32-34 Georges Bay Esplanade
St Helens Tasmania 7216
T: 03 6376 7900 | ABN 96 017 131 248

Break O'Day COUNCIL

Development Applications

Notice is hereby given under Section 57(3) of the *Land Use Planning & Approvals Act 1993* that an application has been made to the Break O' Day Council for a permit for the use or development of land as follows:

DA Number	DA 2025 / 00046
Applicant	J. Binns
Proposal	Residential – Construction of a Dwelling and Retrospective Approval of Outbuilding Structures
Location	60 Treloggen Drive, Binalong Bay

Plans and documents can be inspected at the Council Office by appointment, 32 – 34 Georges Bay Esplanade, St Helens during normal office hours or online at www.bodc.tas.gov.au.

Representations must be submitted in writing to the General Manager, Break O'Day Council, 32 -34 Georges Bay Esplanade, St Helens 7216 or emailed to admin@bodc.tas.gov.au, and referenced with the Application Number in accordance with section 57(5) of the abovementioned Act during the fourteen (14) day advertised period commencing on Wednesday 20th August 2025 **until 5pm Tuesday 2nd September 2025.**

John Brown
GENERAL MANAGER

proposed dwelling + as-constucted outbuilding

katie ford
60 treloggen drive binalong bay tasmania 7216

planning application

Building Areas

dwelling area	98.75
deck 2	20.99
deck 2	6.24
	125.98

jennifer binns
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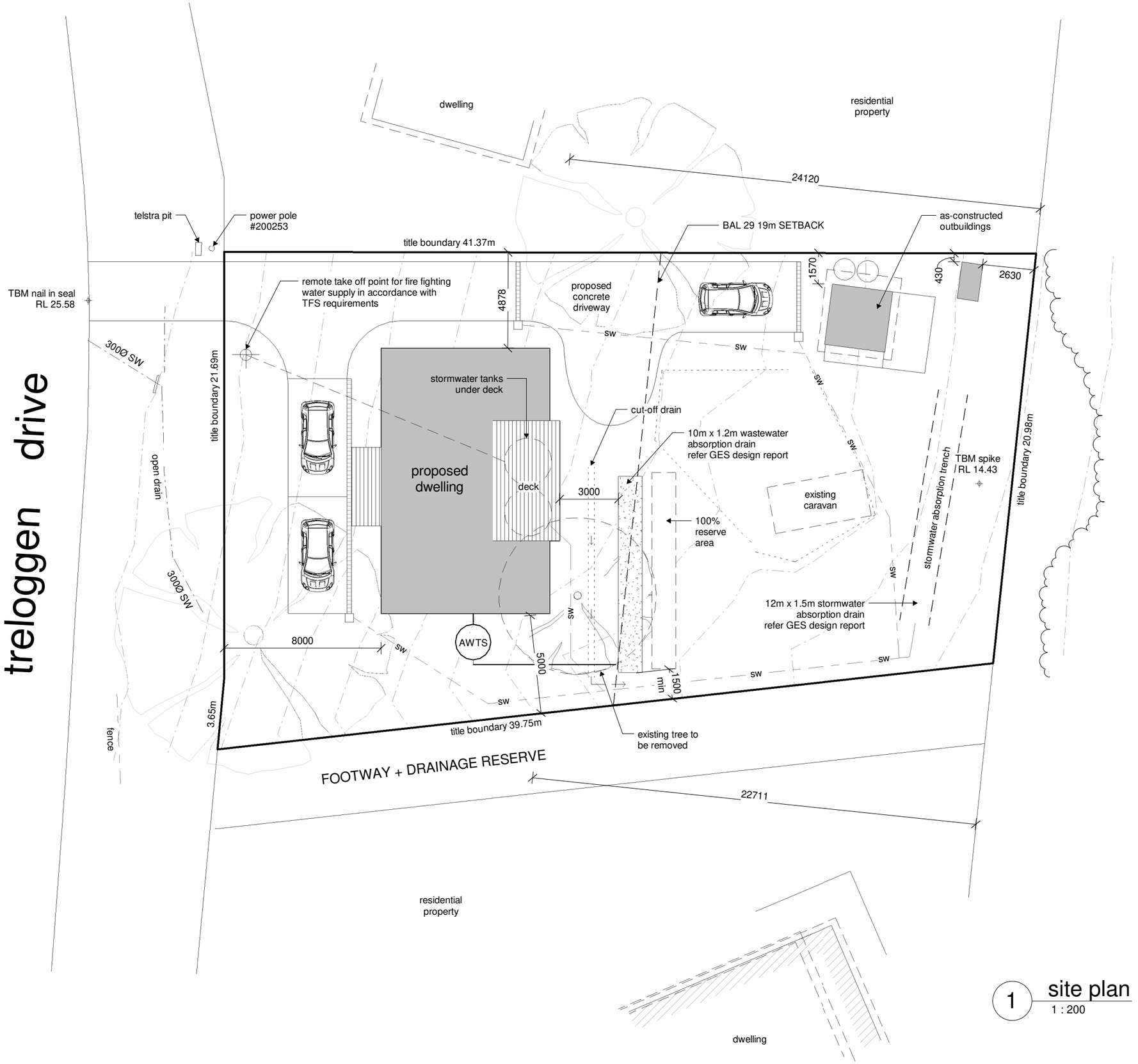

1 site plan
1 : 200

n

REV:	DESCRIPTION:	DATE:
1	Revision 1	Date 1

PROJECT:

proposed dwelling + outbuilding

k. ford

60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:

site plan

DRAWING NO:	DRAWN BY: JB
a04	DATE: 20.05.25
SCALE: 1 : 200	PROJECT: 1123FO

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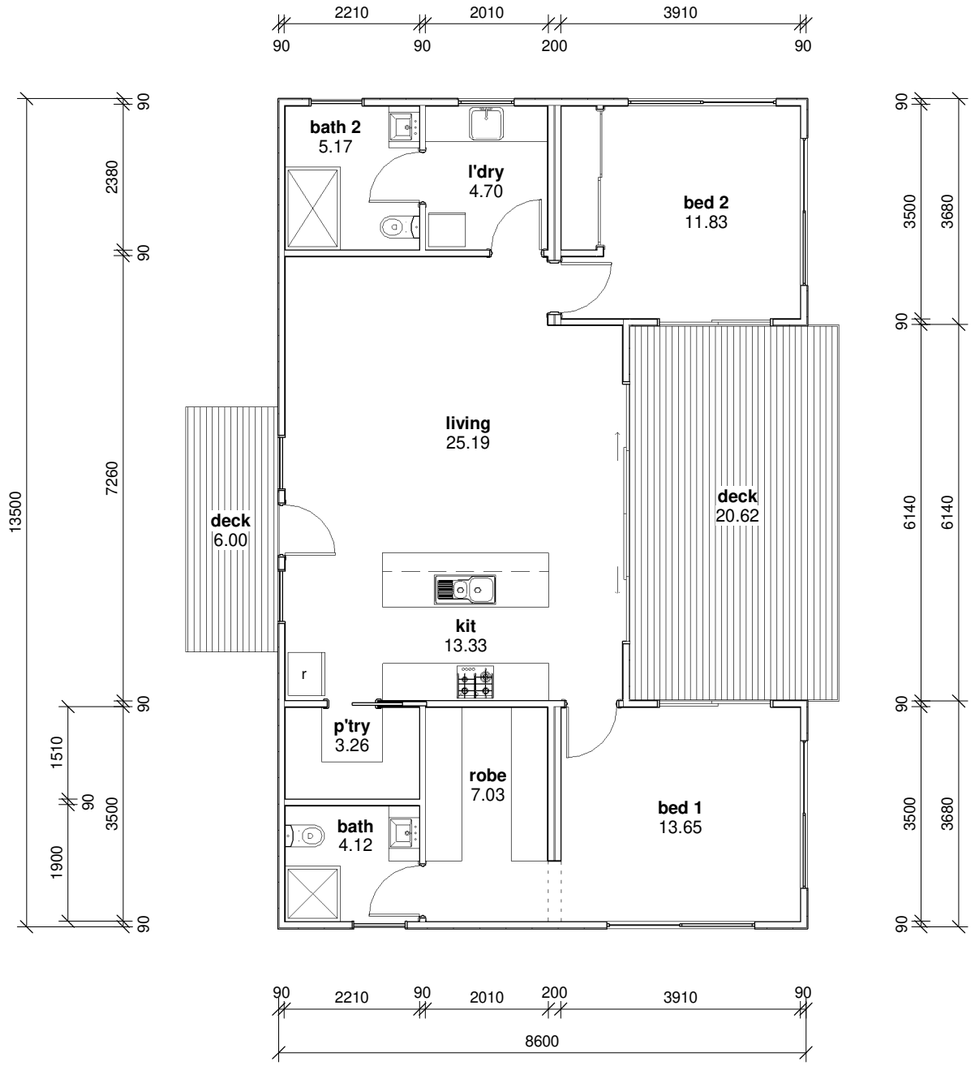
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA
ACCREDITATION NO: CC 1269L



1 proposed floor plan
1 : 100

N

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed dwelling + outbuilding
k. ford
60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:
proposed floor plan

DRAWING NO:	DRAWN BY: JB
a05	DATE: 20.05.25
SCALE: 1 : 100	PROJECT: 1123FO

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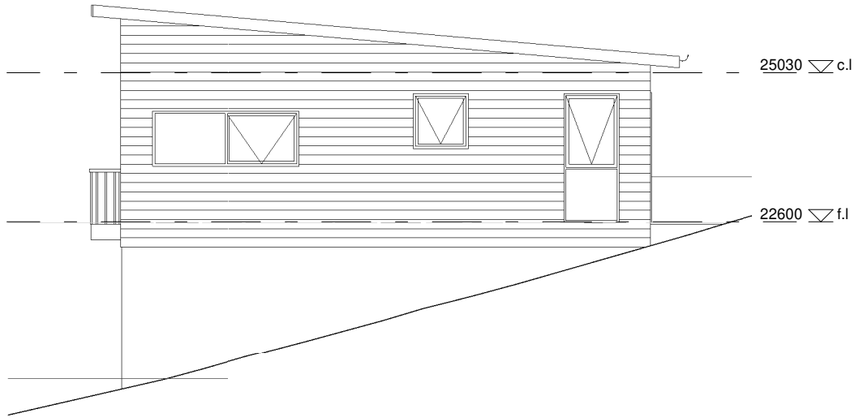
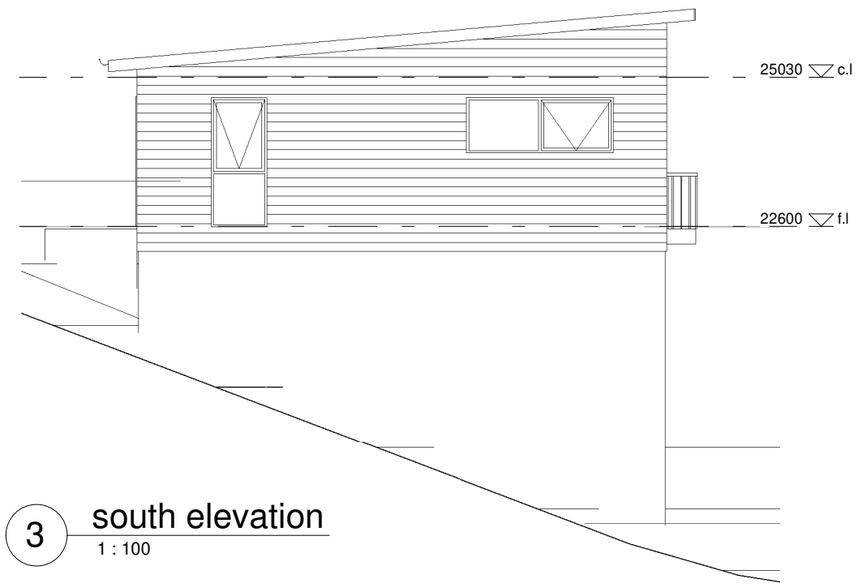
ACCREDITATION NO: CC 1269L

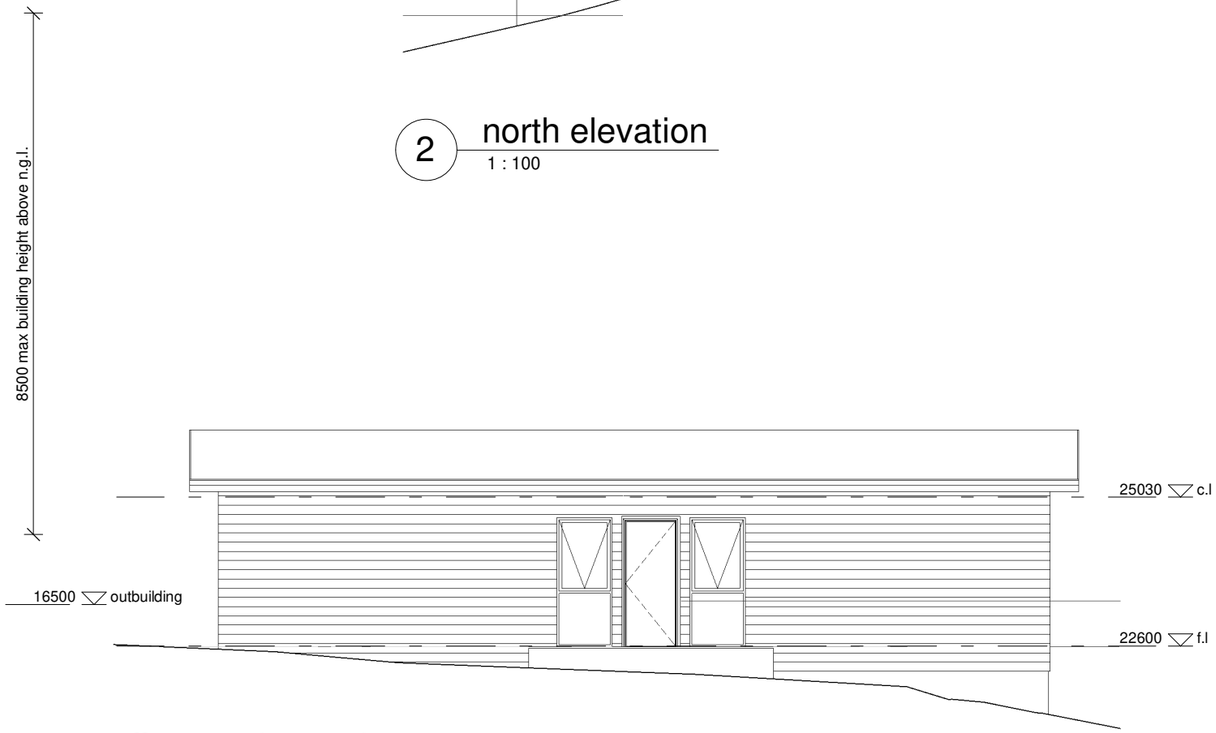
1 east elevation
1 : 100



2 north elevation
1 : 100



3 south elevation
1 : 100



4 west elevation
1 : 100

REV:	DESCRIPTION:	DATE:

PROJECT:

proposed dwelling + outbuilding

k. ford

60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:

elevations

DRAWING NO:	DRAWN BY: JB
a06	DATE: 20.05.25
SCALE: 1 : 100	PROJECT: 1123FO

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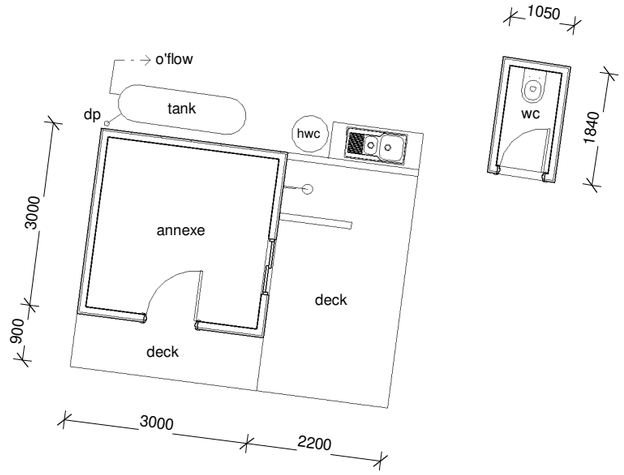
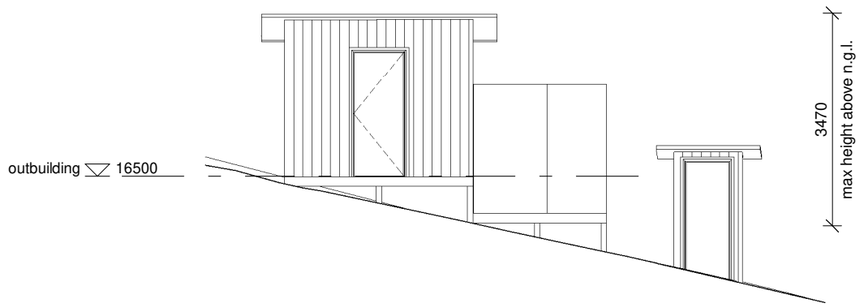
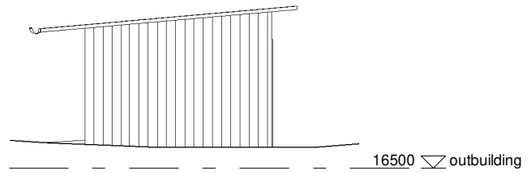


1 as-constructed outbuilding
1 : 100



2 outbuilding south
1 : 100



3 outbuilding west
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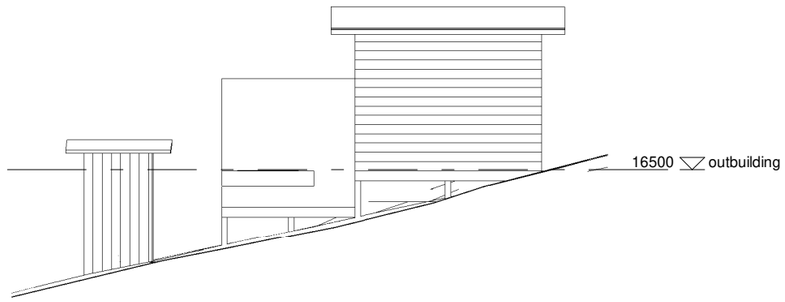
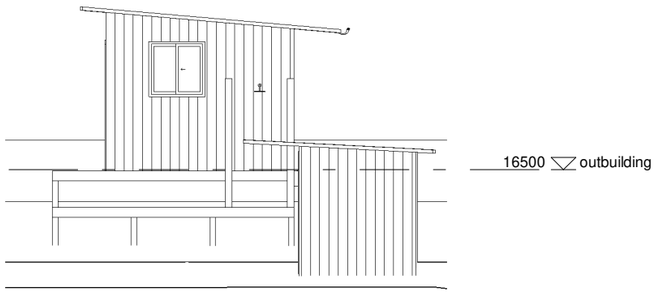


4 outbuilding north
1 : 100



5 outbuilding east
1 : 100

N

REV:	DESCRIPTION:	DATE:

PROJECT:

proposed dwelling + outbuilding

k. ford

60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:

as-constructed outbuilding

DRAWING NO:	DRAWN BY: JB
a07	DATE: 20.05.25
SCALE: 1 : 100	PROJECT: 1123FO

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ACCREDITATION NO: CC 1269L

proposed dwelling + as-constructed outbuilding

katie ford
60 treloggen drive binalong bay tasmania 7216

planning compliance report

may 20 2025

jennifer binns building design
52 cecilia street st helens tasmania 7216
mail@jenniferbinnsdesign.com.au : 0439 765 452

Introduction

This report aims to demonstrate compliance with relevant planning standards for a proposed dwelling and as-constructed outbuilding for Katie Ford at 60 Treloggen Drive Binalong Bay (c.t.104144/1). The report aims to take into consideration the intent, values and objectives of the Tasmanian Planning Scheme and address all scheme standards applicable to this development.

