AWAY FROM THE STOCKPILE.
PROTECT STOCKPILES WITH WATERPROOF COVERING.
INSTALL A SEDIMENT CONTROL DEVICE ON THE DOWNSLOPE SIDE OF THE STOCKPILE.
STOCKPILES MUST NOT BE STORED ON FOOTPATHS.

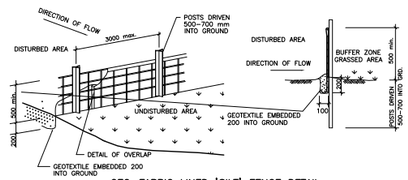

EXAMPLE OF 1.8M STEEL MESH/CHAIN WIRE FENCE

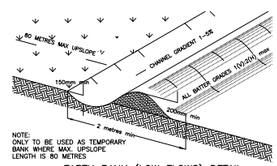




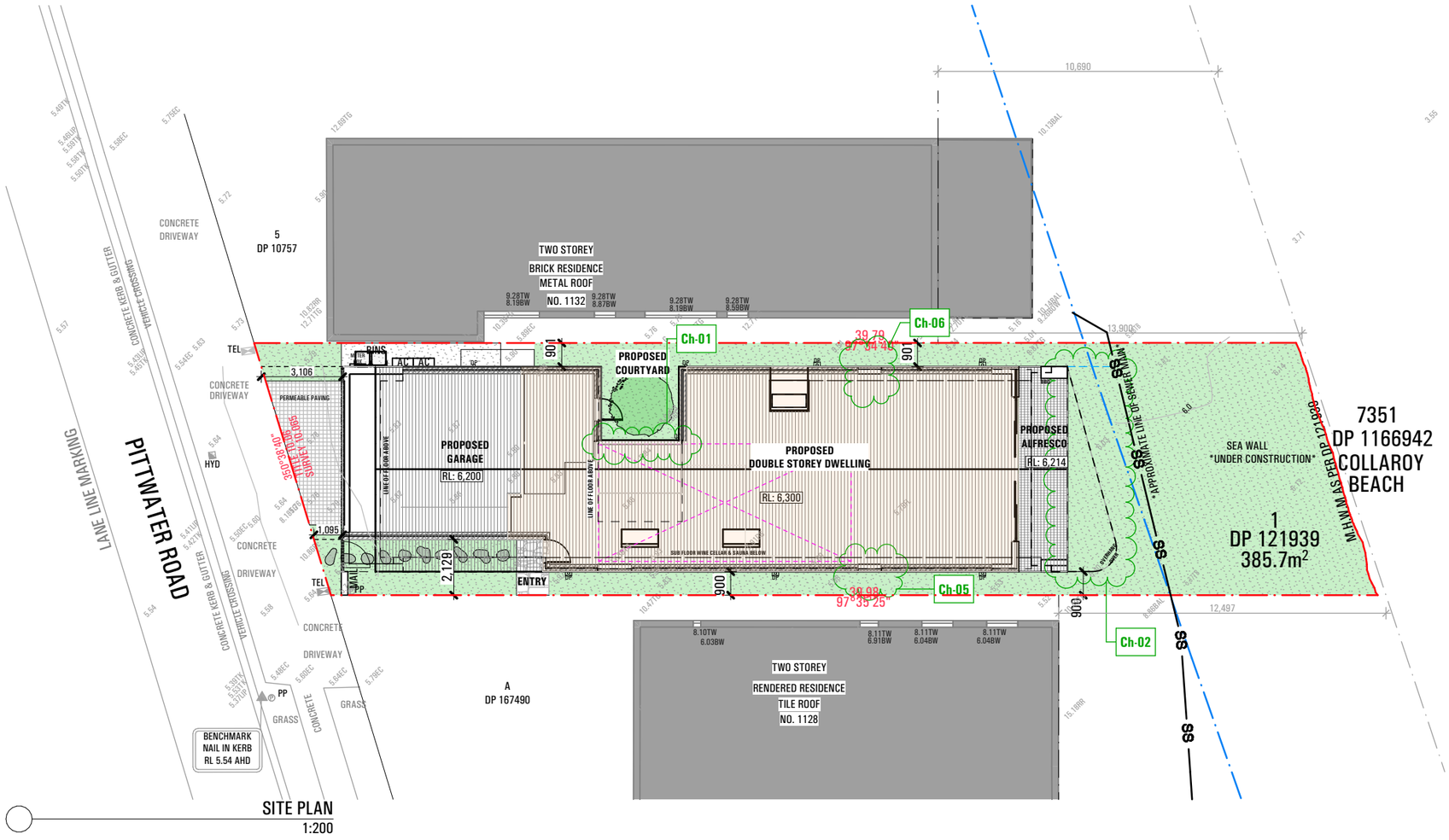








NOTE:
REFER TO GEOTECHNICAL REPORT PREPARED BY '**NEPEAN GEOTECHNICS**', DATED 18th DECEMBER 2023, FOR RECOMMENDATIONS OF THE PREPARATIONS AND DEPTH OF THE PROPOSED PIERING OF THE GROUND FLOOR SLAB



BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES
ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS

Change ID	Name
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY
S4.55 MODIFICATION

project 1130 PITTWATER RD COLLAROY
drawing SITE PLAN
drawn SM / PC checked MA
date 09.02.24 scale 1:200 @ A3
project no 2_23_10 drawing no D0003 issue D

DEMOLITION

STANDARD
DEMOLITION: TO AS 2601
DEMOLISHED MATERIALS
EXCEPT FOR MATERIALS TO BE SALVAGED AND RETAINED BY THE OWNER OR RE-USED,
DEMOLISH MATERIALS AND REMOVE FROM THE SITE.
DO NOT BURN OR BURY DEMOLISHED MATERIALS ON THE SITE.
SUPPORT
PROVIDE TEMPORARY SUPPORT FOR SECTIONS OF EXISTING BUILDINGS WHICH ARE TO
BE ALTERED AND WHICH RELY FOR SUPPORT ON WORK TO BE DEMOLISHED.
ASBESTOS REMOVAL
METHOD: USE WET REMOVAL METHODS RECOMMENDED IN THE CODE OF PRACTICE FOR
THE REMOVAL OF ASBESTOS (HOHSC: 2002), INCLUDING PART 4 FOR INSULATION AND
LAGGING, AND PART 9 FOR ASBESTOS CEMENT.
MONITORING: HAVE DUST MONITORING PERFORMED BY AN INDEPENDENT TESTING
AUTHORITY.

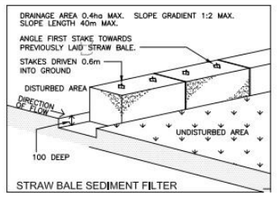
ELEMENTS TO BE REMOVED

NOTES

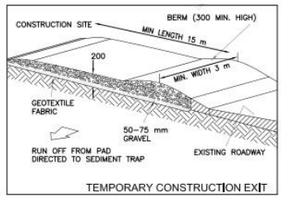
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DEMOLITION SPECIFICATION, SCHEDULES, ENVIRONMENTAL MANAGEMENT PLAN & DA CONSENT CONDITIONS THE PUBLIC FOOTWAYS & ROADWAYS ADJACENT TO THE SITE SHALL BE MAITAINED AT ALL TIMES DURING THE COURSE OF THE WORK IN A SAFE CONDITION. LIGHTING, FENCING, TRAFFIC CONTROL & ADVANCED WARNING SIGNS SHALL BE PROVIDED FOR THE PROTECTION OF THE WORKS & THE SAFETY & CONVENIENCE OF THE PUBLIC TO THE SATISFACTION OF THE PCA & IN ACCORDANCE WITH COUNCIL'S STANDARD SPECIFICATION FOR ENGINEERING WORKS. TRAFFIC MOVEMENT IN BOTH DIRECTIONS ON PUBLIC ROADS , AND VEHICLE ACCESS TO PRIVATE PROPERTIES IS TO BE MAINTAINED AT ALL TIMES DURING THE WORKS

CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS WILL INSTALL, MAINTAIN & IMPLEMENT SOIL &
SEDIMENT CONTROL MEASURES AT ALL TIMES. THE MEASURES TO REMAIN IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAVE BEEN COMPLETED & THE SITE FULLY STABILISED, REFER TO HYDRAULIC ENGINEER'S SEDIMENT CONTROL PLAN DRAWING 0708 SCP:01REVISION B ISSUED 25/07/07. TOILET FACILITIES TO BE PROVIDED DURING DEMOLITION & CONSTRUCTION, AT A RATE OF 1 TOILET TO 20 PERSONS OR PART PERSONS ON SITE. DEMOLITION MUST BE UNDERTAKEN IN ACCORDANCE WITH PROVISIONS OF AS2601- DEMOLITION OF STRUCTURES. ALL EXISTING WALL FIXINGS, EXPOSED SERVICES, WIRING ETC. NOT REUSED TO BE CAPPED OFF & MADE SAFE, IN ACCORDANCE WITH DEMOLITION SPECIFICATION. ALL FILL & VEGETATION TO EXISTING PLANTERS TO BE REMOVED & ANY SERVICE CAPPED WHERE WALLS ARE TO BE REMOVED & NOT REPLACED, THE EXISTING WALLS TO BE MADE GOOD WORK MUST SATISFY APPLICABLE OCCUPATIONAL HEALTH & SAFETY, & CONSTRUCTION SAFETY REGULATIONS, INCLUDING ANY WORK COVER AUTHORITY REQUIREMENTS. SITE FENCE TO BE INSTALLED TO EXCLUDE PUBLIC FROM SITE. SAFETY SIGNS MUST BE ERECTED TO WARN PUBLIC TO KEEP OFF SITE AND PROVIDE A TELEPHONE CONTACT NUMBER FOR ENQUIRIES. WORK COVER AUTHORITY TO BE NOTIFIED IMMEDIATELY IF ANY PART OF THE BUILDING BEING DEMOLISHED OR REMOVED IS IDENTIFIED OR SUSPECTED OF CONTAINING ASBESTOS. THE REQUIREMENTS & STANDARDS IMPOSED BY THE AUTHORITY, ITS CONSULTANTS OR CONTRACTORS SHALL BE COMPLIED WITH. IF REQUIRED CONTRACTOR SHALL ENGAGE QUALIFIED CONSULTANT TO UNDERTAKE ASBESTOS & LEAD PAINT CONTAMINATION SURVEY DEMOLITION WORKS SHALL BE RESTRICTED TO WITHIN THE HOURS OF 8.00AM TO 5.00PM MONDAY TO FRIDAY ONLY. THE BUILDER SHALL DISPLAY ON-SITE, THEIR 24 HOUR CONTACT NUMBER, WHICH IS CLEARLY VISIBLE & LEGIBLE FROM ANY PUBLIC PLACE ADJOINING THE SITE NOISE EMISSIONS & VIBRATIONS TO BE MINIMISED WHERE POSSIBLE & WORK TO BE CARRIED OUT IN ACCORDANCE WITH EPA GUIDLINES & COMPLY WITH THE PROTECTION OF THE ENVIRONMENTAL OPERATIONS ACT 1997. ALL PLANT & EQUIPMENT USED DURING DEMOLITION SHALL BE SITUATED WITHIN THE BOUNDARIES OF THE SITE AND PLACED SO THAT ALL SLURY, WATER AND DEBRIS SHALL BE DISCHARGED & CONTAINED ON SITE. ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA)
ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO COMMENCING WORK

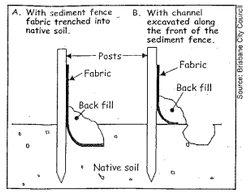


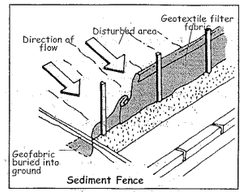
STRAW BALE SEDIMENT FILTER



TEMPORARY CONSTRUCTION EXIT

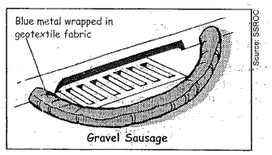
- **Sediment Fences** should be installed downslope to treat site run-off.
- To be effective they need to be installed properly and maintained regularly.

