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 2023 / 00140
Applicant	J Binns
Proposal	Residential & Visitor Accommodation – Multiple Dwellings (2 co-joined dwellings)
Location	6 Coffey Drive, Binalong Bay

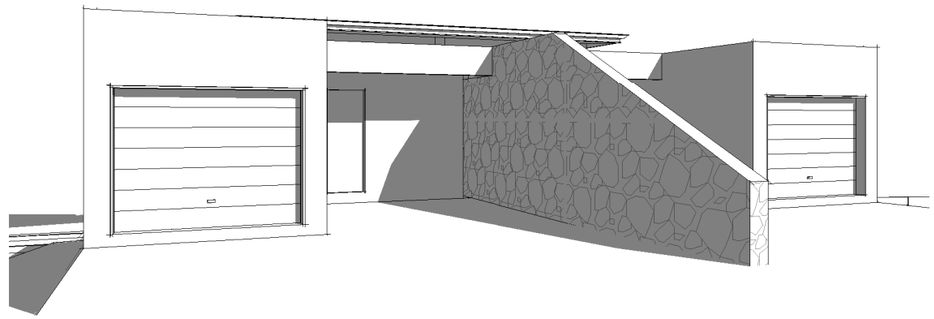
Plans and documents can be inspected at the Council Office by appointment, 32 – 34 Georges Bay Esplanade, St Helens during normal office hours or online at www.bodc.tas.gov.au.

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 Saturday 4 May 2024 **until 5pm Friday 17 May 2024**.

John Brown
GENERAL MANAGER

proposed 2 x multiple dwelling units

janette targett
6 coffey drive binalong bay tasmania 7216



planning application

Building Areas

unit 2 patio	19.27
unit 2 ground floor	92.29
unit 2 first floor	126.07
unit 2 deck	24.59
unit 1 patio	19.27
unit 1 ground floor	92.76
unit 1 first floor	126.07
unit 1 deck	24.59
	524.91

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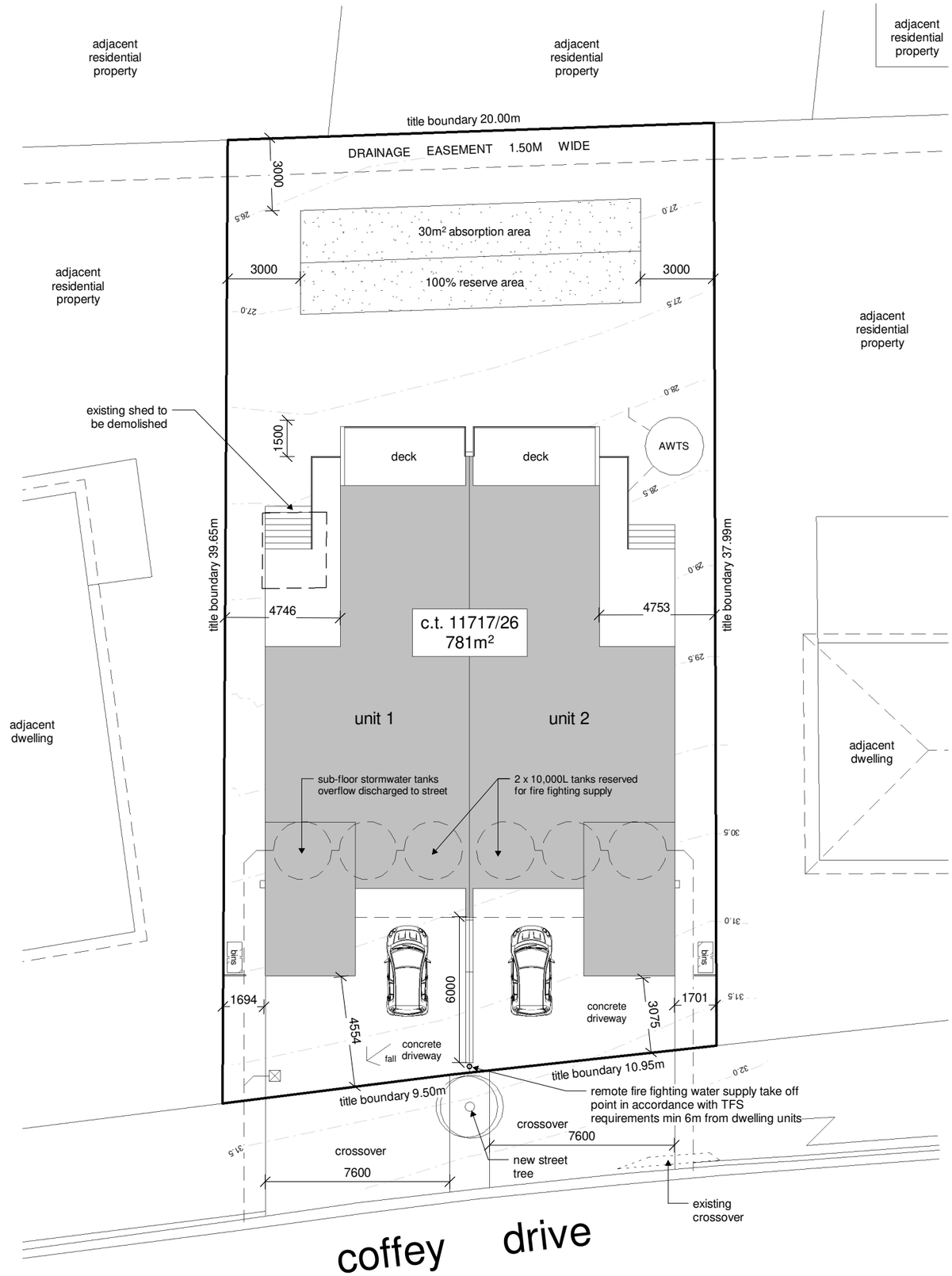
suite 8 level 1 avery house, 48 cecilia street, st helens 7216



1 site plan
1 : 200

Building Areas

unit 2 patio	19.27
unit 2 ground floor	92.29
unit 2 first floor	126.07
unit 2 deck	24.59
unit 1 patio	19.27
unit 1 ground floor	92.76
unit 1 first floor	126.07
unit 1 deck	24.59
	524.91

n

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units

FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
site plan

DRAWING NO: **a04**	DRAWN BY: JB
	DATE: 30.08.23
SCALE: 1 : 200	PROJECT: 0322TA

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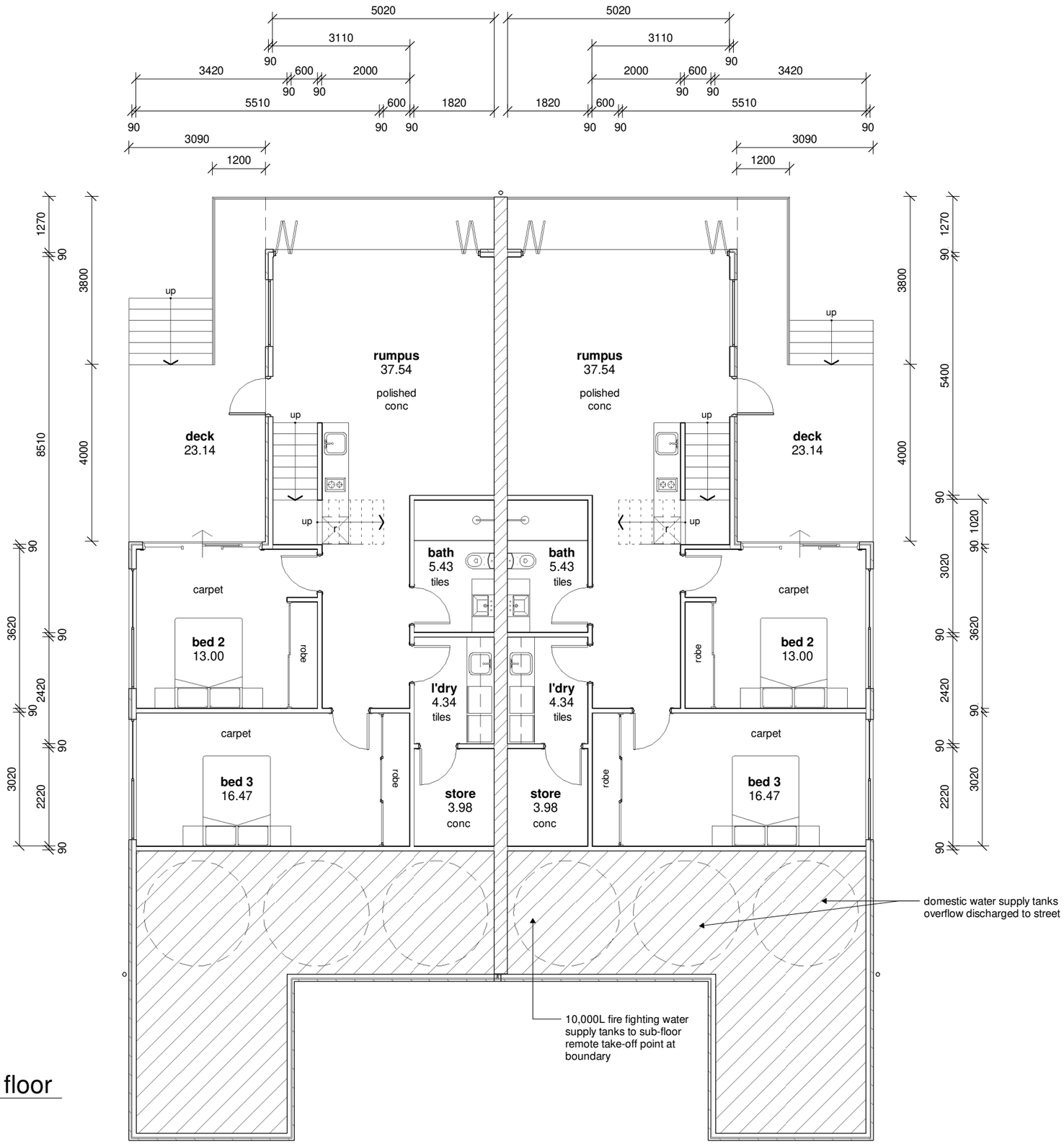
BUILDING DESIGNERS AUSTRALIA
ACCREDITATION NO: CC 1269L



1 proposed ground floor
1 : 100

n

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units

FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
ground floor plan

DRAWING NO:	DRAWN BY: JB
a05	DATE: 07.08.23
SCALE: 1 : 100	PROJECT: 0322TA

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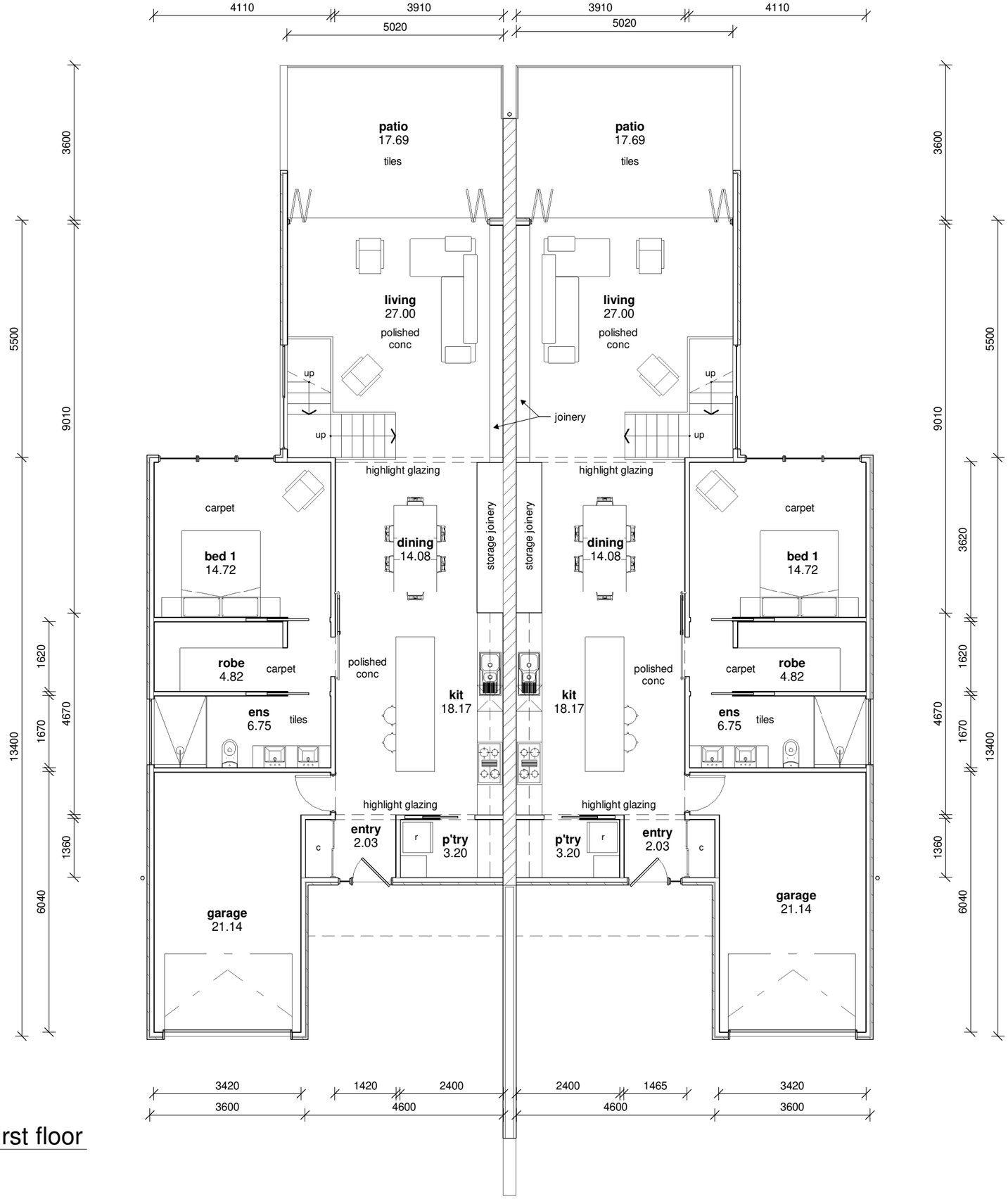

1 proposed first floor
1 : 100

n

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units

FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
first floor plan

DRAWING NO:	DRAWN BY: JB
a06	DATE: 07.08.23
SCALE: 1 : 100	PROJECT: 0322TA

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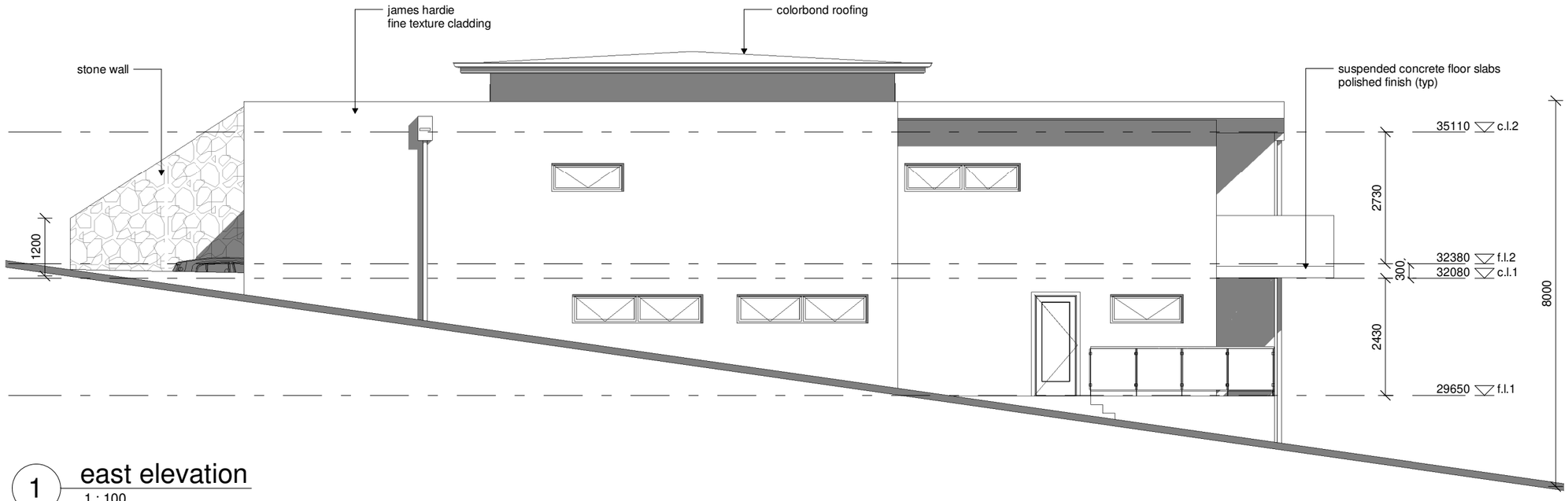
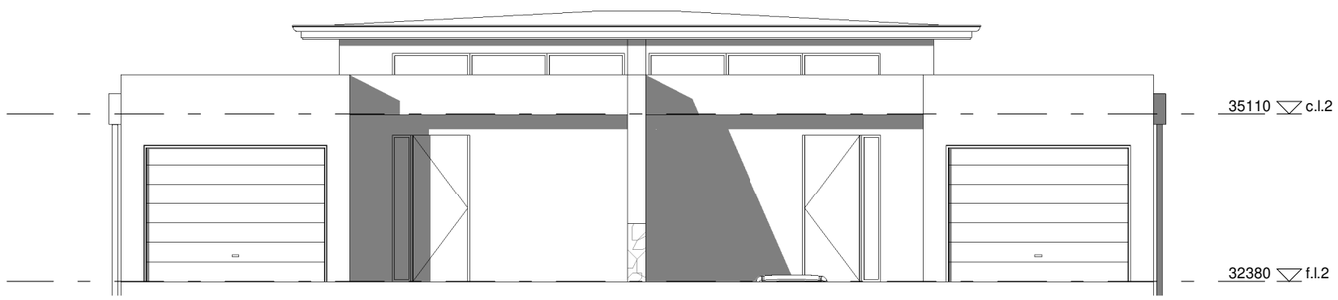
ACCREDITATION NO: CC 1269L



