



DEVELOPMENT APPLICATION

PDPLANPMTD-2026/063369

PROPOSAL: Dwelling

LOCATION: 36 Boyes Street, Dulcote

RELEVANT PLANNING SCHEME: Tasmanian Planning Scheme - Clarence

ADVERTISING EXPIRY DATE: 03/11/2026

The relevant plans and documents can be inspected at the Council offices, 38 Bligh Street, Rosny Park, during normal office hours until 03/11/2026. In addition to legislative requirements, plans and documents can also be viewed at www.ccc.tas.gov.au during these times.

Any person may make representations about the application to the Chief Executive Officer, by writing to PO Box 96, Rosny Park, 7018 or by electronic mail to clarence@ccc.tas.gov.au. Representations must be received by Council on or before 03/11/2026.

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

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

Planning Application

Use this form to obtain planning approval for the use and development of land, including change of use, subdividing land into smaller lots, lot consolidation, or signage.

Please refer to the Planning Application checklist on the following pages to determine what documentation must be submitted with your application.

Proposal: **PA for New Dwelling & Driveway Access**

Location: **36 Boyes St, Dulcote 7015**

Personal Information Removed

Is the property on the Tasmanian Heritage Register? **No**

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



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

Dominique Dinel

Current use of site:

Undeveloped and unused pasture and woodland

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

Declaration

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

Acknowledgement

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

Personal Information Removed



Planning Application checklist/Applicant Response

Mandatory Documents

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

- ☐ *Details of the location of the proposed use or development.*

36 Boyes St, Dulcot Tasmania 7015

- ☐ *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.*

Refer attached documents.

Notes

- **We understand ourselves as the new owners have not been registered on the Certificate of Title as yet. In support of our ownership we attach documents including the Contract of Sale and a letter from our Conveyancer.**
 - **The Dulcot Water Association (DWA) irrigation pipeline which is shown as an encumbrance on the Title runs through the property and is shown on the attached drawings**
- ☐ *Full description of the proposed use or development.*

Residential house and access driveway

- ☐ *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.*

Residential off grid house

- ☐ *Declaration the owner has been notified if the applicant is not the owner.*

The registered Owner on the current Certificate of Title has sold the land to the current Applicant (Refer attached Contract of Sale)



- ☐ *Crown or Council consent (if publically-owned land).*

A Council Landowner Consent Form is attached to request Council consent to connect the proposed Residential Access Road to Boyes St.

- ☐ *Any reports, plans or other information required by the relevant zone or code.*

Bushfire Hazard Report attached (BAL 29) attached

Geotechnical Assessment Report attached

Landslip Assessment Report attached

Wastewater Assessment Report attached

- ☐ *Fees prescribed by the City of Clarence.*

Fees as estimated - \$1126.70

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

Additional Documents

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

- ☐ *Site analysis and site plan, including where relevant:*

- *Existing and proposed use(s) on site.*

Residential

- *Boundaries and dimensions of the site.*

Refer Title Drawing

- *Topography, including contours showing AHD levels and major site features.*

Refer attached drawings

- *Natural drainage lines, watercourses and wetlands on or adjacent to the site.*

Refer attached drawings



- *Soil type.*

Refer Geotechnical Report attached

- *Vegetation types and distribution, and trees and vegetation to be removed.*

Natural grass on majority of site with woodland between ephemeral water course and Boyes St. Some minor vegetation (shrubs) to be removed for access road off Boyes St. No major trees to be removed

- *Location and capacity of any existing services or easements on/to the site.*

The only existing service on the site is the DWA irrigation pipeline which is shown on the attached drawings

- *Existing pedestrian and vehicle access to the site.*

There is no existing pedestrian or vehicle access to the site

- *Location of existing and proposed buildings on the site.*

Refer attached drawings. Note the applicant requests Council approval to reduce the side boundary setback for rural properties from 10m to 7m, this is the minimum setback required from the Bushfire Assessment Report (attached). In support of this reduction we note the following:

- **The adject land is rural grazing land and the owner has advised that it will only be used to run horses, there are no plans to erect any buildings in the area adjacent to the proposed house**
- **There is a Dulcot Water Association irrigation pipeline running through the site below the house and we have tried to keep the house foundations well away from the pipeline.**
- **The land is quite steep at the western end of the proposed house and the 7m setback reduces the height of the exposed understorey of the house**
- *Location of existing adjoining properties, adjacent buildings and their uses.*

Refer attached drawings. Adjacent buildings (on 58 George St) are rural residential buildings and rural storage buildings at the south western end of the site well away from the proposed house

- *Any natural hazards that may affect use or development on the site.*

There is an ephemeral water course running through the site from an upstream dam overflow. The access road to the site will cross the ephemeral water course and include a 600mm diameter pipe culvert.



- *Proposed roads, driveways, car parking areas and footpaths within the site.*

Refer attached drawings. Note the proposed access road includes a hardstand and turning area for a fire brigade pumper truck adjacent the fire water tank and a car hardstand and turning area at the house location.

- *Any proposed open space, communal space, or facilities on the site.*

The majority of the site will be left as open natural grassland and wooded areas on the south eastern side of the property

- *Main utility service connection points and easements.*

The proposed residence will be off grid with:

- **Solar panels, battery and generator**
- **2x10,000l and 1x5000l potable water tanks with pump and filter**
- **AWTS (Waste Water Treatment System)**
- **1x10,000L Fire Water Tank**
- *Proposed subdivision lot boundaries.*

Refer attached drawing for 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 roofs and external walls.*

Refer attached drawings. Re shadowing there are no adjacent structures on other properties in the vicinity of the house.

- *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.*

The site is primarily to be left as natural grassed areas and existing woodland. Minimal planting will include native shrubs, garden area planters and some fruit bearing trees outside of the bushfire hazard area around the house. Some small height trees will be planted along the northwestern boundary adjacent the rural use paddocks and on the south eastern side of the access road. The access road will be sealed (prime & seal). Lighting for vehicles along the access road will be solar powered and solar and battery powered adjacent the house

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

None

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



SEARCH OF TORRENS TITLE

VOLUME 240409	FOLIO 1
EDITION 5	DATE OF ISSUE 18-June-2025

SEARCH DATE : 29-Apr-2026

SEARCH TIME : 04.13 pm

DESCRIPTION OF LAND

Town of DULCOT

Lot 1 on Plan [240409](#)Derivation : Part of 3A-2R-13Ps. - Section E. - Gtd. to P.
Kane.Prior CT [3633/82](#)SCHEDULE 1[N244854](#) ASSENT to NATALIE ANNE WOOD and MARK ANTONY WOOD as
tenants in common in equal shares Registered
18-June-2025 at noonSCHEDULE 2Reservations and conditions in the Crown Grant if any
[C979930](#) ENCUMBRANCE to Dulcot Water Association Inc
Registered 23-Aug-2010 at noonUNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

05-D125

VOL.

FOL.

ANNEXURE TO CERTIFICATE OF TITLE 2633

82



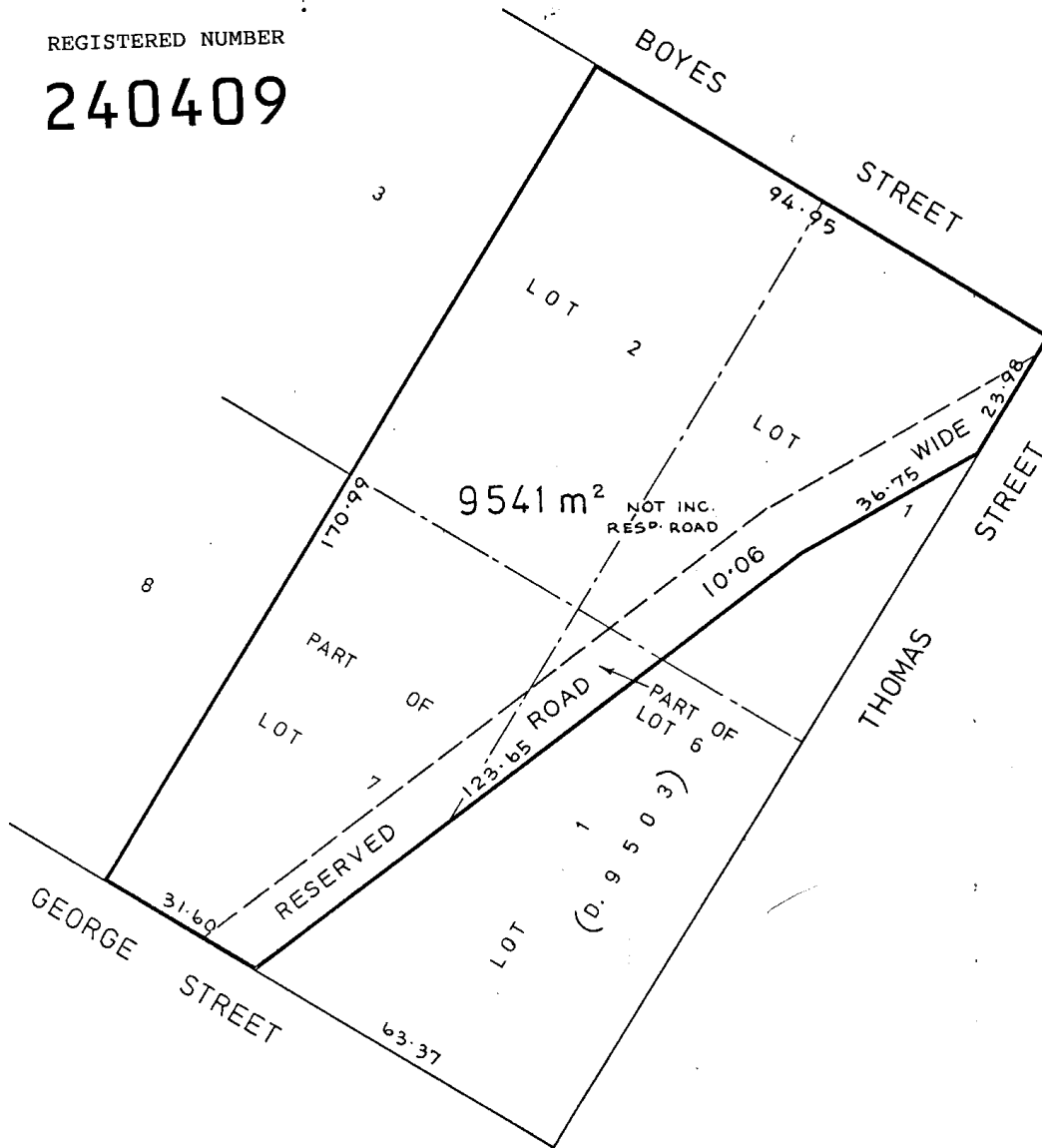
Recorder of Titles

TWN. DULCOT
MEAS. IN METRES

Lot 1 of this plan consists of all the
land comprised in the above-mentioned
cancelled folio of the Register

REGISTERED NUMBER

240409



Initial Initial DS
NW MW BL

05-D125

VOL.

FOL.

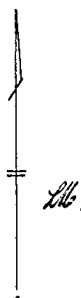
ANNEXURE TO CERTIFICATE OF TITLE 2633

82



Recorder of Titles

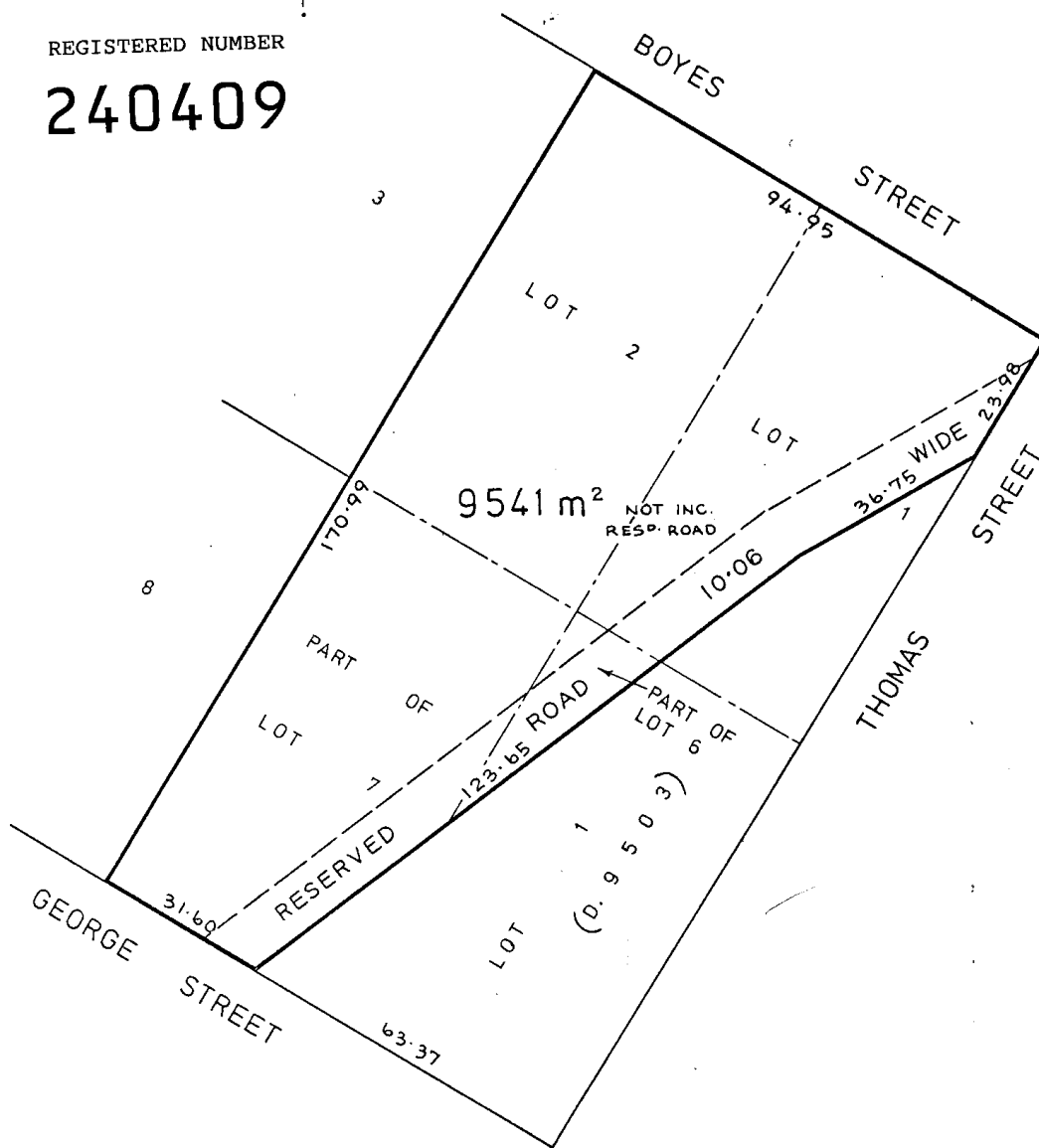
TWN. DULCOT
MEAS. IN METRES



Lot 1 of this plan consists of all the
land comprised in the above-mentioned
cancelled folio of the Register

REGISTERED NUMBER

240409



TASMANIAN LAND TITLES OFFICE

Encumbrance

Section 72 Land Titles Act 1980.



C979930

DESCRIPTION OF LAND				
Folio of the Register				If part of land - describe part Mortgages, Leases, etc., to which this Encumbrance is to be subject
Volume	Folio	Volume	Folio	
148485 32082	3 & 4 8, 9 and 10	240409	1	

THE ENCUMBRANCER hereby encumbers the land described above for the benefit of the Encumbrancee with the to be raised and paid in the following manner:-

The Encumbrancer hereby encumbers the land above described for the benefit of the Encumbrancee pursuant to clause 8 of the Deed dated the 22nd day of MARCH 2008 2010 between the parties hereto, a copy of which clause is set out in paragraph 2 in the annexure to this memorandum.

And, subject as aforesaid, the Encumbrancee shall be entitled to all powers and remedies given to Encumbrancees by the Land Titles Act 1980.

Estate encumbered: - Estate in Fee Simple

Encumbrancer: Loris June Craig (Retired) George Street Dulcot in Tasmania

Encumbrancee: Dulcot Water Association Inc

Dated this 17th day of AUGUST 2010

Signed by the Encumbrancer
in the presence of

Veronica LAUREL Wood
65 George St
Dulcot 7025
AGE CARE

Land Titles Office Use Only

REGISTERED

E Version 1 23 AUG 2010

THE BACK OF THIS FORM MUST NOT BE USED

1. **Interpretation**

For the purposes hereof:

- (a) "Association" shall mean Encumbrancee;
- (b) "Member" or "member" shall mean a member of the Association;
- (c) "Owner" shall mean the Encumbrancer;
- (d) "Owner's property" shall mean the land described in Folio of the Register Volume Folio .

2. **Charge/Encumbrance**

- 2.1 All service fees, charges, levies, funds and amounts payable by respective members for all items referred to in this Deed ("the water services fee") shall, where the respective member is an Owner, be a charge on the respective Owner's property and may be recovered by the Association as liquidated damages;
- 2.2 Each of the Owners hereby acknowledges and agrees that the Association may at the Association's expense register an encumbrance on the respective title of the Owner's property relating to the charge created by this clause and the granting of the licence pursuant to this Deed.

3. **Water Charge**

The members and any person to whom the Association shall supply water are liable to pay for:

- 3.1 The supply of water;
- 3.2 The acquisition, repair and maintenance of all water works;
- 3.3 A reserve fund to be applied for future capital works of the Association;
- 3.4 Administration costs; and
- 3.5 Any debt servicing.

Dated the 17th day of August 2008. 2010

SIGNED by the Encumbrancer
in the presence of:

WITNESS

FULL NAME

ADDRESS

OCCUPATION

Veronica Wood
68 George St Dulcote
AGE Carer

E Version 1

THE BACK OF THIS FORM MUST NOT BE USED

PLANNING APPLICATION

PA01	COVER PAGE
PA01	SITE PLAN
PA03	FLOOR PLAN
PA04	ROOF PLAN
PA05	PROPOSED EAST ELEVATION
PA06	PROPOSED NORTH ELEVATION
PA07	PROPOSED WEST ELEVATION
PA08	PROPOSED SOUTH ELEVATION / CROSS SECTION 1
PA09	PROPOSED DRIVEWAY PLAN
PA10	PROPOSED DRIVEWAY SECTION / CROSS SECTION 2



LOCATION PLAN



ISSUE FOR PA
09/10/2026



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ABN 44 604 708 778

COVER PAGE
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

PA00

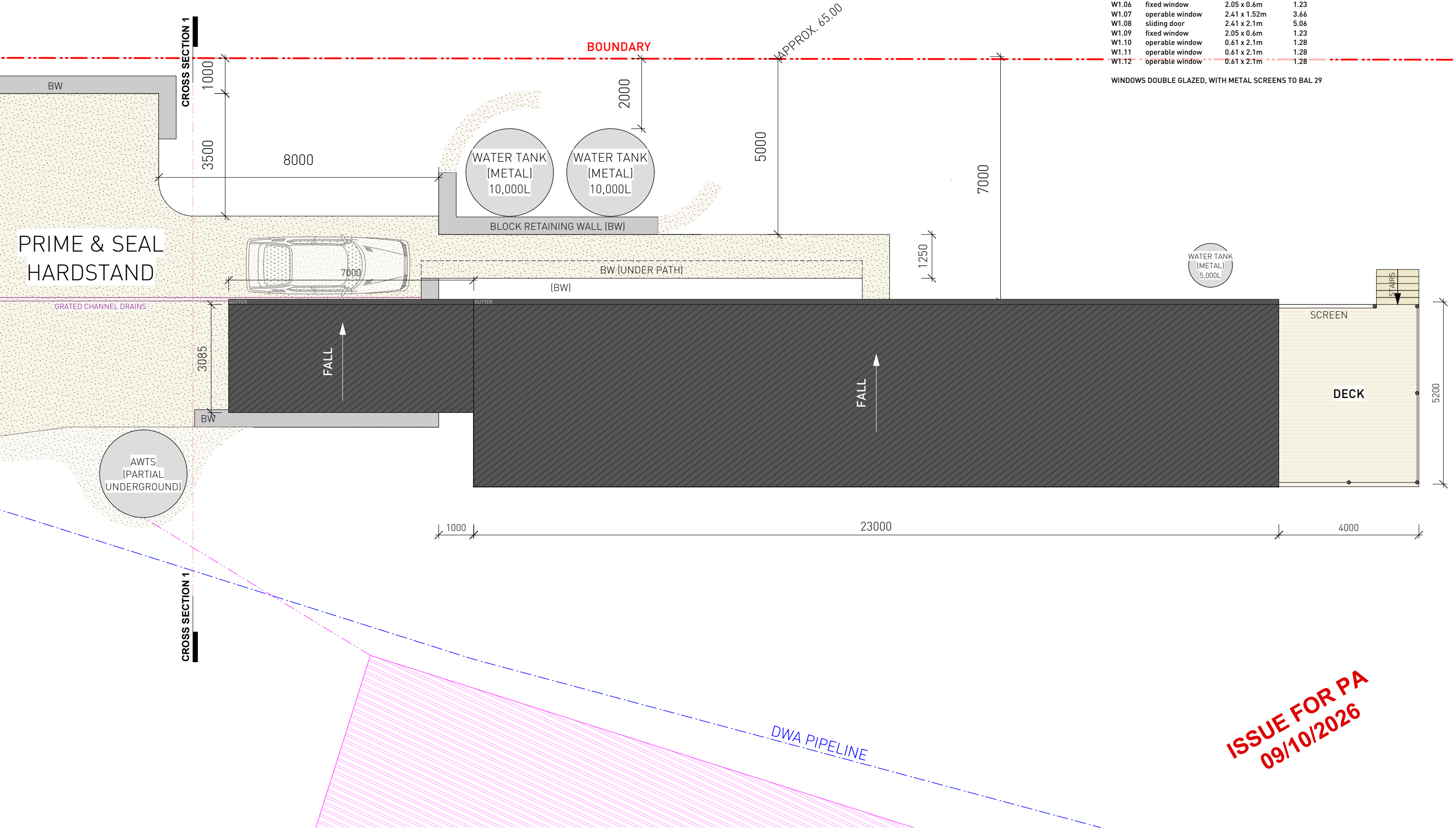
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NOTE:
HOUSE CONSTRUCTION TO COMPLY WITH BAL 29 MIN
ENERGY RATING 6 STAR (R 6 ROOF AND FLOOR, R 2.7 WALLS
ROOF AND WALLS CLAD IN COLORBOND MONUMENT
SOLAR ON ROOF, BATTERY AND GENERATOR

GLAZING SCHEDULE			
No.	Style	Size (W x H)	Area (m2)
W1.01	opearable window	2.05 x 1.52m	3.12
W1.02	operable window	1.45 x 1.52m	2.204
W1.03	operable window	1.21 x 1.52m	1.84
W1.04	operable window	1.45 x 1.52m	2.204
W1.05	operable window	1.45 x 1.52m	2.204
W1.06	fixed window	2.05 x 0.6m	1.23
W1.07	operable window	2.41 x 1.52m	3.66
W1.08	sliding door	2.41 x 2.1m	5.06
W1.09	fixed window	2.05 x 0.6m	1.23
W1.10	operable window	0.61 x 2.1m	1.28
W1.11	operable window	0.61 x 2.1m	1.28
W1.12	operable window	0.61 x 2.1m	1.28

WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29

GENERAL LEGEND	
	Boundary Line
	New Structure
	Window Tag



ISSUE FOR PA
09/10/2026



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PROPOSED ROOF PLAN
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

TRUE NORTH 1:100 @ A3



2 4 6 8 10m

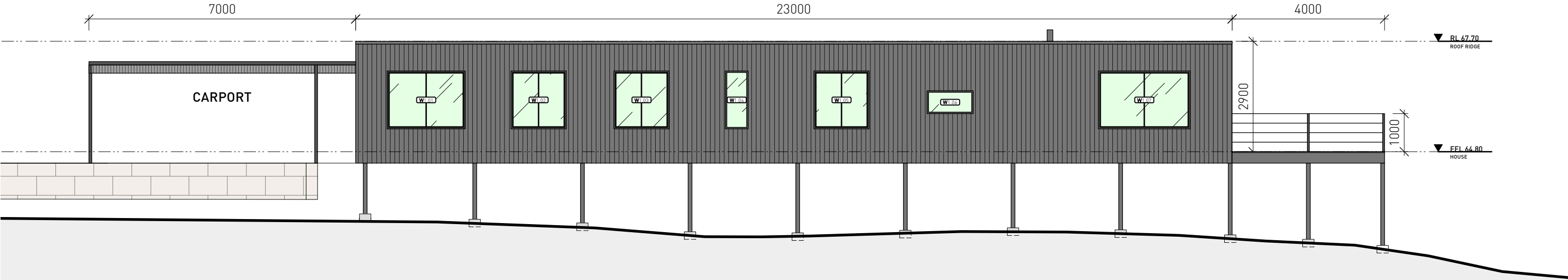
PA04

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NOTE:
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ENERGY RATING 6 STAR (R 6 ROOF AND FLOOR, R 2.7 WALLS
ROOF AND WALLS CLAD IN COLORBOND MONUMENT
SOLAR ON ROOF, BATTERY AND GENERATOR

