



DEVELOPMENT APPLICATION

PDPLANPMTD-2025/054393

PROPOSAL: Two Multiple Dwellings

LOCATION: 19 Dora Lane, Rokeby

RELEVANT PLANNING SCHEME: Tasmanian Planning Scheme - Clarence

ADVERTISING EXPIRY DATE: 03 September 2025

The relevant plans and documents can be inspected at the Council offices, 38 Bligh Street, Rosny Park, during normal office hours until 03 September 2025. In addition to legislative requirements, plans and documents can also be viewed at www.ccc.tas.gov.au during these times.

Any person may make representations about the application to the Chief Executive Officer, by writing to PO Box 96, Rosny Park, 7018 or by electronic mail to clarence@ccc.tas.gov.au. Representations must be received by Council on or before 03 September 2025.

To enable Council to contact you if necessary, would you please also include a day time contact number in any correspondence you may forward.

Any personal information submitted is covered by Council's privacy policy, available at www.ccc.tas.gov.au or at the Council offices.

Application for Development / Use or Subdivision

Use this form to obtain planning approval for developing or using land, including subdividing it into smaller lots or lot consolidation.

Proposal: Construction of multiple dwellings x 2

Location: **19 Dolina Drive ROKEBY**

Personal Information Removed



Is the property on the Tasmanian Heritage Register? Yes No

If yes, we recommend you discuss your proposal with Heritage Tasmania prior to lodgement as exemptions may apply which may save you time on your proposal.

If you had pre-application discussions with City of Clarence, please provide planner's name:

N/A

Current use of site: **Vacant Land**

Does the proposal involve land administered or owned by the Crown or Council? Yes No

Declaration

- I have read the Certificate of Title and Schedule of Easements for the land and am satisfied that this application is not prevented by any restrictions, easements or covenants.
- I authorise the provision of a copy of any documents relating to this application to any person for the purposes of assessment or public consultation. I agree to arrange for the permission of the copyright owner of any part of this application to be obtained. I have arranged permission for Council's representatives to enter the land to assess this application
- I declare that, in accordance with Section 52 of the Land Use Planning and Approvals Act 1993, that I have notified the owner of the intention to make this application. Where the subject property is owned or controlled by Council or the Crown, their signed consent is attached.
- I declare that the information in this declaration is true and correct.

Acknowledgement

- I acknowledge that the documentation submitted in support of my application will become a public record held by Council and may be reproduced by Council in both electronic and hard copy format in order to facilitate the assessment process; for display purposes during public consultation; and to fulfil its statutory obligations. I further acknowledge that following determination of my application, Council will store documentation relating to my application

Personal Information Removed

Please refer to the development/use and subdivision checklist on the following pages to determine what documentation must be submitted with your application.



Development/use or subdivision checklist

Mandatory Documents

This information is required for the application to be valid. We are unable to proceed with an application without these documents.

- Details of the location of the proposed use or development.
- A copy of the current Certificate of Title, Sealed Plan, Plan or Diagram and Schedule of Easements and other restrictions for each parcel of land on which the use or development is proposed.
- Full description of the proposed use or development.
- Description of the proposed operation. May include where appropriate: staff/student/customer numbers; operating hours; truck movements; and loading/unloading requirements; waste generation and disposal; equipment used; pollution, including noise, fumes, smoke or vibration and mitigation/management measures.
- Declaration the owner has been notified if the applicant is not the owner.
- Crown or Council consent (if publically-owned land).
- Any reports, plans or other information required by the relevant zone or code.
- Fees prescribed by the City of Clarence.

Application fees (please phone 03 6217 9550 to determine what fees apply). An invoice will be emailed upon lodgement.

Additional Documents

In addition to the mandatory information required above, Council may, to enable it to consider an application, request further information it considers necessary to ensure that the proposed use or development will comply with any relevant standards and purpose statements in the zone, codes or specific area plan, applicable to the use or development.

- Site analysis and site plan, including where relevant:
 - Existing and proposed use(s) on site.
 - Boundaries and dimensions of the site.
 - Topography, including contours showing AHD levels and major site features.
 - Natural drainage lines, watercourses and wetlands on or adjacent to the site.
 - Soil type.
 - Vegetation types and distribution, and trees and vegetation to be removed.



- Location and capacity of any existing services or easements on/to the site.
- Existing pedestrian and vehicle access to the site.
- Location of existing and proposed buildings on the site.
- Location of existing adjoining properties, adjacent buildings and their uses.
- Any natural hazards that may affect use or development on the site.
- Proposed roads, driveways, car parking areas and footpaths within the site.
- Any proposed open space, communal space, or facilities on the site.
- Main utility service connection points and easements.
- Proposed subdivision lot boundaries.

Where it is proposed to erect buildings, detailed plans with dimensions at a scale of 1:100 or 1:200 showing:

- Internal layout of each building on the site.
- Private open space for each dwelling.
- External storage spaces.
- Car parking space location and layout.
- Major elevations of every building to be erected.
- Shadow diagrams of the proposed buildings and adjacent structures demonstrating the extent of shading of adjacent private open spaces and external windows of buildings on adjacent sites.
- Relationship of the elevations to natural ground level, showing any proposed cut or fill.
- Materials and colours to be used on rooves and external walls.

Where it is proposed to erect buildings, a plan of the proposed landscaping showing:

- Planting concepts.
- Paving materials and drainage treatments and lighting for vehicle areas and footpaths.
- Plantings proposed for screening from adjacent sites or public places.

Any additional reports, plans or other information required by the relevant zone or code.

This list is not comprehensive for all possible situations. If you require further information about what may be required as part of your application documentation, please contact City of Clarence Planning team on (03) 6217 9550.



UNREGISTERED DEALINGS REPORT

SEARCH DATE : 28-Jul-2025

SEARCH TIME : 02:49 pm

CT: 188393/146

N272879 PRIORITY NOTICE reserving priority for 90 days
D/MORTGAGE Butler McIntyre Investments Ltd to
Daesungtas Pty Ltd
TRANSFER Daesungtas Pty Ltd Stuart Glen O'Brien and
Emily Anne O'Brien Lodged by SOUTHERN PROPERTY &
CONVEYANCING on 27-Jun-2025 BP: N272879

SEARCH OF TORRENS TITLE

VOLUME 188393	FOLIO 146
EDITION 1	DATE OF ISSUE 24-Apr-2025

SEARCH DATE : 28-Jul-2025

SEARCH TIME : 02.48 PM

DESCRIPTION OF LAND

City of CLARENCE
 Lot 146 on Sealed Plan 188393
 Derivation : Part of Lot 37617, 56.81ha Gtd. to The
 Director-General of Housing & Construction
 Prior CT 186365/507

SCHEDULE 1

M535627 TRANSFER to DAESUNGTAS PTY LTD Registered
 03-Nov-2015 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
 SP188393 EASEMENTS in Schedule of Easements
 SP188393 COVENANTS in Schedule of Easements
 SP188393 FENCING PROVISION in Schedule of Easements
 SP142549 & SP184319 COVENANTS in Schedule of Easements
 SP184319 FENCING PROVISION in Schedule of Easements
 SP142549 FENCING COVENANT in Schedule of Easements
 SP142549 WATER SUPPLY RESTRICTION
 SP142549 SEWERAGE AND/OR DRAINAGE RESTRICTION
 N111707 MORTGAGE to Butler McIntyre Investments Ltd
 Registered 06-Apr-2023 at 12.05 PM

UNREGISTERED DEALINGS AND NOTATIONS

N272879 PRIORITY NOTICE reserving priority for 90 days
 D/MORTGAGE Butler McIntyre Investments Ltd to
 Daesungtas Pty Ltd
 TRANSFER Daesungtas Pty Ltd Stuart Glen O'Brien and
 Emily Anne O'Brien Lodged by SOUTHERN PROPERTY &
 CONVEYANCING on 27-Jun-2025 BP: N272879

SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 188393

PAGE 1 OF 8 PAGES

EASEMENTS AND PROFITS

Each lot on the plan is together with:

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and
- (2) any easements or profits a prendre described hereunder.

Each lot on the plan is subject to:

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and
- (2) any easements or profits a prendre described hereunder.

The direction of the flow of water through the drainage easements shown on the plan is indicated by arrows.

EASEMENTS

Lots 30 to 37 (inclusive) on the Plan (“the Lots”) are subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT 3.00 WIDE (SP.184319)** shown on the Plan (“the Easement Land”).


Lots 30 to 37 (inclusive) on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT 3.00 WIDE (SP.184319)** on the Plan.

Lot 35 on the Plan (“the Lot”) is subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘A’ 3.00 WIDE (P.187512)** shown on the Plan (“the Easement Land”).

Lot 35 on the Plan is subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘A’ 3.00 WIDE (P.187512)** on the Plan.

Director  Director/Secretary 

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: DAESUNGTAS PTY LTD	PLAN SEALED BY: Clarence City Council
FOLIO REF: 186365/507	DATE: <u>14th March 2025</u>
SOLICITOR 
& REFERENCE: Page Seager (DAS 221111)	REF NO. SD-2016/31 Clare Shea Council Delegate

NOTE: The Council Delegate must sign the Certificate for the purposes of identification.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 2 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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Lot 23 on the Plan (“the Lot”) is subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘B’ VARIABLE WIDTH (P.187512)** shown on the Plan (“the Easement Land”).

Lot 23 on the Plan is subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘B’ VARIABLE WIDTH (P.187512)** on the Plan.

Lots 38 to 43 (inclusive) on the Plan (“the Lots”) are subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘C’ VARIABLE WIDTH (P.187512)** shown on the Plan (“the Easement Land”).

Lots 38 to 43 (inclusive) on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘C’ VARIABLE WIDTH (P.187512)** on the Plan.

Lot 126 on the Plan (“the Lot”) is subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘D’ 3.00 WIDE (P.187512)** shown on the Plan (“the Easement Land”).

Lot 126 on the Plan is subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘D’ 3.00 WIDE (P.187512)** on the Plan.

Director  Director/Secretary 

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing. CO

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 3 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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Lots 141 to 146 (inclusive) on the Plan (“the Lots”) are subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘E’ 3.00 WIDE (P.187512)** shown on the Plan (“the Easement Land”).

Lots 141 to 146 (inclusive) on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘E’ 3.00 WIDE (P.187512)** on the Plan.

Lots 156 to 161 (inclusive) on the Plan (“the Lots”) are subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘F’ 3.00 WIDE (P.187512)** shown on the Plan (“the Easement Land”).

Lots 156 to 161 (inclusive) on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **PIPELINE AND SERVICES EASEMENT & DRAINAGE EASEMENT ‘F’ 3.00 WIDE (P.187512)** on the Plan.

Lots 161 to 163 (inclusive) on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **DRAINAGE EASEMENT ‘G’ 2.50 WIDE (P.187512)** on the Plan.

Lots 37 and 38 on the Plan (“the Lots”) are subject to a PIPELINE AND SERVICES EASEMENT (as defined herein) in gross in favour of TasWater over the land marked **PIPELINE AND SERVICES EASEMENT 2.50 WIDE (SP.184319)** shown on the Plan (“the Easement Land”).

Lots 37, 38 and 39 on the Plan are subject to a Drainage Easement (as defined herein) in gross in favour of the Clarence City Council over the land marked **DRAINAGE EASEMENT 2.50 WIDE (SP.184319)** on the Plan.

Director  Director/Secretary 

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<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 4 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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Each lot on the Plan is together with a right of way created by and fully described in the Schedule of Easements to SP 142549 over the land marked **RIGHT OF WAY (PRIVATE) 10.06 WIDE (SP.142549)** on the Plan.

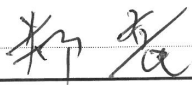
Each lot on the Plan is together with a right of carriageway and service easement created by and fully described in C849483 over the land marked **RIGHT OF WAY (PRIVATE) & SERVICE EASEMENT 20.00 WIDE (P.154357) (created by C849483)** on the Plan.

COVENANTS

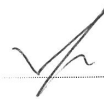
The owner of each Lot on the Plan covenants with the Vendor (Daesung as Pty Ltd) and the Owner or Owners for the time being of every other Lot shown on the Plan to the intent that the burden of these covenants may run with and bind the covenantor's Lot and every part thereof and that the benefit thereof shall be annexed to and devolve with each and every part of every other Lot shown on the plan to observe the following stipulations:

1. Not to subdivide that Lot at any time without the prior consent in writing of the Corporation.
2. Not to erect on that Lot more than a single residence, which may include an ancillary apartment together with usual outbuildings as may be permitted by the Corporation, without the consent of the Corporation.
3. Not to use the land for any purpose except as a residence or ~~the~~ for the purpose of house occupation without the prior consent of the Corporation in writing.
4. Not to use any engine or machinery in any trade of business, nor erect or use or permit to be used on any part of any lot shown on the Plan nor to conduct or permit to be conducted any trade or business on or from any part of the same, including but not limited to mining, quarrying, or market gardening. The leasing of the property for private residential purposes is not deemed to be a breach of this covenant.
5. Not to keep any animals other than domestic pets on any lot shown on the Plan and not to make any application for a kennel licence in respect of any lot shown on the Plan nor to keep or establish or

Director



Director/Secretary



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<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 5 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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permit to be kept or established any licensed kennel upon any lot or any part of any lot shown on the Plan nor to keep at one time more than two adult canines on any lot shown on the Plan.

6. The Vendor may, at the Vendor's absolute discretion, waive the burden of any covenant contained in this Schedule of Easements in favour of any lot by notice in writing to the registered proprietor of that lot.

FENCING PROVISION

In respect of the Lots shown on the Plan, the Vendor (Daesungtas Pty Ltd) shall not be required to fence.

DEFINITIONS

“**Corporation**” means the Warden Councillors and Electors of the City of Clarence.

“**Drainage Easement**” means a right of drainage (including the right of construction of drains) for Clarence City Council with which the right shall be capable of enjoyment for the purpose of carrying away stormwater and other surplus water from any land over or under the land herein indicated as the land over which the right is to subsist, and through all sewers and drains which may hereafter be made or passing under, through, and along the last-mentioned land and the right for Clarence City Council and its employees, agents and contractors from time to time and at all times hereafter if it or they should think fit to enter into and upon the last-mentioned land and to inspect, repair, cleanse, and amend any such sewer or drain without doing unnecessary damage to the said land.

“**Pipeline and Services Easement**” is defined as follows:-

FIRSTLY, THE FULL AND FREE RIGHT AND LIBERTY for TasWater and its employees, contractors, agents and all other persons duly authorised by it, at all times to:

Director  Director/Secretary 

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<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 6 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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- (1) enter and remain upon the Easement Land with or without machinery, vehicles, plant and equipment;
- (2) investigate, take soil, rock and other samples, survey, open and break up and excavate the Easement Land for any purpose or activity that TasWater is authorised to do or undertake;
- (3) install, retain, operate, modify, relocate, maintain, inspect, cleanse, repair, remove and replace the Infrastructure;
- (4) run and pass sewage, water and electricity through and along the Infrastructure;
- (5) do all works reasonably required in connection with such activities or as may be authorised or required by any law:
 - (a) without doing unnecessary damage to the Easement Land; and
 - (b) leaving the Easement Land in a clean and tidy condition;
- (6) if the Easement Land is not directly accessible from a highway, then for the purpose of undertaking any of the preceding activities TasWater may with or without employees, contractors, agents and any other persons authorised by it, and with or without machinery, vehicles, plant and equipment enter the Lot from the highway at any vehicle entry and cross the Lot to the Easement Land; and
- (7) use the Easement Land as a right of carriageway for the purpose of undertaking any of the preceding purposes on other land, TasWater reinstating any damage that it causes in doing so to any boundary fence of the Lot.

SECONDLY, the benefit of a covenant in gross for TasWater with the registered proprietor/s of the Easement Land and their successors and assigns not to erect any building, or place any structures, objects, vegetation, or remove any thing that supports, protects or covers any Infrastructure on or in the Easement Land, without the prior written consent of TasWater to the intent that the burden of the covenant may run with and bind the servient land and every part thereof and that the benefit thereof may be annexed to the easement herein described.