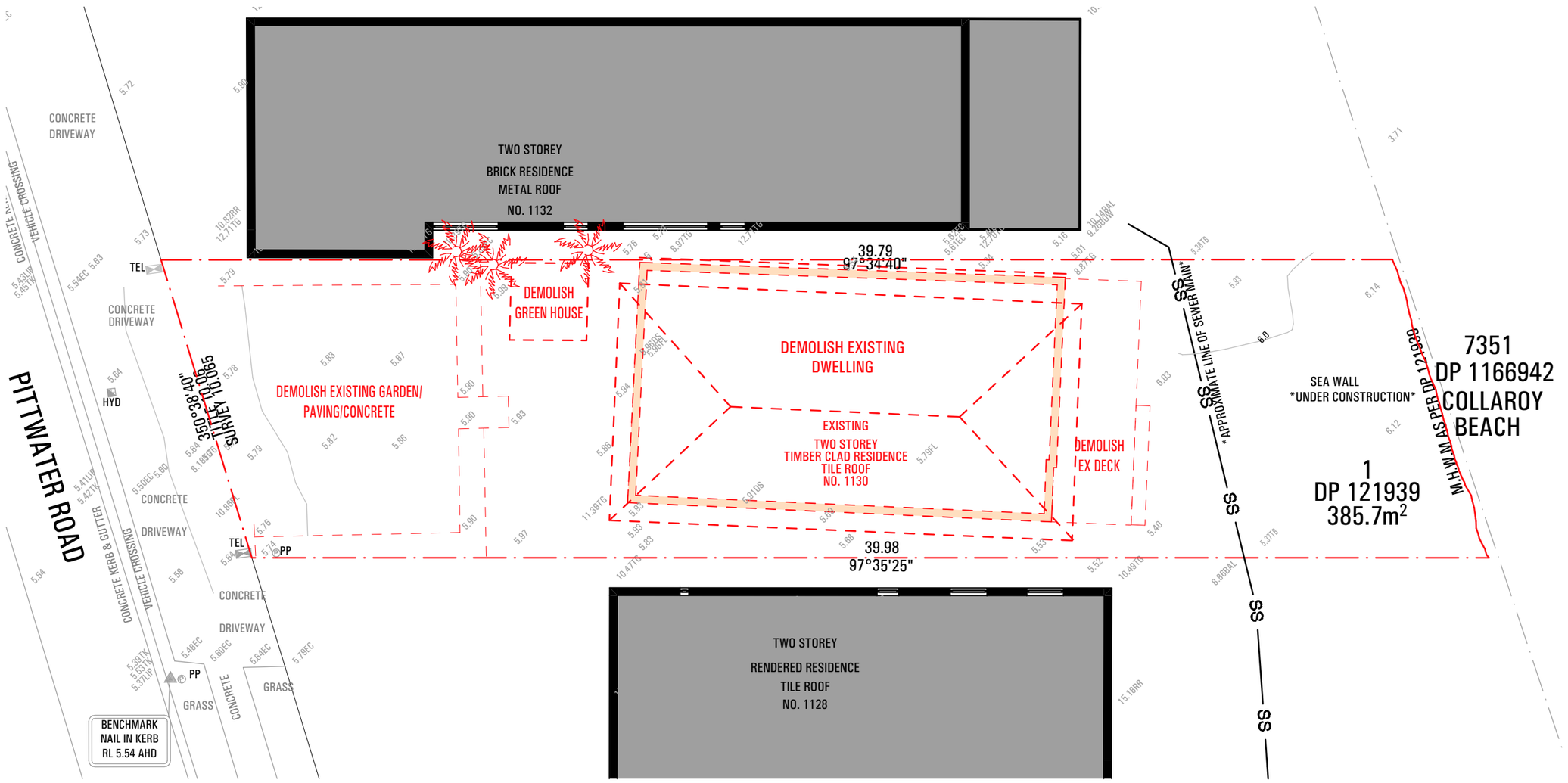




Gutter Protection

As a precautionary measure, sediment controls such as gravel sausages, gravel bags or sand bags should be installed around stormwater inlets if there is a risk of untreated run-off entering the waterways.





Demolition Plan
1:150

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD
COLLAROY
drawing DEMOLITION PLAN
drawn SM / PC checked MA
date 09.02.24 scale 1:150 @ A3
project no 2_23_10 drawing no D1000 issue D

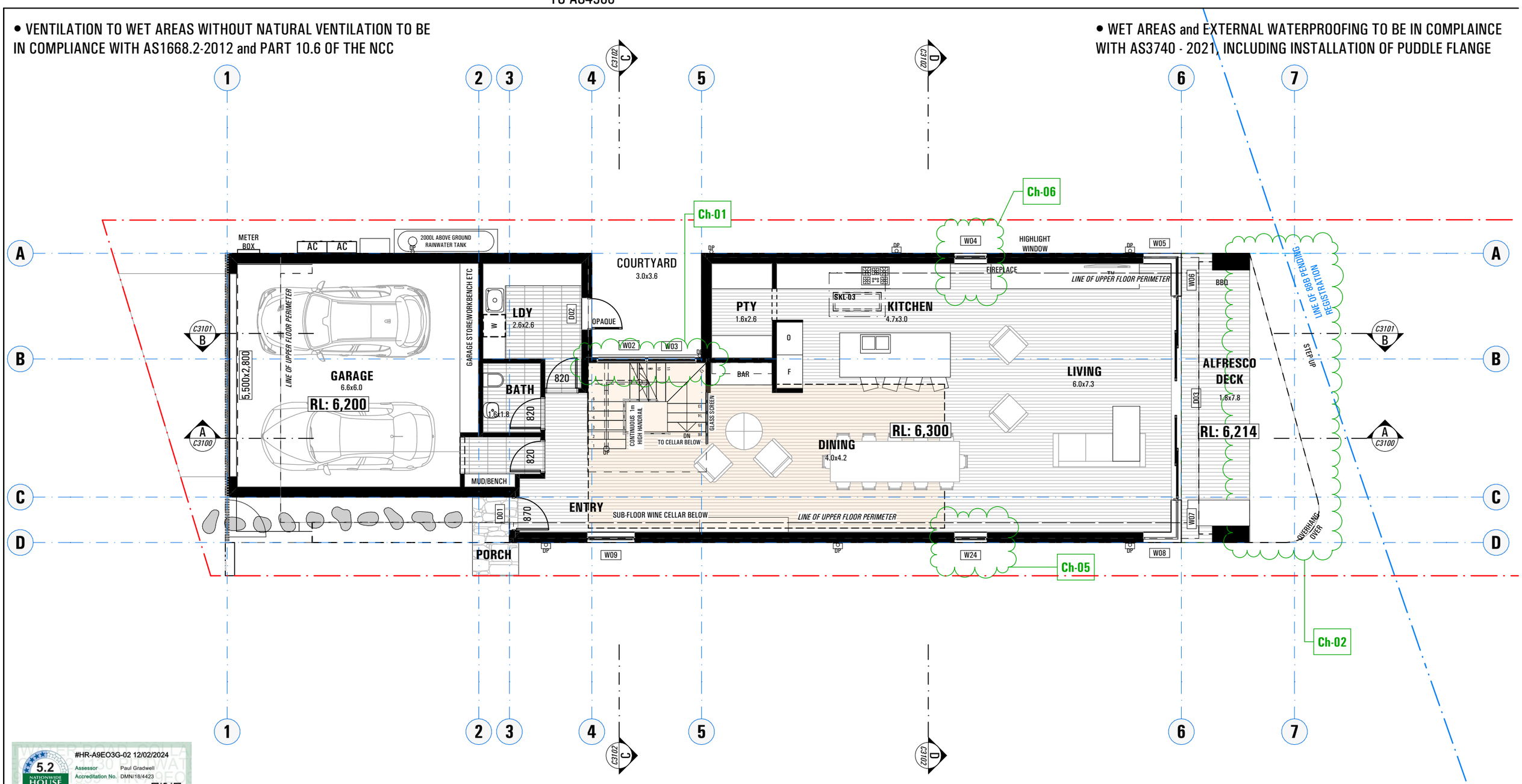
NOTE:
• CONDENSATION MANAGEMENT REQUIREMENTS TO BE IN ACCORDANCE WITH AS4200.1 and AS4200.2

NOTE:
• STAIR TREAD and NOSING STRIP TO BE IN COMPLIANCE WITH AS4586-2013 & PART 11.2 HOUSING PROVISIONS and SLIP RESISTANCE TO AS4586

NOTE:
• INSTALLATION OF FIREPLACE TO BE IN COMPLIANCE WITH AS2918 - 2018

• VENTILATION TO WET AREAS WITHOUT NATURAL VENTILATION TO BE IN COMPLIANCE WITH AS1668.2-2012 and PART 10.6 OF THE NCC

• WET AREAS and EXTERNAL WATERPROOFING TO BE IN COMPLAINCE WITH AS3740 - 2021, INCLUDING INSTALLATION OF PUDDLE FLANGE



#HR-A9EO3G-02 12/02/2024
5.2 NATIONWIDE HOUSE ENERGY RATING SCHEME
63.1 MJ/m²
www.nathers.gov.au
Assessor Paul Gradwell
Accreditation No. DMN/18/4423
Address 1130 Pittwater Road, Collaroy, NSW, 2097
http://www.hero-software.com.au/pdf/HR-A9EO3G-02

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

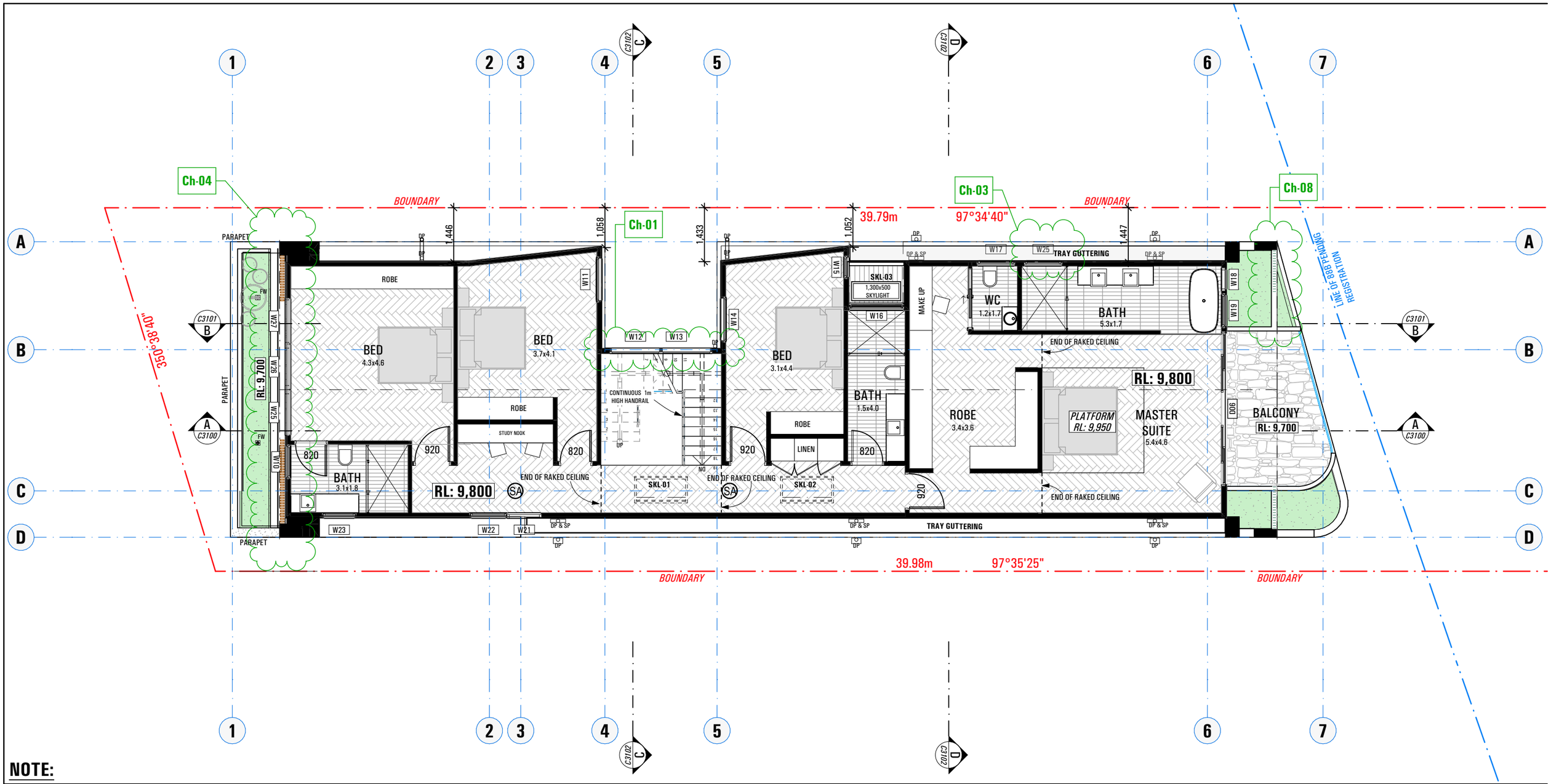
S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY
S4.55 MODIFICATION

project 1130 PITTWATER RD
COLLAROY
drawing GROUND PLAN
drawn SM / PC checked MA
date 09.02.24 scale @ A3
project no 2_23_10 drawing no D2100 issue D