GLAZING SCHEDULE				GENERAL LEGEND	
No.	Style	Size (W x H)	Area (m2)		Boundary Line
W1.01	opearable window	2.05 x 1.52m	3.12		New Structure
W1.02	operable window	1.45 x 1.52m	2.204		Window Tag
W1.03	operable window	1.21 x 1.52m	1.84		
W1.04	operable window	1.45 x 1.52m	2.204		
W1.05	operable window	1.45 x 1.52m	2.204		
W1.06	fixed window	2.05 x 0.6m	1.23		
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WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29

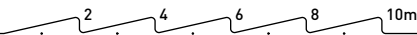


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PROPOSED EAST ELEVATION
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

1:100 @ A3



PA05

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NOTE:
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ENERGY RATING 6 STAR (R 6 ROOF AND FLOOR, R 2.7 WALLS
ROOF AND WALLS CLAD IN COLORBOND MONUMENT
SOLAR ON ROOF, BATTERY AND GENERATOR

GLAZING SCHEDULE			
No.	Style	Size (W x H)	Area (m2)
W1.01	opearable window	2.05 x 1.52m	3.12
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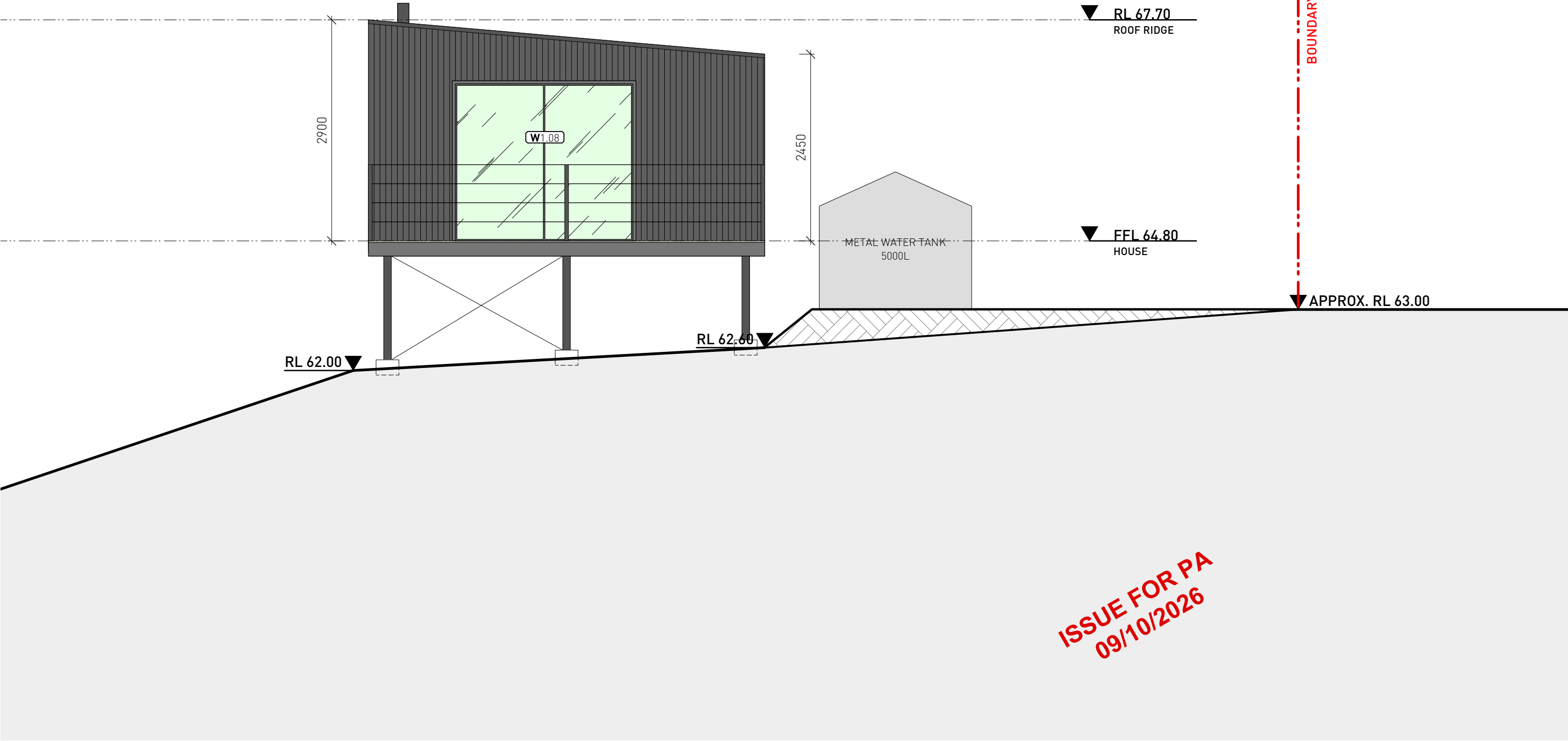
GENERAL LEGEND

Boundary Line

New Structure

Window Tag

WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29



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PROPOSED NORTH ELEVATION
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

1:50 @ A3

0.5 1 1.5 2 2.5m

PA06

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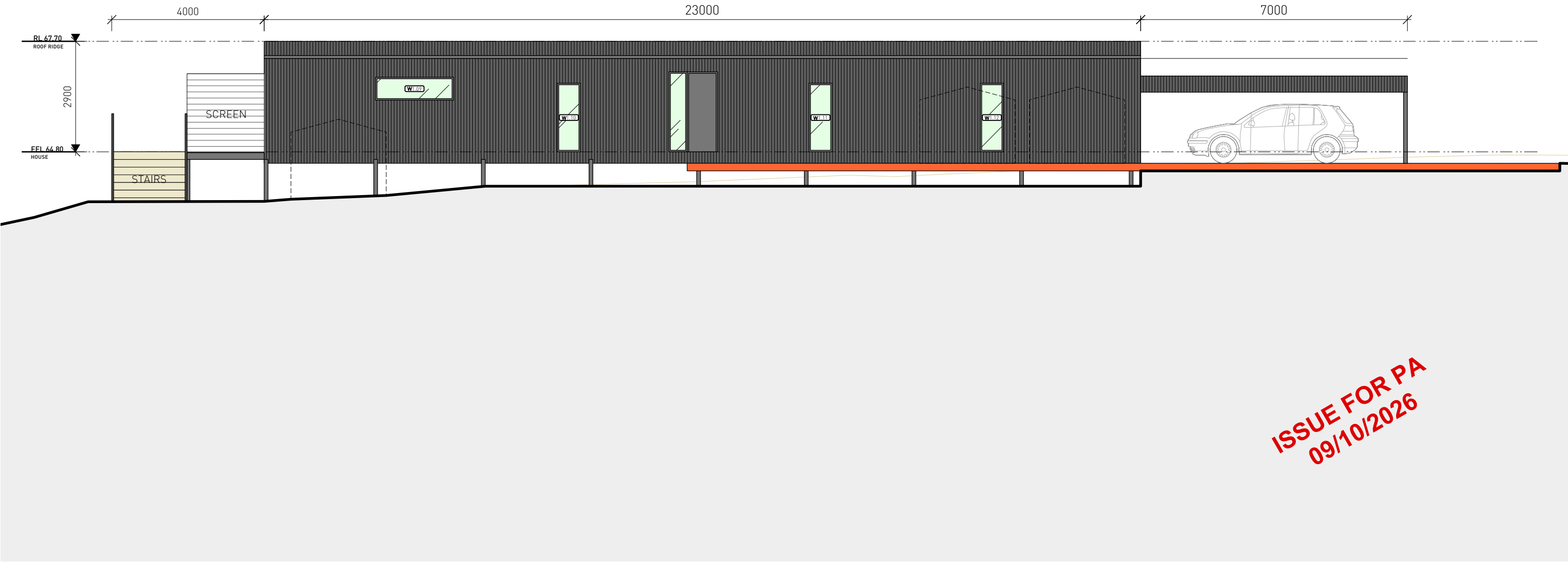
Boundary Line

New Structure

W1.03

Window Tag

WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29



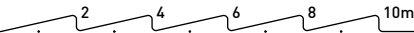
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PROPOSED WESTELEVATION
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

1:100 @ A3



PA07

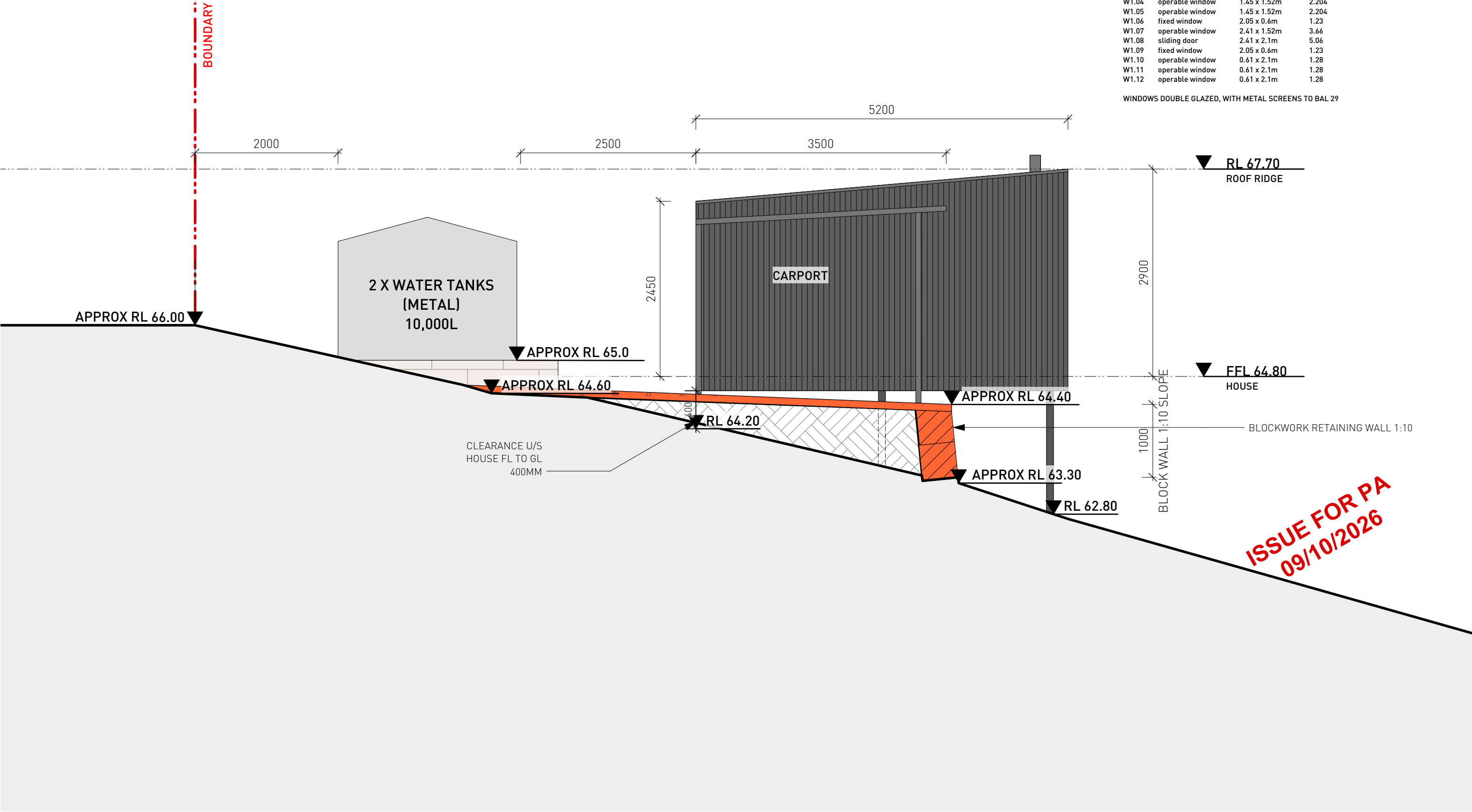
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WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29

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PROPOSED SOUTH ELEVATION / CROSS SECTION 1
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

1:50 @ A3

0.5 1 1.5 2 2.5m

PA08

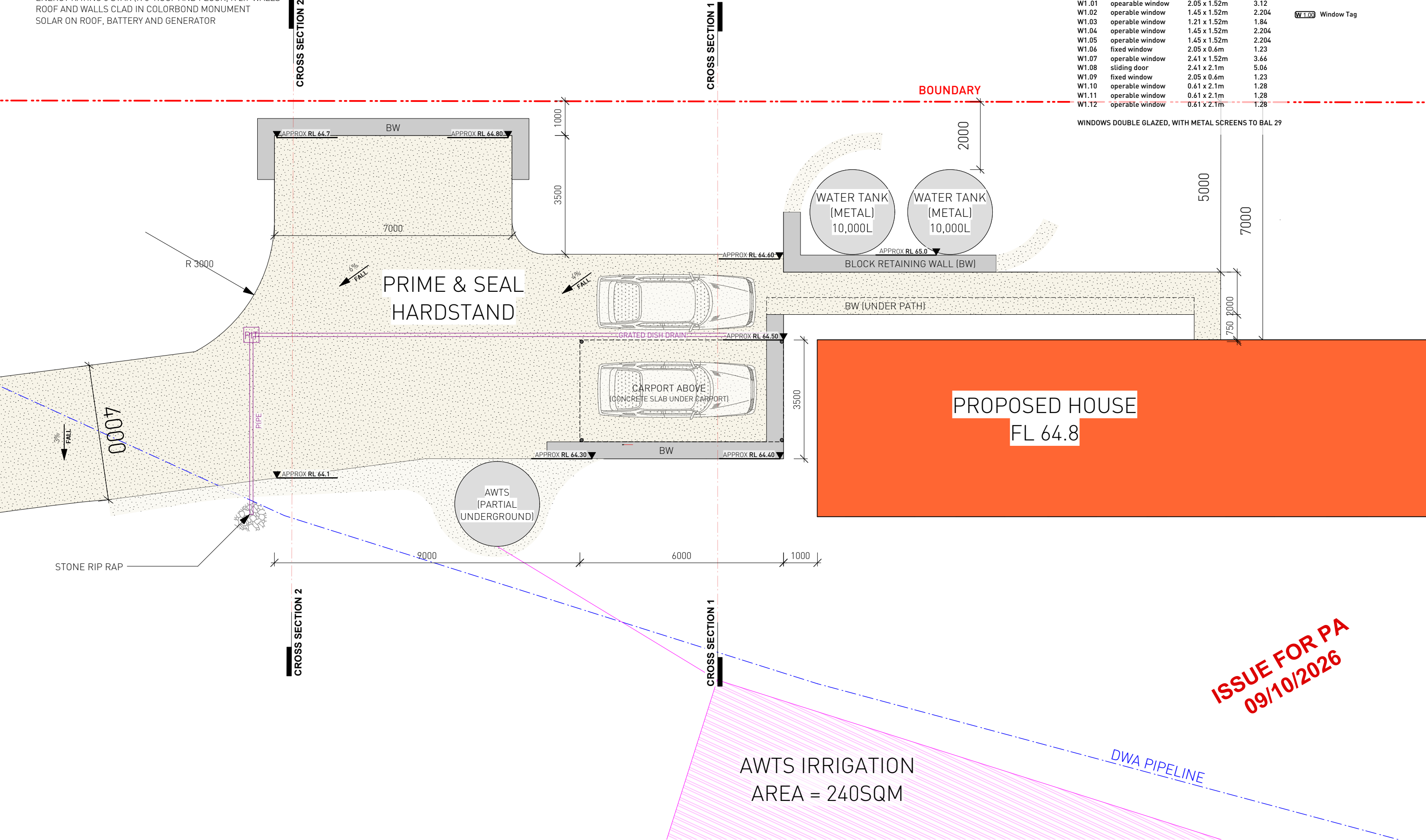
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GLAZING SCHEDULE			
No.	Style	Size (W x H)	Area (m2)
W1.01	opearable window	2.05 x 1.52m	3.12
W1.02	operable window	1.45 x 1.52m	2.204
W1.03	operable window	1.21 x 1.52m	1.84
W1.04	operable window	1.45 x 1.52m	2.204
W1.05	operable window	1.45 x 1.52m	2.204
W1.06	fixed window	2.05 x 0.6m	1.23
W1.07	operable window	2.41 x 1.52m	3.66
W1.08	sliding door	2.41 x 2.1m	5.06
W1.09	fixed window	2.05 x 0.6m	1.23
W1.10	operable window	0.61 x 2.1m	1.28
W1.11	operable window	0.61 x 2.1m	1.28
W1.12	operable window	0.61 x 2.1m	1.28

WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29

GENERAL LEGEND	
	Boundary Line
	New Structure
	Window Tag



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PROPOSED DRIVEWAY PLAN
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

TRUE NORTH 1:100 @ A3

PA09

OCT 2026 2619
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NOTE:
HOUSE CONSTRUCTION TO COMPLY WITH BAL 29 MIN
ENERGY RATING 6 STAR (R 6 ROOF AND FLOOR, R 2.7 WALLS
ROOF AND WALLS CLAD IN COLORBOND MONUMENT
SOLAR ON ROOF, BATTERY AND GENERATOR

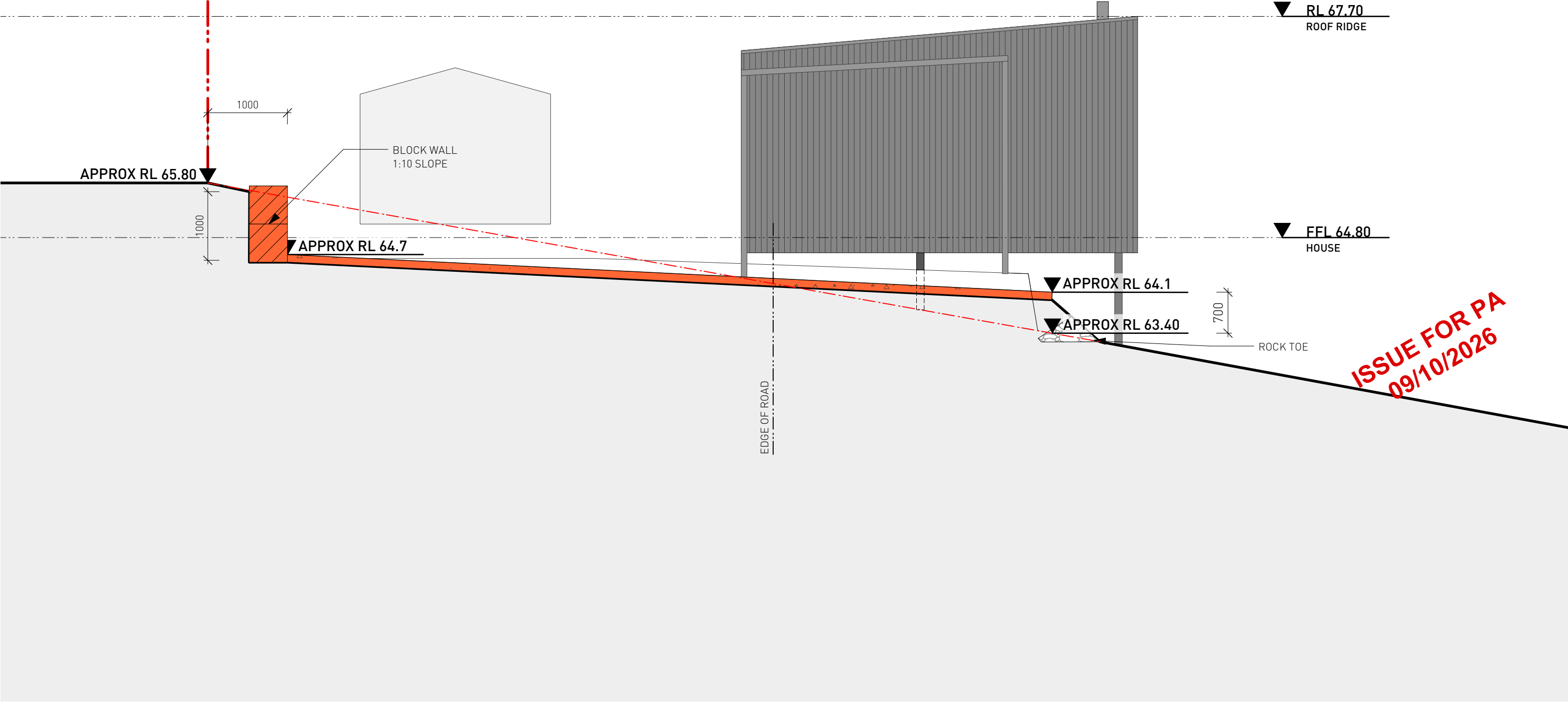
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W1.12	operable window	0.61 x 2.1m	1.28

BOUNDARY LINE

NEW STRUCTURE

WINDOW TAG

WINDOWS DOUBLE GLAZED, WITH METAL SCREENS TO BAL 29



ISSUE FOR PA
09/10/2026

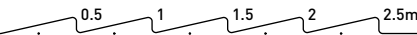


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PROPOSED DRIVEWAY SECTION / CROSS SECTION 2
LUTRUWITA | 36 BOYES STREET, DULCOT, TASMANIA

1:50 @ A3



PA10

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LANDSLIP RISK ASSESSMENT

PROJECT

Proposed Driveway

SITE ADDRESS

*36 Boyes Street
Dulcot,
TAS,
7025*

CLIENT

Bill Anderson

DATE

20/06/2026



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1 INTRODUCTION

Geo-Environmental Solutions Pty Ltd (GES) were contracted by Bill Anderson to provide a geotechnical assessment to assess a Landslip risk for a proposed works in Dulcot which lays within the Tasmanian Planning Scheme - Clarence City mapped and low Landslip overlay.

The proposed development is located at cadastral title (CT 240409/1) at 36 Boyes Street Dulcot TAS 7025 (Figure 1). GES are to undertake this geotechnical assessment relating to the proposed works in conjunction with the requirements of the Landslip Hazard Code, part of the Tasmanian Planning Scheme. GES have written this report with reference to the Australian Geomechanics Guidelines (AGS 2007).

GES have undertaken this assessment using site observations and investigation, photographs and publicly available datasets in the construction of this report. Estimations are determined by approximation with regional information applied where appropriate to site specific information.

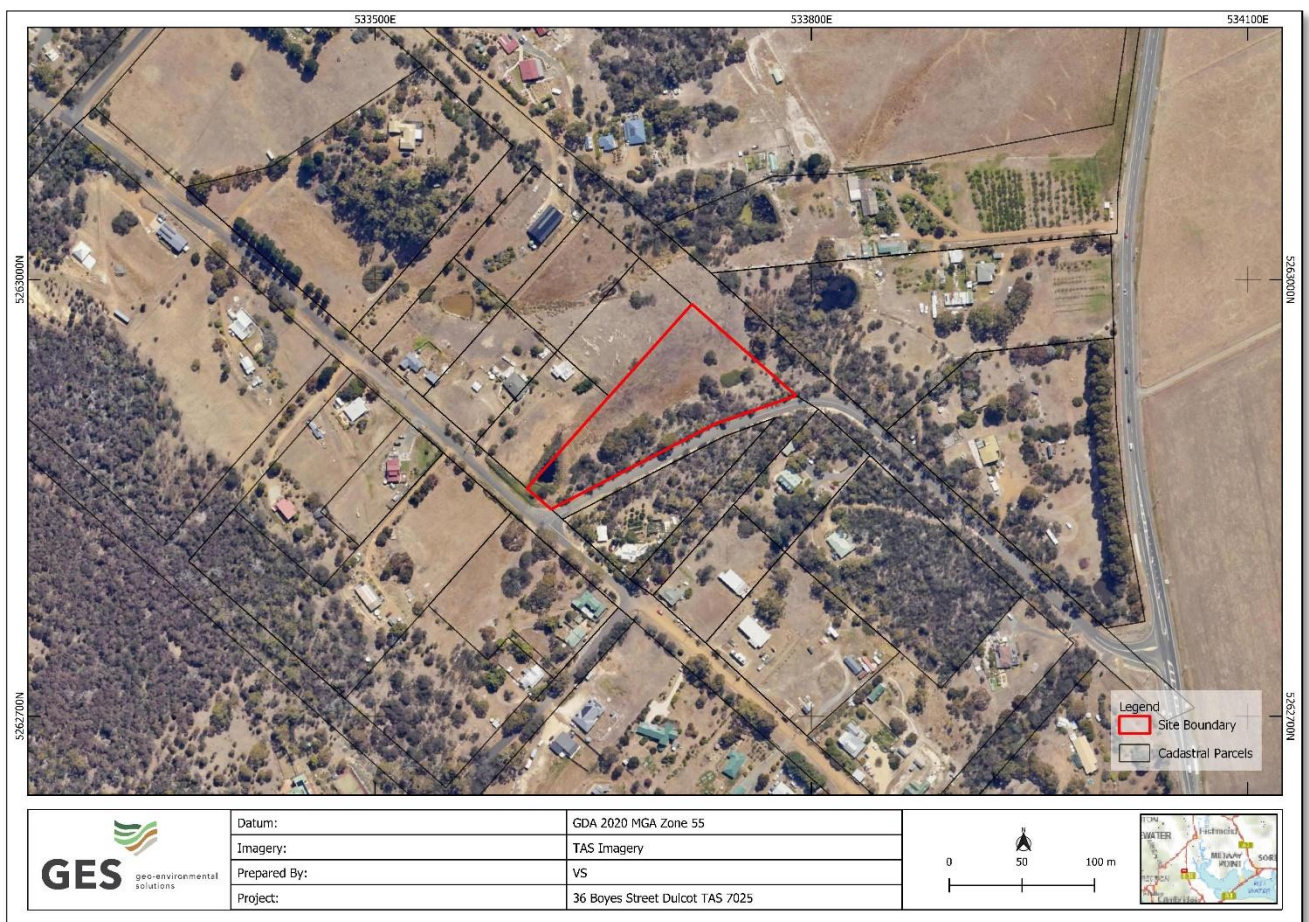


Figure 1 - Location of the site



2 OBJECTIVES & SCOPE OF WORK

The objective of the site investigation is to:

- Identify the requirements of the Landslip Hazard Code;
- Conduct a Landslip risk assessment of the proposed works with reference to the Australian Geomechanics Society (AGS) *Landslip Risk Management (2007) guidelines*;
- Identify which planning scheme codes need to be addressed in terms of Landslip and identify the relevant performance criteria relevant to the project which need addressing;
- Used borehole drilling information, geological mapping and site inspections to determine site physical conditions;
- Conduct a slope stability assessment using data collected for the site investigation
- Conduct a site risk assessment for the proposed development ensuring relevant performance criteria are addressed;

3 SITE DETAILS

3.1 Project Area Land Title

The land studied in this report is defined by the following title reference:

- CT - 240409/1

This parcel of land is referred to as the 'Site' and/or the 'Project Area' in this report.