Interpretation:

Director  Director/Secretary 

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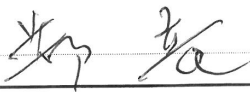
<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 7 OF 8 PAGES</p>	<p>Registered Number</p> <p>SP 188393</p>
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“**Infrastructure**” means infrastructure owned or for which TasWater is responsible and includes but is not limited to:

- (a) sewer pipes and water pipes and associated valves;
- (b) telemetry and monitoring devices;
- (c) inspection and access pits;
- (d) electricity assets and other conducting media (excluding telemetry and monitoring devices);
- (e) markers or signs indicating the location of the Easement Land or any other Infrastructure or any warnings or restrictions with respect to the Easement Land or any other Infrastructure;
- (f) anything reasonably required to support, protect or cover any other Infrastructure;
- (g) any other infrastructure whether of a similar nature or not to the preceding which is reasonably required for the piping of sewage or water, or the running of electricity, through the Easement Land or monitoring or managing that activity; and
- (h) where the context permits, any part of the Infrastructure.

“**TasWater**” means Tasmanian Water & Sewerage Corporation Pty Ltd (ACN 162 220 653), its successors and assigns.

Director



Director/Secretary



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ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 8 OF 8 PAGES	Registered Number SP 188393
SUBDIVIDER: DAESUNGTAS PTY LTD FOLIO REFERENCE: 186365/507	

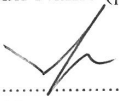
EXECUTED by DAESUNGTAS PTY LTD (ACN 607 472 131) as registered proprietor of the land comprised in Folio of the Register Volume 186365/507 Folio 507 in accordance with section 127 of the *Corporations Act 2001* (Cth) by:



 Director Signature

YONG JUNG

 Director Full Name (print)



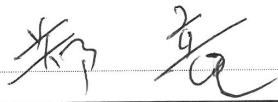
 *Director/*Secretary Signature

DONG keun yoon *BS


 *Director/Secretary Full Name (print)

(*please strike out inapplicable)

*Bailee Saward
 Representative for Transferor
 Page Seager



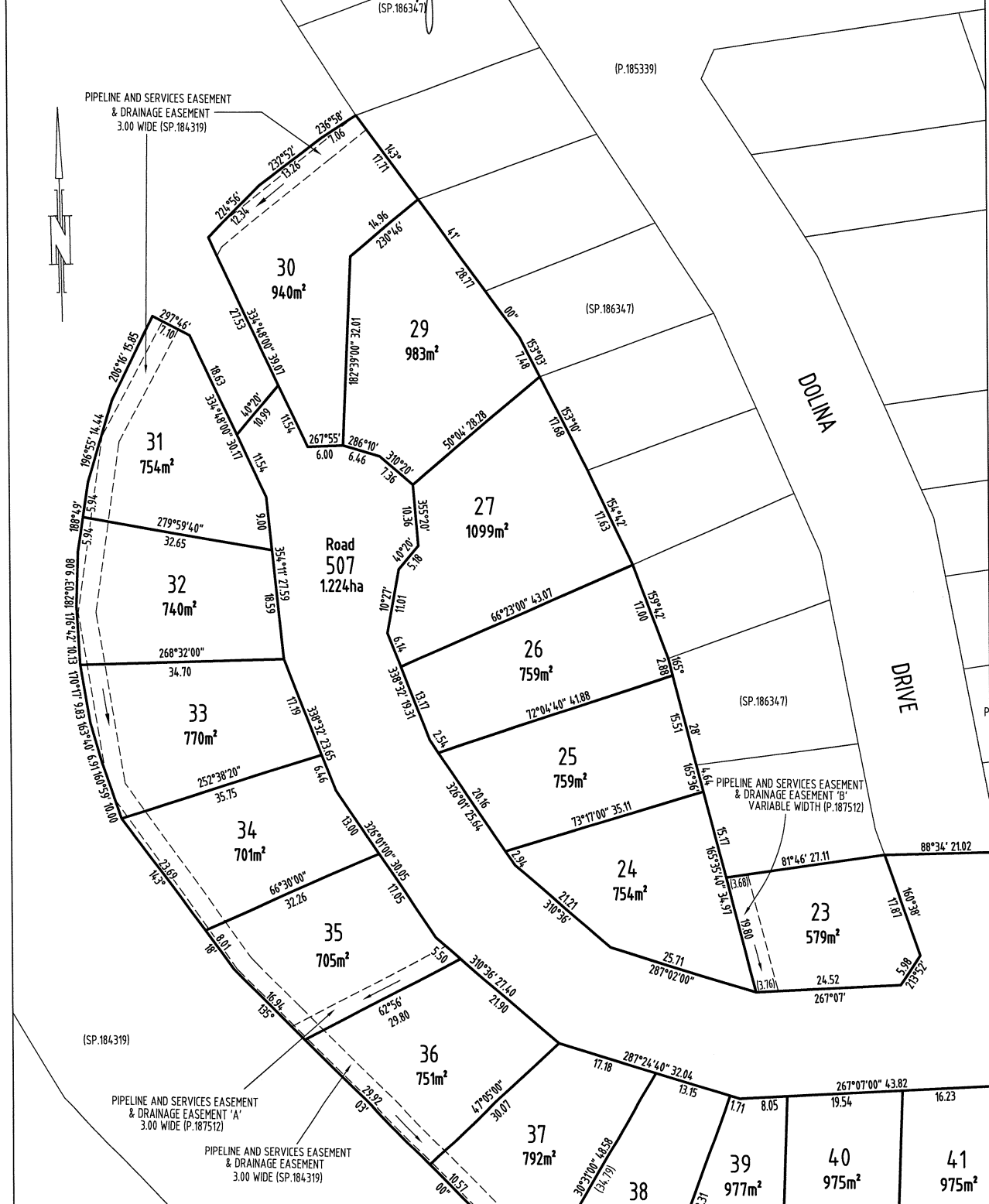
 Director

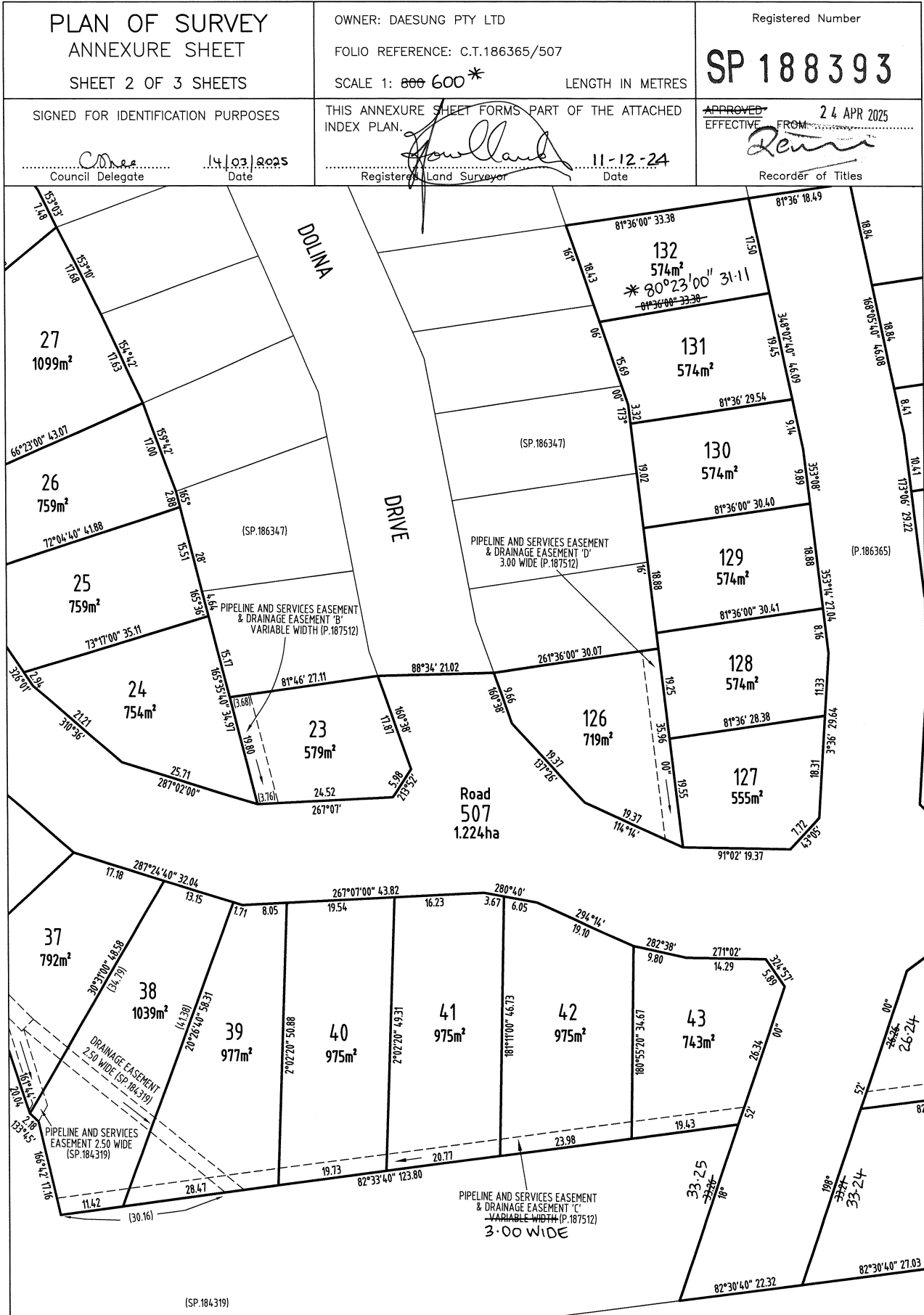


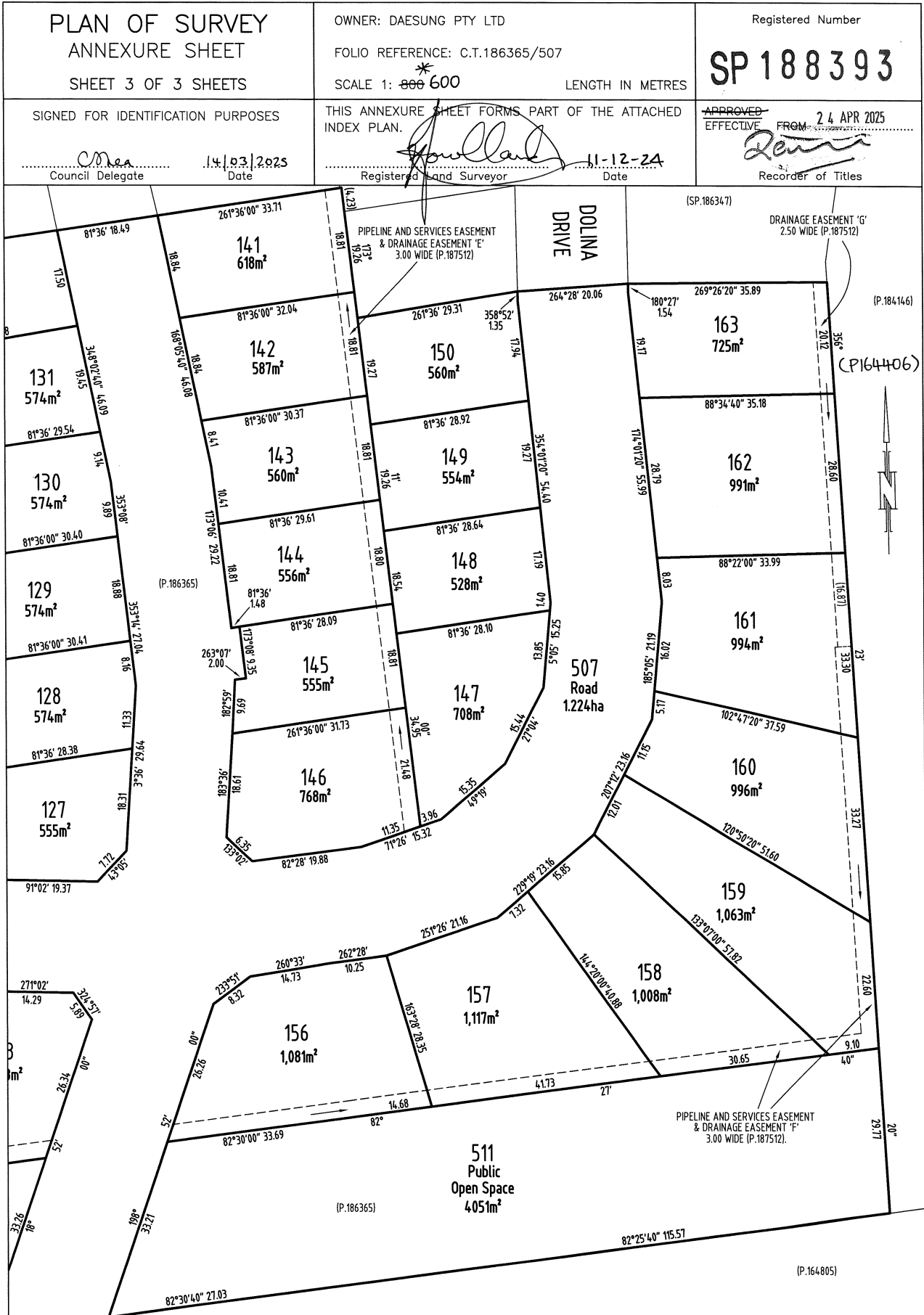
 Director/Secretary

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<p>PLAN OF SURVEY ANNEXURE SHEET SHEET 1 OF 3 SHEETS</p>	<p>OWNER: DAESUNG TAS PTY LTD FOLIO REFERENCE: C.T.186365/507 SCALE 1:600 LENGTH IN METRES</p>	<p>Registered Number SP 188393</p>
<p>SIGNED FOR IDENTIFICATION PURPOSES Council Delegate: <u>C. Cree</u> Date: <u>14/07/2025</u></p>	<p>THIS ANNEXURE SHEET FORMS PART OF THE ATTACHED INDEX PLAN. Registered Land Surveyor: <u>[Signature]</u> Date: <u>11-12-24</u></p>	<p>APPROVED EFFECTIVE FROM <u>24 APR 2025</u> Recorder of Titles: <u>[Signature]</u></p>







GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED BY SURVEY PLUS FROM A COMBINATION OF EXISTING RECORDS AND FIELD SURVEY FOR THE PURPOSES OF SHOWING THE PHYSICAL FEATURES OF THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
2. TITLE BOUNDARIES SHOWN WERE NOT VERIFIED OR MARKED AT THE TIME OF THIS SURVEY.
3. SERVICES SHOWN ON THIS PLAN WERE LOCATED WHERE POSSIBLE BY FIELD SURVEY. THEY ARE NOT A COMPLETE PICTURE OF SERVICES ON SITE. ALL SERVICE LOCATIONS ARE TO BE VERIFIED BEFORE COMMENCEMENT OF ANY WORK ON SITE, IN PARTICULAR THOSE SERVICES NOT PREVIOUSLY LOCATED THROUGH FIELD SURVEY.
4. SURVEY PLUS CAN NOT ACCEPT LIABILITY WHATSOEVER FOR LOSS OR DAMAGE CAUSED TO ANY UNDERGROUND SERVICE WHETHER SHOWN BY OUR SURVEY OR NOT.
5. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN/DATA. REPRODUCTION OF THIS PLAN OR ANY PART OF IT WITHOUT THIS NOTE BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH A REPRODUCTION INVALID AND NOT SUITABLE FOR USE WITHOUT PRIOR AUTHORITY OF SURVEY PLUS.
6. HORIZONTAL DATUM IS MGA (GDA94).
7. VERTICAL DATUM IS AHD.
8. CONTOUR INTERVAL IS 0.2 METRES, INDEX IS 1.0 METRES.
9. SURVEY BY ROBOTIC TOTAL STATION AND GPS.
10. TITLE BOUNDARIES SHOWN WERE NOT VERIFIED OR MARKED BY SURVEY PLUS AT THE TIME OF THIS SURVEY.
11. IMPORTED DATA SHOWN ON THIS PLAN WAS OBTAINED FOR PUBLIC AVAILABLE DATA FROM VARIOUS GOVERNMENT AUTHORITIES. THIS INFORMATION IS PROVIDED FOR GUIDANCE ONLY. THE ACCURACY OF ANY IMPORTED DATA IS PER THE ACCURACY QUOTED BY THE SOURCE AND IS IN NO WAY GUARANTEED BY SURVEY PLUS. USERS MUST NOT RELY ON THIS DATA FOR ON-GROUND LOCATION OF BOUNDARIES AND/OR SERVICES.