NOTE:

- CONDENSATION MANAGEMENT REQUIREMENTS TO BE IN ACCORDANCE WITH AS4200.1 and AS4200.2
- VENTILATION TO WET AREAS WITHOUT NATURAL VENTILATION TO BE IN COMPLIANCE WITH AS1668.2-2012 and PART 10.6 OF THE NCC
- STAIR TREAD and NOSING STRIP TO BE IN COMPLIANCE WITH AS4586-2013 & PART 11.2 HOUSING PROVISIONS and SLIP RESISTANCE TO AS4586

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

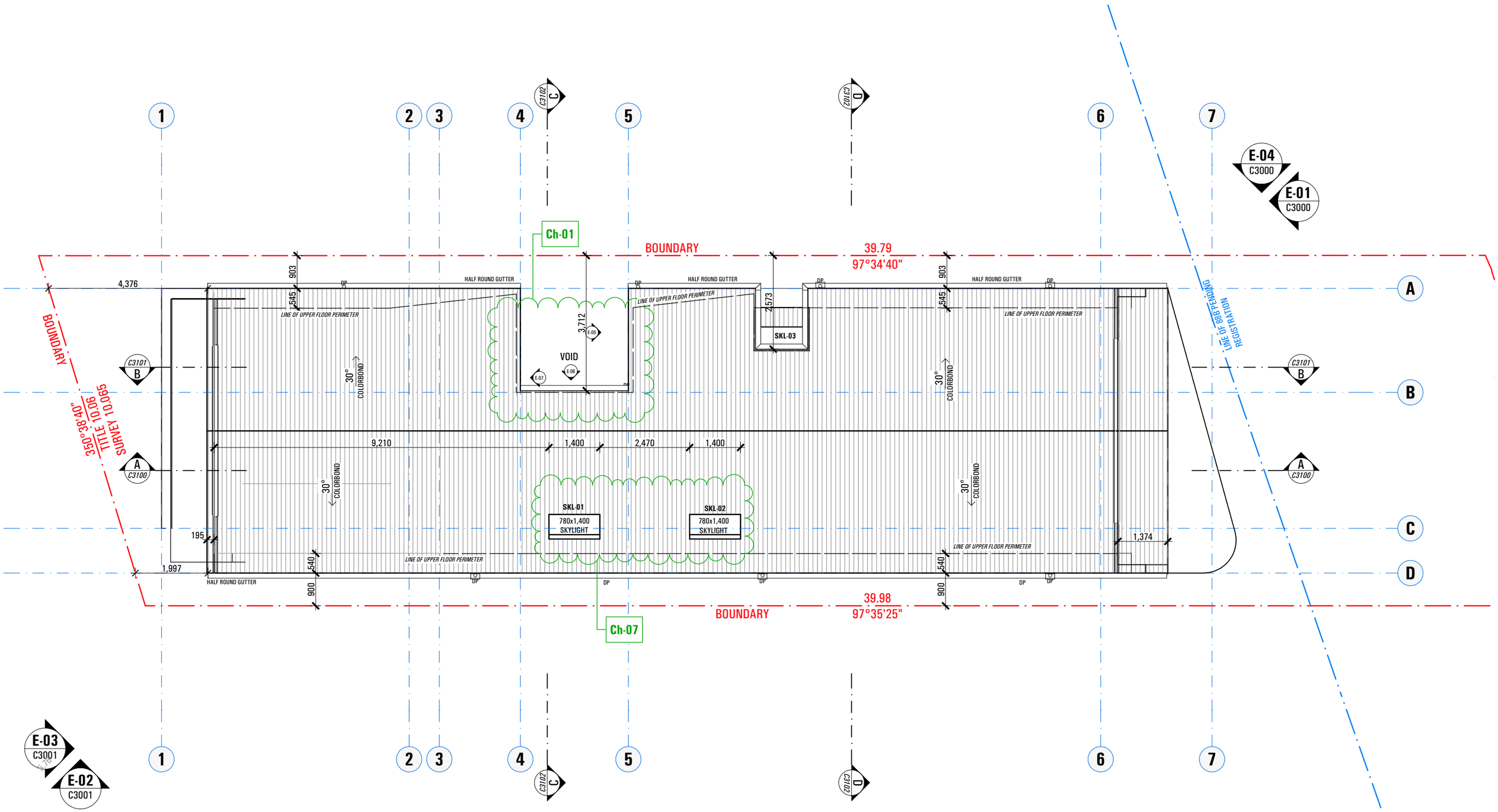
project 1130 PITTWATER RD
COLLAROY

drawing FIRST FLOOR PLAN

drawn SM / PC checked MA

date 09.02.24 scale @ A3

project no 2_23_10 drawing no D2101 issue D



BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

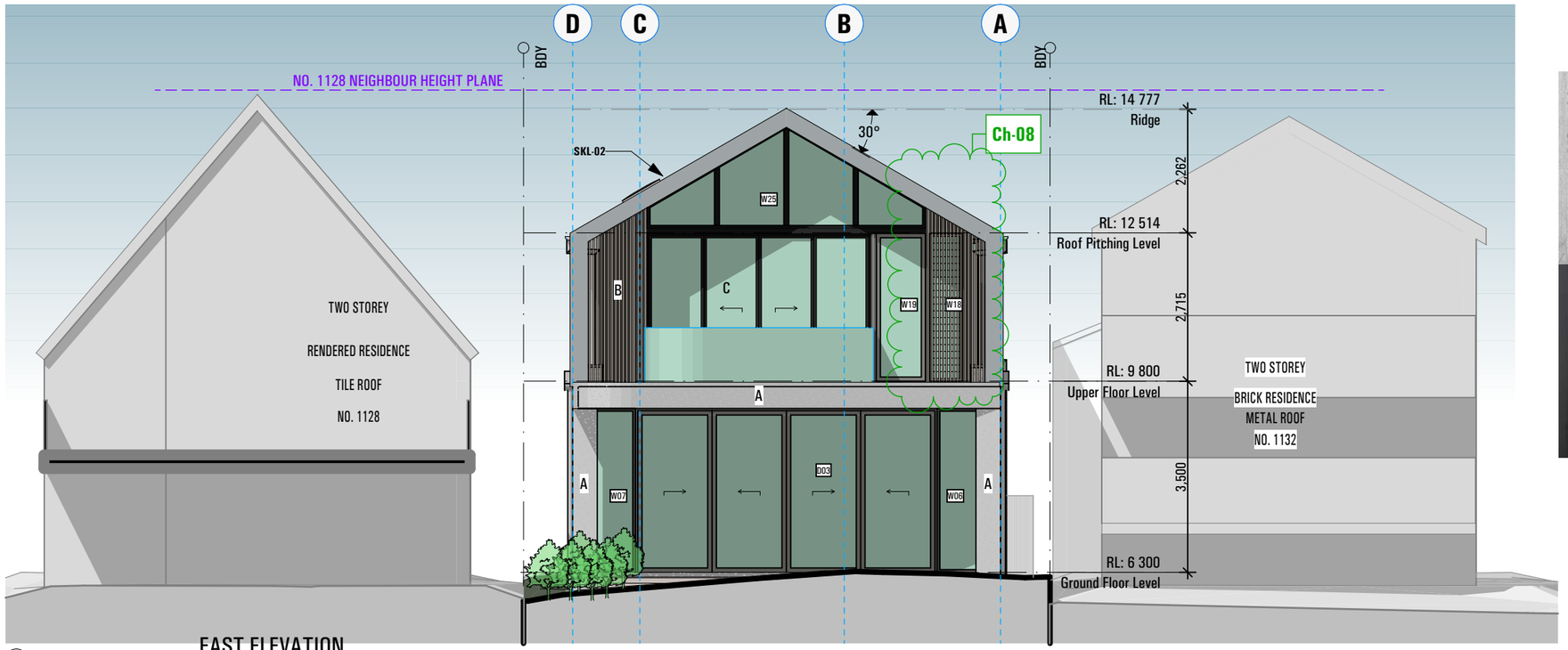
project 1130 PITTWATER RD COLLAROY

drawing ROOF PLAN

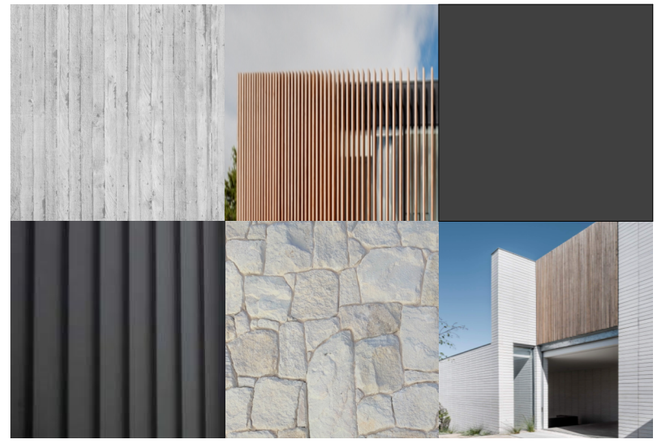
drawn SM / PC checked MA

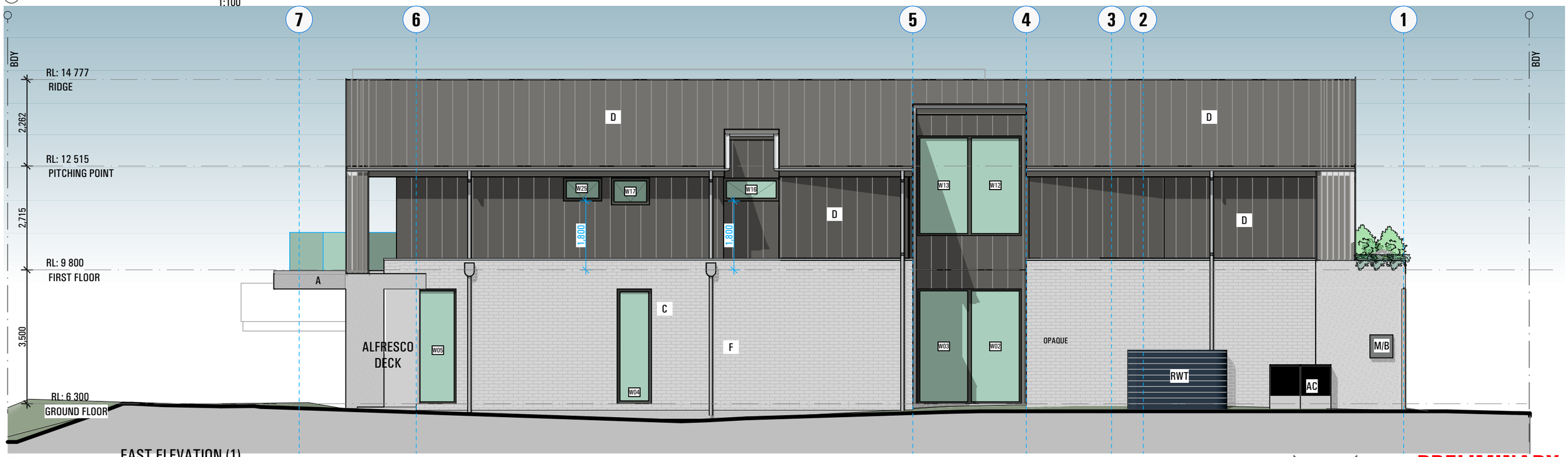
date 09.02.24 scale 1:100 @ A3

project no 2_23_10 drawing no D2102 issue D



EAST ELEVATION
1:100





EAST ELEVATION (1)
1:100

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS

Nominated NSW Architects Reg. 9401 - Mark P. Alves

Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110

ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

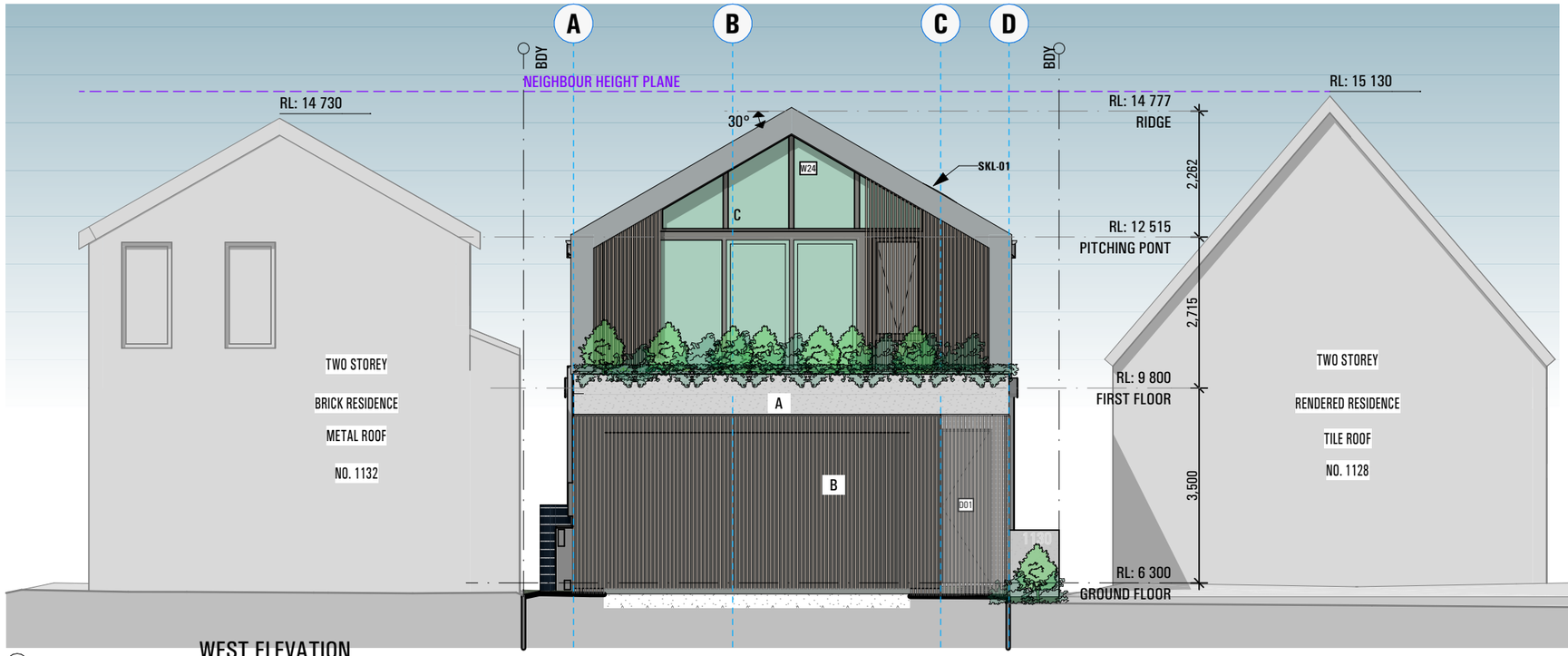
project 1130 PITTWATER RD
COLLAROY

drawing NORTH/EAST ELEVATION

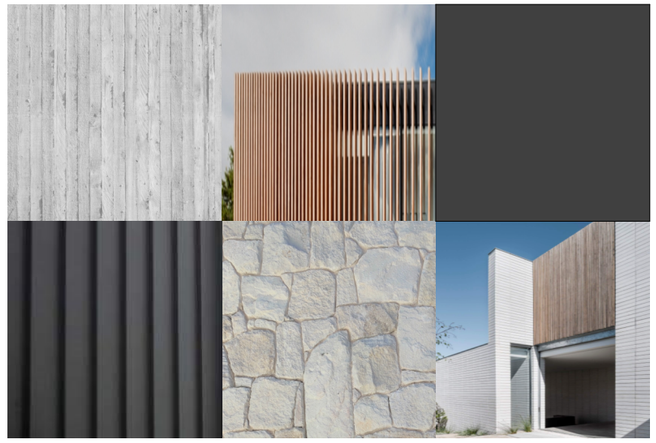
drawn SM / PC checked MA

date 09.02.24 scale 1:100 @ A3

project no 2_23_10 drawing no D3000 issue D



WEST ELEVATION
1:100



SOUTH ELEVATION
1:100

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

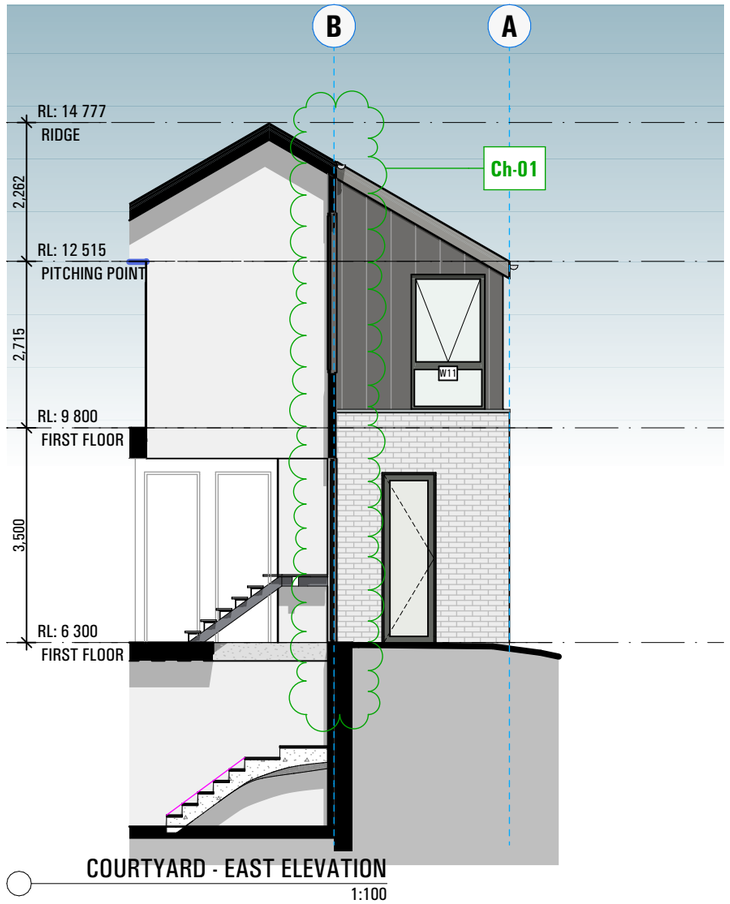
NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 · Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

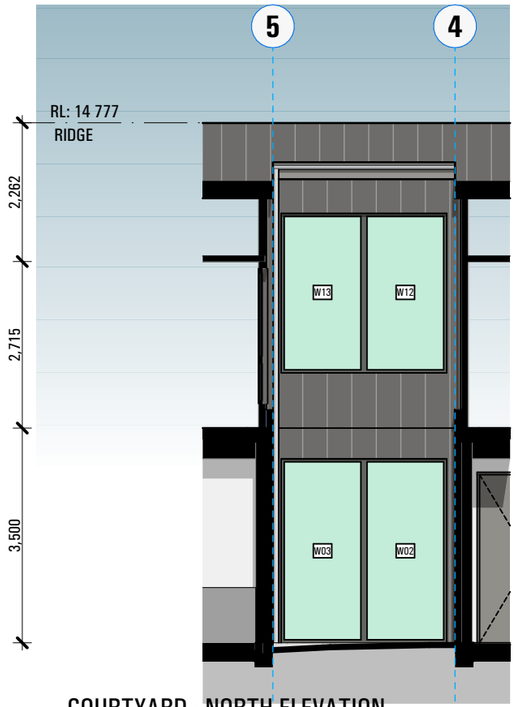
PRELIMINARY

S4.55 MODIFICATION

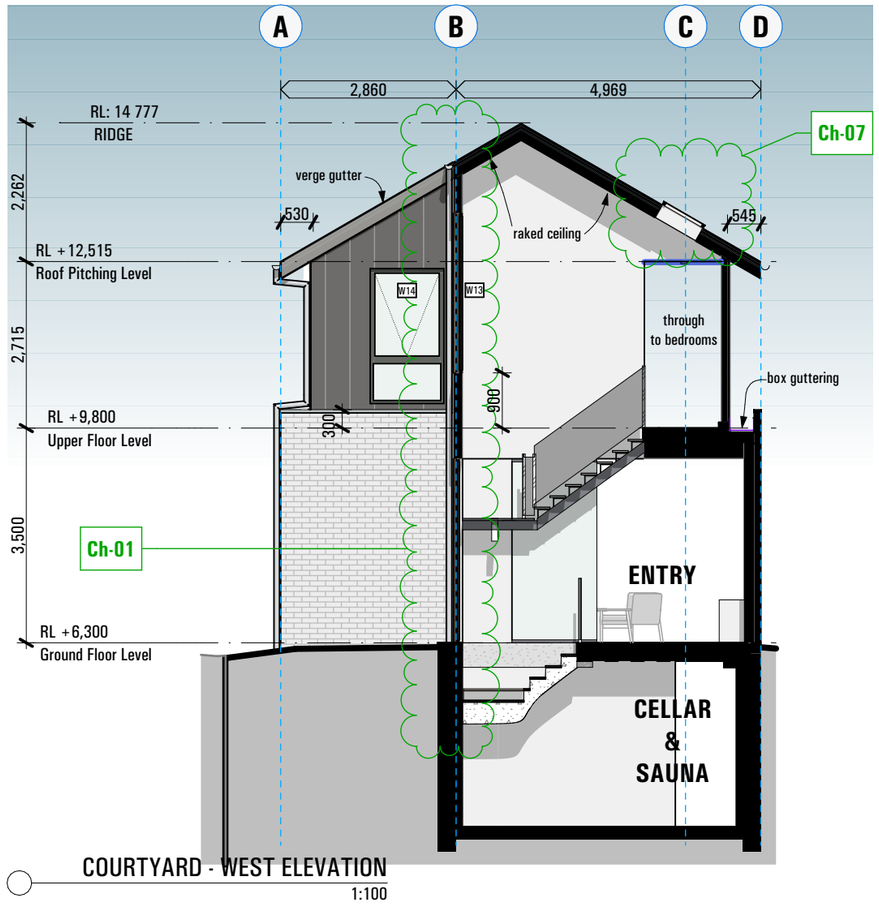
project 1130 PITTWATER RD
COLLAROY
drawing SOUTH/WEST ELEVATION
drawn SM / PC checked MA
date 09.02.24 scale 1:100 @ A3
project no 2_23_10 drawing no D3001 issue D



COURTYARD - EAST ELEVATION
1:100



COURTYARD - NORTH ELEVATION
1:100



COURTYARD - WEST ELEVATION
1:100

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

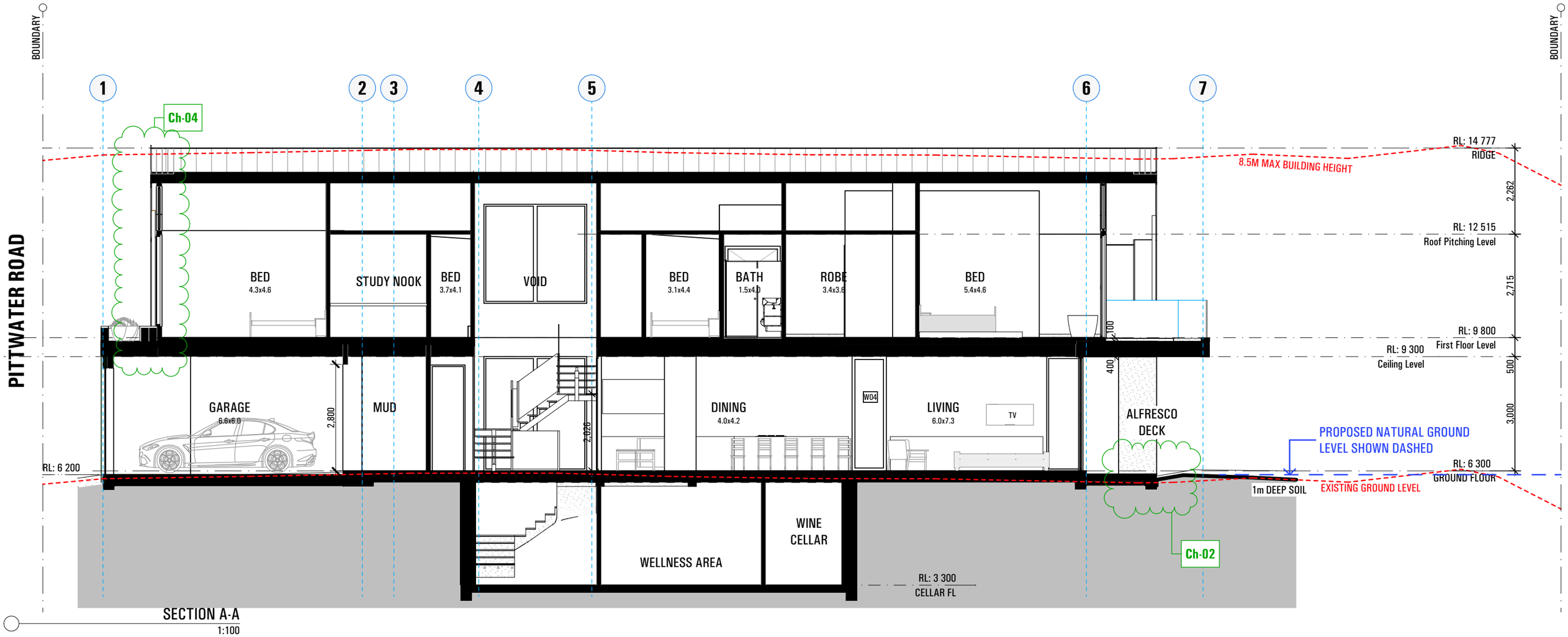
NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