3.2 Australian Building Code Board

This report presents a summary of the overall site risk to Landslip hazards. This assessment has been conducted for the year 2075 which is representative of a 'normal' 50-year building design life category.

Per the Australian Building Code Board (ABCB 2015), when addressing building minimum design life:

'The design life of buildings should be taken as 'Normal' for all building importance categories unless otherwise stated.'

As per Table 3-1, the building design life is 50 years for a normal building.

Table 3-1 Design life of building and plumbing installations and their components

<i>Building Design Life Category</i>	<i>Building Design Life (years)</i>	<i>Design life for components or sub systems readily accessible and economical to replace or repair (years)</i>	<i>Design life for components or sub systems with moderate ease of access but difficult or costly to replace or repair (years)</i>	<i>Design life for components or sub systems not accessible or not economical to replace or repair (years)</i>
Short	1 < dl < 15	5 or dl (if dl<5)	dl	dl
Normal	50	5	15	50
Long	100 or more	10	25	100

Note: Design Life (dl) in years



3.3 The Tasmanian Building Regulations 2016

Building in hazardous areas

As outlined in the Consumer, Builder and Occupational Services (CBOS) web site:

[Building in hazardous areas](#)

Hazardous areas include areas which are bushfire prone, comprise reactive soils or substances, or are subject to coastal erosion, coastal flooding, riverine flooding, and landslip.

Division 5 - Landslip. Section 59. Landslip hazard areas

- For the purposes of the Act, land is a landslip hazard area if –
 - the land is shown on a planning scheme overlay map as being land that is within a landslip hazard area; and
 - the land is classified as land within a hazard band of a landslip hazard area.
- For the purposes of the definition of *hazardous area* in section 4(1) of the Act –
 - classification under a landslip determination as being land that is within a hazard band of a landslip hazard area is a prescribed attribute; and
 - a landslip hazard area is a hazardous area.

3.4 Tasmanian Planning Scheme Landslip Overlay - Clarence City Council

The proposed driveway is partially within the low Landslip overlay (Figure 2).

3.5 Site and Proposed Works

The project site is located at Dulcot on the eastern shore of Hobart, Tasmania. The site comprises a vacant land parcel of approximately 9436 square meters. The site is currently a vacant land parcel. The proposed works include a residential dwelling located along the northern boundary, along with an associated driveway. The driveway will commence from the southwest corner of the site from Boyes Road and extend along the northern boundary for approximately 100 m in length and approx. 5 m in width. Minor cut and fill works will be required to accommodate the driveway alignment and achieve suitable grades.

The draft plans were supplied to GES by the client and are presented in Figure 3.

3.5.1 Development & Works Acceptable Solutions

Where applicable, the need for further performance criteria compliance is outlined in Appendix 1.

3.5.2 Landslip Hazard Code (LHC)

Given that the proposed dwelling is within the medium Landslip Hazard Area and there are no acceptable solutions for the proposed works the Performance Criteria will need to be addressed.

3.5.3 Development Performance Criteria

The following performance criteria need to be addressed:

- **C15.6.1 P1**

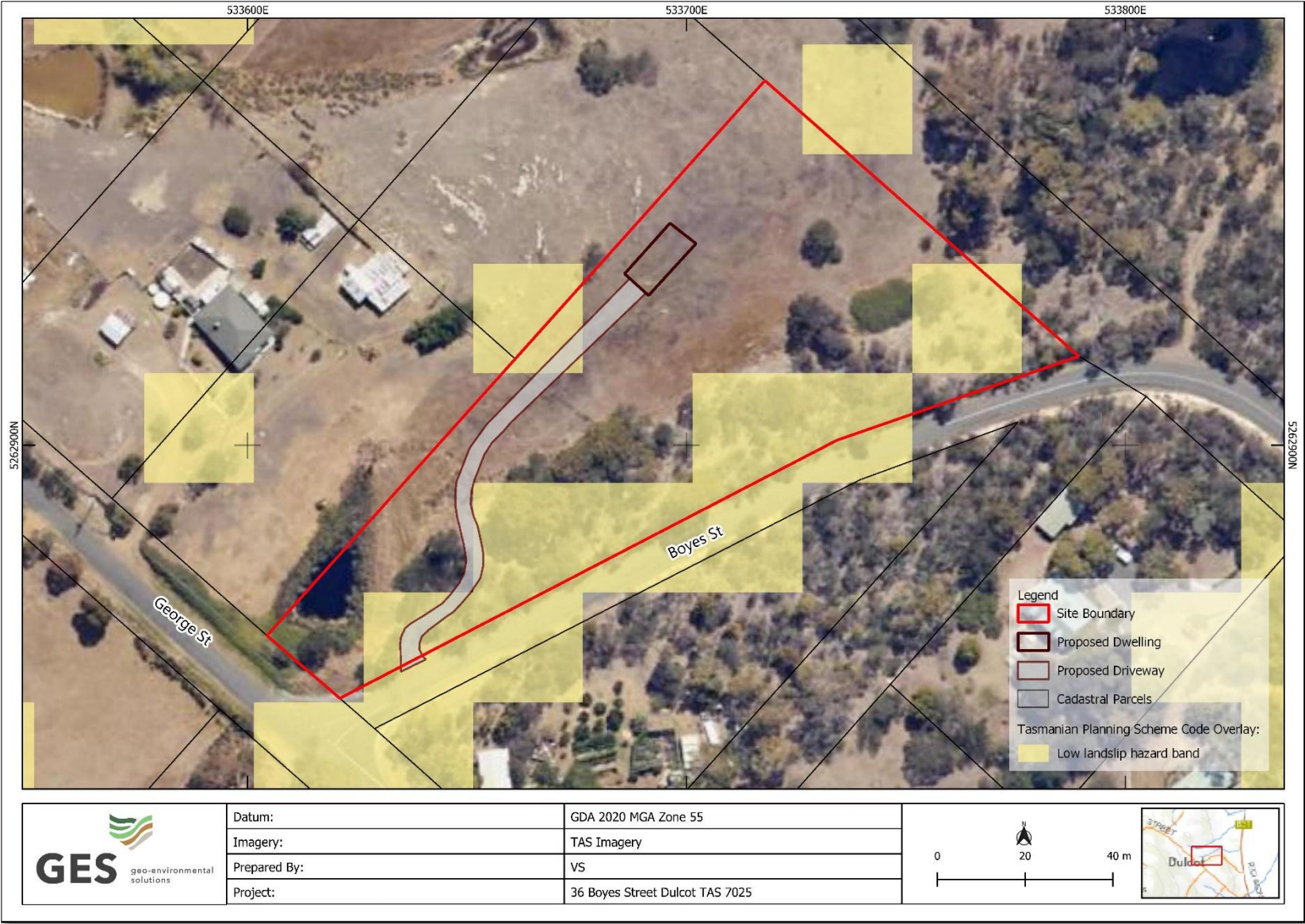


Figure 2 - Landslip Overlay near the Site (The List)

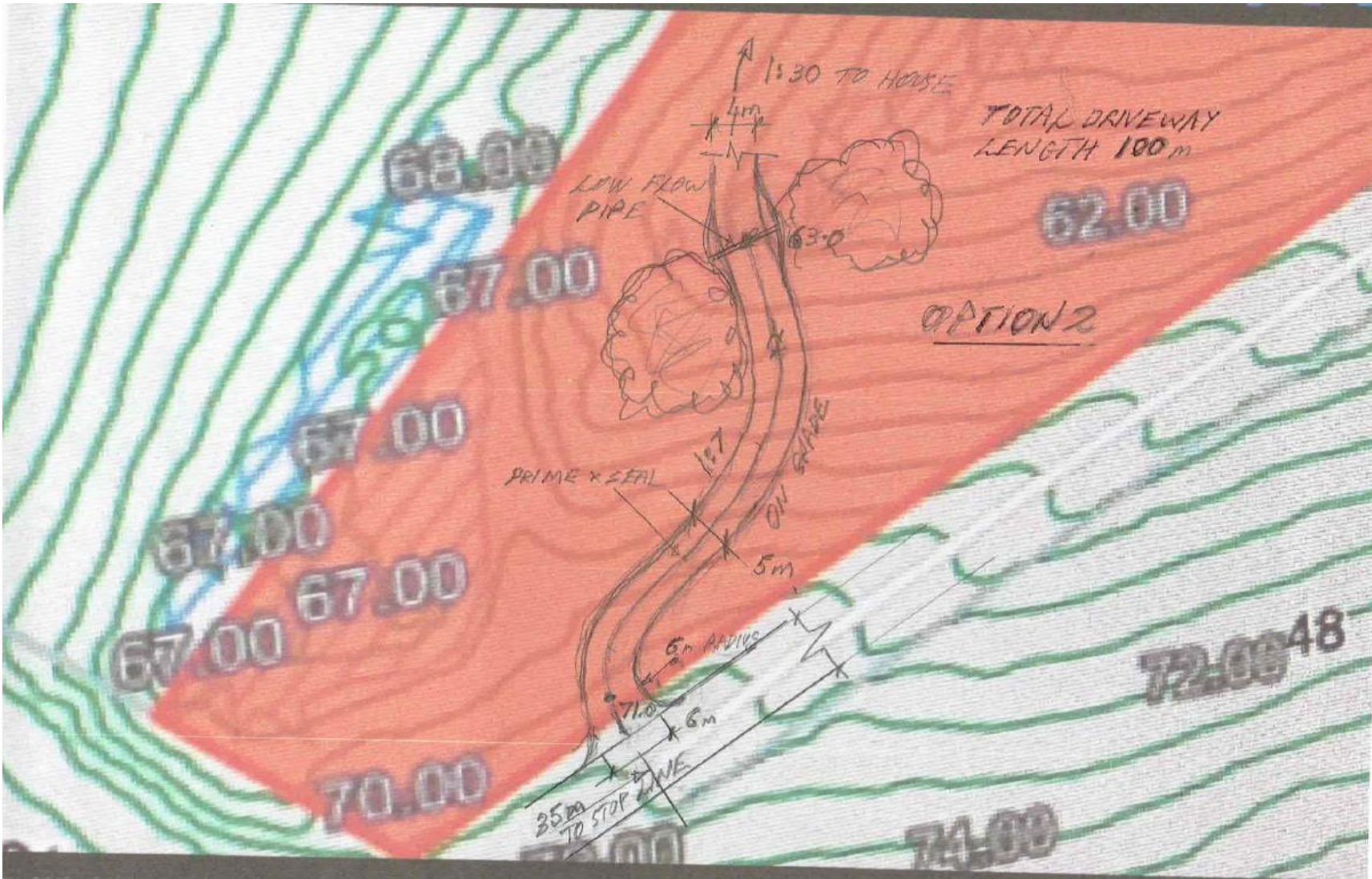


Figure 3 - Site Plan showing proposed works.



4 SITE MAPPING

4.1 Geological Mapping

Based on the MRT 1:25,000 Mineral Resources Tasmania (MRT) mapping of Richmond, the site geology comprises of the following geological unit:

- ❖ **Late Carboniferous to Triassic sedimentary sequences>Parmeener Supergroup>Lower Parmeener Supergroup>Upper Glaciomarine Sequence - Abels Bay Formation and correlates>Abels Bay Formation (*Map Unit: Pua*)** - Generally unfossiliferous glaciomarine interbedded non-fissile and fissile siltstone and silty sandstone, with common bioturbation and lonestones, rare pebbly beds and fossiliferous beds; top beds of laminated grey to brown siltstone with thin beds of well sorted sandstone (Abels Bay Formation).

The geological map for the site has been presented in Figure 4.

4.2 Site Geomorphology

The project site is located on the north-northeast-facing slopes at the northern extent of Nichols Hill, where the proposed works are planned. The slope angles near the proposed works vary from gentle to moderate. Site elevation ranges from approximately 70 metres above the Australian Height Datum (AHD) at the entrance of the driveway from Boyes Rd to about 62metres AHD at the end of the driveway near to the proposed dwelling. The construction area has a gradient of 10-15 degrees, increasing to around 20 degrees in some sections. To illustrate the onsite slope angles, a slope angle map was generated using QGIS software and the Greater Hobart LiDAR 2013 DEM dataset (refer to Figure 5)

4.3 Field Investigation and Site Observation

GES conducted a site inspection on 17/11/2025 to assess the subsurface ground conditions for the proposed works. The typical soils on site consist of shallow sandy topsoils overlying sandy gravel subsoils developing from Permian siltstone. The site has been assessed and classified in accordance with AS2870:2011 "Residential Slabs and Footings". The site has been classified as Class S, which is a slightly reactive site and is expected to exhibit slight ground surface movement due to moisture variations. Design and construction should be made in accordance with this classification. Site photographs are provided in Appendix 5.

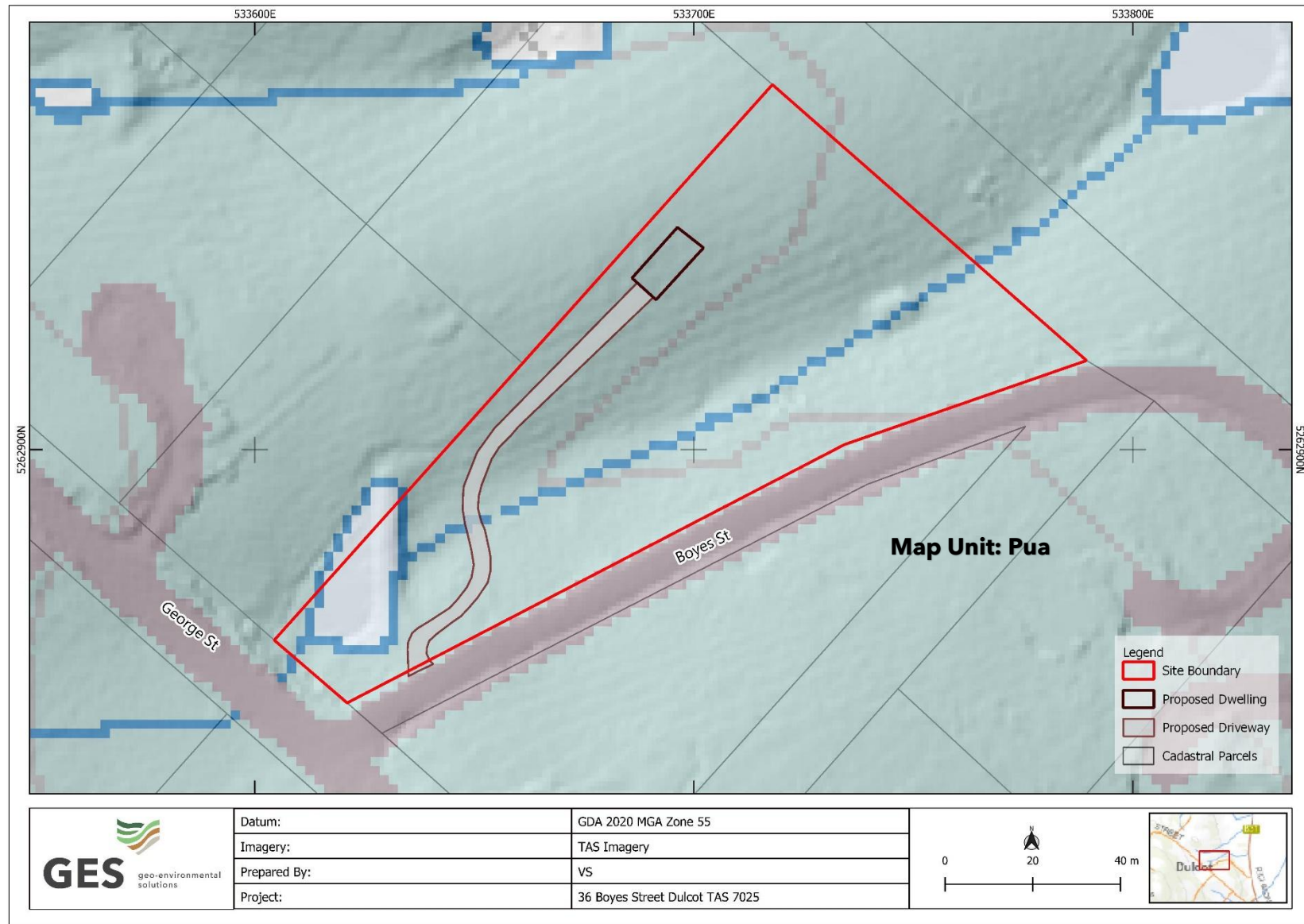


Figure 4 - Mapped Geology (Source: MRT 1:25,000)

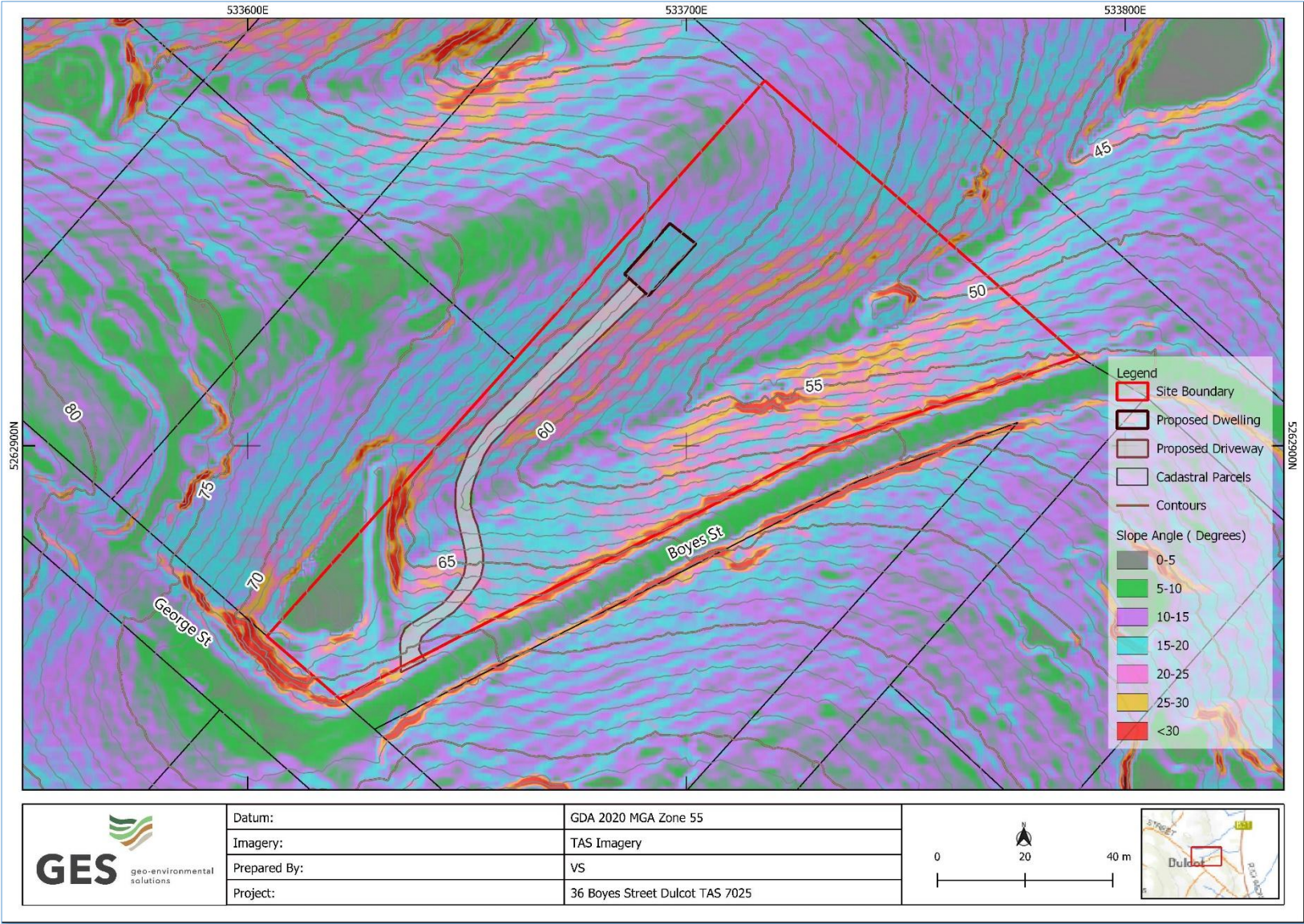


Figure 5 - Slope angle model developed from Greater Hobart LiDAR2013



5 Landslip Hazard Analysis

5.1 Landslip Characteristics

Based on the slope characteristics including site geology, slope geometry and slope angles, MRT Landslip mapping/inventory and site observations, the following scenarios have been identified as potential slope failure mechanisms for the site (Figure 9):

- **Scenario 1** – Shallow slide failure within possible cut embankments above the proposed new driveway and
- **Scenario 2** – Shallow slide failure within possible fill materials and natural soils immediately below the new proposed driveway

5.1.1 Frequency Analysis

Table 1 presents the frequency analysis for the identified slope failure mechanisms. Terminology used is in accordance with the Australian Geomechanics Society (AGS) guidelines for Landslip risk management (2007a,b,c,d).

Table 1 Frequency analysis for Landslip hazards Scenario 1 - 2

Scenario	Failure Mechanism	Unit Affected	Observed in the field	Potential Size	Potential Speed	Water Content	Likelihood
Scenario 1	Shallow Slide Failure	Over-steepened cut batters within the surficial material	No	Small	Very slow to rapid	Wet to Saturated	Unlikely
Scenario 2	Shallow Slide Failure	Natural Soils and Potential fill	No	Small	Very slow to rapid	Wet and saturated	Unlikely



5.2 Risk Analysis

5.2.1 Risk to Property

There is currently low risk to property assuming no risk management is carried out. Threatened risk may be reduced to very low (Table 2).

Table 2 Consequence analysis for Landslip hazards - Property

Scenario	Issue	Current Risks			Landslip Risk Management	Treated Risks
		Likelihood of occurrence	Consequence to property	Level of risk to property		Level of risk to property
Scenario 1	Shallow Slide Failure	Possible	Minor	Low	▪ Cut slopes on site are to be graded to 1V:1H within rock and 1V:1.5H within the soil; A cut-off v-drain should be considered above the cuttings in areas of high-water flow. ▪ Cut batters should be covered with geotextile cloth and suitably vegetated with lightweight species as soon as practicable to prevent riling and erosion. ▪ All earthworks should be conducted in accordance with AS3798-2007. ▪ Toe drain needs to be incorporated into access road design. Where steep slope angles are unavoidable, fill should be terraced/keyed into the hillside. ▪ Good hillside construction practices should be adopted as per Australian Geoguide LR8; ▪ All construction and earthworks on site should be adequately designed in accordance with the good hillside construction practices as outlined in the Australian Geomechanics Society (AGS) Geoguide LR8.	Very Low
Scenario 2	Shallow Slide Failure	Possible	Minor	Low	▪ Fill batters should be covered with geotextile cloth and suitably vegetated with lightweight species as soon as practicable to prevent riling and erosion. ▪ Fill slopes on site are to be graded to 1V:3H and are to be keyed into underlying rock. ▪ Good hillside construction practices should be adopted as per Australian Geoguide LR8; ▪ Culverts should be adequately designed at drainage line locations. ▪ All earthworks should be conducted in accordance with AS3798-2007	Very Low



5.2.1 Risk to Life

Risk to life is considered **ACCEPTABLE** following the recommended hazard treatment in Table 2 given the likelihood and consequence of a shallow slide failures within the potential earthworks within Landslip overlay at the site (Table 3).