The proposed development relies on **Performance Criteria** to satisfy relevant planning standards and this application is to be read in conjunction with drawings and reports submitted for the development.

Development Site Details

The development site is a residential allotment within the Binalong Bay township. The property is considered bushfire prone but has previously been cleared of vegetation and no further native vegetation removal is proposed as part of this application. The dwelling will be serviced by on-site wastewater and stormwater management systems and the existing vehicle access and driveway will be upgraded.

Zone: Low Density Residential

Development Details

The proposed development is a high set prefabricated dwelling. This application includes retrospective approval for the as-constructed outbuildings on site.

Use Class: Residential + Visitor Accommodation

Applicable Planning Codes

The proposed development is in the *Residential* and *Visitor Accommodation* use classes which in the *Low Density Residential* Zone are *No Permit Required* and *Permitted* uses.

The following zone standards and codes of the Tasmanian Planning Scheme are applicable to the proposed development:

- **Zone 10.0 LOW DENSITY RESIDENTIAL ZONE**
- **Code 2.0 PARKING AND SUSTAINABLE TRASNPORT CODE**

Table 10.3 LOW DENSITY RESIDENTIAL USE STANDARDS

10.3.1 Discretionary uses

A1 Not Applicable

The proposed development is not a discretionary use.

A2 Not Applicable

The proposed development is not a discretionary use.

A3 Not Applicable

The proposed development is not a commercial use.

A4 Not Applicable

The proposed development is not a discretionary use.

10.3.2 Visitor accommodation

P1 Performance Solution

The proposed dwelling will be utilised for visitor accommodation for part of the year. The development is a new building and the dwelling has a floor area of 100m^2. The development is a single dwelling and is not expected to generate noise beyond standard residential use. The use of the dwelling for visitor accommodation is in keeping with the character of Binalong Bay.

A2 Not Applicable

No strata lots are proposed.

Table 10.4 LOW DENSITY RESIDENTIAL DEVELOPMENT STANDARDS

10.4.1. Residential density for multiple dwellings

A1 Not Applicable

The proposed development does not include multiple dwellings.

10.4.2 Building height

A1 Acceptable Solution

The proposed dwelling is a prefabricated building on a sloping site and has a maximum height of 8.5m above natural ground level.

10.4.3 Setback

A1 Acceptable Solution

The proposed dwelling has a front setback of 8m.

P2 Performance Solution

The proposed dwelling has a minimum northern boundary setback of 4.88m. The proposed setback is only marginally less than the prescribed minimum 5m setback and does not reduce privacy or solar access to the adjoining properties. The as-constructed outbuildings have a minimum northern boundary setback of 430mm and 1570mm and a minimum rear boundary setback of 2.63m. The outbuildings are sited at the rear of the property and are small structures which do not impact on the solar access or privacy amenity of the adjoining residential properties. The siting of these small outbuildings in the rear corner of the property is considered in keeping with the residential pattern of development in the area.

10.4.4 Site coverage

A1 Acceptable Solution

The proposed development does not exceed 30% of the site area.

10.4.5 Fencing

A1 Not Applicable

No front fencing is proposed as part of this application.

Table 10.5 VILLAGE DEVELOPMENT STANDARDS FOR SUBDIVISION

Not applicable

No subdivision of land is proposed

Table C2.5 CAR PARKING USE STANDARDS

C2.5.1 Car parking numbers

A1 Acceptable Solution

The layout of the development site facilitates parking for a minimum of 2 vehicles for the proposed two bedroom dwelling in accordance with the requirements of Table 2.1.

C2.5.2 Bicycle parking numbers

Not Applicable

The proposed development does not require the provision of bicycle parking.

C2.5.3 Motorcycle parking numbers

Not Applicable

The proposed development does not require the provision of motorcycle parking.

C2.5.4 Loading bays

Not Applicable

The proposed development does not require provision of a loading bay.

C2.5.5 Number of car parking spaces within the General Residential zone and Inner Residential zone

A1 Not Applicable

The proposed development is in the *Low Density Residential* zone.

Table C2.6 CAR PARKING DEVELOPMENT STANDARDS

C2.6.1 Construction of parking areas

A1 Acceptable Solution

The proposed driveway and parking areas will be concrete and drained to the on-site stormwater drain.

C2.6.2 Design and layout of parking areas

A1 Acceptable Solution

The layout of the proposed parking spaces meets the prescribed requirements and the layout of the development site facilitates forward egress.

A1.2 Not Applicable

No accessible parking is required for the proposed development.

C2.6.3 Number of accesses for vehicles

A1 Acceptable Solution

The proposed development has one access point only.

A2 Not Applicable

The development site is in the *Low Density Residential* zone.

C2.6.4 Lighting of parking areas within the Gen. Business zone and Central Business zone

A1 Not Applicable

The development site is in the *Low Density Residential* zone.

C2.6.5 Pedestrian Access

A1.1 Not Applicable

The proposed development does not require the provision of pedestrian access paths.

A1.2 Acceptable Solution

The proposed development does not require the provision of accessible parking.

C2.6.6 Loading bays

A1 Not Applicable

The proposed development does not require the provision of a loading bay.

A2 Not Applicable

There are no commercial vehicles associated with the proposed development.

C2.6.7 Bicycle parking and storage facilities within the Gen. Business zone and Central Business zone

A1 Not Applicable

The proposed development does not require the provision of bicycle parking.

A2 Not Applicable

The proposed development does not require the provision of bicycle parking.

C2.6.8 Siting of parking and turning areas

A1 Not Applicable

The development site is in the *Low Density Residential* zone.

A2 Not Applicable

The development site is in the *Low Density Residential* zone.

Table C2.7 PARKING PRECINCT PLAN

C2.7.1 Construction of parking areas

A1 Not Applicable

The development site is not within a parking precinct plan.

Rebecca Green & Associates

Bushfire Hazard Assessment Report &

Bushfire Hazard Management Plan

60 Treloggen Drive, Binalong Bay

Prepared for (Client)

Katie Ford

7 Middle Head Road

MOSMAN NSW 2088

Assessed & Prepared by

Rebecca Green

Senior Planning Consultant & Accredited Bushfire Hazard Assessor

Rebecca Green & Associates

PO Box 2108 LAUNCESTON TAS 7250

Mobile: 0409 284 422

Version 1

30 January 2025

Job No: RGA-B2432

Executive Summary

The proposed development at 60 Treloggen Drive, Binalong Bay is subject to bushfire threat. A bushfire attack under extreme fire weather conditions is likely to subject buildings at this site to considerable radiant heat, ember attack along with wind and smoke.

The site requires bushfire protection measures to protect the buildings and people that may be on site during a bushfire.

These measures include provision of hazard management areas in close proximity to the buildings, implementation of safe egress routes, establishment of a water supply and construction of buildings as described in AS 3959-2018 Construction of Buildings in Bushfire Prone Areas.

Primary responsibilities identified within this report:

Occupier	• Establish and maintain Hazard Management Areas as described in this report, including egress and access routes. • Establish and maintain adequate turning facilities for emergency vehicles, as described in this report. • Establish and maintain an independent water supply for fire fighting purposes, including connection point within 3m of hardstand and signage. • Design and Construct single dwelling to meet **BAL 29** (AS3959-2018).

Rebecca Green & Associates

Contents

Schedule 1 – Bushfire Report

1.0 Introduction

The Bushfire Attack Level (BAL) Report and Bushfire Hazard Management Plan (BHMP) has been prepared for submission with a Building Permit Application under the *Building Act 2016 & Regulations 2016*.

The Bushfire Attack Level (BAL) is established taking into account the type and density of vegetation within 100 metres of the proposed building site and the slope of the land; using the simplified method in AS 3959-2018 Construction of Buildings in Bushfire Prone Areas; and includes:

- The type and density of vegetation on the site,
- Relationship of that vegetation to the slope and topography of the land,
- Orientation and predominant fire risk,
- Other features attributing to bushfire risk.

On completion of assessment, a Bushfire Attack Level (BAL) is established which has a direct reference to the construction methods and techniques to be undertaken on the buildings and for the preparation of a Bushfire Hazard Management Plan (BHMP).

1.1 Scope

This report was commissioned to identify the Bushfire Attack Level for the existing property. ALL comment, advice and fire suppression measures are in relation to compliance with the Building Code of Australia and Australian Standards, *AS 3959-2018, Construction of buildings in bushfire-prone areas*.

1.2 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. The report only identifies the size, volume and status of vegetation at the time the site inspection was undertaken and cannot be relied upon for any future development.
3. Impacts of future development and vegetation growth have not been considered.

No action or reliance is to be placed on this report; other than for which it was commissioned.

1.3 Proposal

The proposal is for the construction of a new single dwelling.

2.0 Site Description for Proposal (Bushfire Context)

2.1 Locality Plan

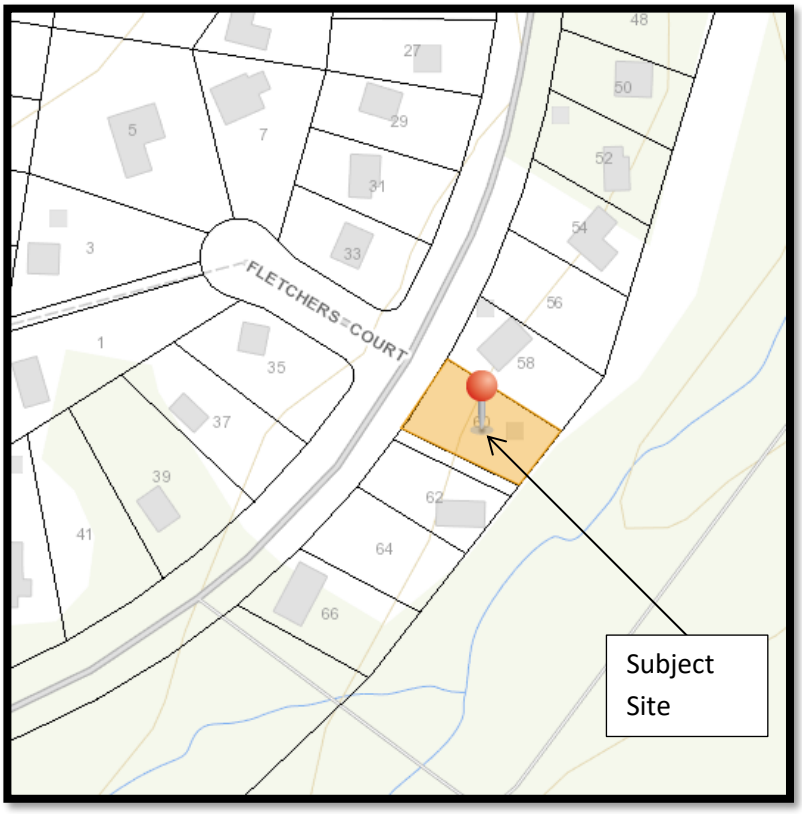


Figure 1: Location Plan of 60 Treloggen Drive, Binalong Bay

2.2 Site Details

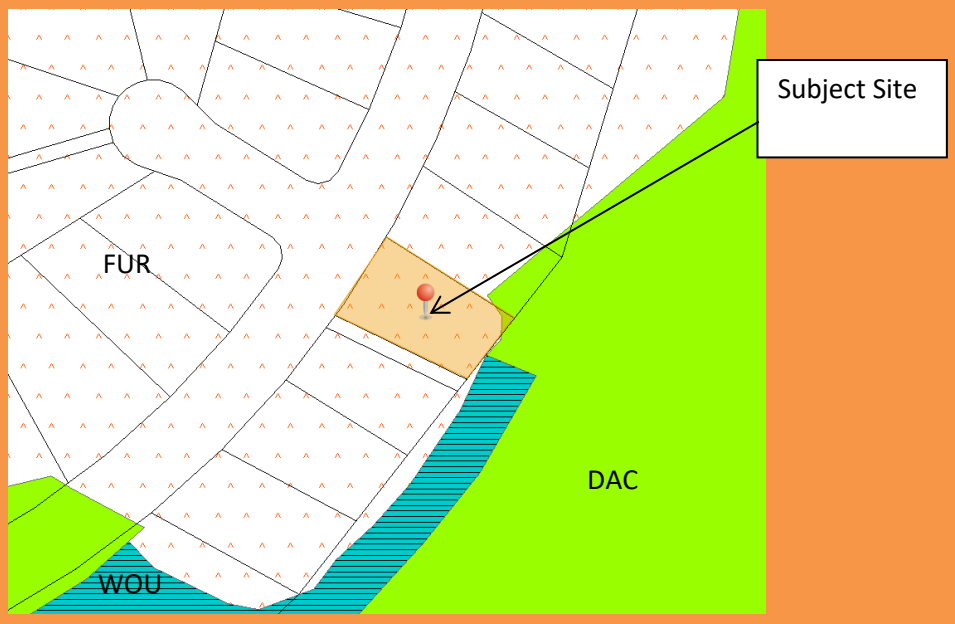
Property Address	60 Treloggen Drive, Binalong Bay
Certificate of Title	Volume 104144 Folio 1
Owner	Katie Ann Ford
Existing Use	Vacant
Type of Proposed Building Work	Construction of single dwelling
BCA Classification	Dwelling – Class 1a
Water Supply	On-site supply for fire fighting purposes
Road Access	Street Frontage – Treloggen Drive

3.0 Bushfire Site Assessment

3.1 Vegetation Analysis

3.1.1 TasVeg Classification

Reference to Tasmanian Vegetation Monitoring & Mapping Program (TASVEG) indicates the land in and around the property is generally comprising of varying vegetation types including:



Code	Species	Vegetation Group
DAC	• Eucalyptus amygdalina coastal forest and woodland	Dry eucalypt forest and woodland
WOU	• Eucalyptus obliqua wet forest (undifferentiated)	Wet eucalypt forest and woodland
FUR	• Urban areas	Modified land

3.1.2 Site & Vegetation Photos

Existing access from Treloggen Drive

Looking northeast

Looking southeast

Looking southwest

Looking northwest

Looking further to northwest

3.2 BAL Assessment – Dwelling

Vegetation classification AS3959	North ☐ North-East ☒	South ☐ South-West ☒	East ☐ South-East ☒	West ☐ North-West ☒
Group A	☐ Forest	☒ Forest	☒ Forest	☐ Forest
Group B	☐ Woodland	☐ Woodland	☐ Woodland	☐ Woodland
Group C	☐ Shrub-land	☐ Shrub-land	☐ Shrub-land	☐ Shrub-land
Group D	☐ Scrub	☐ Scrub	☐ Scrub	☐ Scrub
Group E	☐ Mallee-Mulga	☐ Mallee-Mulga	☐ Mallee-Mulga	☐ Mallee-Mulga
Group F	☐ Rainforest	☐ Rainforest	☐ Rainforest	☐ Rainforest
Group G	☐ Grassland	☒ Grassland	☐ Grassland	☐ Grassland
	☒ Managed Land	☒ Managed Land	☒ Managed Land	☒ Managed Land
Effective slope (degrees)	☒ Up/0^0	☒ Up/0^0	☐ Up/0^0	☒ Up/0^0
	☐ >0-5^0	☐ >0-5^0	☒ >0-5^0	☐ >0-5^0
	☐ >5-10^0	☐ >5-10^0	☐ >5-10^0	☐ >5-10^0
	☐ >10-15^0	☐ >10-15^0	☐ >10-15^0	☐ >10-15^0
	☐ >15-20^0	☐ >15-20^0	☐ >15-20^0	☐ >15-20^0
Distance to classified vegetation	Metres >100m managed/low threat	Metres 0-approx. 77m managed/low threat 77-<90m grassland >90m forest	Metres 0-<22.7m managed/low threat (subject site) 22.7-<24.7m grassland >24.7m forest	Metres >100m managed/low threat
Likely direction of bushfire attack	☐	☐	☒	☐
Prevailing winds	☐	☐	☐	☒
Exclusions	a b c d **e** **f**	a b c d **e** **f**	a b c d e **f**	a b c d **e** **f**
BAL Value (FDI 50)	**BAL – LOW**	**BAL – 12.5**	**BAL – 29**	**BAL – LOW**

The Bushfire Attack Level shall be classified BAL-LOW where the vegetation is one or a combination of any of the following:

(a) Vegetation of any type that is more than 100 metres from the site.
(b) Single areas of vegetation less than 1 hectare in area and not within 100m of other areas of vegetation being classified.
(c) Multiple areas of vegetation less than 0.25 hectare in area and not within 20 metres of the site, or each other.
(d) Strips of vegetation less than 20 metres in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 metres of the site or each other, or other areas of vegetation being classified.
(e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
(f) Low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTE: Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognisable as short-cropped grass for example, to a nominal height of 100mm).