1 east elevation
1 : 100



2 south elevation
1 : 100

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units

FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
elevations

DRAWING NO:	DRAWN BY: JB
a07	DATE: 07.08.23
SCALE: 1 : 100	PROJECT: 0322TA

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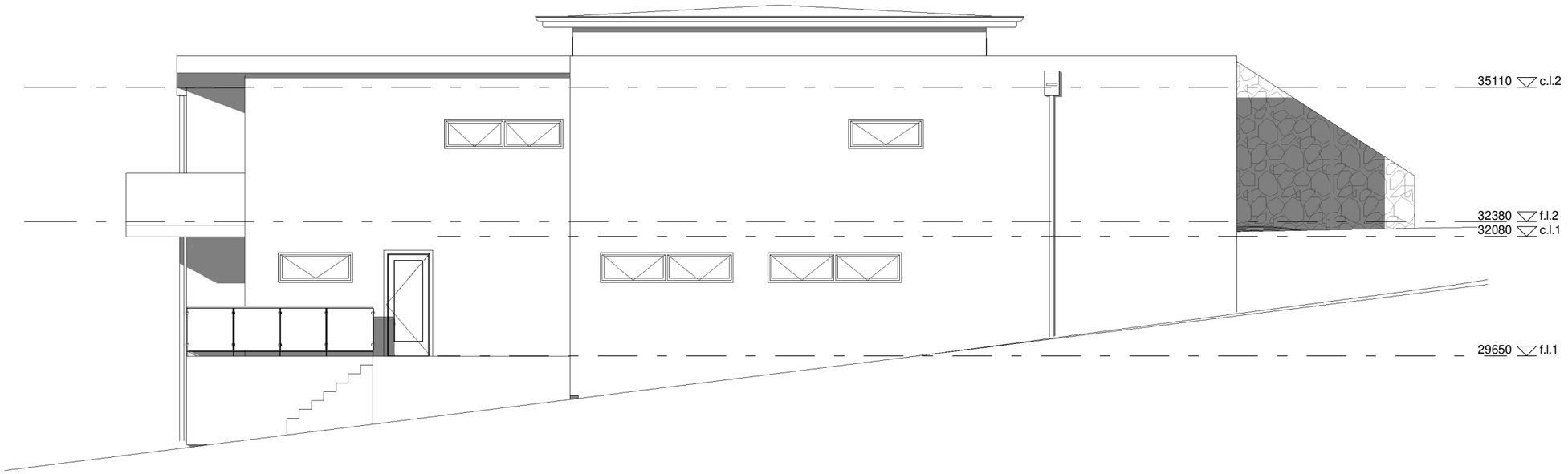
ACCREDITATION NO: CC 1269L



1 west elevation
1 : 100

2 north elevation
1 : 100

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units
FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
elevations

DRAWING NO:	DRAWN BY: JB
a08	DATE: 07.08.23
SCALE: 1 : 100	PROJECT: 0322TA

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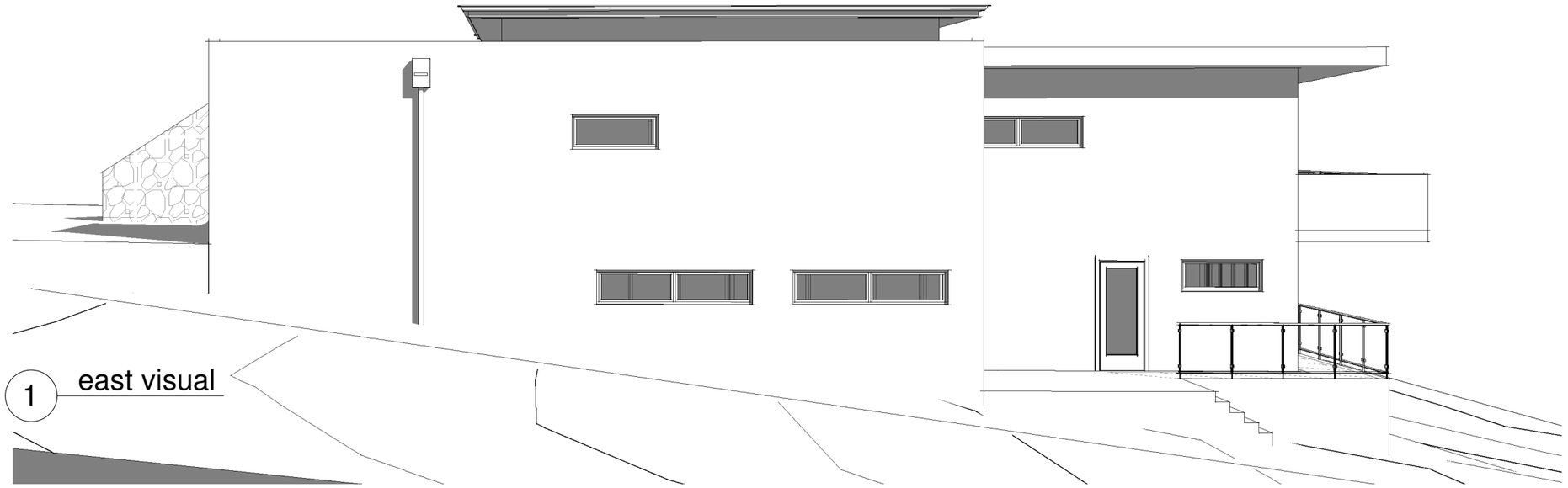
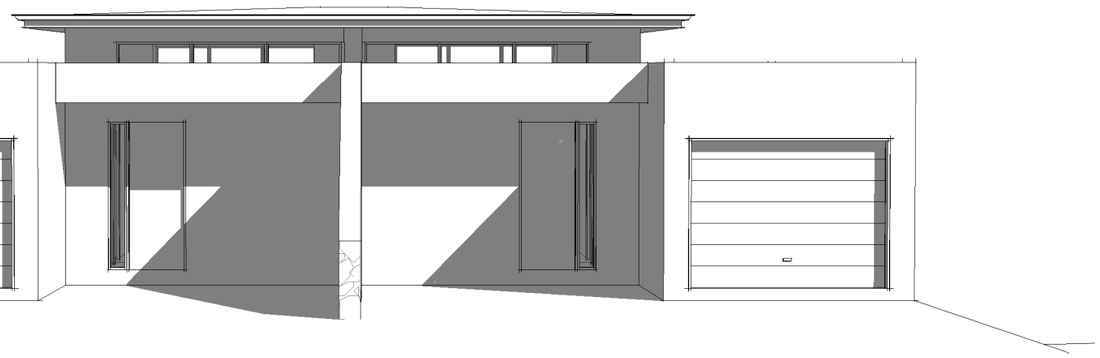
ACCREDITATION NO: CC 1269L



1 east visual



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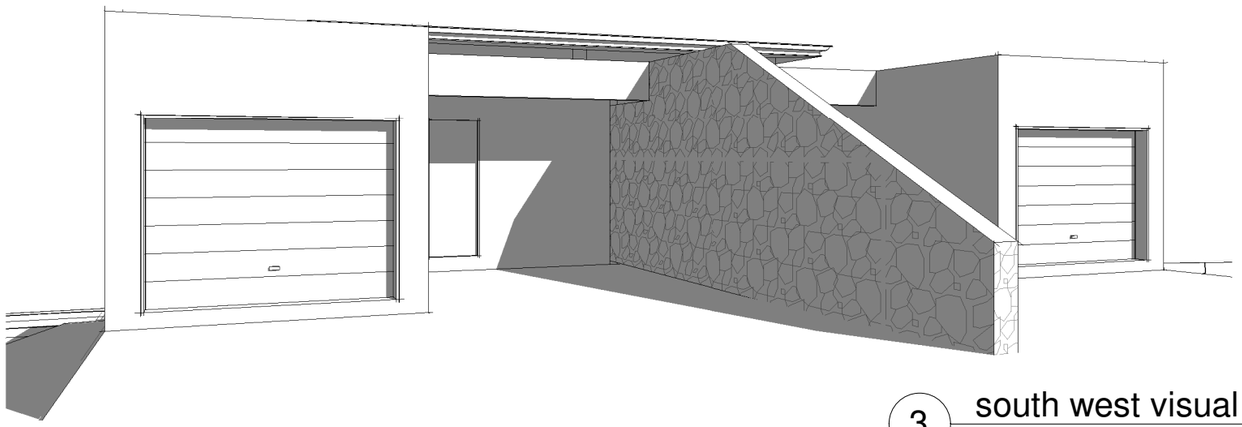

3 south west visual

REV:	DESCRIPTION:	DATE:

PROJECT:

proposed multiple units

FOR:

s + r targett

6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:

visuals

DRAWING NO:	DRAWN BY: JB
a09	DATE: 07.08.23
SCALE:	PROJECT: 0322TA

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BUILDING DESIGNERS AUSTRALIA

ACCREDITATION NO:
CC 1269L

1 north east visual

2 north visual

REV:	DESCRIPTION:	DATE:

PROJECT:

proposed multiple units

FOR:

s + r targett

6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:

visuals

DRAWING NO:	DRAWN BY: JB
a10	DATE: 07.08.23
SCALE:	PROJECT: 0322TA

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BUILDING DESIGNERS AUSTRALIA

ACCREDITATION NO:
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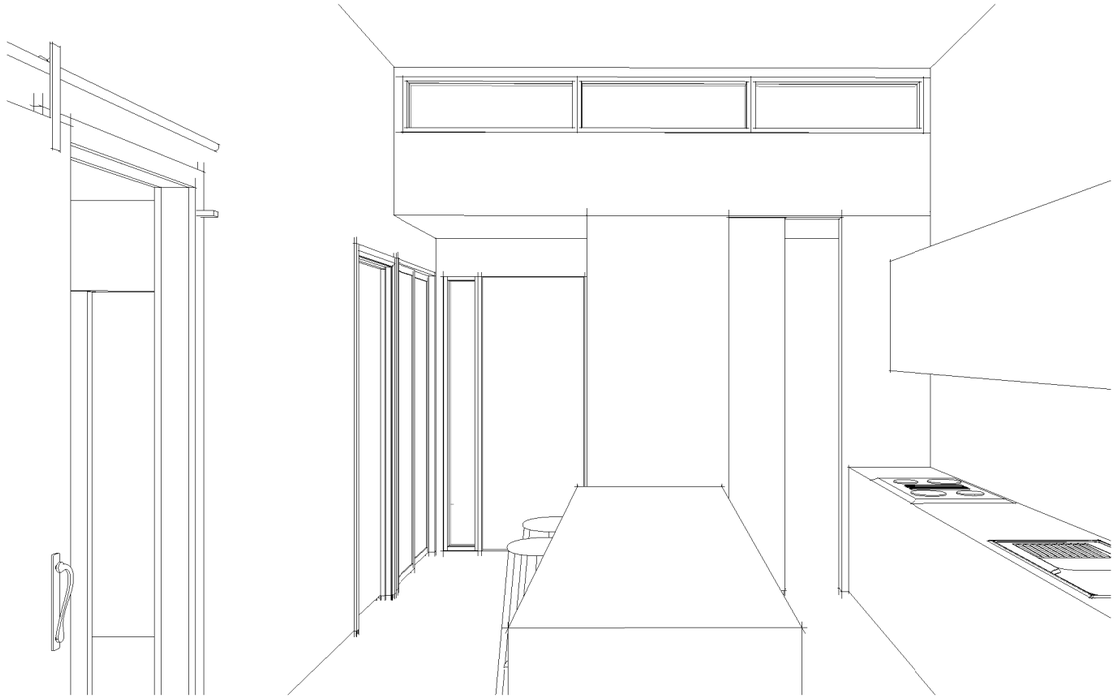
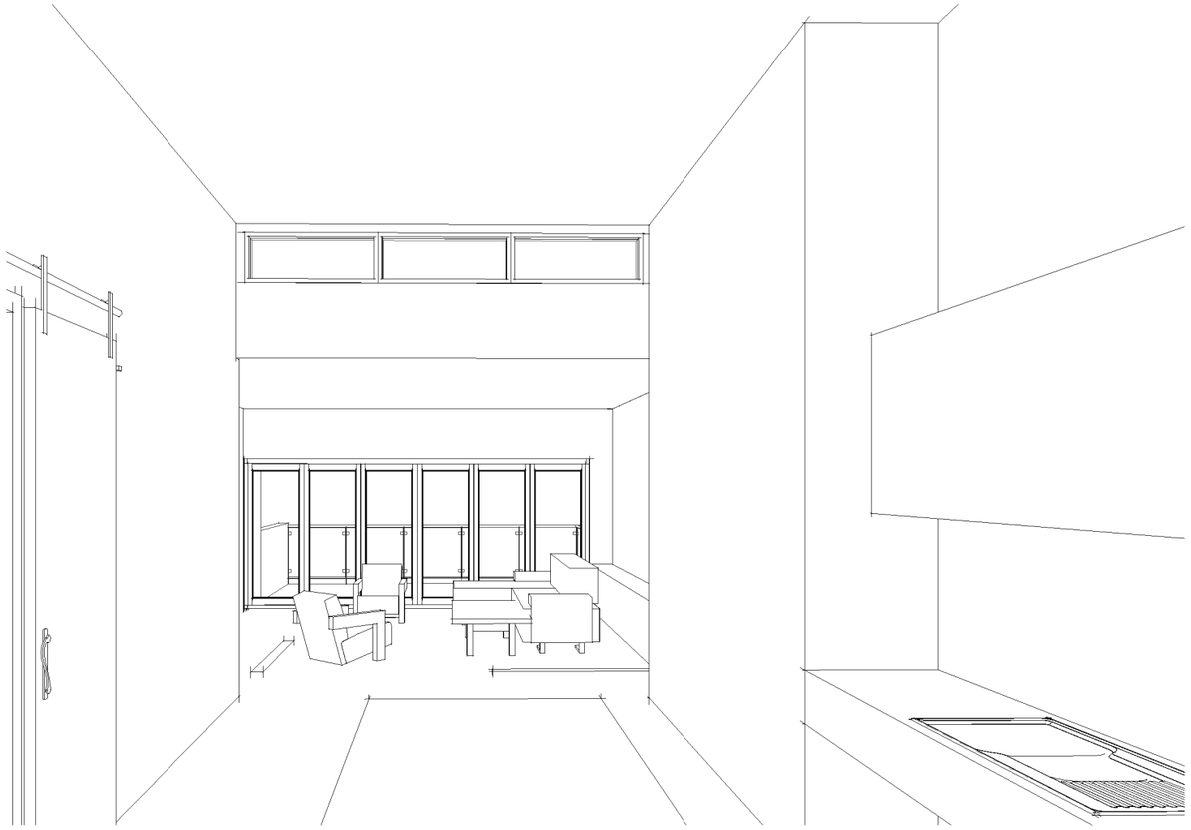


1 interior kitchen view looking south



2 interior living view looking north

REV:	DESCRIPTION:	DATE:

PROJECT:

proposed multiple units

FOR:

s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:

visuals

DRAWING NO:	DRAWN BY: JB
a11	DATE: 07.08.23
SCALE:	PROJECT: 0322TA

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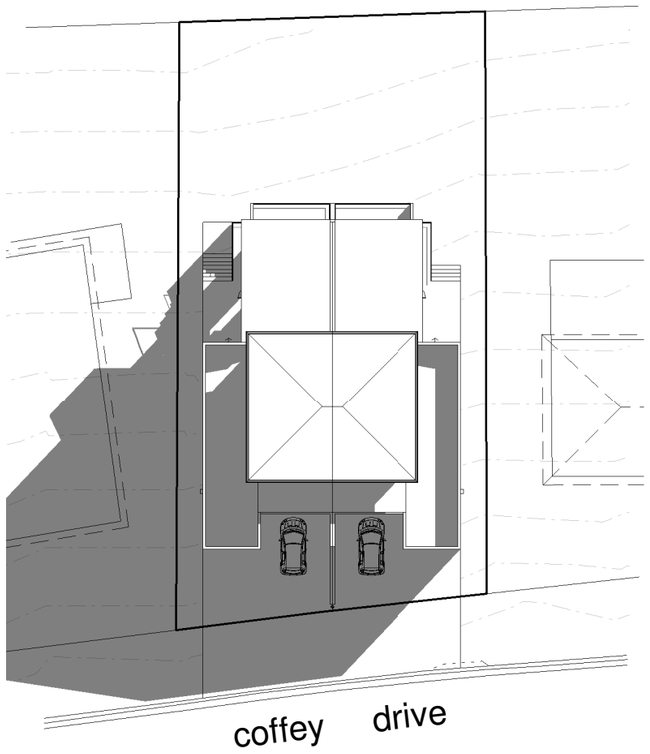

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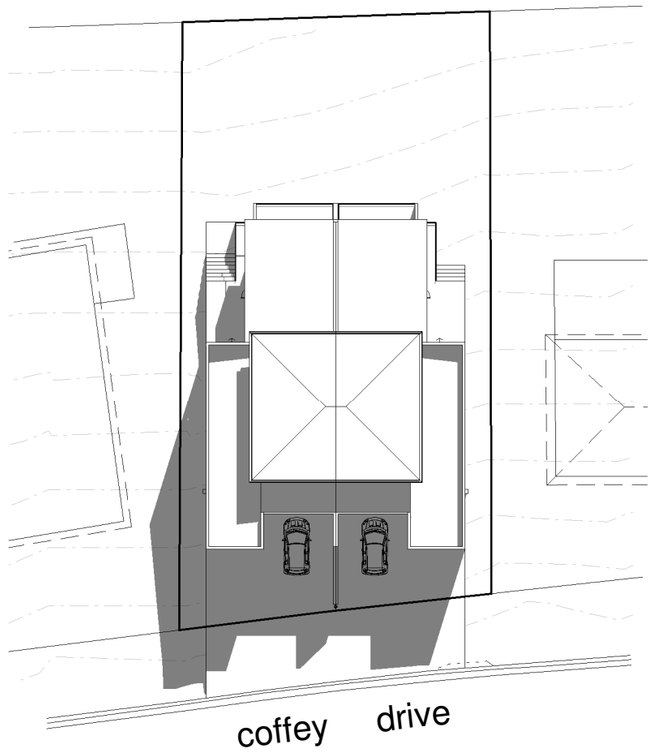