Table 3 Consequence analysis for Landslip hazards 1 - 2 - Life

Hazard	Scenario 1	Scenario 2
Factor	Shallow Slide Failure	Shallow Slide Failure
Likelihood	Unlikely	Unlikely
Indicative Annual Probability	0.0001	0.0001
Use of Affected Structure/Site	Cut Batter/access road	Fill Batter/access road
Probability of Spatial Impact	0.2	0.1
Proportion of Time	Estimated 12 hours a day. = 0.5	Estimated 12 hours a day. = 0.5
Probability of Not Evacuating	Residual soils should exhibit signs of stress (tension cracking prior to failure). Anticipated velocities should allow for time for evacuation and/or remediation. - Personnel assumed on driveway for 1 hours daily (conservative) - 0.1	Fill and residual soils should exhibit signs of stress (tension cracking prior to failure), resulting in time for evacuation and/or remediation - 0.1
Vulnerability	Possibility for a portion of cut batters to collapse and potentially impacting small portions of the driveway and interact with vehicles. 0.1	Expected volumes unlikely to cause death. 0.1
Risk for Person Most at Risk	2×10^{-8}	2×10^{-8}
Risk Evaluation	Acceptable	Acceptable



5.2.2 Social Risk

The Societal Risk Graph plot presented in Figure 6. showing the estimated individual risks for scenarios 1 and 2 (outlined in the AGS 'Landslide Risk Management Concepts and Guidelines', 2000).

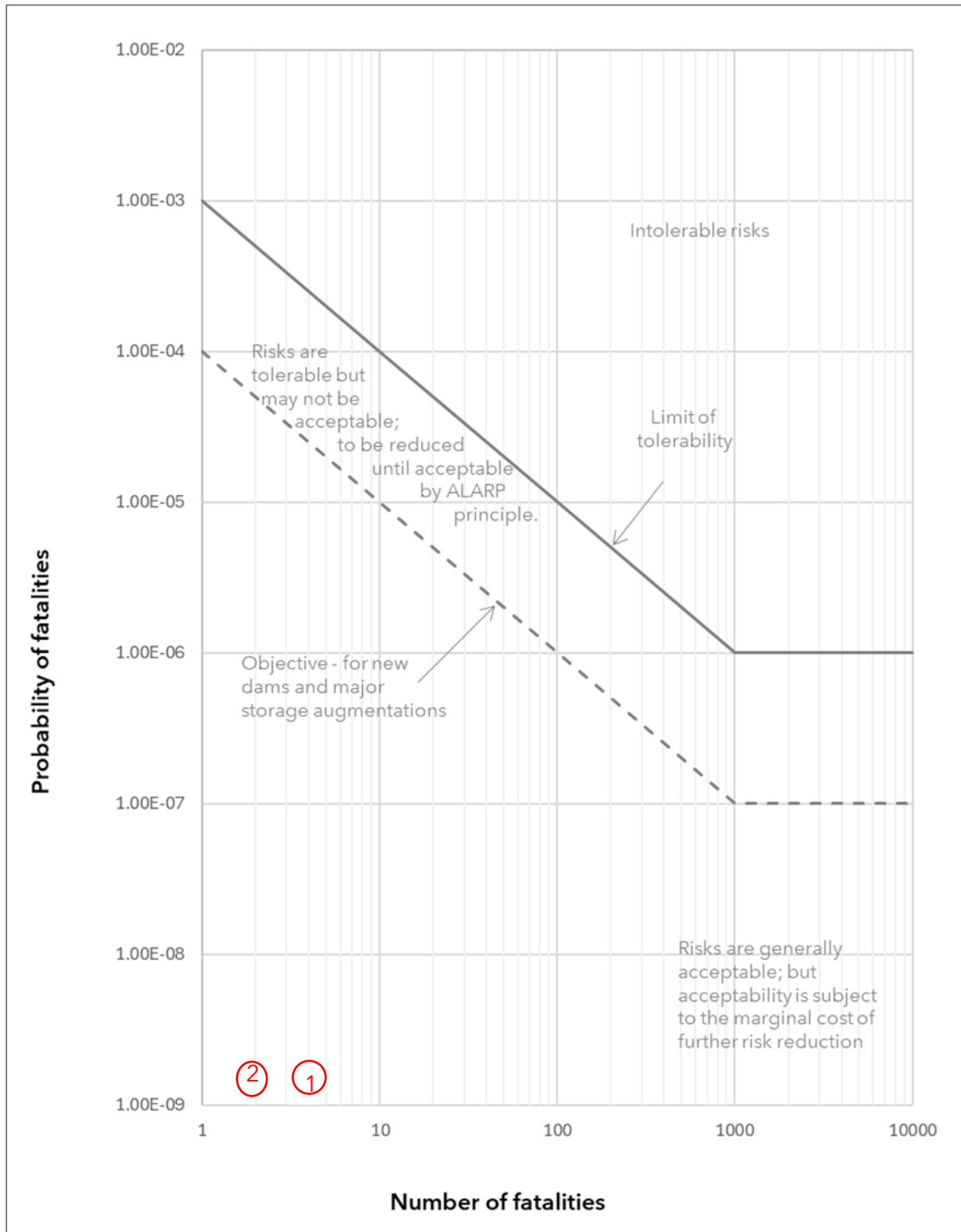


Figure 6 - Societal Risk Graph of Probability of fatalities vs Number of fatalities



6 CONCLUSIONS AND RECOMMENDATIONS

Based on the observations made during the site visit and the outcome of the slope stability and hazard analysis and risk assessment, the following conclusions are made:

- The proposed driveway partially falls within a low landslip overlay.
- Cut slopes on site are to be graded to 1V:1H within rock and 1V:1.5H within the soil;
- A cut-off v-drain should be considered above the cuttings in areas of high-water flow.
- Cut batters should be covered with geotextile cloth and suitably vegetated with lightweight species as soon as practicable to prevent riling and erosion.
- Toe drain needs to be incorporated into access road design. Where steep slope angles are unavoidable, fill should be terraced/keyed into the hillside.
- Fill batters should be covered with geotextile cloth and suitably vegetated with lightweight species as soon as practicable to prevent riling and erosion.
- Fill slopes on site are to be graded to 1V:3H and are to be keyed into underlying rock.
- Culverts should be adequately designed at drainage line locations.
- All earthworks should be conducted in accordance with AS3798-2007
- All construction and earthworks on site should be adequately designed in accordance with the good hillside construction practices as outlined in the Australian Geomechanics Society (AGS) Geoguide LR8.
- The proposed works will not cause or contribute to landslide on the site, adjacent land, or on public infrastructure if the recommendations are followed.
- With the implementation of all following recommendations the proposed works satisfies the performance criteria and is considered as it represents a tolerable risk for the life of the use and development with Code (C15) as per Tasmanian Planning Scheme - Clarence City Council

GES should be contacted immediately should conditions greatly differ to that which are stated in this report.



7 LIMITATIONS STATEMENT

This Assessment Report has been prepared in accordance with the scope of services between Geo-Environmental Solutions Pty. Ltd. (GES) and 'the Client'. To the best of GES's knowledge, the information presented herein represents the Client's requirements at the time of printing of the Report. However, the passage of time, manifestation of latent conditions or impacts of future events may result in findings differing from that discussed in this Report. In preparing this Report, GES has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations referenced herein. Except as otherwise stated in this Report, GES has not verified the accuracy or completeness of such data, surveys, analyses, designs, plans and other information.



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APPENDIX 1 - Acceptable Solutions

Landslip Code Areas

C15.6.1 Building and works within a landslip hazard area	
Objective:	
That building and works on land within a landslip hazard area can:	
(a) minimise the likelihood of triggering a landslip event; and	
(b) achieve and maintain a tolerable risk from a landslip.	
Acceptable Solutions	Performance Criteria
A1	P1.1
No Acceptable Solution.	Building and works within a landslip hazard area must minimise the likelihood of triggering a landslip event and achieve and maintain a tolerable risk from landslip, having regard to:
	(a) the type, form, scale and intended duration of the development;
	(b) whether any increase in the level of risk from a landslip requires any specific hazard reduction or protection measures;
	(c) any advice from a State authority, regulated entity or a council; and
	(d) the advice contained in a landslip hazard report.
	P1.2
	A landslip hazard report also demonstrates that the buildings and works do not cause or contribute to landslip on the site, on adjacent land or public infrastructure.
	P1.3
	If landslip reduction or protection measures are required beyond the boundary of the site the consent in writing of the owner of that land must be provided for that land to be managed in accordance with the specific hazard reduction or protection measures.



APPENDIX 2 - Qualitative Risk Assessment Tables

Likelihood & Consequence Index

QUALITATIVE MEASURES OF LIKELIHOOD

Approximate Annual Probability		Implied Indicative Landslide Recurrence Interval		Description	Descriptor	Level
Indicative Value	Notional Boundary					
10^{-1}	5×10^{-2}	10 years	20 years	The event is expected to occur over the design life.	ALMOST CERTAIN	A
10^{-2}		100 years		The event will probably occur under adverse conditions over the design life.	LIKELY	B
10^{-3}	5×10^{-3}	1000 years	2000 years	The event could occur under adverse conditions over the design life.	POSSIBLE	C
10^{-4}		10,000 years		The event might occur under very adverse circumstances over the design life.	UNLIKELY	D
10^{-5}	5×10^{-5}	100,000 years	200,000 years	The event is conceivable but only under exceptional circumstances over the design life.	RARE	E
10^{-6}		1,000,000 years		The event is inconceivable or fanciful over the design life.	BARELY CREDIBLE	F

Note: (1) The table should be used from left to right; use Approximate Annual Probability or Description to assign Descriptor, not vice versa.

QUALITATIVE MEASURES OF CONSEQUENCES TO PROPERTY

Approximate Cost of Damage		Description	Descriptor	Level
Indicative Value	Notional Boundary			
200%	100%	Structure(s) completely destroyed and/or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.	CATASTROPHIC	1
60%		Extensive damage to most of structure, and/or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequence damage.	MAJOR	2
20%	40%	Moderate damage to some of structure, and/or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequence damage.	MEDIUM	3
5%	10%	Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works.	MINOR	4
0.5%	1%	Little damage. (Note for high probability event (Almost Certain), this category may be subdivided at a notional boundary of 0.1%. See Risk Matrix.)	INSIGNIFICANT	5

Notes: (2) The Approximate Cost of Damage is expressed as a percentage of market value, being the cost of the improved value of the unaffected property which includes the land plus the unaffected structures.

(3) The Approximate Cost is to be an estimate of the direct cost of the damage, such as the cost of reinstatement of the damaged portion of the property (land plus structures), stabilisation works required to render the site to tolerable risk level for the landslide which has occurred and professional design fees, and consequential costs such as legal fees, temporary accommodation. It does not include additional stabilisation works to address other landslides which may affect the property.

(4) The table should be used from left to right; use Approximate Cost of Damage or Description to assign Descriptor, not vice versa

Qualitative Risk Matrix

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY

LIKELIHOOD		CONSEQUENCES TO PROPERTY (With Indicative Approximate Cost of Damage)				
	Indicative Value of Approximate Annual Probability	1: CATASTROPHIC 200%	2: MAJOR 60%	3: MEDIUM 20%	4: MINOR 5%	5: INSIGNIFICANT 0.5%
A - ALMOST CERTAIN	10^{-1}	VH	VH	VH	H	M or L (5)
B - LIKELY	10^{-2}	VH	VH	H	M	L
C - POSSIBLE	10^{-3}	VH	H	M	M	VL
D - UNLIKELY	10^{-4}	H	M	L	L	VL
E - RARE	10^{-5}	M	L	L	VL	VL
F - BARELY CREDIBLE	10^{-6}	L	VL	VL	VL	VL

Notes: (5) For Cell A5, may be subdivided such that a consequence of less than 0.1% is Low Risk.

(6) When considering a risk assessment it must be clearly stated whether it is for existing conditions or with risk control measures which may not be implemented at the current time.

RISK LEVEL IMPLICATIONS

Risk Level		Example Implications (7)
VH	VERY HIGH RISK	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to Low; may be too expensive and not practical. Work likely to cost more than value of the property.
H	HIGH RISK	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to Low. Work would cost a substantial sum in relation to the value of the property.
M	MODERATE RISK	May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low. Treatment options to reduce to Low risk should be implemented as soon as practicable.
L	LOW RISK	Usually acceptable to regulators. Where treatment has been required to reduce the risk to this level, ongoing maintenance is required.
VL	VERY LOW RISK	Acceptable. Manage by normal slope maintenance procedures.

Note: (7) The implications for a particular situation are to be determined by all parties to the risk assessment and may depend on the nature of the property at risk; these are only given as a general guide.



Performance Criteria C15.6.1 That building and works on land within a landslip hazard area can: (a) minimise the likelihood of triggering a landslip event; and (b) achieve and maintain a tolerable risk from a landslip	Relevance	Management Options	Managed (treated) Risk Assessment			Further Assessment Required
			Consequence	Likelihood	Risk	
P1.1 Building and works within a landslip hazard area must minimise the likelihood of triggering a landslip event and achieve and maintain a tolerable risk from landslip, having regard to: (a) the type, form, scale and intended duration of the development; (b) whether any increase in the level of risk from a landslip requires any specific hazard reduction or protection measures; (c) any advice from a State authority, regulated entity or a council; and (d) the advice contained in a landslip hazard report.	Achieve and maintain a tolerable risk	Refer to recommendations	Minor	Rare	Low	No
P1.2 A landslip hazard report also demonstrates that the buildings and works do not cause or contribute to landslip on the site, on adjacent land or public infrastructure.	Works not likely to cause or contribute to landslip on site, or adjacent land or public infrastructure	Refer to recommendations	Minor	Rare	Very Low	No
P1.3 If landslip reduction or protection measures are required beyond the boundary of the site the consent in writing of the owner of that land must be provided for that land to be managed in accordance with the specific hazard reduction or protection measures.	No reduction or protection required beyond the site boundary.	Refer to recommendations	Minor	Rare	Very Low	No

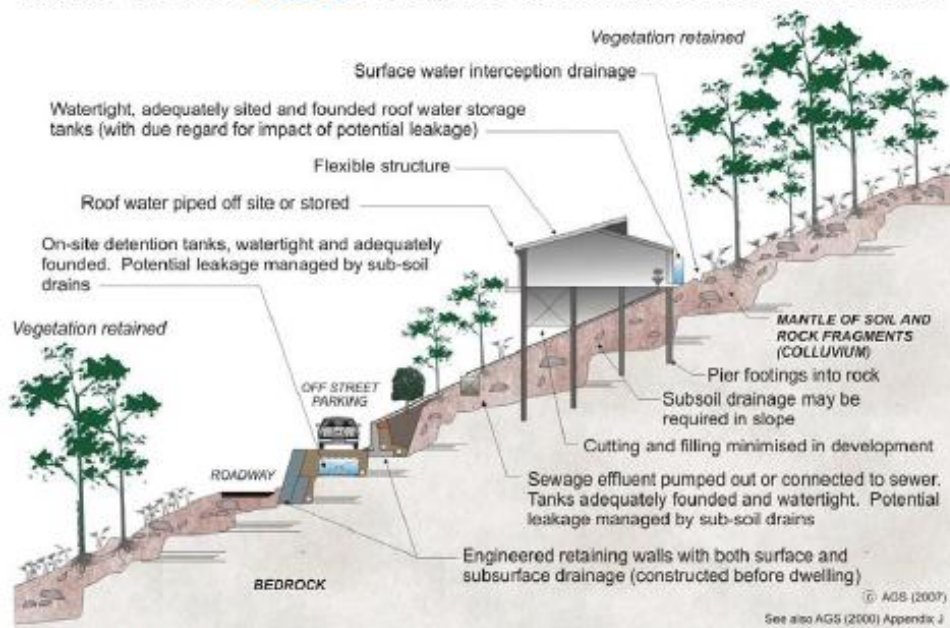
APPENDIX 3 - Australian Geomechanics Society (AGS) Landslip Risk

AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

HILLSIDE CONSTRUCTION PRACTICE

Sensible development practices are required when building on hillsides, particularly if the hillside has more than a low risk of instability (GeoGuide LR7). Only building techniques intended to maintain, or reduce, the overall level of landslide risk should be considered. Examples of good hillside construction practice are illustrated below.

EXAMPLES OF GOOD HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES GOOD?

Roadways and parking areas - are paved and incorporate kerbs which prevent water discharging straight into the hillside (GeoGuide LR5).

Cuttings - are supported by retaining walls (GeoGuide LR8).

Retaining walls - are engineer designed to withstand the lateral earth pressures and surcharges expected, and include drains to prevent water pressures developing in the backfill. Where the ground slopes steeply down towards the high side of a retaining wall, the disturbing force (see GeoGuide LR8) can be two or more times that in level ground. Retaining walls must be designed taking these forces into account.

Sewage - whether treated or not is either taken away in pipes or contained in properly founded tanks so it cannot soak into the ground.

Surface water - from roofs and other hard surfaces is piped away to a suitable discharge point rather than being allowed to infiltrate into the ground. Preferably, the discharge point will be in a natural creek where ground water exits, rather than enters, the ground. Shallow, lined, drains on the surface can fulfil the same purpose (GeoGuide LR5).

Surface loads - are minimised. No fill embankments have been built. The house is a lightweight structure. Foundation loads have been taken down below the level at which a landslide is likely to occur and, preferably, to rock. This sort of construction is probably not applicable to soil slopes (GeoGuide LR3). If you are uncertain whether your site has rock near the surface, or is essentially a soil slope, you should engage a geotechnical practitioner to find out.

Flexible structures - have been used because they can tolerate a certain amount of movement with minimal signs of distress and maintain their functionality.

Vegetation clearance - on soil slopes has been kept to a reasonable minimum. Trees, and to a lesser extent smaller vegetation, take large quantities of water out of the ground every day. This lowers the ground water table, which in turn helps to maintain the stability of the slope. Large scale clearing can result in a rise in water table with a consequent increase in the likelihood of a landslide (GeoGuide LR5). An exception may have to be made to this rule on steep rock slopes where trees have little effect on the water table, but their roots pose a landslide hazard by dislodging boulders.

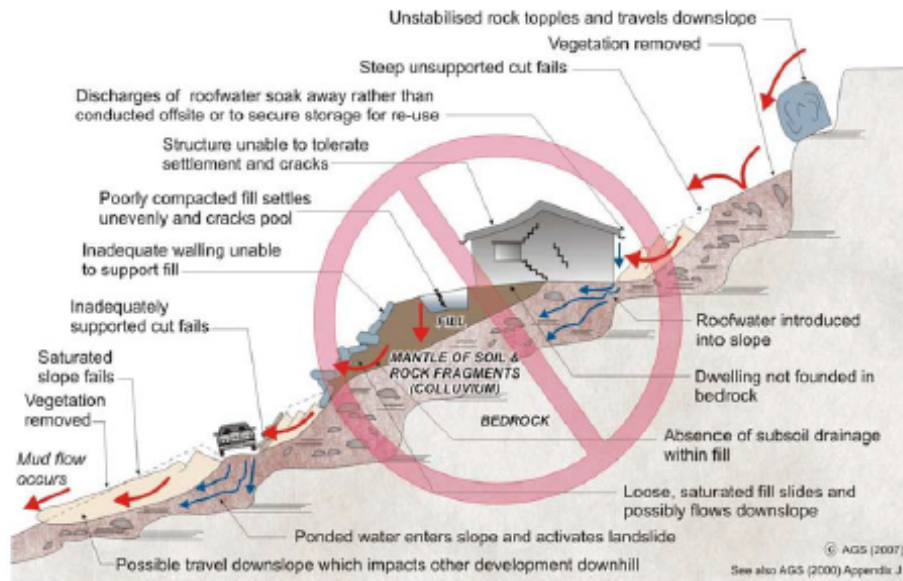
Possible effects of ignoring good construction practices are illustrated on page 2. Unfortunately, these poor construction practices are not as unusual as you might think and are often chosen because, on the face of it, they will save the developer, or owner, money. You should not lose sight of the fact that the cost and anguish associated with any one of the disasters illustrated, is likely to more than wipe out any apparent savings at the outset.

ADOPT GOOD PRACTICE ON HILLSIDE SITES



AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

EXAMPLES OF **POOR** HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES POOR?

Roadways and parking areas - are unsurfaced and lack proper table drains (gutters) causing surface water to pond and soak into the ground.

Cut and fill - has been used to balance earthworks quantities and level the site leaving unstable cut faces and added large surface loads to the ground. Failure to compact the fill properly has led to settlement, which will probably continue for several years after completion. The house and pool have been built on the fill and have settled with it and cracked. Leakage from the cracked pool and the applied surface loads from the fill have combined to cause landslides.

Retaining walls - have been avoided, to minimise cost, and hand placed rock walls used instead. Without applying engineering design principles, the walls have failed to provide the required support to the ground and have failed, creating a very dangerous situation.

A heavy, rigid, house - has been built on shallow, conventional, footings. Not only has the brickwork cracked because of the resulting ground movements, but it has also become involved in a man-made landslide.

Soak-away drainage - has been used for sewage and surface water run-off from roofs and pavements. This water soaks into the ground and raises the water table (GeoGuide LR5). Subsoil drains that run along the contours should be avoided for the same reason. If felt necessary, subsoil drains should run steeply downhill in a chevron, or herring bone, pattern. This may conflict with the requirements for effluent and surface water disposal (GeoGuide LR9) and if so, you will need to seek professional advice.

Rock debris - from landslides higher up on the slope seems likely to pass through the site. Such locations are often referred to by geotechnical practitioners as "debris flow paths". Rock is normally even denser than ordinary fill, so even quite modest boulders are likely to weigh many tonnes and do a lot of damage once they start to roll. Boulders have been known to travel hundreds of metres downhill leaving behind a trail of destruction.

Vegetation - has been completely cleared, leading to a possible rise in the water table and increased landslide risk (GeoGuide LR5).

DON'T CUT CORNERS ON HILLSIDE SITES - OBTAIN ADVICE FROM A GEOTECHNICAL PRACTITIONER

More information relevant to your particular situation may be found in other Australian GeoGuides:

- | | |
|-------------------------------------|--|
| • GeoGuide LR1 - Introduction | • GeoGuide LR8 - Retaining Walls |
| • GeoGuide LR2 - Landslides | • GeoGuide LR7 - Landslide Risk |
| • GeoGuide LR3 - Landslides in Soil | • GeoGuide LR9 - Effluent & Surface Water Disposal |
| • GeoGuide LR4 - Landslides in Rock | • GeoGuide LR10 - Coastal Landslides |
| • GeoGuide LR5 - Water & Drainage | • GeoGuide LR11 - Record Keeping |

The Australian GeoGuides (LR series) are a set of publications intended for property owners; local councils; planning authorities; developers; insurers; lawyers and, in fact, anyone who lives with, or has an interest in, a natural or engineered slope, a cutting, or an excavation. They are intended to help you understand why slopes and retaining structures can be a hazard and what can be done with appropriate professional advice and local council approval (if required) to remove, reduce, or minimise the risk they represent. The GeoGuides have been prepared by the [Australian Geomechanics Society](#), a specialist technical society within Engineers Australia, the national peak body for all engineering disciplines in Australia, whose members are professional geotechnical engineers and engineering geologists with a particular interest in ground engineering. The GeoGuides have been funded under the Australian governments' National Disaster Mitigation Program.



