



## **DEVELOPMENT APPLICATION**

### **PDPLANPMTD-2024/042778**

**PROPOSAL:** Dwelling

**LOCATION:** 426 Prossers Road, Richmond

**RELEVANT PLANNING SCHEME:** Tasmanian Planning Scheme - Clarence

**ADVERTISING EXPIRY DATE:** 24 April 2024

The relevant plans and documents can be inspected at the Council offices, 38 Bligh Street, Rosny Park, during normal office hours until 24 April 2024. In addition to legislative requirements, plans and documents can also be viewed at [www.ccc.tas.gov.au](http://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](mailto:clarence@ccc.tas.gov.au). Representations must be received by Council on or before 24 April 2024.

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](http://www.ccc.tas.gov.au) or at the Council offices.



Clarence... a brighter place

# Clarence City Council

## APPLICATION FOR DEVELOPMENT / USE OR SUBDIVISION

The personal information on this form is required by Council for the development of land under the Land Use Planning and Approvals Act 1993. We will only use your personal information for this and other related purposes. If this information is not provided, we may not be able to deal with this matter. You may access and/or amend your personal information at any time. How we use this information is explained in our **Privacy Policy**, which is available at [www.ccc.tas.gov.au](http://www.ccc.tas.gov.au) or at Council offices.

Proposal:

New dwelling and on-site waste water treatment sytem

Location:

Address..... 426 Prossers Road

Suburb/Town ..... Richmond, TAS ..... Postcode ..... 7025

Current Owners/s:

Applicant:

**Personal Information Removed**

Tax Invoice for application fees to be in the name of: (if different from applicant)

Estimated cost of development

\$ 700,000

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 a Council Officer, please give their name

Current Use of Site:

Rural Resource / Vineyard

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. Where the application is submitted under Section 43A, the owner's 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 in electronic format only.*

Applicant's Signature:

Signature.....Date 11.03.2024

**PLEASE REFER TO THE DEVELOPMENT/USE AND SUBDIVISION CHECKLIST ON THE FOLLOWING PAGES TO DETERMINE WHAT DOCUMENTATION MUST BE SUBMITTED WITH YOUR APPLICATION.**

Documentation required:

### 1. **MANDATORY DOCUMENTATION**

*This information is required for the application to be valid. An application lodged without these items is unable to proceed.*

- 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 Council.

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

### 2. **ADDITIONAL DOCUMENTATION**

*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 plan 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 Council's Planning Officers on (03) 6217 9550 who will be pleased to assist.*

SEARCH OF TORRENS TITLE

VOLUME 175764	FOLIO 11
EDITION 3	DATE OF ISSUE 17-Feb-2021

SEARCH DATE : 07-Jan-2024

SEARCH TIME : 03.12 PM

DESCRIPTION OF LAND

City of CLARENCE  
 Lot 11 on Sealed Plan 175764  
 Derivation : Part of 3,243 Acres Gtd. to William Thomas  
 Parramore  
 Prior CT 175513/1

SCHEDULE 1

M871859 TRANSFER to PAUL GORDON WILLCOCK and SARA ALEXANDRA  
 CHUGG Registered 17-Feb-2021 at noon

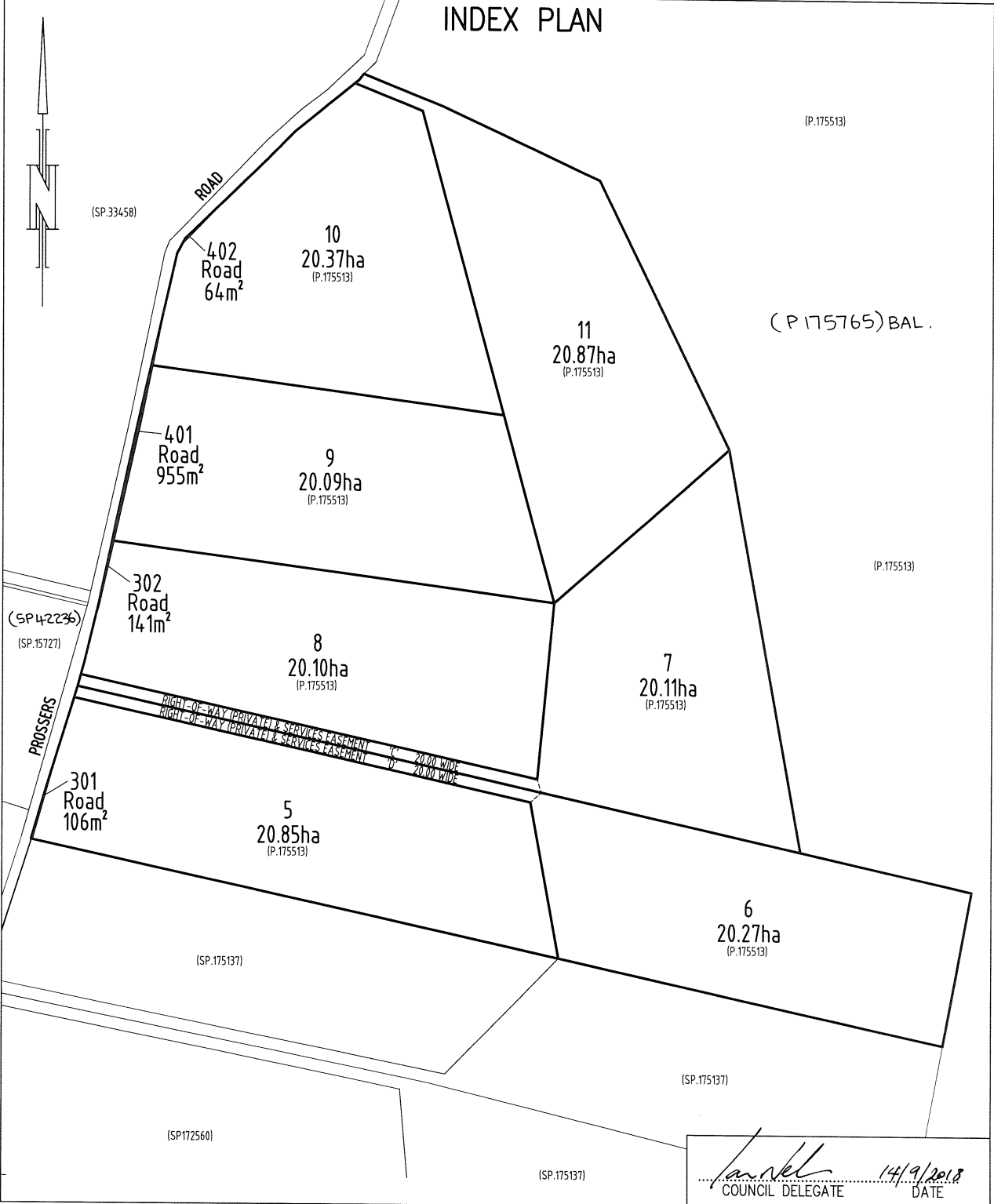
SCHEDULE 2

Reservations and conditions in the Crown Grant if any  
 SP175764 COVENANTS in Schedule of Easements  
 SP175764 FENCING PROVISION in Schedule of Easements

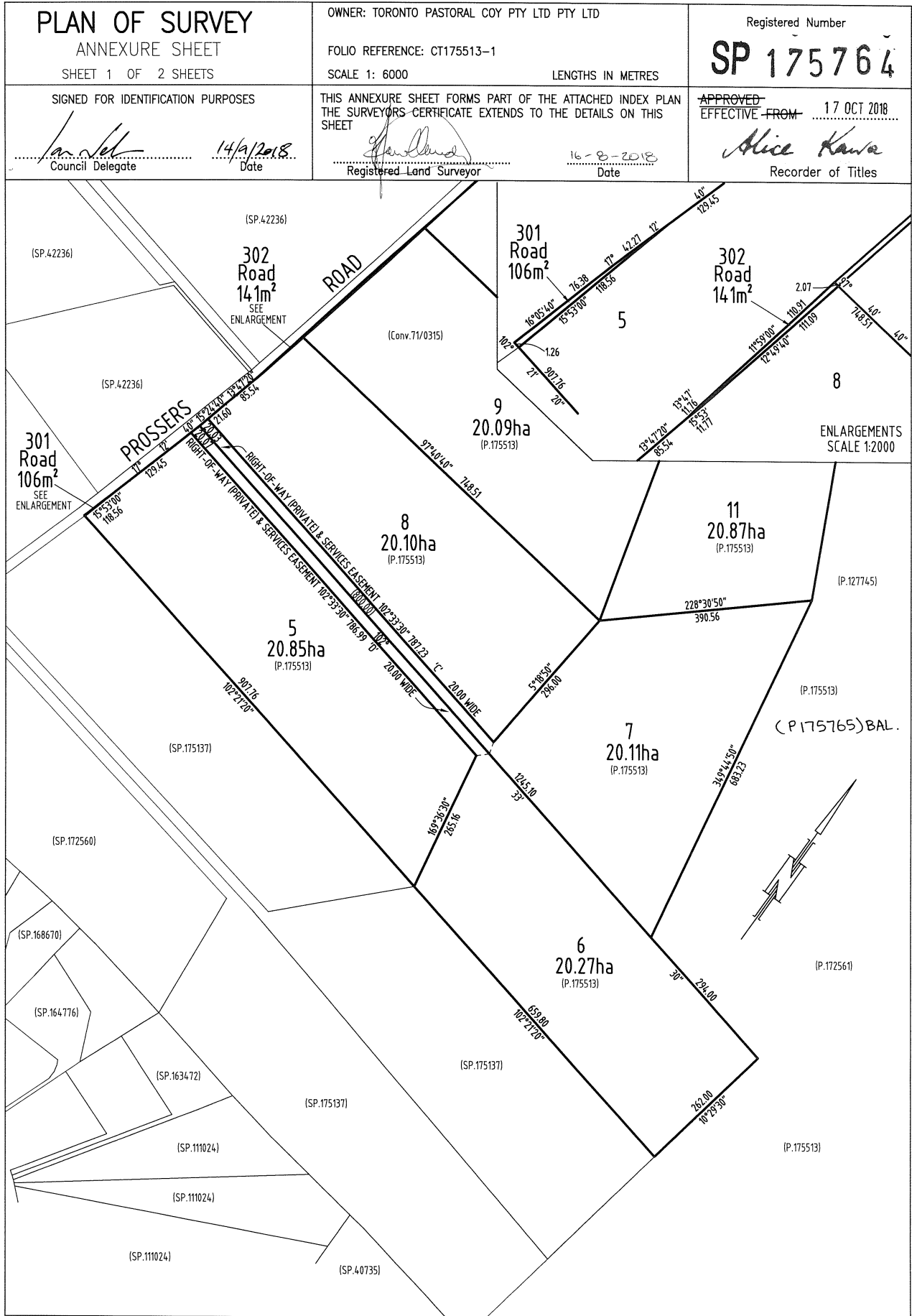
UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

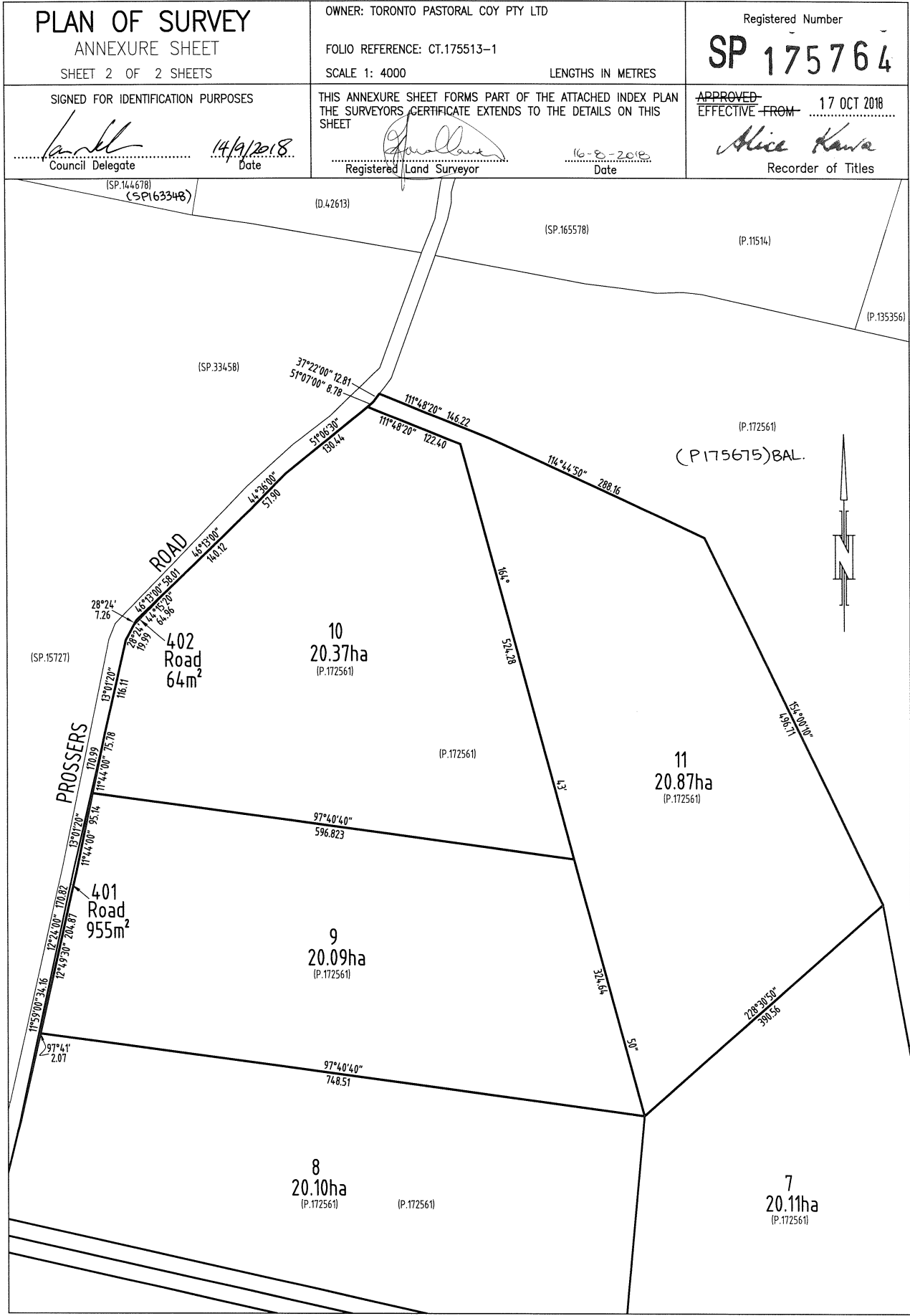
OWNER: TORONTO PASTORAL COY PTY LTD	<p><b>PLAN OF SURVEY</b>                  BY SURVEYOR TIMOTHY LEIGH GOWLLAND  <b>ROGERSON AND BIRCH SURVEYORS</b>                  UNIT 1 - 2 KENNEDY DRIVE, CAMBRIDGE PARK                  PH 6248-5898 MOB. 0419-594-966</p>	REGISTERED NUMBER <b>SP175764</b>
FOLIO REFERENCE: CT.175513-1		APPROVED EFFECTIVE FROM 17 OCT 2018 <i>Alice Kawa</i> Recorder of Titles
GRANTEE: PART OF 3243 ACRES GRANTED TO WILLIAM THOMAS PARRAMORE	<b>CITY OF CLARENCE</b>	
MAPSHEET MUNICIPAL CODE No. 107 (5227)	LAST UPI No.3505434	LAST PLAN No. P.175513
ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN		



*[Signature]* 14/9/2018  
 COUNCIL DELEGATE DATE







<b>SCHEDULE OF EASEMENTS</b>	Registered Number
<b>NOTE:</b> THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	<b>SP 175764</b>

PAGE 1 OF 3 PAGE/S

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.

**Right of Way Easement**

Lot 6 on the plan is SUBJECT TO a right of carriageway over that part of Lot 6 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" appurtenant to Lots 5, 7 and 8 on the plan

Lot 7 on the plan is SUBJECT TO a right of carriageway over that part of Lot 7 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" appurtenant to Lots 5, 6 and 8 on the plan

Lot 5 on the plan is TOGETHER WITH a right of carriageway over those parts of Lot 6 and Lot 7 shown on the plan as RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" and "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" respectively

Lot 6 on the plan is TOGETHER WITH a right of carriageway over that part of Lot 7 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE"

Lot 7 on the plan is TOGETHER WITH a right of carriageway over that part of Lot 6 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE"

Lot 8 on the plan is TOGETHER WITH a right of carriageway over those parts of Lot 6 and Lot 7 shown on the plan as RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" and "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" respectively


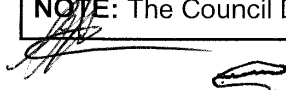
**Services Easement**

Lot 6 on the plan is SUBJECT TO a Services Easement over that part of Lot 6 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" appurtenant to Lots 5, 7 and 8 on the plan

Lot 7 on the plan is SUBJECT TO a Services Easement over that part of Lot 7 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" appurtenant to Lots 5, 6 and 8 on the plan

T-T0935243-1

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REF: 175513/1 SOLICITOR & REFERENCE: Dobson Mitchell Allport – James Ramsay	PLAN SEALED BY: CLARENCE CITY COUNCIL DATE: 14/9/2018 SD-2015/18 REF NO.  Council Delegate
<p><b>NOTE:</b> The Council Delegate must sign the Certificate for the purposes of identification.</p> 	

<p><b>ANNEXURE TO SCHEDULE OF EASEMENTS</b></p> <p>PAGE 2 OF 3 PAGES</p>	<p>Registered Number</p> <p><b>SP 175764</b></p>
<p>SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REFERENCE: 175513/1</p>	

Lot 5 on the plan is TOGETHER WITH a Services Easement over those parts of Lot 6 and Lot 7 shown on the plan as RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" and "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" respectively

Lot 6 on the plan is TOGETHER WITH a Services Easement over that part of Lot 7 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE"

Lot 7 on the plan is TOGETHER WITH a Services Easement over that part of Lot 6 shown on the plan as "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE"

Lot 8 on the plan is TOGETHER WITH a Services Easement over those parts of Lot 6 and Lot 7 shown on the plan as RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'D' 20.00 WIDE" and "RIGHT OF WAY (PRIVATE) & SERVICES EASEMENT 'C' 20.00 WIDE" respectively

**Restrictive Covenant**

The owners of Lots 5, 6, 7, 8, 9, 10 and 11 on the plan covenant with the Vendor, the Council, the owners for the time being of every other lot shown on the plan (if any) and the Balance Land to the intent that the burden of this covenant may run with and bind the covenantor's lot, and every part of it, and that the benefit of it may be annexed to and devolve with each and every part of every other lot shown on the plan (and with the Balance Land and each and every part of it and Council) to observe the following stipulations:

1. NOT TO develop Lot 5, 6, 7, 8, 9, 10 and/or 11 (as the case maybe) otherwise than in accordance with the recommendations of the Bushfire Hazard Management Plan J153011PH-B01 prepared by JMG dated 1 May 2015 or in accordance with the recommendations of an alternative Bushfire Hazard Management Plan prepared by an accredited person as required by the Tasmania Fire Service

**Fencing Provision**

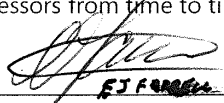
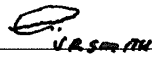
In respect of each lot shown on the plan the Vendor will not be required to fence

**Definitions**

**Balance Land** means the balance of the land remaining in folio of the Register Volume 175513 Folio 1 at the date of acceptance of the plan excepting Lots 5, 6, 7, 8, 9, 10 and 11 on the plan  
& 301, 302, 401 & 402

**Council** means the Clarence City Council ABN 35 264 254 198 or its legal successors from time to time

**Services Easement** means the full and free right of every person who is entitled to an estate or interest in possession in the land indicated as the dominant tenement or any part of that land, and those persons' employees, agents and contractors, with which such right being capable of enjoyment in common with the owner of the servient tenement and the relevant Council, the relevant Water Authority, Aurora Energy Pty Ltd or any other relevant electrical supply entity and Telstra Corporation Ltd or any other telecommunication supply entity (and their successors from time to time), to lay services and to have the right of free and uninterrupted

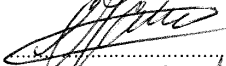

T-T0935243-1  
**NOTE:** Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

<p><b>ANNEXURE TO SCHEDULE OF EASEMENTS</b></p> <p>PAGE 3 OF 3 PAGES</p>	<p>Registered Number</p> <p><b>SP 175764</b></p>
<p>SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REFERENCE: 175513/1</p>	

passage and running of water, electricity, telephone or other services or supplies (including electronic or other information transfer services) through, under, over and along the easement by pipes, wires, cables, poles, and all other conducting media which are now or at any time laid under or over the easement provided that pipes, wires, cables and all other conducting media under the natural surface of the land are safe and protected in accordance with all relevant Acts, Regulations or By-laws, together with a right for them and their surveyors and workmen to enter on the easement with or without machinery, materials and specialist service providers for the purposes of inspecting, laying, installing, cleaning, repairing, maintaining, renewing, re-laying or removing any such pipes, wires, cables, poles or other conducting media, with every person exercising such right causing as little damage and inconvenience as reasonably practicable in so doing and making good any damage caused to the servient tenement.