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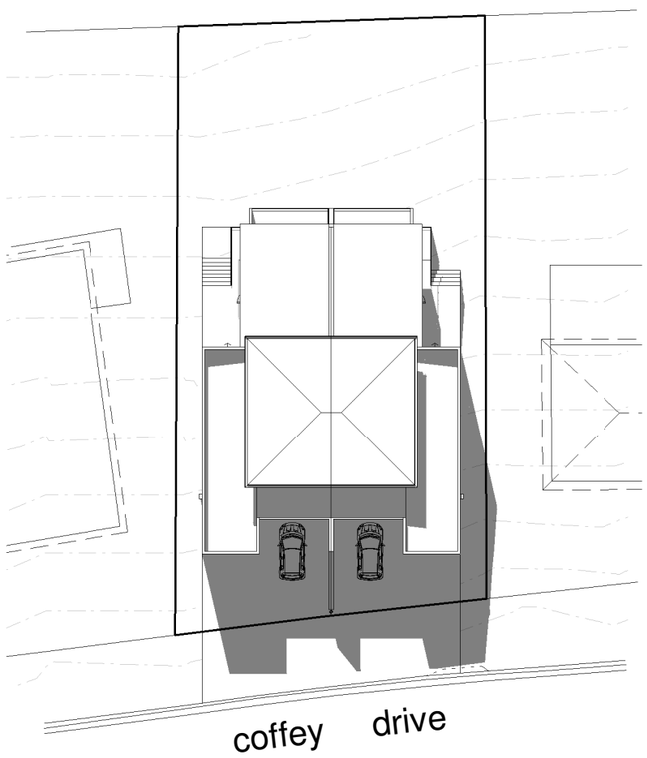

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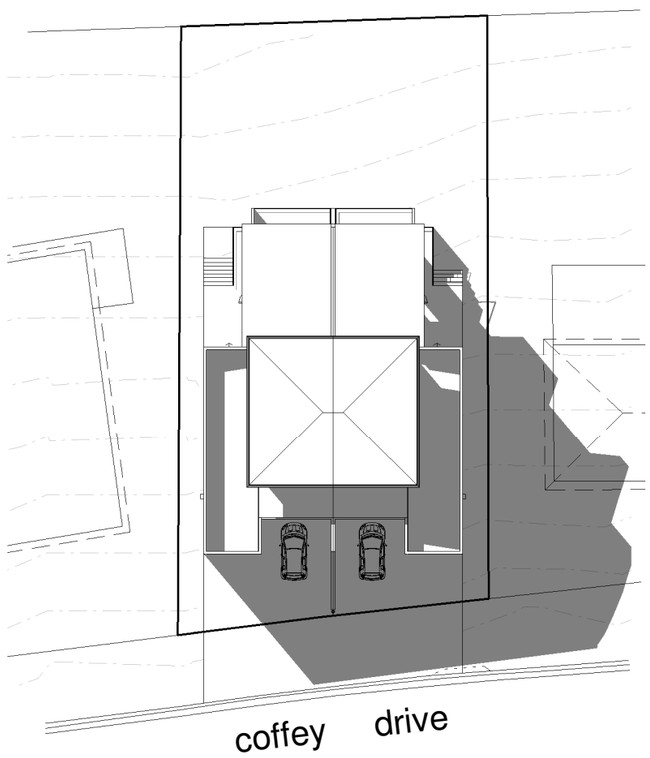

4 shadow cast june 21 3pm
1 : 400

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units
FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
shadow diagrams

DRAWING NO:	DRAWN BY: JB
a12	DATE: 07.08.23
SCALE: 1 : 400	PROJECT: 0322TA

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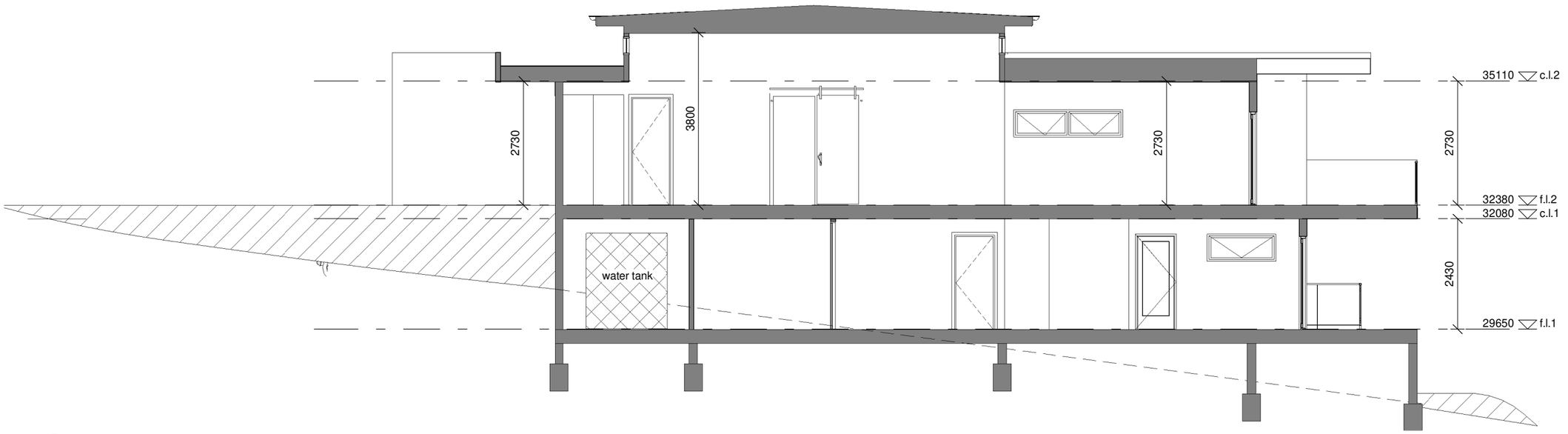

1 preliminary section
1 : 100

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units
FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
section

DRAWING NO:	DRAWN BY: JB
a13	DATE: 07.08.23
SCALE: 1 : 100	PROJECT: 0322TA

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BUILDING DESIGNERS AUSTRALIA
ACCREDITATION NO: CC 1269L

ON-SITE WASTEWATER ASSESSMENT

6 Coffey Drive

Binalong Bay

September 2023

Revised April 2024

GEO-ENVIRONMENTAL SOLUTIONS

Geo-Environmental Solutions P/L 29 Kirksway Place Battery Point 7004 Ph 6223 1839

Introduction

Client: Simon & Rowan Targett

Date of inspection: 15/09/2022

Location: 6 Coffey Drive, Binalong Bay

Land area: Approx. 775 m²

Building type: Proposed new dwellings

Investigation: Geoprobe 540UD - Direct Push

Inspected by: M. Campbell

Background Information

Map: Mineral Resources Tasmania, NE Sheet 1:250 000

Rock type: Devonian granite

Soil depth: 2.00m+

Planning overlays: Bushfire Prone Areas

Local meteorology: Annual rainfall approx. 700 mm

Local services: Tank water with on-site wastewater disposal

Site Conditions

Slope and aspect: Approx. 11% slope to the N/NE

Site drainage: Well drained

Vegetation: Mixed grass species

Weather conditions: Fine, approx. 20mm rainfall received in preceding 7 days

Ground surface: Slightly moist sandy surface conditions

Investigation

A number of bore holes were completed to identify the distribution of, and variation in soil materials on the site. Representative bore holes were taken at the approximate locations indicated on the site plan and were chosen for testing and classification according to AS2870-2011 and AS1547-2012 (see profile summary).

Profile Summary

Test hole 1 Depth (m)	Test hole 2 Depth (m)	Horizon	Description
0.00 – 0.40	0.00 – 0.30	A1	Dark Grey **SAND (SP)**, single grain, slightly moist, loose consistency, clear boundary to
0.40 – 1.00	0.30 – 1.20	A2	Pale Grey **SAND (SP)**, single grain, slightly moist, loose consistency, visible boundary to
1.00 – 1.60	1.20 – 1.80	A21	Dark Grey **SAND (SW)**, trace gravels, slightly moist, dense consistency, gradual boundary to
1.60 – 2.50	1.80 – 2.00+	B2	Grey-Green **Sandy CLAY (Cl)**, approx. 15% gravels, medium plasticity, moist, firm to stiff consistency, gradual boundary to
2.50 – 3.00+		BC	Grey-Breen **Sandy GRAVEL (GW)**, trace low plasticity clays, slightly moist, dense consistency, lower boundary undefined.

Soil Profile Notes

The site features thick sandy horizons over clay to gravel subsoils forming over Devonian granite. The soils are likely to exhibit slight ground surface movement and have characteristically high permeability, low cation exchange capacity and nutrient absorption capacity.

Wastewater Classification & Recommendations

According to AS1547-2012 for on-site wastewater management the soil on the property is classified as **Sandy LOAM (category 2)**. Due to site restrictions, a secondary treatment system (e.g., AWTS such as Envirocycle, Econocycle, Ozzikleen) with onsite absorption is required. Therefore, a Design Loading Rate (DLR) of 40L/m^2/day would be applicable for secondary treated effluent.

The proposed development consists of two three-bedroom dwellings with a total daily wastewater loading of 1200L/day. This is based on a tank water supply and a maximum occupancy of 5 persons in each dwelling (120L/person/day). Using a DLR of 40L/m^2/day, an absorption area of at least 30m^2 is required. This can be accommodated by one 14m x 2.2m x 0.6m absorption bed as per the attached design.

A diversion drain will not be required upslope of the application area due to the highly permeable soils on site. Care should be taken to ensure that all stormwater overflow is effectively managed on site and not diverted toward the application area. A 100% reserve area should be set aside for future wastewater requirements and the area kept free from development. For further detail please refer to the attached plan and Trench summary reports.

The following setback distances are required to comply with E.16 On-Site Wastewater Management Code of the Break O'Day Interim Planning Scheme 2013 and Building Act 2016:

All buildings:	3m
All boundaries:	3m
Downslope surface water:	100m

Compliance with Building Act 2016 Guidelines for On-site Wastewater Management Systems is outlined in the attached table. The proposed development complies with the E.16 On-Site Wastewater Management Code of the Break O'Day Interim Planning Scheme 2013 as outlined below.

E16.6.1 Use and Lot Size

Acceptable Solutions	**Comment**
A1 Residential uses that rely on onsite wastewater management must: a) Be on a site with minimum area of 2000m^2 and b) Have four bedrooms or less	Non-compliance See P1

Performance Criteria	**Comment**
P1 Residential use on sites less than 2,000m^2 or with more than four bedrooms that rely on onsite wastewater management must be able to accommodate: a) the proposed residence and associated buildings and structures; b) private open space; c) vehicle manoeuvring and car parking; d) hardstand and paved areas; and e) onsite wastewater management infrastructure	Complies

Acceptable Solutions	Comment
A2 Non-residential uses that rely on onsite water management must be on a site with minimum area of 5000m^2	N/A

E16.7.1 Onsite Wastewater Management

Acceptable Solutions	Comment
A1 A minimum horizontal separation of 3m must be provided between onsite wastewater management infrastructure and buildings and structures	Complies
Acceptable Solutions	**Comment**
A2 A minimum horizontal separation of 3m must be provided between onsite wastewater management infrastructure and the following: a) Hardstand and paved areas b) Car parking and vehicle manoeuvring areas; and c) Title or lot boundaries	Complies
Acceptable Solutions	**Comment**
A3 Private Open Space must not be used for surface irrigation of treated wastewater	Complies

Acceptable Solutions	Comment
A4 Onsite wastewater management infrastructure must be on lots with an average slope of 10% or less	Complies with P4 below

Acceptable Solutions	Comment
P4 Onsite wastewater management infrastructure located on lots with an average slope of more than 10% must have no detrimental impacts: **a)** through wastewater seepage, or soil erosion; and **b)** on the foundations or footings of buildings or structures.	There are no detrimental impacts on the natural or built environment expected to result from the proposed wastewater management system. Subsurface application within the predominately highly permeable sandy soils safeguards against wastewater seepage or soil erosion. The proposed system does not encroach on any known existing footings. All development must occur in line with the minimum setback requirements.

E16.7.2 Surface and Ground Water Impacts

Acceptable Solutions	Comment
A1 Onsite wastewater management infrastructure must have a minimum separation distance of 100m from a wetland or watercourse or coastal marine area.	Complies

Acceptable Solutions	Comment
A2 Onsite wastewater management infrastructure must have a minimum separation distance of 50m from a downslope bore, well or other artificial water supply.	Complies No bore or well identified within 50m
Acceptable Solutions	**Comment**
A3 Vertical separation between groundwater and the land used to apply effluent, including reserved areas, must be no less than 1.5m.	Complies No groundwater encountered

Acceptable Solutions	Comment
A4 Vertical separation between a limiting layer and the land used to apply effluent, including reserved areas, must be no less than 1.5m.	Complies No limiting layer identified

It is therefore concluded that there is a low and acceptable risk of environmental impact from wastewater management on the site for the current proposal. The wastewater system must be installed in accordance with AS/NZS1547-2012 and operated in accordance with any conditions on the approved special plumbing permit, including maintenance requirements.

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

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

Director

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report

Site assessment for on-site waste water disposal

Assessment for	Simon & Rowan Targett	Assess. Date	28-Aug-23
		Ref. No.	
Assessed site(s)	6 Coffey Drive, Binalong Bay	Site(s) inspected	15-Sep-22
Local authority	Break O'Day Council	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 = 1,200 (using a method independent of the no. of bedrooms)
Septic tank wastewater volume (L/day) = 400
Sullage volume (L/day) = 800
Total nitrogen (kg/year) generated by wastewater = 3.7
Total phosphorus (kg/year) generated by wastewater = 2.9

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 = Sandy LOAM Category = 2 Thick. (m) = 3
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) =	14
Width (m) =	2.2
Depth (m) =	0.5
Total disposal area (sq m) required =	60
comprising a Primary Area (sq m) of:	30
and a Secondary (backup) Area (sq m) of:	30

Sufficient area is available on site

Comments

With a DLR of 40L/m^2/day and a daily wastewater loading of 1200L/day from the two three-bedroom dwellings proposed, an absorption area of at least 30m^2 is required for secondary treated effluent. Therefore the system should have the capacity to cope with predicted climatic and loading events.

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	Simon & Rowan Targett	Assess. Date	28-Aug-23
		Ref. No.	
Assessed site(s)	6 Coffey Drive, Binalong Bay	Site(s) inspected	15-Sep-22
Local authority	Break O'Day Council	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 Trench	Limitation Amended	Remarks
AA	Expected design area	sq m	200	V. high	Very high		
	Density of disposal systems	/sq km	10	Mod.	Very low		
	Slope angle	degrees	6	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		
	Aspect (Southern hemi.)	Faces N		V. high	Very low		
	Frequency of strong winds	Common		High	Low		
AA	Wastewater volume	L/day	1,200	High	Very high		
	SAR of septic tank effluent		1.7	High	Low		
	SAR of sullage		2.6	High	Moderate		
	Soil thickness	m	3.0	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	%	0	V. high	Very low		
	Soil pH		5.5	High	Low		
	Soil bulk density	gm/cub. cm	1.4	High	Very low		
	Soil dispersion	Emerson No.	8	V. high	Very low		
AA	Adopted permeability	m/day	3	Mod.	Very high		
AA	Long Term Accept. Rate	L/day/sq m	40	High	Very high		

Comments

The site has good capacity to accept wastewater flows provided that secondary treatment is applied.

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	Simon & Rowan Targett	Assess. Date	28-Aug-23
		Ref. No.	
Assessed site(s)	6 Coffey Drive, Binalong Bay	Site(s) inspected	15-Sep-22
Local authority	Break O'Day Council	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 Trench	Limitation Amended	Remarks
A	Cation exchange capacity	mmol/100g	30	High	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	6.6	High	Low		
	G'water environ. value	Agric non-sensit		V. high	Low		
	Min. separation dist. required	m	2	High	Very low		
	Risk to adjacent bores	Very low		V. high	Very low		
	Surf. water env. value	Agric non-sensit		V. high	Low		
	Dist. to nearest surface water	m	240	V. high	Moderate		
	Dist. to nearest other feature	m	3	V. high	Very high	Low	Other factors lessen impact
	Risk of slope instability	Very low		V. high	Very low		
	Distance to landslip	m	1000	V. high	Very low		

Comments

The soil on site has a sandy loam texture with low nutrient adsorption capacity. Planting out of the absorption area with suitable species is recommended to aid nutrient uptake.

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 E16.
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 (a) Land application area located > 100m from downslope surface water

A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; and (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with E16.
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	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	No groundwater encountered.
A6 Vertical separation distance between a limiting layer and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	No limiting layer identified.
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

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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: 6 Coffey Drive, Binalong Bay

System Capacity: 10 persons @ 120L/person/day

Summary of Design Criteria

DLR: 40L/m^2/day

Absorption area: 30m^2

Reserve area location /use: Assigned

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 THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Simon & Rowan Targett *Owner name*
36 Cecilia Street *Address*
St Helens 7216 *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 Simon & Rowan Targett
Designer's project reference No. J7617
Address: 6 Coffey Drive
Lot No: 11717/26
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 modified absorption bed.

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Sep-23
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Sep-23
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Sep-23

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:

Onsite Wastewater Assessment - 6 Coffey Drive, Binalong Bay TAS 7216 - Sep-23

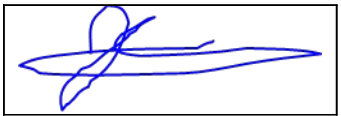
Onsite Wastewater Assessment - 6 Coffey Drive, Binalong Bay TAS 7216 - Sep-23

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		04/09/2023
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.