- LIST DATA IMPORT**
- TasWater-SewerLateralLine
 - TasWater-SewerMain
 - TasWater-SewerMaintenanceHole
 - TasWater-SewerPressurisedMain
 - TasWater-WaterHydrant
 - TasWater-WaterLateralLine
 - TasWater-WaterMain
 - CadastralParcel-OwnerInformation

12. APPROXIMATE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN DERIVED FROM SALE PLAN ONLY, AND ARE APPROXIMATE AND SUBJECT TO FINAL SURVEY.

13. 3D DATA TURNED OFF IN LAYER CONTROL.
- 3D TIN
 - MAJOR CONTOUR 3D
 - MINOR CONTOUR 3D

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

•DP 90mm DOWNPIPE

NOTE: ALL PROPOSED STORMWATER TO BE DISCHARGED TO EXISTING INFRASTRUCTURE

EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE IMPLEMENTED ON THE SITE IN ACCORDANCE WITH COUNCIL REQUIREMENTS

PROPOSED SITE PLAN

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02



CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS.
DO NOT SCALE DRAWINGS. ALWAYS USE WRITTEN DIMENSIONS.

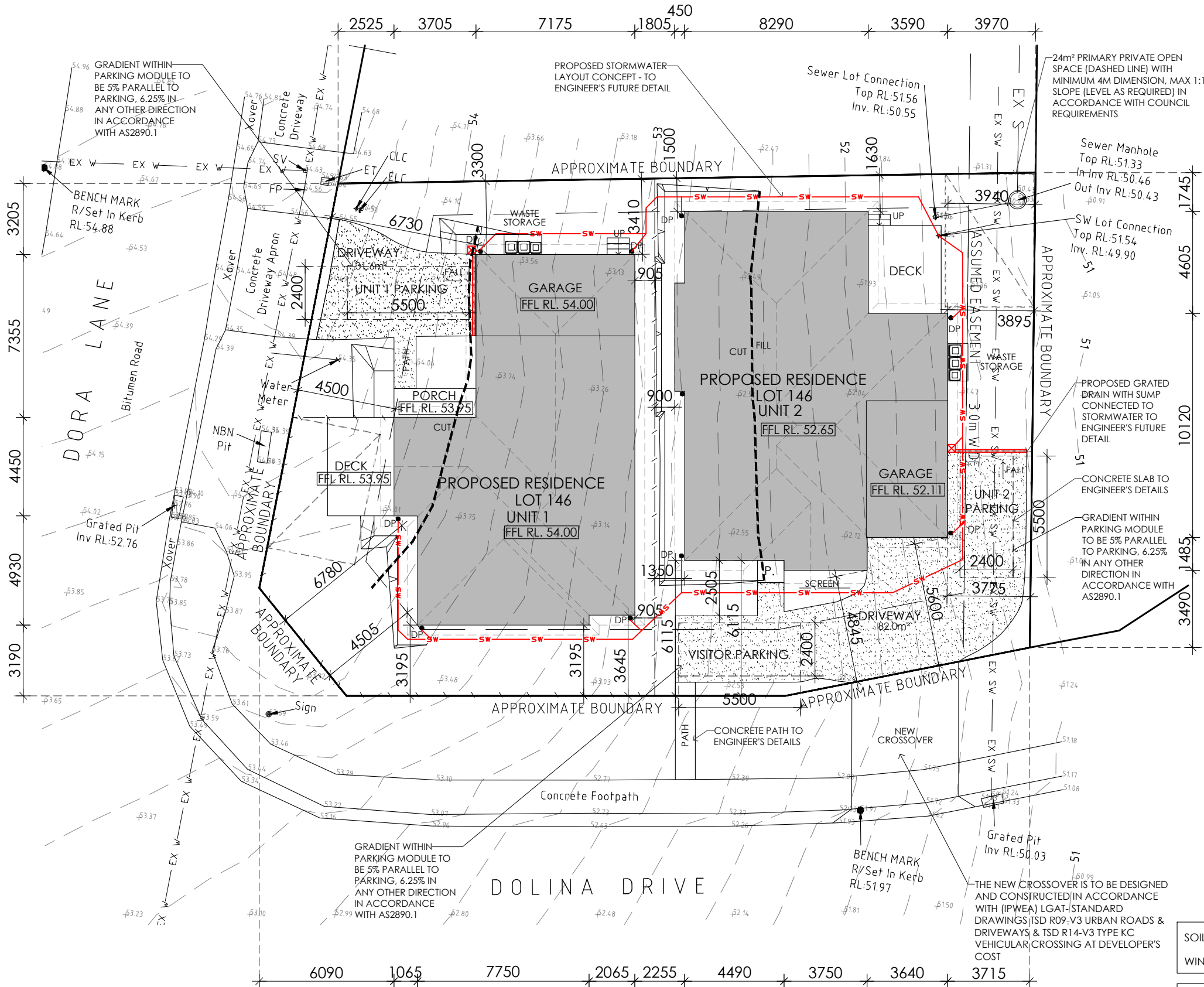
REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

PRELIMINARY



CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 2 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:200	REV: C	



NOTES

SITE PREPARATION
THE SITE IS TO BE DISTURBED AS MINIMALLY AS POSSIBLE TO THE EXTENT REQUIRED TO CARRY OUT THE BUILDING WORKS.
EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH NCC PART 3.2.
UN-RETAINED EMBANKMENT GRADIENTS SHALL BE IN ACCORDANCE WITH NCC TABLE 3.2.1.
DRAINAGE SHALL BE IN ACCORDANCE WITH NCC PART 3.3.2.
THE BUILDER AND SUBCONTRACTOR SHALL ENSURE THAT ALL STORMWATER DRAINS, SEWER PIPES AND THE LIKE ARE LOCATED AT A SUFFICIENT DISTANCE FROM ANY BUILDINGS FOOTING AND/OR SLAB EDGE BEAMS SO AS TO PREVENT GENERAL MOISTURE PENETRATION, DAMPNES, WEAKENING & UNDERMINING OF ANY BUILDING AND ITS FOOTING SYSTEM.
LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION.

ATTENTION OF OWNER
THE OWNERS ATTENTION IS DRAWN TO THE FACT THAT FOUNDATIONS AND ASSOCIATED DRAINAGE FOR ALL SITES REQUIRES CONTINUING MAINTENANCE TO ASSIST FOOTING PERFORMANCE. ADVICE FOR FOUNDATION MAINTENANCE IS CONTAINED IN THE CSIRO BUILDING TECHNOLOGY FILE 18 AND IT IS THE OWNERS RESPONSIBILITY TO MAINTAIN THE SITE IN ACCORDANCE WITH THIS DOCUMENT.

SOIL AND WATER MANAGEMENT NOTES:
DRAINAGE LINES ARE TO BE INSTALLED PRIOR TO THE PLACEMENT OF ROOF AND GUTTERING. ONCE DWELLING IS ROOFED, CONNECT IMMEDIATELY. APPLY TEMPORARY COVERING TO DISTURBED AREAS THAT WILL REMAIN EXPOSED FOR 14 DAYS OR MORE DURING CONSTRUCTION (EG. WATERPROOF BLANKET, VEGETATION OR MULCH)

PROTECT ANY NEARBY OR ON-SITE DRAINAGE PITS FROM SEDIMENT BY INSTALLING SEDIMENT TRAPS AROUND THEM.
LIMIT ENTRY/EXIT TO ONE POINT AND STABILISE. INSTALL FACILITIES TO REMOVE DIRT/ MUD FROM VEHICLE WHEELS BEFORE THEY LEAVE THE SITE.

SITE TO BE VEGETATED AND PLANTED ACCORDING TO THE HOBART REGIONAL SOIL AND WATER MANAGEMENT CODE OF PRACTICE.

BUILDER AND SUBCONTRACTORS TO VERIFY ALL DIMENSIONS AND LEVELS PRIOR TO THE COMMENCEMENT OF ANY WORK. GIVE 24 HOURS MINIMUM NOTICE WHERE AMENDMENTS ARE REQUIRED TO DRAWINGS. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH DOCUMENTATION LISTED ON THE COVER PAGE. DO NOT SCALE DRAWINGS.
DIMENSIONS ARE TO TAKE PREFERENCE OVER SCALE. BUILDING SPECIFICATION AND ENGINEERS DRAWINGS SHALL OVERRIDE ARCHITECTURAL DRAWINGS.

-THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWING SHEETS, CONSULTANTS DRAWINGS, DOCUMENTS, SCHEDULES AND SPECIFICATIONS (AS APPLICABLE).
-THE BUILDER AND SUBCONTRACTOR SHALL ENSURE THAT ALL STORMWATER DRAINS, SEWER PIPES AND THE LIKE ARE LOCATED AT A SUFFICIENT DISTANCE FROM ANY BUILDINGS FOOTING AND/OR SLAB EDGE BEAMS SO AS TO PREVENT GENERAL MOISTURE PENETRATION, DAMPNES, WEAKENING & UNDERMINING OF ANY BUILDING AND ITS FOOTING SYSTEM.
- LOCATION OF ALL EXISTING ONSITE SERVICES TO BE CONFIRMED ONSITE PRIOR TO CONSTRUCTION

IMPORTANT!
SITE INFORMATION AS DRAWN IS APPROXIMATE ONLY. FINAL SITE INFORMATION IS SUBJECT TO A DETAILED CONTOUR SURVEY BY LICENSED SURVEYOR.

SOIL CLASSIFICATION:	S
WIND CLASSIFICATION:	N3

SITE COVERAGE	
SITE AREA	761.60 m ²
PROPOSED BUILDING FOOTPRINT	325.5 m ²
PROPOSED SITE COVERAGE	42.74 %

NOTE: FENCE WITHIN 4.5M SETBACK IS TO BE SOLID TO 1200H THEN SLATTED TO 1800H WITH 25% TRANSPARENCY

AREAS:	
FLOOR AREA:	122.3 m ²
PORCH:	4.8 m ²
GARAGE:	26.4 m ²
TOTAL AREA: 153.5 m ²	
DECK:	13.3 m ²

LEGEND:	
DP	DOWNPIPE LOCATION
SHR	SHOWER
BTH	BATH
VB	VANITY BASIN
WC	TOILET
OHC	OVERHEAD CUPBOARDS
REF	REFRIGERATOR
P	PANTRY
RH	RANGE HOOD
UBO	UNDER BENCH OVEN
CT	COOK TOP
S	SINK
DW	DISH WASHER
T	TROUGH
WM	WASHING MACHINE
MH	MANHOLE
CSD	CAVITY SLIDING DOOR
AAW	ALUM. AWNING WINDOW
ASD	ALUM. SLIDING DOOR
B/O	BEAM OVER
BAL	BALUSTRADE

BAL SELECTED BALUSTRADE TO BUILDER'S STANDARD DETAIL INSTALLED IN ACCORDANCE WITH NCC

MASONRY ARTICULATION JOINT - LOCATION TO ENGINEER'S DETAILS

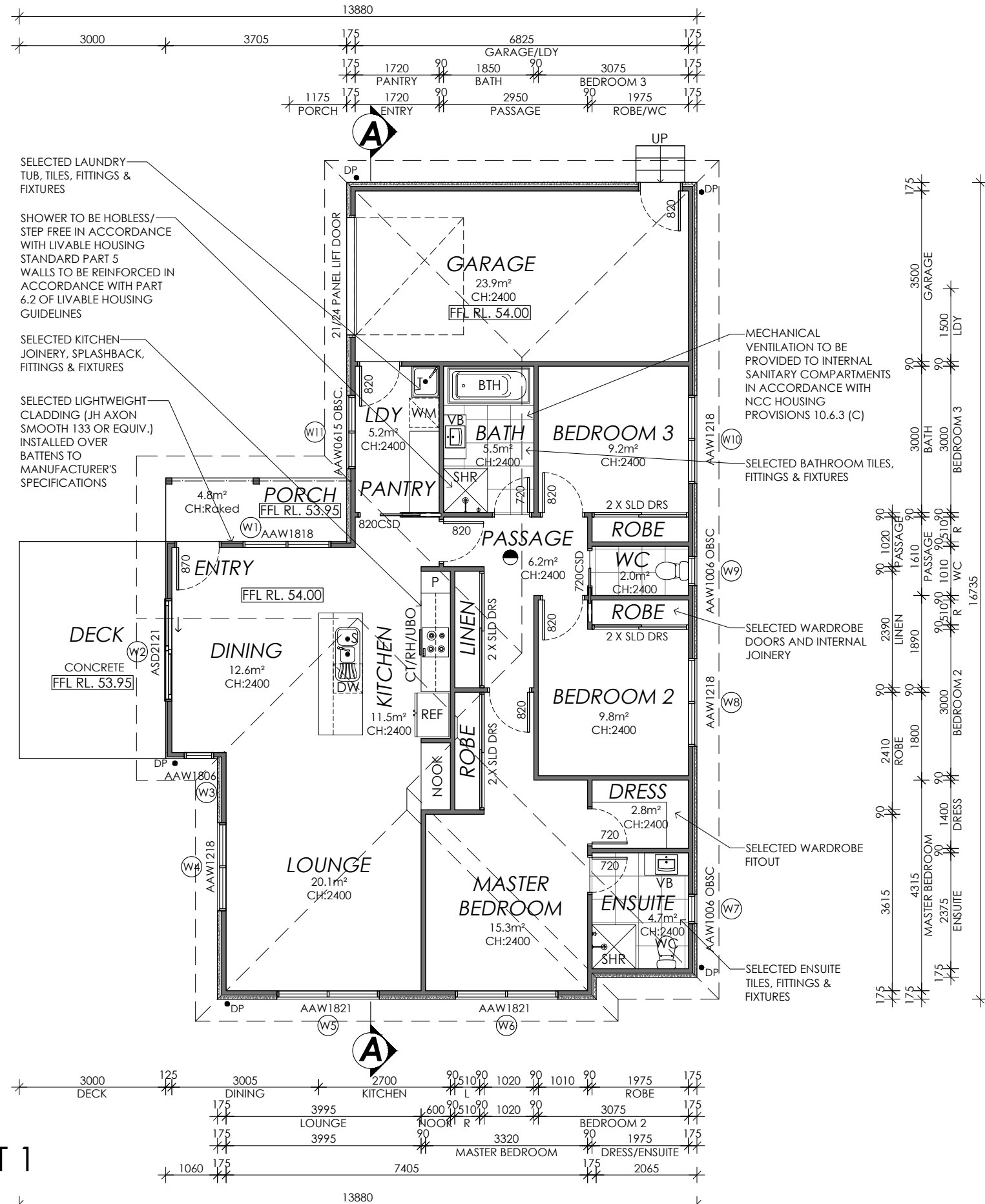
CEILING MOUNTED INTERCONNECTED SMOKE DETECTORS, MAINS WIRED WITH BATTERY BACKUP, ALL IN ACCORDANCE WITH AS 3786.

90mm DOWNPIPE

NOTE: LIFT OFF HINGES TO WC TO BE INSTALLED AS REQUIRED IN ACCORDANCE WITH NCC.

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

PROPOSED FLOOR PLAN - UNIT 1



PRELIMINARY

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03



CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS.
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C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

CREATIVE HOMES HOBART
CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 3 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:100	REV: C	

Framing NCC H1D6
All timber framing, fixing and bracing shall comply with AS 1684 and the requirements of NCC H1D6. Manufactured sizes must not be undersized to those specified, for all timber sizes, stress grades, spacing and wall bracing refer to Engineer's details. Tie-down details shall be in accordance with Engineer's details and comply with NCC H1D6 (4). Structural steel members shall comply with the requirements of clauses in NCC H1D6 (3). Refer to Engineer's details where provided.