**Vendor** means Toronto Pastoral Coy Pty Ltd ACN 009 480 086 or its legal successors from time to time

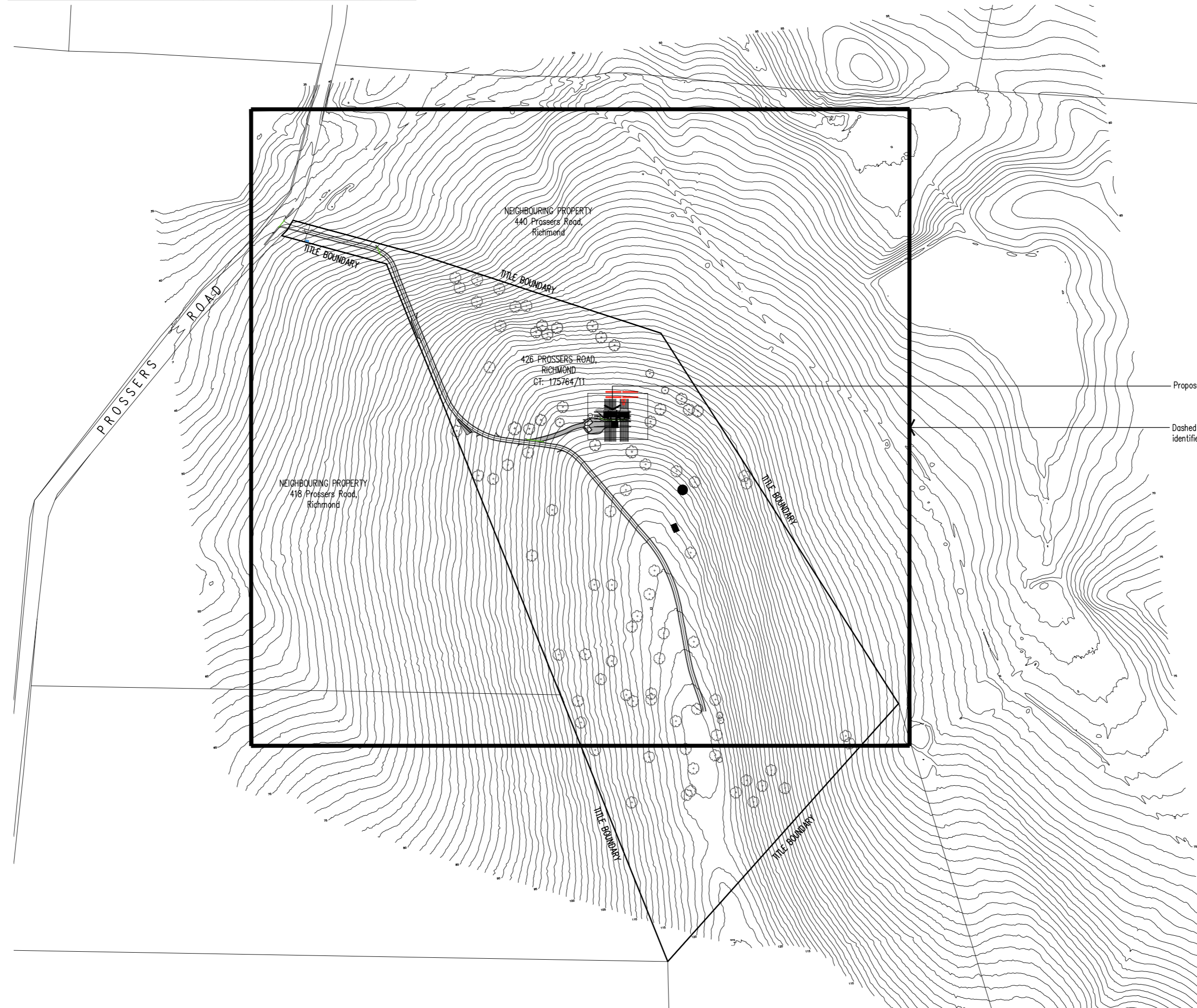
Executed by **Toronto Pastoral Coy Pty Ltd** in accordance )  
with section 127(1) of the *Corporations Act 2001* )


  
 Full name: *Andrew John Farrell* / Full name: *VALENTINE ROY SMITH*  
 Position held: *Director* / Position held: *DIRECTOR*

T-T0935243-1  
**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.

DESIGN DETAILS		
TITLE REFERENCE		
PROPERTY ID	9142341	
CERTIFICATE FOLD	175764	
VOLUME	11	
FLOOR AREAS		
EXISTING SITE AREA	20.87	ha
EXISTING GROUND FLOOR	N/A	m <sup>2</sup>
PROPOSED GROUND FLOOR	171	m <sup>2</sup>
PROPOSED CARPORT	39.6	m <sup>2</sup>
PROPOSED TOTAL GROUND FLOOR	210.6	m <sup>2</sup>
CLARENCE CITY COUNCIL PLANNING INFORMATION		
PLANNING SCHEME ZONE	RURAL RESOURCE	
SITE INFORMATION		
DESIGN WIND CLASSIFICATION	N3	
DESIGN WIND VELOCITY Vh,S	M/S	M/S
DESIGN WIND VELOCITY Vh,U	50	M/S
SOIL CLASSIFICATION	Class P	
CLIMATE ZONE	7	
BAL RATING	12.5	
ALPINE AREA	-	
CORROSION ENVIRONMENT	-	
OTHER HAZARDS	-	

DRAWING SCHEDULE - ARCHITECTURAL			
DRAWING NUMBER	TITLE	11/03/24	02/04/24
A00-00	Cover Sheet	A	B
A00-01	Site Plan	A	
A00-02	Driveway Plan - Part 1	-	B
A00-03	Driveway Plan - Part 2	-	B
A00-04	Driveway Plan - Part 3	-	B
A02-00	Greater Floor Plan 1:200	A	-
A02-01	Floor Plan 1:100	A	-
A02-50	Roof Plan	A	-
A04-00	Elevations	A	-
A04-01	Elevations	A	-



LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



**Hobart**  
 60 Barrack Street Hobart TAS 7000  
 T 61 3 6231 2563  
 A 61 3 6231 0772

**Melbourne**  
 3 Trevell Road South Yarra VIC 3141  
 T 61 3 9627 8902  
 info@prestonlane.com.au  
 prestonlane.com.au

The Builder/Contractor shall verify job dimensions prior to any work commencing. Figured dimensions shall take precedence over scaled work.

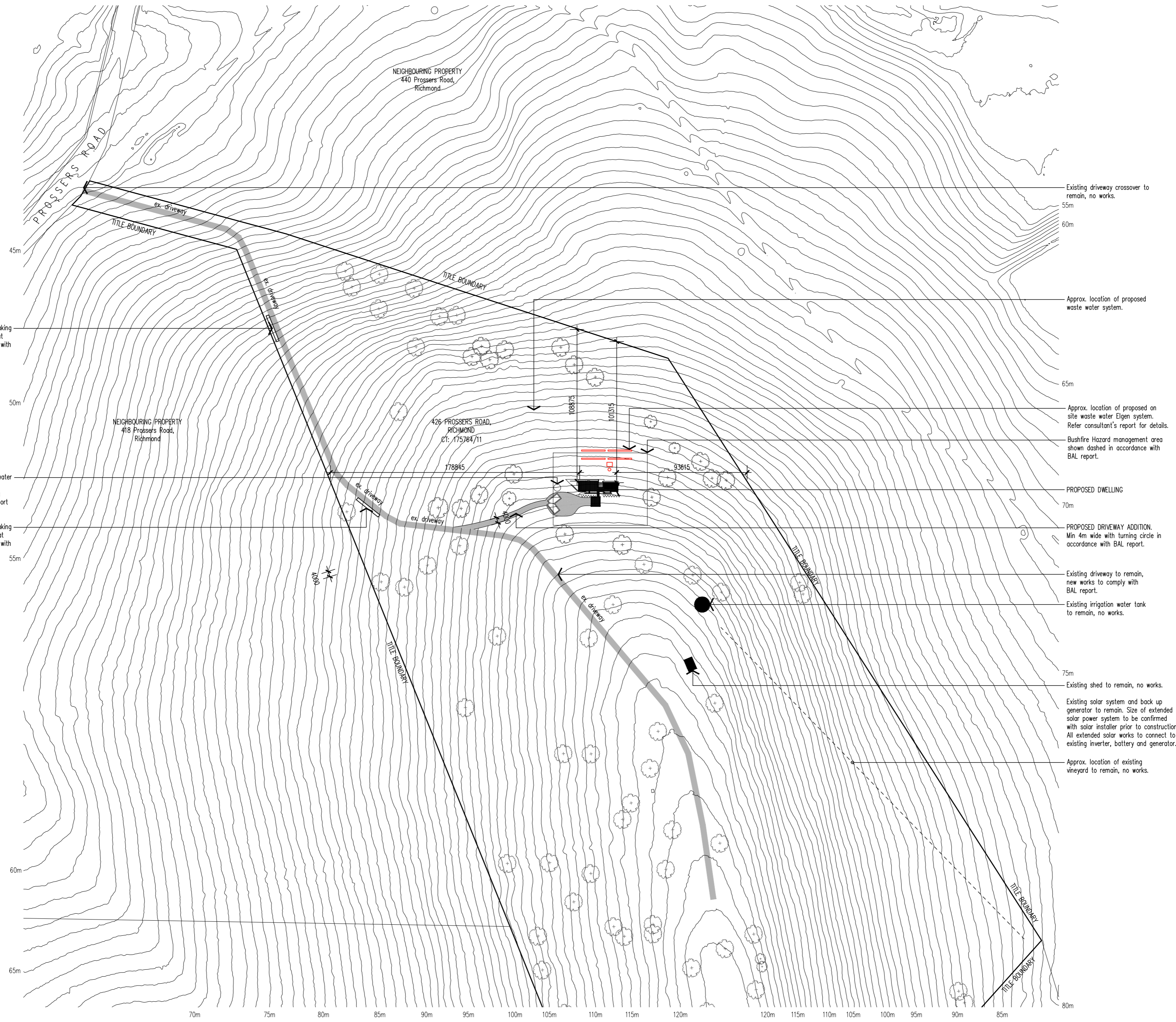
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Proprietor	S.CHUGG & P.WILLCOCK		
Project	426 PROSSERS ROAD RICHMOND, TAS		
Drawing	SITE PLAN		
Scale	1:4000 @ A2		
Revision			
A	11/03/2024	Issued for DA	SC SC
B	02/04/2024	Issued for DA RFI 01	SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**

Existing gum tree to remain, no works.



Approx. location of proposed overtaking bay #1. Min 2m wide x 20m long at max 200m intervals in accordance with AS3959 and BAL report.

Approx. location of proposed rain water tank to be located within 3m of hardstand. Min 10,000L fire fighting reserve in accordance with BAL report

Approx. location of proposed overtaking bay #2. Min 2m wide x 20m long at max 200m intervals in accordance with AS3959 and BAL report.

Existing driveway crossover to remain, no works.

Approx. location of proposed waste water system.

Approx. location of proposed on site waste water Elgen system. Refer consultant's report for details.

Bushfire Hazard management area shown dashed in accordance with BAL report.

PROPOSED DWELLING

PROPOSED DRIVEWAY ADDITION. Min 4m wide with turning circle in accordance with BAL report.

Existing driveway to remain, new works to comply with BAL report.

Existing irrigation water tank to remain, no works.

Existing shed to remain, no works.

Existing solar system and back up generator to remain. Size of extended solar power system to be confirmed with solar installer prior to construction. All extended solar works to connect to existing inverter, battery and generator.

Approx. location of existing vineyard to remain, no works.

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



**Hobart**  
 60 Barrack Street Hobart TAS 7000  
 T 61 3 6231 2563  
 A 61 3 6231 2772  
**Melbourne**  
 3 Trevell Road South Yarra VIC 3141  
 T 61 3 9627 8902  
 info@prestonlane.com.au  
 prestonlane.com.au

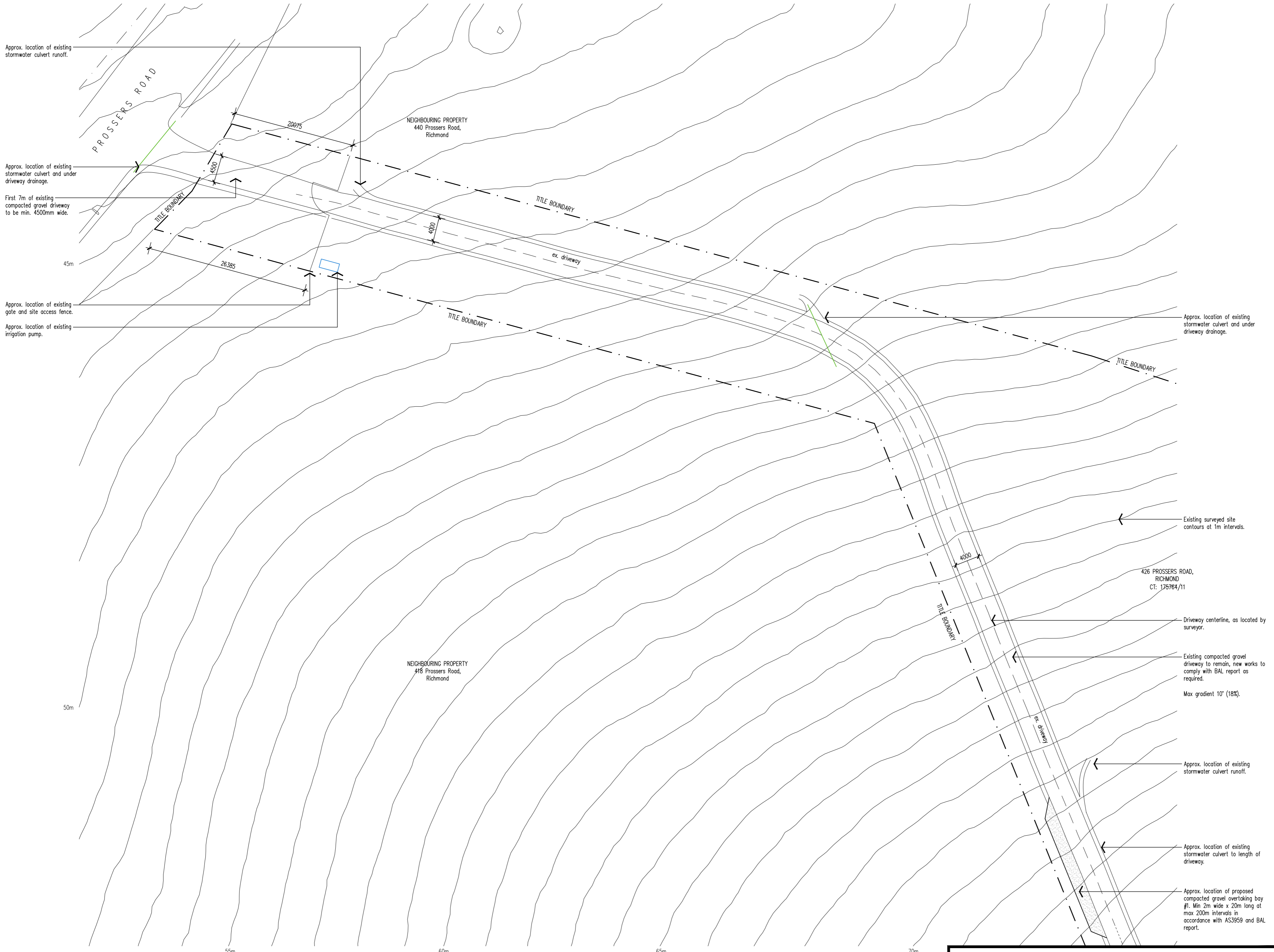
The Builder/Contractor shall verify job dimensions prior to any work commencing. Figured dimensions shall take precedence over scaled work.  
 No part of this drawing shall be reproduced or otherwise dealt with without the prior written consent of Preston Lane.



Proprietor	S.CHUGG & P.WILLCOCK
Project	426 PROSSERS ROAD RICHMOND, TAS
Drawing	SITE PLAN
Scale	1:200 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**

Drawing Number A00-01 rev A



- Existing gum tree to remain, no works.
- NOTE:
- Existing and proposed driveway finish to be compacted gravel.
  - All storm water runoff to be contained on site.

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



**Hebert**  
 60 Barrack Street Hobart TAS 7000  
 T 61 3 6231 2563  
 A 61 3 6231 2577

**McIlwaine**  
 3 Trevell Road South Yarra VIC 3141  
 T 61 3 9627 8902  
 info@prestonlane.com.au  
 prestonlane.com.au

The Builder/Contractor shall verify job dimensions prior to any work commencing. Figured dimensions shall take precedence over scaled work.

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Proprietor	S.CHUGG & P.WILLCOCK		
Project	426 PROSSERS ROAD RICHMOND, TAS		
Drawing	DRIVEWAY PLAN PART 1		
Scale	1:400 @ A2		
Revision			
A	11/03/2024	Issued for DA	SC SC
B	02/04/2024	Issued for DA RFI 01	SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**

Existing gum tree to remain, no works.

- NOTE:
- Existing and proposed driveway finish to be compacted gravel.
  - All storm water runoff to be contained on site.

Approx. location of proposed compacted gravel overtaking bay #1 (see A00-02). Min 2m wide x 20m long at max 200m intervals in accordance with AS3959 and BAL report.

75m

Existing surveyed site contours at 1m intervals.

Driveway centerline, as located by surveyor.

Approx. location of existing stormwater culvert to length of driveway.

Existing compacted gravel driveway to remain, new works to comply with BAL report as required.

Max gradient 10° (18%).

Approx. location of proposed compacted gravel overtaking bay #2. Min 2m wide x 20m long at max 200m intervals in accordance with AS3959 and BAL report.

Approx. location of existing stormwater culvert runoff.

Approx. location of existing stormwater culvert runoff.

PROPOSED COMPACTED GRAVEL DRIVEWAY ADDITION. Min 4m wide with turning circle in accordance with BAL report.

Stormwater culvert to be provided to length of driveway addition.

Approx. location of proposed stormwater culvert and under driveway drainage.

Existing compacted gravel driveway to remain, new works to comply with BAL report as required.

Max gradient 10° (18%).

Approx. location of existing stormwater culvert runoff.

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



**Hobart**  
 60 Barrack Street Hobart TAS 7000  
 T 61 3 6231 2563  
 A 61 3 6231 7777

**Melbourne**  
 3 Trevell Road South Yarra VIC 3141  
 T 61 3 9627 8902  
 info@prestonlane.com.au  
 prestonlane.com.au

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Proprietor S.CHUGG & P.WILLCOCK

Project 426 PROSSERS ROAD RICHMOND, TAS

Drawing DRIVEWAY PLAN PART 2

Scale 1:400 @ A2

Revision

A	11/03/2024	Issued for DA	SC	SC
B	02/04/2024	Issued for DA RFI 01	SC	SC

**PRELIMINARY NOT FOR CONSTRUCTION**

Drawing Number

A00-03 rev B

80m

85m

90m

95m

100m



Existing gum tree to remain, no works.