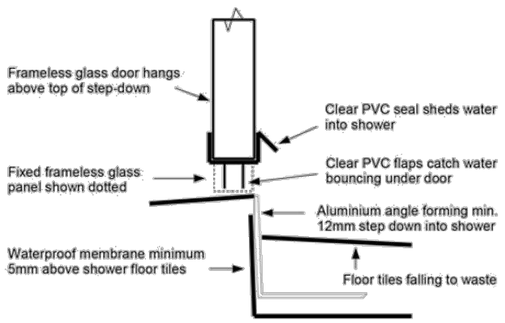
PRELIMINARY

S4.55 MODIFICATION

project	1130 PITTWATER RD COLLAROY
drawing	COURTYARD ELEVATIONS
drawn	SM / PC
checked	MA
date	09.02.24
scale	1:100 @ A3
project no	2_23_10
drawing no	D3002
issue	D



SECTION A-A
1:100



TYPICAL DETAIL - WATERPROOFINGTO OPENING SHOWER

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

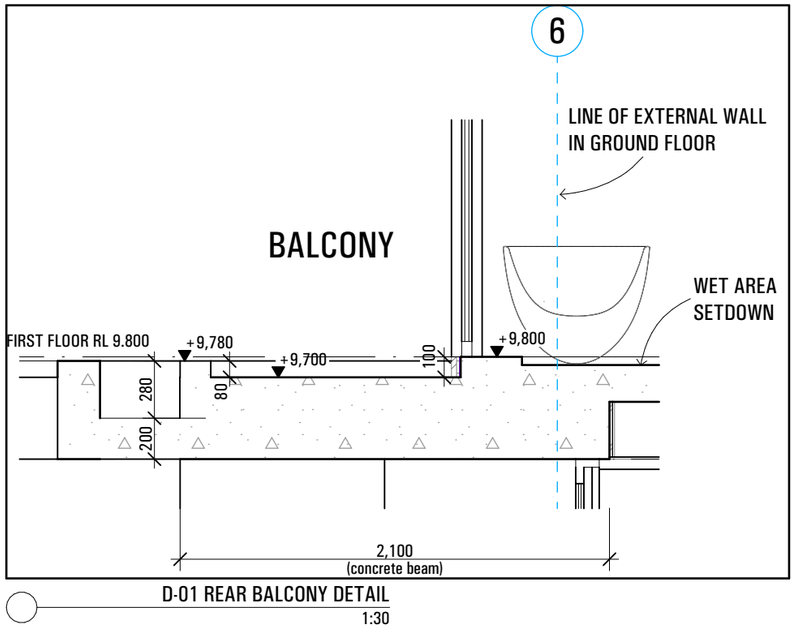
NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

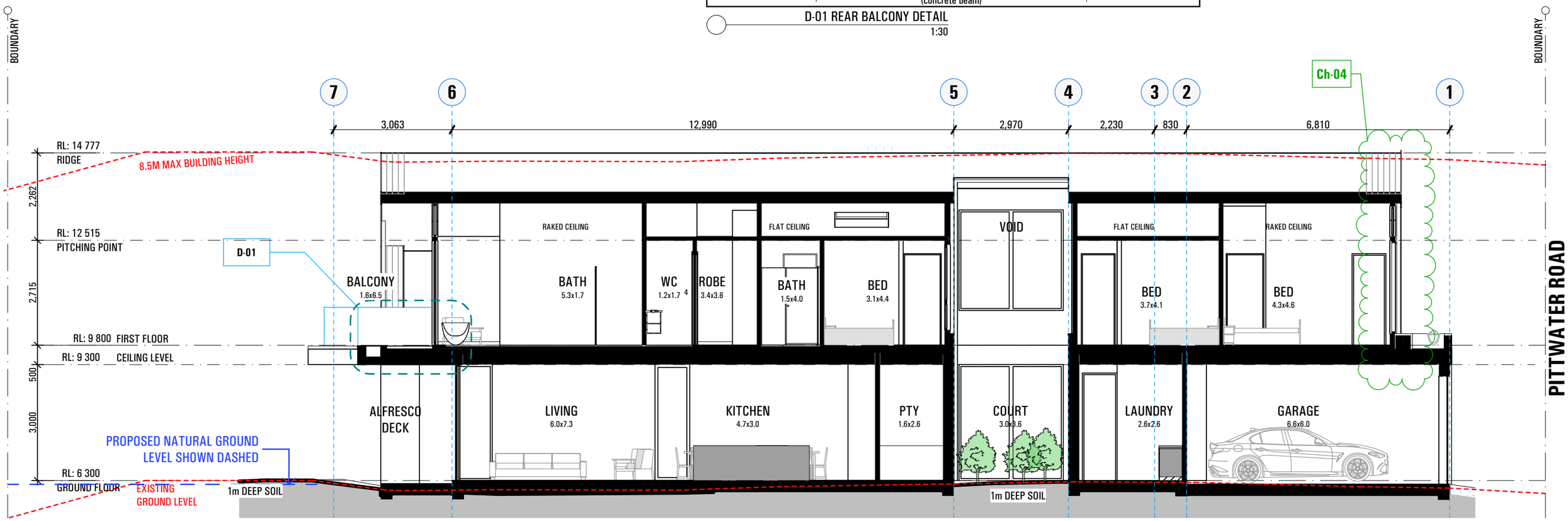
PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD
COLLAROY
drawing SECTION AA
drawn SM / PC checked MA
date 09.02.24 scale 1:100 @ A3
project no 2_23_10 drawing no D3100 issue D