Glazing NCC H1D8
All windows to be aluminium awning style, double glazed (obscured safety glass to bathrooms as shown on drawings) All glazing shall comply with the requirements of AS 2047 & AS 1288 and NCC H1D8.

Human impact safety requirements shall comply with NCC H1D8 (3) and Part 8.4 of the ABCB Housing provisions.

Note:
Builder and subcontractors to verify all dimension and levels prior to the commencement of any work. Give 24hrs minimum notice where amendments are required to design of working drawings. These drawings are to be read in conjunction with Engineer's and Surveyor's drawings and notes. Do not scale drawings. Dimensions are to take preference over scale. Building specification and Engineer's drawings shall override architectural drawings. All construction work shall be carried out in accordance with the state building regulations, local council by-laws and relevant NCC and AS codes.

Important notice for attention of Owners:
the Owners attention is drawn to the fact that foundations and associated drainage in all sites requires continuing maintenance to assist footing performance. Advice for foundation maintenance is contained in the CSIRO building technology file 18 and it is the Owners responsibility to maintain the site in accordance with this document.

Energy efficiency:
Insulation must comply with AS/NZS4859.1 and be installed in accordance with ABCB housing provisions Part 13.2.2 and comply with minimum R values for climate zone 7. Bulk insulation between external studs to be insulated with min R2.0. (Ensure batts fit within cavity without compression, making sure that there is at least 25mm gap from the reflective surface). External walls are to be clad with vapour permeable reflective foil over the outside of the timber frame. Ceiling to be insulated with R4.0 and vapour permeable sarking. Floor to be insulated with Min R1.7 batts where applicable. Seal exhaust fans to Ensuite, Bathroom, Laundry and Kitchen. All downlights to be IC rated. Construction of the external walls, floor and roof for compliance with building sealing requirements shall comply with BCA 2019 Part 3.12

General:
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Wet areas: All wet areas shall comply with the requirements of ABCB Housing provisions Part 10.2. Provide waterproof plasterboard sheeting to all walls and ceilings. Provide ceramic tiles or other approved water resistant lining in accordance with Part 10.2.9 to a minimum height of 1800mm to shower walls and to a height of min 150mm behind baths, basins, sinks, troughs, washing machines and wall fixtures.

For construction of floor wastes refer to NCC ABCB Housing provisions part 10.2.12. For typical installation requirements for substrate preparation, penetrations, flashings/ junctions, membranes, flashings, hobs, baths, showers, door jambs and screens refer to ABCB Housing provisions part 10.2.14-32.

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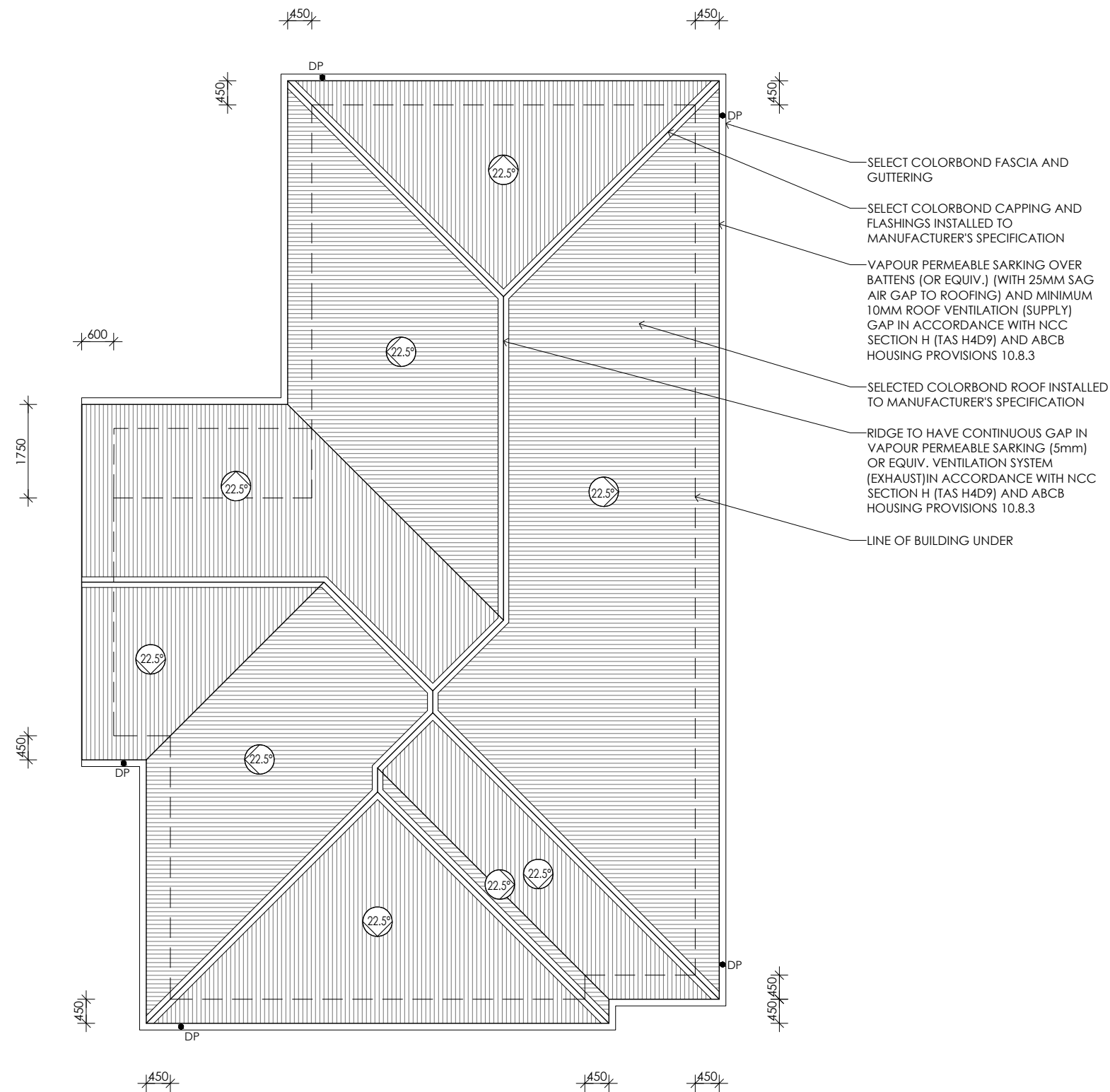
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- SELECT COLORBOND FASCIA AND GUTTERING
- SELECT COLORBOND CAPPING AND FLASHINGS INSTALLED TO MANUFACTURER'S SPECIFICATION
- VAPOUR PERMEABLE SARKING OVER BATTENS (OR EQUIV.) (WITH 25MM SAG AIR GAP TO ROOFING) AND MINIMUM 10MM ROOF VENTILATION (SUPPLY) GAP IN ACCORDANCE WITH NCC SECTION H (TAS H4D9) AND ABCB HOUSING PROVISIONS 10.8.3
- SELECTED COLORBOND ROOF INSTALLED TO MANUFACTURER'S SPECIFICATION
- RIDGE TO HAVE CONTINUOUS GAP IN VAPOUR PERMEABLE SARKING (5mm) OR EQUIV. VENTILATION SYSTEM (EXHAUST) IN ACCORDANCE WITH NCC SECTION H (TAS H4D9) AND ABCB HOUSING PROVISIONS 10.8.3
- LINE OF BUILDING UNDER

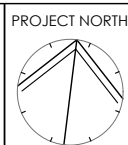
PROPOSED ROOF PLAN UNIT 1

PRELIMINARY

●DP 90mm DOWNPIPE

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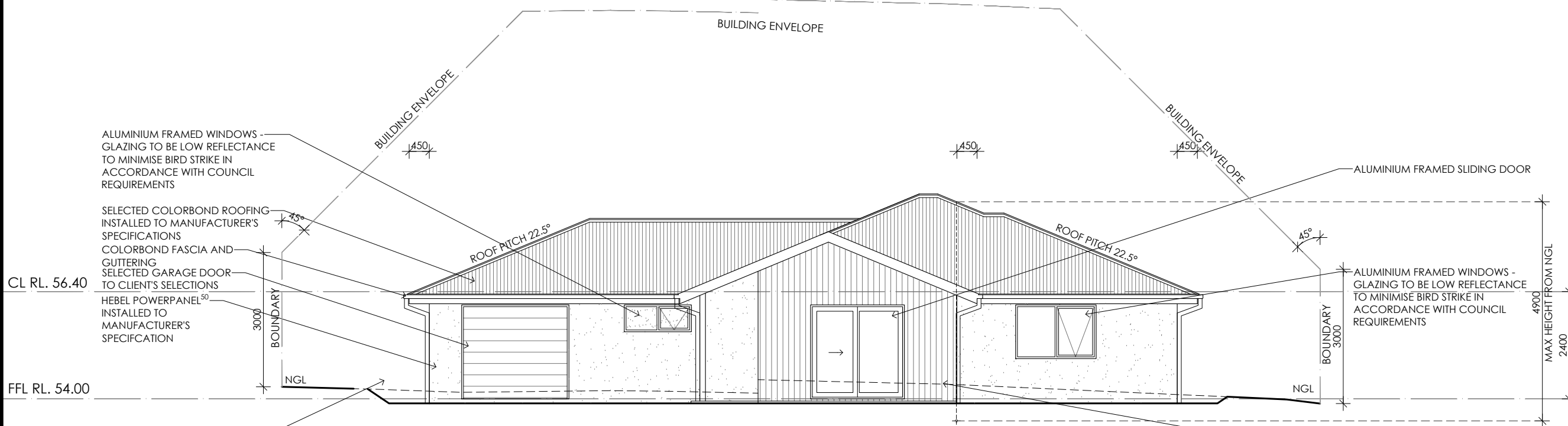


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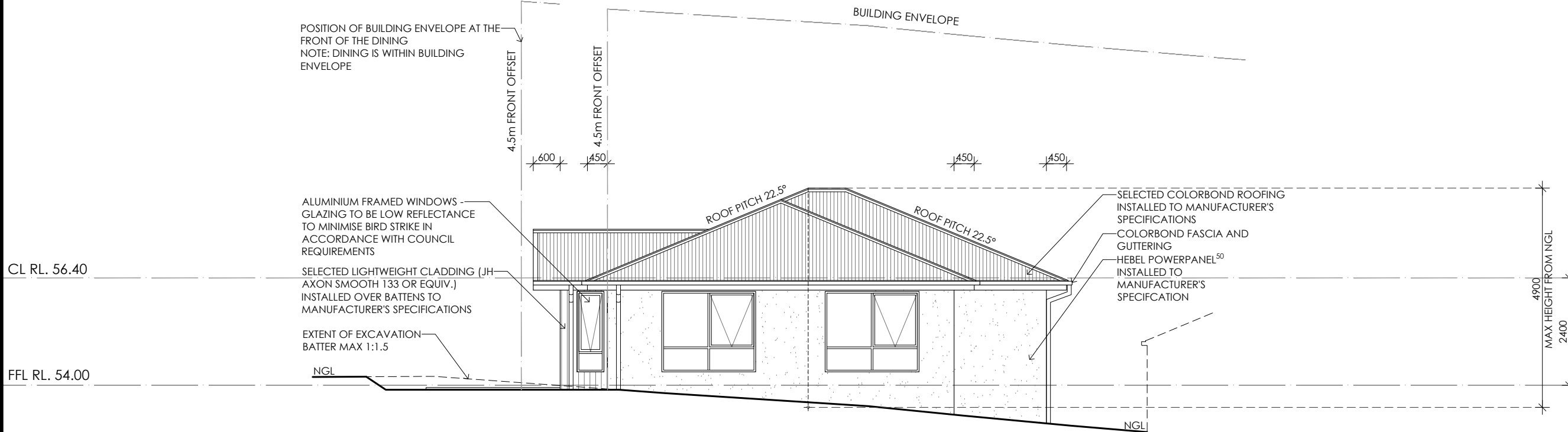
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CREATIVE HOMES HOBART
 CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 4 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
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SCALE: 1:100	REV: C	



WESTERN ELEVATION



SOUTHERN ELEVATION

UNIT 1

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

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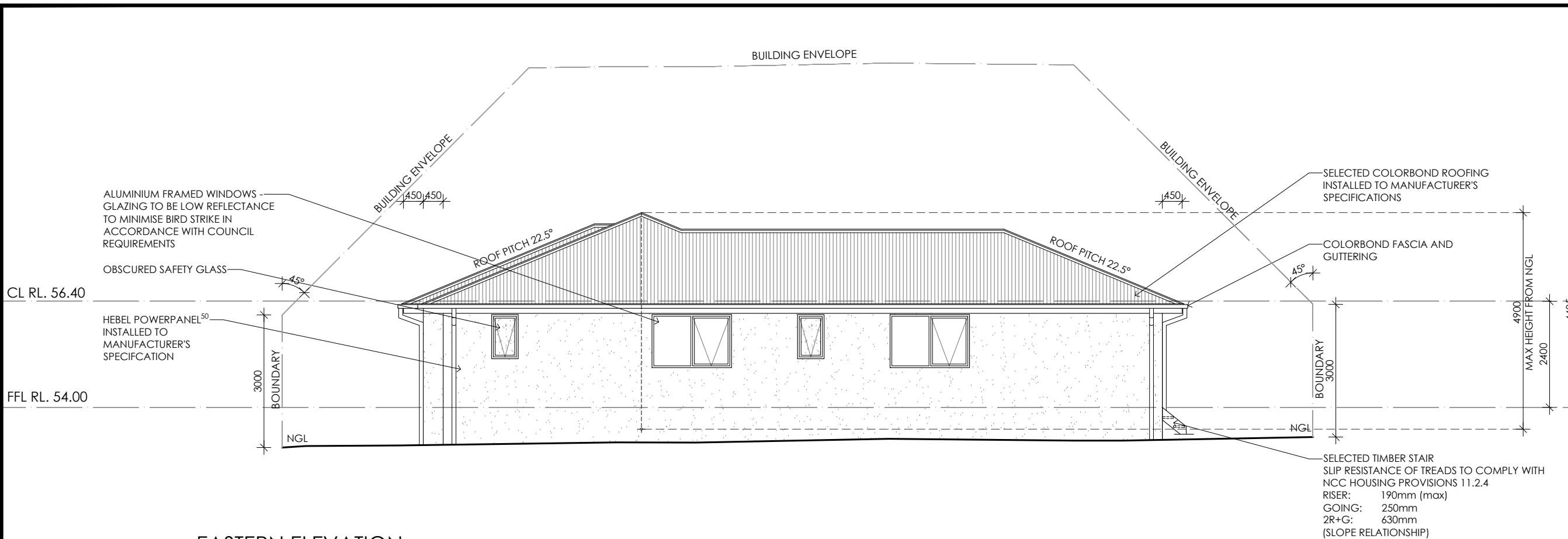
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PRELIMINARY