3.2 Specified Hazard Management Areas

Hazard management areas are to be established and maintained between the bushfire prone vegetation and the building at a distance equal to, or greater than the separation distance specified for the Bushfire Attack Levels (BAL) in table 2.6 of *Australian Standard 3959-2018 Construction of Buildings in Bushfire Prone Areas.*

Where the Hazard Management Areas can be increased around the building and the classified vegetation in accordance with table 2.6 of Australian Standard 3959, the risk from bushfire attack can reduce.

Single Dwelling

Distance from Predominant vegetation for BAL 29	North/ **North-East**	South/ **South-West**	East/ **South-East**	West/ **North-West**
	To title boundary	To title boundary	To title boundary (min. 19m)	To title boundary
	Metres	Metres	Metres	Metres

The separation distance for the SPECIFIED Hazard Management Area is to be shown on the attached Bushfire Hazard Management Plan measured from the external walls (Façade) of the building in metres along the ground to the bushfire hazard vegetation (if applicable).

3.3 Outbuildings

Not applicable, existing.

3.4 Road Access

Roads are to be constructed to provide vehicle access to the site to assist firefighting and emergency personnel to defend the building or evacuate occupants; and provide access at all times to the water supply for firefighting purposes on the building site.

Private access roads are to be upgraded/maintained from the entrance to the property cross over with the public road through to the dwelling. Private access roads are to be designed, constructed and maintained to a standard not less than Table 2.

New / Existing Road Access and Driveways	Private access driveway / roads are to be constructed/maintained from the entrance of the property cross over at the public road (Treloggen Drive) through to the buildings and on-site dedicated fire fighting water. Private access roads are to be maintained to a standard not less than specified in Table 2 B. *Note: Slope of access is approximately 15 degrees, therefore access to be sealed.*

Table 2: Requirements for Property Access

The following design and construction requirements apply to property access length is 30 metres or greater or access for a fire appliance to a fire fighting water point:

(i) All weather construction;
(ii) Load capacity of at least 20 tonnes, including for bridges and culverts;
(iii) Minimum carriageway width of 4 metres;
(iv) Minimum vertical clearance of 4 metres;
(v) Minimum horizontal clearance of 0.5 metres from the edge of the carriageway;
(vi) Cross falls of less than 3 degrees (1:20 or 5%);
(vii) Dips less than 7 degrees (1:8 or 12.5%) entry and exit angle;
(viii) Curves with a minimum inner radius of 10 metres;
(ix) Maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and
(x) Terminate with a turning area for fire appliances provided by one of the following:
    a) A turning circle with a minimum inner radius of 10 metres;
    b) A property access encircling the building; or
    c) A hammerhead “T” or “Y” turning head 4 metres wide and 8 metres long.

3.5 Water Supply

A building that is constructed in a designated bushfire prone area must provide access at all times to a sufficient supply of water for firefighting purposes on the building site.

The exterior elements of a habitable building in a designated Bushfire prone area must be within reach of a 120m long hose (reticulated) or 90m long hose (static) (lay) connected to –

(i) A fire hydrant system designed and constructed in accordance with TasWater Supplement to Water Supply Code of Australia WSA 03-2011-3.1 MRWA Edition 2.0; or

(ii) A stored water supply in a water tank, swimming pool, dam or lake available for fire fighting at all times which has the capacity of at least 10,000L for each separate building area to be protected.

New On-site Dedicated Fire Fighting Water Supply	On-site water supply is to be established and maintained, no fire hydrant was sited during site inspection within 120m of the furthest part of the dwelling, with connection point less than 3m from hardstand. A water tank of at least 10,000 litres per building area to be protected and above ground pipes and fittings used for a stored water supply must be of non-rusting, non-combustible, non-heat-deforming materials and must be situated more than 6m from a building area to be protected.

Table 3B: Requirements for Static Water Supply for Fire Fighting

Column 1		**Column 2**
Element		**Requirement**
A.	Distance between building area to be protected and water supply	The following requirements apply: (1) The building area to be protected must be located within 90 metres of the fire fighting water point of a static water supply; and (2) The distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.
B.	Static Water Supplies	A static water supply: (1) May have a remotely located offtake connected to the static water supply; (2) May be a supply for combined use (fire fighting and other uses) but the specified minimum quantity of fire fighting water must be available at all times; (3) Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including fire fighting sprinkler or spray systems;

		(4) Must be metal, concrete or lagged by non-combustible materials if above ground; and (5) If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959-2018 the tank may be constructed of any material provided that the lowest 400mm of the tank exterior is protected by: (a) Metal; (b) Non-combustible material; or (c) Fibre-cement a minimum 6mm thickness.
C.	Fittings, pipework and accessories (including stands and tank supports)	Fittings and pipework associated with a fire fighting water point for a static water supply must: (a) Have a minimum nominal internal diameter of 50mm; (b) Be fitted with a valve with a minimum nominal diameter of 50mm; (c) Be metal or lagged by non-combustible materials if above ground; (d) Where buried, have a minimum depth of 300mm; (e) Provide a DIN or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment; (f) Ensure the coupling is accessible and available for connection at all times; (g) Ensure the coupling is fitted with a blank cap and securing chain (minimum 220mm length); (h) Ensure underground tanks have either an opening at the top of not less than 250mm diameter or a coupling compliant with this Table; and (i) Where a remote offtake is installed, ensure the offtake is in a position that is: (a) Visible; (b) Accessible to allow connection by fire fighting equipment; (c) At a working height of 450-600mm above ground level; and (d) Protected from possible damage, including damage from vehicles.
D.	Signage for static water connections	The fire fighting water point for a static supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must: (a) Comply with water tank signage requirements within AS 2304:2019; or (b) Comply with the Tasmania Fire Service Water Supply Signage Guideline published by the Tasmania Fire Service.
E.	Hardstand	A hardstand area for fire appliances must be provided: (a) No more than three metres from the fire fighting water point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like);

	(b) No closer than six metres from the building area to be protected; (c) With a minimum width of three metres constructed to the same standard as the carriageway; and (d) Connected to the property access by a carriageway equivalent to the standard of the property access.

4.0 Layout Options

Not relevant to this proposal.

5.0 Other Planning Provisions

Not relevant to this proposal.

6.0 Conclusions and Recommendations

Mitigation from bushfire is dependent on the careful management of the site by maintaining reduced fuel loads within the hazard management areas and within the site.

The site has been assessed as requiring buildings (Single Dwelling) to conform to or exceed BAL 29 requirements based on AS 3959 – 2018 Construction of Buildings in Bushfire Prone Areas.

Access

The driveway is to be constructed/maintained to meet Table 2B. Requirements for Property Access, Director's Determination – Bushfire Hazard Areas, Version 1.2.

Water Supplies

Water supply tank **at least** 10,000 litres (10,000l per building area to be protected) is to be established and maintained, with a fitting suitable for TFS access, meeting the requirements for Reticulated Water Supply for Fire Fighting, Table 3B, Director's Determination – Bushfire Hazard Areas, Version 1.2.

Fuel Managed Areas

Hazard Management Areas as detailed within the plan shall be constructed and maintained as detailed in Section 2 of Schedule 2 (where applicable).

Schedule 2 – Bushfire Hazard Management Plan

1.0 Introduction

The Bushfire Hazard Management Plan (BHMP) is developed from the results of a Bushfire Attack Level (BAL) Assessment Report prepared for the site in accordance with Australian Standard 3959. The BHMP provides reference and information to existing and subsequent owners on their responsibilities for the establishment, maintenance and future management of their property to reduce the risk of bushfire attack and includes: -

- Establishment of a Hazard Management Area in and around the existing and/or proposed buildings,
- Specifications of Private access road construction,
- Provision on firefighting water supply,
- Construction requirements in relation to the Building Code of Australia, dependent on the Bushfire Attack Level and requirements of Australian Standard 3959.
- Reduction and removal of vegetation and fuel loads in and around the property, buildings and Hazard Management Areas,
- Ongoing maintenance responsibilities by successive owners for perpetuity.

A copy of the plan MUST also be provided to ALL current and successive owners to make them aware of their continuing obligations to maintain the plan and protection measures attributed to their property in to the future.

2.0 Hazard Management Areas

The Hazard Management Area (defendable space) is provided between the vegetation and the buildings subject to bushfire risk. The space provides for management of vegetation and reduction in fuel loads in an attempt to:

- Prevent flame impingement on the dwelling;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant heat; and
- Reduce wind speed.

The *Building Act 2016*, requires a hazard management area to be established and maintained between the bushfire prone vegetation and the building at a distance equal to, or greater than the separation distance specified for the Bushfire Attack Levels (BAL) in *AS 3959-2018 Construction of Buildings in Bushfire Prone Areas*.

Refer to the attached BHMP Site Plan in Section 6 of this management plan for specific details on the Hazard Management Area.

2.1 Vegetation (Fuel) Management

Managing an area in a minimum fuel condition generally means a reduction in the amount and altering the arrangement of fuels. Most fine fuels are at or close to the ground, often as part of a grass, litter or shrub layer. If there is enough fuel, when a fire comes these fuels will ignite the trees above or set the bark alight which will burn up into the tree canopy causing the most dangerous of bushfire situation; a crown fire.

To prevent crown fires occurring it is necessary to remove the "ladder of fuel" between the ground and the tree crowns and to make sure the amount of ground fuel is not sufficient to set the crowns alight. Without fire burning below, a crown fire should not be sustained. Further removing continuity and separation of the vegetation canopies both horizontally and vertically will assist.

All vegetation will burn under the influence of bushfire; shrub layers need to be modified to remove tall continuous walls of vegetation and establish clear separation between the ground and the bottom of the tree canopy. Further minimisation of flammable ground litter such as leafs, twigs, bark, ferns and debris will further reduce fuel load with potential to burn or contribute to the growth of a bushfire.

Fuels do not need to be totally removed however fuels close to the building and inside the Hazard Management Area are to be kept to a minimum. As a general practice 5 tonnes per hectare is accepted as being controllable with normal firefighting resources. This can be visualised as grass cut to about 10 centimetres in height or ground litter about 2 centimetres thick. This is considered to be a low fuel level.

2.2 Other Risk Management Actions

Other actions that can be implemented to reduce the bushfire risk in the Hazard Management Areas include:

1. Establishing non-combustible paths and driveways around buildings.
2. Establish plantings of low flammability shrub species.
3. Ensure garden beds and shrubs are established well away from buildings.
4. Tree planting to be located at the outer edge of the Hazard Management Area and spaced well apart to ensure canopy separation.
5. Cut lawns short and maintain.
6. Remove fallen limbs, leaf and bark litter.
7. Avoid using pine bark and other flammable mulch in gardens.
8. Prune trees to ensure canopy separation horizontally and vertically, remove low hanging branches to ensure separation from ground litter.
9. Where the amount of land permits extend the vegetation management in to a secondary hazard management zone.

3.0 On-going Site Management and Maintenance

On-going maintenance is required to the buildings and landscaping within the hazard management area to ensure the continued performance of the bushfire mitigation measures which have been designed into the development for occupant and community protection.

Specified Hazard Management Areas are only a minimum distance required; owners are encouraged to establish a greater management area where land area and opportunity permits. An additional fuel modified buffer zone between the Hazard Management Area and the bushfire vegetation will only improve the protection level and reduce the risk to the property during a bushfire event.

Preparedness comes down to diligent annual maintenance in and around the buildings and Hazard Management Areas particularly during the period of greatest risk; August to February of each year.

Recommendation:

1. Locate wood piles or other flammable storage well away from the dwelling.
2. Solid non-combustible fencing such as steel provides a fire and heat radiation shield to the dwelling.
3. Metal flywire screens prevent sparks and embers from entering the building.
4. Seal gaps under floor spaces, roof space, under eaves, external vents, skylights, chimneys and wall cladding.
5. Remove ladder fuels from the under storey of larger trees. Prune canopies to provide separation.
6. Rake up leaf litter and vegetation debris. Cut grass and maintain to less than 10cm.
7. Keep garden beds well away from the dwelling and use non-combustible garden mulches including rock or stones.
8. Establish plantings of low flammability shrub species.
9. Seal all gaps in external claddings.
10. Keep roof gutters clear of leaf litter, bark and similar debris, remove and maintain. Install gutter guards to assist.
11. Flammable fuels such as gas bottles should be located on the opposite side of the house to the likely direction of a bushfire.
12. Seal gaps in roofing to prevent the entry of embers.
13. Surround the dwelling with non-combustible paths.
14. Outbuildings to be at least 6m from the main dwelling.
15. Ensure hoses provide coverage to the whole site. Use metal hose fittings.
16. Flammable fuels and the like to be stored in minimum volumes well away from the dwelling.

4.0 Vehicular Access

Roads are to be constructed to provide vehicle access to the site to assist firefighting and emergency personnel to defend the building or evacuate occupants; and provide access at all times to the water supply for firefighting purposes on the building site.

Private access roads are to be constructed from the entrance to the property cross over with the public road through to the dwelling and water storage area on the site (if applicable). Private access roads are to be designed, constructed and maintained to a standard as recommended below:

Recommendations:

The following design and construction requirements apply to property access length is 30 metres or greater or access for a fire appliance to a fire fighting water point:

(i) All weather construction;
(ii) Load capacity of at least 20 tonnes, including for bridges and culverts;
(iii) Minimum carriageway width of 4 metres;
(iv) Minimum vertical clearance of 4 metres;
(v) Minimum horizontal clearance of 0.5 metres from the edge of the carriageway;
(vi) Cross falls of less than 3 degrees (1:20 or 5%);
(vii) Dips less than 7 degrees (1:8 or 12.5%) entry and exit angle;
(viii) Curves with a minimum inner radius of 10 metres;
(ix) Maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and
(x) Terminate with a turning area for fire appliances provided by one of the following:
    a) A turning circle with a minimum inner radius of 10 metres;
    b) A property access encircling the building; or
    c) A hammerhead “T” or “Y” turning head 4 metres wide and 8 metres long.

5.0 Water Supply

A building that is constructed in a designated bushfire prone area must provide access at all times to a sufficient supply of water for firefighting purposes on the building site.

Recommendations:

The exterior elements of a habitable building in a designated Bushfire prone area must be within reach of a 120m long hose (reticulated) or 90m long hose (static) (lay) connected to –

(i) A fire hydrant system designed and constructed in accordance with TasWater Supplement to Water Supply Code of Australia WSA 03-2011-3.1 MRWA Edition 2.0; or
(ii) A stored water supply in a water tank, swimming pool, dam or lake available for fire fighting at all times which has the capacity of at least 10,000L for each separate building area to be protected.

5.1 Reticulated Water Supply

Not applicable to this proposal.

5.2 On-Site Dedicated Fire Fighting Water Supply

A water tank of at least 10,000 litres per building area to be protected and above ground pipes and fittings used for a stored water supply must be made of non-rusting, non-combustible, non-heat-deforming materials and must be situated more than 6m from a building, but within 90m of the building area (water connection point). Hardstanding must be provided within 3m of a static water supply/water connection point.

The water tank must be fitted with a 65mm outlet and DIN or NEN Standard compliant forged Storz 65mm adaptor fitted with a standard (delivery) washer rated to 1800kPa working pressure and 2400kPa burst pressure.