D-01 REAR BALCONY DETAIL
1:30



SECTION B-B
1:100

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

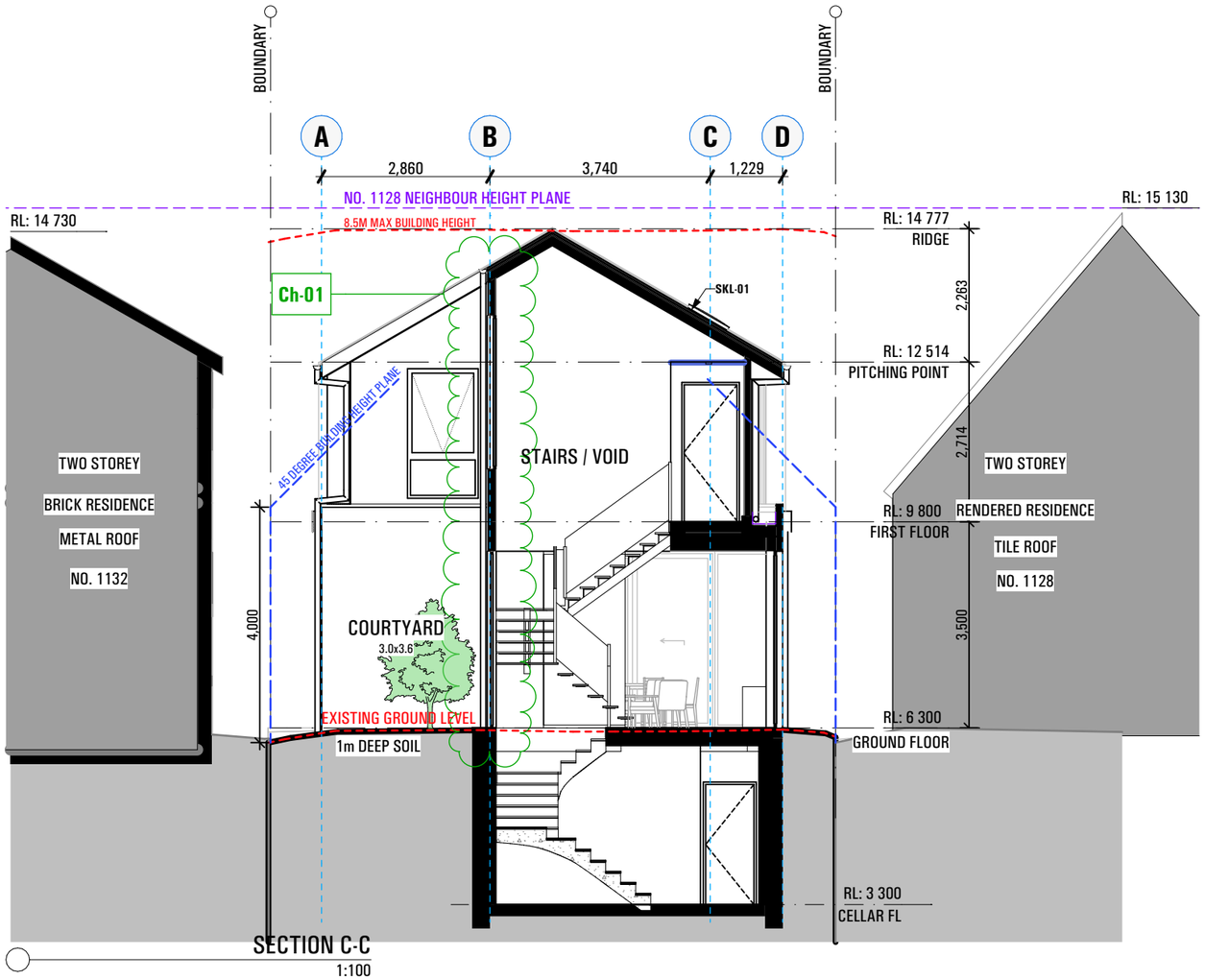
project 1130 PITTWATER RD
COLLAROY

drawing SECTION BB

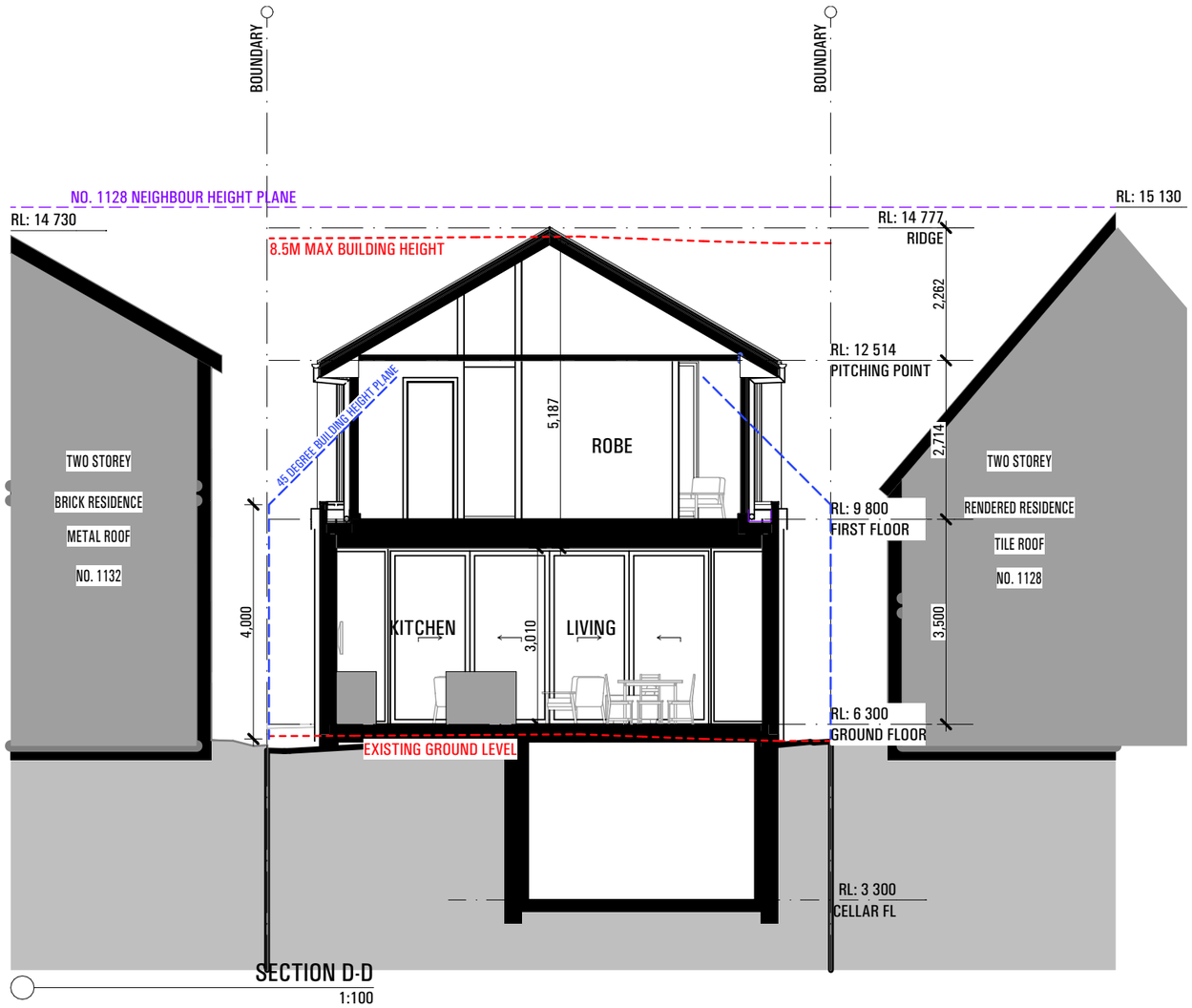
drawn SM / PC checked MA

date 09.02.24 scale 1:100, 1:30 @ A3

project no 2_23_10 drawing no D3101 issue D



SECTION C-C
1:100



SECTION D-D
1:100

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 · Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project: 1130 PITTWATER RD
COLLAROY

drawing: SECTION CC/DD

drawn: SM / PC | checked: MA

date: 09.02.24 | scale: 1:100 @ A3

project no: 2_23_10 | drawing no: D3102 | issue: D

DEVELOPMENT SCHEDULE

SITE AREA	385.70m²	
BUILDING FOOTPRINT		
ALLOWABLE:	128.40m²	(33.3% x SITE AREA)
EXISTING:	125.38m²	(32%)
PROPOSED:	184.35 m²	(48%)
DEEP SOIL LANDSCAPING		
REQUIRED:	154.28m²	(40% x SITE AREA)
PROPOSED (DA Approved):	132.01m²	(34.2%)
PROPOSED (S4.55 Modification):	132.56m²	(34.4%)

LEGEND:

- BUILDING FOOTPRINT
- DEEP SOIL LANDSCAPE

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

S4.55 MODIFICATIONS	
Change ID	**Name**
Ch-01	Courtyard wall moved into courtyard
Ch-02	Alfresco deck reshaped
Ch-03	New indow to first floor bathroom (W25)
Ch-04	Western wall in first floor moved forward by 650mm & Balcony removed
Ch-05	New window to ground floor Dining (W24)
Ch-06	W04 - Kitchen window size change
Ch-07	Skylights relocated from stairwell to hallway
Ch-08	Eastern balcony screen reduced in length

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

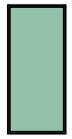
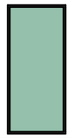
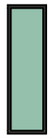
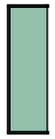
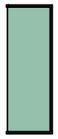
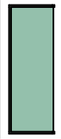
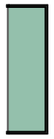
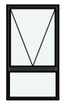
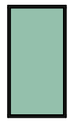
PRELIMINARY

S4.55 MODIFICATION

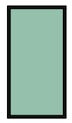
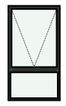
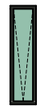
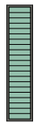
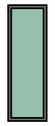
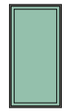
project 1130 PITTWATER RD
COLLAROY
drawing AREA SCHEDULE

drawn SM / PC checked MA
date 09.02.24 scale 1:150 @ A3
project no 2_23_10 drawing no D5000 issue D

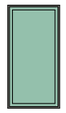
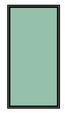
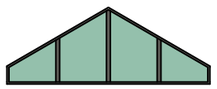
WINDOW SCHEDULE

Floor Level	Ground Floor Level								Upper Floor Level		
ID	W02	W03	W04	W05	W06	W07	W08	W09	W10	W11	W12
Height	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	2,700	2,200	2,600
Width	1,350	1,350	900	900	1,020	1,010	900	1,300	900	1,200	1,350
Elevation											
Glass	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass, obscure	Glass - Clear Fast	Glass - Clear
Quantity	1	1	1	1	1	1	1	1	1	1	1

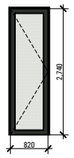
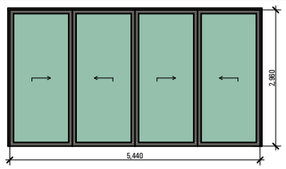
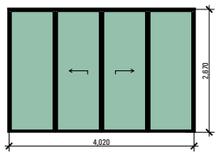
WINDOW SCHEDULE

Floor Level	Upper Floor Level											
ID	W13	W14	W15	W16	W17	W18	W19	W21	W22	W23	W25	W25
Height	2,600	2,200	2,300	600	700	2,700	2,700	2,000	2,000	700	600	2,400
Width	1,350	1,200	600	1,450	1,000	600	900	900	1,000	900	1,000	1,210
Elevation												
Glass	Glass - Clear	Glass - Clear Fast	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear
Quantity	1	1	1	1	1	1	1	1	1	1	1	1

WINDOW SCHEDULE

Floor Level	Upper Floor Level		Raked Ceiling Level	
ID	W26	W27	W24	W25
Height	2,400	2,400	1,786	1,886
Width	1,210	1,210	4,730	5,090
Elevation				
Glass	Glass - Clear	Glass - Clear	Glass - Clear	Glass - Clear
Quantity	1	1	1	1

DOOR SCHEDULE

Floor Level	Ground Floor Level			Upper Floor Level
ID	D01	D02	D03	D06
Height	2,740	2,740	3,000	2,700
Width	870	820	5,520	4,080
Elevation				
Quantity	1	1	1	1

WINDOW AND DOOR POWDERCOAT COLOUR - BLACK

DOOR HARDWARE NOTES:

- The hardware distributor will need to confirm all handling of all products from the latest floor plans prior to the ordering of any hardware. This includes, but is not limited to, all handed locks, furniture, offset pivots, lift-off hinges, etc.
- All door hardware must be checked with the relevant manufacturer for suitability and availability by the hardware distributor prior to ordering of the hardware.
- A new restricted Master Keying system is to be allowed for. The builder is to allow for the master keyed cylinders to be installed on completion of the project. Final master key requirements and cut key quantities are to be provided by the client at a later date. 1 key per cylinder.
- Temporary construction keyed cylinders are to be allowed for on all key lockable doors for the duration of the construction period. The hardware distributor should allow for 4 construction keys. The builder should liaise with the hardware distributor regarding the supply of non-standard construction cylinder. The builder should organise and allow for the cost of the change over from temporary construction cylinders to the final master keyed cylinders.
- Where aluminium louvres or glazed doors have been specified, the aluminium fabricator is to ensure suitable sections have been allowed for to accommodate the door hardware. This includes, but is not limited to, door closers, transom closers, locks (114mm minimum section for standard mortice locks), lever furniture, bolts, etc. The hardware distributor is to confirm these details with the builder and/or aluminium fabricator prior to ordering.
- Where door seals have been specified, the hardware distributor will need to confirm the seal sizes and types are compatible with the actual door type, door widths and heights prior to ordering.
- Where seals have been specified to match acoustic requirements, the acoustic consultant is to confirm these seals are suitable to achieve the acoustic ratings required. The door hardware may need to be altered if different seals are used.
- Where seals have been specified to smoke doors, the fire / smoke door contractor is to confirm these seals are suitable to comply with the AS and BCA requirements for this project. The door hardware may need to be altered if different seals are used.
- Where doors to a WC are specified it has been assumed that the door is the required distance from the toilet pan to comply with BCA regulations.
- Where lift-off hinges have been specified, the door and frame configuration will need to be confirmed as suitable. The door will need to be undercut and overcut to allow for the 'lift off' function. The frame may require a larger rebate to hide the overcut in the door.
- Where access control and security products have been scheduled they are only indicatively. For full details and specifications refer to the relevant security/electrical documentation. The electronic products included should be checked and coordinated with the information shown on the electrical documentation to ensure adequate power and cabling has been allowed for. The builder is to confirm that the electronic products are to be part of the hardware distributor's package.
- Signage has not been included in this door hardware schedule.

SKYLIGHTS SCHEDULE

ID	Opening W x H Size
SKL-01	1,400 × 780
SKL-02	1,400 × 780
SKL-03	1,300 × 500

SPECIFICATION NOTES:

- ALL WINDOWS ARE EXTERNAL VIEWS.
- ALL TIMBER DOORS, 35mm SOLID TIMBER, PAINTED FINISH.
- CONFIRM ALL DIMENSIONS ON SITE BEFORE MANUFACTURE & PROVIDE SHOP DRAWINGS.
- ALL FRAME SECTIONS TO SUIT THE REQUIRED GLASS TYPE.
- PROFILE APPEARANCE TO BE CONSISTENT.
- ALL DIMENSIONS ARE STRUCTURAL OPENINGS ALLOW FOR TOLERANCE & SUBFRAMING AS REQUIRED.
- WINDOWS RESTRICTED TO 125mm MAX. OPENING AS INDICATED. (Protection of openable window details, BCA 3.9.2.6 and BCA 3.9.2.7)
- TRANSLUCENT GLASS TO ALL BATHROOMS.
- LOCKS KEYED ALIKE TO OTHER LOCKS.
- LEVER TYPE DOOR HARDWARE TO ALL DOORS TO COMPLY WITH BCA AND AS
- REFER TO FLOOR PLANS FOR INDIVIDUAL DOOR OPENING DIRECTIONS
- TO BE READ IN CONJUNCTION WITH SPECIFICATIONS & BASIX.
- ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA)
- ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL CONSULTANTS AND CONTRACTORS DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.
- ALL OPENING SASHES TO BE FITTED WITH ALU FRAMED STANDARD MESH FLYSCREENS.
- **ALL GLAZING TO COMPLY WITH BASIX REQUIREMENTS and CERTIFICATE No.1412073S_02**
- **SAFETY GLAZING COMPLIANCE DETAILS FOR WINDOWS, DOORS, SIDELIGHTS AND SHOWERSCREENS - AS1288-2006**

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

MAP ARCHITECTS

Nominated NSW Architects Reg. 9401 - Mark P. Alves

Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110

ph: 02 8065 6975

e: mark@maparch.com.au

www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project 1130 PITTWATER RD