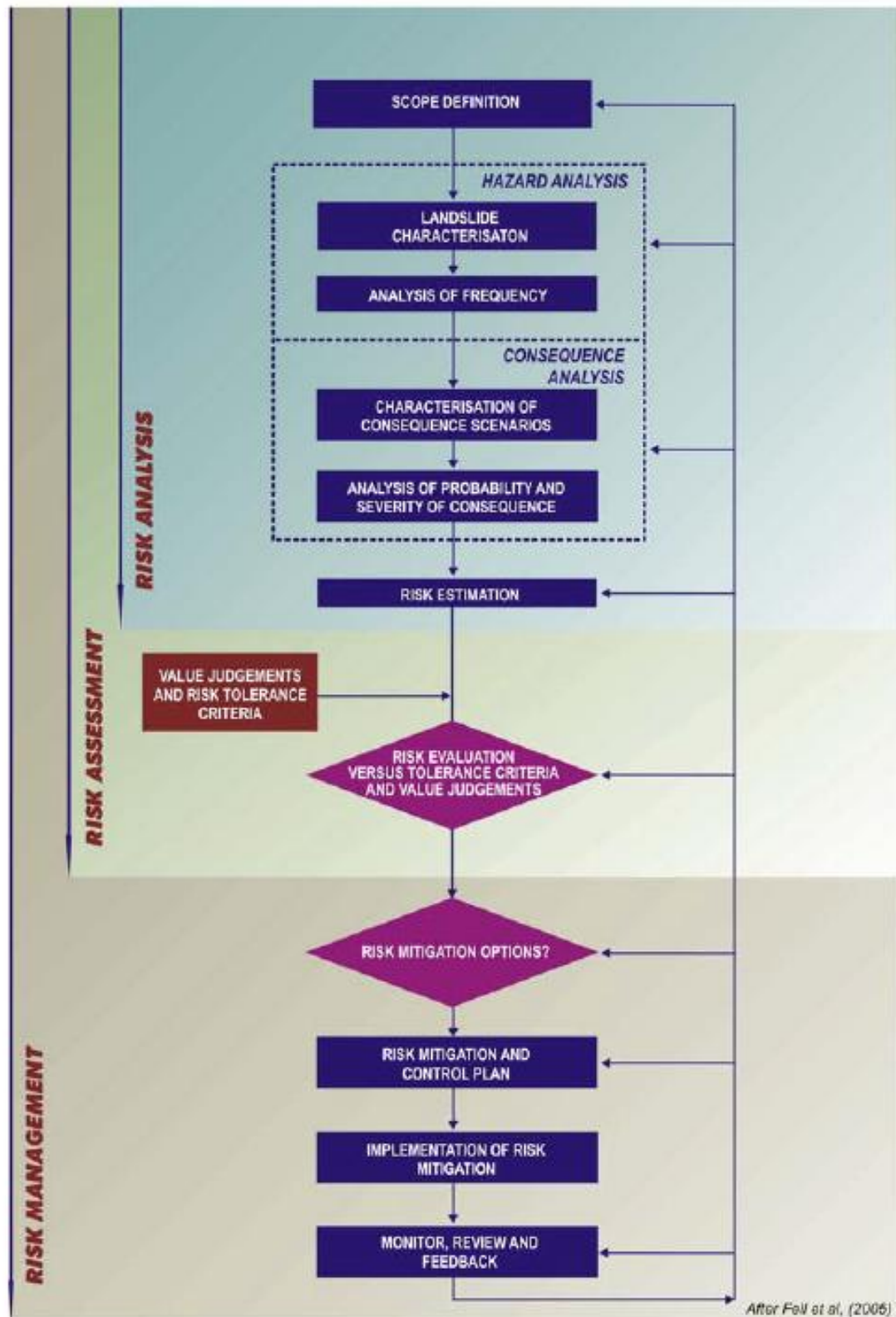
PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

APPENDIX G - SOME GUIDELINES FOR HILLSIDE CONSTRUCTION

ADVICE		GOOD ENGINEERING PRACTICE	POOR ENGINEERING PRACTICE
GEOTECHNICAL ASSESSMENT		Obtain advice from a qualified, experienced geotechnical practitioner at early stage of planning and before site works.	Prepare detailed plan and start site works before geotechnical advice.
PLANNING			
SITE PLANNING		Having obtained geotechnical advice, plan the development with the risk arising from the identified hazards and consequences in mind.	Plan development without regard for the Risk.
DESIGN AND CONSTRUCTION			
HOUSE DESIGN		Use flexible structures which incorporate properly designed brickwork, timber or steel frames, timber or panel cladding. Consider use of split levels. Use decks for recreational areas where appropriate.	Floor plans which require extensive cutting and filling. Movement intolerant structures.
SITE CLEARING		Retain natural vegetation wherever practicable.	Indiscriminately clear the site.
ACCESS & DRIVEWAYS		Satisfy requirements below for cuts, fills, retaining walls and drainage. Council specifications for grades may need to be modified. Driveways and parking areas may need to be fully supported on piers.	Excavate and fill for site access before geotechnical advice.
EARTHWORKS		Retain natural contours wherever possible.	Indiscriminatory bulk earthworks.
CUTS		Minimise depth. Support with engineered retaining walls or batter to appropriate slope. Provide drainage measures and erosion control.	Large scale cuts and benching. Unsupported cuts. Ignore drainage requirements
FILLS		Minimise height. Strip vegetation and topsoil and key into natural slopes prior to filling. Use clean fill materials and compact to engineering standards. Batter to appropriate slope or support with engineered retaining wall. Provide surface drainage and appropriate subsurface drainage.	Loose or poorly compacted fill, which if it fails, may flow a considerable distance including onto property below. Block natural drainage lines. Fill over existing vegetation and topsoil. Include stumps, trees, vegetation, topsoil, boulders, building rubble etc in fill.
ROCK OUTCROPS & BOULDERS		Remove or stabilise boulders which may have unacceptable risk. Support rock faces where necessary.	Disturb or undercut detached blocks or boulders.
RETAINING WALLS		Engineer design to resist applied soil and water forces. Found on rock where practicable. Provide subsurface drainage within wall backfill and surface drainage on slope above. Construct wall as soon as possible after cut/fill operation.	Construct a structurally inadequate wall such as sandstone flagging, brick or unreinforced blockwork. Lack of subsurface drains and weepholes.
FOOTINGS		Found within rock where practicable. Use rows of piers or strip footings oriented up and down slope. Design for lateral creep pressures if necessary. Backfill footing excavations to exclude ingress of surface water.	Found on topsoil, loose fill, detached boulders or undercut cliffs.
SWIMMING POOLS		Engineer designed. Support on piers to rock where practicable. Provide with under-drainage and gravity drain outlet where practicable. Design for high soil pressures which may develop on uphill side whilst there may be little or no lateral support on downhill side.	
DRAINAGE			
SURFACE		Provide at tops of cut and fill slopes. Discharge to street drainage or natural water courses. Provide general falls to prevent blockage by siltation and incorporate silt traps. Line to minimise infiltration and make flexible where possible. Special structures to dissipate energy at changes of slope and/or direction.	Discharge at top of fills and cuts. Allow water to pond on bench areas.
SUBSURFACE		Provide filter around subsurface drain. Provide drain behind retaining walls. Use flexible pipelines with access for maintenance. Prevent inflow of surface water.	Discharge roof runoff into absorption trenches.
SEPTIC & SULLAGE		Usually requires pump-out or mains sewer systems; absorption trenches may be possible in some areas if risk is acceptable. Storage tanks should be water-tight and adequately founded.	Discharge sullage directly onto and into slopes. Use absorption trenches without consideration of landslide risk.
EROSION CONTROL & LANDSCAPING		Control erosion as this may lead to instability. Revegetate cleared area.	Failure to observe earthworks and drainage recommendations when landscaping.
DRAWINGS AND SITE VISITS DURING CONSTRUCTION			
DRAWINGS		Building Application drawings should be viewed by geotechnical consultant	
SITE VISITS		Site Visits by consultant may be appropriate during construction/	
INSPECTION AND MAINTENANCE BY OWNER			
OWNER'S RESPONSIBILITY		Clean drainage systems; repair broken joints in drains and leaks in supply pipes. Where structural distress is evident see advice. If seepage observed, determine causes or seek advice on consequences.	



FRAMEWORK FOR LANDSLIDE RISK MANAGEMENT





APPENDIX B - LANDSLIDE TERMINOLOGY

The following provides a summary of landslide terminology which should (for uniformity of practice) be adopted when classifying and describing a landslide. It has been based on Cruden & Varnes (1996) and the reader is recommended to refer to the original documents for a more detailed discussion, other terminology and further examples of landslide types and processes.

Landslide

The term *landslide* denotes “the movement of a mass of rock, debris or earth down a slope”. The phenomena described as landslides are not limited to either the “land” or to “sliding”, and usage of the word has implied a much more extensive meaning than its component parts suggest. Ground subsidence and collapse are excluded.

Classification of Landslides

Landslide classification is based on Varnes (1978) system which has two terms: the first term describes the material type and the second term describes the type of movement.

The material types are *Rock*, *Earth* and *Debris*, being classified as follows:-

The material is either rock or soil.

- Rock:** is “a hard or firm mass that was intact and in its natural place before the initiation of movement.”
- Soil:** is “an aggregate of solid particles, generally of minerals and rocks, that either was transported or was formed by the weathering of rock in place. Gases or liquids filling the pores of the soil form part of the soil.”
- Earth:** “describes material in which 80% or more of the particles are smaller than 2 mm, the upper limit of sand sized particles.”
- Debris:** “contains a significant proportion of coarse material; 20% to 80% of the particles are larger than 2 mm and the remainder are less than 2 mm.”

The terms used should describe the displaced material in the landslide before it was displaced.

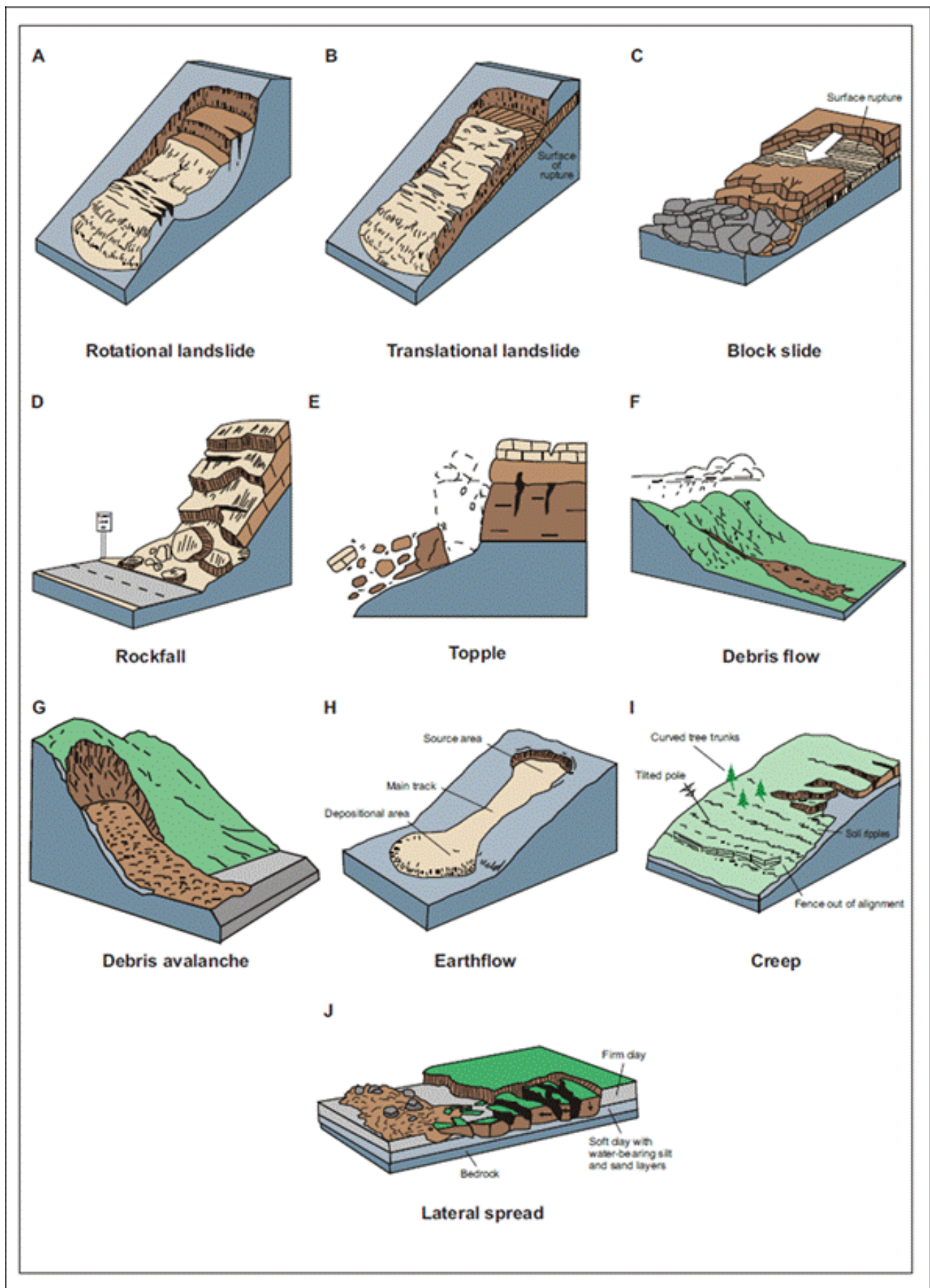
The types of movement describe how the landslide movement is distributed through the displaced mass. The five kinematically distinct types of movement are described in the sequence *fall*, *topple*, *slide*, *spread* and *flow*.

The following table shows how the two terms are combined to give the landslide type:

Table B1: Major types of landslides. Abbreviated version of Varnes’ classification of slope movements (Varnes, 1978).

TYPE OF MOVEMENT		TYPE OF MATERIAL		
		BEDROCK	ENGINEERING SOILS	
			Predominantly Coarse	Predominantly Fine
FALLS		Rock fall	Debris fall	Earth fall
TOPPLES		Rock topple	Debris topple	Earth topple
SLIDES	ROTATIONAL	Rock slide	Debris slide	Earth slide
	TRANSLATIONAL			
LATERAL SPREADS		Rock spread	Debris spread	Earth spread
FLOWS		Rock flow (Deep creep)	Debris flow (Soil creep)	Earth flow
COMPLEX		Combination of two or more principle types of movement		

Figure B1 gives schematics to illustrate the major types of landslide movement. Further information and photographs of landslides are available on the USGS website at <http://landslides.usgs.gov>.





APPENDIX 4 – Site Photographs



GEO-ENVIRONMENTAL ASSESSMENT

36 Boyes Street

Dulcot

June 2026



GEO-ENVIRONMENTAL

S O L U T I O N S

Disclaimer: The author does not warrant the information contained in this document is free from errors or omissions. The author shall not in any way be liable for any loss, damage or injury suffered by the User consequent upon, or incidental to, the existence of errors in the information.

Investigation Details

Client:	Bill Anderson
Site Address:	36 Boyes Street, Dulcot
Date of Inspection:	14/05/2026
Proposed Works:	New house
Investigation Method:	Geoprobe 540UD - Direct Push
Inspected by:	C. Cooper

Site Details

Certificate of Title (CT):	240409/1
Title Area:	Approx. 9436 m ²
Applicable Planning Overlays:	Bushfire-prone areas, Landslip Hazard, Flood-prone Areas, Airport obstacle limitation area
Slope & Aspect:	14° SE facing slope
Vegetation:	Grass & Weeds
Ground Surface:	Undisturbed

Background Information

Geology Map:	MRT 1:250000
Geological Unit:	Permian Siltstone
Climate:	Annual rainfall 600mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	AS2870:2011, AS1726:2017 & AS1547:2012

Investigation

A number of bore holes were completed to identify the distribution and variation of the soil materials at the site, bore hole locations are indicated on the site plan. See soil profile conditions presented below.

Soil Profile Summary

TH 1 Depth (m)	TH 2 Depth (m)	TH 3 Depth (m)	USCS	Description
0.00-0.30	0.00-0.10	0.00-0.50	SM	Silty SAND with gravels: Fine-medium grained, brown-grey, dry, dense (TH3 refusal on rock).
0.30-0.60			GP	Sandy GRAVEL: Coarse grained, pale brown, slightly moist very dense.
0.60-0.80	0.10-0.30		SC	Silty SAND trace gravels: Fine grained, pale brown, slightly moist, very dense, refusal on rock.

Site Notes

The soils on site consist of shallow sandy topsoils overlying sandy gravel subsoils developing from Permian siltstone.

Site Classification

The site has been assessed and classified in accordance with AS2870:2011 “Residential Slabs and Footings”.

The site has been classified as:

Class S

Y^s range: **0-20mm**

Notes: The site has been classified as Class S, which is a slightly reactive site and is expected to exhibit slight ground surface movement due to moisture variations. Design and construction should be made in accordance with this classification.

Wind Loading Classification

According to “AS4055:2021 - Wind Loads for Housing” the house site is classified below:

Wind Classification:	N3
Region:	A
Terrain Category:	2.0
Shielding Classification:	NS
Topographic Classification:	T2
Wind Classification:	N3
Design Wind Gust Speed – m/s ($V_{h,u}$):	50

Wastewater Classification & Recommendations

According to AS1547-2012 (on-site waste-water management) the natural soil is classified as **Sandy Loam (category 2)**. The site is unsuited to the installation of a traditional septic tank and trenches due to distance to surface water and shallow soil. Secondary treatment of effluent will be required, and it is proposed to install a package treatment system (e.g. UbiAqua, Econocycle, Envirocycle, Ozzikleen etc) with treated effluent disposed by subsurface irrigation. Due to the steep slope a reduced Design Irrigation Rate (DIR) of 2.5L/m²/day has been assigned for this site.

The proposed three-bedroom dwelling has a calculated maximum wastewater output of 600L/day. This is based on a tank water supply and a maximum occupancy of 5 people (120L/day/person). With secondary treatment this will require an absorption area of at least 240m². This can be accommodated by subsurface irrigation. Additional sandy loam (min 200mm) is to be added to the irrigation area during installation. For all calculations please refer to the Trench summary reports. Due to the highly permeable topsoils a cut-off drain will not be required. In light of the use of irrigation and secondary treatment the designation of a reserve area can be eliminated. This is justified by the ease at which irrigation systems can be replaced, with old lines and topsoil removed and replaced with new topsoil and irrigation systems within a 48 hour period.

The following setback distances are consistent with the Building Act 2016:

Upslope or level buildings:	3m
Downslope buildings:	5.5m
Upslope or level boundaries:	1.5m
Downslope boundaries:	15.5m
Downslope surface water:	15m

with Building Act 2016 Guidelines for On-site Wastewater Management Systems is outlined in the attached table. During construction GES will need to be notified of any variation to the soil conditions or wastewater loading as outlined in this report.

Construction Notes & Recommendations

The site has been classified as **Class S**.

It is recommended that all footing loads are transferred to bedrock (either directly or via piers/piles).

All earthworks on site must comply with AS3798:2007, and I further recommend that consideration be given to drainage and sediment control on site during and after construction. Care should also be taken to ensure there is adequate drainage in the construction area to avoid the potential for weak bearing and foundation settlement associated with excessive soil moisture.

During construction GES will need to be notified of any variation to the soil conditions or wastewater loading as outlined in this report.



Dr John Paul Cumming B.Agr.Sc (hons) PhD CPSS GAICD

Director

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report

Site assessment for on-site waste water disposal

Assessment for	Bill Anderson	Assess. Date	16-Jun-26
		Ref. No.	
Assessed site(s)	36 Boyes Street, Dulcote	Site(s) inspected	14-May-26
Local authority	Clarence	Assessed by	John Paul Cumming

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 = 2.2

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)	60	37	47	32	57	68	28	49	46	62	62	48
Adopted rainfall (R, mm)	60	37	47	32	57	68	28	49	46	62	62	48
Retained rain (Rr, mm)	45	28	35	24	43	51	21	36	34	46	46	36
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	130	110	91	63	42	29	32	42	63	84	105	126
Evapotr. less rain (mm)	85	82	56	39	-1	-22	11	6	29	38	59	90
Annual evapotranspiration less retained rain (mm) =												471

Soil characteristics

Texture = Sandy Loam

Category = 2

Thick. (m) = 0.5

Adopted permeability (m/day) = 3

Adopted LTAR (L/sq m/day) = 3

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 a package treatment plant
The preferred method of on-site secondary treatment:	In-ground
The preferred type of in-ground secondary treatment:	None
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) =	24
Width (m) =	10
Depth (m) =	0.2
Total disposal area (sq m) required =	240
comprising a Primary Area (sq m) of:	240
and a Secondary (backup) Area (sq m) of:	

Sufficient area is available on site

Comments

Using the DIR of 2.5mm/day, an irrigation area of 240m² will be required to accommodate the expected wastewater flows.

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report

Site assessment for on-site waste water disposal

Assessment for Bill Anderson

Assess. Date

16-Jun-26

Ref. No.

Assessed site(s) 36 Boyes Street, Dulcot

Site(s) inspected

14-May-26

Local authority Clarence

Assessed by John Paul Cumming

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	1,000	V. high	Moderate		
	Density of disposal systems	/sq km	1	Mod.	Very low		
A	Slope angle	degrees	14	High	High		
	Slope form	Straight simple		High	Low		
	Surface drainage	Imperfect		High	Moderate		
	Flood potential	Site floods <1:100 yrs		High	Very low		
	Heavy rain events	Infrequent		High	Moderate		
	Aspect (Southern hemi.)	Faces NE or NW		V. high	Low		
	Frequency of strong winds	Common		High	Low		
	Wastewater volume	L/day	600	High	Moderate	No change	
	SAR of septic tank effluent		1.0	High	Low		
	SAR of sullage		1.6	High	Low		
	Soil thickness	m	0.5	V. high	Moderate		
AA	Depth to bedrock	m	0.5	V. high	Very high		
	Surface rock outcrop	%	0	V. high	Very low		
	Cobbles in soil	%	0	V. high	Very low		
	Soil pH		5.5	High	Low		
	Soil bulk density	gm/cub. cm	1.4	High	Very low		
	Soil dispersion	Emerson No.	7	V. high	Very low		
AA	Adopted permeability	m/day	3	Mod.	Very high		
	Long Term Accept. Rate	L/day/sq m	3	High	High	Moderate	Other factors lessen impact

Comments

This site is limited by shallow depth to bed rock. The site has the capability to accept secondary treated effluent via subsurface irrigation.

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report

Site assessment for on-site waste water disposal

Assessment for Bill Anderson

Assess. Date

16-Jun-26

Ref. No.

Assessed site(s) 36 Boyes Street, Dulcote

Site(s) inspected

14-May-26

Local authority Clarence

Assessed by John Paul Cumming

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	
	Cation exchange capacity	mmol/100g	100	High	Low	Moderate	
	Phos. adsorp. capacity	kg/cub m	0.7	High	Moderate		
	Annual rainfall excess	mm	-471	High	Very low		
	Min. depth to water table	m	3	High	Very low		
	Annual nutrient load	kg	3.3	High	Very low		
	G'water environ. value	Agric non-sensit		V. high	Low		
	Min. separation dist. required	m	3	High	Very low		
	Risk to adjacent bores	Very low		V. high	Very low		
	Surf. water env. value	Agric non-sensit		V. high	Low		
AA	Dist. to nearest surface water	m	15	V. high	Very high		
	Dist. to nearest other feature	m	40	V. high	Moderate		
	Risk of slope instability	Low		V. high	Low		
	Distance to landslip	m	1000	V. high	Very low		

There is low risk associated with onsite wastewater disposal at this site.

APPENDIX 1 - DCP Results Table

Dynamic Cone Penetration (DCP) Conversion to Californian Bearing Ratio
(ref: Australian Standard AS 1289.6.3.2 - 1997)

DCP Location TH1

Depth (mm)	DCP (Blows/100mm)	DCP (mm/Blow)	DCP Resistance (mPa)	Allowable Bearing Capacity (kPa)	CBR (Rounded Up)
0-100	3	33.3	0.9	104	6
100-200	3	33.3	0.9	104	6
200-300	5	20.0	1.6	174	10
300-400	20	5.0	6.3	694	48

Demonstration of wastewater system consistency with the *Building Act 2016 Guidelines for On-site Wastewater*

Acceptable Solutions	Performance Criteria	Compliance
A1 Horizontal separation distance from a building to a land application area must comply with one of the following: a) be no less than 6m; or b) be no less than: (i) 3m from an upslope building or level building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (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.	P1 a) The land application area is located so that (i) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.; and (ii) is setback a sufficient distance from a downslope excavation around or under a building to prevent inadequately treated wastewater seeping out of that excavation	Consistent with A1 (b) (i) Land application area will be located with a minimum separation distance of 3m from an upslope or level building. Consistent with A1 (b) (iii) Land application area will be located with a minimum separation distance of 5.5m from a downslope building.
A2 Horizontal separation distance from downslope surface water to a land application area must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.	P2 Horizontal separation distance from downslope surface water to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Consistent with P2 (a) & (b) Land application area will be located a minimum of 15m from downslope surface water

A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; and (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Consistent with A3 (b) (i) Land application area will be located with a minimum separation distance of 1.5m from an upslope or level property boundary Consistent with A3 (b) (iii) Land application area will be located with a minimum separation distance of 15.5m from a downslope property boundary.
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.	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: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable	Consistent with A4 No bore or well identified within 50m

A5 Vertical separation distance between groundwater and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent	P5 Vertical separation distance between groundwater and a land application area must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable	Consistent with A5 (b) No groundwater encountered
A6 Vertical separation distance between a limiting layer and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	Consistent with A5 (b)
A7 nil	P7 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	Consistent

ASSESSMENT OF HORIZONTAL AND VERTICAL SETBACK DISTANCES

(adapted from Table R1 in AS1547 - to be used in conjunction with Site Constraint Table)

Site feature	Setback distance range (m)	Site constraint items of specific concern (from Site Constraint Table)	Assessment	Adopted setback distance (m)
	Horizontal setback distance (m)			
Property boundary	1.5 – 50	A, D, J	15.5	>15.5
Buildings/houses	2.0 – > 6	A, D, J	2	>2m
Surface water	15 – 100	A, B, D, E, F, G, J	15	15
Bore, well	15 – 50	A, C, H, J	N/A	N/A
Recreational areas (Children's play areas, swimming pools and so on)	3 – 15	A, E, J	N/A	N/A
In-ground water tank	4 – 15	A, E, J	N/A	N/A
Retaining wall and Embankments, escarpments, cuttings	3.0 m or 45° angle from toe of wall (whichever is greatest)	D, G, H	N/A	N/A
	Vertical setback distance (m)			
Groundwater	0.6 – > 1.5	A, C, F, H, I, J	0.6	N/A
Hardpan or bedrock	0.5 – ≥ 1.5	A, C, J	0.5	0.6

SITE CONSTRAINT RATING

(adapted from Table R2 in AS1547 - used as a guide in determining appropriate setback distances)

Item	Site/system feature	Constraint scale (see Note 1)		Sensitive features	Comment	Constraint Rating
		LOWER	HIGHER			
		Examples of constraint factors (see Note 2)				
A	Microbial quality of effluent	Effluent quality consistently producing ≤ 10 cfu/100 mL <i>E. coli</i> (secondary treated effluent with disinfection)	Effluent quality consistently ⁶ <i>E. coli</i> (for example, primary treated effluent)	Groundwater and surface pollution hazard, public health hazard	Secondary treated effluent	Low
B	Surface water	Category 1 to 3 soils, no surface water down gradient within > 100 m, low rainfall area	Category 4 to 6 soils, permanent surface water <50 m down gradient, high rainfall area, high resource/environmental value	Surface water pollution hazard for low permeable soils, low lying or poorly draining areas	Low rainfall area category 2 soil	Low
C	Groundwater	Category 5 and 6 soils, low resource/environmental value	Category 1 and 2 soils, gravel aquifers, high resource/environmental value	Groundwater pollution hazard	Sandy Loam (category 2) soil No groundwater encountered	Low
D	Slope	0 – 6% (surface effluent application) 0 – 10% (subsurface effluent application)	> 10% (surface effluent application), > 30% subsurface effluent application	Off-site export of effluent, erosion	25% slope, secondary treatment of effluent	Moderate
E	Position of land application area in landscape.	Downgradient of surface water, property boundary, recreational area	Upgradient of surface water, property boundary, recreational area	Surface water pollution hazard, off-site export of effluent	Low resource value waterway downslope of irrigation	Moderate,
F	Drainage	Category 1 and 2 soils, gently sloping area	Category 6 soils, sites with visible seepage, moisture tolerant vegetation, low lying area	Groundwater pollution hazard	Sandy Loam (category 2) soil No visible seepage or moisture tolerant species	Low
G	Flood potential	Above 1 in 20 year flood contour	Below 1 in 20 year flood contour	Off-site export of effluent, system failure, mechanical faults	Above 1:20 year flood contour	Low

SITE CONSTRAINT RATING (cont)

Item	Site/system feature	Constraint scale (see Note 1)		Sensitive features	Comment	Constraint Rating
		LOWER	HIGHER			
		Examples of constraint factors (see Note 2)				
H	Geology and soils	Category 3 and 4 soils, low porous regolith, deep, uniform soils	Category 1 and 6 soils, fractured rock, gravel aquifers, highly porous regolith	Groundwater pollution hazard for porous regolith and permeable soils	Sandy Loam (category 2) soil High permeability	Consistent with Acceptable Solutions
I	Landform	Hill crests, convex side slopes, and plains	Drainage plains and incise channels	Groundwater pollution hazard, resurfacing hazard	side slope	Consistent with Acceptable Solutions
J	Application method	Drip irrigation or subsurface application of effluent	Surface/above ground application of effluent	Off-site export of effluent, surface water pollution	Subsurface application	Low

AS1547:2012 – Loading Certificate – AWTS Design

This loading certificate sets out the design criteria and the limitations associated with use of the system.