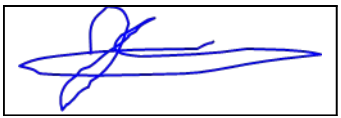
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

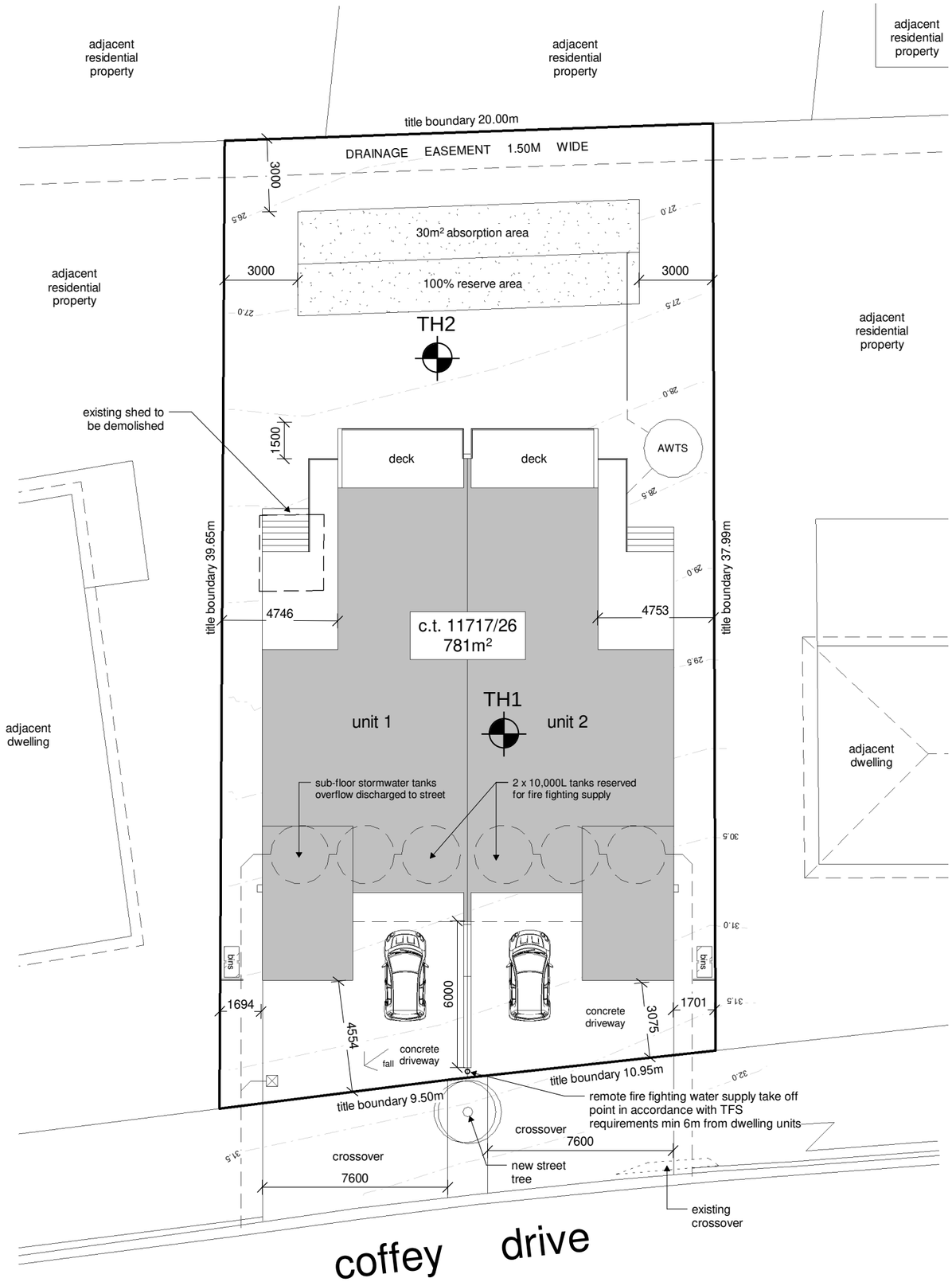
- [x] The works will not increase the demand for water supplied by TasWater
- [x] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [x] The works will not require a new connection, or a modification 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		04/09/2023



Wastewater system:

AWTS Unit with venting according to NCC Vol 3 Tas H101.2 - min 1:60 fall

Absorption bed (30m²)
1 x 14m x 2.2m x 0.6m

100% reserve area

Min 3m from buildings
Min 3m from boundaries
Min 100m from downslope surface water

Refer to GES report

Dr. John Paul Cumming
Building Services Designer-Hydraulic
CCC774A

04/09/2023

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

Approximate Test Hole Location

1 site plan
1 : 200

Building Areas

unit 2 patio	19.27
unit 2 ground floor	92.29
unit 2 first floor	126.07
unit 2 deck	24.59
unit 1 patio	19.27
unit 1 ground floor	92.76
unit 1 first floor	126.07
unit 1 deck	24.59
	524.91

n

REV:	DESCRIPTION:	DATE:

PROJECT:
proposed multiple units
FOR:
s + r targett
6 coffey drive
binalong bay TAS 7216

DRAWING TITLE:
site plan

DRAWING NO: **a04**	DRAWN BY: JB
	DATE: 30.08.23
SCALE: 1 : 200	PROJECT: 0322TA

jennifer binns
www.jenniferbinnsdesign.com.au
(03) 6376 2588 : 0439 765 452 : jenniferbinns@bigpond.com
suite 8 level 1 avery house, 48 cecilia street, st helens 7216
BUILDING DESIGNERS AUSTRALIA
ACCREDITATION NO: CC 1269L

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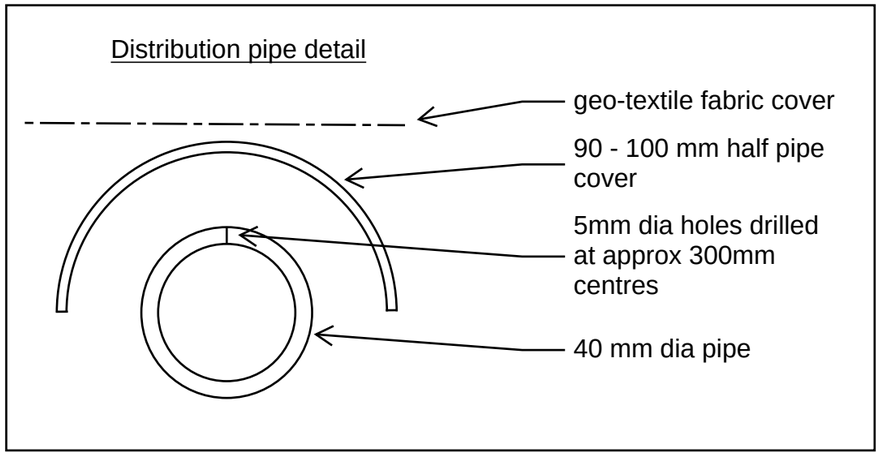
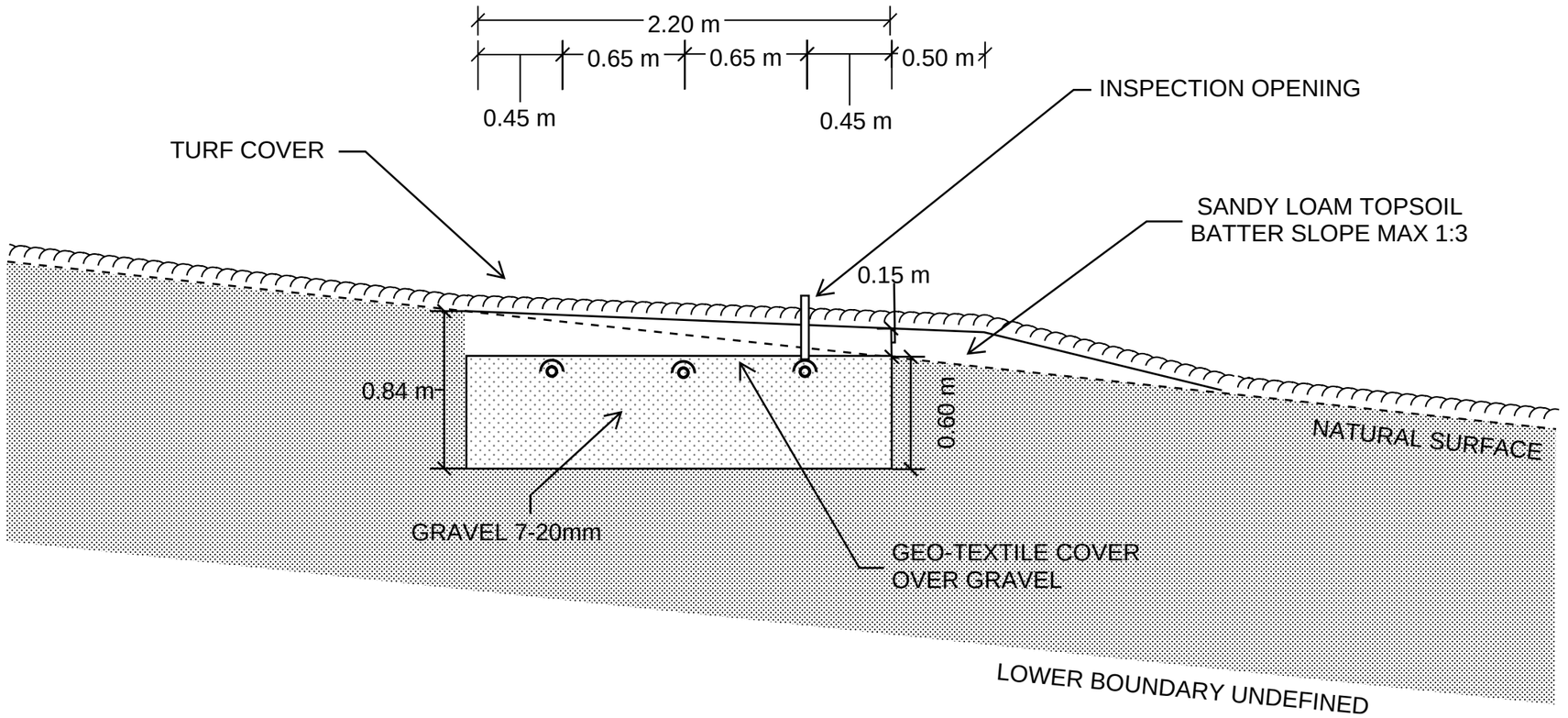
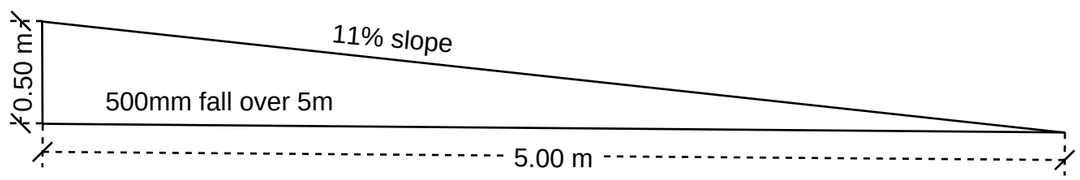


Note: min 0.5m required between end of absorption bed and batter





Do not scale from these drawings. Dimensions to take precedence over scale.	Absorption Bed Cross-Section			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 2.2m wide.

2. Base of bed to be excavated level max 900mm into natural soils and smearing and compaction avoided.

3. Lower 450mm of bed to be filled with 7-20mm clean washed gravel and drilled 40mm distribution pipes packed into upper 100mm of bed

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.

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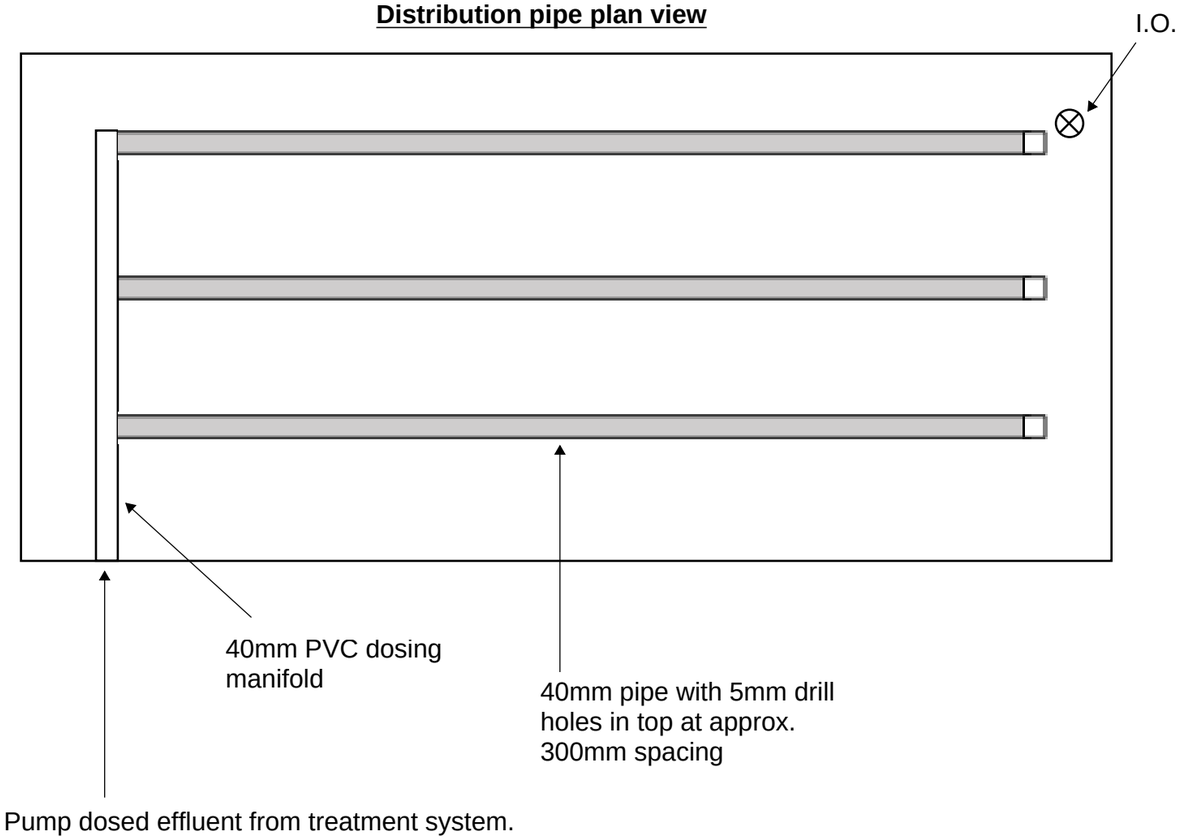
Distribution pipe plan view



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.

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

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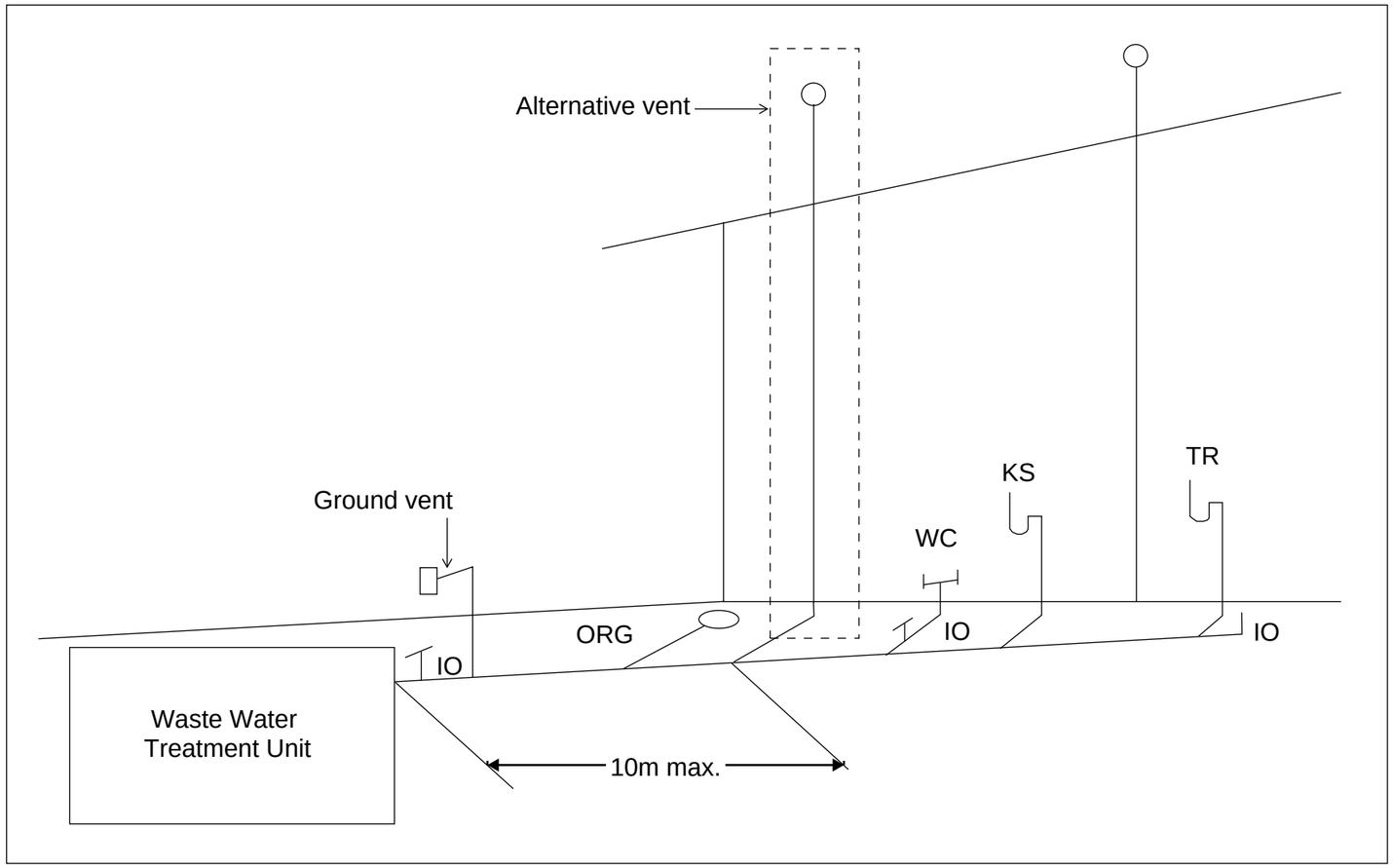


Tas Figure H101.2 Alternative Venting Arrangements

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

Alternative vent is the preferred arrangement where possible.