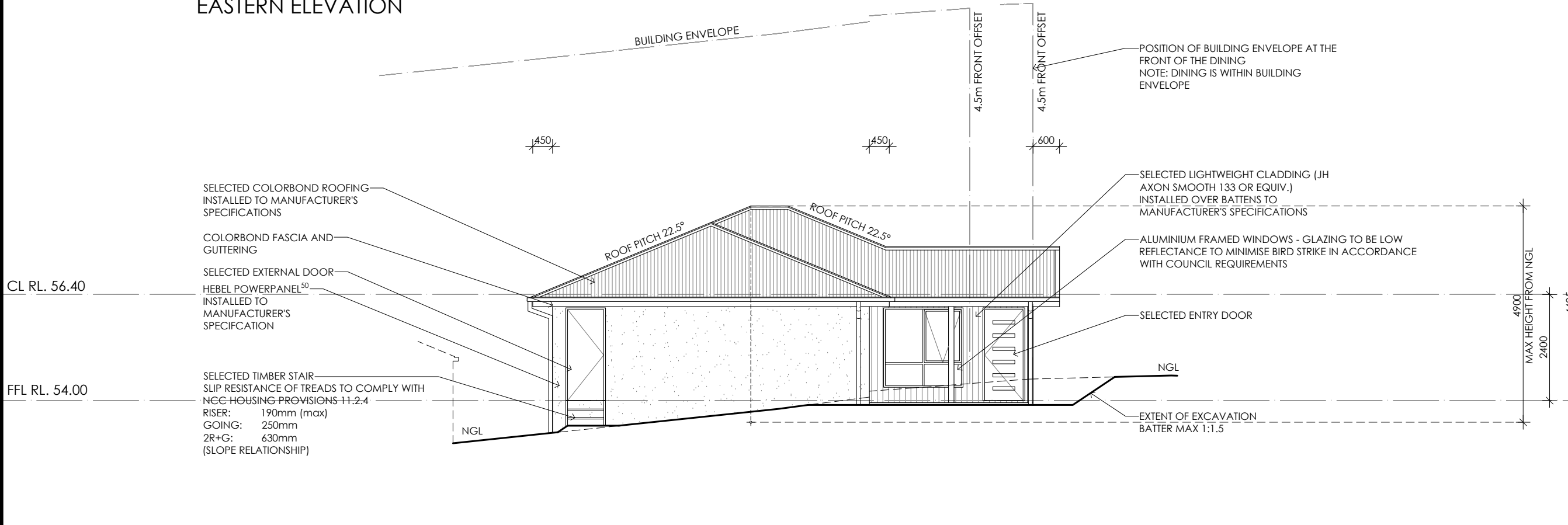
CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 5 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
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EASTERN ELEVATION



NORTHERN ELEVATION

UNIT 1

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

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PRELIMINARY

CREATIVE HOMES HOBART
CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 6 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:100	REV: C	

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06	PROJECT NORTH	CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS.	REV: SK5	DESCRIPTION: ADD SINGLE GARAGE & REDESIGN UNIT 2	BY: NN	DATE: 11/6/25
		DO NOT SCALE DRAWINGS. ALWAYS USE WRITTEN DIMENSIONS.	A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
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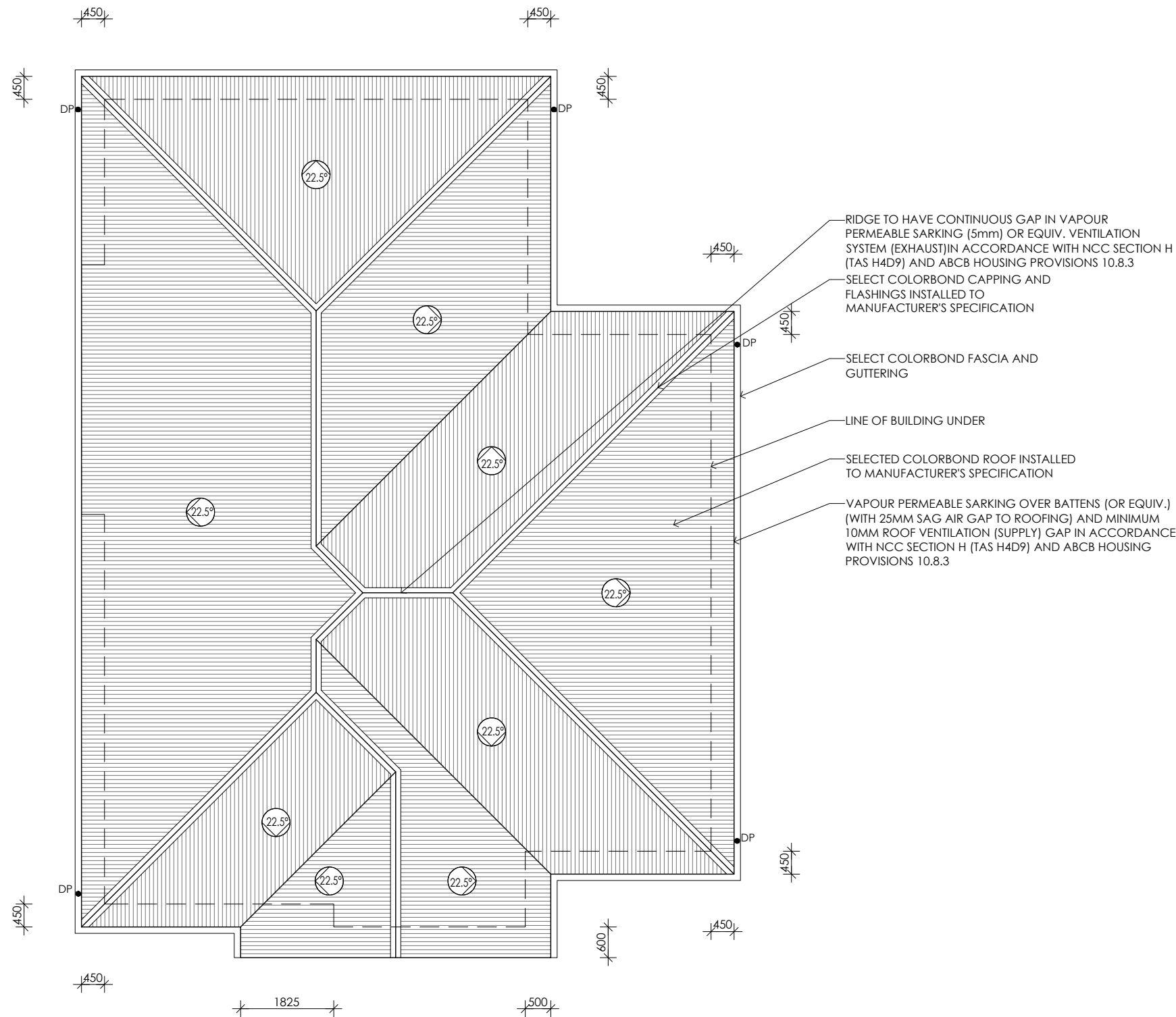
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General:
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PROPOSED ROOF PLAN UNIT 2

● DP 90mm DOWNPIPE

PRELIMINARY

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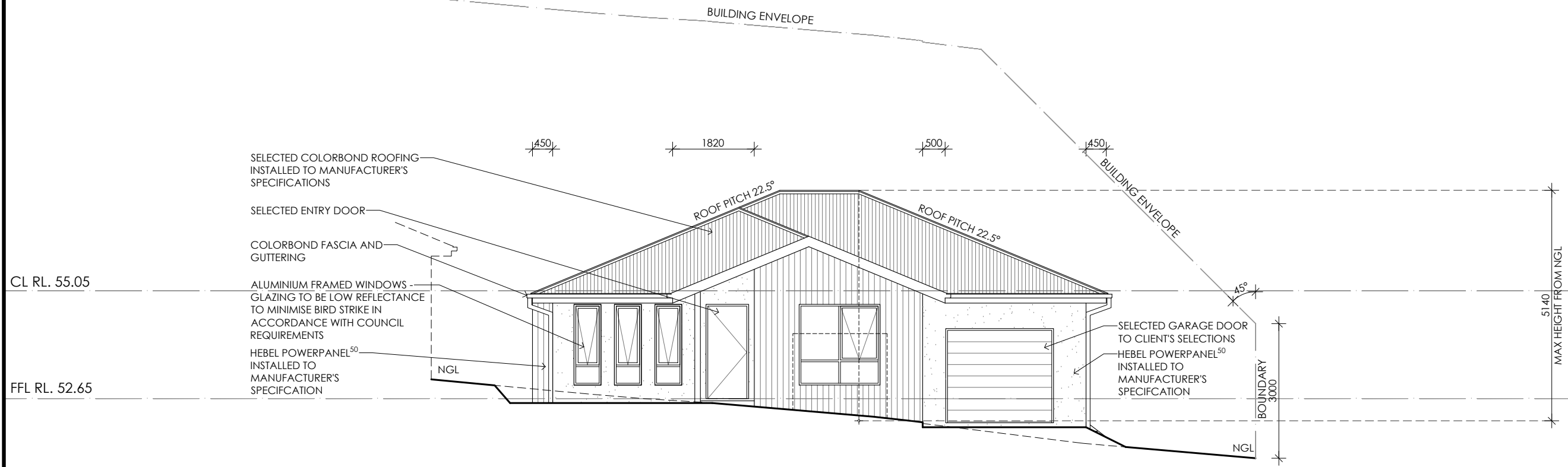
CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS.
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ALWAYS USE WRITTEN DIMENSIONS.

REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

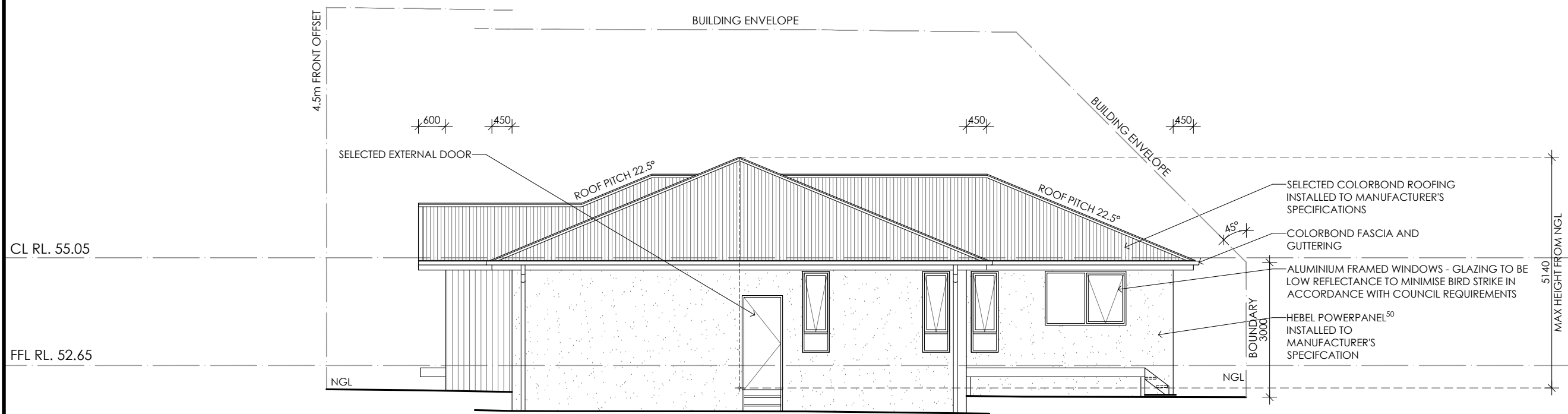
CREATIVE HOMES
HOBART

CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 8 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:100	REV: C	



SOUTHERN ELEVATION



EASTERN ELEVATION

UNIT 2

PRELIMINARY

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

Framing NCC H1D6
All timber framing, fixing and bracing shall comply with AS 1684 and the requirements of NCC H1D6. Manufactured sizes must not be undersized to those specified, for all timber sizes, stress grades, spacing and wall bracing refer to Engineer's details. Tie-down details shall be in accordance with Engineer's details and comply with NCC H1D6 (4). Structural steel members shall comply with the requirements of clauses in NCC H1D6 (3). Refer to Engineer's details where provided.

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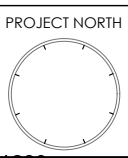
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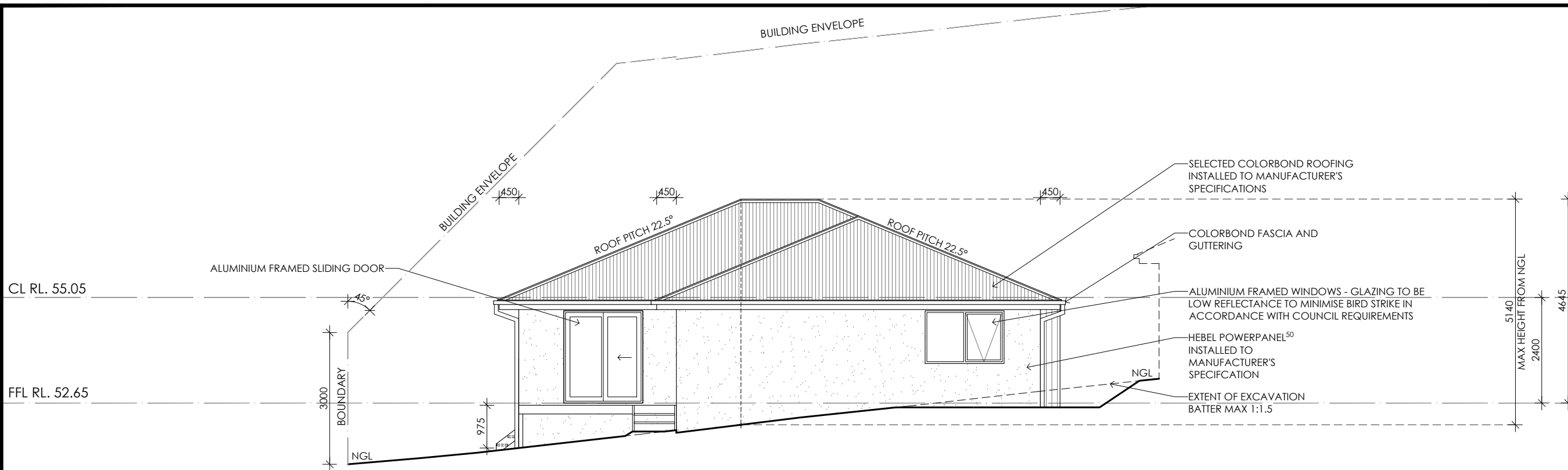
PROJECT NORTH
CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS.
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REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

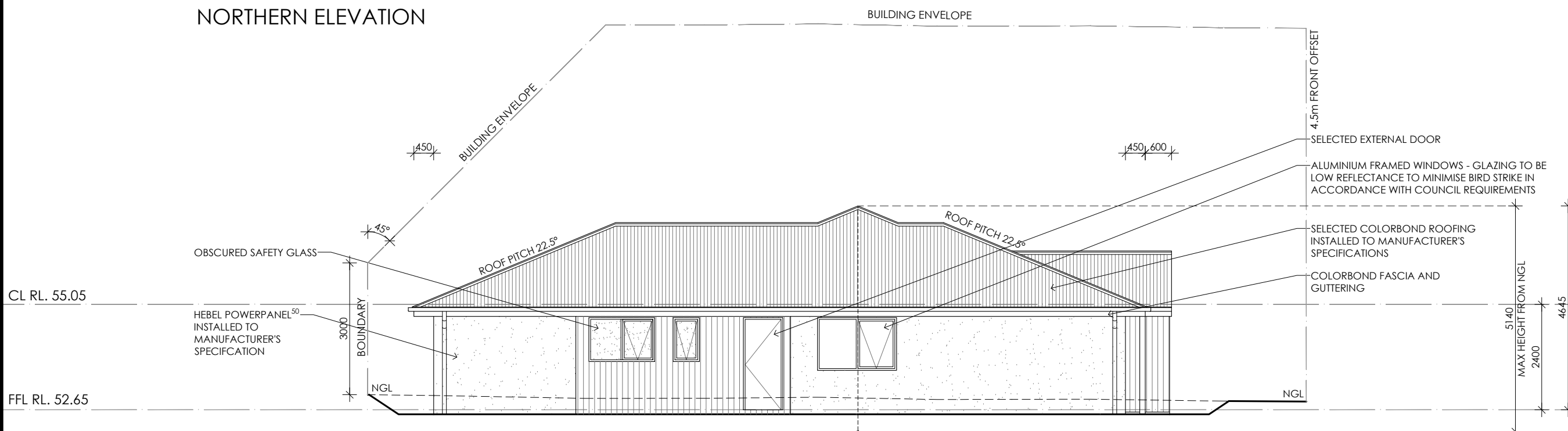
CREATIVE HOMES HOBART
CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY	
DESIGNER: I. Brown	ACCRED. NO.: CC6652
DRAWN: N. Nguyen	DATE: MAY 2023
CHECKED:	DATE:
SCALE: 1:100	REV: C

CLIENT: STUART AND EMILY O'BRIEN	SHEET: 9 of 15
DESIGN TYPE: Custom	DRAWING NO: 0067



NORTHERN ELEVATION



WESTERN ELEVATION

UNIT 2

GLAZING - ALL EXTERNAL GLASS SURFACES TO BE LOW REFLECTIVE TO COUNCIL COMPLIANCE AS TO MINIMISE BIRD STRIKE - REFLECTIVITY % BETWEEN 0 - 10%