- NOTE:
- Existing and proposed driveway finish to be compacted gravel.
  - All storm water runoff to be contained on site.

Approx. location of proposed stormwater culvert, with runoff culvert, to perimeter of turning circle.

90m

PROPOSED COMPACTED GRAVEL DRIVEWAY ADDITION. Min 4m wide with turning circle in accordance with BAL report.

Approx. location of proposed stormwater culvert to length of driveway.

Approx. location of proposed stormwater culvert and under driveway drainage.

Approx. location of existing stormwater culvert runoff.

Approx. location of existing stormwater culvert runoff.

Existing surveyed site contours at 1m intervals.

Approx. location of proposed stormwater culvert and under driveway drainage to be directed away from dwelling.

PROPOSED DWELLING. Refer A02-01 for details.

HAZARD MANAGEMENT AREA, refer A02-00 for extent and BAL report for details.

Ag drain to base of battered landscaping to top side of dwelling to be directed away from dwelling.

PROPOSED TURNING CIRCLE, IN ACCORDANCE WITH BAL REPORT.  
 -Min radius 10m.  
 -Max cross <math>3^{\circ}</math> (1:20 or 5%).  
 Storm water to be directed to surrounding culvert and directed away from the dwelling.

Confirm details and extent on site to ensure compliance achieved.

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



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 A 61 3 6231 7777  
**Melbourne**  
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Proprietor S. CHUGG & P. WILLCOCK  
 Project 426 PROSSERS ROAD RICHMOND, TAS

Drawing DRIVEWAY PLAN PART 3

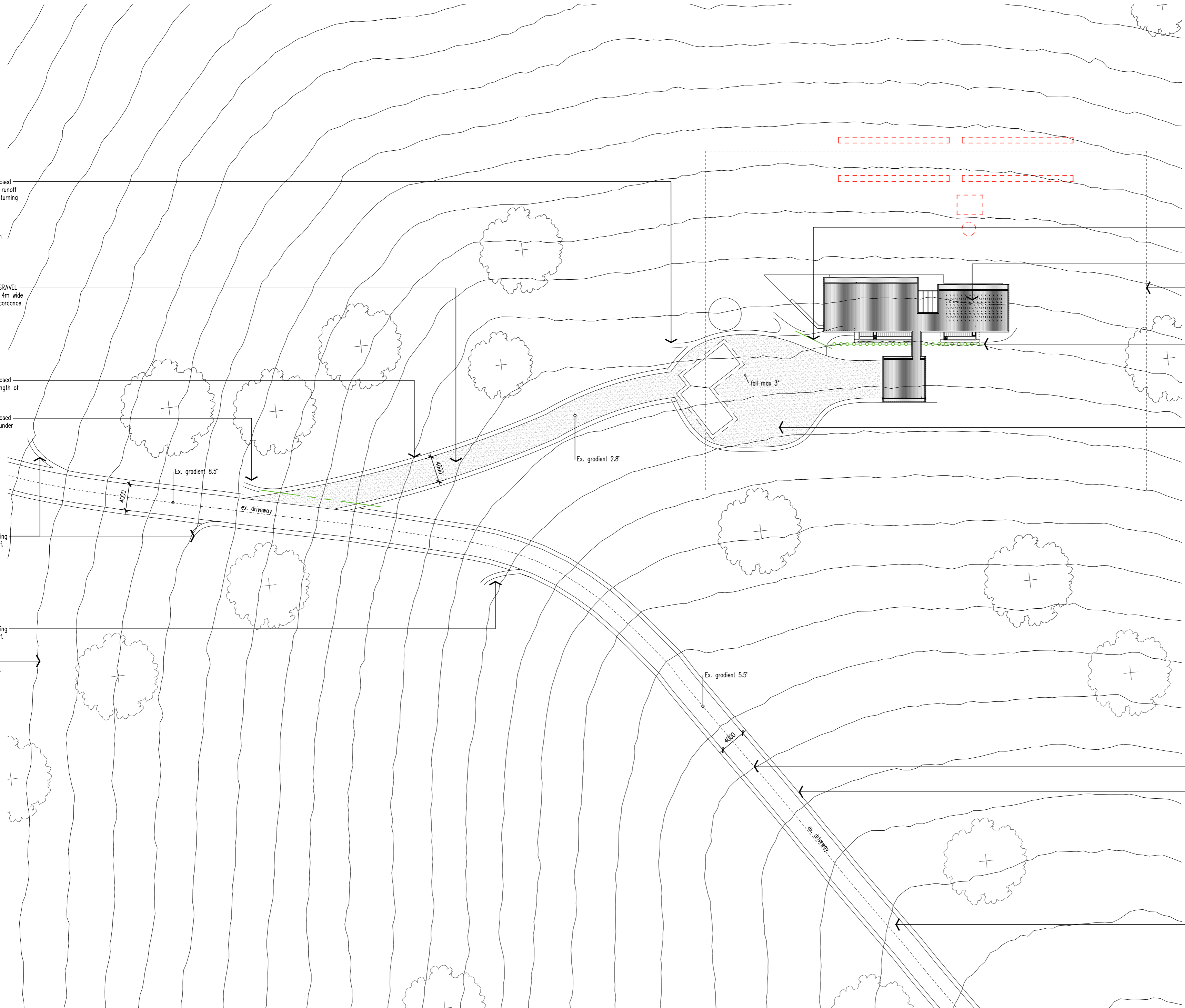
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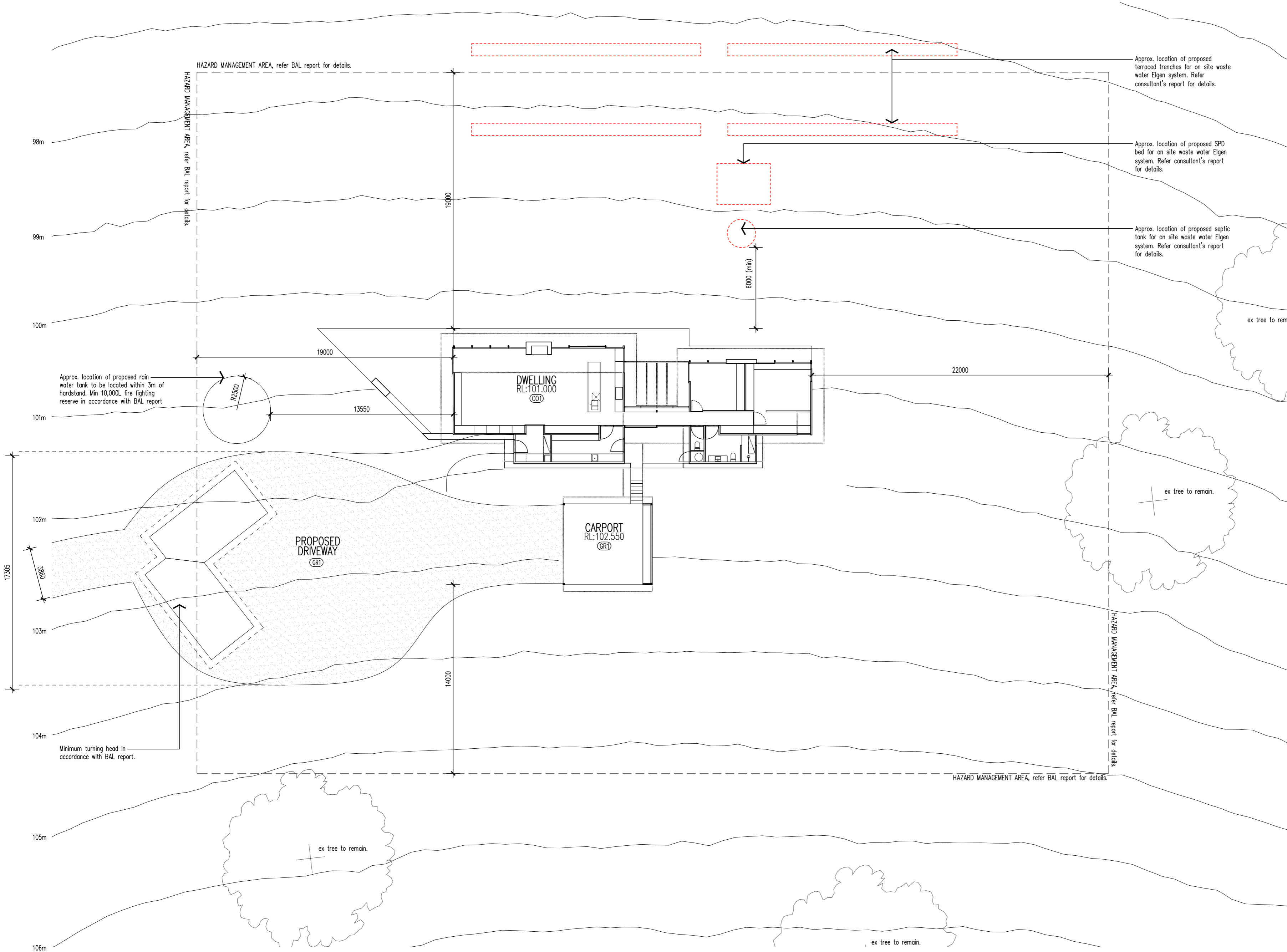
Revision	Issued for DA	SC	SC
A	11/03/2024	Issued for DA	SC SC
B	02/04/2024	Issued for DA RFI 01	SC SC

Drawing Number A00-04 rev B

**PRELIMINARY NOT FOR CONSTRUCTION**

95m 100m 105m 110m





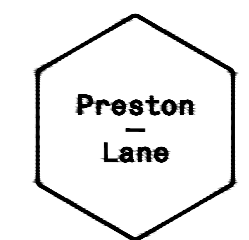
- EXTERNAL FINISHES**
- (EFD1) Charred timber cladding or similar, vertical slat.
  - (EFD2) Masonry wall. Construction to be either dry stacked sandstone or rammed earth to future selection.
  - (TD1) 90mm wide hardwood timber decking, species to future selection. Smooth side up, Cutek CD50 finish (confirm).
  - (GR1) Gravel. Colour to match existing driveway.
  - (PV1) Sandstone crazy paving. Contractor to use sandstone from site if suitable (confirm).
  - (CS1) 9mm cement sheet cladding, butt joint silicone seal. paint finish, colour to be Monument (confirm).
  - (CR1) Zincalume roof sheeting, profile to be Custom Orb.

- INTERNAL FINISHES**
- (C01) Concrete Floor. White Quartz aggregate (max 5% black). Light grind and seal to lightly expose aggregate. Clear water based penetrating sealer (satin finish) to future selection.
  - (CP1) Carpet to future selection.
  - (CT1) Ceramic floor tile supplied and installed by builder. Mitre joint for external corners typical unless otherwise noted. Contractor to allow for epoxy grout, glue and trims.

- GENERAL ABBREVIATIONS:**
- w. window
  - d. door
  - sl. sliding
  - dp. downpipe
  - fp. fixed panel
  - NGL natural (existing) ground line

NOTE: Refer A02-01 for floor plan details.

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



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40 Barrack Street Hobart TAS 7000  
T 61 3 6231 2563  
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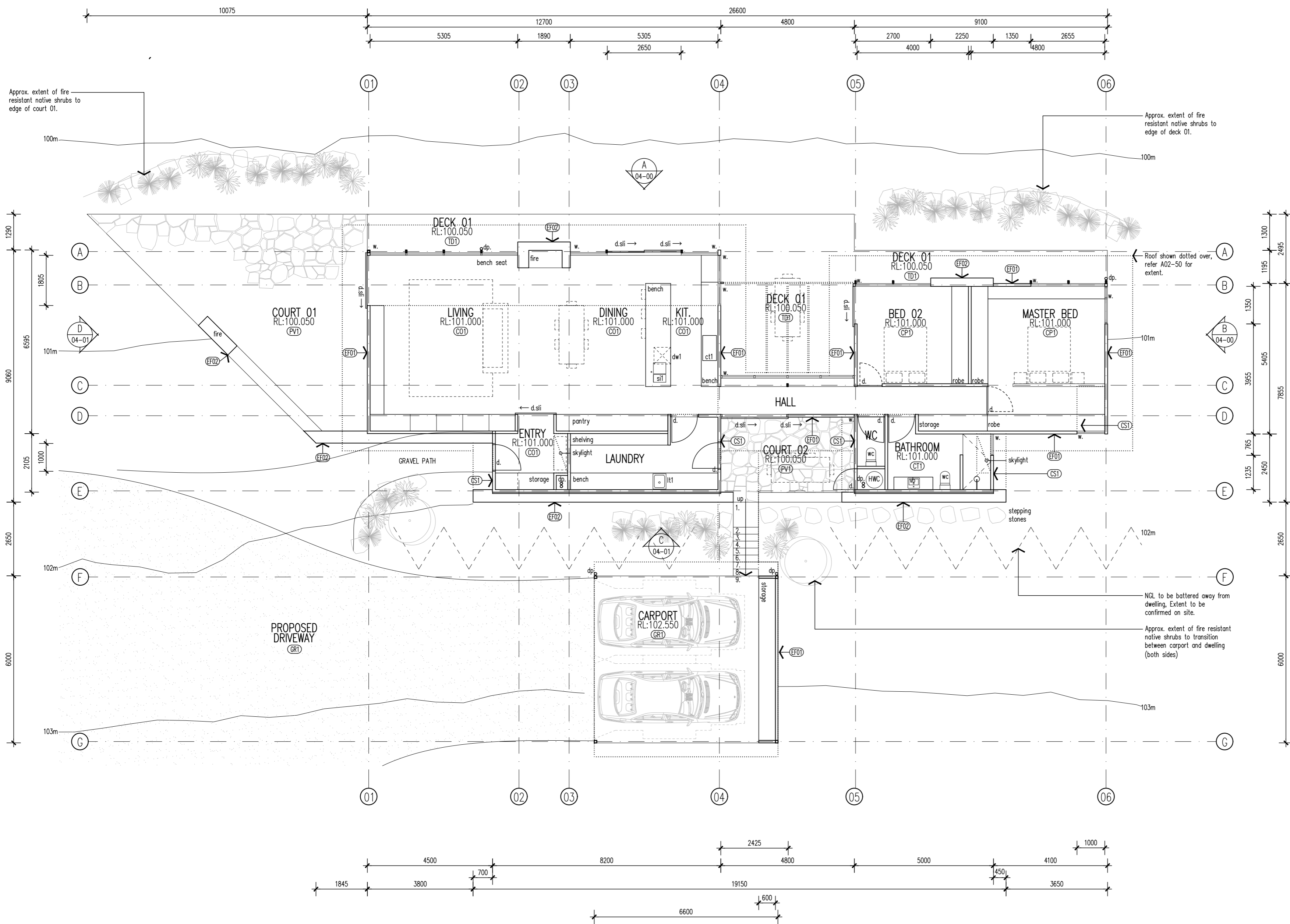
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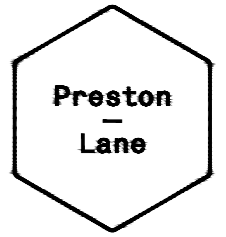
Proprietor	S. CHUGG & P. WILLCOCK
Project	426 PROSSERS RIDGE RICHMOND, TAS
Drawing	HAZARD MANAGEMENT AREA GREATER FLOOR PLAN
Scale	1:200 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**



- EXTERNAL FINISHES**
- (EF01) Charred timber cladding or similar, vertical shiplap.
  - (EF02) Masonry wall. Construction to be either dry stacked sandstone or rammed earth to future selection.
  - (TD1) 90mm wide hardwood timber decking, species to future selection. Smooth side up, Cutek CD50 finish (confirm).
  - (GR1) Gravel. Colour to match existing driveway.
  - (PV1) Sandstone crazy paving. Contractor to use sandstone from site if suitable (confirm).
  - (CS1) 9mm cement sheet cladding, butt joint silicone seal. paint finish, colour to be Monument (confirm).
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  - sl. sliding
  - dp. downpipe
  - fp. fixed panel
  - NGL natural (existing) ground line

LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



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 40 Barrack Street Hobart TAS 7000  
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 A 61 3 6231 7777

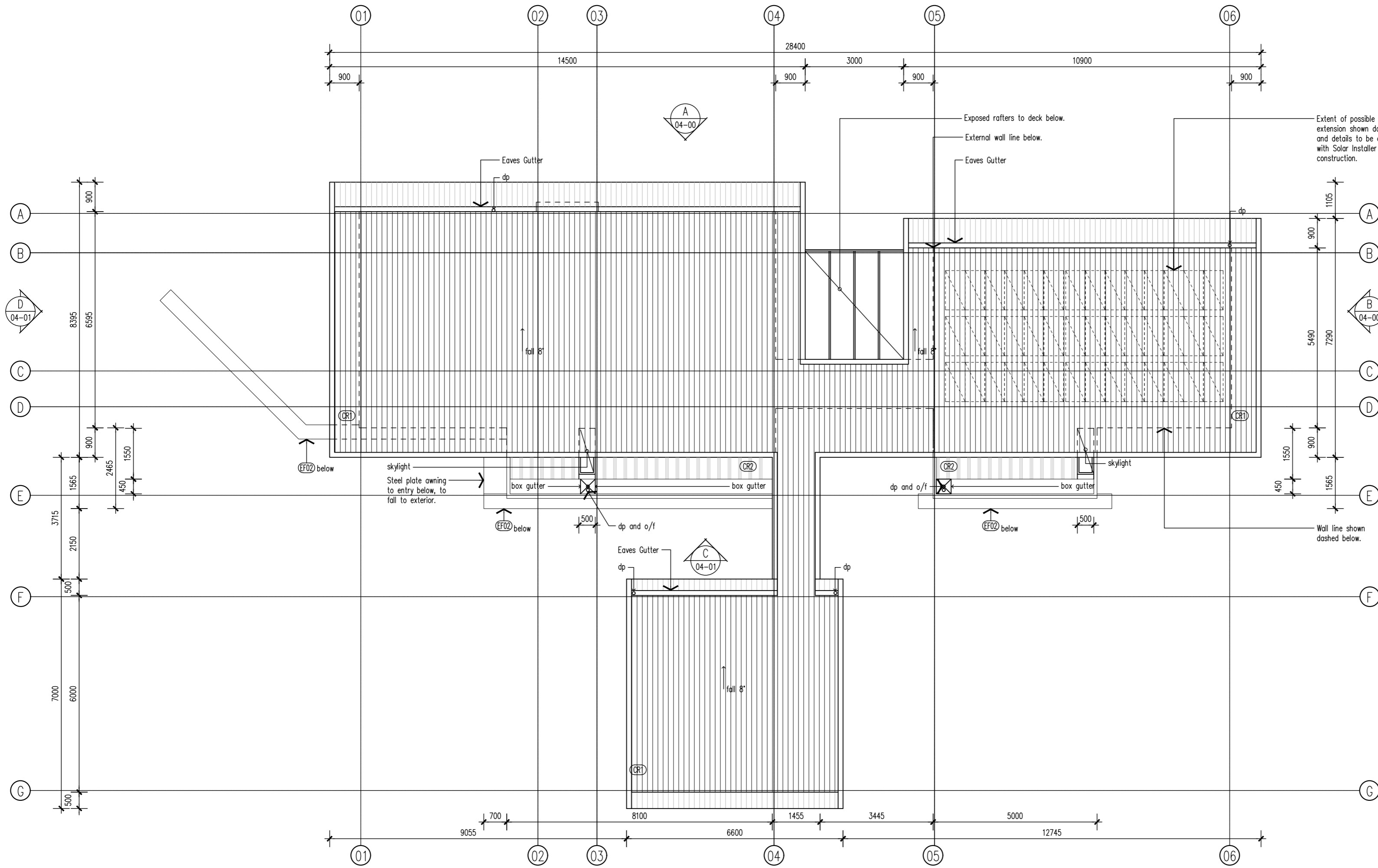
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 info@prestonlane.com.au  
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Proprietor	S. CHUGG & P. WILLCOCK
Project	426 PROSSERS RIDGE RICHMOND, TAS
Drawing	FLOOR PLAN
Scale	1:100 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**



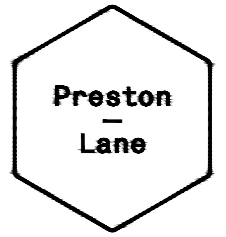
- EXTERNAL FINISHES**
- (EF01) Charred timber cladding or similar, vertical shiplap.
  - (EF02) Masonry wall. Construction to be either dry stacked sandstone or rammed earth to future selection.
  - (TD1) 90mm wide hardwood timber decking, species to future selection. Smooth side up, Cutek CD50 finish (confirm).
  - (GR1) Gravel. Colour to match existing driveway.
  - (PV1) Sandstone crazy paving. Contractor to use sandstone from site if suitable (confirm).
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- INTERNAL FINISHES**
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**NOTE:**  
Existing solar array to be expanded. Size and location of extended system to be confirmed with solar installer prior to construction. All extended solar works to connect to existing inverter, battery and generator.