Do not scale from these drawings. Dimensions to take precedence over scale.				Tas Figure H101.2 Alternative Venting Arrangements		Sheet 1 of 1

STORMWATER ASSESSMENT

6 Coffey Drive

Binalong Bay

October 2023

GES

GEO-ENVIRONMENTAL

SOLUTIONS

Geo-Environmental Solutions P/L 29 Kirksway Place Battery Point 7004 Ph 6223 1839

Introduction

Client: Simon & Rowan Targett

Date of inspection: 15/09/2022

Location: 6 Coffey Drive, Binalong Bay

Land area: Approx. 775 m²

Building type: Proposed new dwellings

Investigation: Geoprobe 540UD - Direct Push

Inspected by: M. Campbell

Background Information

Map: Mineral Resources Tasmania, NE Sheet 1:250 000

Rock type: Devonian granite

Soil depth: 2.00m+

Planning overlays: Bushfire Prone Areas

Local meteorology: Annual rainfall approx. 700 mm

Local services: Tank water with on-site wastewater disposal

Site Conditions

Slope and aspect: Approx. 11% slope to the N/NE

Site drainage: Well drained

Vegetation: Mixed grass species

Weather conditions: Fine, approx. 20mm rainfall received in preceding 7 days

Ground surface: Slightly moist sandy surface conditions

Investigation

A number of bore holes were completed to identify the distribution of, and variation in soil materials on the site. Representative bore holes were taken at the approximate locations indicated on the site plan and were chosen for testing (see profile summary).

Profile Summary

Test hole 1 Depth (m)	Test hole 2 Depth (m)	Horizon	Description
0.00 – 0.40	0.00 – 0.30	A1	Dark Grey **SAND (SP)**, single grain, slightly moist, loose consistency, clear boundary to
0.40 – 1.00	0.30 – 1.20	A2	Pale Grey **SAND (SP)**, single grain, slightly moist, loose consistency, visible boundary to
1.00 – 1.60	1.20 – 1.80	A21	Dark Grey **SAND (SW)**, trace gravels, slightly moist, dense consistency, gradual boundary to
1.60 – 2.50	1.80 – 2.00+	B2	Grey-Green **Sandy CLAY (Cl)**, approx. 15% gravels, medium plasticity, moist, firm to stiff consistency, gradual boundary to
2.50 – 3.00+		BC	Grey-Breen **Sandy GRAVEL (GW)**, trace low plasticity clays, slightly moist, dense consistency, lower boundary undefined.

Soil Conditions

The soil on site features thick sandy horizons over clay to gravel subsoils forming over Devonian granite. The soil has a moderate to high estimated permeability of between 2.4 – 3m/day.

GES have identified the following at the site:

- The site has a 11% grade and presents a low risk to slope stability and landslip
- The upper 1.5m of soil has been identified as comprising of sand and clayey sand with a low risk to soil dispersion & soil reactivity
- No water table was encountered within any of the site investigations and is not expected to restrict soil infiltration capacity;
- There is a low risk of the natural soils being impacted by contamination;
- There is no evidence to suggest saline water intrusion at the site
- No bedrock was encountered

Soil Dispersion

The soils are non-dispersive

Suitability for Onsite Stormwater

The soils and site are suitable for in ground absorption of stormwater from the proposed structure. A hydraulic assessment and design for the absorption system has been completed by Flussig Engineers and can be found attached to this report with a form 35.

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

Director

HYDRAULIC DESIGN REPORT

FE-24001-18 PERFORMANCE SOLUTION REPORT

Document Information

Title	Client	Document Number	Project Manager
6 Coffey Dr, Binalong Bay TAS 7216 Performance Solution Report	**Geo Environmental Solutions PTY LTD**	FE-24001-18	**Manuri Alwis** *BEng (Hons)* *Civil Engineer*

Document Initial Revision

REVISION 00	Staff Name	Signature	Date
Prepared by	Manuri Alwis ***Civil Engineer***		19.01.2024
Reviewed by	Ash Perera ***Civil Hydraulic Engineer***		28.03.2024
Authorised by	Max W. Möller ***Principal Hydraulic Engineer***		28.03.2024

Document Revision History

Rev No.	Description	Revised By	Reviewed & authorised by	Date
01	Stormwater concept plan update	Manuri Alwis	Max Moller	15.04.2024

Flüssig Engineers – Level 4, 116 Bathurst Street, Hobart 7000, TASMANIA – Ph 03 6288 7704

INTRODUCTION

This report details the stormwater management strategies for the proposed development **6 Coffey Dr, Binalong Bay TAS 7216**. The objective of the report is to demonstrate how stormwater runoff would be captured and conveyed from the subject site safely to the receiving drainage network while considering stormwater quantity management.

The owner is proposing to install stormwater tanks and a stormwater pump to provide the function of detention for the new impervious areas.

EXISTING CONDITIONS AND ASSUMPTIONS

The site covers an area of approximately 781m^2, 330m^2 new roofed areas, 103m^2 new concrete areas accounting for an impervious area of approximately 433m^2. The site in its current state discharges to existing ground conditions.

The proposed development would result in an increase of impervious area of approximately 55.44%.

Stormwater from the site would be routed through the proposed conventional underground drainage system. comprising of Grated Sumps and PVC Pipes, coupled with the use of detention tank 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.

Existing site conditions are to remain except the proposed roof impervious area of each unit is discharged to its respective stormwater storage and detention tank. The outflow from the tank will be pumped into the new stormwater kerb outlet. The concrete impervious area from the new driveway is compensated within the tank detention calculations.

PERFORMANCE SOLUTION COMPLIANCE

AS 3500.3 – CL 7.10 ARR2019 Book 9	7.10.1 – Overflow is safe and does not compromise freeboard to habitable spaces. On-Site Detention
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).

DETENTION DESIGN

Detention calculations are provided in Appendix B with the following summary for design:

Detention Volume = 3210L (Roof/unit) 910L (Unit 1 driveway) 790L (Unit 2 driveway)

Permissible Site discharge = 1.02L/s (Roof/unit) 0.34L/s (Unit 1 driveway) 0.30L/s (Unit 2 driveway)

	Pre-Development New Impervious Areas Only		Post-Development New Impervious Areas Only	
Land Use	**Area m²**	**% Total land**	**Area m²**	**% Total land**
Total Pervious	433	100	0	0
Total Impervious	0	0	433	100

As per stormwater management best practices, the post-development allowable site discharge must not exceed the pre-development site discharge. As seen from the figures above, this is exceeded in the 5% AEP 20min storm duration by a Permissible Site discharge of 2.68L/s. Therefore, the site must detain the difference using an onsite stormwater detention (OSD) system with a 4120L and 4000L minimum capacity detention tank respectively for unit 1 and unit 2.

GENERAL MAINTENANCE

Task	Action	Frequency
Stormwater pits, drains and other infrastructure		
Inspect gutters of building and remove any debris/sludge	Remove any leaves or debris and sludge from gutters of building and flush downpipes of building to remove any blockages. Pits downstream of downpipes to be cleaned of flushed debris.	Approximately every 6 months
Inspect pits and trench drains on site and remove debris/litter/sludge	Remove grate. Remove any debris/litter/sludge from within pits.	Approximately every 6 months
Inspect pipes and remove any blockage	Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream pit.	Approximately every 6 months

Above ground stormwater tanks		
Inspect and remove any blockage of orifice	Clear all pollutants from storage orifice and device filters, ensure operational	Approximately every 6 months
Inspect storage tank for silt and debris and remove.	Pump out any water from within tank and remove all silt and debris present	Annually
Stormwater pump		
Inspect pump well for silt and debris and remove	Pump out any water from within pump well and remove all silt and debris present. It is recommended for this to be carried out by a qualified individual with confined space training.	Annually
Check float switches and pumps to ensure they function as required.	Floats shall be raised to levels required in order to ensure pumps operate as designed. High level float shall activate siren and flashing strobe light on pump control panel.	Approximately every 6 months
Service Pump	As per manufacturer's recommendations	As per manufacturer's recommendations

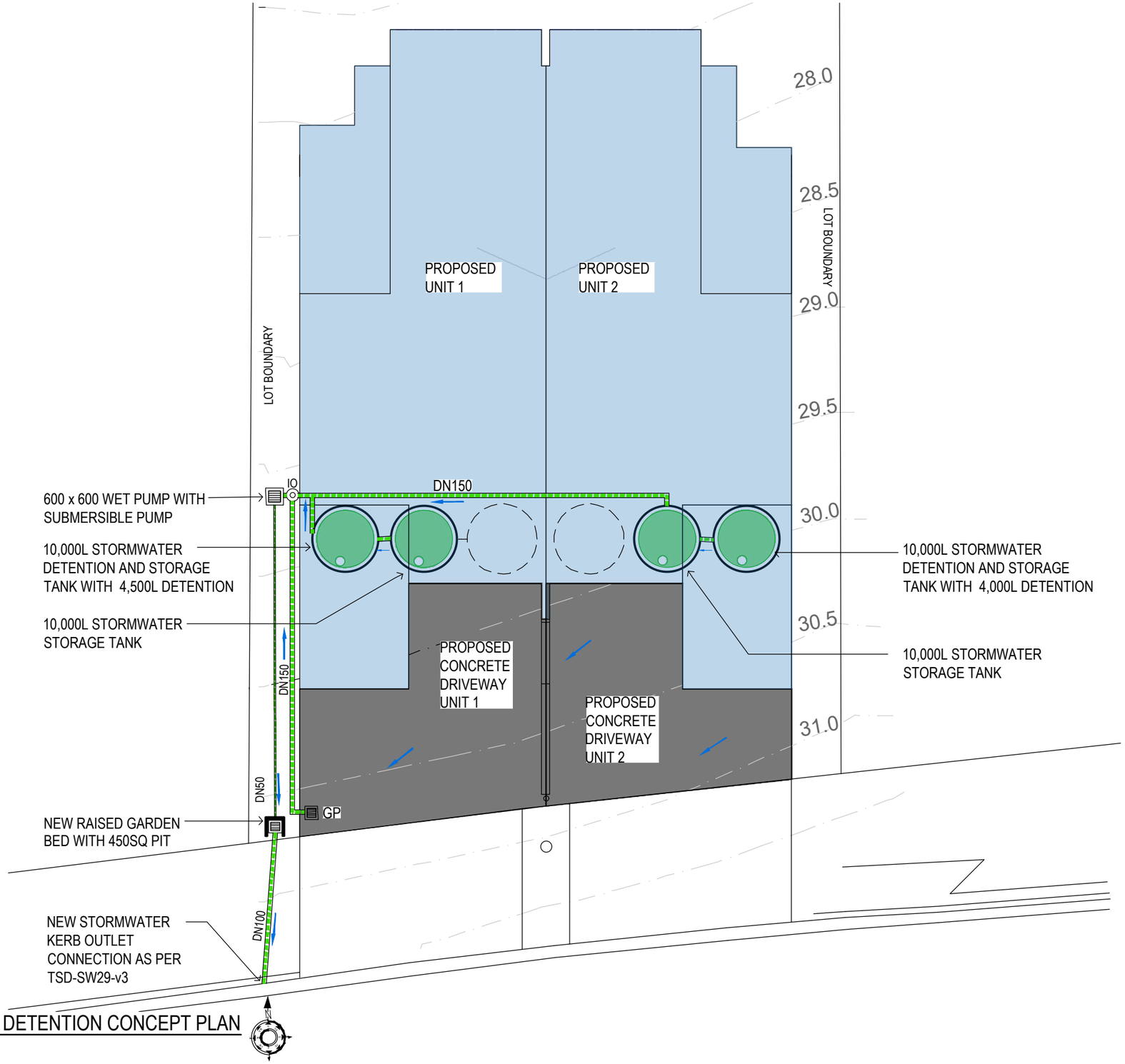
SUMMARY AND CONCLUSIONS

- The 10,000L stormwater tank is designed with 4500L dedicated detention over a 20min storm duration and to store 5500L for storage and reuse purposes for unit 1.
- The 10,000L stormwater tank is designed with 4000L dedicated detention over a 20min storm duration and to store 6000L for storage and reuse purposes for unit 2.
- Both unit 1 & 2 is designed with a dedicated 10,000L stormwater tank for storage and reuse purposes.
- Any stormwater volume that's marked as detention within any tank is dedicated only for detention, and any storage volume marked within the tank can only be reused.
- The discharge rate of 2.68L/s will be regulated by a pressure switch in the **BEST 2 MA Stainless Steel Submersible Pump** system.
- The detention system outflows to a raised pit at southern west corner of the lot. This pit will be connected to a new stormwater kerb outlet on Coffey Drive.
- The performance solution concept drawing is schematic only and must not be used for construction.

End of Report

APPENDIX A

STORMWATER DESIGN DRAWINGS



STORMWATER DETENTION CONCEPT PLAN

SCALE 1:150

NEW SERVICES

- STORMWATER PIPE
- STORMWATER FLOW DIRECTION
- GRATED STORMWATER PIT. 450X450 CLASS A
  ACO GALVANISED HEELGUARD OR SIMILAR ENGINEER APPROVED
- RAINWATER STORAGE TANK. DN30 UNDERFLOW AND DN150 OVERFLOW

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 TRAFFIC ABLE AREAS ARE TO BE BACK FILLED FULL DEPTH WITH 20 F.C.R. AND FULLY COMPACTED.
3. ALL STORM WATER PIPES TO BE PVC-U-SWJ CLASS "SN8" TO AS 1254 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.

SITE AREA=781m²

- PROPOSED IMPERVIOUS ROOF AREA 330m²
- PROPOSED IMPERVIOUS CONCRETE AREA 103m²

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REV:	DESCRIPTION:	BY:	DATE:
01	SW CONCEPT PLAN UPDATE	MA	15.04.24

STATUS: CONCEPT

flussig ENGINEERS
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p: (03) 6288 7704
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a: 116 Bathurst St, Level 4 Hobart, 7000, TASMANIA

CLIENT: GEO ENVIRONMENTAL SOLUTIONS PTY LTD

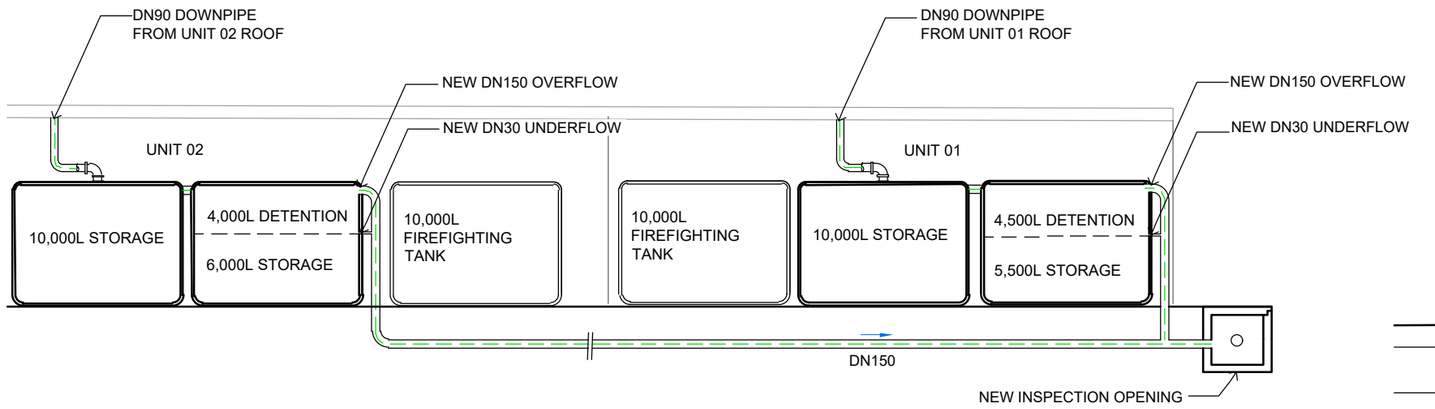
SITE: 6 COFFEY DR, BINALONG BAY TAS 7216

TITLE: PERFORMANCE SOLUTION CONCEPT DESIGN

PROJECT: PROPOSED NEW DEVELOPMENT

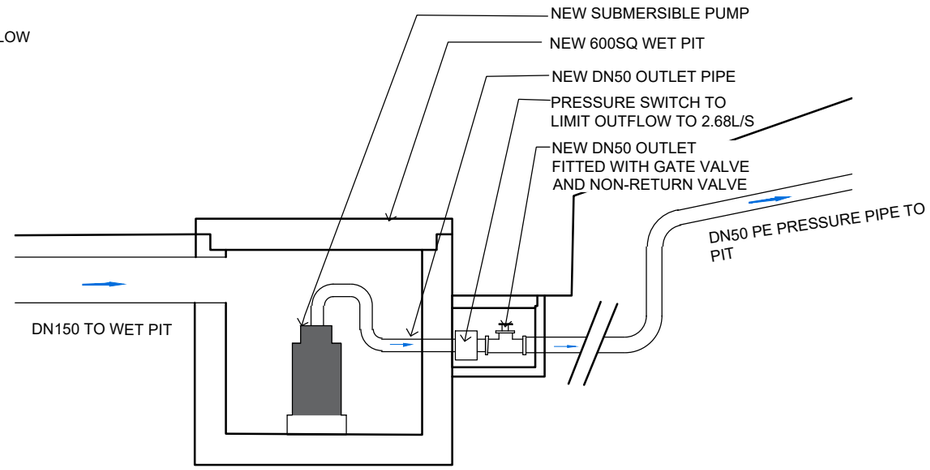
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
AS SHOWN	25.03.2024	MA	MM