Bushfire Hazard Management Site Plan

PROPERTY ACCESS REQUIREMENTS - REFER TO SECTION 3.5 (SCHEDULE 1) OF BUSHFIRE HAZARD ASSESSMENT REPORT

NOTE: TO BE SEALED DUE TO SLOPE

SINGLE DWELLING MUST BE DESIGNED AND CONSTRUCTED TO BAL - 29 MINIMUM STANDARD UNDER AS3959-2018

HAZARD MANAGEMENT AREA TO BE MAINTAINED IN A MINIMUM FUEL CONDITION - REFER TO SECTION 3.3 (SCHEDULE 1) & SECTION 2.0 (SCHEDULE 2) OF BUSHFIRE HAZARD ASSESSMENT REPORT

FIREFIGHTING WATER SUPPLY - REFER TO SECTION 3.6 (SCHEDULE 1) OF BUSHFIRE HAZARD ASSESSMENT REPORT (SUGGESTED LOCATION)

* THIS BHMP MUST BE READ IN CONJUNCTION WITH BUSHFIRE HAZARD ASSESSMENT REPORT REF: RGA-B2432, R. GREEN, 30 JANUARY 2025

* THIS BHMP HAS BEEN PREPARED TO SATISFY THE REQUIREMENTS OF THE *DIRECTORS DETERMINATION - BUSHFIRE HAZARD AREAS (V1.2)*

N

BUSHFIRE HAZARD MANAGEMENT PLAN
BUSHFIRE ATTACK LEVEL (BAL) - 29
NEW SINGLE DWELLING

60 TRELOGGEN DRIVE, BINALONG BAY
VOLUME 104144 FOLIO 1
PROPERTY ID 6798471

DATE: 30 JANUARY 2025
VERSION: 1
DRAWN: REBECCA GREEN
PHONE: 0409 284 422
EMAIL: ADMIN@RGASSOCIATES.COM.AU
BFP - 116, SCOPE - 1, 2, 3A, 3B, 3C

Rebecca Green & Associates

Form 55

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To:	Katie Ford		*Owner /Agent*
	7 Middle Head Road		*Address*
	MOSMAN NSW	2088	*Suburb/postcode*

Qualified person details:

Qualified person:	Rebecca Green		
Address:	PO Box 2108	Phone No:	0409 284 422
	Launceston 7250	Fax No:	
Licence No:	BFP-116	Email address:	admin@rgassociates.com.au

Qualifications and Insurance details: Accredited to report on bushfire hazards under Part IVA of the *Fire Services Act 1979*

(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:	60 Treloggen Drive	Lot No:	1
	BINALONG BAY TAS 7216	Certificate of title No:	104144

The assessable item related to this certificate: New Single Dwelling

(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 Assessment Report & Bushfire Hazard Management Plan (Rebecca Green & Associates, 30 January 2025, Version 1, Job No. RGA-B2432)
Relevant	N/A
References:	*Australian Standard 3959-2018*

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

1. Assessment of the site Bushfire Attack Level (BAL – 29 for Single Dwelling) to Australian Standard 3959-2018

2. Bushfire Hazard Management Plan showing BAL-29 solutions.

Scope and/or Limitations

Scope

This report and certification was commissioned to identify the Bushfire Attack Level for the existing property. All comment, advice and fire suppression measures are in relation to compliance with the *Building Act 2016* & *Regulations 2016*, *National Construction Code* and *Australian Standard 3959-2018, Construction of buildings in bushfire-prone areas*.

Limitations

The assessment 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 certificate.
2. The report only identifies the size, volume and status of vegetation at the time the inspection was undertaken and cannot be relied upon for any future development.
3. Impacts of future development and vegetation growth have not been considered.
4. No assurance is given or inferred for the health, safety or amenity of the general public, individuals or occupants in the event of a Bushfire.
5. No warranty is offered or inferred for any buildings constructed on the property in the event of a Bushfire.

No action or reliance is to be placed on this certificate or report; other than for which it was commissioned.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		RG-011/2025	30 January 2025

Attachment 1 – AS3959-2018 Construction Requirements

Rebecca Green & Associates

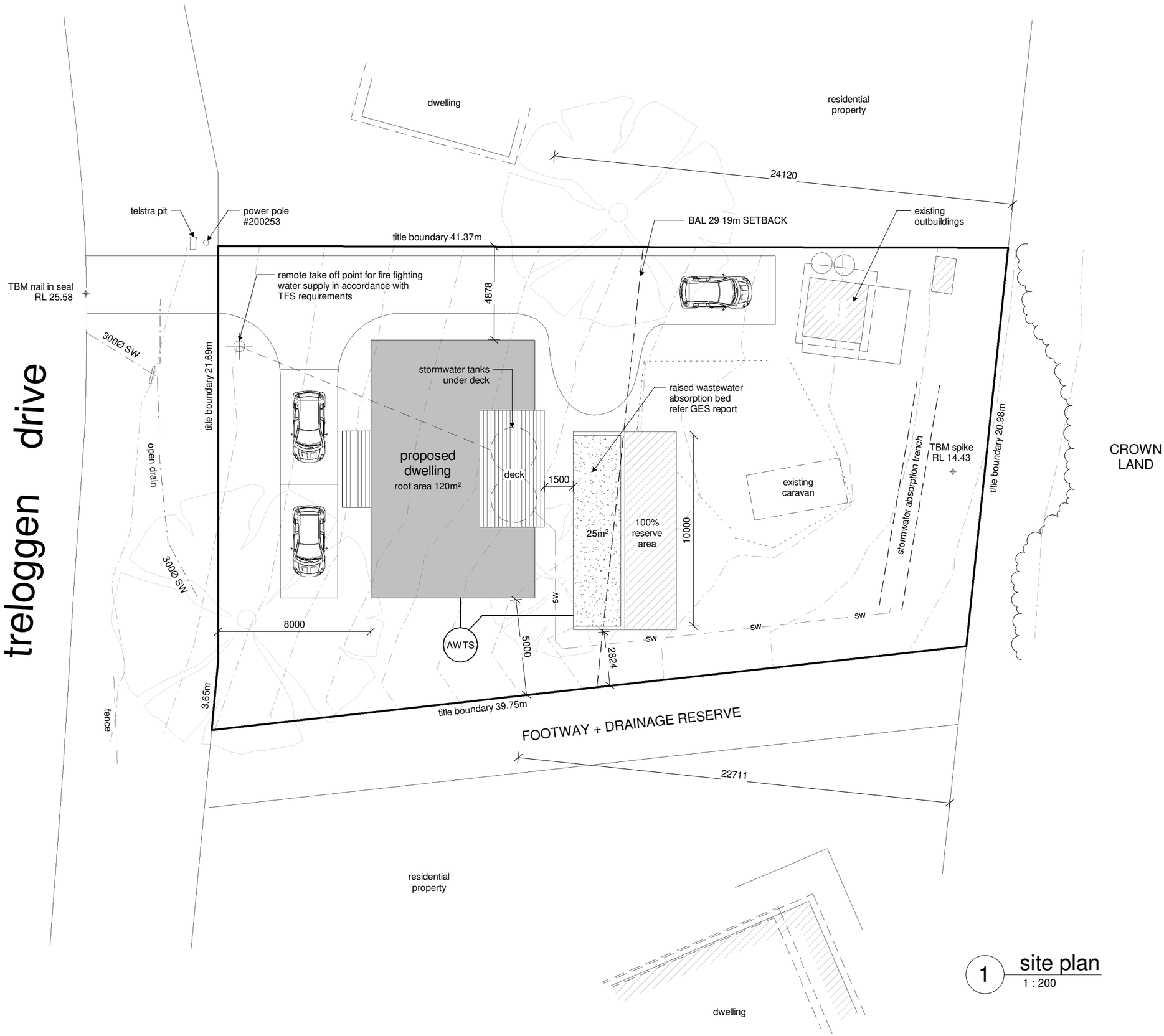
BAL Assessments

Revised for 2018 edition

	BAL—LOW	BAL-12.5	BAL-19	BAL-29	BAL-40	BAL –FZ (FLAMEZONE)
SUBFLOOR SUPPORTS	No special construction requirements	No special construction requirements	Enclosure by external wall or by steel, bronze or aluminium mesh	Enclosure by external wall or by steel, bronze of aluminium mesh. Non-combustible or naturally fire resistant timber supports where the subfloor is unenclosed	If enclosed by external wall refer below "External Walls" section in table or non-combustible sub-floor supports, or tested for bushfire resistance to AS1530.8.1	Enclosure by external wall or non-combustible with an FRL of 30/-/- or to be tested for bushfire resistance to AS1530.8.2
FLOORS	No special construction requirements	No special construction requirements	Concrete slab on ground or enclosure by external wall, metal mesh as above or flooring less than 400mm above ground level to be non-combustible, naturally fire resistant timber or protected on the underside with sarking or mineral wool insulation	Concrete slab on ground or enclosure by external wall, metal mesh as above or flooring less than 400mm above ground level to be non-combustible, naturally fire resistant timber or protected on the underside with sarking or mineral wool insulation	Concrete slab on ground or enclosure by external wall or protection of underside with a non-combustible material such as fibre cement sheet or be non-combustible or to be tested for bushfire resistance to AS1530.8.1	Concrete slab on ground or enclosure by external wall or an FRL of 30/30/30 or protection of under-side 30 minute incipient spread of fire system or to be tested for bushfire resistance to AS1530.8.2
EXTERNAL WALLS	No special construction requirements	As for BAL-19	Parts less than 400mm above ground or decks etc to be of non-combustible material, 6mm fibre cement clad or bushfire resistant/ naturally fire resistant timber	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete) or timber framed, or steel framed walls sarked on the outside and clad with 6mm fibre cement sheeting or steel sheeting or bushfire resistant timber	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete) or timber framed, or steel framed walls sarked on the outside and clad with 9mm fibre cement sheeting or steel or to be tested for bushfire resistance to AS1530.8.1	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete) with a minimum thickness of 90mm or a FRL of -/30/30 when tested from outside or to be tested for bushfire resistance to AS1530.8.2
EXTERNAL WINDOWS	No special construction requirements	4mm grade A Safety Glass of glass blocks within 400m of ground, deck etc with Openable portion metal screened with frame of metal or metal reinforced PVC-U or bushfire resisting timber	5mm toughened glass or glass bricks within 400mm of the ground, deck etc with openable portion metal screened with frame of metal or metal reinforced PVC-U or bushfire resisting timber. Above 400mm annealed glass can be used with all glass screened	5mm toughened glass with openable portion screened and frame of metal or metal reinforced PVC-U, or bushfire resistant timber and portion within 400mm of ground, deck, screen etc screened	6mm toughened glass. Fixed and openable portion screened with steel or bronze mesh	Protected by bushfire shutter or FRL of -/30/- and openable portion screened with steel or bronze mesh or be tested for bushfire resistance to AS1530.8.2
EXTERNAL DOORS	No special construction requirements	As for BAL-19 except that door framing can be naturally fire resistant (high density) timber	Screened with steel, bronze or aluminium mesh or glazed with 5mm toughened glass, non-combustible or 35mm solid timber for 400mm above threshold, metal or bushfire resistant timber framed for 400mm above ground, decking etc. tight-fitting with weather strips at base	Screened with steel, bronze or aluminium mesh or non-combustible, or 35mm solid timber for 400mm above threshold. Metal or bushfire resistant timber framed tight-fitting with weather strips at base	Non-combustible or 35mm solid timber, screened with steel or bronze mesh, metal framed, tight-fitting with weather strips at base	Protected by bushfire shutter or tight-fitting with weather strips at base and a FRL of -/30/-
ROOFS	No special construction requirements	As for BAL-19 (including roof to be fully sarked)	Non-combustible covering, roof/wall junctions sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked.	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked and no roof mounted evaporative coolers	Roof with FRL of 30/30/30 or tested for bushfire resistance to AS1530.8.2. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. No roof mounted evaporative coolers
VERANDAS DECKS ETC.	No special construction requirements	As for BAL-19	Enclosed sub floor space—no special requirements for materials except within 400mm of ground. No special requirements for supports or framing. Decking to be non-combustible or bushfire resistant within 300mm horizontally and 400mm vertically from a glazed element	Enclosed sub floor space or non-combustible or bushfire resistant timber supports. Decking to be non-combustible or bushfire resistant timbers	Enclosed sub-floor space or non-combustible supports. Decking to be non-combustible	Enclosed sub floor space or non-combustible supports. Decking to have no gaps and be non-combustible

Please note: The information in the table is a summary of the construction requirements in the AS3959-2018 standard and is not intended as a design or construction guide. You should consult the standard for the full technical details.

Attachment 2 – Proposal Plans



1 site plan
1 : 200

n

REV:	DESCRIPTION:	DATE:
1	Revision 1	Date 1

PROJECT:
proposed dwelling

FOR:
k. ford
60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:
site plan

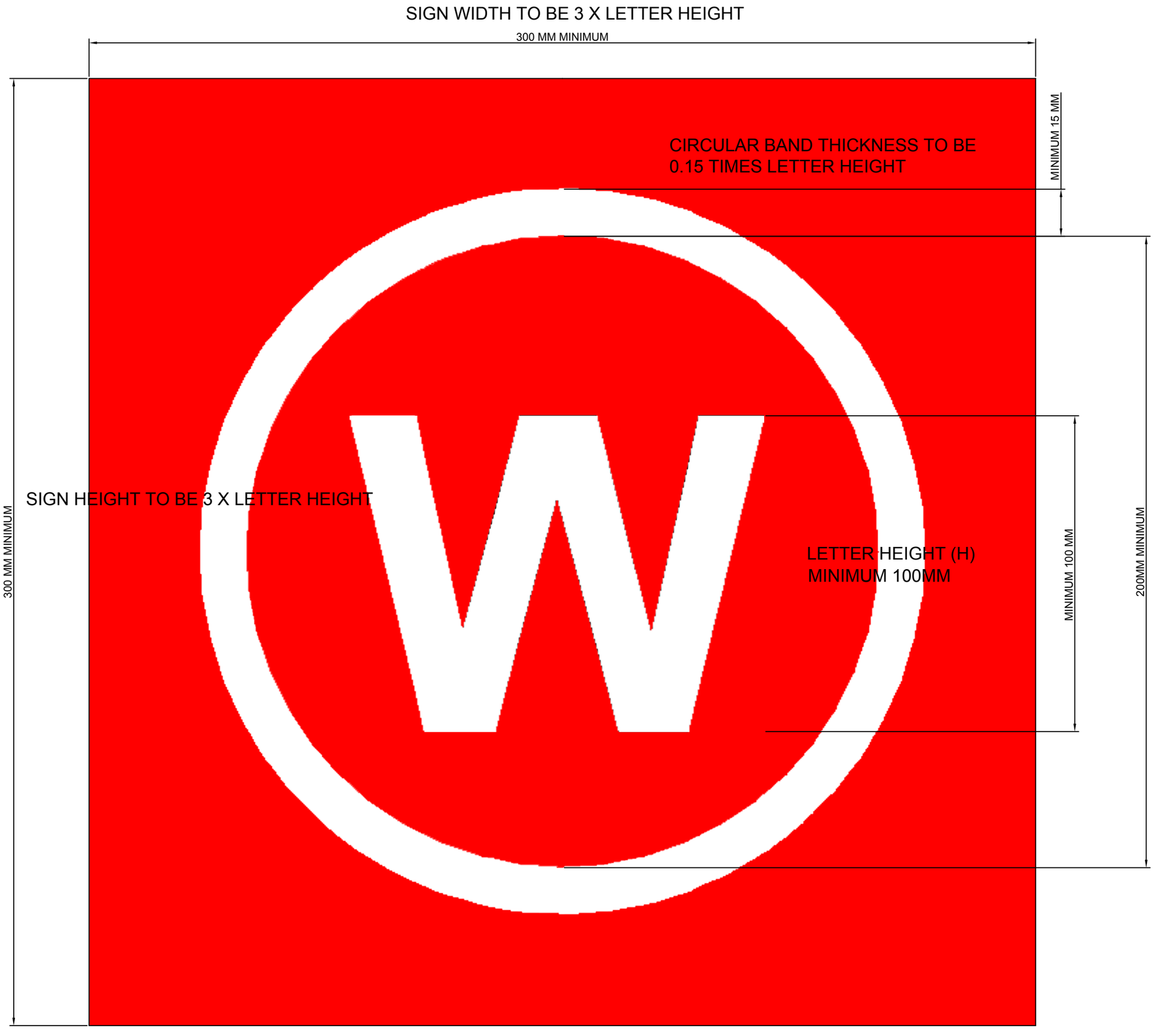
DRAWING NO:	DRAWN BY: JB
a04	DATE: 23.01.25
SCALE: 1 : 200	PROJECT: 1123FO

jennifer binns
www.jenniferbinnsdesign.com.au
0439 765 452 : mail @ jenniferbinnsdesign.com.au
52 cecilia street st helens tasmania 7216
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA
ACCREDITATION NO: CC 1269L

Attachment 3 – Tasmania Fire Service Water Supply Signage Guideline

V1.0

10,000 LITRE DOMESTIC FIREFIGHTING STATIC WATER INDICATOR SIGN



LETTERING TO BE UPPERCASE AND NOT LESS THAN 100MM IN HEIGHT

INSIDE DIAMETER OF CIRCULAR BAND TO BE 2 TIMES LETTER HEIGHT

SIGN SIZE DIMENSIONS
3 X LETTER HEIGHT HIGH AND 3 X LETTER HEIGHT WIDE.