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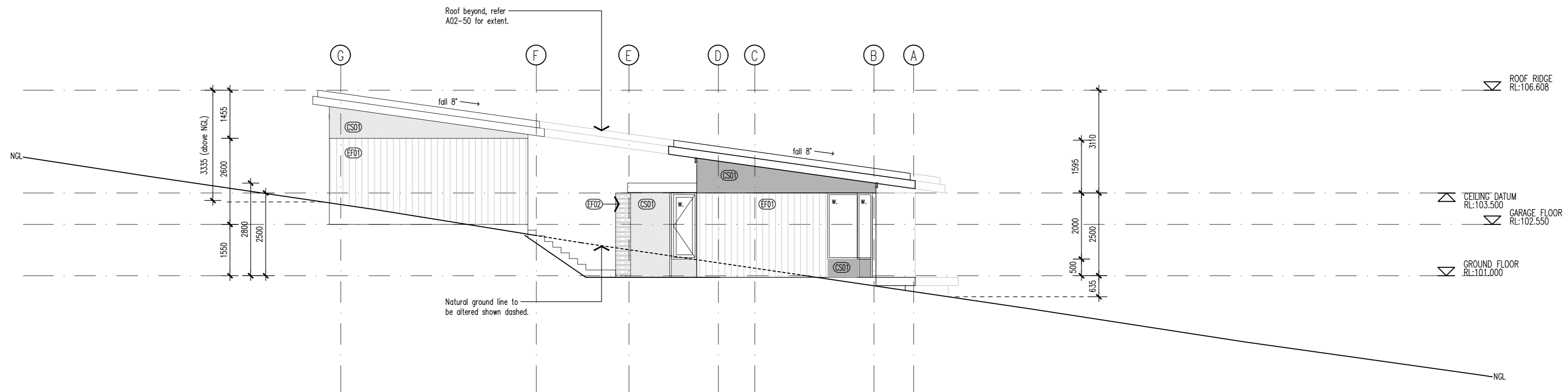
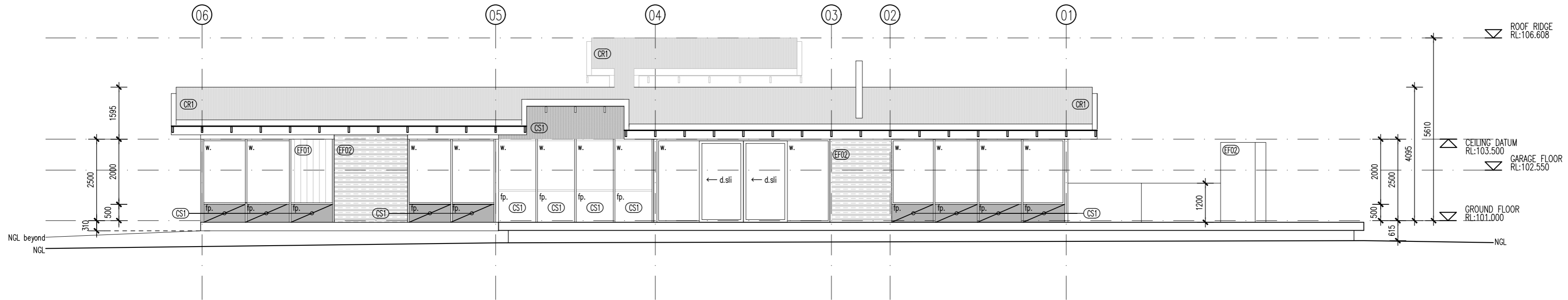
Proprietor	S. CHUGG & P. WILLCOCK
Project	426 PROSSERS RIDGE RICHMOND, TAS
Drawing	ROOF PLAN
Scale	1:100 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**

- EXTERNAL FINISHES**
- (EF01) Charred timber cladding or similar, vertical shiplap.
  - (EF02) Masonry wall. Construction to be either dry stacked sandstone or rammed earth to future selection.
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  - d. door
  - sl. sliding
  - dp. downpipe
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  - NGL natural (existing) ground line



LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY

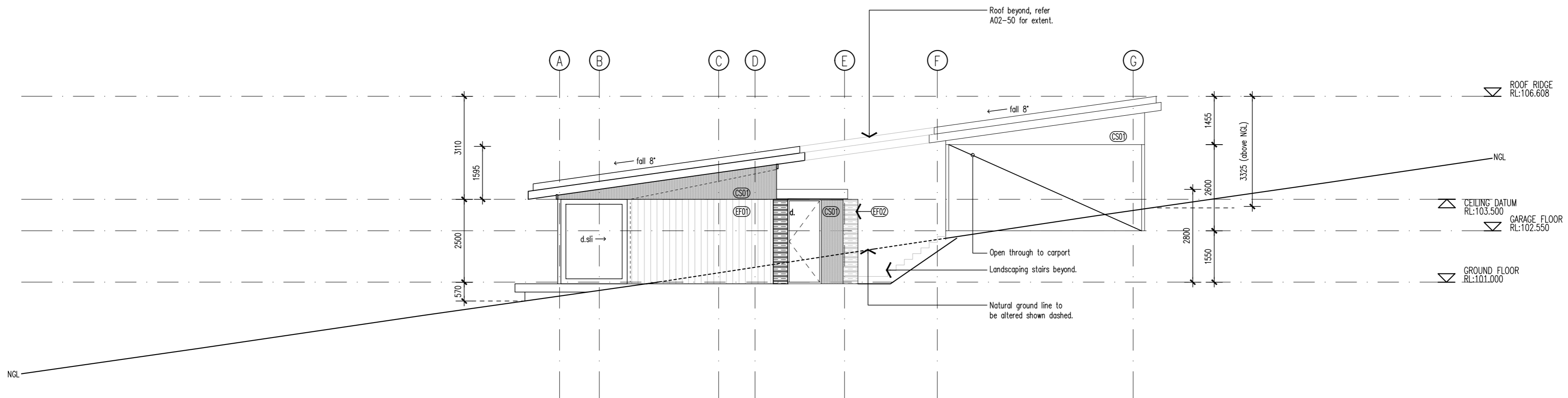
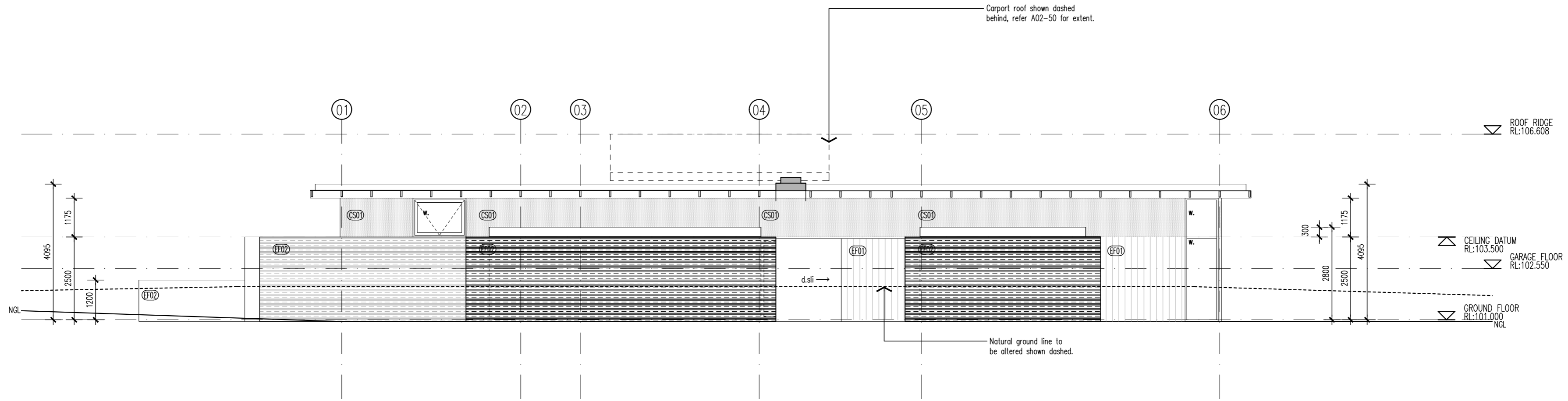


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Project	426 PROSSERS ROAD RICHMOND, TAS
Drawing	ELEVATIONS
Scale	1:100 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**

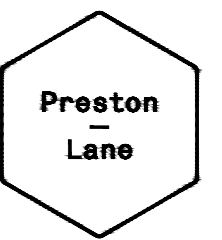


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  - (EF02) Masonry wall. Construction to be either dry stacked sandstone or rammed earth to future selection.
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LOCATION OF ALL NEIGHBOURING STRUCTURES ARE INDICATIVE ONLY



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Project	426 PROSSERS ROAD RICHMOND, TAS
Drawing	ELEVATIONS
Scale	1:100 @ A2
Revision	
A	11/03/2024 Issued for DA SC SC

**PRELIMINARY NOT FOR CONSTRUCTION**



**426**  
**PROSSERS ROAD**  
**RICHMOND 7025**

# **BUSHFIRE HAZARD REPORT**

The information in this report is based on the instructions of AS 3959:2018 - Construction of Buildings in Bushfire Prone Areas and the Directors Determination – Bushfire Hazard Areas.

Prepared by: **Tas Bushfire Consulting**  
21/10/2023

# CONTENTS

Executive Summary .....	3
Description of Proposal .....	4
Bushfire Site Assessment .....	5
Objectives & Requirements .....	6
Conclusion & References .....	9
Aerial Imagery .....	10

## Associated Documents:

- Bushfire Hazard Management Plan
- Form 55
- Site Photos

## DISCLAIMER

Please remember that the measures contained in this report cannot guarantee that a building will survive in the event of a bushfire on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire and extreme weather conditions.

In preparation of this document, all reasonable steps have been taken to ensure that the information in this report is correct and accurately reflects, both the conditions of the considered allotment and its surroundings on the date of this assessment.



## EXECUTIVE SUMMARY

This Bushfire Hazard Report is prepared for the proposed Dwelling at 426 Prossers Road Richmond 7025 (C.T. 175764/11). This report is prepared as part of the document for Building Approval.

The property is considered as being bushfire prone being mapped within the Bushfire-Prone Areas overlay of the Tasmanian Planning Scheme.

The report will define the bushfire attack level classification of the lot and determine its compliance with relevant bushfire building requirements, legislation and guidelines.

Using AS 3959:2018 simplified procedure, method 1, the bushfire attack level of the site and the construction requirements will be classified as BAL 12.5.

The site is to be maintained to the level set out in this report and the proposed Dwelling to be constructed and maintained in accordance with the Directors Determination - Bushfire Hazard Areas (Version 1.1) as well as the construction sections 3 and 5 of AS3959:2018 Construction of Buildings in Bushfire Prone Areas for BAL 12.5.

## DESCRIPTION OF PROPOSAL

Location	426 Prossers Road Richmond 7025
Title Reference	175764/11
Property ID	9142341
Lot Size	20.87ha
Zoning	Rural Living
Council	Clarence City Council
Development Type	Dwelling
Environs	Rural property surrounded by mostly grassland and some woodland. The proposed dwelling is located towards the end of a North facing ridgeline with downslope to the West, North and East. Upslope following the ridge to the South.
Access	Prossers Road is unsealed and provides acceptable access from main roads. Property driveway to access firefighting water point, to comply with Table 2 Part B & C of the Directors Determination - Bushfire Hazard Areas. Refer BHMP.
Water Supply	Static water supply and hardstand required to comply with Table 3B Requirements for Static Water supply for firefighting of the Directors Determination - Bushfire Hazard Areas. Refer BHMP.

Assessed by:

Jake Bell  
 Tas Bushfire Consulting  
 admin@tasbushfire.com.au

Accredited person under part 4a of the Fire Service Act 1979  
 BFP-154



# BUSHFIRE SITE ASSESSMENT

The property is considered to be within a bushfire prone area due to the proximity of vegetation greater than 1ha in area.

The proposed building is located in a rural area and the risk of bushfire attack is considered to be a realistic outcome. Using AS 3959:2018 simplified procedure (method 1) the bushfire attack level of the allotment and the associated construction requirements will be classified as BAL 12.5. BAL 12.5 is described as being exposed to increasing levels of ember attack with radiant heat less than 12.5kW/m<sup>2</sup>.

Please see table 1 below for results. These results were calculated on Tasmania’s FDI of 50.

	North	East	South	West
Veg <100m	0-100m grassland	0-100m grassland	0-100m grassland	0-100m grassland
Slope (degrees over 100m)	5° - 10°	10° - 15°	Level/Upslope	5° - 10°
Min. req. Defendable space - BAL 12.5	19m	22m	14m	19m

The defendable space requirement listed in the above table is the minimum distance required for a BAL 12.5 rating as per AS 3959 table 2.6. To achieve a BAL 12.5 and ensure ongoing compliance the allotment will need to meet the required defendable space distances as outlined in the associated Bushfire Hazard Management Plan.

This hazard management zone of defendable space area will need fuel reduction carried out to ensure compliance with low threat vegetation classification. This single zone hazard management area must be managed and kept at a minimum fuel condition at all times “where fine fuels are minimized to the extent that the passage of fire will be restricted, e.g. short green lawns, paths, driveways etc.”. All grassed areas within this zone need to be kept to a nominal height of 100mm.

The main design principles for this zone are to; create space, remove flammable objects or materials, separate fuel & influence the selection, location and maintenance of trees.

For more information, refer the “fire resisting garden plants” booklet produced by the Tasmanian Fire Service.

# OBJECTIVES & REQUIREMENTS

## Directors Determination - Bushfire Hazard Areas (V1.1) - Construction Requirements

Table 1 - Construction Requirements & Construction Variations		
Element	Applicability	Requirement
A.	N/A	N/A
B.	N/A	N/A
Table 2 - Requirements for Property Access		
Element	Applicability	Requirement
A.	N/A	N/A
B.	Yes	<p>The following design and construction requirements apply to property access:</p> <ul style="list-style-type: none"> <li>(a) All-weather construction;</li> <li>(b) Load capacity of at least 20 tonnes, including for bridges and culverts;</li> <li>(c) Minimum carriageway width of 4 metres;</li> <li>(d) Minimum vertical clearance of 4 metres;</li> <li>(e) Minimum horizontal clearance of 0.5 metres from the edge of the carriageway;</li> <li>(f) Cross falls of less than 3° (1:20 or 5%);</li> <li>(g) Dips less than 7° (1:8 or 12.5%) entry and exit angle;</li> <li>(h) Curves with a minimum inner radius of 10 metres;</li> <li>(i) Maximum gradient of 15° (1:3.5 or 28%) for sealed roads, and 10° (1:5.5 or 18%) for unsealed roads; and</li> <li>(j) Terminate with a turning area for fire appliances provided by one of the following: <ul style="list-style-type: none"> <li>(i) A turning circle with a minimum outer radius of 10 metres;</li> <li>(ii) A property access encircling the building; or</li> <li>(iii) A hammerhead “T” or “Y” turning head 4 metres wide and 8 metres long</li> </ul> </li> </ul>
C.	Yes	<p>The following design and construction requirements apply to property access:</p> <ul style="list-style-type: none"> <li>(a) The Requirements for B above; and</li> <li>(b) Passing bays of 2 metres additional carriageway width and 20 metres length provided every 200 metres.</li> </ul>
D.	N/A	N/A
Table 3A - Requirements for Reticulated Water Supply for Firefighting		
Element	Applicability	Requirement
A.	N/A	N/A
B.	N/A	N/A
C.	N/A	N/A
Table 3B - Requirements for Static Water Supply for Firefighting		
Element	Applicability	Requirement

A.	Yes	<p>The following requirements apply:</p> <p>(a) The building area to be protected must be located within 90 metres of the firefighting water point of a static water supply; and</p> <p>(b) The distance must be measured as a hose lay, between the firefighting water point and the furthest part of the building area.</p>
B.	Yes	<p>A static water supply:</p> <p>(a) May have a remotely located offtake connected to the static water supply;</p> <p>(b) May be a supply for combined use (firefighting and other uses) but the specified minimum quantity of firefighting water must be available at all times;</p> <p>(c) Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including firefighting sprinkler or spray systems;</p> <p>(d) Must be metal, concrete or lagged by non-combustible materials if above ground; and</p> <p>(e) If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959:2018, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by:</p> <p>(i) metal;</p> <p>(ii) non-combustible material; or</p> <p>(iii) fibre-cement a minimum of 6 mm thickness.</p>
C.	Yes	<p>Fittings and pipework associated with a firefighting water point for a static water supply must:</p> <p>(a) Have a minimum nominal internal diameter of 50mm;</p> <p>(b) Be fitted with a valve with a minimum nominal internal diameter of 50mm;</p> <p>(c) Be metal or lagged by non-combustible materials if above ground;</p> <p>(d) Where buried, have a minimum depth of 300mm;</p> <p>(e) Provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to firefighting equipment;</p> <p>(f) Ensure the coupling is accessible and available for connection at all times;</p> <p>(g) Ensure the coupling is fitted with a blank cap and securing chain (minimum 220 mm length);</p> <p>(h) Ensure underground tanks have either an opening at the top of not less than 250 mm diameter or a coupling compliant with this Table; and</p> <p>(i) Where a remote offtake is installed, ensure the offtake is in a position that is:</p> <p>(i) Visible;</p> <p>(ii) Accessible to allow connection by firefighting equipment;</p> <p>(iii) At a working height of 450 – 600mm above ground level; and</p> <p>(iv) Protected from possible damage, including damage by vehicles.</p>

D.	Yes	The firefighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must: (a) comply with water tank signage requirements within AS 2304:2019; or (b) comply with the Tasmania Fire Service Water Supply Signage Guideline published by the Tasmania Fire Service.
E.	Yes	A hardstand area for fire appliances must be provided: (a) No more than three metres from the firefighting water point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like); (b) No closer than six metres from the building area to be protected; (c) With a minimum width of three metres constructed to the same standard as the carriageway; and (d) Connected to the property access by a carriageway equivalent to the standard of the property access.

Table 4 - Requirements for Hazard Management Area		
Element	Applicability	Requirement
A.	N/A	N/A
B.	Yes	BAL 12.5 HMA identified and to be provided.
C.	N/A	N/A
D.	N/A	N/A
E.	N/A	N/A
F.	N/A	N/A

Table 5 - Requirements for Emergency Planning		
Element	Applicability	Requirement
A.	N/A	N/A

The proposed Dwelling is to be constructed to comply with BAL 12.5 requirements in accordance with AS 3959 and the deemed to satisfy requirements outlined in this report and associated BHMP.

No natural or cultural values were identified on site or through desktop assessment which would prevent the clearing of vegetation communities present on site required for achieving BAL 12.5.

No other environmental or planning issues were identified on site or through desktop assessment, including review of the Tasmanian Planning Scheme zoning and overlay maps.

## CONCLUSION

The site was assessed as having a bushfire attack level of 12.5. The defensible space required to meet BAL 12.5 is specified in the associated Bushfire Hazard Management Plan and the ongoing maintenance of this defensible space area in a low fuel state as prescribed in this plan is of utmost priority in regards to bushfire risk.