Site Address: 36 Boyes Street, Dulcot

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

Summary of Design Criteria

DIR: 2.5mm/day.

Irrigaion area: 240m²

Reserve area location /use: Not assigned. Irrigation lines and topsoil will need to be replaced within a 48 hour period

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 AWTS and large land area

Overloading consequences: Continued overloading may cause hydraulic failure of the irrigation area and require upgrading/extension of the area. Risk considered acceptable due to monitoring through quarterly maintenance reports.

Underloading consequences: Lower than expected flows will have minimal consequences on system operation unless the house has long periods of non occupation. Under such circumstances additional maintenance of the system may be required. Long term under loading of the system may also result in vegetation die off in the irrigation area and additional watering may be required. Risk considered acceptable due to monitoring through quarterly maintenance reports.

Lack of maintenance / monitoring consequences: Issues of underloading/overloading and condition of the irrigation 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/maintenance contractor.

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:

On-site wastewater management system - design

(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
	☐ Building design	Architect or Building Designer
	☐ Structural design	Engineer or Civil Designer
	☐ Fire Safety design	Fire Engineer
	☐ Civil design	Civil Engineer or Civil Designer
	☒ Hydraulic design	Building Services Designer
	☐ Fire service design	Building Services Designer
	☐ Electrical design	Building Services Designer
	☐ Mechanical design	Building Service Designer
	☐ Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer
	☐ Other (specify)	

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

Other details:

AWTS with subsurface irrigation

Design documents provided:

The following documents are provided with this Certificate –
 Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Jun-26
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Jun-26
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Jun-26

Standards, codes or guidelines relied on in design process:	
AS1547:2012 On-site domestic wastewater management.	
AS3500 (Parts 0-5)-2013 Plumbing and drainage set.	

Any other relevant documentation:	
Geo-Environmental Assessment - 36 Boyes Street Dulcot - Jun-26	
Geo-Environmental Assessment - 36 Boyes Street Dulcot - Jun-26	

Attribution as designer:	
---------------------------------	--

I John-Paul Cumming, 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:	John-Paul Cumming		16/06/2026
Licence No:	CC774A		

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:

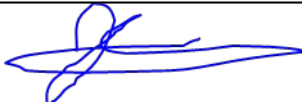
- ☒ The works will not increase the demand for water supplied by TasWater
- ☒ The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- ☒ The works will not require a new connection, or a modification to an 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 John-Paul Cumming..... 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

	Name: (print)	Signed	Date
Designer:	John-Paul Cumming		16/06/2026



CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Owner /Agent
 Address
 Suburb/postcode

Qualified person details:

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

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

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

Details of work:

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

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

Certificate details:

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

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

building work, plumbing work or plumbing installation or demolition work ☒
or

a building, temporary structure or plumbing installation: ☐

In issuing this certificate the following matters are relevant –

Documents:	The attached soil report for the address detailed above in 'details of work'
Relevant calculations:	Reference the above report.
References:	AS2870:2011 residential slabs and footings AS1726:2017 Geotechnical site investigations CSIRO Building technology file – 18.

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

Site Classification consistent with AS2870-2011.

Scope and/or Limitations

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

I, John-Paul Cumming certify the matters described in this certificate.

Qualified person:

Signed:

Certificate No:

Date:

J13109

16/06/2026



A handwritten signature in black ink, appearing to be "John Paul Cumming", written over a light grey background.

Wastewater system:

AWTS unit vented according to
NCC vol 3 Tas H101.2
min 1:60 fall from all fixtures

Subsurface irrigation - 240m²

Min 3m from upslope buildings
Min 5.5m from downslope buildings
Min 1.5m from upslope or level boundaries
Min 15.5m from downslope boundary
Min 15m from downslope surface water

Refer to GES report



Dr. John Paul Cumming
Building Services Designer-
Hydraulic
CCC774A
15/06/2026



Do not scale from these drawings.
Dimensions to take precedence
over scale.

Bill Anderson
36 Boyes Street Dulcot 7025:

C.T.: 240409/1
PID: 9039483

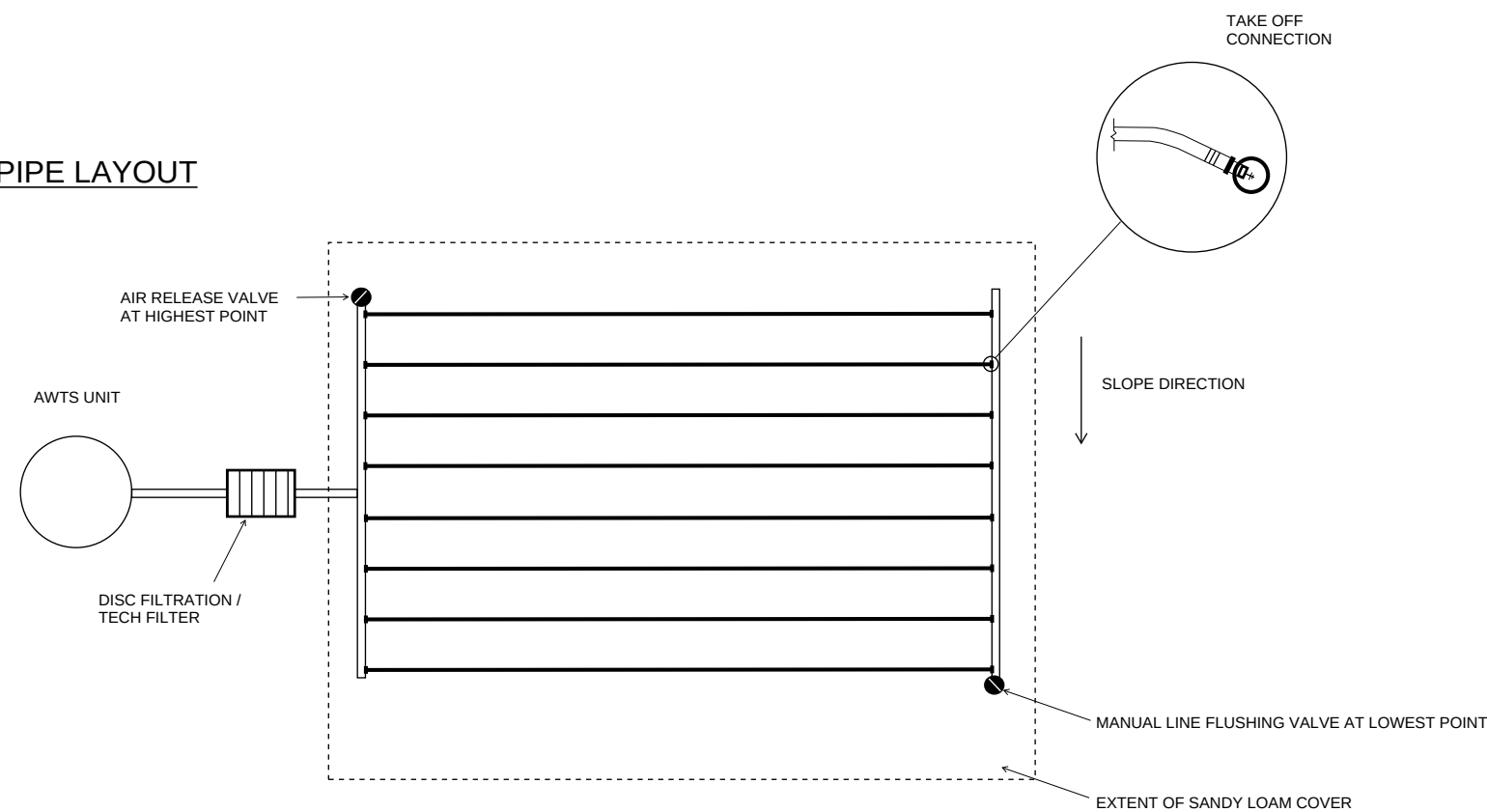
Date: 15/06/2026

On-Site Wastewater Management Plan

Drawing Number:

Sheet 1 of 1
Drawn by: LR

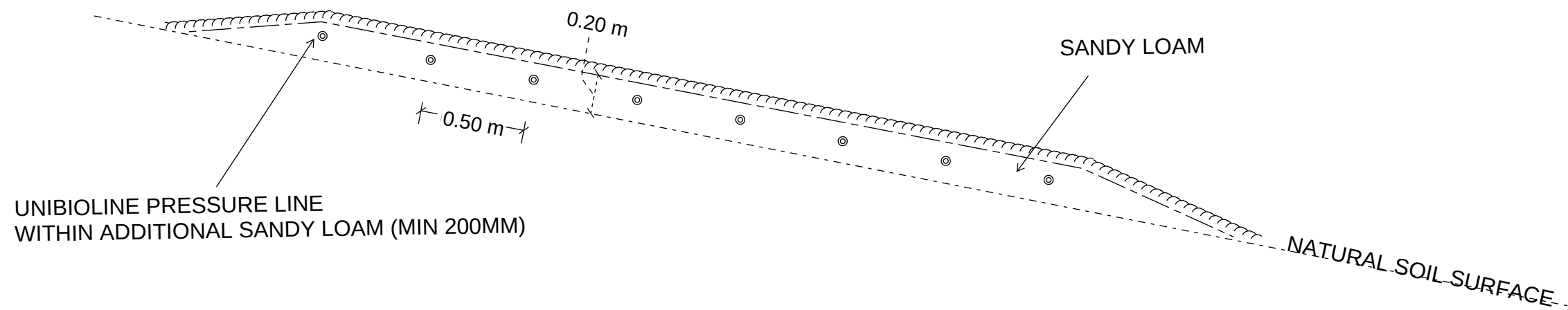
BED PLAN PIPE LAYOUT



APPLICATION AREA NOTES

1. APPLICABLE FOR SLOPE ANGLES OF 10-25%
2. BASE OF APPLICATION AREA TO BE SCARIFIED TO BREAK SURFACE LAYER. ALTERNATIVELY LINES CAN BE RIPPED INTO TOPSOIL WITH SUITABLE TRACTOR AND PIPE LAYER. SMEARING AND COMPACTION TO BE AVOIDED
3. IRRIGATION LINES TO BE INSTALLED INTO MIN 200mm ADDITIONAL SANDY LOAM
4. DEPENDANT ON TREATMENT SYSTEM A 200µm FILTER MAY BE INSTALLED AT THE PUMPING CHAMBER OUTLET, BUT A 100-120µm INLINE DISC FILTER SHOULD BE INSTALLED PRIOR TO DISCHARGE INTO THE IRRIGATION AREA.
5. A VACUUM BREAKER VALVE MUST BE INSTALLED AT THE HIGHEST POINT OF THE IRRIGATION AREA IN A MARKED AND PROTECTED VALVE CONTROL BOX.
6. A FLUSH LINE MUST BE INSTALLED AT THE LOWEST POINT OF THE IRRIGATION AREA
7. THE MINIMUM IRRIGATION PUMPING CAPACITY SHOULD BE EQUIVALENT TO 120 kpa (i.e. 12m OF HEAD) AT THE HIGHEST POINT OF THE IRRIGATION AREA.
8. CUT-OFF DIVERSION DRAIN UPSLOPE AS REQUIRED
9. ALL WORKS TO COMPLY WITH AS3500 AND TASMANIAN PLUMBING CODE

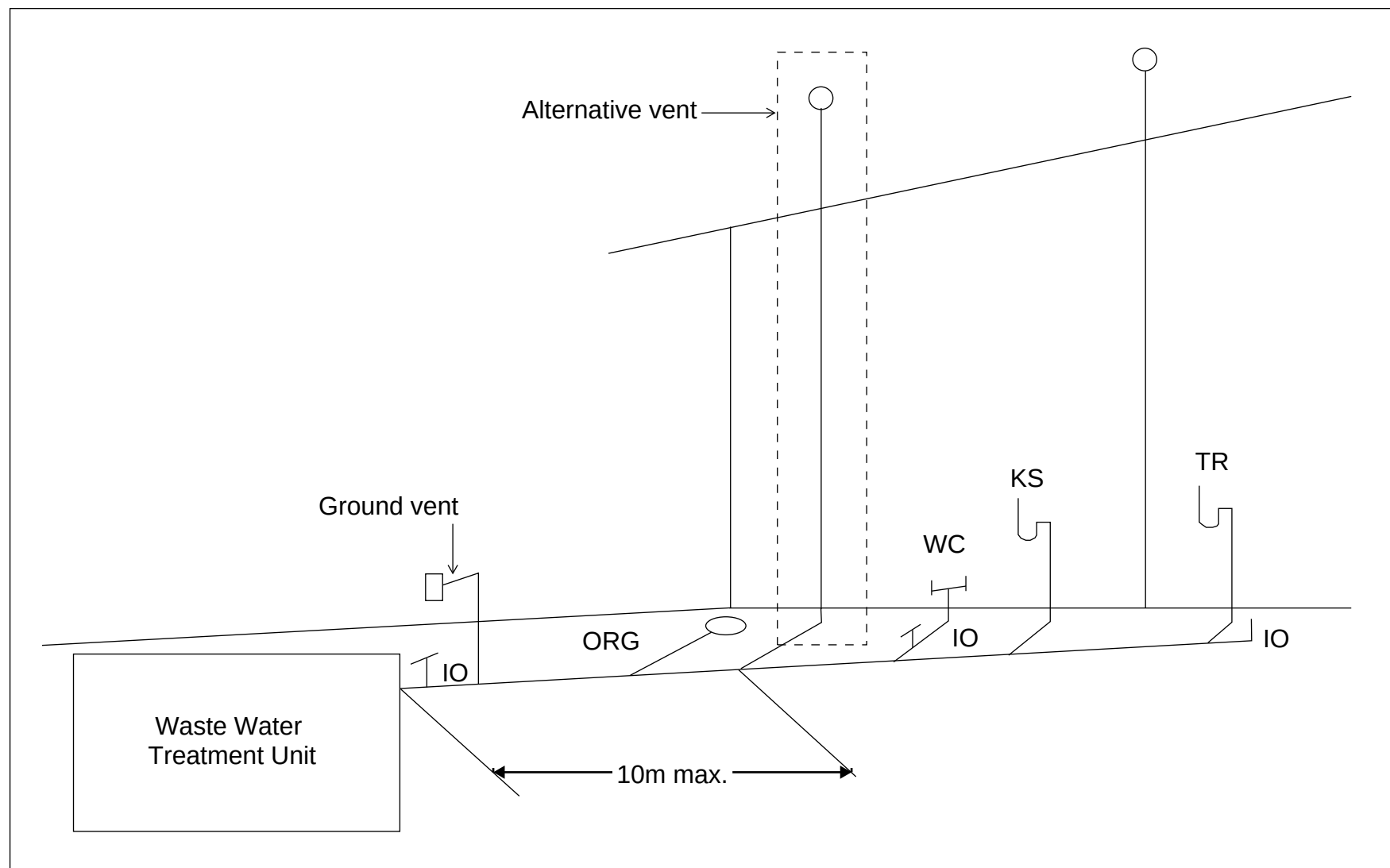
APPLICATION AREA CROSS-SECTION



Do not scale from these drawings.
Dimensions to take precedence
over scale.

CROSS-SECTION
SUBSURFACE APPLICATION SLOPES 10-20%

Sheet 1 of 1
Drawn by: SR



Tas Figure C2D6 Alternative Venting Arrangements

Vents must terminate in accordance with AS/NZS 3500.2

Alternative venting to be used by extending a vent to terminate as if an upstream vent, with the vent connection between the last sanitary fixture or sanitary appliance and the on-site wastewater management system. Use of a ground vent is not recommended

Inspection openings must be located at the inlet to an on-site wastewater management system treatment unit and the point of connection to the land application system and must terminate as close as practicable to the underside of an approved inspection opening cover installed at the finished surface level

Access openings providing access for desludging or maintenance of on-site wastewater management system treatment units must terminate at or above finished surface level

BUSHFIRE HAZARD REPORT
CONSTRUCTION OF A NEW CLASS 1A BUILDING
36 DULCOT STREET, DULCOT
FOR
W. P. ANDERSON & B. ARNOTT



PREPARED BY L BRIGHTMAN (BFP-164)

CERTIFIED BY N M CREESE (BFP-118)

23 July 2026

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ATTACHMENT 1 – Bushfire Hazard Management Plan

ATTACHMENT 2 – Form 55 Certificate

Disclaimer:

AS 3959:2018 cannot guarantee that a habitable building will survive a bushfire attack, however the implementation of the measures contained within AS 3959:2018, this report and accompanying plan will improve the likelihood of survival of the structure. This report and accompanying plan are based on the conditions prevailing at the time of assessment. No responsibility can be accepted to actions by the landowner, governmental or other agencies or other persons that compromise the effectiveness of this plan. The contents of this plan are based on the requirements of the legislation prevailing at the time of report.

1. SUMMARY:

This Bushfire Hazard Report has been prepared to support the design, application for a building permit, and construction of a new Class 1a building at 36 Boyes Road, Dulcot. The site is subject to a Bushfire Prone Area Overlay under the relevant planning scheme and has been deemed to have the potential to be bushfire prone due to its proximity to the areas of bushfire prone vegetation surrounding the site.

This report identifies the protective features and controls that must be incorporated into the design, and construction works to ensure compliance with the standards. Fire management solutions are defined in *National Construction Code 2025 (Volume 2) (NCC)*, *Building Regulations 2016*, *AS 3959:2018 Construction of Buildings in Bushfire-Prone Areas (AS 3959)*, *Director's Determination – Bushfire Hazard Areas (version 1.2) (Determination)*.

The proposed Class 1a building has been assessed as **BAL-29** under *Section 7* of *AS3959* and provided the appropriate construction standards are incorporated into the design; the new building works are capable of compliance with the provisions of *AS3959*.

Compliance with the following provisions of the *Directors Determination - Requirements for Building in Bushfire-Prone Areas* will be required:

- 2.3.1 Construction Requirements
- 2.3.2 Property Access
- 2.3.3 Water Supply for Firefighting
- 2.3.4 Hazard Management Areas

The effectiveness of the measures and recommendations detailed in this report and *AS3959* is dependent on their implementation and maintenance for the life of the development or until the site characteristics that this assessment has been measured from alter from those identified. No Liability can be accepted for actions by lot owner, Council or Government agencies which compromise the effectiveness of this report.

This report has been prepared by Liam Brightman and certified by Nick Creese, principal of Lark & Creese Surveyors. Liam is accredited by the Tasmania Fire Service to prepare Bushfire Hazard Management Plans. Nick is a registered surveyor in Tasmania and is accredited by the Tasmanian Fire Service to prepare Bushfire Hazard Management Plans.

Site survey carried out on the 13 May 2026.

2. LOCATION:

Property address: 36 Boyes Street, Dulcot
Title owner: N. A. Wood & M. A. Wood
Title reference: C.T. 240409/1
PID N°: 9039483
Title area: 9541 m²
Municipal area: Clarence
Zoning: Rural Living



Figure 1: Site location (*The LIST*)

3. SITE DESCRIPTION:

The site is located within an existing rural area on Beaumont Road, approximately 480 metres west of the intersection of Richmond Road and Boyes Street, Dulcot. The site is located at an elevation of approximately 60 metres with grades falling to the north-east in the order of 5-10°.

At the time of assessment, the property was vacant and included a dam adjacent to the south-western boundary. The site was vegetated predominantly by grass with a line of trees along a watercourse near the south-eastern boundary.

Immediately to the north-east was road reserve that was vegetated by grass and a small area of native trees and shrubs. Beyond the road reserve, were rural allotments that included dwellings, sheds, accesses, gardens, grassed areas, areas of native trees & shrubs, and dams.

Adjacent to the south-eastern boundary was Boyes Street, further rural allotments, and an undeveloped road reserve. Boyes Street included nature strips vegetated by a mix of grassed areas and areas of native trees and shrubs, and a bitumen carriageway. The rural allotments included dwellings, sheds, accesses, gardens, grassed areas, and areas of native trees and shrubs. The road reserve was vegetated by native trees & shrubs.

Adjoining the south-western boundary was George Street which included grassed nature strips and a bitumen carriageway. Beyond George Street were rural allotments that included dwellings, sheds, accesses, garden, grassed areas, and areas of native trees and shrubs.

North-west of the subject property were additional rural allotments that included dwellings, sheds, accesses, gardens, grassed areas, water courses, and dams.

Reticulated water supply is unavailable to the site with domestic water supply requirements reliant on on-site static water storage.

Planning controls are administered by the Clarence Council under the *Tasmanian Planning Scheme - Clarence*. The site is zoned Rural Living.



Figure 2: Looking east towards development site.



Figure 3: Looking south-west towards development site.

4. PROPOSED DEVELOPMENT:

The construction of a new Class 1a building is proposed for the site as shown in Image 4 as provided by the owner.

Construction materials are to be determined following this report.

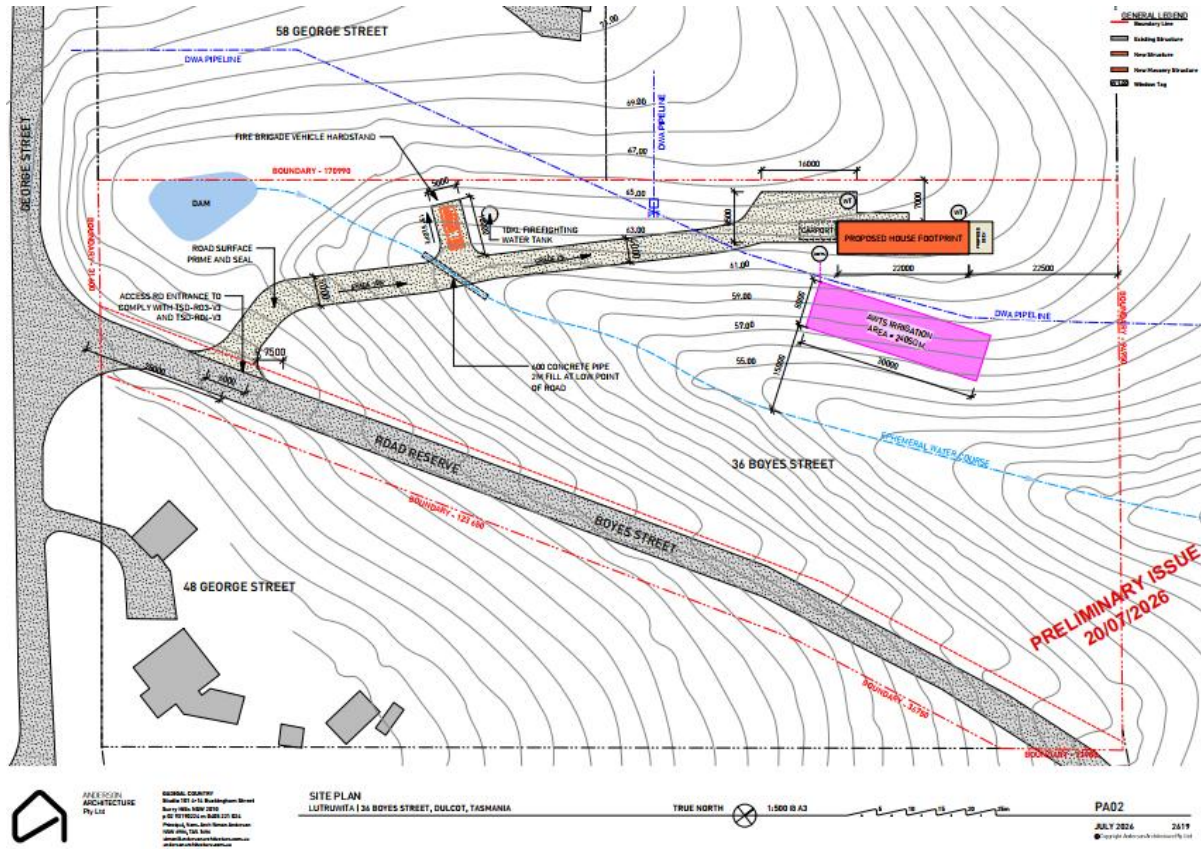


Figure 4: Site plan.