THICKNESS OF CIRCULAR BAND TO BE 0.15 TIMES LETTER HEIGHT

TEXT STYLE TO BE IN ACCORDANCE WTH AS1744.2015, SERIES F

SIGN TO BE IN FADE RESISTING MATERIAL WITH WHITE REFLECTIVE LETTERING AND CIRCLE ON A RED BACKGROUND

RED TO BE R-13 SIGNAL RED
COLOUR CODE 1795U

WHITE SUBSTRATE COLOUR TO BE PMS 186C

SIGN TO BE CONSTRUCTED FROM UV STABILIZED, NON FLAMMABLE AND NON HEAT DEFORMING MATERIAL

SIGN TO BE PERMANENTLY FIXED

Tasmania Fire Service

References

(a) Australian Standards, AS 3959-2018, *Construction of buildings in bushfire-prone areas*, Standards Australia, Sydney NSW.

(b) Resource Management & Conservation Division of the Department Primary Industry & Water September 2006, TASVEG, *Tasmanian Vegetation Map*, Tasmania.

(c) Tasmanian Government, Land Information System Tasmania, www.thelist.tas.gov.au

STORMWATER ASSESSMENT

60 Treloggen Drive

Binalong Bay

January 2025

GEO-ENVIRONMENTAL

SOLUTIONS

Investigation Details

Client:	Katie Ford
Site Address:	60 Treloggen Drive, Binalong Bay
Date of Inspection:	28/01/2025
Proposed Works:	New house
Investigation Method:	Hand Auger
Inspected by:	JP Cumming

Site Details

Certificate of Title (CT):	104144/1
Title Area:	Approx. 928.6 m²
Applicable Planning Overlays:	Bushfire-prone areas, Landslip Hazard, Priority Vegetation
Slope & Aspect:	7° SE facing slope
Vegetation:	Mixed Flora

Background Information

Geology Map:	MRT
Geological Unit:	Devonian Granite
Climate:	Annual rainfall 700mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	Onsite stormwater retention

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

BH 1 Depth (m)	BH 2 Depth (m)	USCS	Description
0.0 – 0.40	0.0 – 0.30	SW	Dark Grey **SAND**, slightly moist, medium dense consistency, trace of gravels, common fine rootlets, gradual boundary to
0.40 – 0.90	0.30 – 0.80	SW	Light Brownish Grey **SAND**, slightly moist to moist, medium dense consistency, trace of gravels, clear boundary to
0.90 – 1.10	0.80 – 1.00	SW	Black **SAND**, dry, dense consistency, ~10% quartz gravels, clear boundary to
1.10 – 1.8+	1.00 – 1.5+	SP	Light Brown **SAND**, dry, dense consistency, ~10% quartz gravels

Soil Conditions

The soil on site has developed from windblown sands overlying Devonian granite. The soil has an estimated permeability of approximately >3m/day

GES have identified the following at the site:

- There are no proposals for cuts or changes of grade which may impact on any proposed onsite stormwater absorption.
- The soil onsite has been identified as comprising of sands. No soil dispersion was identified.
- No evidence of a water table was observed at the time of the investigation
- There is a low risk of the natural soils being impacted by contamination
- Bedrock was not encountered within 1.8m

Soil Dispersion

The soil is non-dispersive.

Existing Conditions and Assumptions

The site covers an area of approximately 928m^2 with a total proposed roof area of approx. 120m^2 and proposed office with area of approx. 180m^2.

There is no public stormwater system that the property can connect to, and it is therefore it is proposed that stormwater from the site would be routed through the proposed conventional underground drainage system comprising of Grated Sumps and PVC Pipes, coupled with soakage trench elements for on-site detention.

The stormwater management report is prepared in accordance with the design criteria listed below:

- The stormwater drainage system is designed using Bureau of Meteorology (BOM) published rainfall Intensity Frequency Duration (IFD) data as a minor / major system to accommodate the 5% AEP / 20 min storm events.
- The flow rate of stormwater leaving the site shall be designed so that it does not exceed the pre- developed flow rate for both the minor and major rain events.
- The total site discharges are modelled as described in *Storm Drainage Design in Small Urban Catchments,* a handbook for Australian practice by *Australian Rainfall and Runoff (ARR2019)*, Book 9 – Runoff in Urban Areas.

Detention Calculations

Detention calculations area provided in Appendix A

Summary and Conclusions

- Detention design to be adopted as per design and documentation.
- The designed solution complies with the performance solution design check carried out.
- The 18m^2 base (12m x 1.5m), 1.2m deep soakage trench is designed over a 20-minute storm duration for proposed development.
- DN100 slotted PVC pipe with geotextile covering on top of aggregate to be installed within the soakage trench.

It is also recommended that regular inspection and maintenance is conducted to ensure the stormwater system is operating without obstruction. A schematic of recommended checks is attached.

GES Stormwater Maintenance Plan Checklist

Indicative frequency	**Inspection and criteria**	**Maintenance activities (where required)**
Annual	Check whether any tree branches overhang the roof or are likely to grow to overhang the roof	If safe and where permitted, consider pruning back any overhanging branches
	Check that access covers to storage tanks are closed	Secure any open access covers to prevent risk of entry
	Check that screens on inlets, overflows and other openings do not have holes and are securely fastened	Repair any defective screens to keep out mosquitoes
	Inspect tank water for presence of rats, birds, frogs, lizards or other vermin or insects	Remove any infestations, identify point of entry and close vermin and insect-proof mesh
	Inspect tank water for presence of mosquito larvae (inspect more frequently in sub-tropical and tropical northern Australia, based on local requirements)	Identify point of entry and close with insect-proof mesh with holes no greater than 1.6 mm in diameter
	Inspect gutters for leaf accumulation and ponding	Clean leaves from gutters-remove more regularly if required. If water is ponding, repair gutter to ensure water flows to downpipe
	Check signage at external roof water taps and that any removable handle taps are being properly used	Replace or repair the missing or damaged signage and fittings
	Check plumbing and pump connections are watertight/without leakage	Repair any leaks as necessary
	Check suction strainers, in-line strainers and pump location for debris	Clean suction strainers, in-line strainers or debris from pump location
	Check pump installation is adequate for reliable ongoing operation	Modify and repair as required
	Check first flush diverter, if present	Clean first flush diverter, repair and replace if necessary
	Check health of absorption trench area and surrounding grass or plants	Investigate any adverse impacts observed that might be due to irrigation
	Check condition of roof and coatings	Investigate and resolve any apparent changes to roof condition, such as loss of material coatings

Triennial	Drain, clean out and check the condition of the tank walls and roof to ensure no holes have arisen due to tank deterioration	Repair any tank defects
	Check sediment levels in the tank	Organise a suitable contractor to remove accumulated sediment if levels are approaching those that may block tank outlets
	Undertake a systematic review of operational control of risks to the system	Identify the reason for any problems during inspections and take actions to prevent failures occurring in future
After 20 years and then every 5 years	Monitor the effectiveness of the stormwater absorption area to assess for any clogging due to algal growth, or blocking due to tree roots/grass growth/trench failure.	Clean or replace clogged equipment
Ongoing	Inspect and follow up on any complaints or concerns raised that could indicate problems with the system	Repair or replace any problems that are notified

APPENDIX A: STORMWATER DETENTION CALCULATIONS

STORAGE TRENCH

Hydrology		
Total Catchment Area	300	m2
Runoff Coefficient	0.94	
Annunal Recurrence Interval (ARI)	20	yr
Ground Conditions		
Hydraulic conductivity (K)	5	m/day
	3.470	mm/min
Adjusted Rate (15% clogging factor)	2.950	mm/min
Trench Design		
Length	12	m
Width	1.5	m
Depth	1.2	m
Infiltration Area	18	m2
Porosity	0.35	%
Trench Storage	7.56	m3
	7560	L

Final Check			
Criteria	**Requirement**	**Design**	**Check**
Detention reqd	6770	7560	OK

STORM CHECK

Storm Duration	Intensity	Inflow Volume	Outflow Volume	Required Storage	Emptying time
	(mm/hr)	(m^3)	(L)	(L)	(hr)
1 min	**216**	1015	53	962	0.30
2 min	**167**	1570	106	1464	0.46
3 min	**153**	2157	159	1998	0.63
4 min	**143**	2688	212	2476	0.78
5 min	**134**	3149	265	2884	0.91
10 min	**103**	4841	531	4310	1.35
15 min	**83.9**	5915	796	5119	1.61
20 min	**71.4**	6712	1062	5650	1.77
25 min	**62.5**	7344	1327	6016	1.89
30 min	**55.9**	7882	1593	6289	1.97
45 min	**43.4**	9179	2389	6790	2.13
1 hour	**36.4**	10265	3185	7079	2.22
1.5 hour	**28.6**	12098	4778	7320	2.30
2 hour	**24.4**	13762	6371	7391	2.32
3 hour	**19.7**	16666	9556	7110	2.23
4.5 hour	**16.2**	20558	14335	6223	1.95
6 hour	**14.2**	24026	19113	4914	1.54
9 hour	**11.8**	29948	28669	1279	0.40
12 hour	**10.3**	34855	38226	-	-
18 hour	**8.32**	42232	57338	-	-
24 hour	**7.05**	47714	76451	-	-
30 hour	**6.12**	51775	95564	-	-
36 hour	**5.4**	54821	114677	-	-
48 hour	**4.36**	59017	152902	-	-
72 hour	**3.11**	63145	229353	-	-
			Full volume	7560	2.32

Notes:

Inflow volume calculated using Equation 10.1 (WSUD Guidelines: Chapter 10)

Outflow volume calculated using Equation 10.2 (WSUD Guidelines: Chapter 10)

Required storage and emptying time is left blank when outflow volume exceeds inflow volume

Location

Label: 60 Treloggen Dr Binalong Bay
Easting: 610075
Northing: 5432030
Zone: 55
Latitude: Nearest grid cell: 41.2625 (S)
Longitude: Nearest grid cell: 148.3125 (E)

IFD Design Rainfall Intensity (mm/h)

Issued: 29 January 2025

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

Table | Chart

Unit: mm/h

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	97.9	110	152	183	216	263	301
2 min	82.0	91.9	124	146	167	195	215
3 min	73.7	82.7	112	132	153	180	200
4 min	67.3	75.7	103	123	143	170	191
5 min	62.2	70.0	95.9	115	134	161	183
10 min	46.0	51.9	71.9	87.0	103	126	146
15 min	37.4	42.1	58.4	70.8	83.9	103	120
20 min	31.9	36.0	49.8	60.3	71.4	87.6	101
25 min	28.2	31.7	43.8	52.9	62.5	76.3	88.0
30 min	25.4	28.6	39.4	47.4	55.9	68.0	78.0
45 min	20.2	22.7	31.1	37.1	43.4	52.2	59.3
1 hour	17.2	19.3	26.3	31.3	36.4	43.3	48.8
1.5 hour	13.8	15.5	21.0	24.8	28.6	33.6	37.5
2 hour	11.9	13.4	18.0	21.2	24.4	28.4	31.5
3 hour	9.64	10.9	14.7	17.3	19.7	22.9	25.3
4.5 hour	7.85	8.90	12.1	14.2	16.2	18.8	20.7
6 hour	6.78	7.70	10.5	12.4	14.2	16.5	18.3
9 hour	5.46	6.24	8.63	10.2	11.8	13.8	15.4
12 hour	4.64	5.32	7.43	8.86	10.3	12.2	13.6
18 hour	3.61	4.16	5.90	7.11	8.32	9.99	11.3
24 hour	2.97	3.43	4.91	5.97	7.05	8.54	9.76
30 hour	2.53	2.92	4.21	5.15	6.12	7.46	8.56
36 hour	2.20	2.54	3.68	4.52	5.40	6.61	7.61
48 hour	1.74	2.01	2.93	3.62	4.36	5.35	6.17
72 hour	1.23	1.42	2.07	2.57	3.11	3.81	4.39
96 hour	0.962	1.11	1.60	1.98	2.39	2.92	3.35
120 hour	0.796	0.913	1.32	1.62	1.95	2.36	2.69
144 hour	0.688	0.788	1.13	1.38	1.64	1.98	2.25
168 hour	0.613	0.701	0.995	1.21	1.43	1.71	1.93

Note:
The 50% AEP IFD **does not** correspond to the 2 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 1.44 ARI.
* The 20% AEP IFD **does not** correspond to the 5 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 4.48 ARI.

STORMWATER DETENTION V5.05

Geo-Environmental Solutions

Location: Binalong Bay, Tas
Site: 300m² with tc = 20 and tcs = 15 mins.
PSD: AEP of 5%, Underground rectangular tank PSD = 1.79L/s
Storage: AEP of 5%, Underground rectangular tank volume = 6.77m³

Design Criteria

(Custom AEP IFD data used)

Location = Binalong Bay, Tas
Method = E (A)RI 2001,A(E)P 2019

PSD annual exceedance probabiliy (APE) = 5 %
Storage annual exceedance probabiliy (APE) = 5 %

Storage method = U (A)bove,(P)ipe,(U)nderground,(C)ustom

Site Geometry

Site area (As) = 300 m² = 0.03 Ha
Pre-development coefficient (Cp) = 0.30
Post development coefficient (Cw) = 0.94

Total catchment (tc) = 20 minutes
Upstream catchment to site (tcs) = 15 minutes

Coefficient Calculations

Pre-development

Zone	Area (m²)	C	Area * C
Concrete	0	0.90	0
Roof	0	1.00	0
Gravel	0	0.50	0
Garden	300	0.30	90
Total	300 m²		90

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	180	0.90	162
Roof	120	1.00	120
Gravel	0	0.50	0
Garden	0	0.30	0
Total	300 m²		282

Cw = ΣArea*C/Total = 0.940

Permissible Site Discharge (PSD) (AEP of 5%)

PSD Intensity (I) = 71.4 mm/hr For catchment tc = 20 mins.
Pre-development (Qp = Cp*I*As/0.36) = 1.78 L/s
Peak post development (Qa = 2*Cw*I*As/0.36) = 11.18 L/s =(0.157 x I) Eq. 2.24

Storage method = U (A)bove,(P)ipe,(U)nderground,(C)ustom
Permissible site discharge (Qu = PSD) = 1.788 L/s

Above ground - Eq 3.8

$0 = PSD^2 - 2*Qa/tc*(0.667*tc*Qp/Qa + 0.75*tc+0.25*tcs)*PSD + 2*Qa*Qp$

Taking x as = PSD and solving
a = 1.0 b = -23.3 c = 39.9
$PSD = -b \pm \sqrt{(b^2-4ac)}/(2a)$
PSD = 1.856 L/s

Below ground pipe - Eq 3.3

$Qp = PSD*[1.6*tcs/\{tc*(1-2*PSD/(3*Qa))\}-0.6*tcs^{2\cdot67}/\{tc*(1-2*PSDp/(3*Qa))\}^{2\cdot67}]$
= 1.78
PSD = 1.842 L/s

Below ground rectangular tank - Eq 3.4

t =tcs/(tc*(1-2*PSD/(3*Qa))) = 0.839
$Qp = PSD*[0.005-0.455*t+5.228*t^2-1.045*t^3-7.199*t^4+4.519*t^5]$
= 1.78
PSD = 1.788 L/s

Design Storage Capacity (AEP of 5%)

Above ground (Vs) = $[0.5*Qa*td-[(0.875*PSD*td)(1-0.917*PSD/Qa)+(0.427*td*PSD^2/Qa)]]*60/10^3$ m^3 Eq 4.23

Below ground pipe (Vs) = $[(0.5*Qa-0.637*PSD+0.089*PSD^2/Qa)*td]*60/10^3$ m^3 Eq 4.8

Below ground rect. tank (Vs) = $[(0.5*Qa-0.572*PSD+0.048*PSD^2/Qa)*td]*60/10^3$ m^3 Eq 4.13

td (mins)	I (mm/hr)	Qa (L/s)	Above Vs (m^3)	Pipe Vs (m^3)	B/G Vs (m^3)
5	134.3	21.0			2.85
25	62.5	9.8			5.83
36	49.9	7.8			6.28
46	42.8	6.7			6.50
56	38.0	5.9			6.64
66	34.3	5.4			6.72
76	31.6	4.9			6.76
87	29.2	4.6			6.77
97	27.4	4.3			6.76
107	25.9	4.1			6.73

Table 1 - Storage as function of time for AEP of 5%

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m^3)
Above				
Pipe				
B/ground	85.8	29.4	4.6	**6.77**

Table 2 - Storage requirements for AEP of 5%

Frequency of operation of Above Ground storage

Qop2 = 0.75 Cl 2.4.5.1

Qp2 =Qop2*Qp1 (where Qp1=PSD) = 1.39 L/s at which time above ground storage occurs

I = $360*Qp2/(2*Cw*As*10^3)$ = 8.9 mm/h Eq 4.24

Period of Storage

Time to Fill:

Above ground (tf) = $td*(1-0.92*PSD/Qa)$ Eq 4.27

Below ground pipe (tf) = $td*(1-2*PSD/(3*Qa))$ Eq 3.2

Below ground rect. tank (tf) = $td*(1-2*PSD/(3*Qa))$ Eq 3.2

Time to empty:

Above ground (te) = $(Vs+0.33*PSD^2*td/Qa*60/10^3)*(1.14/PSD)*(10^3/60)$ Eq 4.28

Below ground pipe (te) = $1.464/PSD*(Vs+0.333*PSD^2*td/Qa*60/10^3)*(10^3/60)$ Eq 4.32