PROJECT NO:	DRAWING NO:	REVISION:
FE-24001-18	C-100	01



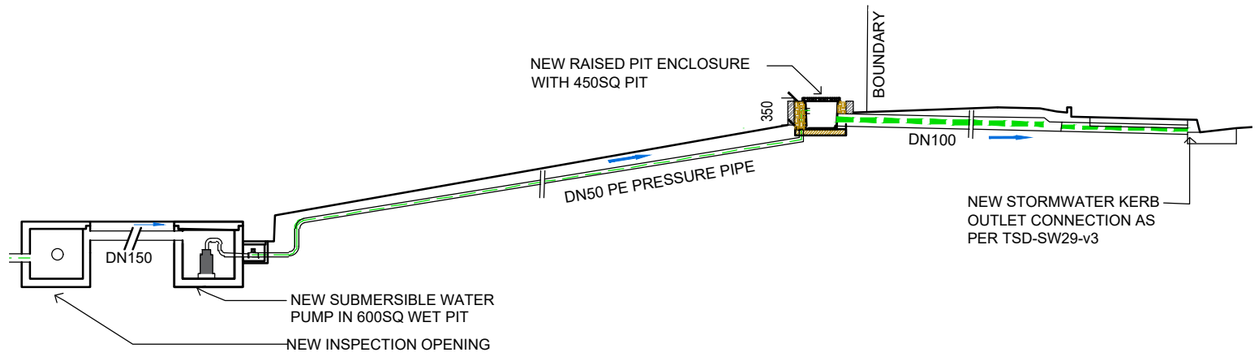
SCHEMATIC SECTION - TANK ARRANGEMENT

SCALE 1:75



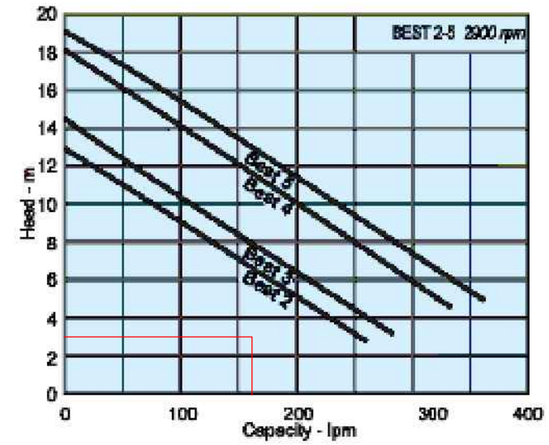
SUMP PIT DETAIL

SCALE 1:20



SCHEMATIC SECTION - INSPECTION OPENING TO KERB OUTLET

SCALE 1:75



BEST 2 MA STAINLESS STEEL SUBMERSIBLE SUMP PUMP PERFORMANCE CURVE

PRESSURE DROP – 10 M HEAD

	INDEX LENGTH (m)																				
	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	160
DN	Probable simultaneous flow rate (L/s)																				
10	0.13	0.09	0.07	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
15	0.28	0.22	0.17	0.15	0.13	0.12	0.11	0.10	0.09	0.09	0.08	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05
18	0.45	0.42	0.33	0.28	0.25	0.22	0.21	0.19	0.18	0.17	0.15	0.14	0.13	0.12	0.12	0.11	0.10	0.10	0.10	0.09	0.09
20	0.68	0.68	0.57	0.49	0.43	0.39	0.36	0.33	0.31	0.29	0.27	0.24	0.23	0.21	0.20	0.19	0.18	0.17	0.17	0.16	0.15
25	1.24	1.24	1.24	1.09	0.96	0.87	0.80	0.74	0.69	0.65	0.59	0.54	0.50	0.47	0.44	0.42	0.40	0.38	0.37	0.35	0.34
32	2.02	2.02	2.02	2.02	1.84	1.66	1.53	1.42	1.33	1.25	1.13	1.04	0.96	0.90	0.85	0.81	0.77	0.74	0.71	0.68	0.66
40	3.00	3.00	3.00	3.00	3.00	2.80	2.57	2.39	2.24	2.11	1.91	1.75	1.63	1.52	1.44	1.36	1.30	1.24	1.19	1.15	1.11
50	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.38	5.05	4.78	4.30	3.95	3.67	3.44	3.24	3.07	2.93	2.80	2.60	2.59	2.50
65	8.78	8.78	8.78	8.78	8.78	8.78	8.78	8.78	8.78	8.78	8.01	7.35	6.83	6.40	6.03	5.72	5.45	5.22	5.01	4.82	4.65
80	12.54	12.54	12.54	12.54	12.54	12.54	12.54	12.54	12.54	12.54	12.54	11.82	10.98	10.28	9.70	9.20	8.76	8.38	8.04	7.74	7.47
100	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	22.78	21.50	20.40	19.45	18.60	17.85	17.17	16.47

NEW DN50 PE PIPE SELECTION

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SITE: 6 COFFEY DR, BINALONG BAY TAS 7216

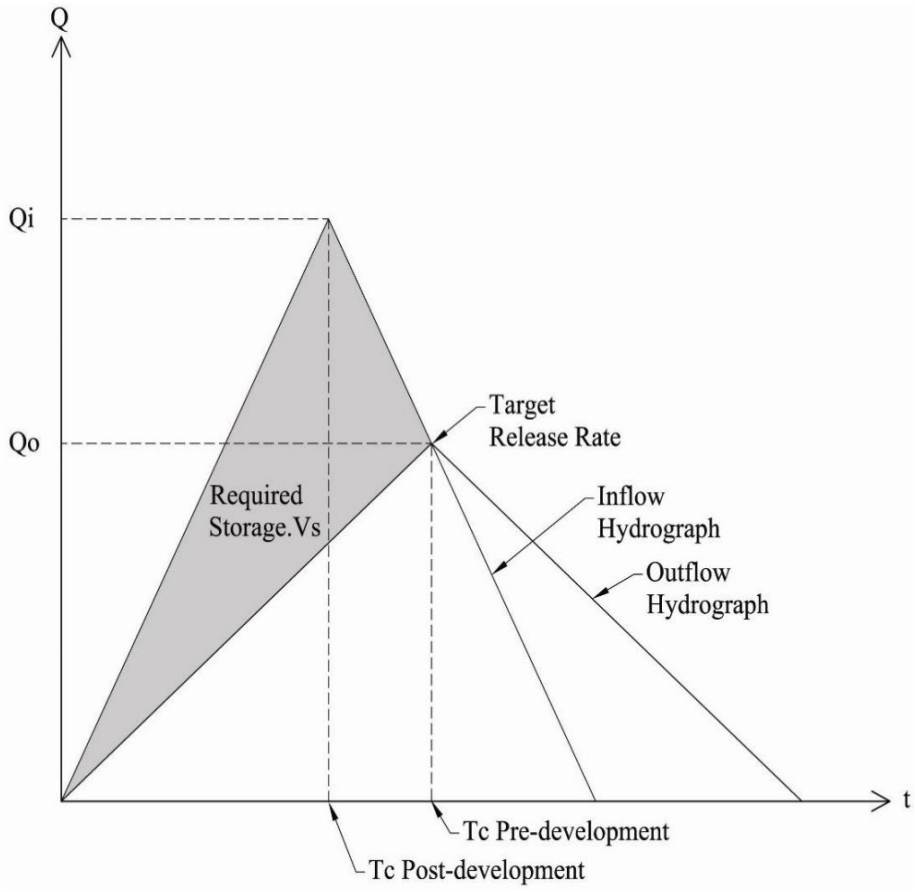
TITLE: PERFORMANCE SOLUTION CONCEPT DESIGN

PROJECT: PROPOSED NEW DEVELOPMENT

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
AS SHOWN	25.03.2024	MA	MM

PROJECT NO:	DRAWING NO:	REVISION:
FE-24001-18	C-101	01

APPENDIX B
DETENTION COMPUTATIONS



Triangular Hydrograph Method Schematic

STORMWATER DETENTION V5.05

Flussig Engineers

Location: **Binalong Bay TAS 7216**
Site: **165m² with tc = 20 and tcs = 15 mins.**
PSD: **AEP of 5%, Above ground PSD = 1.02L/s**
Storage: **AEP of 5%, Above ground volume = 3.21m³**

Design Criteria

(Custom AEP IFD data used)

Location =	Binalong Bay TAS 7216	
Method =	E	(A)RI 2001,A(E)P 2019
PSD annual exceedance probabiliy (APE) =	5	%
Storage annual exceedance probabiliy (APE) =	5	%
Storage method =	A	(A)bove,(P)ipe,(U)nderground,(C)ustom

Site Geometry

Site area (As) =	165	m²	=	0.0165 Ha
Pre-development coefficient (Cp) =	0.30			
Post development coefficient (Cw) =	1.00			
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	165	0.30	50
Total	165 m²		50

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	0	0.90	0
Roof	165	1.00	165
Gravel	0	0.50	0
Garden	0	0.30	0
Total	165 m²		165

Cw = ΣArea*C/Total = 1.000

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) =	0.98	L/s		
Peak post development (Qa = 2*Cw*I*As/0.36) =	6.54	L/s	=(0.092 x I)	Eq. 2.24
Storage method =	A		(A)bove,(P)ipe,(U)nderground,(C)ustom	
Permissible site discharge (Qu = PSD) =	1.023	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 = -13.6 c = 12.8

$PSD = -b \pm \sqrt{(b^2-4ac)}/(2a)$

PSD = 1.023 L/s

Below ground pipe - Eq 3.3

$Qp = PSD*[1.6*tcs/\{tc*(1-2*PSD/(3*Qa))\}-0.6*tcs^{2.67}/\{tc*(1-2*PSDp/(3*Qa))\}^{2.67}]$

= 0.98

PSD = 1.016 L/s

Below ground rectangular tank - Eq 3.4

t =tcs/(tc*(1-2*PSD/(3*Qa))) = 0.834

$Qp = PSD*[0.005-0.455*t+5.228*t^2-1.045*t^3-7.199*t^4+4.519*t^5]$

= 0.98

PSD = 0.985 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*PSD²/Qa)]]*60/10³ m³ Eq 4.23
Below ground pipe (Vs) = [(0.5*Qa-0.637*PSD+0.089*PSD²/Qa)*td]*60/10³ m³ Eq 4.8
Below ground rect. tank (Vs) = [(0.5*Qa-0.572*PSD+0.048*PSD²/Qa)*td]*60/10³ m³ Eq 4.13

td (mins)	I (mm/hr)	Qa (L/s)	Above Vs (m³)	Pipe Vs (m³)	B/G Vs (m³)
5	134.3	12.3	1.59		
14	87.1	8.0	2.64		
19	73.5	6.7	2.89		
23	65.7	6.0	3.01		
28	58.3	5.3	3.11		
33	52.7	4.8	3.17		
37	49.1	4.5	3.20		
42	45.3	4.2	3.22		
46	42.8	3.9	3.23		
51	40.2	3.7	3.23		

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

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m³)
Above	40.5	46.4	4.3	**3.21**
Pipe				
B/ground				

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) = 0.77 L/s at which time above ground storage occurs
I = 360*Qp2/(2*Cw*As*10³) = 8.4 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*PSD²*td/Qa*60/10³)*(1.14/PSD)*(10³/60) Eq 4.28
Below ground pipe (te) = 1.464/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) Eq 4.32
Below ground rect. tank (te) = 2.653/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) 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	40.5	4.3	3.2	31.5	63.4	94.9
Pipe						
B/ground						

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

Orifice

Permissible site discharge (Qu=PSD) = 1.02 L/s (Above ground storage)
Orifice coefficient (CD) = 0.61 For sharp circular orifice
Gravitational acceration (g) = 9.81 m/s²
Maximum storage depth above orifice (H) = 400 mm
Orifice flow (Q) = CD*Ao*√(2*g*H)

Therefore:
Orifice area (Ao) = 598 mm²
Orifice diameter (D = √(4*Ao/π)) = 27.6 mm

STORMWATER DETENTION V5.05

Flussig Engineers

Location: **Binalong Bay TAS 7216**
Site: **55m² with tc = 20 and tcs = 15 mins.**
PSD: **AEP of 5%, Above ground PSD = 0.34L/s**
Storage: **AEP of 5%, Above ground volume = 0.91m³**

Design Criteria

(Custom AEP IFD data used)

Location = Binalong Bay TAS 7216
Method = E (A)RI 2001,A(E)P 2019

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

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

Site Geometry

Site area (As) = 55 m² = 0.0055 Ha
Pre-development coefficient (Cp) = 0.30
Post development coefficient (Cw) = 0.90

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	55	0.30	17
Total	55 m²		17

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	55	0.90	50
Roof	0	1.00	0
Gravel	0	0.50	0
Garden	0	0.30	0
Total	55 m²		50

Cw = ΣArea*C/Total = 0.900

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) = 0.33 L/s
Peak post development (Qa = 2*Cw*I*As/0.36) = 1.96 L/s =(0.028 x I) Eq. 2.24

Storage method = A (A)bove,(P)ipe,(U)nderground,(C)ustom
Permissible site discharge (Qu = PSD) = 0.340 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 = -4.1 c = 1.3
$PSD = -b \pm \sqrt{(b^2-4ac)}/(2a)$
PSD = 0.340 L/s

Below ground pipe - Eq 3.3

$Qp = PSD*[1.6*tcs/\{tc*(1-2*PSD/(3*Qa))\}-0.6*tcs^{2.67}/\{tc*(1-2*PSDp/(3*Qa))\}^{2.67}]$
= 0.33
PSD = 0.337 L/s

Below ground rectangular tank - Eq 3.4

$t = tcs/(tc*(1-2*PSD/(3*Qa))) =$ 0.844
$Qp = PSD*[0.005-0.455*t+5.228*t^2-1.045*t^3-7.199*t^4+4.519*t^5]$
= 0.33
PSD = 0.327 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*PSD²/Qa)]]*60/10³ m³ Eq 4.23
Below ground pipe (Vs) = [(0.5*Qa-0.637*PSD+0.089*PSD²/Qa)*td]*60/10³ m³ Eq 4.8
Below ground rect. tank (Vs) = [(0.5*Qa-0.572*PSD+0.048*PSD²/Qa)*td]*60/10³ m³ Eq 4.13

td (mins)	I (mm/hr)	Qa (L/s)	Above Vs (m³)	Pipe Vs (m³)	B/G Vs (m³)
5	134.3	3.7	0.47		
13	90.6	2.5	0.75		
16	81.0	2.2	0.80		
20	71.4	2.0	0.85		
24	64.0	1.8	0.87		
28	58.3	1.6	0.89		
32	53.7	1.5	0.90		
35	50.8	1.4	0.91		
39	47.5	1.3	0.91		
43	44.7	1.2	0.91		

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

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m³)
Above	34.1	51.6	1.4	**0.91**
Pipe				
B/ground				

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) = 0.25 L/s at which time above ground storage occurs
I = 360*Qp2/(2*Cw*As*10³) = 9.3 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*PSD²*td/Qa*60/10³)*(1.14/PSD)*(10³/60) Eq 4.28
Below ground pipe (te) = 1.464/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) Eq 4.32
Below ground rect. tank (te) = 2.653/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) 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	34.1	1.4	0.9	26.6	53.7	80.3
Pipe						
B/ground						

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

Orifice

Permissible site discharge (Qu=PSD) = 0.34 L/s (Above ground storage)
Orifice coefficient (CD) = 0.61 For sharp circular orifice
Gravitational acceration (g) = 9.81 m/s²
Maximum storage depth above orifice (H) = 400 mm
Orifice flow (Q) = CD*Ao*√(2*g*H)

Therefore:
Orifice area (Ao) = 199 mm²
Orifice diameter (D = √(4*Ao/π)) = 15.9 mm

6 Coffey Dr, Binalong Bay TAS 7216 - driveway unit 02

STORMWATER DETENTION V5.05

Flussig Engineers

Location: **Binalong Bay TAS 7216**
Site: **48m² with tc = 20 and tcs = 15 mins.**
PSD: **AEP of 5%, Above ground PSD = 0.30L/s**
Storage: **AEP of 5%, Above ground volume = 0.79m³**

Design Criteria

(Custom AEP IFD data used)

Location = Binalong Bay TAS 7216
Method = E (A)RI 2001,A(E)P 2019

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

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

Site Geometry

Site area (As) = 48 m² = 0.0048 Ha
Pre-development coefficient (Cp) = 0.30
Post development coefficient (Cw) = 0.90

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	48	0.30	14
Total	48 m²		14

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	48	0.90	43
Roof	0	1.00	0
Gravel	0	0.50	0
Garden	0	0.30	0
Total	48 m²		43

Cw = ΣArea*C/Total = 0.900

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) = 0.29 L/s
Peak post development (Qa = 2*Cw*I*As/0.36) = 1.71 L/s =(0.024 x I) Eq. 2.24

Storage method = A (A)bove,(P)ipe,(U)nderground,(C)ustom
Permissible site discharge (Qu = PSD) = 0.297 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 = -3.6 c = 1.0
$PSD = -b \pm \sqrt{(b^2-4ac)}/(2a)$
PSD = 0.297 L/s

Below ground pipe - Eq 3.3

$Qp = PSD*[1.6*tcs/\{tc*(1-2*PSD/(3*Qa))\}-0.6*tcs^{2.67}/\{tc*(1-2*PSDp/(3*Qa))\}^{2.67}]$
= 0.29
PSD = 0.294 L/s

Below ground rectangular tank - Eq 3.4

t =tcs/(tc*(1-2*PSD/(3*Qa))) = 0.844
$Qp = PSD*[0.005-0.455*t+5.228*t^2-1.045*t^3-7.199*t^4+4.519*t^5]$
= 0.29
PSD = 0.286 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*PSD²/Qa)]]*60/10³ m³ Eq 4.23
Below ground pipe (Vs) = [(0.5*Qa-0.637*PSD+0.089*PSD²/Qa)*td]*60/10³ m³ Eq 4.8
Below ground rect. tank (Vs) = [(0.5*Qa-0.572*PSD+0.048*PSD²/Qa)*td]*60/10³ m³ Eq 4.13

td (mins)	I (mm/hr)	Qa (L/s)	Above Vs (m³)	Pipe Vs (m³)	B/G Vs (m³)
5	134.3	3.2	0.41		
13	90.6	2.2	0.66		
16	81.0	1.9	0.70		
20	71.4	1.7	0.74		
24	64.0	1.5	0.76		
28	58.3	1.4	0.78		
32	53.7	1.3	0.79		
35	50.8	1.2	0.79		
39	47.5	1.1	0.79		
43	44.7	1.1	0.79		

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

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m³)
Above	34.1	51.6	1.2	**0.79**
Pipe				
B/ground				

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) = 0.22 L/s at which time above ground storage occurs
I = 360*Qp2/(2*Cw*As*10³) = 9.3 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*PSD²*td/Qa*60/10³)*(1.14/PSD)*(10³/60) Eq 4.28
Below ground pipe (te) = 1.464/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) Eq 4.32
Below ground rect. tank (te) = 2.653/PSD*(Vs+0.333*PSD²*td/Qa*60/10³)*(10³/60) 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	34.1	1.2	0.8	26.6	53.7	80.3
Pipe						
B/ground						

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

Orifice

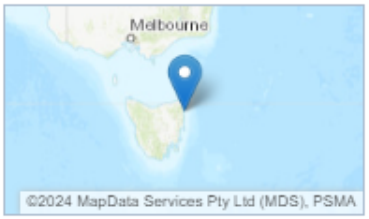
Permissible site discharge (Qu=PSD) = 0.30 L/s (Above ground storage)
Orifice coefficient (CD) = 0.61 For sharp circular orifice
Gravitational acceration (g) = 9.81 m/s²
Maximum storage depth above orifice (H) = 400 mm
Orifice flow (Q) = CD*Ao*√(2*g*H)

Therefore:
Orifice area (Ao) = 174 mm²
Orifice diameter (D = √(4*Ao/π)) = 14.9 mm

IFD Design Rainfall

Location

Label: 6 Coffey Dr, Binalong Bay TAS 7216
Latitude: -41.254 [Nearest grid cell: 41.2625 (S)]
Longitude: 148.304 [Nearest grid cell: 148.3125 (E)]



IFD Design Rainfall Intensity (mm/h)

Issued: 25 March 2024

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.