5. BUSHFIRE ATTACK LEVEL:

Fire Danger Index (FDI): The Fire Risk Rating for Tasmania is adopted as 50.

Vegetation Classification:

Vegetation Assessment:

Following assessment of the characteristics of the site, the vegetation types, separation distances from development site and slope under the vegetation have been identified as shown in Table 1 below:

Direction:	Description:	Distance:	Slope:
N	Subject property:	0-10	10-15°↓
	• grass		
	Neighbouring allotment:	10-27	
	• grass		
	Road Reserve:	27-50	
	• grass	50	Level
	• water course	50-100	5-10°↑
	• native trees & shrubs		
	Neighbouring allotments:	60-150	
NE	• native trees & shrubs		
	Subject property:	0-21	5-10°↓
	• grass		
	Road Reserve:	21-45	
	• grass		
E	Neighbouring allotments:	45-150	
	• grass	50-120	
	• native trees & shrubs		
	Subject property:	0-31	10-15°↓
	• grass		
	Road Reserve:	31-45	
	• grass	45-68	
	• native trees & shrubs		
	Neighbouring allotment:	68-117	5-10°↓
	• native trees & shrubs	117-150	
SE	• grass		
	Subject property:	0-30	10-15°↓
	• grass	30-42	
	• native trees & shrubs	42	Level
	• water course	42-52	15-20°↑
	• native trees & shrubs		
	Boyes Road:	52-55	
	• native trees & shrubs	55-60	Level
	• bitumen carriageway		

	- native trees & shrubs Neighbouring allotment: - native trees & shrubs Road Reserve: - native trees & shrubs Neighbouring allotments: - dwelling, sheds, accesses, gardens - native trees & shrubs	60-63 63-82 82-101 101-125 125-150	
S	Subject property: - grass - native trees & shrubs - water course - native trees & shrubs Boyes Street: - native trees & shrubs - bitumen carriageway - native trees & shrubs Neighbouring allotment: - native trees & shrubs - dwelling, sheds, access, garden Road Reserve: - native trees & shrubs Neighbouring allotment: - dwelling, sheds, access, garden	0-31 31-42 42 42-52 52-55 55-60 60-63 63-96 96-148 91-150 112-150	10-15°↓ Level 15-20°↑ Level 5-10°↑
SW	Subject property: - grass - native shrubs - dam - native shrubs George Street: - grassed nature strips, bitumen carriageway Neighbouring allotments: - grass - native trees & grass	0-83 83-87 87-109 109-117 117-134 134-150 134-150	Level 5-10°↑
W	Subject property: - grass Neighbouring allotments: - grass - dwelling, sheds, access garden	0-9 9-150 44-127	5-10°↑
NW	Subject property: - grass Neighbouring allotments: - grass	0-7 7-61	5-10°↓

	• water course • grass	61 61-150	15-20°↑
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Table 1: Site assessment.

NOTE: distances that overlap is due to a slight angular difference between the site and the measured feature.

The vegetation identified in Table 1 has been assessed in consideration of *Table 2.3 and figures 2.4(A)-(H) AS 3959* as follows.

At the time of assessment, the site was undeveloped. The site included a dam adjacent the south-western boundary and ephemeral water course which runs approximately parallel to and approximately 8 metres from the south-eastern boundary. The subject property was vegetated predominantly by grass with eucalypts with varying densities of understory vegetation follows the water course. The dam was surrounded by a mix of native shrubs and reeds which has been classified as **C: Shrubland**. The grass was short presumably due to grazing by native animals. It has been assumed that the grass has the potential to exceed 100 mm in height in the future and has been classified as **G: Grassland**. The vegetation along the water course varies in height from 5-20 metres in height and has an understory of variable densities ranging from smaller trees and shrubs to grass. The areas of vegetation that has a foliage density of >30% has been classified as **A: Forest** and the areas of vegetation with a foliage coverage of <30% has been classified as **B: Woodland**.

Adjacent to the north-eastern boundary was an undeveloped road reserve which was vegetated predominately by grass with areas of eucalypts with an understory of smaller trees and shrubs. The grass was short presumably due to grazing by native animals. It has been assumed that the grass has the potential to exceed 100 mm in height in the future and has been classified as **G: Grassland**. The areas of eucalypts have been classified as **A: Forest**. The areas of the rural allotments, beyond the road reserve, that are within the assessable area were vegetated by short-cropped grass, areas of eucalypts with an understory of smaller trees and shrubs and a dam. The grass appeared to be short cropped due to grazing by animals. It has been assumed that the grass has the potential to exceed 100 mm in height in the future and has been classified as **G: Grassland**. The areas of eucalypts have been assessed as having a foliage coverage of >30% and has been classified as **A: Forest**.

Immediately to the south-east was Boyes Street beyond which were further rural allotments. Boyes Street included nature strips vegetated by native shrubs, ≈5 metres in height, with scattered emergent eucalypts ≈15 metres in height, and a bitumen carriageway. The vegetation within the nature strips has been classified as **B: Woodland**. The bitumen carriageway has been classified as a **Non-vegetated Area** in accordance with *Part 2.2.3.2 (e) & (f), AS 3959:2018*. The rural allotments

and the undeveloped road reserve beyond Boyes Street included dwellings, sheds, accesses, gardens, eucalypts 5-20 metres in height with an understory of smaller trees and shrubs. The developed portions have been classified as **Low Threat Vegetation** in accordance with *Part 2.2.3.2 (e) & (f)*, AS 3959:2018. The areas of eucalypts have been classified as **A: Forest**.

To the south-west of the subject property was George Street which included grassed nature strips and a bitumen carriageway. The vegetation within the nature strips appeared to be well maintained in a minimal fuel condition. George Street has been classified as **Low Threat Vegetation** in accordance with *Part 2.2.3.2 (e) & (f)*, AS 3959:2018. Beyond George Street were rural allotments that included dwellings, sheds, accesses, gardens, pasture, and areas of eucalypts, 10-15 metres in height, with a grass understory. The areas of these properties that was within the assessable area included the pasture and the area of eucalypts. The grass within the areas of pasture appeared to be short due to grazing by animals. It has been assumed that the grass has the potential to exceed 100 mm in height in the future and has been classified as **G: Grassland**. The area of eucalypts has been assessed as having a foliage coverage of <30% and has been classified as **B: Woodland**.

North-west of the subject property were several rural allotments that included dwellings, sheds, accesses, gardens, pasture, an ephemeral water course and dams. The developed portions of these allotments have been classified as **Low Threat Vegetation** in accordance with *Part 2.2.3.2 (e) & (f)*, AS 3959:2018. The dams have been classified as **Non-vegetated Areas** in accordance with *Part 2.2.3.2 (e)*, AS 3959:2018. The grass within the areas of pasture appeared to be short due to grazing and possibly periodic slashing. It has been assumed that the grass has the potential to exceed 100 mm in height and has been classified as **G: Grassland**.

Vegetation Classification:

In consideration of vegetation classifications under *Table 2.3* and *Figure 2.4*, AS 3959 and as detailed above, the predominant vegetation, separation distances from development site and slope under the classified vegetation is assessed as shown in Table 2 below:

Direction:	Vegetation Type:	Distance (m):	Effective slope:	Exclusions:
N	G	0-55	10-15°↓	No
	A	55-150	5-10°↑	No
NE	G	0-150	5-10°↓	No
	A	50-120		No
E	G	0-45	10-15°↓	No
	A	45-68		No
		68-117	5-10°↓	
	G	117-150		No

SE	G	0-30	10-15°↓	No
	B	30-42		No
	NVA	42-55	15-20°↑	2.2.3.2 (e)
	B	55-60	Level	No
	A	60-63		No
	LTV	63-101		2.2.3.2 (e) & (f)
S	LTV	101-125		No
	A	125-150		
	G	0-31	10-15°↓	No
	A	31-42		No
	B	42-52	15-20°↑	No
	NVA	52-55	Level	2.2.3.2 (e)
SW	B	55-60		No
	B	60-63	5-10°↑	No
	A	63-96		No
	LTV	96-148		2.2.3.2 (e) & (f)
	A	91-150		No
	LTV	112-150		2.2.3.2 (e) & (f)
W	G	0-83	Level	No
	C	83-87		No
	NVA	87-109		2.2.3.2 (e)
	C	109-117		No
	LTV	117-134		2.2.3.2 (e) & (f)
	G	134-150	5-10°↑	No
NW	B	134-150		No
	G	0-150	5-10°↑	No
NW	LTV	44-127		2.2.3.2 (e) & (f)
	G	0-61	5-10°↓	No
NW		61-150	15-20°↑	No

Table 2: Assessed vegetation.

NOTE: A = A: Forest, B = B: Woodland, C = C: Shrubland, D = D: Scrub, F = F: Rainforest, G = G: Grassland, H = H: Tussock Moorland, LTV = Low Threat Vegetation, NVA = Non-vegetated Area.

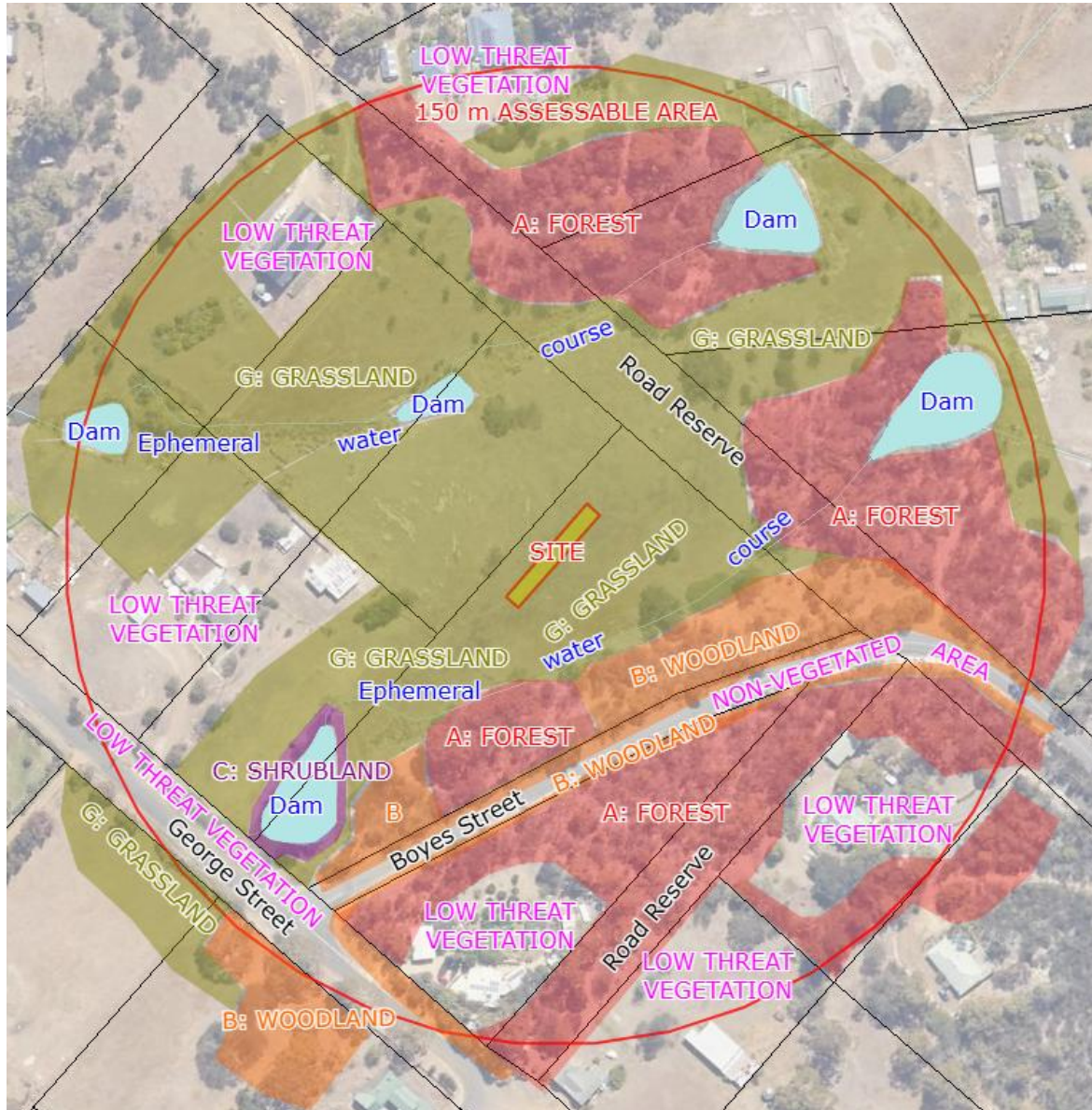


Figure 5: Aerial image of assessed vegetation (*The LIST*).



Figure 6: Predominant vegetation to the north of the site – G: Grassland



Figure 7: Predominant vegetation to the north-east of the site – G: Grassland
(Vegetation classified as A: Forest in background)



Figure 8: Predominant vegetation to the east of the site – G: Grassland
(Vegetation classified as A: Forest to left; B: Woodland to right)



Figure 9: Predominant vegetation to the south-east of the site – B: Woodland
(Vegetation classified as G: Grassland in foreground and A: Forest in background)



Figure 10: Predominant vegetation to the south of the site – B: Woodland
(Vegetation classified as G: Grassland in foreground)



Figure 11: Predominant vegetation to the south-west of the site – G: Grassland



Figure 12: Predominant vegetation to the west of the site – G: Grassland



Figure 13: Predominant vegetation to the north-west of the site – G: Grassland

Bushfire Attack Level Assessment:

Bushfire Attack Levels have been divided into 6 categories based on the potential impact on the proposed structure from bushfire threat. These are as follows.

BAL-LOW	BAL-12.5	BAL-19	BAL-29	BAL-40	BAL-FZ
There is some risk but it is considered insufficient to warrant any specific construction requirements	Ember attach and radiant heat below 12.5 kW/m ²	Increased ember attack and windborne debris, radiant heat between 12.5 kW/m ² and 19 kW/m ²	Increased ember attack and windborne debris, radiant heat between 19 kW/m ² and 29 kW/m ²	Increased ember attack and windborne debris, radiant heat between 29 kW/m ² and 40 kW/m ² . Exposure to flames from fire front likely	Direct Exposure to flames, radiant heat and embers from fire front

Definition of Bushfire Attack Levels (Source *Building for Bushfire, Bushfire Attack Level (BAL) Assessment*)

Based on the predominant vegetation detailed above, and the separation distances provided between the predominant vegetation and the development site, the BAL for each direction from the proposed dwelling has been determined from *Table 2.6, AS3959* as follows:

Direction:	N	NE	E	SE	S	SW	W	NW
BAL	FZ	FZ	FZ	FZ	FZ	FZ	FZ	FZ

With the establishment of an appropriate Hazard Management Area, the increased risk associated with the exposure of the structure to the bushfire threat can be reduced. The resulting bushfire attack level for each elevation can then be assessed as:

BAL-29

Direction	BAL	Vegetation	Effective slope	HMA specified <i>Table 2.6</i>	HMA required	HMA available
N	29	*G (0 m) #A (55 m)	10-15°↓ 5-10°↓	10-<15 m 23-<32 m	Boundary	10 metres to boundary.
NE		*G (0 m) #A (45 m)	5-10°↓	8-<13 m 24-<34 m	^Boundary	21 metres to boundary.

E		*G (0 m) #A (44 m)	10-15° ↓ 5-10°↓	10-<15 m 30-<41 m 24-<34 m	10 metres	31 metres to boundary.
SE		G (0 m) B (30 m) B (42 m) NVA (55 m) B (60 m) #A (63 m)	10-15° ↓ 15-20°↑ Level	10-<15 m 19-<28 m 10-<15 m N/A 10-<15 m 16-<23 m	19 metres	30 metres to predominate vegetation.
S		G (0 m) #A (31 m) B (52 m) NVA (55 m) B (60 m) A (91 m)	10-15° ↓ †Level Level 5-10°↑	10-<15 m 16-<23 m 10-<15 m N/A 10-<15 m 16-<23 m	10 metres	31 metres to predominate vegetation.
SW		G C NVA C LTV	Level	6-<10 m 9-<13 m N/A 9-<13 m N/A	6 metres	117 metres to boundary.
W		G LTV	5-10° ↑	6-<10 m N/A	6 metres	9 metres to boundary.
NW		G	0-5° ↓ 15-<20°↑	7-<11 m 6-<10 m	7 metres	7 metres to boundary.

Table 3: Details the hazard management areas (HMA) required to comply with that BAL, and the area available for compliance.

NOTE: Bolded text indicates the relevant site characteristics assessed as posing the predominate bushfire risk to the proposed development.

*The vegetation classified as G: Grassland has been assessed as posing the predominate bushfire threat to the site due to its proximity to the site.

^This report requires the HMA to be extended to the boundary to provide a further level of protection from the potential bushfire-prone vegetation contained within the Road Reserve.

†It is acknowledged that the slopes under the vegetation classified as A: Forest, to the south, were measured as being 10-15°↓ and 15-20°↑. As these areas of vegetation occur over a narrow band of ≈10 metres each, the effective slope has been assessed as being level.

The vegetation classified as A: Forest, to the north, north-east, east, south-east, and south, have been measured as exceeding the maximum distance for BAL-29 prescribed within *Table 2.6, AS 3959* resulting in a bushfire attack level equal to that

expected for a BAL-19 rating. Due to this the vegetation classified as A: Forest has not been deemed to pose the predominate bushfire threat to the site.

COMPLIANCE:

Building Regulations 2016:

Compliance with *Part 5 – Work in Hazardous Areas, Division 6 – Bushfire-prone areas* the *Building Regulations 2016* is achieved through the implementation of *Director's Determination – Bushfire Hazard Areas* as follows:

Director's Determination – Bushfire Hazard Areas

2.1 Application:

- (1) The Determination applies to a building located in a bushfire-prone area of the following Class:*
 - (i) Class 1;*
 - (ii) Class 2;*
 - (iii) Class 3;*
 - (iv) Class 8;*
 - (v) Class 9; and*
 - (vi) Class 10a that is*
 - (a) closer than 6 metres to a habitable building; or*
 - (b) closer than 6 metres to another Class 10a Building that is within 6m of a habitable building.*
- (2) Despite subclause (1), this Determination does not apply to buildings that are integral to the agricultural use of the land and which are not habitable buildings.*
- (3) Notwithstanding the Director's Determination – Categories of Building and Demolition Work, for the purposes of regulation 51(2)(c) of the Building Regulations 2016, building work or demolition work specified in Schedule 1 of this Determination, if performed, or proposed to be performed, in a bushfire-prone area is work to which Part 5 of the Building Regulations 2016 applies.*
- (4) Notwithstanding the Director's Determination – Categories of Building and Demolition Work, building work or demolition work specified in Schedule 1 of this Determination, if performed, or proposed to be performed, in a bushfire-prone area is categorised as notifiable work, provided that it would not otherwise be categorised as permit work.*

APPLICATION

- (1) The proposed building is a Class 1a building and as such the requirements of the Determination apply.*
- (2) The proposed building is not intended for agricultural purposes as such this subsection is not applicable.*
- (3) In accordance with 3.0.1 Schedule 1 this subsection applies.*
- (4) The proposed works are permit works as such this subsection is not applicable.*

2.2 Performance Requirements:

- (1) A building to which this Division applies and where defined in the applications of TAS G5P1 must be designed and constructed to comply with TAS G5P1 of the National Construction Code.*
- (2) Certain Class 9 Buildings as defined in the application of TAS G5P1 must also comply with TAS G5P2 of the National Construction Code.*
- (3) A Class 1 Building or a Class 10a Building or deck associated with a Class 1 Building to which this Division applies must be designed and constructed to comply with TAS H7P5 of the National Construction Code and the quantified by H7P5 of the National Construction Code.*
- (4) A building to which this Division applies must be:*
 - (a) provided with property access to the building to assist firefighting and emergency personnel to defend the building and to support occupant evacuation;*
 - (b) provided with access at all times to a sufficient supply of water for firefighting purposes on the site;*
 - (c) provided with appropriate separation of the building from the bushfire hazard;*
 - (d) provided with a bushfire emergency plan.*
 - (i) Subclause 4(d) does not apply to Class 1a Buildings.*
- (5) The Performance Requirements specified in subclause (1), (2), (3) and (4) can only be satisfied by a Performance Solution or Deemed-to-Satisfy solution or a combination of both.*
- (6) Where a Deemed-to-Satisfy solution is proposed, the Performance Requirements are satisfied by complying with the Deemed-to-Satisfy provisions in this Determination for BAL-LOW to BAL-29 only given that the performance requirements for BAL-40 and BAL-FZ cannot be satisfied by the Deemed-to-Satisfy provisions.*
- (7) A Performance Solution must comply with the Performance Requirements or be at least equivalent to the Deemed-to-Satisfy provisions in this Determination. Further, a Performance Solution must comply with the Governing Requirements of Section A and be assessed according to one or more of the Assessment Methods in Clause A2G2 of Volume One or Two of the National Construction Code.*

APPLICATION

The requirements of *Part 3 Performance Requirements* have been satisfied by assessing the proposed development against the requirements of *Part 2.3 Deemed-to-Satisfy Provisions*.

2.3 Deemed-to-Satisfy Provisions:

2.3.1 Design and Construction

- (1) *Building work (including additions or alterations to an existing building) in a bushfire-prone area must be designed and constructed in accordance with the relevant Deemed-to-Satisfy provisions of:*
 - (a) *NCC Volume 1, Part G5 for Class 2 or Class 3 Buildings or Certain Class 9 Buildings and a Class 10a Building or deck associated with a building to which this Division applies.*
 - (b) *NCC Volume 2, Part H7 for Class 1 Building and Class 10a Building or deck associated with a building to which this Division applies.*
- (2) *Despite subclause (1) above, permissible variations are specified in Table 1 below for Class 1, Class 2 and Class 3 Buildings and an associated Class 10a Building or deck.*
- (3) *Performance Requirements for buildings subject to BAL-40 or BAL Flame Zone (BAL-FZ) cannot be satisfied by Deemed-to-Satisfy provisions and must be satisfied by means of a Performance Solution.*

Table 1 - Construction Requirements and Construction Variations		
Element		Requirements
A.	Straw Bale Construction	<i>May be used in exposures up to and including BAL 19.</i>
B.	Shielding provisions under Section 3.5 of AS 3959:2018	<i>To reduce construction requirements due to shielding, building plans or supporting documentation must include suitable detailed elevations or plans that demonstrate that the requirements of Section 3.5 of the Standard can be met.</i> <i>Comment: Application of Section 3.5 of the Standard cannot result in an assessment of BAL-LOW.</i>
C.	Additional requirements for Certain Class 9 Buildings	<i>Refer to NCC Vol. 1 – Part G5 (incorporating TAS G5P1 and TAS G5P2) and Specification 43.</i>

APPLICATION:

- (1) The proposal is for the construction of a new Class 1a building which has been assessed in against the requirements of AS 3959 in accordance with *NCC Volume 2, Part H7*.
- (2) The proposed development does not make use of any of the Construction Variations listed within *Table 1*, as such this subsection is not applicable.
- (3) The proposed building has not been assessed as either BAL-40 or BAL-FZ, as such this subsection is not applicable.