Proposed development should be constructed to comply with all construction requirements of AS 3959 and other recommendations outlined in this report. These measures will need to be undertaken to avoid increasing risk from a bushfire.

This report should be considered in conjunction with all other design documents for this proposal in case of conflict. Therefore, it is the responsibility of the client to provide this report to all relevant parties involved in the future planning and construction at the property.

For other valuable resources in regards to building for bushfires and bushfires in general see the Tasmanian fire service website: [www.fire.tas.gov.au](http://www.fire.tas.gov.au)

## REFERENCES

- Directors Determination – Bushfire Hazard Areas (V1.1)
- Standards Australia Limited. AS 3959:2018 – Construction of Buildings in Bushfire Prone Areas
- Tasmanian Planning Scheme
- Australian Building Codes Board. 2022 National Construction Code – volume two
- Tasmanian government DPI/PWE - LISTmap & TASVEG Live map

## AERIAL IMAGERY



**Aerial view of allotment with 120m radius from development site. Surrounded by grassland.**



## SITE PHOTOS



Photos from project site showing surrounding grassland. There are some isolated trees but the predominant vegetation type within 100m of the site is grassland.



**NOTE:**

TO BE READ IN CONJUNCTION WITH THE BUSHFIRE HAZARD REPORT. THE HAZARD MANAGEMENT AREA (SHOWN IN ORANGE) MUST BE MANAGED AND KEPT AT A MINIMUM FUEL CONDITION AT ALL TIMES WHERE FINE FUELS ARE MINIMIZED TO THE EXTENT THAT THE PASSAGE OF FIRE WILL BE RESTRICTED, E.G. SHORT GREEN LAWNS, PATHS, DRIVEWAYS ETC. ALL GRASSED AREAS WITHIN THIS ZONE NEED TO BE KEPT TO A NOMINAL HEIGHT OF 100MM.

**DIRECTORS DETERMINATION - BUSHFIRE HAZARD AREAS - V1.1**

THE FOLLOWING REQUIREMENTS ARE RELEVANT TO THIS DESIGN:

**TABLE 2 REQUIREMENTS FOR PROPERTY ACCESS**

PART B - Access required for a fire appliance to access firefighting water point

The following design and construction requirements apply to property access:

- (a) all-weather construction;
- (b) load capacity of at least 20t, including for bridges and culverts;
- (c) minimum carriageway width of 4m;
- (d) minimum vertical clearance of 4m;
- (e) minimum horizontal clearance of 0.5m from the edge of the carriageway;
- (f) cross falls of less than 3 degrees (1:20 or 5%);
- (g) dips less than 7 degrees (1:8 or 12.5%) entry and exit angle;
- (h) curves with a minimum inner radius of 10m;
- (i) maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and
- (j) terminate with a turning area for fire appliances provided by one of the following:
  - (i) a turning circle with a minimum outer radius of 10m; or
  - (ii) a property access encircling the building; or
  - (iii) a hammerhead "T" or "Y" turning head 4m wide and 8m long.

**PART C - Property access length is 200m or greater**

The following design and construction requirements apply to property access:

- (a) The Requirements for B above; and
- (b) Passing bays of 2 metres additional carriageway width and 20 metres length provided every 200 metres.

**TABLE 3B REQUIREMENTS FOR STATIC WATER SUPPLY FOR FIREFIGHTING**

The following requirements apply:

- (a) the building area to be protected must be located within 90m of the fire fighting water point of a static water supply; and
- (b) the distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.

A static water supply:

- (a) may have a remotely located offtake connected to the static water supply;
- (b) may be a supply for combined use (fire fighting and other uses) but the specified minimum quantity of fire fighting water must be available at all times;
- (c) must be a minimum of 10,000l per building area to be protected. This volume of water must not be used for any other purpose including fire fighting sprinkler or spray systems;
- (d) must be metal, concrete or lagged by non-combustible materials if above ground; and
- (e) if a tank can be located so it is shielded in all directions in compliance with section 3.5 of Australian Standard AS 3959-2009 Construction of buildings in bushfire-prone areas, the tank may be constructed of any material provided that the lowest 400mm of the tank exterior is protected by:
  - (i) metal;
  - (ii) non-combustible material; or
  - (iii) fibre-cement a minimum of 6mm thickness.

Fittings and pipework associated with a fire fighting water point for a static water supply must:

- (a) have a minimum nominal internal diameter of 50mm;
- (b) be fitted with a valve with a minimum nominal internal diameter of 50mm;
- (c) be metal or lagged by non-combustible materials if above ground;
- (d) if buried, have a minimum depth of 300mm<sup>2</sup>;
- (e) provide a DIN or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment;
- (f) ensure the coupling is accessible and available for connection at all times;
- (g) ensure the coupling is fitted with a blank cap and securing chain (minimum 220mm length);
- (h) ensure underground tanks have either an opening at the top of not less than 250mm diameter or a coupling compliant with this Table; and
- (i) if a remote offtake is installed, ensure the offtake is in a position that is:
  - (i) visible;
  - (ii) accessible to allow connection by fire fighting equipment;
  - (iii) at a working height of 450 – 600mm above ground level; and
  - (iv) protected from possible damage, including damage by vehicles.

The fire fighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must:

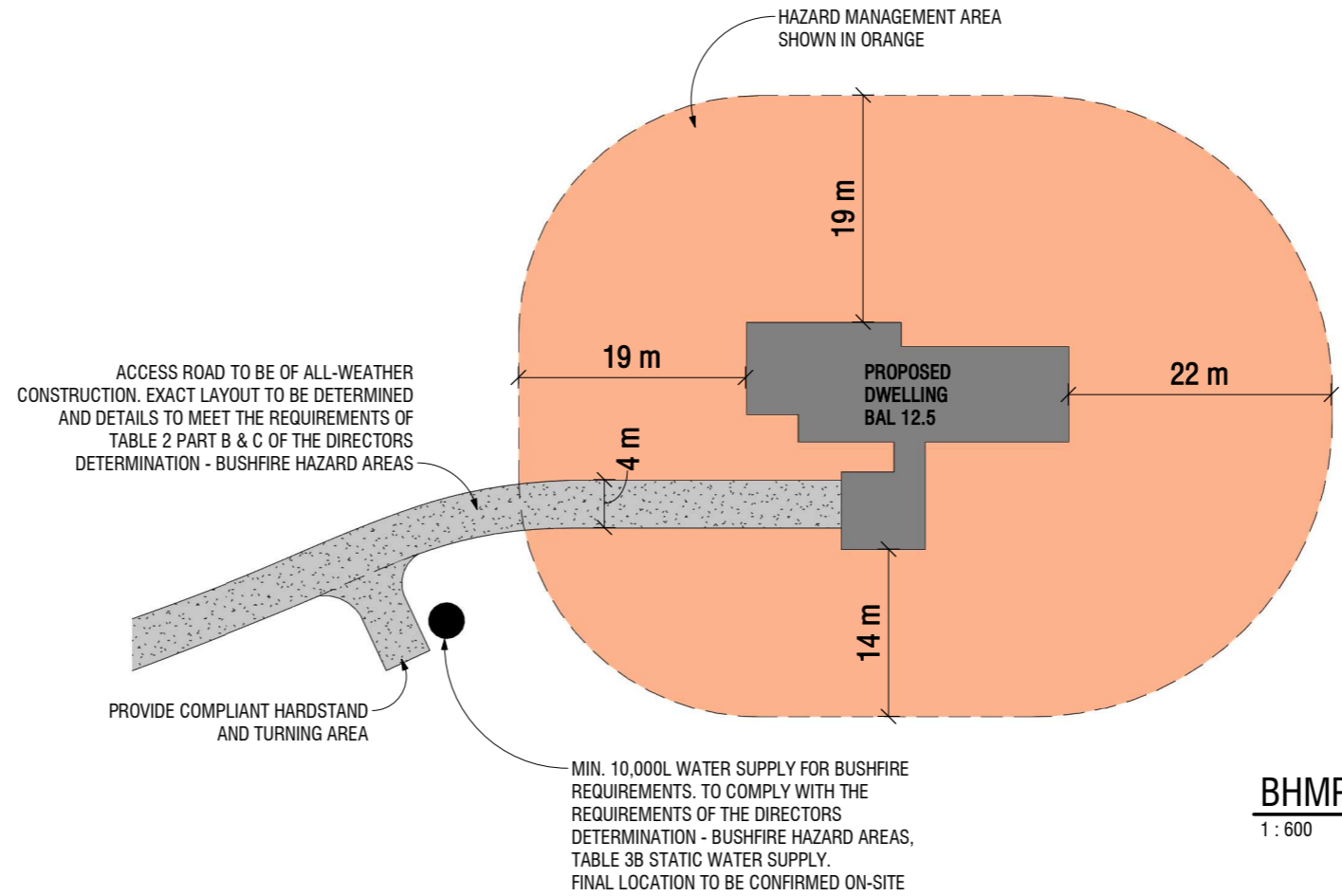
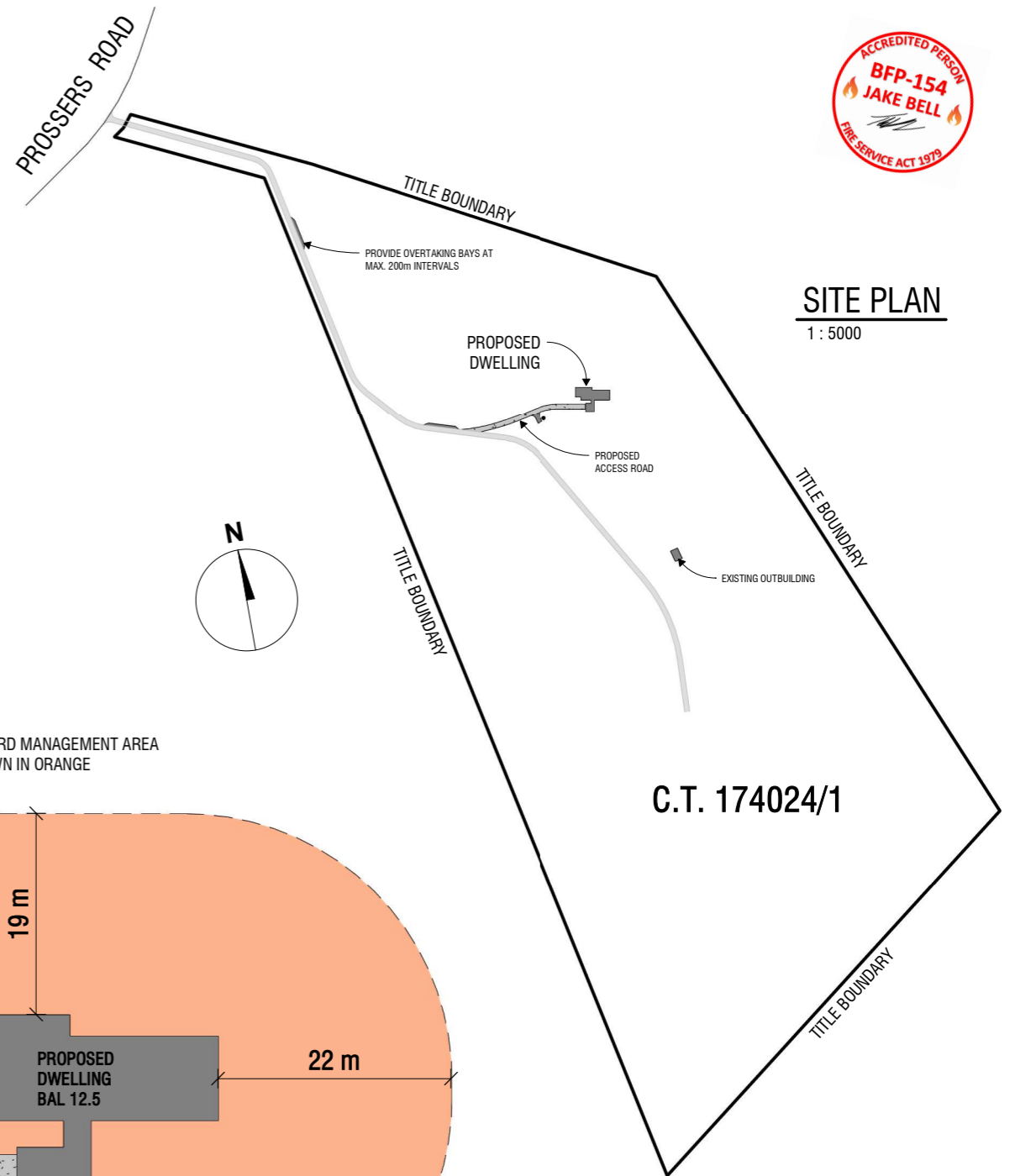
- (a) comply with water tank signage requirements within Australian Standard AS 2304-2011 Water storage tanks for fire protection systems; or
- (b) comply with the Tasmania Fire Service Water Supply Guideline published by the Tasmania Fire Service.

A hardstand area for fire appliances must be:

- (a) no more than 3m from the fire fighting water point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like);
- (b) no closer than 6m from the building area to be protected;
- (c) a minimum width of 3m constructed to the same standard as the carriageway; and
- (d) connected to the property access by a carriageway equivalent to the standard of the property access.



**SITE PLAN**  
1 : 5000



**BHMP**  
1 : 600

CLIENT:	<b>SARA CHUGG</b>	426 PROSSERS ROAD RICHMOND 7025	M: 0407 167 231 E: admin@tasbushfire.com.au
PRINT REDUCTION BAR   A3 SHEET		<b>BUSHFIRE HAZARD MANAGEMENT PLAN</b>	
10 20 30 40 50mm		DATE: 21/10/2023      SCALE: As indicated	
DRAWN: JAKE BELL   BFP 154   ACCREDITED: 1, 2, 3A			

# CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To:  Owner /Agent  
 Address  
 Suburb/postcode<sup>o</sup>

## 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:

Bushfire Hazard Report (Dated 21/10/2023)  
&  
Bushfire Hazard Management Plan (Dated 21/10/2023)

Relevant  
calculations:

References:

AS 3959:2018 Construction of Buildings in Bushfire-prone Areas  
Directors Determination – Bushfire Hazard Areas V1.1

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

The Bushfire Attack Level is assessed for the site.  
The site was assessed as having a Bushfire Attack Level of 12.5. Separation distances to meet BAL 12.5 requirements have been specified and shown on the BHMP.

*Scope and/or Limitations*

**I certify the matters described in this certificate.**

Qualified person:

*Signed:*

Jake Bell



*Certificate No:*

BFP-154

*Date:*

21/10/2023

**DOYLE**  
**SOIL**  
**CONSULTING**



**SITE AND SOIL EVALUATION REPORT**  
**ONSITE WASTEWATER ASSESSMENT**

**426 Prossers Road**

**Richmond**

**January 2024**

## SITE INFORMATION

**Client:** Sara Chugg and Paul Willcock

**Address:** 426 Prossers Road, Richmond (CT 175764/11)

**Site Area:** Approximately 52 acres

**Date of inspection:** 15/09/2023

**Building type:** New house

**Services:** Tank water and onsite wastewater

**Planning Overlays:** Bushfire Prone, Low landslide hazard in parts.

**Mapped Geology** - Mineral Resources Tasmania 1:25 000 Tea Tree sheet:

**Jd**, = Jurassic Dolerite, with subordinate **Rlp** = Triassic sandstone, mudstone

**Soil Depth:** 0.5 - 1.6 m

**Subsoil Drainage:** Moderately-well drained

**Drainage lines / water courses:** none

**Vegetation:** Pasture and few trees.

**Rainfall in previous 7 days:** Approximately 2 mm

**Slope/aspect:** Approximately 9° / N

## SITE ASSESSMENT AND SAMPLE TESTING

Site and soil assessment in accordance with AS1547-2012 *Onsite domestic wastewater assessment and design*.

Emerson Dispersion test on subsoils.

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).

## SITE AND SOIL COMMENTS

The proposed house and location for onsite wastewater are on a north-facing slope with uniform slope angles of approximately 9°. The slope is straight in form, meaning concentrated overland flow / run off in the area is not likely.

The natural soil profiles are formed from windblown sands over clayey colluvium derived from Jurassic dolerite. The profiles are moderately deep with refusal occurring at approximately 1.0 to 1.6 m in the vicinity of the proposed Land application area. The soil profiles comprise 20 – 40 cm of windblown sandy loam (category 2) topsoil over light clay (category 5) subsoils, which are moderately structured and moderately reactive (class M). hard dolerite boulders/floaters are common at the soil surface.

**Site constraints** to be addressed by suitably designed OWMS:

- Moderately shallow soils – min observed depth to bedrock at LAA= 1.1 m
- Light clay (Cat. 5) subsoils
- Moderate slope angles of 9° at proposed LAA

**Site strengths**: to be exploited by suitably designed OWMS:

- Large area available for land application with large separation distances from both downslope surface water (~500 m) and the boundary (~80 m).
- Sufficient soil depth to achieve vertical setback to bedrock with secondary treatment.

Site constraints can be addressed by treating effluent to a secondary standard and land application via shallow absorption trenches with sufficient downslope separation between trenches (min. 5 m).



### SOIL PROFILES – Test Hole 1

Depth (m)	Horizon	Description and field texture grade	Soil Cat.
0 – 0.4	A1/A2	Very Dark Grey (10YR 3/1), grading to Brown (7.5YR, 4/3), <b>Coarse Sandy Loam</b> , single grain, dry loose consistency.	<b>2</b>
0.4 – 0.5	B2	Dark Reddish Brown (5YR, 3/2), <b>Slightly Sandy Light Clay</b> , moderate medium angular blocky structure, slightly moist firm consistency.  <u>Refusal</u> on dolerite (probable) boulder – Colluvial boulders common at surface and in topsoil.	<b>5</b>



### SOIL PROFILES – Test Hole 2

Depth (m)	Horizon	Description and field texture grade	Soil Cat.
0 – 0.2	A1/A2	Very Dark Grey (10YR 3/1), grading to Brown (7.5YR, 4/3), <b>Coarse Sandy Loam</b> , single grain, dry loose consistency.	<b>2</b>
0.2 – 0.4	B2	Dark Reddish Brown (5YR, 3/2), <b>Slightly Sandy Light Clay</b> , moderate medium angular blocky structure, slightly moist firm consistency.	<b>5</b>
0.4 – 0.9	BC	Banded olive brown (2.5Y 4/4) and strong brown (7.5YR 4/6), <b>Gritty Silty Light Clay</b> , moderate mediate angular blocky structure breaking to fine polyhedral structure, slightly moist soft consistency.	<b>5</b>
0.9 – 1.4	C <sub>w</sub>	Banded olive brown (2.5Y 4/4), strong brown (7.5YR 4/6), <b>Gravelly Coarse Sandy Clay Loam (+)</b> , weak fine polyhedral structure, slightly moist loose consistency.  <u>Effective refusal</u> on weathered dolerite bedrock.	<b>4</b>



### SOIL PROFILES – Test Hole 3



Depth (m)	Horizon	Description and field texture grade	Soil Cat.
0 – 0.4	A1/A2	Very Dark Grey (10YR 3/1), grading to Brown (7.5YR, 4/3), <b>Coarse Sandy Loam</b> , single grain, dry loose consistency.	<b>2</b>
0.4 – 0.7	B2	Dark Reddish Brown (5YR, 3/2), <b>Slightly Sandy Light Clay</b> , moderate medium angular blocky structure, slightly moist firm consistency.	<b>5</b>
0.7 – 1.1	BC	Branded olive brown (2.5Y 4/4), + strong brown (7.5YR 4/6), <b>Gritty Silty Light Clay</b> , moderate mediate angular blocky structure breaking to fine polyhedral structure, slightly moist soft consistency.  <u>Effective refusal</u> on weathered dolerite bedrock.	<b>5</b>

### 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 Emerson class 2(1), indicating presence of soils with slight 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/m<sup>2</sup> along with minimising subsoil disturbance whenever possible.