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PRELIMINARY

REV:	DESCRIPTION:	BY:	DATE:
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A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

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CREATIVE HOMES HOBART

CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 10 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:100	REV: C	

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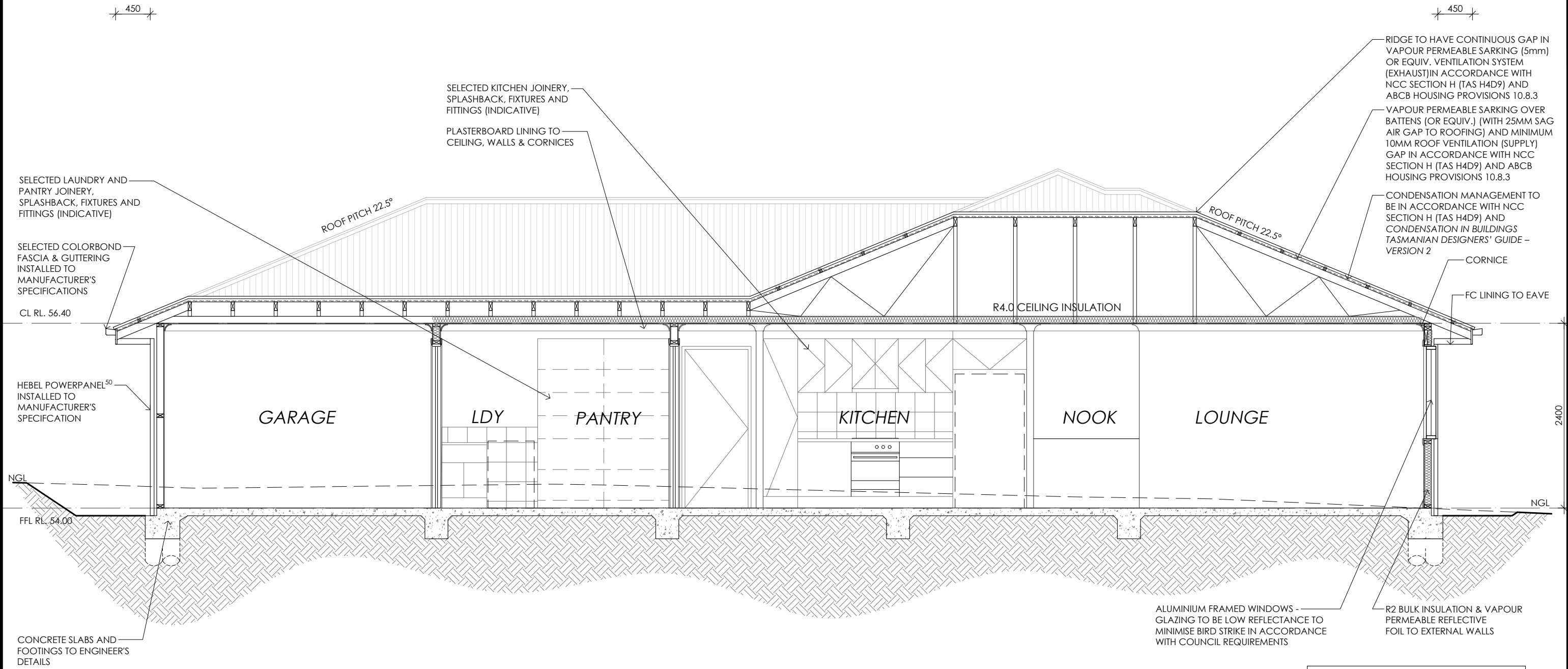
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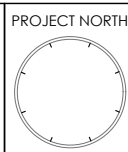


SECTION A-A

PRELIMINARY

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REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY	DESIGNER: I. Brown	ACCRED. NO.: CC6652
DRAWN: N. Nguyen	DATE: MAY 2023	CHECKED:
SCALE: 1:50	REV: C	

CLIENT: STUART AND EMILY O'BRIEN	SHEET: 11 of 15
DESIGN TYPE: Custom	DRAWING NO: 0067

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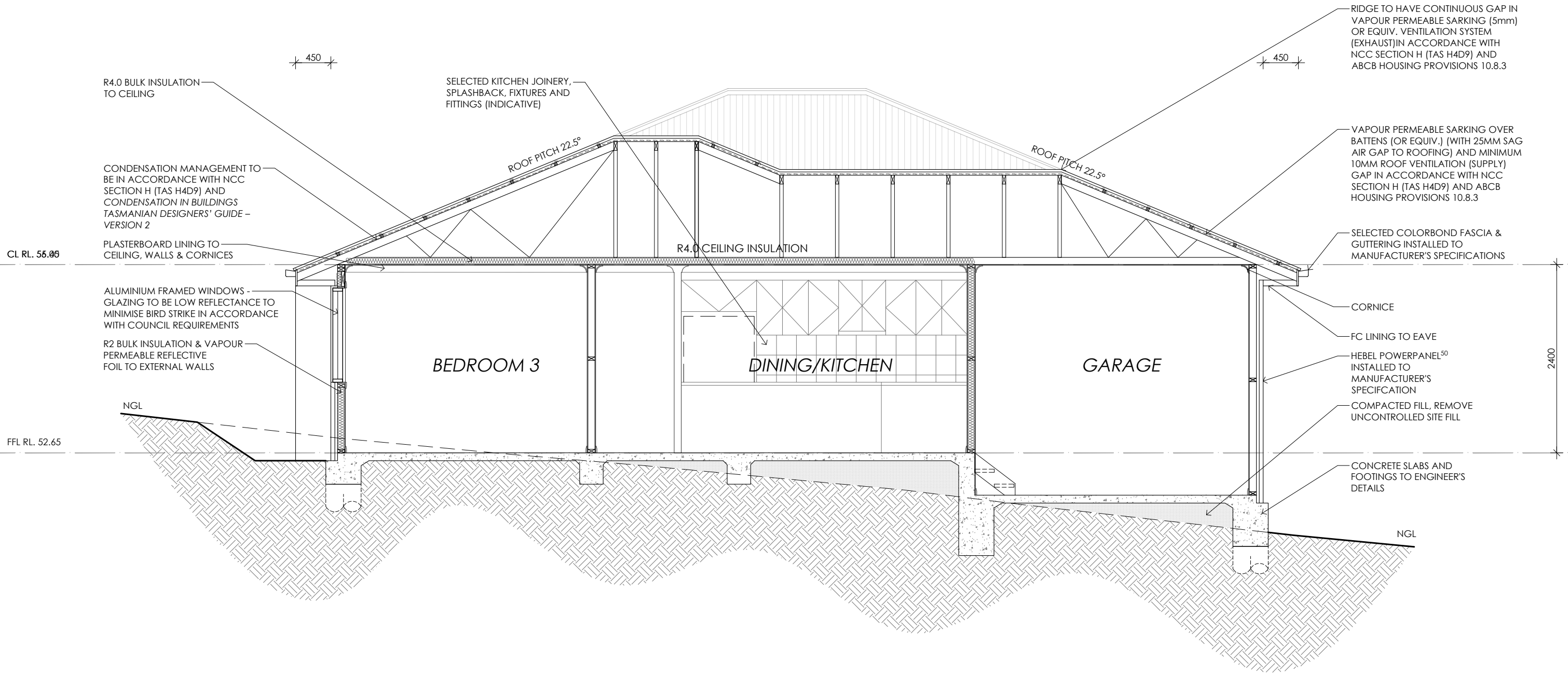
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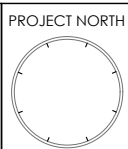


SECTION B-B

PRELIMINARY

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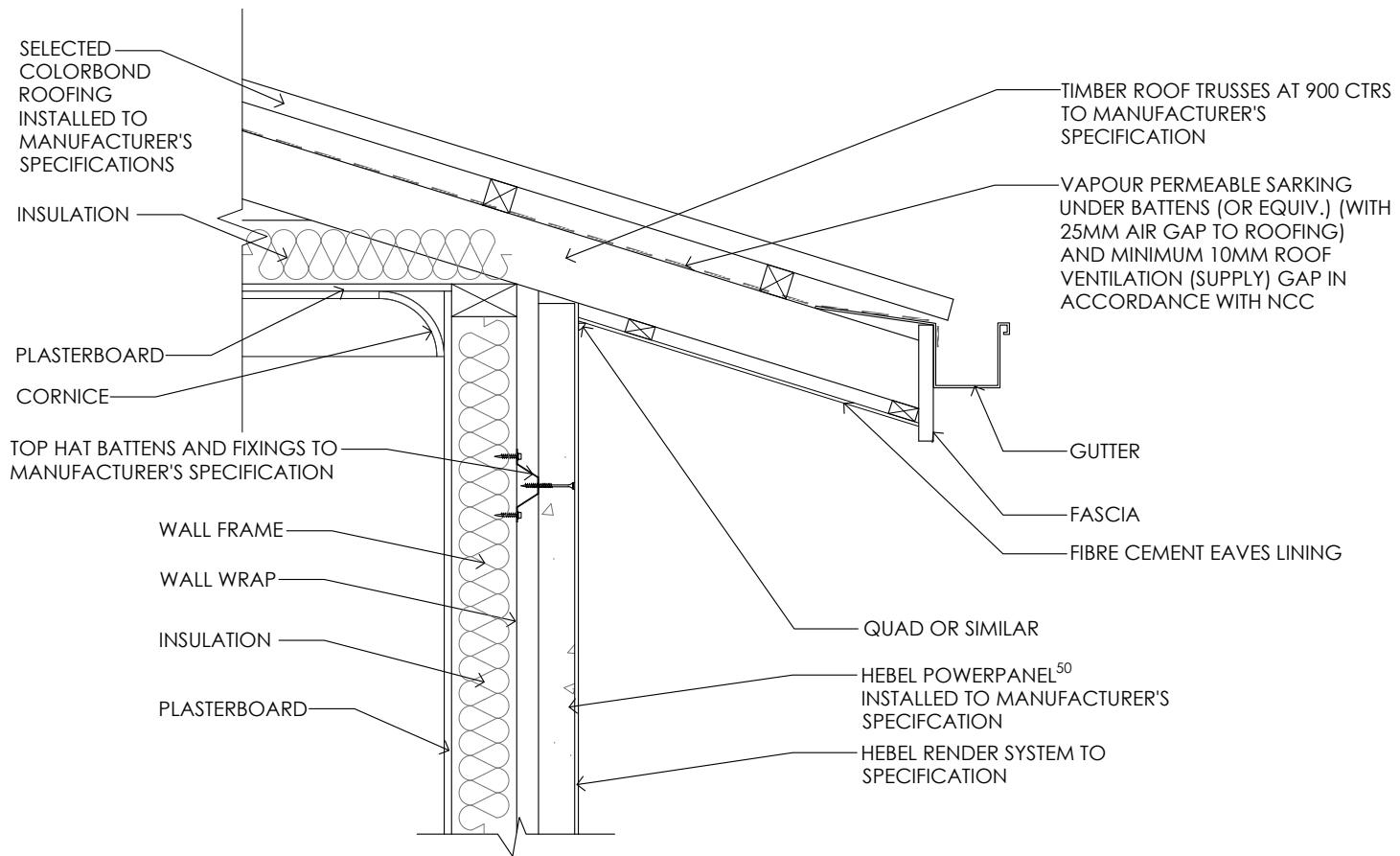


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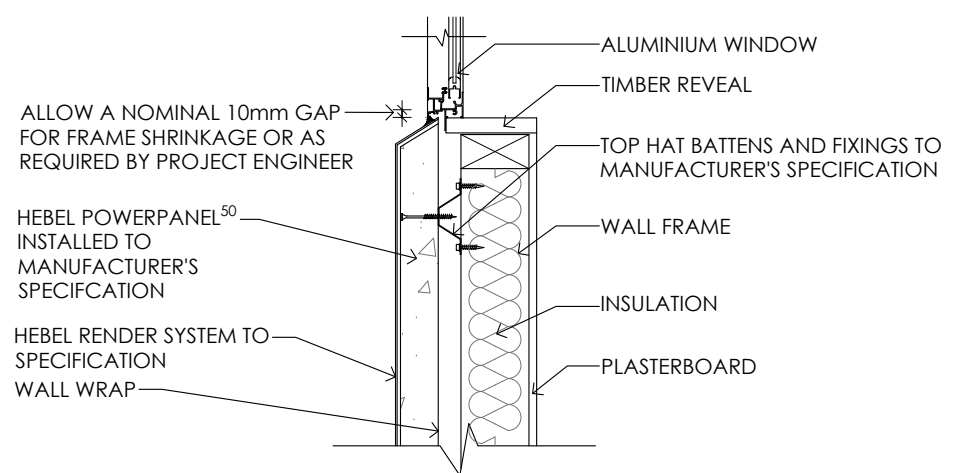
REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

CREATIVE HOMES HOBART
 CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

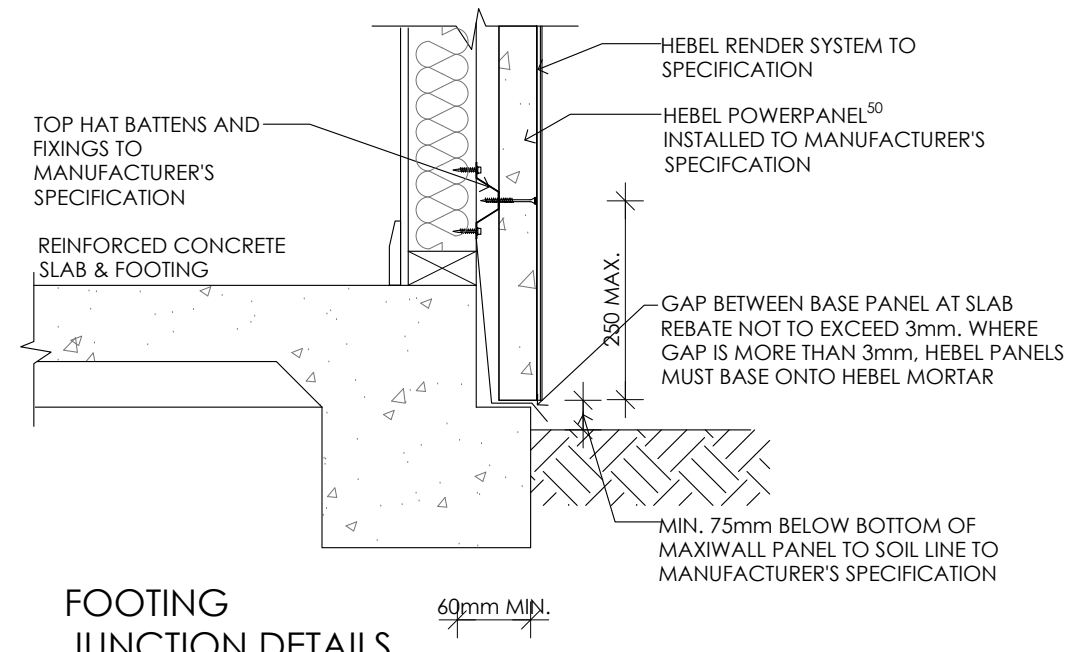
JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 12 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:50	REV: C	