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Simon & Rowan Targett *Owner name*

Address

Suburb/postcode

Designer details:

Name: Max W. Moller

Category: Civil

Business name: Flussig Engineers

Phone No: 0431 080 279

Business address: L4 116 Bathurst St

HOBART 7000

Fax No: N/A

Licence No: 650370893

Email address: max@flussig.com.au

Details of the proposed work:

Owner/Applicant Simon & Rowan Targett

Designer's project reference No. FE_24001-18 _REV01

Address: 6 Coffey Drive,

Binalong Bay

Lot No:

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: FE-24001-18_REV01-C100 FE-24001-18_REV01-C101	Prepared by: Flussig Engineers	Date: 15.04.24
Schedules:	Prepared by:	Date:
Specifications: Performance Solution Report	Prepared by: Flussig Engineers	Date: 15.04.24
Computations: Performance solution Report	Prepared by: Flussig Engineers	Date:15.04.24
Performance solution proposals: Onsite stormwater retention	Prepared by: Flussig Engineers	Date:15.04.24
Test reports:	Prepared by:	Date:

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:

GES stormwater assessment 'Site assessment - 6 Coffey Drive, Binalong Bay'

Attribution as designer:

I Max W. Moller, 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.

Max W. Moller — 15.04.24

Licence No: 650370893

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.

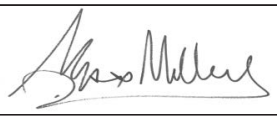
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- [x] The works will not increase the demand for water supplied by TasWate
- [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 ..... Max W. Moller..... 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:	Max W. Moller		15.04.24

TRAFFIC & CIVIL SERVICES

6 COFFEY DRIVE, BINALONG BAY

2 UNIT DEVELOPMENT

TRAFFIC IMPACT ASSESSMENT

AUGUST 2023

6 Coffey Drive, Binalong Bay
2 Unit Development

TRAFFIC IMPACT ASSESSMENT

- Final
- August 2023

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Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	3rd Aug 2023	R Burk	R Burk	3rd Aug 2023	Draft
2	3rd Aug 2023	R Burk	R Burk	3rd Aug 2023	Final

Distribution of copies

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Draft	1	1	Jennifer Binns
Final	1	1	Jennifer Binns

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Author:	Richard Burk
Project manager:	Richard Burk
Name of organisation:	
Name of project:	6 Coffey Dr TIA
Name of document:	6 Coffey Dr TIA
Document version:	Final

1. Introduction

1.1 Background

A 2-unit multiple dwelling development is proposed at 6 Coffey Drive , Binalong Bay. This TIA provides details on:

- Anticipated additional traffic and pedestrian movements.
- The significance of the impact of these movements on the existing road network
- Any changes required to accommodate the additional traffic.

The TIA has been prepared based on Department of State Growth (DSG) guidelines.

1.2 Objectives

A Traffic Impact Assessment is a means for assisting in the planning and design of sustainable development proposals that consider:

- Safety
- Capacity
- Equity and social justice
- Economic efficiency
- The environment
- Future development

This report considers traffic projections to 10 years beyond the opening of the development.

1.3 Scope of Traffic Impact Assessment (TIA)

This TIA considers in detail the impact of the proposal on the adjacent road network, in particular Coffey Drive.

1.4 References

- Break O Day Interim Planning Scheme 2013
  - Code E4:Road & Railway Assets
  - Code E6:Car Parking & Sustainable Transport.
- RTA Guide to Traffic Generating Developments – 2002.
- Austroads Guidelines
  - Road Design Part 4A: Unsignalised & Signalised Intersections 2021.
  - Traffic Management Part 6: Intersections, Interchanges & Crossings 2020.
- AS/NZS 2890.1 – 2004 : Parking facilities – Part 1: Off-street car parking

1.5 Statement of Qualifications and Experience

This TIA has been prepared by Richard Burk, an experienced and qualified traffic engineer in accordance with the requirements of the Department of State Growth's guidelines and Council's requirements.

Richard Burk is an experienced and qualified traffic engineer with:

- 36 years professional experience in road and traffic engineering industry
    - Director Traffic and Civil Service Pty Ltd since May 2017.
    - Manager Traffic Engineering at the Department of State Growth until May 2017.
    - Previous National committee membership with Austroads Traffic Management Working Group and State Road Authorities Pavement Marking Working Group
- Master of Traffic, Monash University, 2004
- Post Graduate Diploma in Management, Deakin University, 1995
- Bachelor of Civil Engineering, University of Tasmania, 1987
- Chartered Professional Engineer with Engineers Australia since 1988

Richard Burk

BE (Civil) M Traffic Dip Man. MIE Aust CPEng

Director Traffic and Civil Services Pty Ltd

1.6 Glossary of Terms

AADT	Annual Average Daily Traffic - The total number of vehicles travelling in both directions passing a point in a year divided by the number of days in a year.
Acceleration Lane	An auxiliary lane used to allow vehicles to increase speed without interfering with the main traffic stream. It is often used on the departure side of intersections.
Access	The driveway by which vehicles and/or pedestrians enter and/or leave the property adjacent to a road.
ADT	Average Daily Traffic – The average 24-hour volume being the total number of vehicles travelling in both directions passing a point in a stated period divided by the stared number of days in that period.
Austroads	The Association of Australian and New Zealand road transport and traffic authorities and includes the Australian Local Government Association.
Delay	The additional travel time experiences by a vehicle or pedestrian with reference to a vase travel time (e.g. the free flow travel time).
DSG	Department of State Growth – The Tasmanian Government Department which manages the State Road Network.
GFA	Gross Floor Area
Intersection Kerb	The place at which two or more roads meet or cross. A raised border of rigid material formed at the edge of a carriageway, pavement or bridge.
km/h	Kilometres per hour
Level of Service	An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions. It is usually defined in terms of the convenience of travel and safety performance.
m	Metres
Median	A strip of road, not normally intended for use by traffic, which separates carriageways for traffic in opposite directions. Usually formed by painted lines, kerbed and paved areas grassed areas, etc.
Movement	A stream of vehicles that enters from the same approach and departs from the same exit (i.e. with the same origin and destination).
Phase	The part of a signal cycle during which one or more movements receive right-of -way subject to resolution of any vehicle or pedestrian conflicts by priority rules. A phase is identified by at least one movement gaining right-of-way at the start of it and at least one movement losing right-of-way at the end of it.

Sight Distance	The distance, measured along the road over which visibility occurs between a driver and an object or between two drivers at specific heights above the carriageway in their lane of travel.
Signal Phasing	Sequential arrangement of separately controlled groups of vehicle and pedestrian movements within a signal cycle to allow all vehicle and pedestrian movements to proceed.
SISD	Safe Intersection Sight Distance – The sight distance provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation and to decelerate to a stop before reaching the collision point.
Speed	Distance travelled per unit time.
85th Percentile	The speed at which 85% of car drivers will travel slower and 15% will travel faster.
	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian traffic demands.
Traffic-actuated Control	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian tragic demands.
Traffic Growth Factor	A factor used to estimate the percentage annual increase in traffic volume.
Trip	A one-way vehicular movement from one point to another excluding the return journey. Therefore, a vehicle entering and leaving a land use is counted as two trips. (RTA Guide to Traffic generating Developments).
Turning Movement	The number of vehicles observed to make a particular turning movement (left or right turn, or through movement) at an intersection over a specified period.
Turning Movement Count	A traffic count at an intersection during which all turning movements are recorded.
Vehicle Actuated Traffic Signals	Traffic signals in which the phasing varies in accordance with the detected presence of vehicles on the signal approaches.
vpd	vehicles per day – The number of vehicles travelling in both directions passing a point during a day from midnight to midnight.
vph	vehicles per hour – The number of vehicles travelling in both directions passing a point during an hour.

1.7 Site Specific Glossary of Terms

BODC	Break O Day Council
SSA	Safe System Assessment

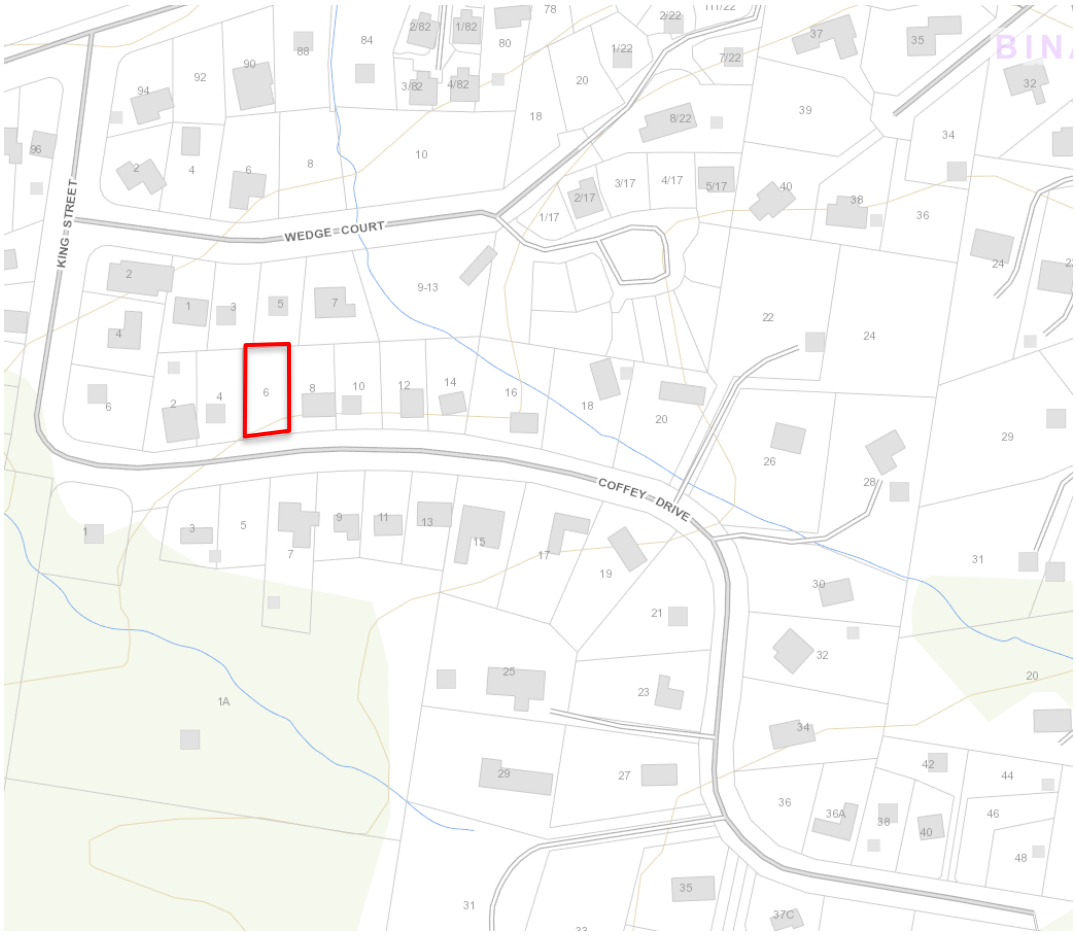
2. Site Description

6 Coffey Drive is located on the Northern side of the road. The land slopes downhill towards Binalong Bay with a grade of some 12% . The greater area, development site and local road network are shown in Figures 1-3 respectively. There is a 5m wide nature strip along the property frontage to 6 Coffey Drive.

Figure 1 - Location of proposed development shown highlighted.

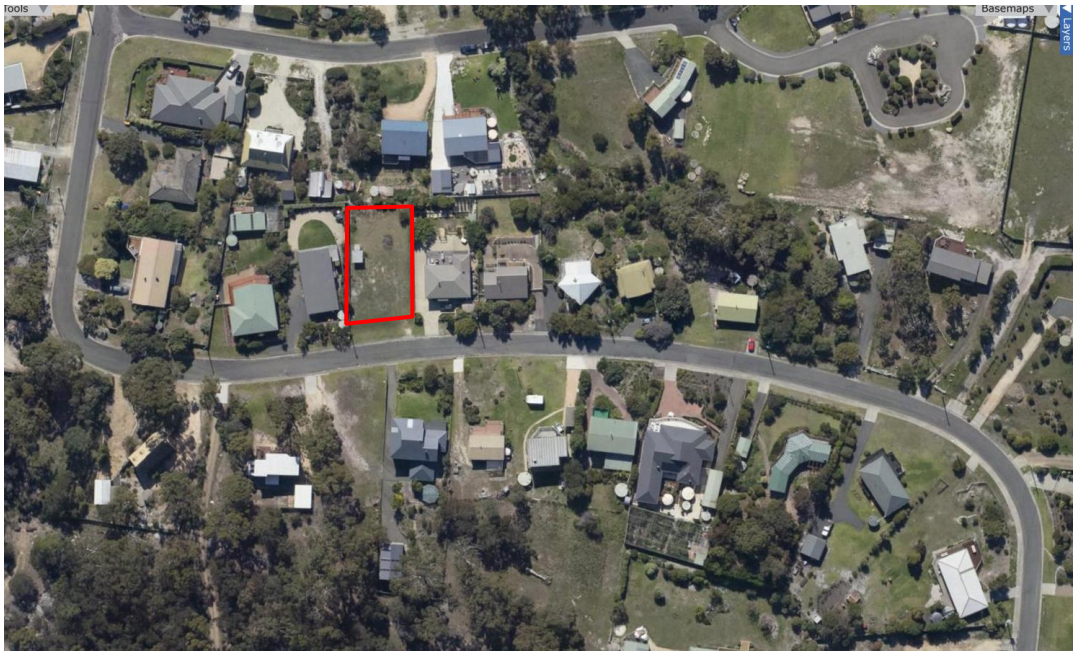
Source: The List, DPIPWE

Figure 2 – Road network surrounding 6 Coffey Drive



Source: The List, DPIPWE

Figure 3 – Road network surrounding 6 Coffey Drive



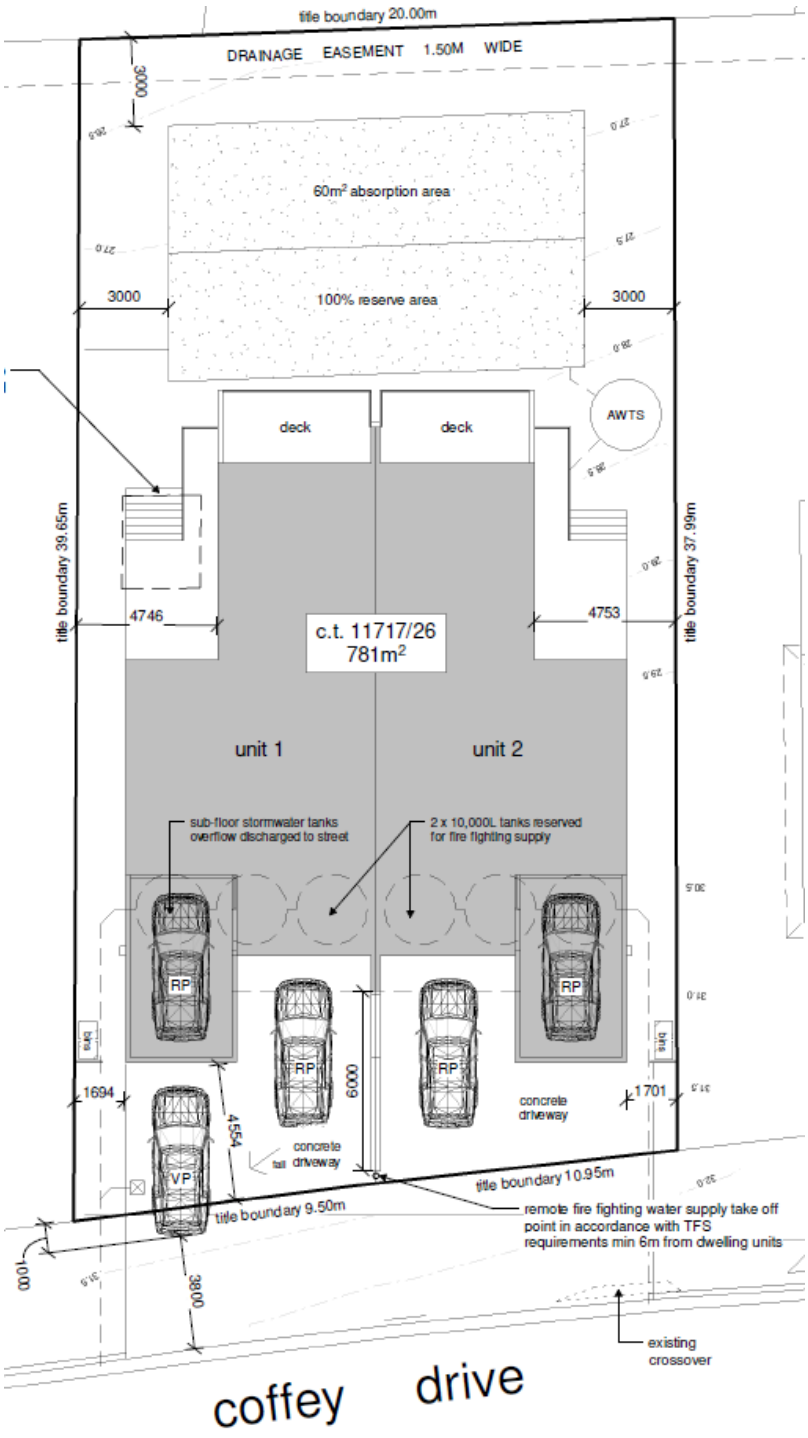
Source: The List, DPIPWE

3. Proposed Development

3.1 Description of Proposed Development

The proposed multiple dwelling development at 6 Coffey Drive, Binalong Bay consists of 2*3-bedroom units, see Figure 4, plans showing the development are attached in Appendix A.