TH #	Depth (m)	Visual sign	Class
2	0.2 - 0.4	Some dispersion (Slight milkiness immediately adjacent to aggregate)	2(1)
3	0.7 - 0.9	Some dispersion (Slight milkiness immediately adjacent to aggregate)	2(1)

### WASTEWATER LAND APPLICATION AREA SETBACKS

Required setback from foundations: 6 m

Required setback from downslope surface water: 100 m

Required setback from downslope boundary: 40 m

Required setback from upslope and side boundaries: 1.5 m

Required vertical setback to bedrock: 0.5 m below the LAA (Table R1 of AS1547-2012)

## WASTEWATER CLASSIFICATION AND DESIGN

According to AS1547-2012, the soil is **category 5** (Light Clay).

Secondary treatment is recommended.

Wastewater loading: 5 persons @ 120 L/day (tank) - 600 L/day.

Design Loading Rates (DLR):

- 50 mm/day Eljen SPD
- 10 mm/day for land application area (LAA)

Total minimum LAA required:

- 12.0 m<sup>2</sup> for single pass sand filter and
- 60.0 m<sup>2</sup> absorption trenches.

The new three-bedroom equivalent house (including temporary ancillary) has a maximum design hydraulic load of 600 L/day. A dual-purpose septic tank (min 3000 L) with outlet filter is required. This shall gravity feed to a lined Eljen sand filter, with single-point discharge for secondary treatment. The SPD bed will then gravity feed to in-ground absorption trenches sized on a DLR of 10 mm/day. A minimum land application area of 60 m<sup>2</sup> is therefore required.

The Eljen sand filter of 12 m<sup>2</sup> will be 3.96 m x 3.03 m with three rows of 3 Eljen units within a bed of specified sand. High and low vents are required. The bed is to be fitted with a polyethylene liner with a 100 mm slotted PVC drainage pipe to collect the liquid to gravity feed to the LAA via a diversion/splitter box.

LAA to be four absorption trenches 17 m long x 0.9 m wide x 0.4 m deep. Two rows of two terraced trenches to receive even distribution of effluent using a four-way gravity splitter box. Min. 5 m downslope separation between terraced trenches. Ensure trenches are fed from the middle.

Trench bases to be scarified and treated with gypsum at 0.5 Kg/m<sup>2</sup> prior to adding aggregate. Gypsum also to be applied to any exposed subsoil clays at. Local sandy loam topsoil to be mounded over the aggregate layer to at least 200 mm. Seed with deep rooted grasses, suited to the local conditions, to aid in evapotranspiration.

A surface diversion drain is to be installed upslope of the wastewater absorption area to protect the LAA water runoff. Once constructed, the diversion drain should have adequate topsoil and grass seed to ensure successful pasture establishment. This will protect against soil erosion.

All livestock/vehicular traffic to be excluded from LAA with fencing if necessary. The area should be mowed to encourage grass growth, evapotranspiration and nutrient removal. Clippings removed.

A 100% reserve area is set aside for future wastewater requirements.

Subsoils were tested for reactivity, the tests resulted is horizons that are Class M. All plumbing fixtures and fittings should be installed as per *Appendix G AS/NZS 3500.2.2021*.

Compliance with *Directors Guidelines 2016* is shown in the attached table for acceptable criteria. It is recommended that during construction Doyle Soil Consulting be notified of any major variation to the soil conditions or loading rate as predicted in this report.



**Robyn Doyle**  
B.Agr.Sc.  
**Soil Scientist and**  
**Wastewater Designer**  
**Licence no. CC7149**



**Rowan Mason**  
B.Agr.Sc.(hons)  
**Soil Scientist**

## APPENDIX 1 – TRENCH™

**Doyle Soil Consulting**  
 Land suitability and system sizing for on-site wastewater management  
 Trench 3.0 (Australian Institute of Environmental Health)

### Site Capability Report OWMS for new 3 bedroom equiv. house

Assessment for	Sarah Chugg and Paul Willcock	Assess. Date	17-Jan-24
	6 Duncan Street Montrose 7010	Ref. No.	
Assessed site(s)	426 Prossers Road, Rochmond	Site(s) inspected	15-Sep-23
Local authority	Clarence Council	Assessed by	R Doyle

This report summarises data relating to the physical capability of the assessed site(s) to accept wastewater. Environmental sensitivity and system design issues are reported separately. The 'Alert' column flags factors with high (A) or very high (AA) site limitations which probably require special consideration in site acceptability or for system design(s). Blank spaces indicate data have not been entered into TRENCH.

Alert	Factor	Units	Value	Confid level	Limitation		Remarks
					Trench	Amended	
	Expected design area	sq m	3,000		Very low		
	Density of disposal systems	/sq km	1		Very low		
	Slope angle	degrees	9		Moderate		
	Slope form	Convex spreading			Very low		
	Surface drainage	Good			Very low		
	Flood potential	Site floods <1:100 yrs			Very low		
	Heavy rain events	Very rare			Very low		
	Aspect (Southern hemi.)	Faces N			Very low		
	Frequency of strong winds	Common			Low		
	Wastewater volume	L/day	600		Moderate		
	SAR of septic tank effluent		1.0		Low		
	SAR of sullage		2.5		Moderate		
	Soil thickness	m	0.8		Low		
	Depth to bedrock	m	1.4		Moderate		
	Surface rock outcrop	%	1		Moderate		
	Cobbles in soil	%	5		Low		
	Soil pH		6.0		Low		
	Soil bulk density	gm/cub. cm	1.4		Very low		
	Soil dispersion	Emerson No.	5		Moderate		
	Adopted permeability	m/day	0.1		Very low		
	Long Term Accept. Rate	L/day/sq m	10		Low		

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

#### Comments

The site is suitable for onsite wastewater disposal with a very large area available. The site is limited by depth of soil and light clay subsoils therefore secondary treatment and land application via absorption trenches is recommended

**Doyle Soil Consulting**  
 Land suitability and system sizing for on-site wastewater management  
 Trench 3.0 (Australian Institute of Environmental Health)

**Environmental Sensitivity Report**  
**OWMS for new 3 bedroom equiv. house**

Assessment for Sarah Chugg and Paul Willcock	Assess. Date	17-Jan-24
6 Duncan Street Montrose 7010	Ref. No.	
Assessed site(s) 426 Prossers Road, Richmond	Site(s) inspected	15-Sep-23
Local authority Clarence Council	Assessed by	R Doyle

This report summarises data relating to the environmental sensitivity of the assessed site(s) in relation to applied wastewater. Physical capability and system design issues are reported separately. The 'Alert' column flags factors with high (A) or very high (AA) limitations which probably require special consideration in site acceptability or for system design(s). Blank spaces indicate data have not been entered into TRENCH.

Alert	Factor	Units	Value	Confid level	Limitation		Remarks
					Trench	Amended	
A	Cation exchange capacity	mmol/100g	50		High		
A	Phos. adsorp. capacity	kg/cub m	0.5		High		
	Annual rainfall excess	mm	-671		Very low		
	Min. depth to water table	m	3		Very low		
	Annual nutrient load	kg	5.5		Low		
	G'water environ. value	Agric non-sensit			Low		
AA	Min. separation dist. required	m	80		Very high		
	Risk to adjacent bores						Factor not assessed
	Surf. water env. value	Agric non-sensit			Low		
	Dist. to nearest surface water	m	500		Low		
	Dist. to nearest other feature	m	80		Low		
	Risk of slope instability		Very low		Very low		
	Distance to landslip	m	5000		Very low		

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

**Comments**

There will be a low environmental risk due to the large available area and the distance to the downslope boundary means a very low risk of off-site movement. effluent to be treated to a secondary standard.

**Doyle Soil Consulting**  
 Land suitability and system sizing for on-site wastewater management  
 Trench 3.0 (Australian Institute of Environmental Health)

**Assessment Report**  
**OWMS for new 3 bedroom equiv. house**

Assessment for Sarah Chugg and Paul Willcock	Assess. Date	17-Jan-24
6 Duncan Street Montrose 7010	Ref. No.	
Assessed site(s) 426 Prossers Road, Richmond	Site(s) inspected	15-Sep-23
Local authority Clarence Council	Assessed by	R Doyle

This report summarises wastewater volumes, climatic inputs for the site, soil characteristics and system sizing and design issues. Site Capability and Environmental sensitivity issues are reported separately, where 'Alert' columns flag factors with high (A) or very high (AA) limitations which probably require special consideration for system design(s). Blank spaces on this page indicate data have not been entered into TRENCH.

**Wastewater Characteristics**

Wastewater volume (L/day) used for this assessment = 600 (using the 'No. of bedrooms in a dwelling' method)  
 Septic tank wastewater volume (L/day) = 200  
 Sullage volume (L/day) = 400  
 Total nitrogen (kg/year) generated by wastewater = 4.4  
 Total phosphorus (kg/year) generated by wastewater = 1.1

**Climatic assumptions for site**

(Evapotranspiration calculated using the crop factor method)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean rainfall (mm)	39	35	31	38	32	40	38	52	46	53	47	51
Adopted rainfall (R, mm)	39	35	31	38	32	40	38	52	46	53	47	51
Retained rain (Rr, mm)	31	28	25	30	26	32	30	41	37	42	38	41
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	156	137	104	70	47	31	34	50	72	104	118	149
Evapotr. less rain (mm)	<b>125</b>	<b>109</b>	<b>79</b>	<b>40</b>	<b>21</b>	<b>-1</b>	<b>4</b>	<b>8</b>	<b>35</b>	<b>62</b>	<b>80</b>	<b>108</b>
Annual evapotranspiration less retained rain (mm) =												671

**Soil characteristics**

Texture = Light Clay Category = 5 Thick. (m) = 0.8  
 Adopted permeability (m/day) = 0.1 Adopted LTAR (L/sq m/day) = 10 Min depth (m) to water = 3

**Proposed disposal and treatment methods**

Proportion of wastewater to be retained on site: All wastewater will be disposed of on the site  
 The preferred method of on-site primary treatment: In dual purpose septic tank(s)  
 The preferred method of on-site secondary treatment: In-ground  
 The preferred type of in-ground secondary treatment: Sand filter(s)  
 The preferred type of above-ground secondary treatment: None  
 Site modifications or specific designs: Not needed

**Suggested dimensions for on-site secondary treatment system**

Total length (m) = 49  
 Width (m) = 0.9  
 Depth (m) = 0.4  
 Total disposal area (sq m) required = 410  
 comprising a Primary Area (sq m) of: 203  
 and a Secondary (backup) Area (sq m) of: 203

Sufficient area is available on site

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

**Comments**

The calculated DLR for secondary treated effluent in the category 5 soil is 10 mm/day. Total land application area of 60 sq m is required. Therefore the system should have the capacity to cope with predicted climatic and loading events.

Demonstration of wastewater system compliance to *2016 Directors Guidelines for On-site Wastewater Disposal*

Acceptable Solutions	Performance Criteria	Compliance
<p>A1 Horizontal separation distance from a building to a land application area must comply with one of the following:</p> <ul style="list-style-type: none"> <li>a) be no less than 6m; or</li> <li>b) be no less than:                             <ul style="list-style-type: none"> <li>i) 3m from an upslope building or level building;</li> <li>ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building;</li> <li>iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building</li> </ul> </li> </ul>	<p>P1 The land application area is located so that</p> <ul style="list-style-type: none"> <li>a) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.; and</li> <li>b) is setback a sufficient distance from a downslope excavation around or under a building to prevent inadequately treated wastewater seeping out of that excavation</li> </ul>	<p>Complies with A1 (a) Land application area will be located with minimum separation distance to proposed building of 6m.</p>
<p>A2 Horizontal separation distance from downslope surface water to a land application area must comply with (a) or (b)</p> <ul style="list-style-type: none"> <li>a) be no less than 100m; or</li> <li>b) be no less than the following:                             <ul style="list-style-type: none"> <li>i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or</li> <li>ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.</li> </ul> </li> </ul>	<p>P2 Horizontal separation distance from downslope surface water to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setback must be consistent with AS/NZS 1547 Appendix R;</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</li> </ul>	<p>Complies with A2 (a) Land application area located &gt; 100m from downslope surface water</p>



<p>A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following:</p> <ul style="list-style-type: none"> <li>a) be no less than 40m from a property boundary; or</li> <li>b) be no less than: <ul style="list-style-type: none"> <li>i) 1.5m from an upslope or level property boundary; and</li> <li>ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or</li> <li>iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</li> </ul> </li> </ul>	<p>P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setback must be consistent with AS/NZS 1547 Appendix R; and</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</li> </ul>	<p>Complies with A3 (a) Land application area located no less than 40m from property boundary.</p>
<p>A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.</p>	<p>P4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setback must be consistent with AS/NZS 1547 Appendix R; and</li> <li>b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable</li> </ul>	<p>No bore or well identified within 50m</p>

<p>A5</p> <p>Vertical separation distance between groundwater and a land application area must be no less than:</p> <p>a) 1.5m if primary treated effluent; or</p> <p>b) 0.6m if secondary treated effluent</p>	<p>P5</p> <p>Vertical separation distance between groundwater and a land application area must comply with the following:</p> <p>a) Setback must be consistent with AS/NZS 1547 Appendix R; and</p> <p>b) A risk assessment completed in accordance with appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable</p>	<p>Complies with A5 (b)</p>
<p>A6</p> <p>Vertical separation distance between a limiting layer and a land application area must be no less than:</p> <p>a) 1.5m if primary treated effluent; or</p> <p>b) 0.5m if secondary treated effluent</p>	<p>P6</p> <p>Vertical setback must be consistent with AS/NZS1547 Appendix R.</p>	<p>Complies with A6 (b)</p> <p>No limiting layer identified.</p>
<p>A7</p> <p>nil</p>	<p>P7</p> <p>A wastewater treatment unit must be located a sufficient distance from buildings or neighbouring properties so that emissions (odour, noise or aerosols) from the unit do not create an environmental nuisance to the residents of those properties</p>	<p>Complies</p>

## **AS1547:2012 – Loading Certificate – Eljen-SPD Design**

This loading certificate is provided in accordance with Clause 7.4.2(d) of AS/NZS 1547:2012 and sets out the design criteria and the limitations associated with use of the system.

**Site Address:** 426 Prossers Rd, Richmond

**System Capacity:** 5 persons @ 120 L/person/day

### **Summary of Design Criteria:**

**SPD bed DLR:** 50 L/m<sup>2</sup>/day. **SPD bed area:** 12 m<sup>2</sup>.

**Trench DLR:** 10 mm/day. **Absorption area:** 60 m<sup>2</sup>

**Reserve area location / use:** Assigned – 100% available

**Water saving features fitted:** Standard fixtures

**Allowable variation from design flows:** 1 event @ 200% daily loading per quarter

**Typical loading change consequences:** Expected to be minimal due to use of SPD bed

**Overloading consequences:** Continued overloading may cause hydraulic failure of the absorption area and require upgrading/extension of the area. Risk considered acceptable.

**Underloading consequences:** Lower than expected flows will have minimal consequences on system operation unless the house has long periods of non-occupation.

**Lack of maintenance / monitoring consequences:** Issues of underloading/overloading and condition of the absorption area require monitoring and maintenance, if not completed system failure may result in unacceptable health and environmental risks. Monitoring and regulation by the permit authority required to ensure compliance.

**Other considerations:** Owners/occupiers must be made aware of the operational requirements and limitations of the system by the installer – i.e., the “do’s and don’ts” of how to manage a septic tank, including pump-out frequency, water conservation and products to avoid entering the system.

# CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94  
Section 106  
Section 129  
Section 155

Form **35**

To:  Owner name  
 Address  
  Suburb/postcode

## Designer details:

Name:  Category:   
 Business name:  Phone No:   
 Business address:   
  Fax No:   
 Licence No:  Email address:

## Details of the proposed work:

**Owner/Applicant**  Designer's project reference No.   
**Address:**  Lot No:   
   
**Type of work:** Building work  Plumbing work  (X all applicable)

### Description of work:

(new building / alteration / addition / repair / removal / re-erection water / sewerage / stormwater / on-site wastewater management system / backflow prevention / other)

### Description of the Design Work (Scope, limitations or exclusions): (X all applicable certificates)

Certificate Type:	Certificate	Responsible Practitioner
	<input type="checkbox"/> Building design	Architect or Building Services Designer
	<input type="checkbox"/> Structural design	Structural Engineer
	<input type="checkbox"/> Fire Safety design	Fire Engineer
	<input type="checkbox"/> Civil design	Civil Engineer
	<input checked="" type="checkbox"/> Hydraulic design	Building Services Designer
	<input type="checkbox"/> Fire service design	Building Services Designer
	<input type="checkbox"/> Electrical design	Building Services Designer
	<input type="checkbox"/> Mechanical design	Building Service Designer
	<input type="checkbox"/> Plumbing design	Plumber
	<input type="checkbox"/> Other (specify)	

Deemed-to-Satisfy:  Performance Solution:  (X the appropriate box)

Other details:

<b>Design documents provided:</b>	
-----------------------------------	--

The following documents are provided with this Certificate –

*Document description:*

Drawing numbers:	Prepared by: Doyle Soil Consulting	Date: Jan 2024
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Doyle Soil Consulting	Date: Jan 2024
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Doyle Soil Consulting	Date: Jan 2024

<b>Standards, codes or guidelines relied on in design process:</b>	
--------------------------------------------------------------------	--

AS1547-2012 On site domestic wastewater management.  
AS3500 (Parts 0-5)-2013 Plumbing and drainage set.

<b>Any other relevant documentation:</b>	
------------------------------------------	--

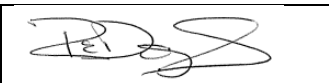
Site and Soil Evaluation Report

<b>Attribution as designer:</b>	
---------------------------------	--

I, Robyn Doyle, am responsible for the design of that part of the work as described in this certificate.

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2016* and sufficient detail for the builder or plumber to carry out the work in accordance with the documents and the Act.

This certificate confirms compliance and is evidence of suitability of this design with the requirements of the National Construction Code.

	<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
Designer:	R Doyle		18/01/2024
Licence No:	CC7418		

**Assessment of Certifiable Works: (TasWater)**

**Note: single residential dwellings and outbuildings on a lot with an existing sewer connection are not considered to increase demand and are not certifiable.**

**If you cannot check ALL of these boxes, LEAVE THIS SECTION BLANK.**

**TasWater must then be contacted to determine if the proposed works are Certifiable Works.**

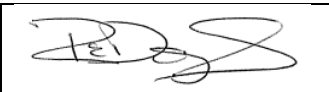
**I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:**

- The works will not increase the demand for water supplied by TasWater
- The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- The works will not damage or interfere with TasWater's works
- The works will not adversely affect TasWater's operations
- The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- I have checked the LISTMap to confirm the location of TasWater infrastructure
- If the property is connected to TasWater's water system, a water meter is in place, or has been applied for to TasWater.

**Certification:**

I, .....Robyn Doyle.....being responsible for the proposed work, am satisfied that the works described above are not Certifiable Works, as defined within the *Water and Sewerage Industry Act 2008*, that I have answered the above questions with all due diligence and have read and understood the Guidelines for TasWater CCW Assessments.