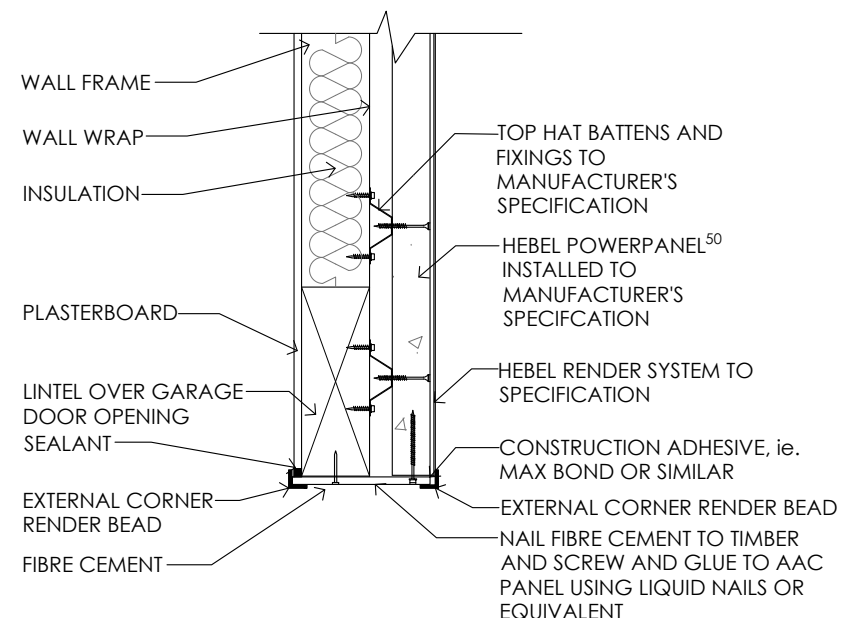
TYPICAL ROOF EAVES DETAILS



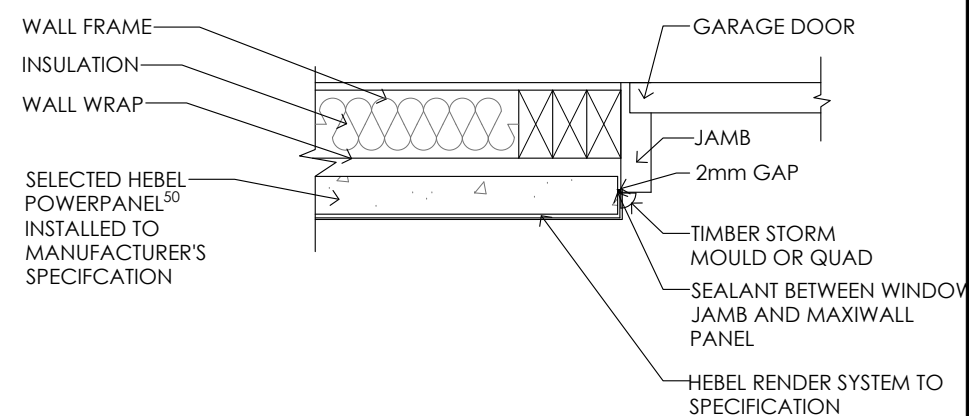
TYPICAL WINDOW SILL DETAIL ALUMINIUM WINDOW FRAME



FOOTING JUNCTION DETAILS



GARAGE DOOR - HEAD DETAIL

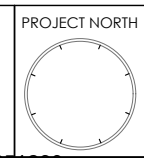


GARAGE DOOR - JAMB DETAIL

PRELIMINARY

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JOB ADDRESS: 19 DORA LANE ROKEBY	DESIGNER: I. Brown	ACCRED. NO.: CC6652
DRAWN: N. Nguyen	DATE: MAY 2023	CHECKED:
SCALE: 1:10	REV: C	

CLIENT: STUART AND EMILY O'BRIEN	SHEET: 13 of 15
DESIGN TYPE: Custom	DRAWING NO: 0067

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Note:
Builder and subcontractors to verify all dimension and levels prior to the commencement of any work. Give 24hrs minimum notice where amendments are required to design of working drawings. These drawings are to be read in conjunction with Engineer's and Surveyor's drawings and notes. Do not scale drawings. Dimensions are to take preference over scale. Building specification and Engineer's drawings shall override architectural drawings. All construction work shall be carried out in accordance with the state building regulations, local council by-laws and relevant NCC and AS codes.

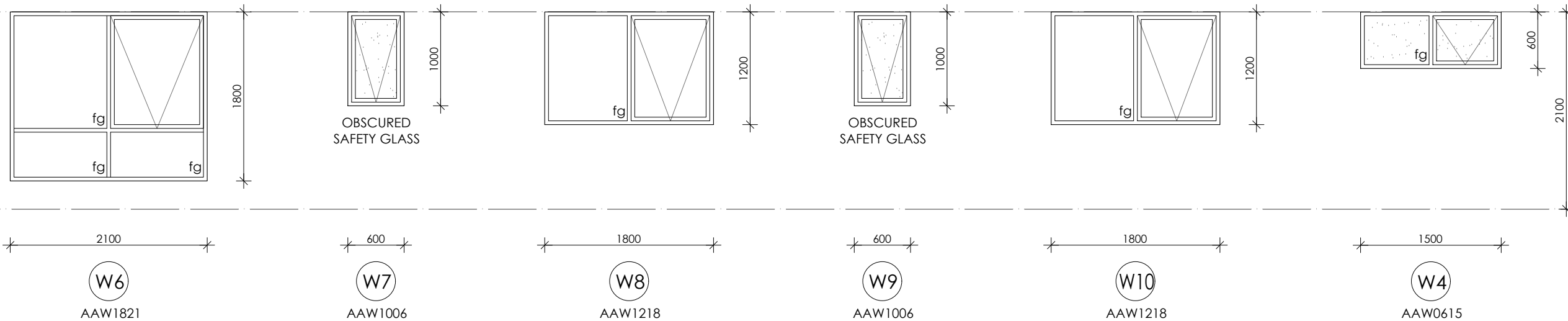
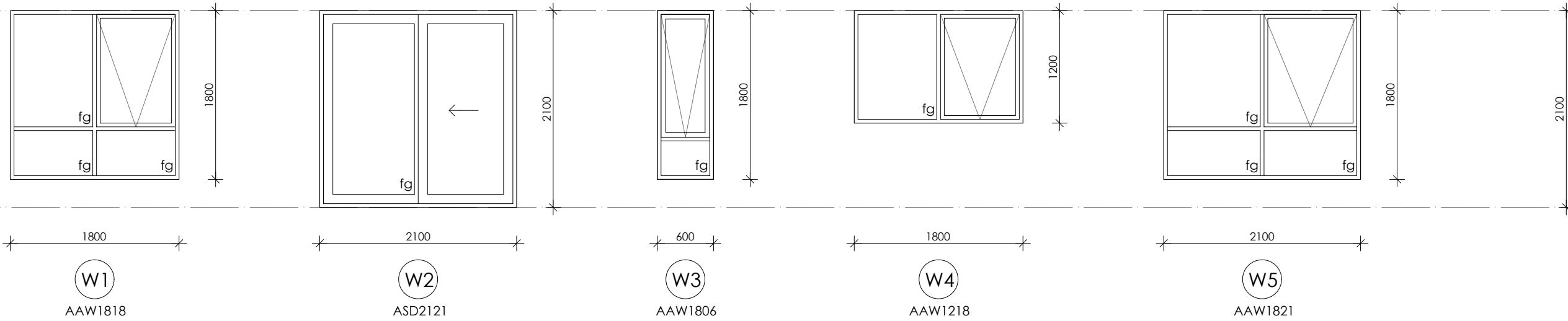
Important notice for attention of Owners: the Owners attention is drawn to the fact that foundations and associated drainage in all sites requires continuing maintenance to assist footing performance. Advice for foundation maintenance is contained in the CSIRO building technology file 18 and it is the Owners responsibility to maintain the site in accordance with this document.

Energy efficiency:
Insulation must comply with AS/NZS4859.1 and be installed in accordance with ABCB housing provisions Part 13.2.2 and comply with minimum R values for climate zone 7. Bulk insulation between external studs to be insulated with min R2.0. Ensure batts fit within cavity without compression, making sure that there is at least 25mm gap from the reflective surface). External walls are to be clad with vapour permeable reflective foil over the outside of the timber frame. Ceiling to be insulated with R4.0 and vapour permeable sarking. Floor to be insulated with Min R1.7 batts where applicable. Seal exhaust fans to Ensuite, Bathroom, Laundry and Kitchen. All downlights to be IC rated. Construction of the external walls, floor and roof for compliance with building sealing requirements shall comply with BCA 2019 Part 3.12

General:
All flashings, weep holes and damp proof coursing to be in accordance with NCC Housing provisions Part 5.7. Fibre cement sheet in accordance with NCC Housing provisions Part 7.5. Block construction in accordance NCC Housing provisions Part 5. Plasterboard linings to internal walls and ceilings with selected cornice. (see below for wet areas)

Wet areas: All wet areas shall comply with the requirements of ABCB Housing provisions Part 10.2. Provide waterproof plasterboard sheeting to all walls and ceilings. Provide ceramic tiles or other approved water resistant lining in accordance with Part 10.2.9 to a minimum height of 1800mm to shower walls and to a height of min 150mm behind baths, basins, sinks, troughs, washing machines and wall fixtures.

For construction of floor wastes refer to NCC ABCB Housing provisions part 10.2.12. For typical installation requirements for substrate preparation, penetrations, flashings/ junctions, membranes, screeds, hobs, baths, showers, door jambs and screens refer to ABCB Housing provisions part 10.2.14-32.



WINDOW SCHEDULE UNIT 1

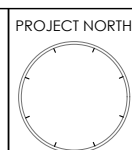
NOTE: ALL WINDOWS TO BE GLAZED WITH LOW REFLECTANCE GLAZING TO MINIMISE BIRD STRIKE IN ACCORDANCE WITH COUNCIL REQUIREMENTS.

fg FIXED GLAZING

PRELIMINARY

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CONTRACTOR MUST VERIFY ALL DIMENSIONS AND LEVELS AT THE JOB PRIOR TO COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS. DO NOT SCALE DRAWINGS. ALWAYS USE WRITTEN DIMENSIONS.

REV:	DESCRIPTION:	BY:	DATE:
SK5	ADD SINGLE GARAGE & REDESIGN UNIT 2	NN	11/6/25
A	ISSUED FOR CLIENT REVIEW	NN	11/7/25
B	ISSUED FOR APPROVAL	IB	22/7/25
C	CORRECTION TO SITE ADDRESS, COUNCIL RFI	IB	1/8/25

CREATIVE HOMES HOBART, CNR OF ELWICK ROAD & BROOKER HIGHWAY, GLENORCHY 7010 PH: 03 6272 3000

JOB ADDRESS: 19 DORA LANE ROKEBY	
DESIGNER: I. Brown	ACCRED. NO.: CC6652
DRAWN: N. Nguyen	DATE: MAY 2023
CHECKED:	DATE:
SCALE: 1:50	REV: C

CLIENT: STUART AND EMILY O'BRIEN	SHEET: 14 of 15
DESIGN TYPE: Custom	DRAWING NO: 0067

Framing NCC H1D6
All timber framing, fixing and bracing shall comply with AS 1684 and the requirements of NCC H1D6. Manufactured sizes must not be undersized to those specified, for all timber sizes, stress grades, spacing and wall bracing refer to Engineer's details. Tie-down details shall be in accordance with Engineer's details and comply with NCC H1D6 (4). Structural steel members shall comply with the requirements of clauses in NCC H1D6 (3). Refer to Engineer's details where provided.

Glazing NCC H1D8
All windows to be aluminium awning style, double glazed (obscured safety glass to bathrooms as shown on drawings) All glazing shall comply with the requirements of AS 2047 & AS 1288 and NCC H1D8.

Human impact safety requirements shall comply with NCC H1D8 (3) and Part 8.4 of the ABCB Housing provisions.

Note:
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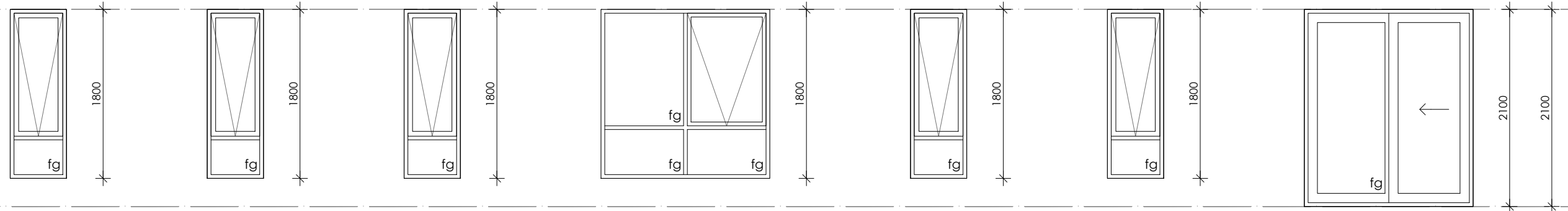
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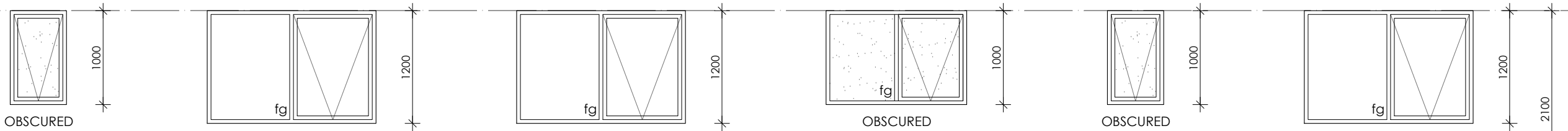
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W1 AAW1806 (600x1800)
W2 AAW1806 (600x1800)
W3 AAW1806 (600x1800)
W4 AAW1818 (1800x1800)
W5 AAW1806 (600x1800)
W6 AAW1806 (600x1800)
W7 ASD2118 (1800x2100)



W8 AAW1006 (600x1000)
W9 AAW1218 (1800x1200)
W10 AAW1218 (1800x1200)
W11 AAW1015 (1500x1000)
W12 AAW1006 (600x1000)
W13 AAW1218 (1800x1200)

WINDOW SCHEDULE UNIT 2

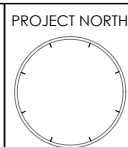
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JOB ADDRESS: 19 DORA LANE ROKEBY		CLIENT: STUART AND EMILY O'BRIEN
DESIGNER: I. Brown	ACCRED. NO.: CC6652	SHEET: 15 of 15
DRAWN: N. Nguyen	DATE: MAY 2023	DESIGN TYPE: Custom
CHECKED:	DATE:	DRAWING NO: 0067
SCALE: 1:50	REV: C	

DOYLE
SOIL
CONSULTING



SITE AND SOIL EVALUATION REPORT
FOUNDATION AND WINDLOADING ASSESSMENT

Lot 146 Dolina Dr
Rokeby

February 2024

Doyle Soil Consulting: 6/76 Auburn Rd Kingston Beach 7050 – 0488 080 455 – robyn@doylesoilconsulting.com.au

SITE INFORMATION

Client: Creative Homes Hobart

Address: Lot 146 Dolina Dr, Rokeby (Part of CT 184339/504)

Site Area: Approximately 761 m²

Date of inspection: 16/02/2024

Building type: New house

Services: Mains water and sewer

Planning Overlays: Paraville specific area plan, airport obstacle limitation area, priority vegetation area, bushfire prone area

Mapped Geology - Mineral Resources Tasmania 1:25 000 Hobart sheet:

Pua = Permian siltstone, sandstone, mudstone

Soil Depth: 0.8 – 1.05 m

Subsoil Drainage: Imperfectly drained

Drainage lines / water courses: Clarence Plains Rivulet 200 m east

Vegetation: Pasture

Rainfall in previous 7 days: Approximately 0 mm

Slope: Approximately 6° to the east

SITE ASSESSMENT AND SAMPLE TESTING

Site investigation and soil classification in accordance with AS 2870-2011 *Residential slabs and footings* and in accordance with AS 4055-2021 *Wind load for Housing*. Test holes were dug using a Christie Post Driver Soil Sampling Kit, comprising CHPD78 Christie Post Driver with Soil Sampling Tube (50 mm OD x 1600/2100 mm). For test hole and DCP locations, see Appendix 1.

- Two test hole (TH) cores:
 - TH1 with refusal at 1.05 m
 - TH2 with refusal at 0.4 m
- One Dynamic Cone Penetrometer (DCP) test:
 - DCP1 with refusal above 0.8 m
- Emerson Dispersion test on subsoils and linear shrinkage tests on all likely founding layers.