Below ground rect. tank (te) = $2.653/PSD*(Vs+0.333*PSD^2*td/Qa*60/10^3)*(10^3/60)$ Eq 4.36

Storage period (Ps = tf + te) Eq 4.26

Type	td (mins)	Qa (L/s)	Vs (L/s)	tf (mins)	te (mins)	Ps (mins)
Above						
Pipe						
B/ground	85.8	4.6	6.8	63.6	196.9	260.5

Table 3 - Period of Storage requirements for AEP of 5%

Orifice

Permissible site discharge (Qu=PSD) = 1.79 L/s (Underground storage)

Orifice coefficient (CD) = 1 For sharp circular orifice

Gravitational acceration (g) = 9.81 m/s^2

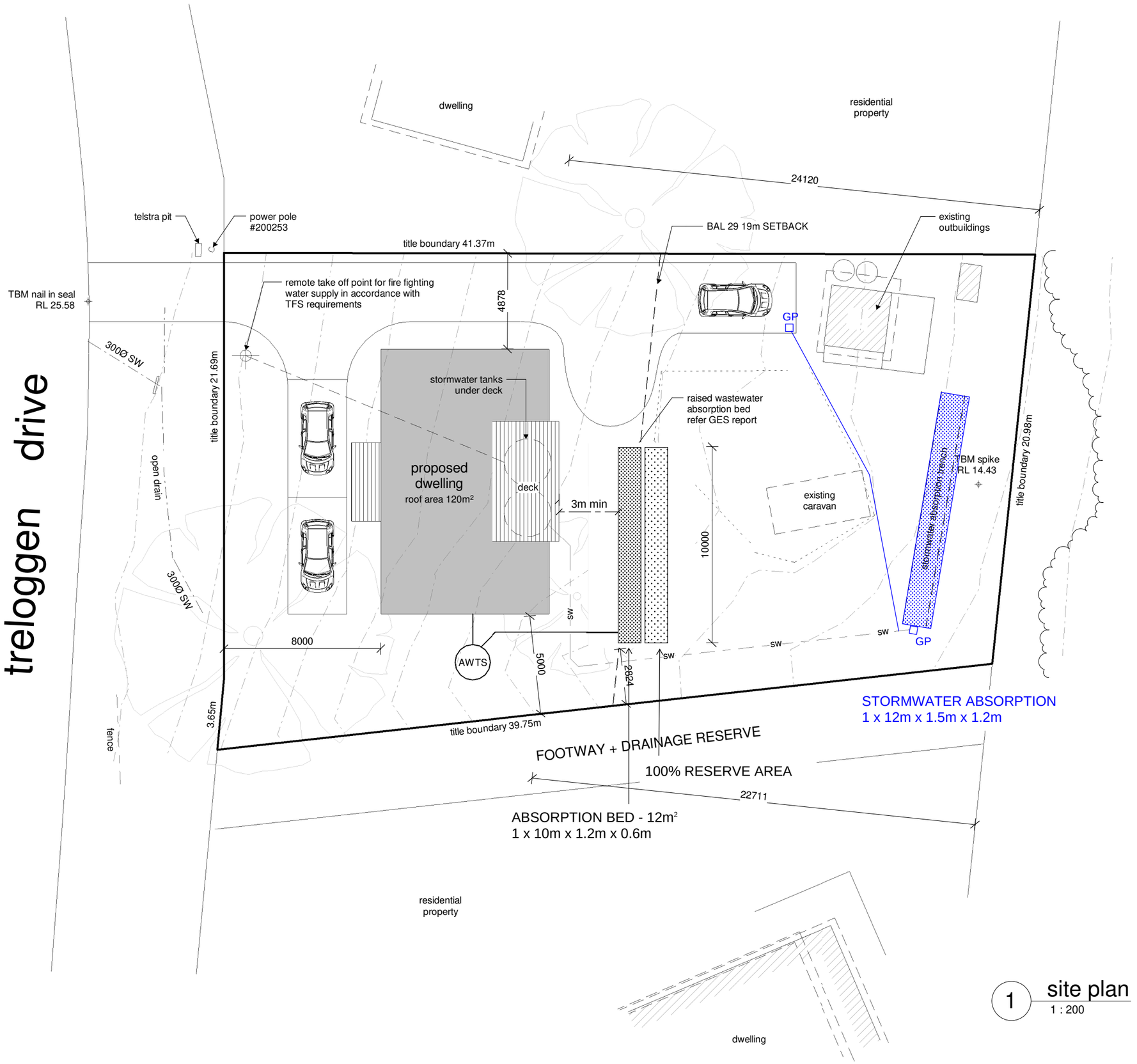
Maximum storage depth above orifice (H) = 1200 mm

Orifice flow (Q) = $CD*Ao*\sqrt{(2*g*H)}$

Therefore:

Orifice area (Ao) = 368 mm^2

Orifice diameter ($D = \sqrt{(4*Ao/\pi)}$) = 21.7 mm



1 site plan
1 : 200

New Services

STORMWATER PIPE WITH FLOW DIRECTION

GRATED STORMWATER PIT 450x450 CLASS A ACO GALVANISED HEELGUARD OR SIMILAR ENGINEER APPROVED

Performance Solution Compliance Notes:

AS 3500.3 - CL 7.10

- 7.10.1 - OVERFLOW IS SAFE AND DOES NOT COMPROMISE FREEBOARD TO HABITABLE SPACES.

GENERAL

- AS/NZS 3500.3: PART 3 STORMWATER DRAINAGE AUSTRALIAN RAINFALL AND RUN-OFF VOLUME 8: URBAN STORMWATER MANAGEMENT
- AUSTRALIAN RUNOFF QUALITY - A GUIDE TO WATER SENSITIVE URBAN DESIGN
- STORM DRAINAGE DESIGN IN SMALL URBAN CATCHMENTS: A HANDBOOK FOR AUSTRALIAN PRACTICE
- WATER SENSITIVE URBAN DESIGN (WSUD) ENGINEERING PROCEDURE: STORMWATER
- WATER SERVICES ASSOCIATION OF AUSTRALIA CODE (WSAA)

Stormwater Services Notes:

1. ALL SITE SAFETY & MANAGEMENT PROCEDURES SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF STATE GROWTH SPECIFICATIONS: SECTION 168 OCCUPATIONAL HEALTH AND SAFETY & SECTION 176 ENVIRONMENTAL MANAGEMENT.
2. ALL PIPES UNDER TRAFFICABLE AREAS ARE TO BE BACKFILLED FULL DEPTH WITH 20 F.C.R. AND FULLY COMPACTED.
3. ALL STORMWATER PIPES TO BE PVC-U-SWJ CLASS "SN8" TO AS1254 UNO.
4. ALL DRAIN AND TRENCH CONSTRUCTION SHALL COMPLY WITH THE LGAT STANDARD DRG TSD G01.
5. ANY EXCAVATED TRENCHES IN EXCESS OF 1.5M IN DEPTH ARE TO BE ADEQUATELY SHORED TO PREVENT COLLAPSE DURING WORKS.

REV:	DESCRIPTION:	DATE:
1	Revision 1	Date 1

PROJECT:
proposed dwelling

FOR:
k. ford
60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:
site plan

DRAWING NO:	DRAWN BY: JB
a04	DATE: 23.01.25
SCALE: 1 : 200	PROJECT: 1123FO

jennifer binns
www.jenniferbinnsdesign.com.au
0439 765 452 : mail @ jenniferbinnsdesign.com.au
52 cecilia street st helens tasmania 7216
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA
ACCREDITATION NO: CC 1269L

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Katie Ford *Owner name*
10 Hilly Street *Address*
Mortlake 2137 *Suburb/postcode*

Designer details:

Name: Vinamra Gupta
Category: Civil Engineer
Business name: Geo-Environmental Solutions
Phone No: 03 6223 1839
Business address: 29 Kirksway Place
Battery Point 7004
Fax No: N/A
Licence No: CC774A
Email address: office@geosolutions.net.au

Details of the proposed work:

Owner/Applicant Katie Ford
Designer's project reference No. J11364
Address: 60 Treloggen Drive
Lot No: 104144/1
Binalong Bay 7216

Type of work: Building work ☐ Plumbing work ☒ *(X all applicable)*

Description of work:
On-Site stormwater 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:

Onsite stormwater retention

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Jan-25
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Jan-25
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by: Geo-Environmental Solutions	Date: Jan-25
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Jan-25

Standards, codes or guidelines relied on in design process:

AS3500 (Parts 0-5)-2013 Plumbing and drainage set.

Any other relevant documentation:

Stormwater Assessment - 60 Treloggen Drive Binalong Bay - Jan-25

Attribution as designer:

I Vinamra Gupta, 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.

	Name: (print)	*Signed*	*Date*
Designer:	Vinamra Gupta		29/01/2025
Licence No:	685982720		

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:

- [x] The works will not increase the demand for water supplied by TasWater
- [x] 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
- [x] The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- [x] The works will not damage or interfere with TasWater's works
- [x] The works will not adversely affect TasWater's operations
- [x] The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- [x] I have checked the LISTMap to confirm the location of TasWater infrastructure
- [x] 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 ..... Vinamra Gupta..... 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:	Vinamra Gupta		29/01/2025

GEO-ENVIRONMENTAL ASSESSMENT

60 Treloggen Drive

Binalong Bay

January 2025

GEO-ENVIRONMENTAL

SOLUTIONS

Investigation Details

Client:	Katie Ford
Site Address:	60 Treloggen Drive, Binalong Bay
Date of Inspection:	28/01/2025
Proposed Works:	New house
Investigation Method:	Hand Auger
Inspected by:	JP Cumming

Site Details

Certificate of Title (CT):	104144/1
Title Area:	Approx. 928.6 m²
Applicable Planning Overlays:	Bushfire-prone areas, Landslip Hazard, Priority Vegetation
Slope & Aspect:	7° SE facing slope
Vegetation:	Mixed Flora

Background Information

Geology Map:	MRT
Geological Unit:	Devonian Granite
Climate:	Annual rainfall 700mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	AS2870:2011, AS1726:2017, AS1547:2012 & AS4055:2021

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. Tests were conducted across the site to obtain bearing capacities of the material at the time of this investigation.

Soil Profile Summary

BH 1 Depth (m)	BH 2 Depth (m)	USCS	Description
0.0 – 0.40	0.0 – 0.30	SW	Dark Grey **SAND**, slightly moist, medium dense consistency, trace of gravels, common fine rootlets, gradual boundary to
0.40 – 0.90	0.30 – 0.80	SW	Light Brownish Grey **SAND**, slightly moist to moist, medium dense consistency, trace of gravels, clear boundary to
0.90 – 1.10	0.80 – 1.00	SW	Black **SAND**, dry, dense consistency, ~10% quartz gravels, clear boundary to
1.10 – 1.8+	1.00 – 1.5+	SP	Light Brown **SAND**, dry, dense consistency, ~10% quartz gravels

Site Notes

The soils on site consist of deep windblown sands which have developed over Devonian granite.

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: That is a slightly reactive site.

Wind Loading Classification

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

Wind Classification: N2

Region:	A
Terrain Category:	2.5
Shielding Classification:	NS
Topographic Classification:	T1
Wind Classification:	N2
Design Wind Gust Speed – m/s ($V_{h,u}$):	40

Wastewater Classification & Recommendations

According to AS1547-2012 (on-site waste-water management) the natural soil is classified as **SAND (category 1)**. Secondary treatment of wastewater will be required due to the limited space available onsite. It is proposed to install a package treatment system (e.g. AWTS such as Econocycle, Envirocycle, Ozzikleen etc) with the treated wastewater applied into an absorption bed. A Design Loading Rate (DLR) of 40L/m^2/day has therefore been applied for secondary treated wastewater.

The proposed two-bedroom dwelling has a calculated maximum wastewater output of 480L/day. This is based on a tank water supply and a maximum occupancy of 4 people (120L/day/person).

Using the DLR of 40L/m^2/day, an absorption area of at least 12m^2 will be required. This can be accommodated by one 10m x 1.2m x 0.6m absorption bed as per the attached design. The base of the absorption area will need to be ripped to ensure the soil beneath the bed is not compacted.

A cut off drain will be required upslope of the application area to divert any surface water flows. A 100% reserve area will also need to be set aside and keep free from development for any future wastewater requirements. There is sufficient space available onsite to accommodate the required reserve.

The following setback distances are required to comply with the Building Act 2016:

Upslope or level buildings:	3m
Downslope buildings:	3.75m
Upslope or level boundaries:	1.5m
Downslope boundaries:	8.5m
Downslope surface water:	29m

Compliance with Building Act 2016 Guidelines for On-site Wastewater Management Systems is outlined in the attached table.

Construction Notes & Recommendations

The site has been classified as **Class S** - Slightly reactive site, which may experience only slight ground movement from moisture changes.

It is recommended that all footings be founded in the natural material with bearing capacities >100kPa.

All earthworks on site must comply with AS3798:2012, 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 in 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	Katie Ford	Assess. Date	29-Jan-25
		Ref. No.	
Assessed site(s)	60 Treloggen Drive Binalong Bay	Site(s) inspected	
Local authority	Break O'Day	Assessed by	JP Cumming

This report summarises wastewater volumes, climatic inputs for the site, soil characteristics and sustem 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 = 480 (using the 'No. of bedrooms in a dwelling' method)

Septic tank wastewater volume (L/day) = 160

Sullage volume (L/day) = 320

Total nitrogen (kg/year) generated by wastewater = 1.5

Total phosphorus (kg/year) generated by wastewater = 1.2

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)	51	46	56	55	46	49	68	67	70	68	64	62
Adopted rainfall (R, mm)	51	46	56	55	46	49	68	67	70	68	64	62
Retained rain (Rr, mm)	43	39	48	47	39	42	58	57	60	58	54	53
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	130	110	91	63	42	29	32	42	63	84	105	126
Evapotr. less rain (mm)	**87**	**71**	**43**	**16**	**3**	**-12**	**-26**	**-15**	**3**	**26**	**51**	**73**

Annual evapotranspiration less retained rain (mm) = 320

Soil characterisitics

Texture = Sand Category = 1 Thick. (m) = 2

Adopted permeability (m/day) = 3 Adopted LTAR (L/sq m/day) = 40 Min depth (m) to water = 5

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:	Evapotranspiration bed(s)
The preferred type of above-ground secondary treatment:	None
Site modifications or specific designs:	Not needed

Suggested dimensions for on-site secondary treatment system

Total length (m) =	11
Width (m) =	1.2
Depth (m) =	0.6
Total disposal area (sq m) required =	12
comprising a Primary Area (sq m) of:	12
and a Secondary (backup) Area (sq m) of:	

Sufficient area is available on site

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

Comments

Using the DLR of 40L/m2/day, an absorption area of 12m2 is 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	Katie Ford	Assess. Date	29-Jan-25
		Ref. No.	
Assessed site(s)	60 Treloggen Drive Binalong Bay	Site(s) inspected	
Local authority	Break O'Day	Assessed by	JP 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	500	V. high	High	Moderate	Other factors lessen impact
	Density of disposal systems	/sq km	20	Mod.	Moderate		
	Slope angle	degrees	7	High	Low		
	Slope form	Straight simple		High	Low		
	Surface drainage	Good		High	Very low		
	Flood potential	Site floods <1:100 yrs		High	Very low		
	Heavy rain events	Infrequent		High	Moderate		
A	Aspect (Southern hemi.)	Faces SE or SW		V. high	High		
	Frequency of strong winds	Common		High	Low		
	Wastewater volume	L/day	480	High	Low	Moderate	
	SAR of septic tank effluent		1.7	High	Low		
	SAR of sullage		2.6	High	Moderate		
	Soil thickness	m	2.0	V. high	Very low		
	Depth to bedrock	m	3.0	V. high	Very low		
	Surface rock outcrop	%	0	V. high	Very low		
	Cobbles in soil	%	10	V. high	Low		
	Soil pH		5.5	High	Low		
	Soil bulk density	gm/cub. cm	1.4	High	Very low		
	Soil dispersion	Emerson No.	8	V. high	Very low		
	Adopted permeability	m/day	3	Mod.	Very high	Moderate	Other factors lessen impact
	Long Term Accept. Rate	L/day/sq m	40	High	Very high	Moderate	Other factors lessen impact

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

Comments

The site has the capability to accept secondary treated wastewater

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	Katie Ford	Assess. Date	29-Jan-25
		Ref. No.	
Assessed site(s)	60 Treloggen Drive Binalong Bay	Site(s) inspected	
Local authority	Break O'Day	Assessed by	JP 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	
AA	Cation exchange capacity	mmol/100g	20	High	Very high		
A	Phos. adsorp. capacity	kg/cub m	0.3	High	High		
	Annual rainfall excess	mm	-320	High	Very low		
	Min. depth to water table	m	5	High	Very low		
	Annual nutrient load	kg	2.6	High	Very low		
A	G'water environ. value	Recreational		V. high	High		
	Min. separation dist. required	m	2	High	Very low		
	Risk to adjacent bores	Very low		V. high	Very low		
A	Surf. water env. value	Recreational		V. high	High		
AA	Dist. to nearest surface water	m	45	V. high	Very high		
	Dist. to nearest other feature	m	20	V. high	High	Low	Other factors lessen impact
	Risk of slope instability	Low		V. high	Low		
	Distance to landslip	m	60	V. high	Moderate		

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

Comments

Secondary treatment of wastewater is required

Explanatory Notes

1 Scope of Works

The methods of description and classification of soils used in this report are based largely on Australian Standard 1726 – Geotechnical Site Investigations (AS1726:2017), with reference to Australian Standard 1289 – Methods for testing soils for engineering purposes (AS1289), for eventual Site Classification according to Australian Standard 2870 (AS2870:2011) – Residential Slabs and Footings and Australian Standard 1547 (AS1547:2012) On-site domestic wastewater management.