Note: the Guidelines for TasWater Certification of Certifiable Works Assessments are available at: [www.taswater.com.au](http://www.taswater.com.au)

	<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
Designer:	Robyn Doyle		18/01/2024




Innovative Environmental Products and Solutions Since 1979

# Eljen GSF System Design Program

RESET FORM

Date:	17-Jan-24	Client Name:	Sara Chugg and Paul Willcock		
Site Address:	426 Prossers Rd, Richmond		Council Area:	Clarence	
Designer:	Robyn Doyle (DS)	Designer Phone Number:	488080455	Is this new construction Y or N:	Y
Plumber:	Cameron Ward	Plumber Phone Number:	407782308	Plumber License Number:	1110675

**Note: This design program is a guide only. All design constraints and limitations must be addressed by the designer prior to design and installation.**

System Design Information		Design Notes and Comments
Design Occupancy (Number of persons):	5	 <b>19/1/2024</b>
Daily Design Flow (L/Person/Day):	120	
Total Daily Design Flow (L/Day):	600	
Trench or Bed	Bed	
Soil Category <i>(Note: Soil Categories 4-6 May Require additional design consideration. Please reference AS/1547 2012 when designing in these soil types.)</i>	1 - Gravels and Sands	
Site Design Loading Rate (L/mm/day):	50	
System Area Slope (%):	16%	
System Area Slope (converted from % slope to degrees slope):	9.09	
System Basal Area Bore Log Depth: <i>(Note: Must be greater than 600 mm)</i>	600	
Maximum System Length Based on Site Constraints:	20	
Desired Rows or Trenches in System	3	
Distribution Type (G = Gravity - P = Pump to Gravity - LPD = Low Pressure Distribution):	G	

### System Dimensions

Would you like to use a specific width?	
Specific Width (m)	

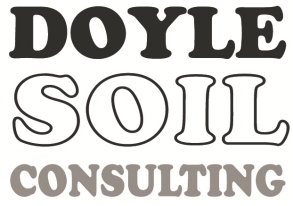
	Treatment Zone	Dispersal Zone Extension
Length (m)	3.96	
Width (m)	3.03	
Sand Height (m)	0.15	
Sand Area (m <sup>2</sup> )	12.00	

### System Capacity

Total Daily Design Flow (L/Day):	600
Minimum Number of A42 Units Required	9
Units per Row	3
Length of Rows with 0.15 m Sand Extension	3.96
End to End Space Between Modules (TRENCH ONLY)	

### Materials

Minimum Number of A42 Units Required	9
The system requires a high vent. Are using 50mm or 100mm pipe?	100mm 1
Low vent	1 x 100mm vent
Effluent Filter	1
Inspection Ports	2
Pipe Required (m)	11.88
Estimate of System Sand Required (m <sup>3</sup> )	5.16

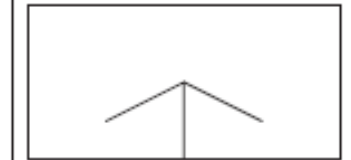


426 Prossers Rd, RICHMOND

Three rows of 3 Eljen Units

TITLE  
GSF WITH LINER

SIDE VIEW



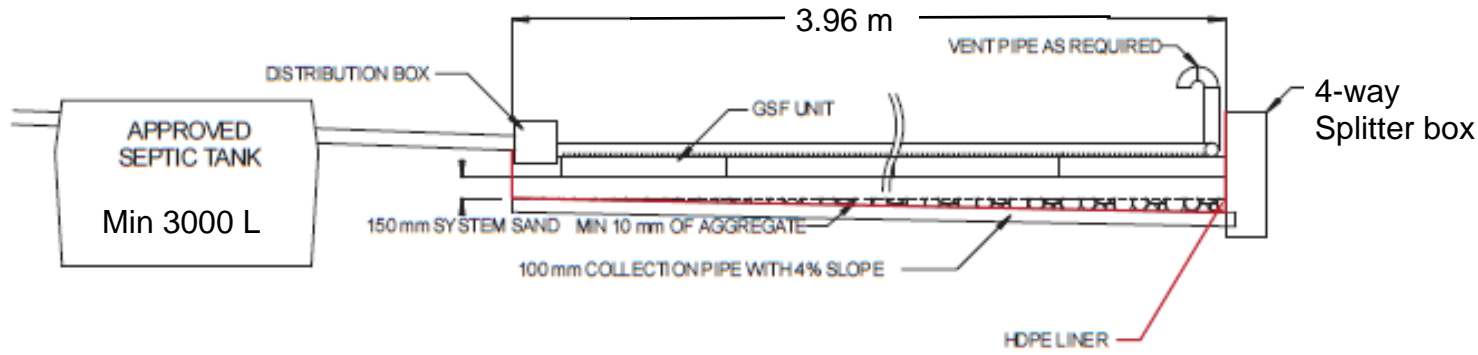
MOBILE : 0418132021  
EMAIL : paul@eljenacific.com  
WEBSITE : eljenacific.com  
ADDRESS : 16 The Lee  
Devonport  
TAS 7310  
Australia

DESIGNED \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

REVISION

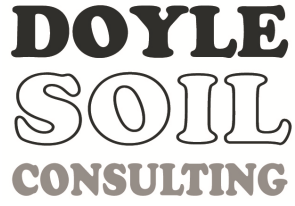
SCALE 1:50 SIZE A41/1 SHEET 1



Director of Building Control  
Delegate of the Minister for Building and Construction

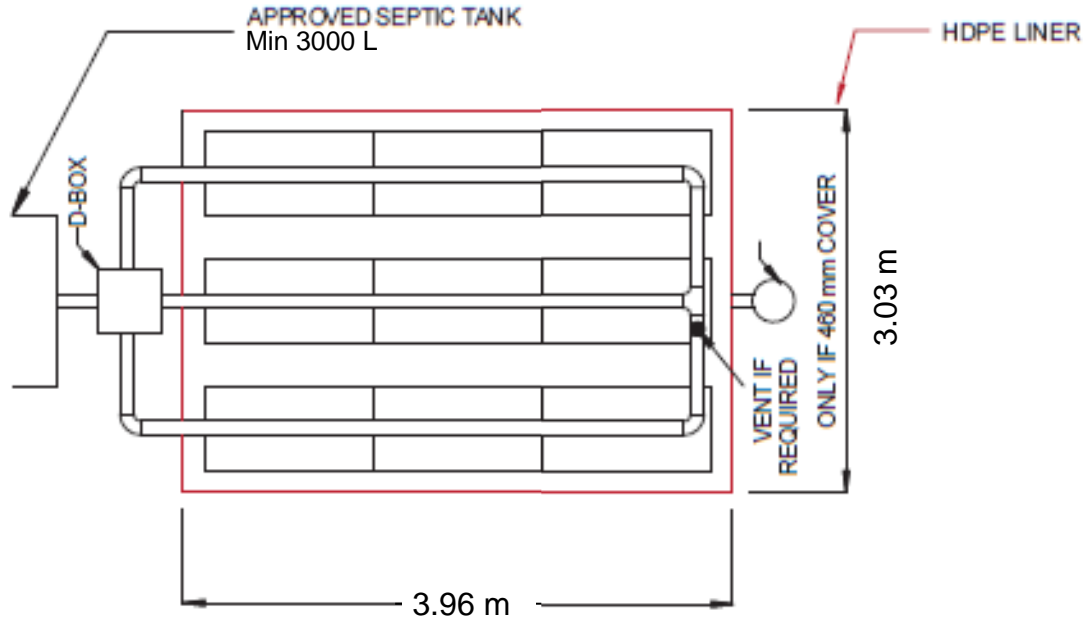
20 November 2019



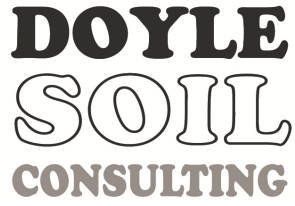


426 Prossers Rd, RICHMOND

Three rows of 3 Eljen Units

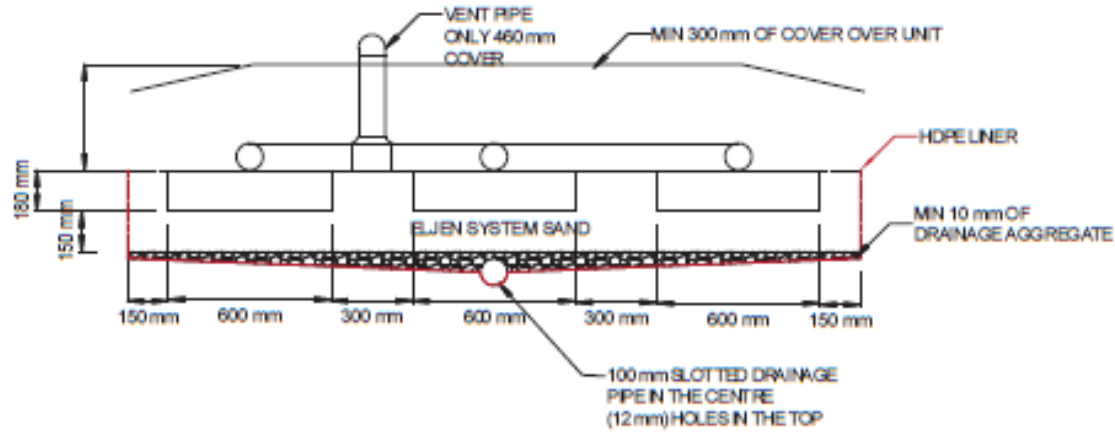


TITLE		
GSF WITH LINER		
PLAN VIEW		
0 25 50 cm 100 150		
MOBILE : 0418132021 EMAIL : paul@eljenpacific.com WEBSITE : eljenpacific.com ADDRESS: 16 The Lee Devonport TAS 7310 Australia		
DESIGNED DATE		
APPROVED DATE		
REVISION		
SCALE	SIZE	SHEET
1:50	A4	1/1



426 Prossers Rd, RICHMOND

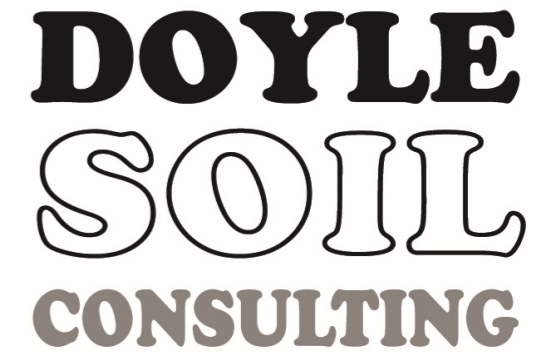
Three rows of 3 Eljen Units



TITLE		
GSF WITH LINER		
CROSS VIEW		
0 12.5 25 50 75 cm		
MOBILE	: 0418132021	
EMAIL	: paul@eljenpadfc.com	
WEBSITE	: eljenpadfc.com	
ADDRESS	: 16 The Lee Devonport TAS 7310 Australia	
DESIGNED DATE		
APPROVED DATE		
REVISION		
SCALE	1:25	SIZE SHEET
		A4 1/1

# TERRACED TRENCH DETAIL

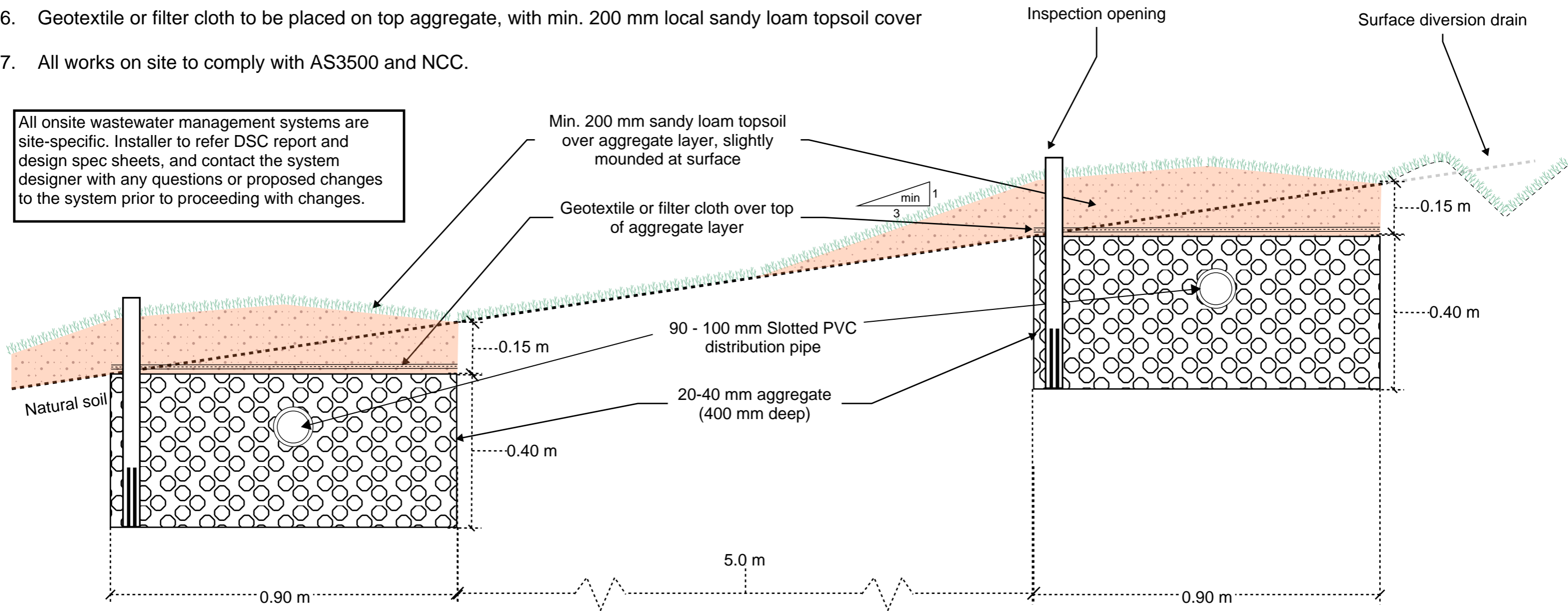
426 Prossers Rd, Richmond



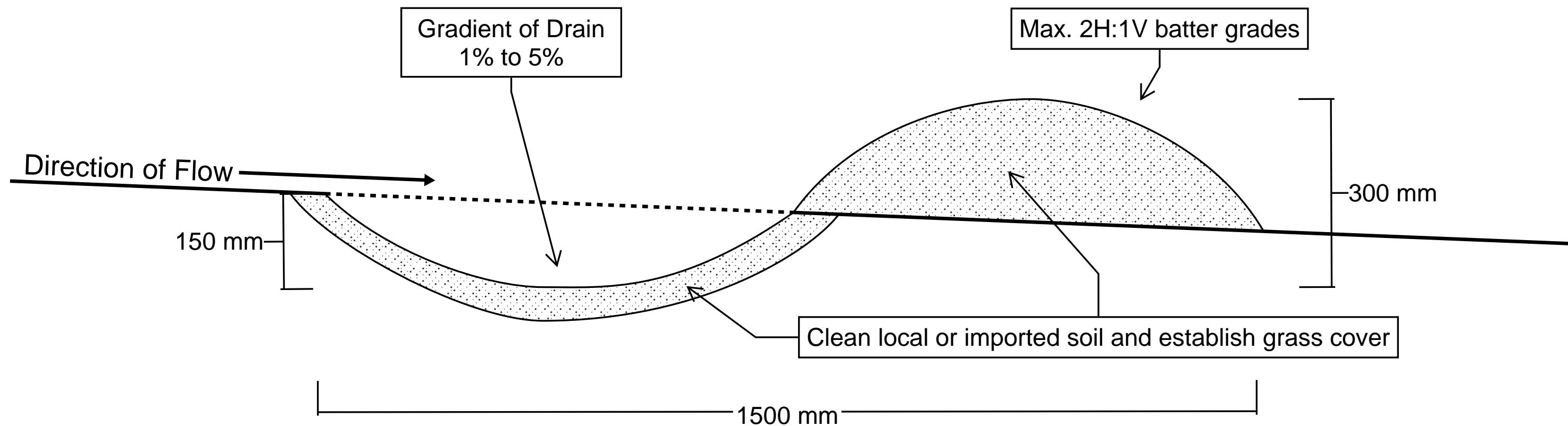
## Design notes:

1. Total of four terraced (two by two) absorption trenches, dimensions of 17 000 mm long by 900 mm wide by 400 mm deep
2. Base of the trench to be excavated level, scarified and treated with gypsum at 0.5 Kg/m<sup>2</sup>
3. Fill with 20 - 40 mm aggregate to 400 mm
4. 90-100mm slotted pipe should be placed in the top 100mm of the aggregate layer and fed, via splitter box's
5. Inspection opening to be placed on downslope side of the trench and perforated in lower section
6. Geotextile or filter cloth to be placed on top aggregate, with min. 200 mm local sandy loam topsoil cover
7. All works on site to comply with AS3500 and NCC.

All onsite wastewater management systems are site-specific. Installer to refer DSC report and design spec sheets, and contact the system designer with any questions or proposed changes to the system prior to proceeding with changes.



**Cross Section: Upslope Diversion Drain**



Extracted from: Designing and Installing On-Site Wastewater Systems - Water NSW - CRP 2019  
Standard Drawing 8A - Upslope Diversion Drain  
(not to scale)

# DOYLE SOIL CONSULTING

426 Prossers Rd, Richmond

## Wastewater system:

Dual purpose septic tank (min 3000 L).

Eljen SPD bed 3.96 m x 3.03 m with three rows of three Eljen units in a bed of specified sand.

Total minimum LAA: 60 m<sup>2</sup>

- comprising four 17 m long x 0.9 m wide x 0.4 m deep absorption trenches
- mounded over with min. 200 mm local sandy loam topsoil.
- scarify base of trenches

Construct during dry weather conditions only, to avoid clay smearing.

4-way gravity splitter discharging to the middle of each trench.

5 m downslope separation between the terraced trenches.

Min 40 m downslope boundary setback

Min 6 m setback from foundations

Min 1.5 m horizontal boundary setback

Min 100 m waterway setback

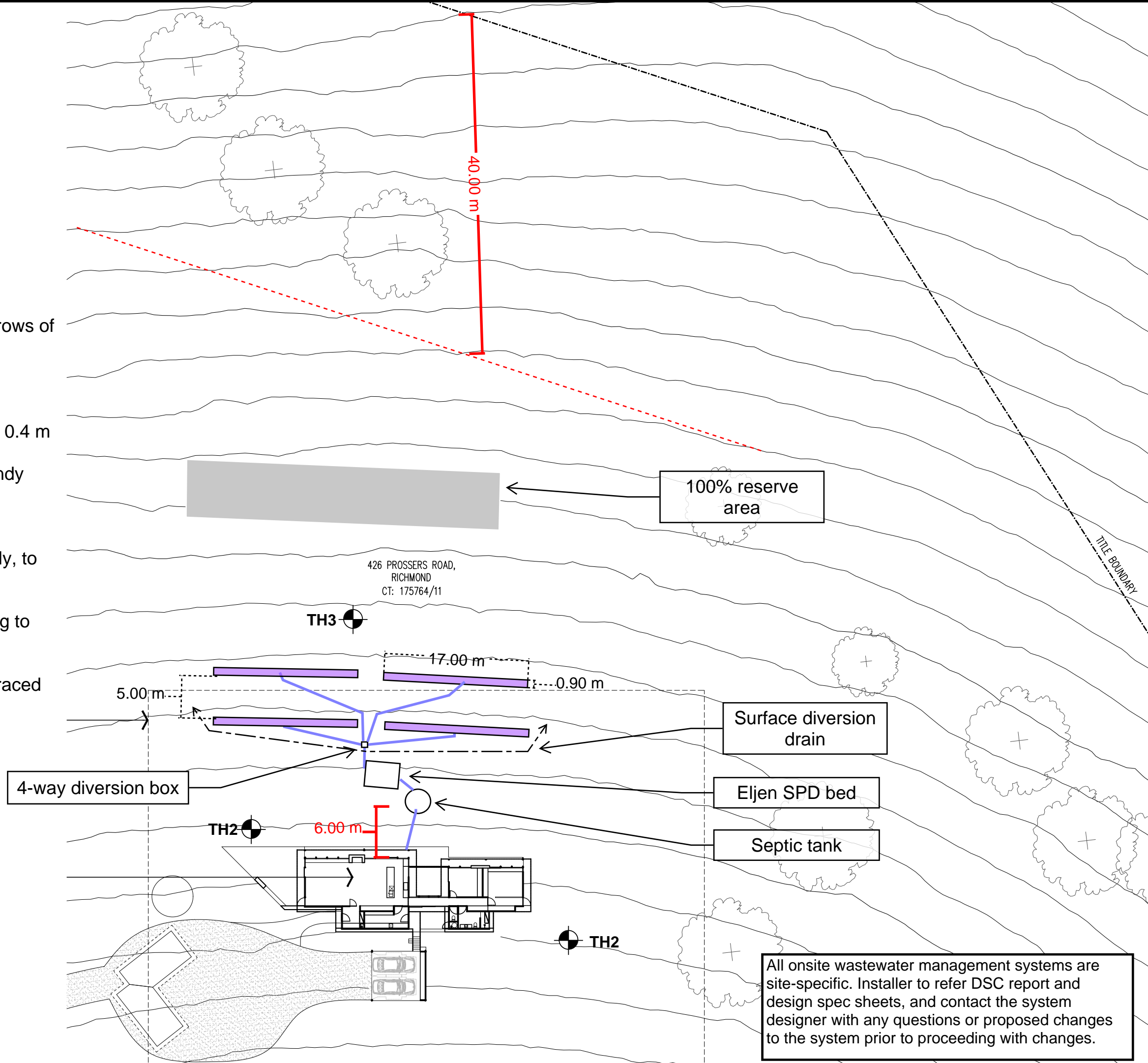
Refer to DSC report.