SOIL PROFILES – Test Hole 1



Depth (m)	Horizon	Description and field texture grade	USCS Class
0 – 0.20	FILL	Uncontrolled mixed clay topsoil fill.	
0.20 – 0.40	A1	Dark brown (10YR 3/3) Clay Loam , strong polyhedral fine structure, dry loose soft consistency, roots and common mudstone gravels.	ML
0.40 – 1.05	B2	Very dark grey (10YR 3/1) Medium Clay , medium angular blocky structure, firm common alluvial mudstone gravels. <u>Refusal</u>	CL

SOIL PROFILES – Test Hole 2

Depth (m)	Horizon	Description and field texture grade	USCS Class
0 – 0.3	A1	Dark yellowish brown (10YR 3/3) Silty Clay Loam , strong platy fine structure, soft crumbly dry consistency.	ML
0.30 – 0.40	B2	Dark yellowish brown (10YR 3/3), Silty Light Clay , medium coarse platy structure, medium dry friable consistency. <u>Refusal</u>	CL

SITE AND SOIL COMMENTS

The natural soil profiles are formed from colluvium derived from Permian mudstone. The profiles are moderately shallow to very shallow, with refusal occurring at approximately 0.4 to 1.05 m. The field textures of the soil profile are dominated by clay, which is moderately reactive

and moderately dispersive. The DCP indicates a suitable bearing capacity below 0.4 m. We recommend founding on the underlying, highly competent Permian mudstone bedrock at approximately 0.4 to 1.05 m.

LINEAR SHRINKAGE AND SOIL REACTIVITY

Samples of the clayey subsoils were tested for reactivity using the linear shrinkage test. Linear shrinkage provides an approximate guide to aid site classification (for foundations) based on the reactivity of clays. The results suggest the clays are moderately reactive (refer to tables below and *AS2870-2011 clause 2.1.2 table 2.1*).

TH #	Depth (m)	Length of mould (mm)	Longitudinal Shrinkage (LS) in mm	LS (%)	Soil Class
1	0.5 - 1.0	125	12.0	9.6	M

DCP TESTS AND ESTIMATED BEARING CAPACITY

A minimum bearing capacity of 100 kPa is required for strip and pad footings and under the edge footings and associated slab foundations (refer to tables below and *AS2870-2011 clause 2.4.5*). We provide estimated soil bearing strengths along with a variance range (+/-) based on a review of published literature relating field Dynamic Cone Penetrometer (DCP) readings to triaxial soil strength tests.

DCP testing is a method of estimating likely soil bearing capacity. However, surface layers (upper ~0.7 m) are subject to seasonal variation in soil moisture content leading to possible higher DCP values in summer/drought. Moisture-related variability in soil bearing capacity is most pronounced in clays - which may be very stiff to hard when dry, while only soft to firm under wetter conditions/seasons. DCP values below ~0.7 m are likely to be more typical of year-to-year soil bearing conditions in clayey and silty soils.

When estimating the suitable foundation depth, we take in to account the interplay between soil bearing capacity and seasonally variable soil moisture conditions in the upper layers. The subsoils were dry when tested (Feb '24).

The field DCP1 data indicates that the bearing capacity of the soil is at a *suitable* strength at 0.6 m. However, the more competent Permian mudstone bedrock at 0.8 would be the *recommended* foundation material.

Based on the DCP data and core depths, the recommended foundation depth can range from approximately 0.40 to 1.05 m.

DCP 1				
Depth (mm)	DCP n-number (Blows/100 mm)	DCP Penetration Index (mm/Blow)	Estimated Bearing Capacity (kPa = n x 30)	Likely Variance (+/-)
0 - 100	4	25.0	120	40
100 - 200	4	25.0	120	40
200 - 300	5	20.0	150	50
300 - 400	11	9.1	330	110
400 - 500	10	10.0	300	100
500 - 600	5	20.0	150	50
600 - 700	15	6.7	450	150
700 - 800	15	6.7	450	150

EMERSON AGGREGATE DISPERSION TEST

Soils with an excess of exchangeable sodium ions on the cation exchange complex (clays), can cause clay dispersion. Under some circumstances, the presence of dispersive soils can also lead to significant erosion, and in particular, tunnels leading to eventual gully erosion. Dispersive clay subsoil materials can also cause sealing of the soil surface – if left out in wet weather, they then dry and set very hard in dry weather. Based upon field survey of the property and the surrounding area, no erosion was identified at the site.

The subsoil was tested for dispersion using the Emerson Aggregate Test (EAT). Testing resulted in (worst-case) Emerson class 2(3), indicating presence of soils with moderate clay dispersion characteristics. As such, exposure to rainfall may lead to spontaneous clay dispersion.

To minimise this, we recommend coverage of exposed subsoil with topsoil or regular treatment with gypsum at 0.5 Kg/m² along with minimising subsoil disturbance whenever possible.

TH #	Depth (m)	Visual sign	Class
1	0.5-1.0	Some dispersion (obvious milkiness > 50% of aggregate affected)	2(3)

WIND CLASSIFICATION

The AS 4055-2021 *Wind load for Housing* classification of the site is:

Region:	A
Terrain Category:	TC1 (open space within < 500 m)
Shielding Classification:	PS (2nd row of housed abutting open space)
Topographic Classification:	T2 (top 3rd of 1:9 slope feature > 10 m height)
Wind Classification:	N3
Design Wind Gust Speed ($V_{h,u}$):	50 m/sec

SITE CLASSIFICATION AND RECOMMENDATIONS

For standard foundations (100 kPa bearing capacity), the site meets the criteria for a **Class S** site classification, as set out in AS2870-2011 (construction). The dominant reactivity of expected surface movement under normal soil moisture ranges for the location is 0 – 20 mm. We recommend founding on the underlying highly competent mudstone bedrock at approximately 0.4 to 1.05 m.

Note 1 – If founded entirely on underlying competent Permian mudstone bedrock (recommended), below approximately 0.2 to 0.4 m, and no part of the foundations, be it a slab, pier or footing, is in contact with/or is supported by the subsoils, then **Class A** would become an appropriate site classification.

Note 2 – All foundations require ongoing adequate drainage and vegetation management – please refer to the attached CSIRO foundation management BTF 18 sheet.

Note 3 – If any foundations are placed on FILL that is > 0.5 m in depth then **Class P** is applicable.

Note 4 – Based on the upper 0.6 m of soil, all plumbing fixtures and fittings should be installed using **Class S** as per *Appendix G AS/NZS 3500.2.2021*.

General Notes – Important points pertinent to maintenance of foundation soil conditions

This report relates to the soil and site conditions on the property at the time of the site assessment. The satisfactory long-term performance of footings is dependent upon on-going site maintenance by the owner.

Examples of abnormal moisture conditions developing after construction include the following:

- A) The effect of trees too close to the footings.
- B) Excessive or irregular watering of gardens adjacent to the footings.
- C) Failure to maintain site drainage affecting footings.
- D) Failure to repair plumbing leaks affecting footings.
- E) Loss of vegetation from near the building.

All earthworks on site must comply with AS 3798-2007 Guidelines on Earthworks for commercial and residential developments.

REPORT LIMITATIONS

Whilst every attempt is made to describe sub-surface conditions, natural variation will occur that cannot be determined by limited investigative soil testing. Therefore, discrepancies are possible between test results and observations during construction. It is our intention to accurately indicate the most probable soil type(s) and conditions for the area assessed. However, due to the nature of sampling an area, variations in soil type, soil depth and site conditions may occur.

We accept no responsibility for any differences between what we have reported and actual site and soil conditions for particular regions we could not directly assess at the time of inspection.

It is recommended that during construction, Doyle Soil Consulting and/or the design engineer be notified of any major variation to the foundation conditions as predicted in this report. Any changes to the site through excavations may alter the site classification.

In these cases, it is expected that the owner consult the author for a reclassification. This report requires certification via a form 55 certificate from Doyle Soil Consulting to validate its contents.

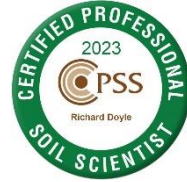
Because site discrepancies may occur between this report and actual site conditions, it is a condition of certification of this report that the builder be provided with a copy of this report.



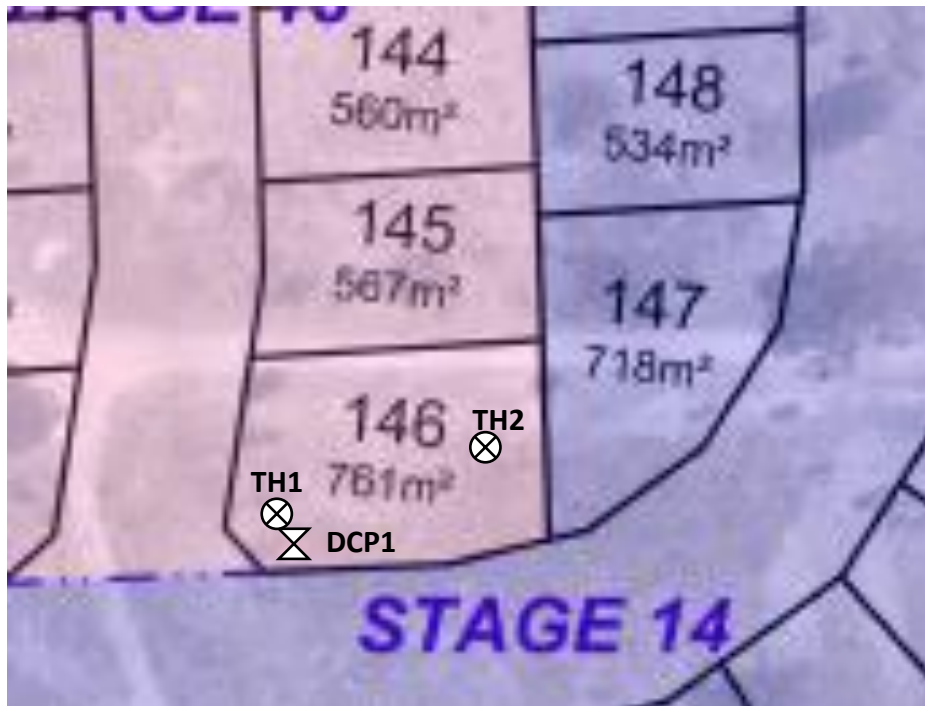
Rowan Mason
B.Agr.Sc.(Hons).
Soil Scientist



Dr Richard Doyle
B.Sc.(Hons), M.Sc.(Geol), Ph.D. (Soil Sci.), CPSS
(Certified Prof
Soil Scientist)
Geologist and Soil Scientist



APPENDIX 1 – Approximate test hole and DCP locations



APPENDIX 2 – Definitions of Soil Horizons

Horizon name	Meaning
A1	Dark topsoils, zone of maximum organic activity
A2 or E	Leached, light/pale washed-out sandy layer
A3 or AB	Transition from A to B, more like A
B1 or BA	Transition from A to B, more like B
B2	Main subsoils layer with brown colouration, accumulations of clay, humus, iron oxide, etc
B3	Transitional from B2 to C
C	Weakly weathered soil parent materials

Subscript	Meaning
r	Reducing conditions (anaerobic)
t	Enriched in translocated clay
s	Iron/aluminium oxide accumulations in subsoil
g	Mottled, suggesting periodic/seasonal wetness
m	Cemented layer (oxides, carbonates, humus, silica etc)
k	Calcium carbonate (lime) accumulation
h	Humus accumulation in subsoil

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

To: Owner /Agent
 Address
 Suburb/postcode

Form **55**

Qualified person details:

Qualified person:
Address: Phone No:
 Fax No:
Licence No: Email address:

Qualifications and Insurance details: *(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)*

Speciality area of expertise: *(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)*

Details of work:

Address: Lot No:
 Certificate of title No:
The assessable item related to this certificate: *(description of the assessable item being certified)*
Assessable item includes –

- a material;
- a design
- a form of construction
- a document
- testing of a component, building system or plumbing system
- an inspection, or assessment, performed

Certificate details:

Certificate type: *(description from Column 1 of Schedule 1 of the Director's Determination - Certificates by Qualified Persons for Assessable Items n)*

This certificate is in relation to the above assessable item, at any stage, as part of - (tick one)

building work, plumbing work or plumbing installation or demolition work:

or

a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents:

The attached Site and Soil Assessment Report for the address detailed above in, 'Details of Work'.

Relevant calculations:

Refer to above report.

References:

AS2870-2011 Residential slabs and footings
AS1726-2017 Geotechnical site investigations
CSIRO Building Technology File -18

Substance of Certificate: (what it is that is being certified)

Site classification consistent with AS2870-2011.


Scope and/or Limitations

The classification applies to the site as inspected and does not account for future alteration to foundation conditions as a result of earthworks, drainage condition changes or variations in site maintenance.

I certify the matters described in this certificate.

Qualified person:

Signed:



Certificate No:

1504

Date:

18/02/2024



Foundation Maintenance and Footing Performance: A Homeowner's Guide



PUBLISHING
BTF 18-2011
 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 2870-2011, 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, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

Notes

1. Where controlled fill has been used, the site may be classified A to E according to the type of fill used.
2. Filled sites. Class P is used for sites which include soft fills, such as clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soil subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.
3. Where deep-seated moisture changes exist on sites at depths of 3 m or greater, further classification is needed for Classes M to E (M-D, H1-D, H2-D and E-D).

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 perpend).

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

Seasonal swelling/shrinkage in clay

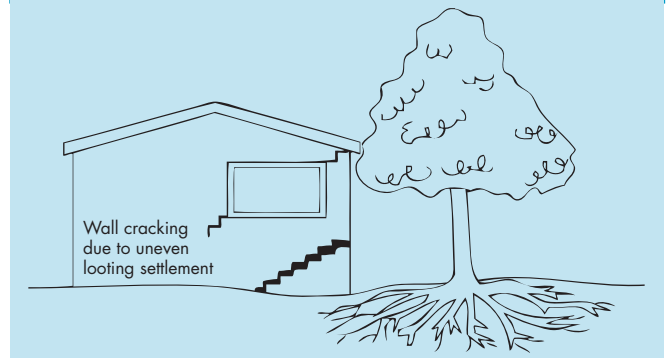
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the

Trees can cause shrinkage and damage



external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.

- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/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

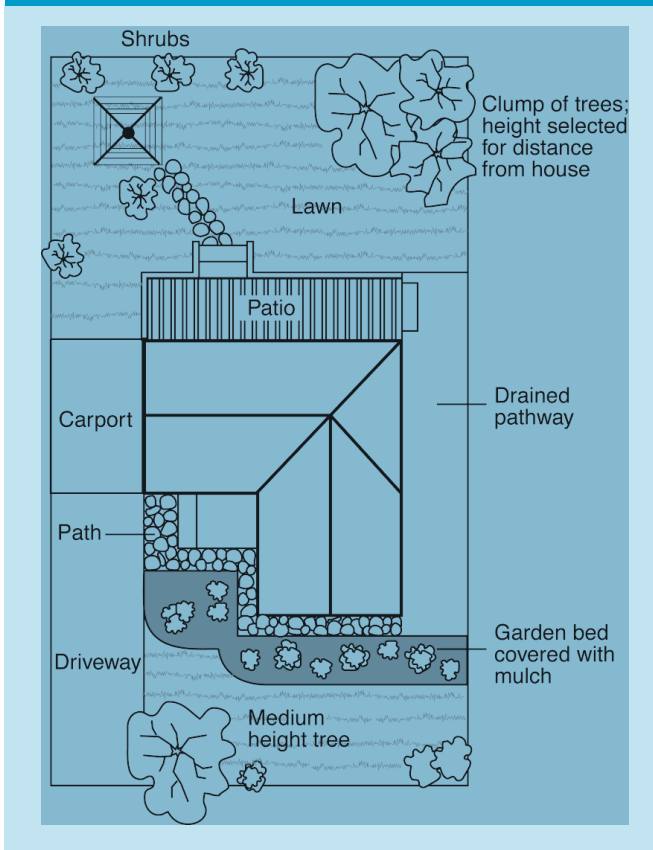
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

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 should

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 depends on number of cracks	4

Gardens for a reactive site



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.

The information in this and other issues in the series was derived from various sources and was believed to be correct when published.

The information is advisory. It is provided in good faith and not claimed to be an exhaustive treatment of the relevant subject.

Further professional advice needs to be obtained before taking any action based on the information provided.

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