All building works shall comply with the specification for **BAL-29** of *Section 3* and *Section 7* of AS 3959. This includes the general provisions contained within AS3959:2018 and the following sub-sections:

- 7.1 *General provisions*
- 7.2 *Sub-floor supports*
- 7.3 *Floors*
- 7.4 *Walls*
- 7.5 *External glazed elements and assemblies and external doors*
- 7.6 *Roofs (including penetrations, eaves, fascias and gables, and gutters and downpipes)*
- 7.7 *Verandas, decks, steps and landings*
- 7.8 *Water and gas supply pipes*

2.3.2 Property Access

- (1) *The following building work must be provided with property access to the building and the firefighting water point, accessible by a carriageway, designed and constructed as specified in subclause (4) below:*
 - (a) *a new habitable building; or*
 - (b) *a new Class 10a Building to which this Determination applies, if not accessible using an existing property access.*
- (2) *For an addition or alteration to an existing building in a bushfire-prone area, if there is no property access available, property access must be provided to the building and the firefighting water point accessible by a carriageway as specified in subclause (4).*
- (3) *An addition or alteration to an existing building in a bushfire-prone area must not restrict any existing property access to the building or the water supply for firefighting.*
- (4) *Vehicular access from a public road to a building must:*
 - (a) *comply with the property access requirements specified in Table 2;*
 - (b) *include access from a public road to a hardstand within 90 metres of the furthest part of the building measured by a hose lay;*
 - (c) *include access to the hardstand area for the firefighting water point.*
- (5) *Certain Class 9 Buildings have additional property access requirements as specified in Table 2.*

APPLICATION:

- (1) *The proposal is for the construction of a new Class 1a building and must be provided with an access design and constructed in accordance with subclause (4).*
- (2) *The proposed development does not involve any additions or alteration to an existing building, as such this subsection is not applicable.*
- (3) *The proposed development does not involve any additions or alteration to an existing building, as such this subsection is not applicable.*
- (4) *The constructed access is to be located to provide access to the site, turning area, the firefighting water point and hardstand area within 90 m of the furthest point of the building to be protected in compliance with Table 2, AS 3959.*
- (5) *The proposal is for the construction of a Class 1a building, as such this subsection is not applicable.*

The proposed access to the turning/hardstand area and the Class 1a building has been assessed as being ≈45 metres and ≈106 metres in length respectively and is required for access to a firefighting water point and as such the requirements of *Element B, Table 2, Director's Determination - Requirements for Building in Bushfire-Prone Areas (transitional)* below apply.

Table 2 - Requirements for Property Access

Element	Requirement
B <i>Property access length is 30 metres or greater; or access is required for a fire appliance to access a firefighting water point.</i>	<i>The following design and construction requirements apply to property access:</i> <i>(a) all-weather construction;</i> <i>(b) load capacity of at least 20 tonnes, including for bridges and culverts;</i> <i>(c) minimum carriageway width of 4 metres;</i> <i>(d) minimum vertical clearance of 4 metres;</i> <i>(e) minimum horizontal clearance of 0.5 metres from the edge of the carriageway, excluding gate posts;</i> <i>(f) cross falls of less than 3° (1:20 or 5%);</i> <i>(g) dips less the 7° (1:8 or 12.5%) entry and exit angle;</i> <i>(h) curves with a minimum inner radius of 10 metres;</i> <i>(i) maximum gradient of 15° (1:3.5 or 28%), for sealed roads, and 10° (1:5.5 or 18%) for unsealed roads; and</i> <i>(j) terminating with a turning area for fire appliances provided by one of the following:</i> <i>(i) a turning circle with a minimum outer radius of 10 metres;</i> <i>(ii) a property access encircling the building; or</i> <i>(iii) a hammerhead "T" or "Y" turning head 4 metres wide and 8 metres long.</i>

2.3.3 Water Supply for Firefighting

- (1) *The following building work must be provided with a water supply dedicated for firefighting purposes which complies with the requirements specified in Table 3A or Table 3B:*
 - (a) *a new habitable building; or*
 - (b) *a new Class 10a Building to which this Determination applies, if not protected by an existing firefighting water supply.*
- (2) *For an addition or alteration to an existing building in a bushfire-prone area, if there is no water supply for firefighting available, the building must be provided with a water supply dedicated to for firefighting purposes which complies with the requirements specified in Table 3A or Table 3B.*
- (3) *Certain Class 9 Buildings have specific requirements for water supply for firefighting as specified in Tables 3A or 3B.*

APPLICATION:

- (1) The proposed development is not within an area serviced by a reticulated water supply, as such a static water supply for firefighting purposes will need to be installed in accordance with *Table 3B*.
- (2) This bushfire hazard assessment refers to the construction of a new Class 1a building as such this subsection is not applicable.
- (3) The proposal is for the construction of a new Class 1a building as such this subsection is not applicable.

As there is no reticulated water supply available to the site, a static water supply with minimum capacity 10,000 litres is to be installed on the site and must be accessible at all times by fire service vehicles in compliance with *Table 3B*, the *Determination* below.

Table 3B - Requirements for Static Water Supply for Firefighting		
	Element	Requirement
A.	<i>Distance between building to be protected and water supply</i>	<i>The following requirements apply:</i> <i>(a) the building area to be protected must be located within 90 metres of the firefighting water point of a static water supply; and</i> <i>(b) the distance must be measured as a hose lay between the firefighting water point and the furthest part of the building.</i>
B.	<i>Static Water Supplies</i>	<i>A static water supply:</i> <i>(a) may have a remotely located offtake connected to the static water supply;</i> <i>(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;</i>

		(c) must be a minimum of 10,000 litres per building including associated Class 10 Building or deck to be protected. This volume of water must not be used for any other purpose, including firefighting sprinkler or spay 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 AS 3959, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by: (i) metal; (ii) non-combustible material; or (iii) fibre-cement a minimum of 6 mm thickness.
C.	Fittings, pipework and accessories (including stands and tank supports)	Fittings and pipework associated with a firefighting water point for a static water supply must: (a) have a minimum nominal internal diameter of 50 mm; (b) be fitted with a valve with a minimum nominal internal diameter of 50 mm; (c) be metal or lagged by non-combustible materials if above ground; (d) if buried, have a minimum depth of 300 mm; (e) provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to firefighting 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 of 220 mm 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) where a remote offtake is installed, ensure the offtake is in a position that is: (i) visible; (ii) accessible to allow connection by firefighting equipment; (iii) at a working height of 450 - 600 mm above ground level; and (iv) protected from possible damage, including damage by vehicles.
D.	Signage for static water connections	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) <i>comply with water tank signage requirements within AS 2304; or</i> (b) <i>comply with the Tasmania Fire Service Water Supply Signage Guidelines published by the Tasmania Fire Service.</i>
E.	Hardstand	<i>A hardstand area for fire appliances must be provided:</i> (a) <i>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);</i> (b) <i>no closer than six metres from the building to be protected;</i> (c) <i>with a minimum width of three metres and a minimum length of six metres constructed to the same standard as the carriageway; and</i> (d) <i>connected to the property access by a carriageway equivalent to the standard of the property access.</i>

2.3.4 Hazard Management Areas:

- (1) The following building work must be provided with a hazard management area of sufficient dimensions and which provides an area around the building which separates the building from the bushfire hazard and complies with subclauses (2), (3) (4) and (5) below:
 - (a) a new habitable building;
 - (b) an existing building in the case of an addition or alteration to a building; or
 - (c) a new Class 10a Building to which this Determination applies unless fire separation is provided in accordance with clause 3.2.3 of AS3959;
- (2) The hazard management area must comply with the requirements specified in Table 4.
- (3) The hazard management area for a particular BAL must have the minimum dimensions required for the separation distances specified for that BAL in Table 2.6 of AS 3959 (Method 1).
- (4) The hazard management area must be established and maintained such that fuels are reduced sufficiently, and other hazards are removed such that the fuels and other hazards do not significantly contribute to the bushfire attack.
- (5) Certain Class 9 Buildings have additional requirements for hazard management areas as specified in Table 4.

APPLICATION:

- (1) The HMA for the proposed development has been designed in accordance with (2), (3), (4), and (5).
- (2) The HMA has been assessed against the requirements of Element B, Table 4.
- (3) The HMA has been designed to have the minimum distances prescribed within Table 2.6, AS 3959:2018.
- (4) The vegetation within the HMA must be maintained in a condition consistent with a vegetation classification of Low Threat Vegetation. Any other potential fuels must be stored in a way so that they won't significantly impact on the buildings if they are involved in a fire.
- (5) The proposed development is for a Class 1a building, as such this subsection is not applicable.

This assessment and accompanying Bushfire Hazard Management Plan details the extent of the Hazard Management Area (HMA) which is of sufficient dimensions to accord with *Element B, Table 4.4, Director's Determination - Requirements for Building in Bushfire-Prone Areas (transitional)* below. The dimensions of the HMA are to be in accordance with *Table 2.6, AS 3959* and is to be maintained in a reduced fuel condition into perpetuity.

Table 4 - Requirements for Hazard Management Area

B.	New building on lots not provided with a BAL at the time of subdivision.	A new building must: (a) be provided with a HMA no smaller than the required separation distances required for BAL-29; and (b) have a HMA established in accordance with a certified bushfire hazard management plan.
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The hazard management area assessed for this site is to comply with the separation distances as determined for **BAL-29** in *Table 2.6, AS3959:2018*, and must established and maintained in a reduced fuel condition to the minimum distance as specified in Table 4 below:

Maintenance Requirements of the Hazard Management Area								
Direction	N	NE	E	SE	S	SW	W	NW
HMA required	Boundary	Boundary	10 m	19 m	16 m	6 m	6 m	7 m
HMA establishment recommendations	- Establishing non-flammable areas around the dwelling such as paths, patios, driveway, lawns etc. - Locating dams, orchards, vegetable garden, effluent disposal areas etc on the bushfire prone side of the building. - Providing heat shields and ember trap on the bushfire prone side of the dwelling such as non-flammable fencing, hedges, separated garden shrubs and small trees, - Store flammable materials such as wood piles, fuels and rubbish heaps are stored away from the dwelling. - Replace highly flammable vegetation with low flammability species. See Tasmanian Fire Service web site (www.fire.tas.gov.au) publications - Fire resisting garden plants. - Provided separation between significant trees such that groups are no greater than 20 metres in width, and more than 20 metres of the other groups of significant trees. Note that the retention of some trees can screen a dwelling from windborne embers. - Trim lower branches of retained trees to a minimum of 2 metres above ground level. - Trees are not to overhang the dwelling so that vegetation falls onto the roof. - Strips of vegetation less than 20 metres in width and not within 20 metres of the site or other areas of bushfire-prone vegetation may be beneficial as an ember trap, wind breaks etc. - Removal of ground fuels such as leaves, bark, fallen branches etc.							

Ongoing Management practices	• Slash or mow grasses to less than 100 mm. • Remove dead and fallen vegetation including branches, bark and leaves regularly. • Trim any regrowth branches of retained trees within HMA that overhang building or are less than 2m above ground level.
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6. CONCLUSIONS & RECOMMENDATIONS:

This Bushfire Hazard Report and Bushfire Hazard Management Plan have been prepared to support the design, application for a building permit, and construction of a new Class 1a building. The report has reviewed the bushfire risks associated with the site and determined the fire management strategies that must be carried out to ensure the development on the site is at a reduced risk from bushfire attack. Provided the elements detailed in this report are implemented, the development on the site is capable of compliance with AS 3959 and any potential bushfire risk to the site is reduced.

- The new building works must comply with the requirements *2.3.1 Design and Construction*, the *Determination*.
 - The proposed building must be constructed in compliance with the requirements for **BAL-29** of AS3959 as specified in Table 3 and Part 6 of this report.
- Property access is to comply with *2.3.2 Property Access*, the *Determination*.
 - The access will need to be constructed in order to comply with the requirements of *Table 4 – Requirements for Hazard Management Area, Determination* from the road frontage to the turning/hardstand area.
- The water supply for firefighting purposes is to comply with *2.3.3 Water Supply for Firefighting*, the *Determination*.
 - A static water supply must be provided in compliance with *Table 3B*, the *Determination*.
- The Hazard Management Area is to comply with *2.3.4 Hazard Management Area*, the *Determination*.
 - The HMA is to be established in accordance with *Element B, Table 4*, the *Determination*. The HMA is to be established and maintained in a minimal fuel condition in perpetuity. See Table 4 of this report.

All protective elements defined in this report and AS3959 are to be implemented during the construction phase and maintained by the lot owner for the life of the structure. All works required by this assessment must be completed prior to the issuing of the Certificate of Occupancy. See section 6 of this report for further details.

Although not mandatory, any increase in the construction standards above the assessed Bushfire Attack Level will afford improved protection from bushfire and this should be considered by the owner, designer and/or the builder prior to construction commencing. Hazard Management Areas must be established and maintained in a minimal fuel condition in accordance with this plan and the TFS guidelines. It is the owner's responsibility to ensure the long-term maintenance of the Hazard Management Areas in accordance with the requirements of this report.

This Report does not recommend or endorse the removal of any vegetation within or adjoining the site for the purposes of bushfire protection without the explicit approval of the local authority.

L Brightman
Bushfire Hazard Practitioner BFP-164
Scope 1, 2, 3a, 3b, and 3c



N M Creese
Bushfire Hazard Practitioner BFP-118
Scope 1, 2, 3a, 3b and 3c

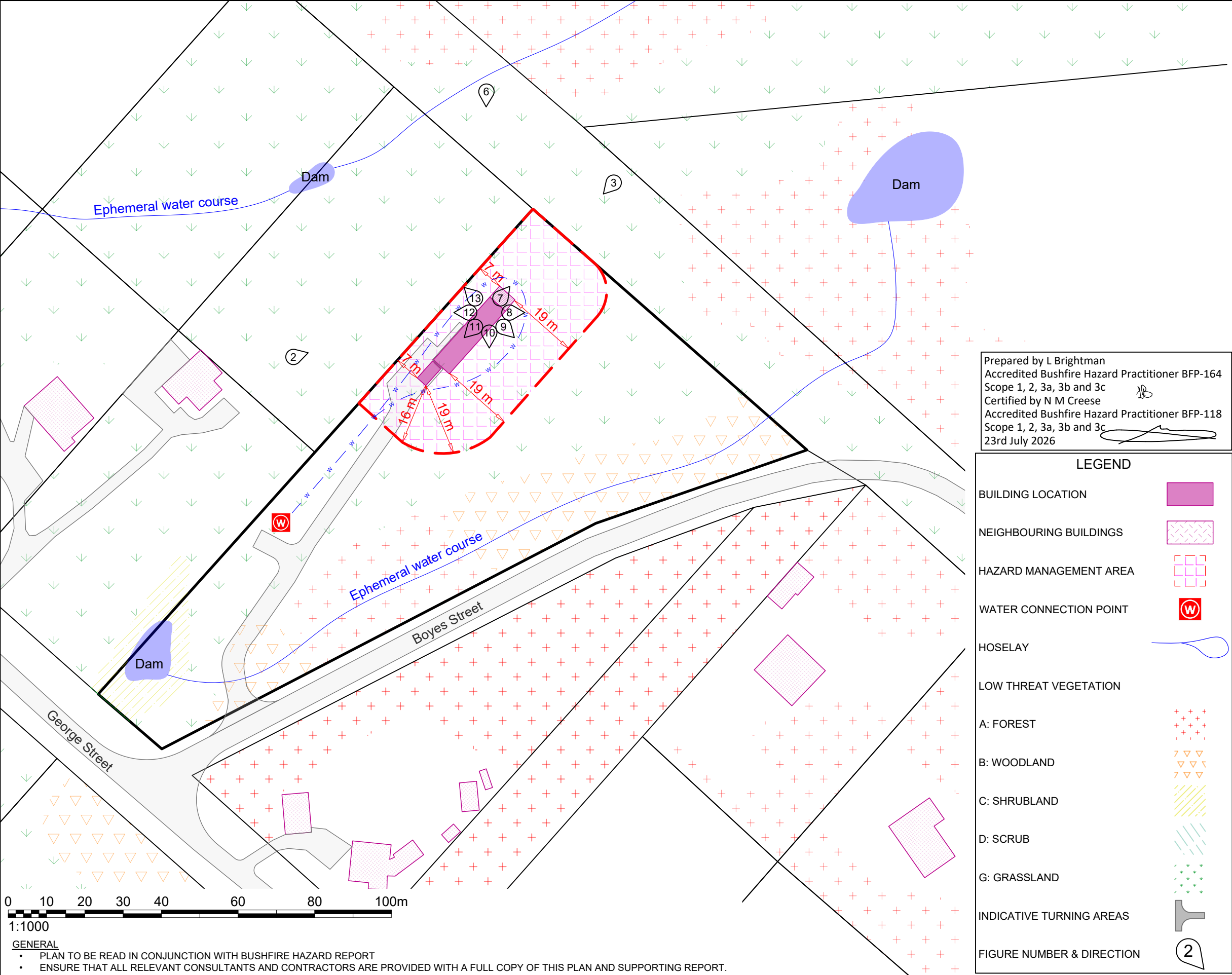


7. REFERENCES:

- *AS 3959:2018 - Construction of building in bushfire-prone areas, Standards Australia.*
- *National Construction Code 2025 (Volume 2), Australian Building Codes Board.*
- *Building Regulations 2016, Department of Justice (13 December 2016).*
- *Director's Determination – Bushfire Hazard Areas (Version 1.2), Consumer, Building and Occupational Services, Department of Justice (16th July 2024).*
- *The LIST - Department of Primary Industry Parks Water & Environment.*
- *Building for Bushfire, Bushfire Attack Level (BAL) Assessment, Tasmania Fire Service.*

8. GLOSSARY

AS 3959:2018	Australian Standards AS 3959:2018 <i>Construction of buildings in bushfire-prone areas</i> .
BAL (Bushfire Attack Level)	A means of measuring the severity of a building's potential exposure to ember attack, radiant heat, and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire. The following BAL levels, based on heat flux exposure threshold are used within AS3959:2018; BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, BAL-FZ.
Bushfire	An unplanned fire burning vegetation.
Bushfire Hazard Management Plan	A plan showing means of protection from bushfire in a form approved in writing by the Chief Officer.
Bushfire-Prone Area	An area that is subject to, or likely to be subject to, bushfire attack. Land that has been designated under legislation; or Has been identified under environmental planning instrument, development control plan or while processing and determining a development application.
Carriageway (also vehicular access)	The section of the road formation, which is used by traffic, and includes all the area of the traffic lane pavement together with the formed shoulder.
Class 1a, 1b, 2, 3, 4, 5, 6, 7, 8, 9a, 9b, 9c, 10a, 10b & 10c buildings	A system of classifying buildings of similar uses and functions to facilitate a referencing system within the National Construction Code.
Classified vegetation	Vegetation that has been classified in accordance with Clause 2.2.3 of AS3959:2018.
Distance to	The distance between the building or building area to the classified vegetation.
FDI (Fire Danger Index)	The chance of a fire starting, its rate of spread, its intensity, and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both long- and short-term drought effects.
Firefighting water point	The point where a fire appliance can connect to a water supply for firefighting purposes. This includes a coupling in the case of a fire hydrant, offtake or outlet, or the minimum water level in the case of a static water body (including a dam, lake, or pool).
Hazard Management Area	The area between a habitable building or building area and bushfire-prone vegetation, which provides access to a fire front for firefighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire.
Hose lay	The distance between two points established by a fire hose laid out on the ground, inclusive of obstructions.
Predominant vegetation	The vegetation that poses the greatest bushfire threat to the development site.
Slope Effective slope	The slope of the ground under the classified vegetation. The calculated slope under the classified vegetation considering variations in the topography.
Water supply - Reticulated (Fire hydrant)	An assembly installed on a branch from a water pipeline, which provides a valved outlet to permit a supply of water to be taken from the pipeline for firefighting.
Water supply - Static	Water stored on a tank, swimming pool, dam, or lake, that is always available for firefighting purposes.



Director's Determination - Bushfire Hazard Areas V1.2
16 July 2024.

2.3.1 Design and Construction

- the assessed building and associated outbuildings, within 6 m, must be designed and constructed to comply with AS 3959:2018 - Section 3 for general requirements and Section 7 for **BAL-29**.

2.3.2 Property Access

- the access must be of an all-weather construction with a load capacity of 20 tonnes, including bridges and culverts. Must have a Min carriageway width of 4 m. Must have a Min vertical clearance of 4 m with a Min 0.5 m horizontal clearance from the edge of carriageway, excluding gate posts.
- cross falls of <3°, dips <7° entry and exit angles, Max 15° for sealed road and Max 10° for unsealed roads.
- curves with a Min radius of 10 m
- terminate in a "T" or "Y" turning area 4 m wide and 8 m long.

2.3.3 Water Supply for Firefighting

- the firefighting water point must be located within a 90 m of the building measured as a hose lay.
- may be fitted with a remote takeoff valve.
- may be a supply for combined use, but the Min 10,000 L per building to be protected must be available at all times. The specified quantity is not to be used for any other purpose.
- tank must be constructed of metal, concrete, or lagged by non-combustible materials if above ground.
- if tank can be located so that it is shielded in compliance with Section 3.5, AS 3959, the tank may be constructed of any material provided the lowest 400 mm in protected by metal, non-combustible materials, or fibre-cement of a Min thickness of 6 mm.
- any fitting and pipework associated with a firefighting water point must have a Min internal 50 mm Ø, be fitted with a valve with a Min nominal internal 50 mm Ø.
- any pipework located above ground must be metal or lagged by non-combustible materials.
- if buried, have a Min depth of 300 mm.
- fitted with a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer.
- coupling is to be accessible at all times, fitted with a blank cap and securing chain Min length of 220 mm.
- if tank is underground, must have an opening in the top of ≥ 250 mm Ø or a coupling compliant with Table 3B, AS 3959.
- remote offtakes are to be visible, accessible at all times, 450-650 mm above ground level, and protected from possible damage.
- signage is to be fitted in a visible location and must comply with AS 2304 or Tasmanian Fire Service Water Supply Signage Guideline.
- hardstand must be ≤3 m from the firefighting water point, ≥6 m from building to be protected.
- must have a Min width of 3 m and length of 6 m connected to the carriageway and constructed to the same standard.

2.3.4 Hazard Management Areas

- grasses to be maintained to less than 100 mm in height.
- dead/fallen vegetation to be regularly removed.
- branches of retained trees, within HMA, that are less than 2 metres above ground level to be removed.

Prepared by L Brightman
Accredited Bushfire Hazard Practitioner BFP-164
Scope 1, 2, 3a, 3b and 3c
Certified by N M Creese
Accredited Bushfire Hazard Practitioner BFP-118
Scope 1, 2, 3a, 3b and 3c
23rd July 2026

LEGEND

BUILDING LOCATION

NEIGHBOURING BUILDINGS

HAZARD MANAGEMENT AREA

WATER CONNECTION POINT

HOSELAY

LOW THREAT VEGETATION

A: FOREST

B: WOODLAND

C: SHRUBLAND

D: SCRUB

G: GRASSLAND

INDICATIVE TURNING AREAS

FIGURE NUMBER & DIRECTION

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

To: W. P. Anderson & B. Arnott

Owner /Agent

26 Hyrama Crescent

Address

Brunswick Heads, NSW

2483

Suburb/postcode

Form **55**

Qualified person details:

Qualified person: NICK CREESE

Address: PO BOX 136

Phone No: 03 6229 6563

KINGSTON TAS

7051

Fax No:

Licence No: BFP-118

Email address: nick@larkandcreese.com.au

Qualifications and Insurance details: Accredited to report on bushfire Hazards under Part IVA of the Fire Service Act 1979
Insurance Policy Woodina Underwriting Agency 2023-CO11471-92792

(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)

Speciality area of expertise: Analysis of hazards in bushfire-prone areas.

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

Details of work:

Address: 36 Boyes Street

Lot No: 1

Dulcot, TAS

7025

Certificate of title No: 240409/1

The assessable item related to this certificate: Bushfire hazard management report and bushfire hazard management plan for proposed Class 1a building.

(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: Bushfire Hazard

(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 53608-01 dated 23rd July 2026.
- Bushfire Hazard Management Plan 53608-01 dated 23rd July 2026.

Relevant calculations:

AS 3959:2018 – Method 1 BAL assessment.

References:

- *AS 3959:2018 Construction of Buildings in Bushfire Prone Areas*
- *Building Regulations 2016*
- *National Construction Code 2025 Building Code Australia (Volume 2)*
- *Director's Determination – Bushfire Hazard Areas (version 1.2)*

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

1. The proposed building work – if designed and constructed in accordance with the bushfire hazard management plan referred to in this certificate – will comply with the applicable Deemed-to-Satisfy requirements of the Director's Determination – Requirements for Building in Bushfire-Prone Areas (transitional).
2. The applicable Bushfire Attack Level (BAL) determined using AS 3959:2018 for design and construction is **BAL-29**.

Scope and/or Limitations

Scope

This report was commissioned to identify the bushfire risk and subsequent Bushfire Attack Level (BAL) associated with the proposed buildings on the site. All advice, construction standards and measures are in compliance with *AS 3959:2018, Construction of buildings in bushfire-prone areas, Building Regulations 2016 & National Construction Code 2022*.

Limitations

The inspection has been undertaken and report provided on the understanding that; -

1. The report only deals with the potential bushfire risk. All other statutory assessments are outside the scope of this report.
2. This assessment is based on the site conditions present at the time of assessment only. No responsibility can be accepted for actions by the landowners, Council, governmental agencies, or any other persons that may compromise the effectiveness of this report.
3. Impacts of future development and vegetation growth have not been considered for the purpose of this assessment.
4. This report and AS 3959:2018 cannot guarantee that a dwelling will survive a bushfire, however the implementation of the measures contained within AS 3959:2018 and this report will improve the likelihood of survival of the structure in the event of bushfire attack.

I certify the matters described in this certificate.

Qualified person:

Signed:



Certificate No:

53608-01

Date:

23/07/26