Approximate test hole locations

Prepared by  
Rowan Mason



17/1/24



All onsite wastewater management systems are site-specific. Installer to refer DSC report and design spec sheets, and contact the system designer with any questions or proposed changes to the system prior to proceeding with changes.

# DOYLE SOIL CONSULTING

426 Prossers Rd, Richmond

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- scarify base of trenches

Construct during dry weather conditions only, to avoid clay smearing.

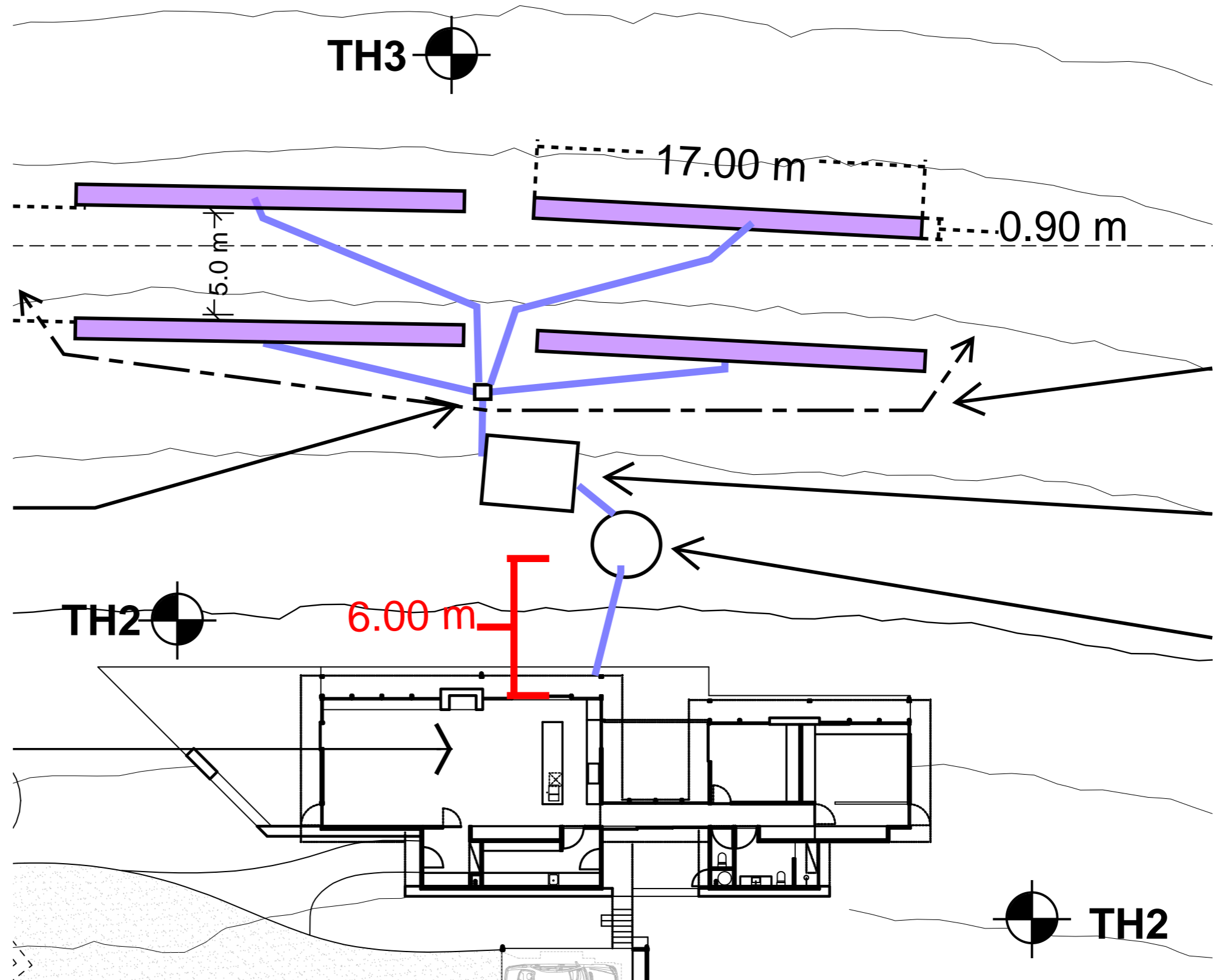
4-way gravity splitter box to discharging to the middle of each trench.

5 m downslope separation between the terraced trenches.

- Min 40 m downslope boundary setback
- Min 6 m setback from foundations
- Min 1.5 m horizontal boundary setback
- Min 100 m waterway setback

Refer to DSC report.

Approximate test hole location



Prepared by  
Rowan Mason

Robyn Doyle  
Building Services Designer  
Hydraulic  
CC7418

*[Signature]*

*[Signature]*

17/1/24

29/1/2024

All onsite wastewater management systems are site-specific. Installer to refer DSC report and design spec sheets, and contact the system designer with any questions or proposed changes to the system prior to proceeding with changes.

**DOYLE**  
**SOIL**  
**CONSULTING**



**SITE AND SOIL EVALUATION REPORT**  
**FOUNDATION AND WINDLOADING ASSESSMENT**

**426 Prossers Road**

**Richmond**

**September 2023**

## SITE INFORMATION

**Client:** Sara Chugg and Paul Willcock

**Address:** 426 Prossers Road, Richmond (CT 175764/11)

**Site Area:** Approximately 21 Ha

**Date of inspection:** 15/09/2023

**Building type:** New house

**Services:** Tank water and onsite wastewater

**Planning Overlays:** Bushfire Prone, Low landslide hazard in parts.

**Mapped Geology** - Mineral Resources Tasmania 1:25 000 Tea Tree sheet:

**Jd**, some **Rlp** = Jurassic Dolerite, some Triassic sandstone, mudstone

**Soil Depth:** 0.5 - 1.6 m

**Subsoil Drainage:** Well drained

**Drainage lines / water courses:** none

**Vegetation:** pastures

**Rainfall in previous 7 days:** Approximately 2 mm

**Slope:** Approximately 9° to the north

## 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.

- Three test hole (TH) cores:
  - TH1 with refusal at 0.5 m
  - TH2 with effective refusal at 1.4 m
- Two Dynamic Cone Penetrometer (DCP) tests:
  - DCP1 with refusal at 0.8 m
  - DCP2 with no refusal at 1.6 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 – 0.4	A1/A2	Very Dark Grey (10YR 3/1), grading to Brown (7.5YR, 4/3), <b>Coarse Sandy Loam</b> , single grain, dry loose consistency.	SC
0.4 – 0.5	B2	Dark Reddish Brown (5YR, 3/2), <b>Slightly Sandy Light Clay</b> , moderate medium angular blocky structure, slightly moist firm consistency.	CL
@ 0.5	R	<u>Refusal</u> on hard dolerite bedrock/boulders.	N/A

### SOIL PROFILES – Test Hole 2



Depth (m)	Horizon	Description and field texture grade	USCS Class
0 – 0.2	A1/A2	Very Dark Grey (10YR 3/1), grading to Brown (7.5YR, 4/3), <b>Coarse Sandy Loam</b> , single grain, dry loose consistency.	SC
0.2 – 0.4	B2 <sub>1</sub>	Dark Reddish Brown (5YR, 3/2), <b>Slightly Sandy Light Clay</b> , moderate medium angular blocky structure, slightly moist firm consistency.	CL
0.4 – 0.9	B2 <sub>2</sub>	Banded olive brown (2.5Y 4/4) and strong brown (7.5YR 4/6), <b>Gritty Silty Light Clay</b> , moderate medium angular blocky structure breaking to fine polyhedral structure, slightly moist soft consistency.	CL
0.9 – 1.4	BC	Banded olive brown (2.5Y 4/4) and strong brown (7.5YR 4/6), <b>Gravelly Coarse Sandy Clay Loam (+)</b> , weak fine polyhedral structure, slightly moist loose consistency.  <u>Effective refusal</u> on weathered dolerite bedrock.	GC

## SITE AND SOIL COMMENTS

The natural soil profiles are formed from windblown sands over clayey colluvium derived from Jurassic dolerite. The profiles are moderately shallow to moderately deep with test hole refusal occurring at approximately 0.5 to 1.4 m. The field textures of the soil profile are dominated by clay, which is moderately reactive and moderately structured. The DCP indicates a low bearing capacity to at least 1.1 m at DCP2, near TH2. We recommend founding on the underlying, highly competent variably weathered dolerite bedrock at approximately 0.5 to 1.4 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
2	0.2 - 0.4	125	14.0	11.2	M
2	0.4 - 0.9	125	13.0	10.4	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 conditions. Moisture-related variability in soil bearing capacity is most pronounced in coherent soils – i.e., clays and silty clays. These may be very stiff or hard when dry, while only soft to firm when moist/slightly moist - refer to *soil consistency* in above profile descriptions).

Soil moisture below ~0.7 m will vary less with the season, meaning DCP values, hence, soil bearing capacity at these depths is likely to be representative year-round conditions.

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 in the upper 0.7 m were dry and slightly moist when tested (Sept '23).

The data from DCP1 indicate the bearing capacity of the soil is at a *suitable* strength below 0.7 m. However, the highly competent, probable dolerite bedrock at approximately 0.8 m would be the *recommended* foundation material.

The data from DCP2 indicate the bearing capacity of the soil is at a *suitable* strength below 1.1 m. This is also the *recommended* foundation depth.

Based on the DCP data and core depths, the recommended foundation depth can range from approximately 0.5 to 1.4 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	3	33.3	90	30
100 - 200	3	33.3	90	30
200 - 300	3	33.3	90	30
300 - 400	6	16.7	180	60
400 - 500	7	14.3	210	70
500 - 600	6	16.7	180	60
600 - 700	13	7.7	390	130
700 - 800	40	2.5	1200	400

DCP 2				
Depth (mm)	DCP n-number (Blows/100 mm)	DCP Penetration Index (mm/Blow)	Estimated Bearing Capacity (kPa = n x 30)	Likely Variance (+/-)
0 - 100	2	50.0	60	20
100 - 200	5	20.0	150	50
200 - 300	5	20.0	150	50
300 - 400	4	25.0	120	40
400 - 500	4	25.0	120	40
500 - 600	2	50.0	60	20
600 - 700	4	25.0	120	40
700 - 800	3	33.3	90	30
800 - 900	4	25.0	120	40
900 - 1000	8	12.5	240	80
1000 - 1100	24	4.2	720	240
1100 - 1200	13	7.7	390	130
1200 - 1300	17	5.9	510	170
1300 - 1400	18	5.6	540	180
1400 - 1500	10	10.0	300	100
1500 - 1600	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 Emerson class 2(1), indicating presence of soils with slight 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/m<sup>2</sup> along with minimising subsoil disturbance whenever possible.

TH #	Depth (m)	Visual sign	Class
2	0.2 - 0.4	Some dispersion (Slight milkiness immediately adjacent to aggregate)	2(1)
2	0.6 - 0.9	Some dispersion (Slight milkiness immediately adjacent to aggregate)	2(1)

### WIND CLASSIFICATION

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

Region:	<b>A</b>
Terrain Category:	<b>TC1</b>
Shielding Classification:	<b>NS</b>
Topographic Classification:	<b>T2</b>
Wind Classification:	<b>N3</b>
Design Wind Gust Speed ( $V_{h,u}$ ):	<b>50 m/sec</b>

## SITE CLASSIFICATION AND RECOMMENDATIONS

For standard foundations (100 kPa bearing capacity), the site meets the criteria for a **Class P** site classification, as set out in AS2870-2011 (construction). This classification is appropriate due to the presence of some materials with low and variable bearing capacity to depths of approximately 1.1 m. We recommend founding on the underlying, highly competent hard and weathered dolerite bedrock variable depth between approximately 0.5 and 1.4 m.

**Note 1** – In addition to being of low and variable bearing capacity (hence **Class P**), the site also meets the reactivity levels of **Class S** or slightly reactive, with 0 – 20 mm the dominant reactivity of expected surface movement under normal soil moisture ranges for the location.

**Note 2** – If founded entirely on underlying competent Jurassic dolerite bedrock (recommended), below approximately 0.5 to 1.4 m, and no part of the foundations, be it a slab, pier or footing, is in contact with/or is supported by the clayey subsoils, then **Class S** would become an appropriate site classification.

**Note 3** – All foundations require ongoing adequate drainage and vegetation management – please refer to CSIRO foundation management BTF 18 sheet attached.

**Note 4** – If any foundations are placed on FILL that is > 0.5 m in depth then **Class P** is applicable.

**Note 5** – 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.

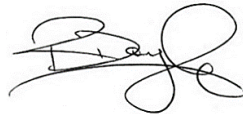
It is recommended that during construction, Doyle Soil Consulting and/or the design engineer be notified of any major variation to the foundation conditions as predicted in this report. Any changes to the site through excavations may alter the site classification.

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.



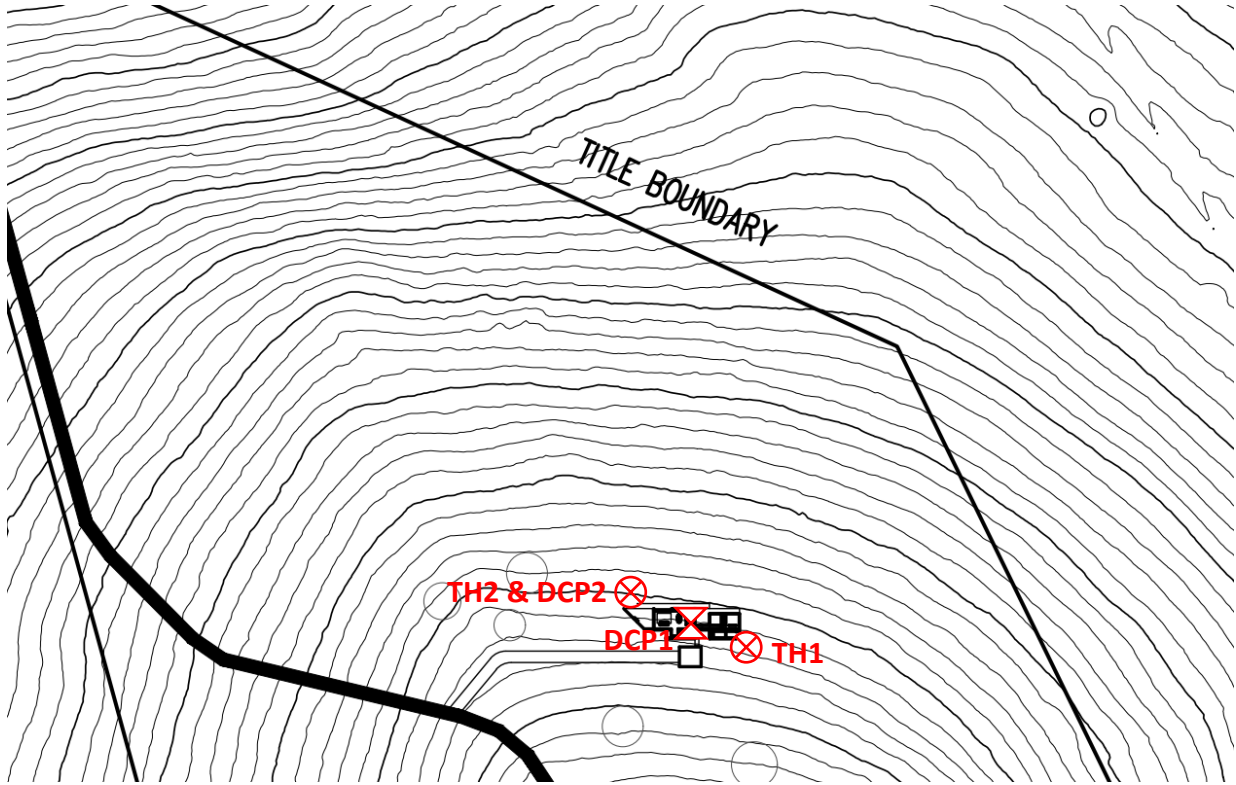
**Rowan Mason**  
B.Agr.Sc.(Hons).  
**Soil Scientist**



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

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

# CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

To:  Owner name  
 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:  X  
or

a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents:	The attached Geotechnical Assessment Report for the address detailed above in, 'Details of Work'.
Relevant calculations:	Refer to above report.
References:	AS1726-2017 Geotechnical site investigations CSIRO Building Technology File -18


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

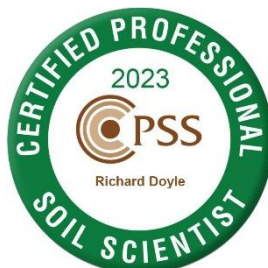
Geotechnical Assessment -Slope stability

*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:	<i>Signed:</i> 	<i>Certificate No:</i> 1420	<i>Date:</i> 18/09/2023
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# 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.

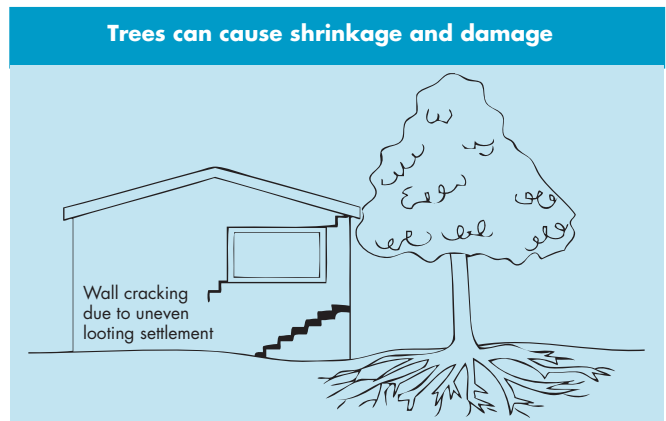
#### Seasonal swelling/shrinkage in clay

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



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**

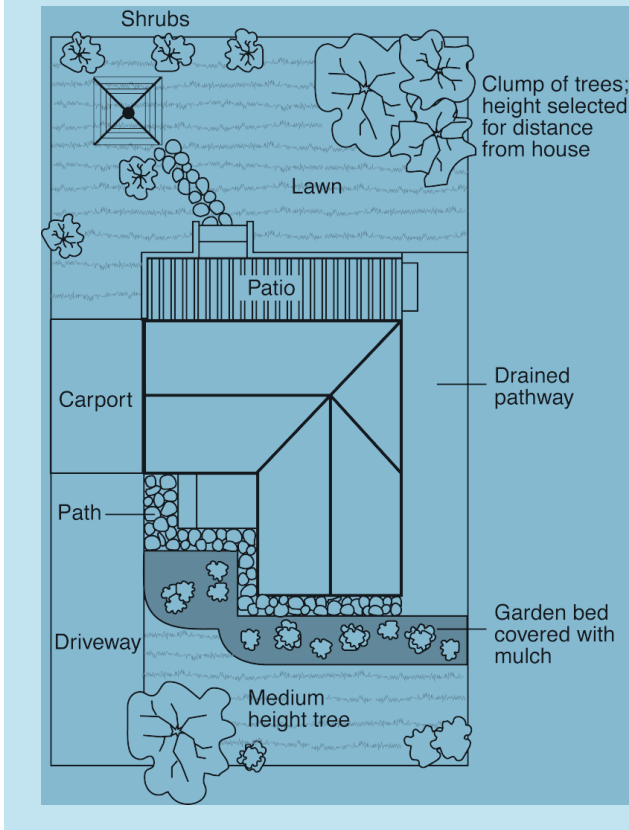
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

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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