1.1 Site Classification AS2870:2011

Site classification with reference to the above Australian Standards are based on site reactivity.

Class	Foundation Conditions	Characteristic Surface Movement
A	Most sand and rock sites with little or no ground movement from moisture changes.	**0mm**
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes.	**0 – 20mm**
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes.	**20 – 40mm**
H-1	Highly reactive clay sites, which may experience high ground movement from moisture changes.	**40 – 60mm**
H-2	Highly reactive clay sites, which may experience very high ground movement from moisture changes.	**60 – 75mm**
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes.	**>75mm**

*Note: Soils where foundation performance may be significantly affected by factors other than reactive soil movement are classified as **Class P**.*

A site is classified as **Class P** when:

- The bearing capacity of the soil profile in the foundation zone is generally less than 100kpa
- If excessive foundation settlement may occur due to loading on the foundation.
- The site contains uncontrolled fill greater than 0.8m in depth for sandy sites and 0.4m in depth for other soil materials.
- The site is subject to mine subsistence, landslip, collapse activity or coastal erosion.
- The site is underlain by highly dispersive soils with significant potential for erosion
- If the site is subject to abnormal moisture conditions which can affect foundation performance

1.2 Soil Characterisation

This information explains the terms of phrase used within the soil description area of the report.

It includes terminology for cohesive and non-cohesive soils and includes information on how the Unified Soil Classification Scheme (USCS) codes are determined.

NON COHESIVE – SAND & GRAVEL		
Consistency Description	**Field Test**	**Dynamic Cone Penetrometer blows/100 mm**
Very loose (VL)	Easily penetrated with 13 mm reinforcing rod pushed by hand.	0 - 1
Loose (L)	Easily penetrated with 13 mm reinforcing rod pushed by hand. Can be excavated with a spade; 50 mm wooden peg can be easily driven.	1 - 3
Medium dense (MD)	Penetrated 300 mm with 13 mm reinforcing rod driven with 2 kg hammer, - hard shovelling.	3 - 8
Dense (D)	Penetrated 300 mm with 13 mm reinforcing rod driven with 2 kg hammer, requires pick for excavation: 50 mm wooden peg hard to drive.	8 - 15
Very dense (VD)	Penetrated only 25 - 50 mm with 13 mm reinforcing rod driven with 2 kg hammer.	>15

COHESIVE - SILT & CLAY		
Consistency Description	**Field Test**	**Indicative undrained shear strength kPa**
Very soft	Easily penetrated >40 mm by thumb. Exudes between thumb and fingers when squeezed in hand.	<12
Soft	Easily penetrated 10 mm by thumb. Moulded by light finger pressure	>12 and <25
Firm	Impression by thumb with moderate effort. Moulded by strong finger pressure	>25 and <50
Stiff	Slight impression by thumb cannot be moulded with finger.	>50 and <100
Very Stiff	Very tough. Readily indented by thumbnail.	>100 and <200
Hard	Brittle. Indented with difficulty by thumbnail.	>200

1.3 USCS Material Descriptions

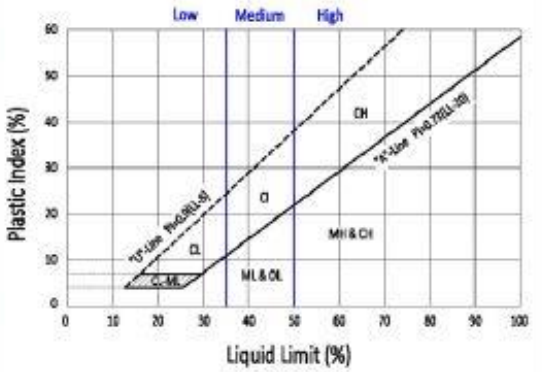
Soils for engineering purposes are the unconsolidated materials above bedrock, they can be residual, alluvial, colluvial or aeolian in origin.

Major Divisions		Particle size mm	USCS Group Symbol	Typical Names	Laboratory Classification				
					% < 0.075 mm (2)	Plasticity of fine fraction	$C_u = \frac{D_{60}}{D_{10}}$	$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})}$	NOTES
COARSE GRAINED SOILS (more than half of material less than 63 mm is larger than 0.075 mm)	BOULDERS	200							
	COBBLES	63							
	GRAVELS (more than half of coarse fraction is larger than 2.36 mm)	coarse 20 / medium 6 / fine 2.36	GW	Well graded gravels and gravel-sand mixtures, little or no fines	0-5	—	>4	Between 1 and 3	(1) Identify fines by the method given for fine-grained soils.
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines, uniform gravels	0-5	—	Fails to comply with above		
			GM	Silty gravels, gravel-sand-silt mixtures (1)	12-50	Below 'A' line or PI<4	—	—	
			GC	Clayey gravels, gravel-sand-clay mixtures (1)	12-50	Above 'A' line and PI>7	—	—	
	SANDS (more than half of coarse fraction is smaller than 2.36 mm)	coarse 0.6 / medium 0.2 / fine 0.075	SW	Well graded sands and gravelly sands, little or no fines	0-5	—	>6	Between 1 and 3	(2) Borderline classifications occur when the percentage of fines (fraction smaller than 0.075 mm size) is greater than 5% and less than 12%. Borderline classifications require the use of SP-SM, GW-GC.
			SP	Poorly graded sands and gravelly sands, little or no fines	0-5	—	Fails to comply with above		
			SM	Silty sands, sand silt mixtures (1)	12-50	Below 'A' line or PI<4	—	—	
			SC	Clayey sands, sand-clay mixtures (1)	12-50	Above 'A' line and PI>7	—	—	
FINE GRAINED SOILS (more than half of material less than 63 mm is smaller than 0.075 mm	SILTS & CLAYS (Liquid Limit ≤50%)		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity					
			CL CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays					
			OL	Organic silts and clays of low plasticity					
	SILTS & CLAYS (Liquid Limit >50%)		MH	Inorganic silts, mic- aceous or diato-maceous fine sands or silts, elastic silts					
			CH	Inorganic clays of high plasticity, fat clays					
			OH	Organic silts and clays of high plasticity					
	HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils					

Use the gradation curve of material passing 63 mm for classification of fractions according to the criteria given in 'Major Divisions'

Plasticity Chart

For classification of fine grained soils and fine fraction of coarse grained soils.



Grain size analysis is performed by two processes depending on particle size. Sand silt and clay particles are assessed using a standardised hydrometer test, and coarse sand and larger is assessed through sieving by USCS certified sieves. For more detail see the following section.

Soil Classification	**Particle Size**
Clay	Less than 0.002mm
Silt	0.002 – 0.06mm
Fine/Medium Sand	0.06 – 2.0mm
Coarse Sand	2.0mm – 4.75mm
Gravel	4.75mm – 60.00mm

1.4 Bearing Capacities and DCP testing.

DCP and PSP weighted penetrometer tests – Dynamic Cone Penetrometer (DCP) and Perth Sand Penetrometer (PSP) tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 100mm increments of penetration. Normally, there is a depth limitation of 1.2m but this may be extended in certain conditions by the use of extension rods. The methods for the two tests are quite similar.

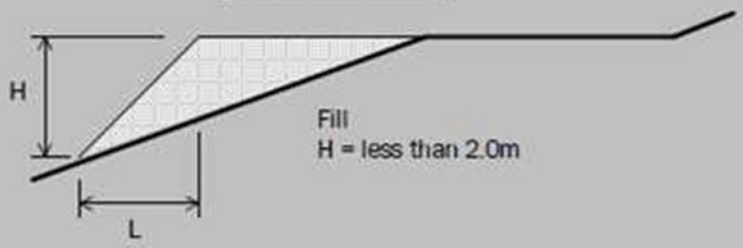
- Dynamic Cone Penetrometer – a 16mm rod with a 20mm diameter cone end is driven with a 9kg hammer dropping 510mm (AS 1289, Test 6.3.2).
- Perth Sand Penetrometer – a 16mm diameter flat-ended rod is driven with a 9kg hammer, dropping 600mm (AS 1289 Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.

Site Anomalies – During construction GES will need to be notified of any major variation to the foundation conditions as predicted in this report.

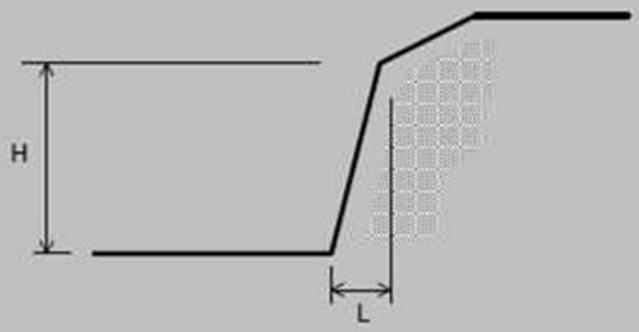
1.5 Batter Angles for Embankments *(Guide Only)*

Note : Retaining walls or other form of soil retaining methods must be adopted where the slope ratio is greater than that indicated in the table below :-

FILL EMBANKMENTS



CUT EMBANKMENTS



MATERIAL TYPE (refer soils report)		EMBANKMENT SLOPES (Height : Length)	
		Compacted Fill	Cutting
Stable Rock (A*)		2 : 3	6 : 1
Sand (A*)		1 : 2	2 : 3
Silt (P*)		1 : 4	1 : 4
Clay	Firm Clay	1 : 2	1 : 1
	Soft Clay	Not Suitable	2 : 3
Soft Soils (P*)		Not Suitable	Not Suitable

Glossary of Terms

Bearing Capacity – Maximum bearing pressure that can be sustained by the foundation from the proposed footing system under service loads which should avoid failure or excessive settlement.

Clay – (Mineral particles less than 0.002mm in diameter). Fine grained cohesive soil with plastic properties when wet. Also includes sandy clays, silty clays, and gravelly clays.

Dynamic Cone Penetrometer (DCP) – Field equipment used to determine underlying soil strength and therefore bearing capacity (kPa) by measuring the penetration of the device into the soil after each hammer blow.

Dispersive soil – A soil that has the ability to pass rapidly into suspension in water.

Footing – Construction which transfers the load from the building to the foundation.

Foundation – Ground which supports the building

Landslip – Foundation condition on a sloping site where downhill foundation movement or failure is a design consideration.

Qualified Engineer – A professional engineer with academic qualifications in geotechnical or structural engineering who also has extensive experience in the design of the footing systems for houses or similar structures.

Reactive Site – Site consisting of clay soil which swells on wetting and shrinks on drying by an amount that can damage buildings on light strip footings or unstiffened slabs. Includes sites classified as S, M, H-1, H-2 & E in accordance with AS2870-2011.

Sand – (Mineral particles greater than 0.02mm in diameter). Granular non-cohesive, non-plastic soil that may contain fines including silt or clay up to 15%.

Services – Means all underground services to the site including but not limited to power, telephone, sewerage, water & storm water.

Silt – (Mineral particles 0.002 – 0.02mm in diameter). Fine grained non-cohesive soil, non-plastic when wet. Often confers a silky smoothness of field texture, regularly includes clay and sand to form clayey silts, sandy silts and gravelly silts.

Site – The site title, as denoted by address, lot number, or Certificate of Title (CT) number, or Property Identification Number (PID).

Surface Movement (Ys) – Design movement (mm) at the surface of a reactive site caused by moisture changes.

Disclaimer

This 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.

The scope of this study does not allow for the review of every possible geotechnical parameter or the soil conditions over the whole area of the site. Soil and rock samples collected from the investigation area are assumed to be representative of the areas from where they were collected and not indicative of the entire site. The conclusions discussed within this report are based on observations and/or testing at these investigation points.

This report does not purport to provide legal advice. Readers of the report should engage professional legal practitioners for this purpose as required.

No responsibility is accepted for use of any part of this report in any other context or for any other purpose by a third party.

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

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	Complies with A1 (b) (i) Land application area will be located with a minimum separation distance of 3m from an upslope or level 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.	Complies with A2 (b) (ii) Land application area will be located with a minimum separation distance of 29m of 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.	Complies 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 Complies with A3 (b) (iii) Land application area will be located with a minimum separation distance of 8.5m of 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	Complies 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	Complies with A5 (b)
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.	Complies with A6 (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	Complies

GES
GEO-ENVIRONMENTAL
SOLUTIONS

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: 60 Treloggen Drive, Binalong Bay

System Capacity: 4 persons @ 120L/person/day

Summary of Design Criteria

DLR: 40L/m^2/day.

Absorption area: 12m^2

Reserve area location /use: Assigned - more than 100% available

Water saving features fitted: Standard fixtures

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

Typical loading change consequences: Expected to be minimal due to use of AWTS and large land area

Overloading consequences: Continued overloading may cause hydraulic failure of the absorption 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 absorption 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 QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Katie Ford *Owner /Agent*

10 Hilly Street *Address*

Mortlake 2137 *Suburb/postcode*

Qualified person details:

Qualified person: John-Paul Cumming

Address: 29 Kirksway Place

Battery Point 7004

Phone No: 03 6223 1839

Fax No:

Licence No: AO999

Email address: jcumming@geosolutions.net.au

Qualifications and Insurance details: Certified Professional Soil Scientist (CPSS stage 2)

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

Speciality area of expertise: AS2870-2011 Foundation Classification

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

Details of work:

Address: 60 Treloggen Drive

Binalong Bay 7216

Lot No:

Certificate of title No: 104144/1

The assessable item related to this certificate: Classification of foundation Conditions according to AS2870-2011

(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: Foundation Classification

(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: J11364

Date: 29/01/2025

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Katie Ford *Owner name*
10 Hilly Street *Address*
Mortlake 2137 *Suburb/postcode*

Designer details:

Name: John-Paul Cumming
Category: Bld. Srvcs. Dsgnr. - Hydraulic
Business name: Geo-Environmental Solutions
Phone No: 03 6223 1839
Business address: 29 Kirksway Place
Battery Point 7004
Fax No: N/A
Licence No: CC774A
Email address: office@geosolutions.net.au

Details of the proposed work:

Owner/Applicant Katie Ford
Designer's project reference No. J11364
Address: 60 Treloggen Drive
Lot No: 104144/1
Binalong Bay 7216

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 absorption bed

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Jan-25
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Jan-25
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Jan-25

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 - 60 Treloggen Drive Binalong Bay - Jan-25

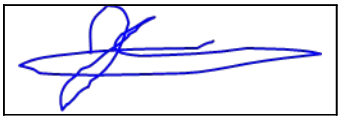
Geo-Environmental Assessment - 60 Treloggen Drive Binalong Bay - Jan-25

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.

	Name: (print)	*Signed*	*Date*
Designer:	John-Paul Cumming		29/01/2025
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.