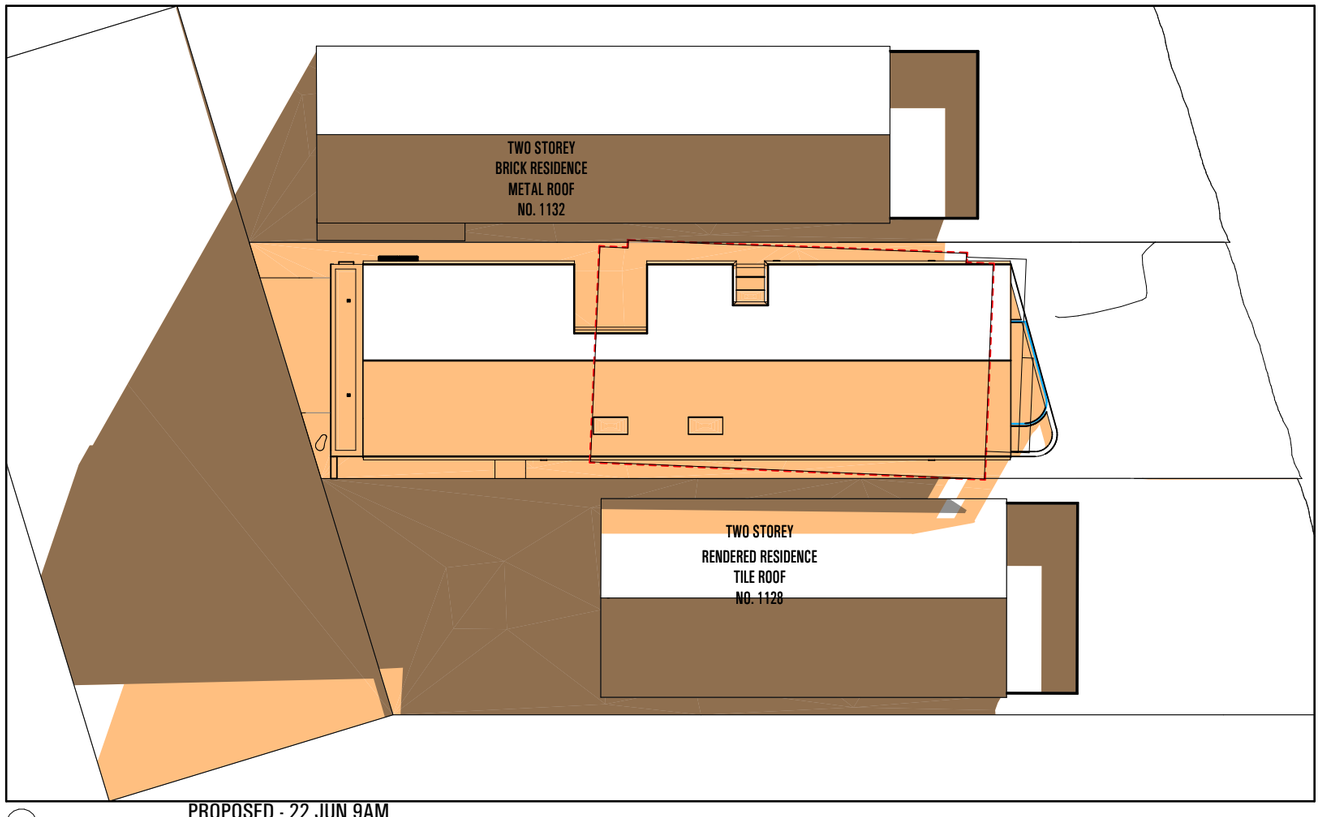
COLLAROY

drawing WINDOW/DOOR/SKYLIGHTS SCHEDULE

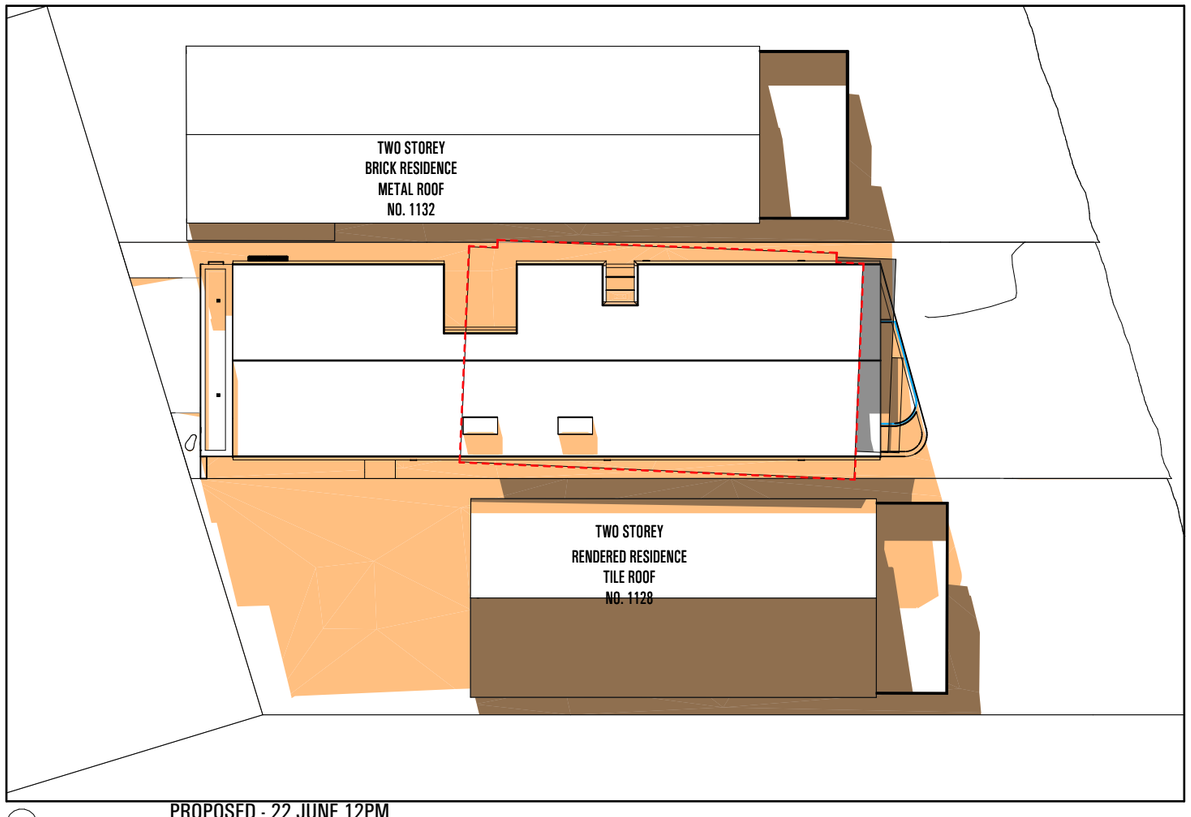
drawn SM / PC checked MA

date 09.02.24 scale

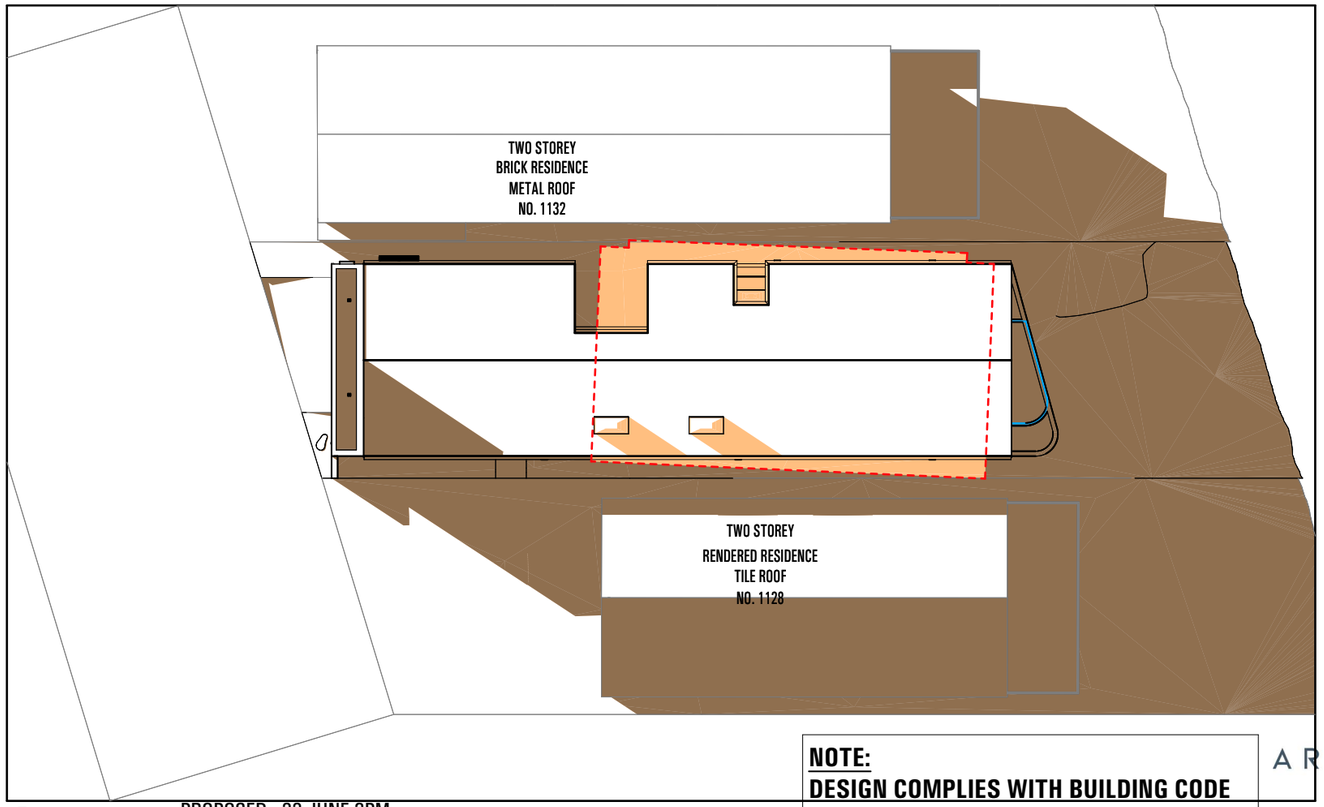
project no 2_23_10 drawing no D5001 issue D



PROPOSED - 22 JUN 9AM
1:250



PROPOSED - 22 JUNE 12PM
1:250



PROPOSED - 22 JUNE 3PM
1:250

LEGEND

- NEW SHADOWS
- EXISTING SHADOWS
- OVERLAPPING SHADOWS

BUILDER TO ALLOW FOR WALL AND FLOOR FINISHES

ISSUE	AMENDMENT	DATE
A	FOR DA	15.09.23
B	FOR DA - RFI	09.02.24
C	ISSUE FOR ENGINEERING	09.04.24
D	S4.55 MODIFICATION	16.05.24

NOTES

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA) ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT.

This drawing is issued as a preliminary concept design and must not be used for construction, cost estimation or any purpose other than for preliminary design purposes, unless noted as 'for construction'.Do not scale off this drawing, use figured dimensions where provided, verify all dimensions on site.

NOTE:
DESIGN COMPLIES WITH BUILDING CODE OF AUSTRALIA 2022 & ABCB HOUSING PROVISIONS - FOR CONSTRUCTION

MAP ARCHITECTS
Nominated NSW Architects Reg. 9401 - Mark P. Alves
Suite 4, Building B, 37 Alexandra St. Hunters Hill 2110
ph: 02 8065 6975
e: mark@maparch.com.au
www.maparch.com.au

PRELIMINARY

S4.55 MODIFICATION

project: 1130 PITTWATER RD
COLLAROY

drawing: SHADOW DIAGRAMS

drawn: SM / PC
checked: MA
date: 09.02.24
scale: 1:250 @ A3
project no: 2_23_10
drawing no: D4000
issue: D

Appendix B

Soil & Rock Descriptions Sheets

Borehole Logs (BH1 and BH2)

Photographs of Subsurface Material

Soil & Rock Descriptions

The methods of descriptions and classifications used by Nepean Geotechnics in this report are in general accordance with Australian Standard AS1726 -1993 as detailed in the following tables:

Soil Classification

Grading

Term		Particle Size(mm)
Coarse Grained Soils (more than 50% of material is larger than 0.075mm)	Boulders	>200
	Cobbles	63 – 200
	Gravels	2.36 – 63
	Sand	0.075 – 2.36
Fine Grained Soils (more than 50% of material is smaller than 0.075mm)	Silt	0.002 – 0.075
	Clay	<0.002

Consistency (Cohesive Soils)

Term	Undrained Shear Strength (kPa)	Field Guide to Consistency
Very soft	≤ 12	Exudes between the fingers when squeezed in hand
Soft	>12 ≤25	Can be moulded by light finger pressure
Firm	>25 ≤50	Can be moulded by strong finger pressure
Stiff	>50 ≤100	Can not be moulded by fingers/can be indented by thumb
Very stiff	>100 ≤200	Can be indented by thumb nail
Hard	>200	Can be indented with difficulty by thumb nail

Consistency (Non-Cohesive Soils)