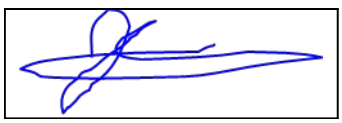
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

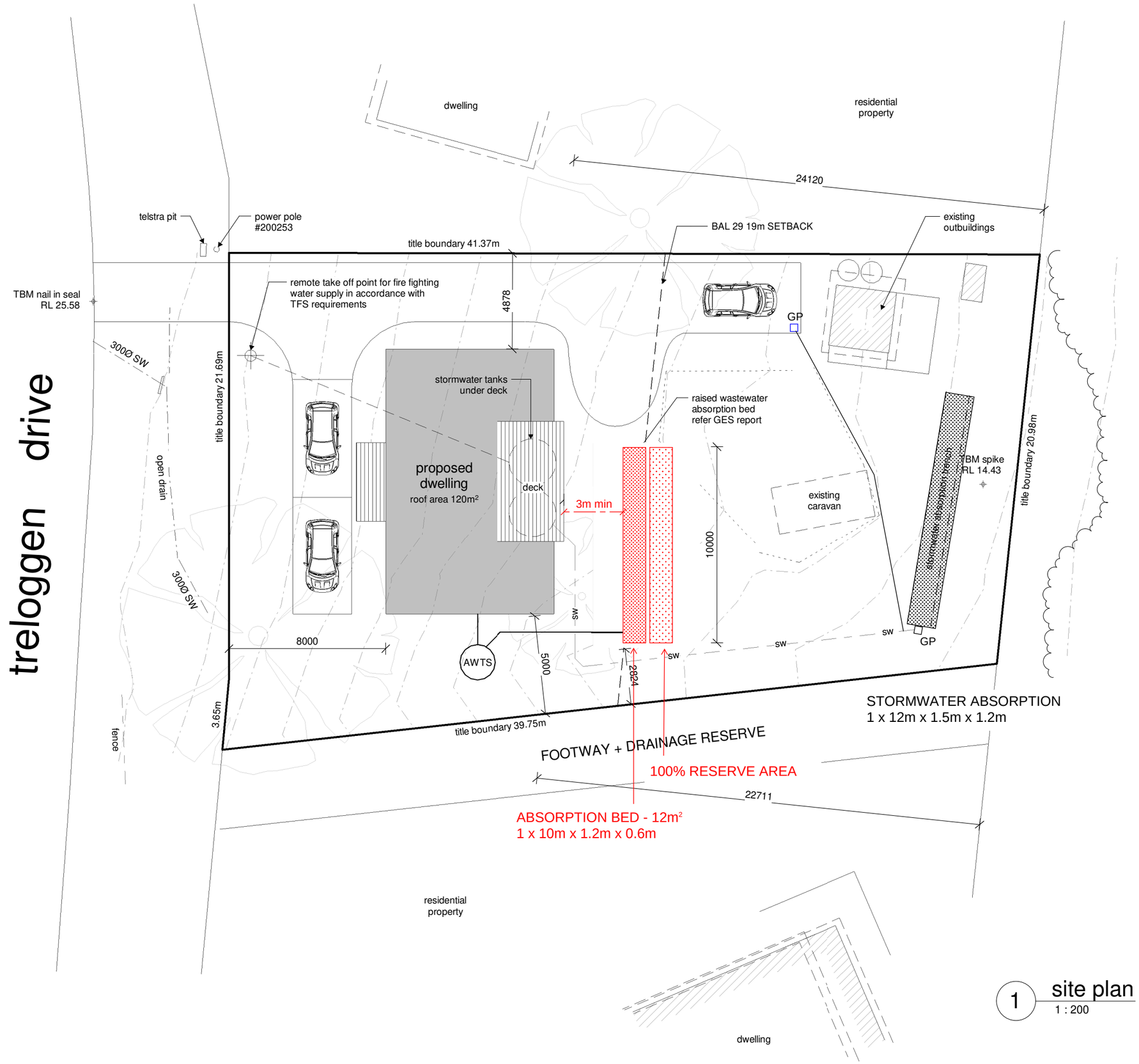
- [x] The works will not increase the demand for water supplied by TasWater
- [x] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [x] The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- [x] The works will not damage or interfere with TasWater's works
- [x] The works will not adversely affect TasWater's operations
- [x] The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- [x] I have checked the LISTMap to confirm the location of TasWater infrastructure
- [x] 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		29/01/2025



1 site plan
1 : 200

Wastewater system:

AWTS unit located to ensure min 1:60 fall from all fixtures. Vented according to NCC Vol 3 Tas C2D6

Cut-off drain

Absorption Bed
3 x 10m x 1.2m x 0.6m

Min 3m from upslope buildings
Min 1.5m from upslope or level boundaries
Min 8.5m from downslope boundary
Min 29m from downslope surface water

Refer to GES report

Dr. John Paul Cumming
Building Services Designer-Hydraulic
CCC774A

29/01/2025

GES GEO-ENVIRONMENTAL SOLUTIONS
29 Kirksway Place Battery Point
T| 62231839 E| office@geosolutions.net.au

REV:	DESCRIPTION:	DATE:
1	Revision 1	Date 1

PROJECT:
proposed dwelling

FOR:
k. ford
60 treloggen drive
binalong bay TAS 7216

DRAWING TITLE:
site plan

DRAWING NO: **a04**
DRAWN BY: JB
DATE: 23.01.25
SCALE: 1 : 200
PROJECT: 1123FO

jennifer binns
www.jenniferbinnsdesign.com.au
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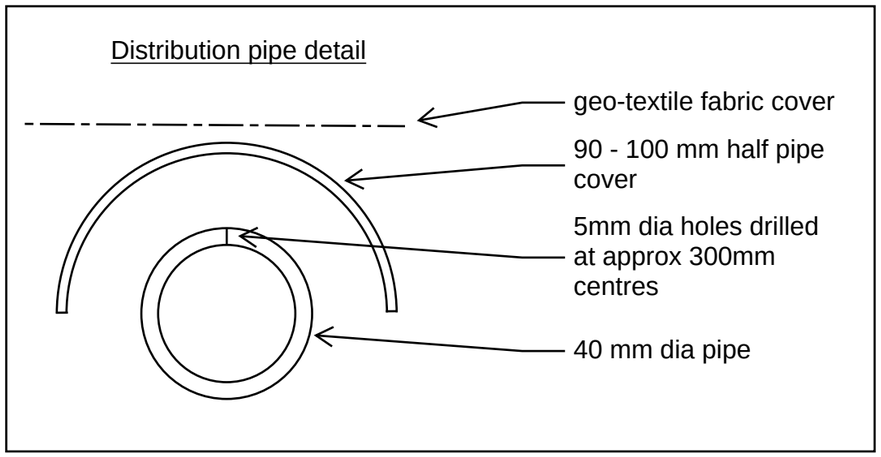
52 cecilia street st helens tasmania 7216
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA
ACCREDITATION NO: CC 1269L



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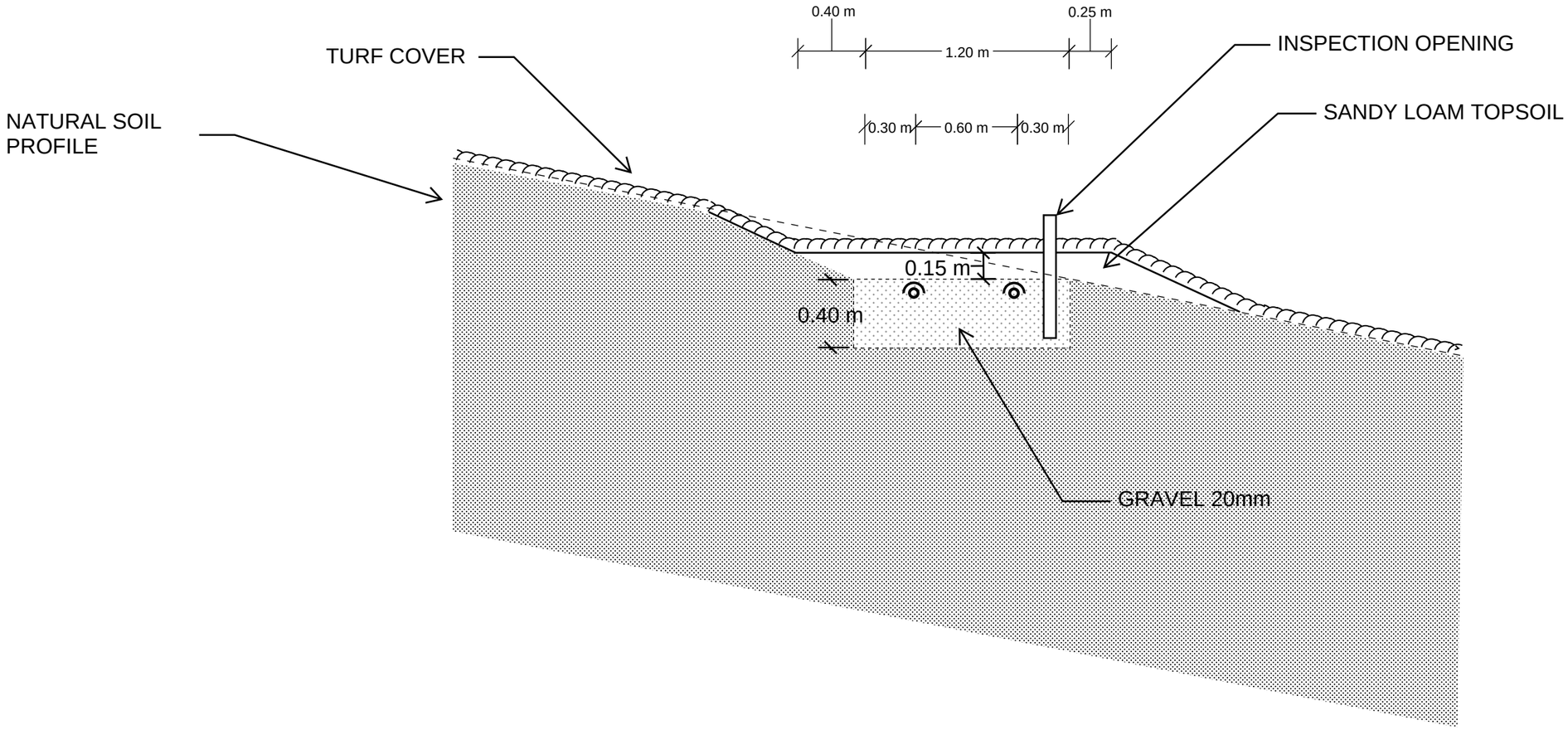

Do not scale from these drawings. Dimensions to take precedence over scale.		Date: August 2018		On-site Wastewater Cross-Section	Sheet 1 of 2

Design notes:

1.Absorption bed dimensions of up to 15m long by 0.60m deep by 1.2m wide.

2. Base of bed to be excavated level min 200mm into natural soils and smearing and compaction avoided.

3. Lower 450mm of bed to be filled with 20mm clean washed gravel and drilled 40mm distribution pipes packed into upper 100mm of sand.

4. 40mm distribution pipes drilled with sufficient 5mm holes in the top of the pipe (approx spacing 300mm) to distribute the effluent and half circle 90-100mm UPVC pipe, un-perforated, laid over each 40mm perforated lateral to direct water jet downwards.

5. One 5 mm hole at centre of invert of each pipe to allow for drainage between pump cycles.

6. Geotextile or filter cloth to be placed over the distribution pipes to prevent clogging of the pipes and aggregate - the sides of the bed should also be lined.

7. Final finished surface with sandy loam to be a minimum of 150 mm above aggregate with turf cover or mulched with appropriate vegetation (eg native grasses and small shrubs at 1 plant per 1 m2)

8. The turf or vegetation is an essential component of the system and must be maintained with regular mowing and or trimming as appropriate

9. The distribution pipe grid must be absolutely level to allow even distribution of effluent around the absorption area – it is recommended that the level be verified by running water into the system before backfilling and commissioning the trench

10.All works on site to comply with AS3500 and Tasmanian Plumbing code.

The pump must be capable of delivering the total flow rate required for all laterals whilst providing a 1.5m residual head (ie squirt height) at the highest orifice (with no more than 15% variation in squirt height across the whole bed).

For beds with individual laterals, no more than 15m long, it is acceptable to adopt a flow rate of 4-5L/min/lineal metre. Total dynamic head (including friction loss) will need to be determined on a site-specific basis.

Individual flush points must be installed for each lateral. This may be a screw cap fitting on a 90 degree elbow level with the bed surface or a pressure controlled flush valve inside an irrigation control box.

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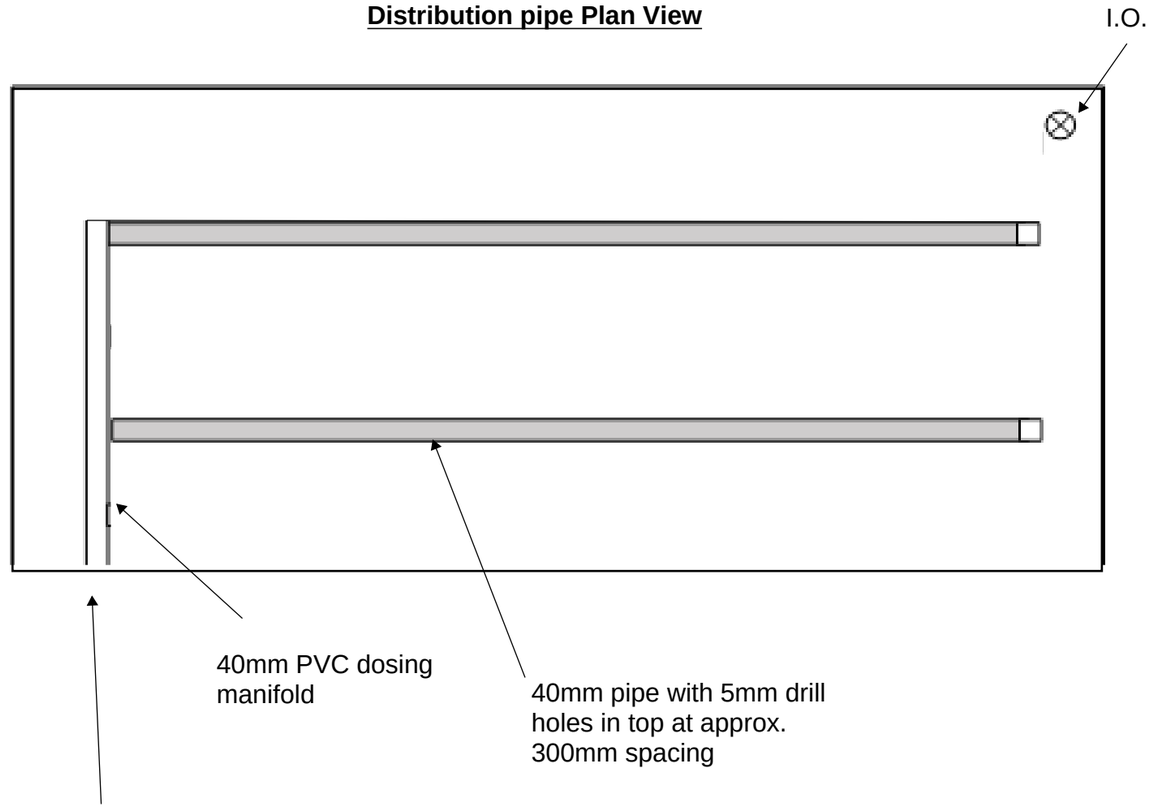
Distribution pipe Plan View



Do not scale from these drawings. Dimensions to take precedence over scale.		Date: April 2018		On-site Wastewater Design Notes	Sheet 2 of 2

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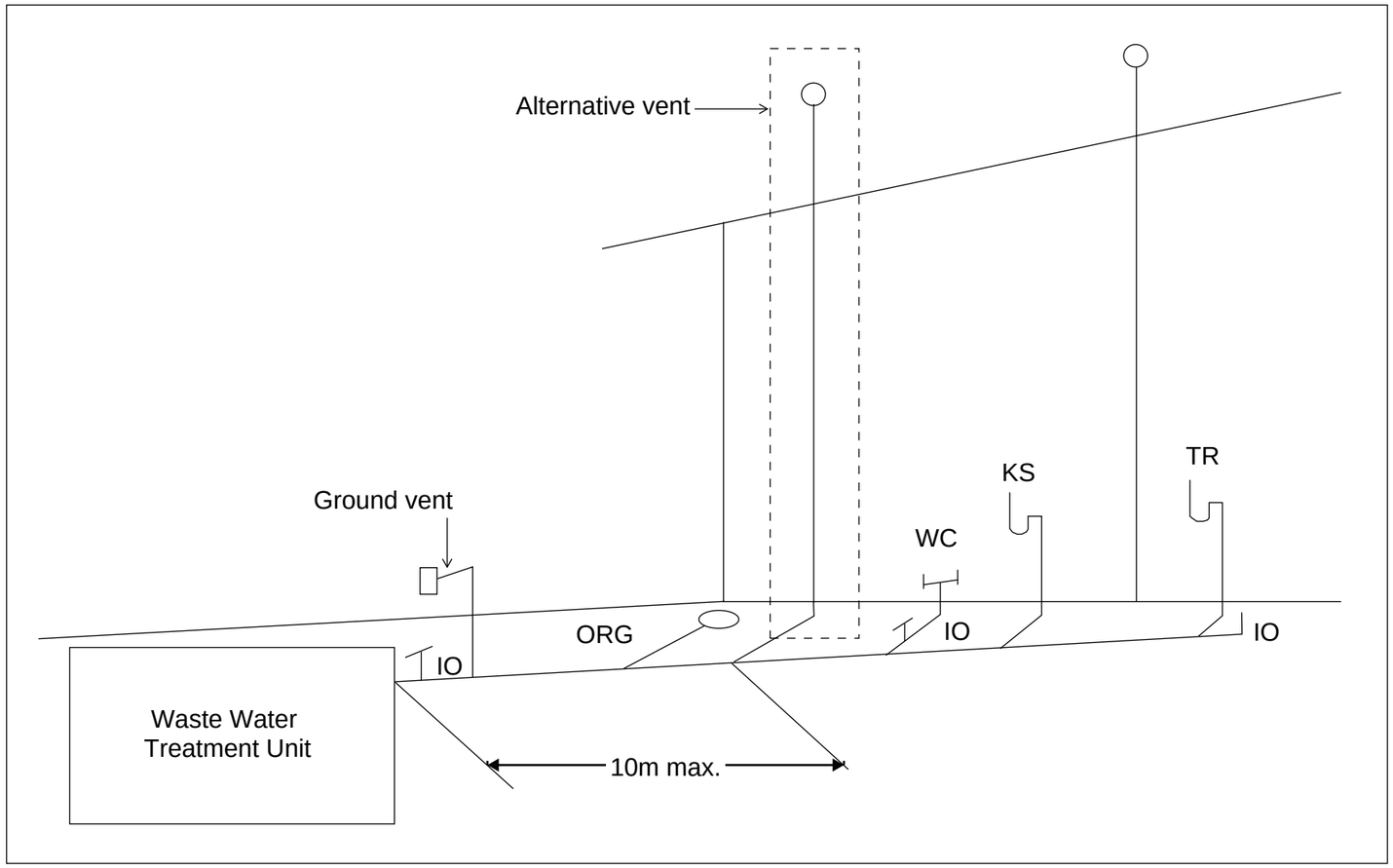

Tas Figure C2D6 Alternative Venting Arrangements

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 in 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 unites must terminate at or above finished surface level

Do not scale from these drawings. Dimensions to take precedence over scale.				Tas Figure C2D6 Alternative Venting Arrangements		Sheet 1 of 1