Term	Density Index (%)
Very loose	≤ 15
Loose	>15 ≤35
Medium dense	>35 ≤65
Dense	>65 ≤85
Very dense	>85

Rock Classification

Strength of Rock Material

Term	Letter Symbol	Point Load Index, Is_{50} (MPa)	Filed Guide to Strength
Extremely low	EL	≤0.03	Easily remoulded by hand to a material with soil properties
Very low	VL	>0.03 ≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; pieces up to 3 cm thick can be broken by finger pressure
Low	L	>0.1 ≤0.3	Easily scored with a knife; indentations 1 – 3 mm show in the specimen with firm blows of the pick point; a piece of core 150 mm long may be broken by hand
Medium	M	>0. 3 ≤1.0	Readily scored with a knife; a piece of core 150 mm long can be broken by hand with difficulty
High	H	>1 ≤3	A piece of core 150 mm long cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer
Very high	VH	>3 ≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer

Rock Material Weathering Classification

Term	Letter Symbol	Filed Guide to Strength
Residual soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely weathered	XW	Rock is weathered to such an extent that has 'soil' properties (i.e. either disintegrated or can be remoulded in water)
Highly weathered	HW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually be ironstaining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering in pores
Slightly weathered	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock
Fresh rock	FR	Rock shows no sign of decomposition or staining

Nepean Geotechnics Pty Ltd
ABN 45 626 934 389
15 Henry Place, Narellan Vale NSW 2567
Email: info@nepeangeotechnics.com.au
Phone: 0447 280 042

Borehole Log

Client:	Azzwic Holdings Pty Ltd	**Surface Level:**	(Approx.) RL 5.9 m	**Job No. :**	R23146
Project:	Proposed Residential Development	**South:**	Refer to	**Borehole:**	BH1
Location:	1130 Pittwater Road, Collaroy	**Easting:**	site plan	**Date:**	21-July-2023
		Logged/Checked by:	RM	**Sheet:**	1 of 2

Method	Groundwater	Sample	PSP	SPT	RL	Depth (m)	Classification Symbol	Material Description	Moisture Content	Consistency	Pocket Penetrometer (kPa)	Origin
Solid Flight Auger			1 1				SM	SILTY SAND grey, dry to moist, loose	D/M	L		Topsoil
			2 1				SP	SAND/SILTY SAND light brown, dry to moist, loose fine grained sand	D/M	L		Natural
			2 2 2			0.5						
			3 3				SP	SAND light brown, dry to moist, medium dense, fine grained sand	D/M	MD		Natural
			3 3			1.0						
			3 3 4				SP	SAND light brown/yellow, dry to moist, medium dense to dense, fine grained sand	D/M	MD/D		Natural
			4 5			1.5						
			6 6 7									
			5 4			2.0						
			3 4									
			4 4			2.5						
			5 5									
			7 6									
			7 10			3.0	SP	SAND light brown/yellow, dry to moist, dense, fine to medium coarse grained sand	D/M	D		Natural
			12 12									
			12 12			3.5						
			12 12									
			12 12			4.0						
			12									
						4.5	SP	SAND light brown/yellow, dry to moist, dense, fine to medium coarse grained sand, with medium coarse shells fragments	M	D		Natural
						5.0						

Rig: Ute Mounted Christie Rig

Water Observations: N/A

Nepean Geotechnics Pty Ltd
ABN 45 626 934 389
15 Henry Place, Narellan Vale NSW 2567
Email: info@nepeangeotechnics.com.au
Phone: 0447 280 042

Borehole Log

Client:	Azzwic Holdings Pty Ltd	**Surface Level:**	(Approx.) RL 5.9 m	**Job No. :**	R23146
Project:	Proposed Residential Development	**South:**	Refer to	**Borehole:**	BH1
Location:	1130 Pittwater Road, Collaroy	**Easting:**	site plan	**Date:**	21-July-2023
		Logged/Checked by:	RM	**Sheet:**	2 of 2

Method	Groundwater	Sample	PSP	SPT	RL	Depth (m)	Classification Symbol	Material Description	Moisture Content	Consistency	Pocket Penetrometer (kPa)	Origin
Solid Flight Auger						5.5	SP	SAND light brown/yellow, moist to wet, dense, fine to medium coarse grained sand, with medium coarse shells fragments	M	D		Natural
						6.0						
						6.5						
						7.0		…becoming wet	W			
						7.5						
						8.0						
						8.5						
						9.0		End of Borehole				
						9.5						

Rig: Ute Mounted Christie Rig

Water Observations: seepage at 3.2 m

Nepean Geotechnics Pty Ltd
ABN 45 626 934 389
15 Henry Place, Narellan Vale NSW 2567
Email: info@nepeangeotechnics.com.au
Phone: 0447 280 042

Borehole Log

Client:	Azzwic Holdings Pty Ltd	**Surface Level:**	(Approx.) RL 7 m	**Job No. :**	R23146
Project:	Proposed Residential Development	**South:**	Refer to	**Borehole:**	BH2
Location:	1130 Pittwater Road, Collaroy	**Easting:**	site plan	**Date:**	21-July-2023
		Logged/Checked by:	RM	**Sheet:**	1 of 1

Method	Groundwater	Sample	PSP	SPT	RL	Depth (m)	Classification Symbol	Material Description	Moisture Content	Consistency	Pocket Penetrometer (kPa)	Origin
Solid Flight Auger						0.5 1.0 1.5 2.0	SP	SAND light brown, dry, very loose fine to medium coarse grained sands .. traces of coarse sub-angular gravels	D	VL		Fill
						2.5	SP	SAND/SILTY SAND light brown, dry to moist, loose fine grained sand	D	L		Natural
						3.0	SP	SAND light brown, dry to moist, medium dense, fine grained sand	D/M	MD		Natural
						3.5 4.0 4.5	SP	SAND light brown/yellow, dry to moist, medium dense to dense, fine grained sand	D/M	MD/D		Natural
						5.0	SP	SAND light brown/yellow, dry to moist, medium dense to dense, fine grained sand	D/M	MD/D		Natural

Rig: Ute Mounted Christie Rig

Water Observations: N/A

Nepean Geotechnics Pty Ltd
ABN 45 626 934 389
15 Henry Place, Narellan Vale NSW 2567
Email: info@nepeangeotechnics.com.au
Phone: 0447 280 042

Borehole Log

Client:	Azzwic Holdings Pty Ltd	**Surface Level:**	(Approx.) RL 7 m	**Job No. :**	R23146
Project:	Proposed Residential Development	**South:**	Refer to	**Borehole:**	BH2
Location:	1130 Pittwater Road, Collaroy	**Easting:**	site plan	**Date:**	21-July-2023
		Logged/Checked by:	RM	**Sheet:**	2 of 2

Method	Groundwater	Sample	PSP	SPT	RL	Depth (m)	Classification Symbol	Material Description	Moisture Content	Consistency	Pocket Penetrometer (kPa)	Origin
Solid Flight Auger						5.5	SP	SAND light brown/yellow, moist to wet, dense, fine to medium coarse grained sand, with medium coarse shells fragments	M	D		Natural
						6.0						
						6.5						
						7.0						
						7.5						
						8.0		… becoming wet	W			
						8.5						
						9.0		End of Borehole				
						9.5						

Rig: Ute Mounted Christie Rig

Water Observations: seepage at 3.2 m

Samples of subsurface material - BH1

Samples of subsurface material – BH2

15 Henry Place, Narellan Vale NSW 2567
Ph: 0447 280 042
Email:info@nepeangeotechnics.com.au

Nepean Geotechnics

Perth Sand Penetrometer (PSP) Test Report

Client:	Azzwic Holdings Pty Ltd	**Surface Level:**	(Approx.) RL 5.4 m	**Job No. :**	R23146
Project:	Proposed Residential Development	**South:**	Refer to	**Date:**	21-July-2023
Location:	1130 Pittwater Road, Collaroy	**Easting:**	site plan	**Sheet:**	1 of 1
		Tested by:	RM		

Depth (m)	PSP2		Depth (m)	PSP2		
0.0 - 0.1	2		3.0 - 3.1	6		
0.1 - 0.2	2		3.1 - 3.2	8		
0.2 - 0.3	1		3.2 - 3.3	10		
0.3 - 0.4	1		3.3 - 3.4	12		
0.4 - 0.5	1		3.4 - 3.5	12		
0.5 - 0.6	1		3.5 - 3.6	12		
0.6 - 0.7	1		3.6 - 3.7	12		
0.7 - 0.8	2		3.7 - 3.8	12		
0.8 - 0.9	1		3.8 - 3.9			
0.9 - 1.0	2		3.9 - 4.0			
1.0 - 1.1	2					
1.1 - 1.2	2					
1.2 - 1.3	3					
1.3 - 1.4	3					
1.4 - 1.5	3					
1.5 - 1.6	4					
1.6 - 1.7	4					
1.7 - 1.8	4					
1.8 - 1.9	4					
1.9 - 2.0	4					
2.0 - 2.1	4					
2.1 - 2.2	4					
2.2 - 2.3	4					
2.3 - 2.4	4					
2.4 - 2.5	5					
2.5 - 2.6	4					
2.6 - 2.7	4					
2.7 - 2.8	5					
2.8 - 2.9	5					
2.9 - 3.0	6					

Appendix C

Foundation Maintenance and Footing Performance (CSIRO)

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

BTF 18 replaces Information Sheet 10/91

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 homeowner 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.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

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. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

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 are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

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). 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.

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 with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

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.**
- **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. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins 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 perpends).

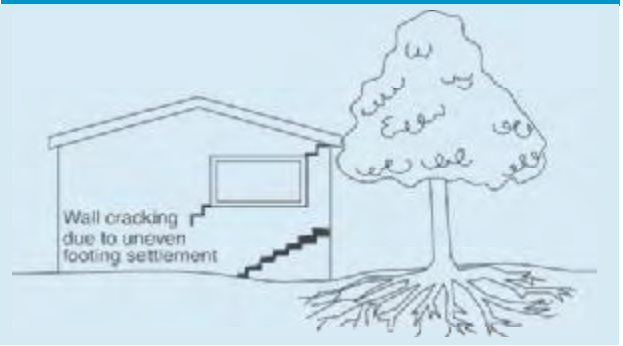
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

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.

Trees can cause shrinkage and damage



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 cause 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. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 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/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 is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

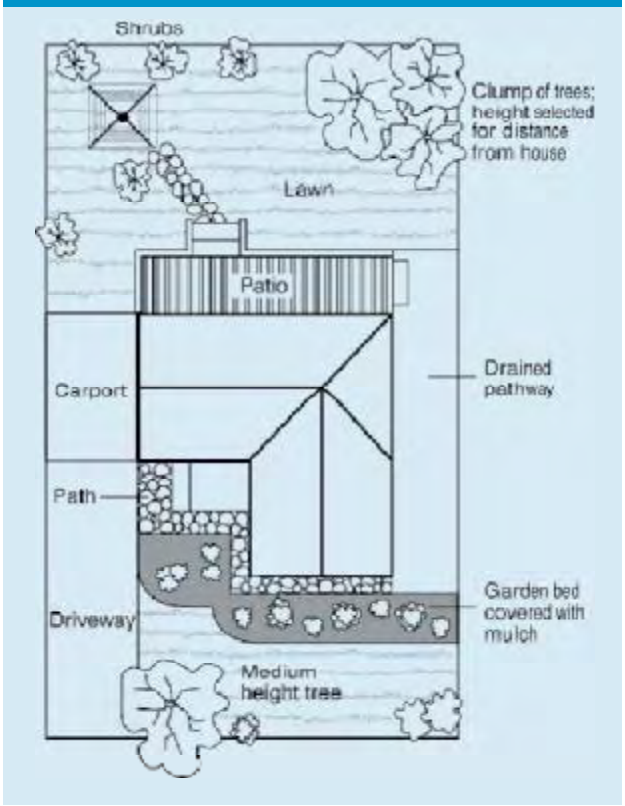
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

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

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
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
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 depend on number of cracks	4

Gardens for a reactive site



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 from it (see BTF 19).

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.

Warning: Although this Building Technology File 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.
- 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. For information on plant roots and drains, see Building Technology File 17.

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.

Remediation

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 homeowner 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.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

Distributed by

CSIRO PUBLISHING PO Box 1139, Collingwood 3066, Australia

Freecall 1800 645 051 Tel (03) 9662 7666 Fax (03) 9662 7555 www.publish.csiro.au

Email: publishing.sales@csiro.au