Figure 4 – Proposed multiple dwelling layout at 6 Coffey Drive



3.2 Council Planning Scheme

The proposed development involves land currently zoned General Residential under the Break O'Day Interim Planning Scheme 2013, see Figure 5.

Figure 5 – 6 Coffey Drive is zoned Low Density Residential

Source: The List, DPIPWE

3.3 Local Road Network Objectives

To maintain traffic safety and efficiency on the Council Road Network.

Break O Day Council is also responsible for the maintenance of the Tasman Highway Road reservation outside the central 7.4m trafficable width of the highway where there is footpath which is the case in this instance. This is in accordance with the Roads and Jetties Act 1935.

4. Existing Conditions

4.1 Transport Network

The transport network in the vicinity of 6 Coffey Drive consists of Main Road, King Street and Coffey Drive which are all Council Roads. None of the roads at Binalong Bay are part of the Tasmanian 26m B Double network, see Appendix C.

Coffey Drive is a No Through Road with a residential access function with traffic flow estimated at 100-250 vpd (2023) and the General Urban Speed Limit of 50km/h speed limit applies. The road is 7.3m wide from face to face of kerb and has no footpaths.

4.1.1 Proposed 6 Coffey Drive Access

Figures 6 -11 show the proposed access and Coffey Drive approaches.

Figure 6 – Aerial view of proposed 6 Coffey Drive

Source: The List, DPIPWE

Figure 7 – Looking right along Coffey Drive from proposed access.

Sight distance right is 68m.

Figure 8 – Looking left along Coffey Drive from proposed access.

Sight distance left is 120m.

Figure 9 – Eastern approach to 6 Coffey Drive

Figure 10 – Western approach to 6 Coffey Drive

Figure 11 – Eastern elevation of frontage to 6 Coffey Drive

4.2 Traffic Activity

From site observations traffic activity on Coffey Drive is estimated at:

- 100vpd outside the holiday season (May to November)
- 250vpd within the peak of the holiday season (January and April)

.

4.3 Crash History

The DSG is supplied with reported crashes by Tasmania Police. The DSG maintains a crash database from the crash reports which is used to monitor road safety, identify problem areas and develop improvement schemes.

DSG advise as of the 2nd August 2023 there have been no reported crashes over the last 5 years on Coffey Drive.

4.4 Services

There is a power pole with a streetlight at the West edge of the frontage to 6 Coffey Drive, see Figure 11.

4.5 Road Safety Review

From review of Coffey Drive approaches to 6 Coffey Drive access, no traffic safety issues were identified.

Construct accesses to LGAT Urban Road Driveways Standard Drawing TSD – R09 available online at:

https://www.lgat.tas.gov.au/__data/assets/pdf_file/0027/813735/Tasmanian-Municipal-Standards-Drawings-v3-December-20202.pdf

4.6 Austroads Safe System Assessment

Coffey Drive approaches to 6 Coffey Drive have been assessed in accordance with the Austroads Safe System assessment framework. This framework involves consideration of exposure, likelihood and severity to yield a risk framework score. High risk crash types and vulnerable road user crash types are assessed for each site and aggregated to provide an overall crash risk. Crash risk is considered in terms of three components:

- Exposure (is low where low numbers of through and turning traffic) i.e.1 out of 4
- Likelihood (is low where the infrastructure standard is high) i.e. 1 out of 4
- Severity (is low where the speed environment is low) i.e. 1 out of 4

The Austroads Safe System Assessment process enables the relative crash risk of an intersection or road link to be assessed. Vulnerable Road users are considered along with the most common crash types.

The crash risk score is an indication of how well the infrastructure satisfies the *safe system objective which is for a forgiving road system where crashes do not result in death or serious injury.*

From safe system assessment Coffey Drive approaches to the proposed 6 Coffey Drive access are well aligned with the safe system objective with crash risk score of 22/448, see Figure 13.

The Austroads Safe System Assessment alignment between crash score and risk is indicated in Figure 12.

Figure 12 – Austroads Safe System Assessment alignment between crash score and risk

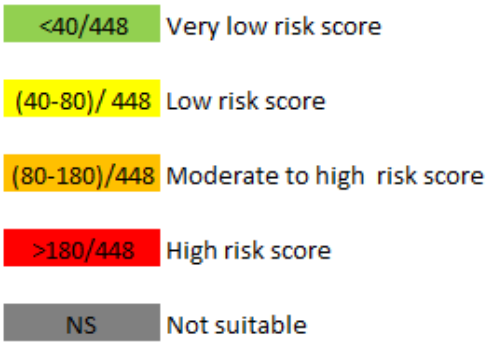


Figure 13 – Safe System Assessment of approaches to 6 Coffey Drive

Safe System Assessment **Coffey Drive approaches to 6 Coffey Drive**

		Run-off-road	Head-on	Intersection	Proposed Access	Pedestrian	Cyclist	Motorcyclist	
Exposure	Justification (AADT 100 to 250 vpd)	Low traffic volume, no crashes	Low traffic volume, no crashes	Low traffic volume at Kings Street / Coffey Drive Bend, no crashes	Low traffic volume, no crashes	Some pedestrian activity with <20 pph	Low cyclist activity with <10 cph	Low motorcyclist activity with <10 mph	
	Score /4	1	1	1	1	1	1	1	
Likelihood	Justification	Winding road alignment 7.3m wide within urban residential setting with street lighting.	Winding road alignment 7.3m wide within urban residential setting with street lighting.	Road continues through a 15m radius bend.	Straight road approaches with 7.3 m width and street lighting.	No footpaths and pedestrian friendly naturestrips both sides of the road to #15. Beyond #15 there is footpath along the Southern side of the road.	Winding road alignment 7.3m wide within urban residential setting with street lighting.	Winding road alignment 7.3 m wide within urban residential setting with street lighting and consistent road surface.	
	Score /4	2	2	2	1	2	2	1	
Severity	Justification (50km/h speed limit)	50km/h speed environment	50km/h speed environment	50km/h speed environment	50km/h speed environment	Moderate to high speed environment for pedestrians	Moderate to high speed environment for cyclists	Moderate to high speed environment for motorcyclists	
	Score /4	1	1	1	1	3	3	3	Total /448
Product	Total Score /64	2	2	2	1	6	6	3	22

5. Traffic Generation and Assignment

This section of the report describes how traffic generated by the proposal is distributed within the adjacent road network now (2023) and in ten years (2033).

5.1 Traffic Growth

Current traffic activity on Coffey Drive ranges between 100 and 250vpd subject to time of year. Coffey Drive has a road reserve that extends further east of the current end of the built road with potential for some 13 or more residential dwellings. Accordingly estimated future compound annual growth of 3% is considered appropriate for Coffey Drive.

On this basis estimated AADT is 130 to 320 vpd (2033).

5.2 Trip Generation

Traffic generation rates are sourced from the RTA Guide to Traffic Generating Developments 2002. For medium density residential dwelling accepted traffic generation rates are 4-5 vpd and 0.4-0.5 vph at peak times.

For the 2-dwelling proposal this amounts to:

- 10 vpd with 1 vph during peaks during the holiday season
- 4 vpd with 0.4vph during the off-peak season.

5.3 Trip Assignment

As Coffey Drive is a No Through Road, it is assumed that 95% all traffic movements associated with 6 Coffey Drive will be between Coffey Drive and Main Road i.e entry left in and exit out bound for Main Road.

6. Impact on Road Network

6.1 Traffic Capacity Review

This section considers the performance of the key road infrastructure in 2023 with estimated performance in 2033 based on assumed background traffic growth and the traffic generated by the proposed development.

The proposal will increase traffic on Coffey Drive by some 5 to 10 vpd depending on the season.

Coffey Drive currently has 100 to 250 vpd depending on the season.

Accordingly, the proposal is estimated to increase traffic activity by some 5 %.

There are no traffic capacity issues at these activity levels, and the road will continue to operate at Level of Service is A, see Appendix B for Level of Service descriptions.

6.2 Sight Distance requirements summary (Figure 14)

Figure 14 – Sight distance requirements

Junction Major Rd - Minor Rd	Speed Limit (km/h)	Speed Environment (km/h)	Acceptable Solution SISD(m) Table E4.7.4	Available		Performance Criteria SSD (m) AS/NZS 2890.1
				Left(m)	Right(m)	
Access to 6 Coffey Drive	50	50	80	120	68	45

Table E4.7.4 compliant AS / NZS 2890.1 compliant

6.3 Impact on liveability, safety and amenity of the local area

According to Traffic Engineering and Management – KW Ogden and SY Taylor 1999, Chapter 2.2- Design of New Urban Networks:

To maximise the liveability, safety and amenity of the local area, road and street network layout should be such that:

- *A minimum of 60% of lots should abut residential streets with less than 300vpd passing traffic.*
- *A minimum of 80% of lots should abut residential streets with less than 600 vpd passing traffic.*
- *A maximum of 5% of single dwelling lots should abut residential streets with between 1,000-2,000 vpd passing traffic.*
- *A maximum of 1% of single dwelling lots should abut local streets or collectors with less than 3,000 vpd passing traffic, and*
- *No single dwelling lot should abut a route with more than 3,000 vpd passing traffic.*

By 2033 the expected traffic activity on Coffey Drive could vary between 140 and 330 vpd depending on the season so the proposal satisfies all liveability, safety and amenity targets.

6.4 Tasmanian Subdivision Guideline Considerations

No issues have been identified.

6.5 Transport Planning Considerations

No issues have been identified.

6.6 Provisions for Road Users

6.6.1 Light Vehicles

Traffic safety and capacity requirements for light vehicles have been considered and the proposed access layout is considered safe and efficient for all road users.

6.6.2 Waste Management

Council's Kerbside On-Street Waste Management Service will empty bins from the development site from Coffey Drive.

6.6.3 Public Transport

Public transport is not disaffected by the proposal.

6.6.4 Vulnerable Road Users

Pedestrians

Pedestrian safety is not affected by the proposal.

Cyclists

Coffey Drive has no cycling facilities. The proposal does not affect cyclists.

Motorcyclists

The proposal does not affect motorcyclists.

6.7 Other requirements

6.7.1 Environmental

No adverse environmental impact is anticipated in relation to:

- Noise, Vibration and Visual Impact
- Community Severance and Pedestrian Amenity
- Hazardous Loads, Air Pollution and Dust and Dirt
- Ecological Impacts and Heritage and Conservation

6.7.2 Street Lighting and Furniture

Streetlighting exists at the site.

6.8 Break O'Day Interim Planning Scheme 2013

6.8.1 Road and Railway Assets Code E4

Section E4.6.1 Use and road or rail infrastructure

Acceptable solution A2*: For roads with a speed limit of 60km/h or less the use must not generate more than a total of 40 vehicle entry and exit movements per day.*

A2 is satisfied as the proposal is estimated to generate up 10 vpd.

Section E4.7.2 Management of Road Accesses and junctions

Acceptable solution A1: *For roads with a speed limit of 60km/h or less the development must include only one access providing both entry and exit, or two accesses providing separate entry and exit.*

A1 is not satisfied as two two-way accesses are proposed i.e one for each of the two units.

Performance Criteria P1: *For roads with a speed limit of 60km/h or less, the number, location, layout and design of accesses and junctions must maintain an acceptable level of safety for all road users, including pedestrians and cyclists.*

There are no road safety issues associated with the proposal as:

- Sight distance is adequate,
- There is adequate space for entry and exit manoeuvres,
- Road Safety review identifies no issues,
- Austroads Safe System Assessment indicates a very low crash risk as traffic volumes are low and the speed environment is low.

P1 is satisfied.

Section E4.7.4 Sight distance at accesses, junctions and level crossings

Acceptable solution A1: *Sight distances at a) an access or junction must comply with the Safe Intersection Sight Distance shown in Table E4.7.4*

A1 is not satisfied, see Figure 16.

Performance Criteria P1*: The design, layout and location of an access, junction or rail level crossing must provide adequate sight distances to ensure safe movement of vehicles.*

P1 is satisfied, see Figure 16

6.8.2 Car Parking and Sustainable Transport Code E6

Section E6.6.1 Car Park Numbers

Acceptable solution A1: The number of car parking spaces must not be less than the requirements of

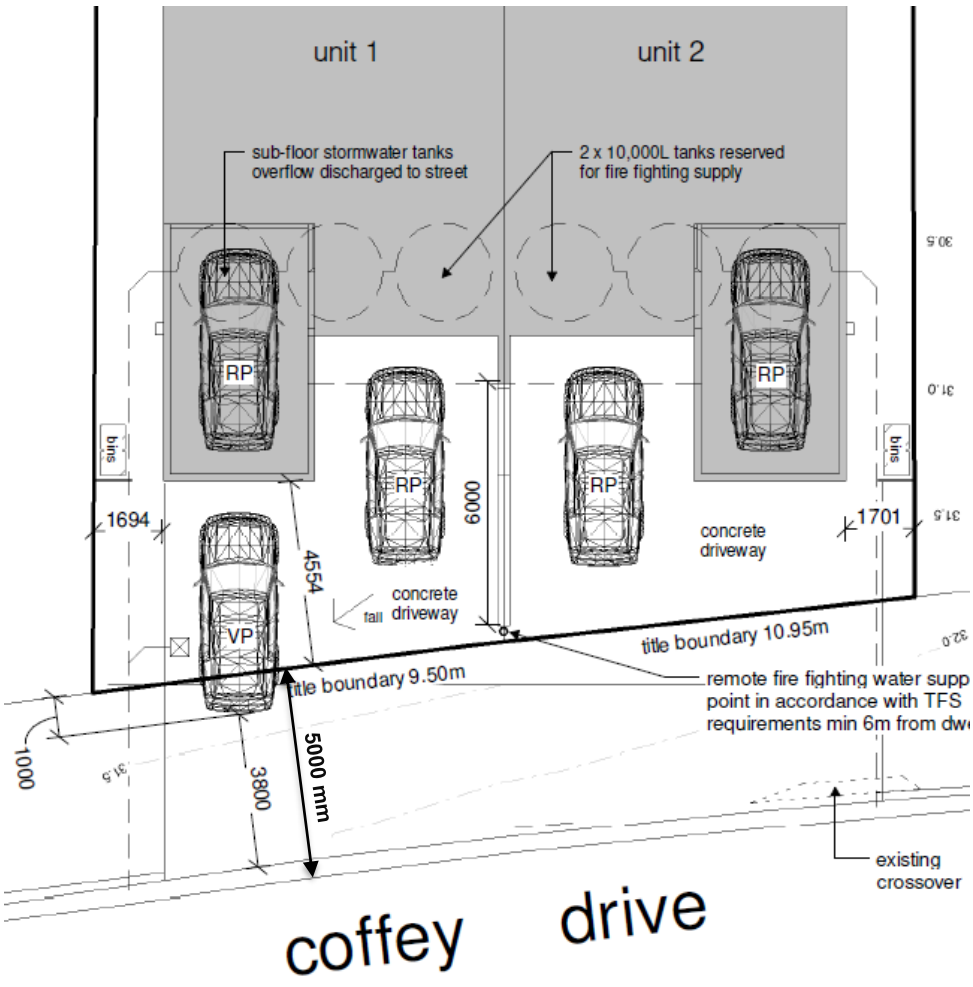
- ***a)*** *Table E6.1*
- ***b)*** *A parking precinct plan contained in Table E6.6: Precinct Parking Plans (except for dwellings in the General Residential Zone)*

Table E6.1 requires parking spaces as follows:

- *2 resident spaces per 2 or more-bedroom dwelling*
- *1 visitor space per 4 dwellings (rounded up to the nearest whole number)***.**

The proposal provides 2 * 3-bedroom dwellings with 2 resident parking spaces (garage & driveway space) per dwelling and 1 visitor parking space, see Figure 15. **A1 is satisfied.**

Figure 15 – Proposed visitor parking at 6 Coffey Drive



Section E6.7.1 Construction of Car Parking Spaces and Access Strips

Acceptable solution A1: *All car parking, access strips, manoeuvring and circulation spaces must be:*

a) Formed to an adequate level and drained; and

b) Except for a single dwelling, provided with an impervious all-weather seal; and

c) Except for a single dwelling, line marked or provided with other clear physical means to delineate car spaces.

A1 is satisfied.

Section E6.7.2 Design and layout of car parking

Acceptable Solution A1.1 *– Where providing for 4 or more spaces, parking areas (other than for parking located in garages and carports for dwellings in the General Residential Zone) must be located behind the building line; and*

A1.1 is satisfied. 2 of the 5 proposed parking spaces are located within garages.

Acceptable Solution A1.2 *– Within the General Residential zone, provision for turning must not be located within the front setback for residential buildings or multiple dwellings.*

A1.2 is satisfied. The proposal is not within a General Residential zone. The land is zoned Low Density Residential.

Acceptable solution A2.1: *Car parking and manoeuvring space must:*

a) *have a gradient of 10% or less* **– Compliant.**

b) *where providing for more than 4 cars, provide for vehicles to enter and exit the site in a forward direction* – **Not Compliant**, cars will need to reverse to exit the site, see P2.

c) *have width of vehicular access no less than prescribed in Table E6.2****:***

- For 1 to 5 parking spaces Table E6.2 specifies an access width of 3.0m. The access widths provided are 6.74m for each of the units. P**roposal is Table E6.2 Compliant.**

d) *have a combined width of access and manoeuvring space adjacent to parking spaces not less than as prescribed in Table E6.3*

- Car park width required is 2.6m, 3m is provided – compliant.
- Car park length required is 5.4m which is provided – compliant.
- An access strip 5.2m wide is required for 90-degree parking 3.0m wide by 5.4m long. The Nature strip width is 5.0m. and all 4 resident spaces have an additional 1m of clearance within the property. The visitor space has 4.0m. of nature strip for manoeuvre space and is entitled to 1.5m of on street space to complete a reverse exit. **Proposal is Table E6.3 Compliant.**

Performance Criteria P2 *– Car parking and manoeuvring space must:*

(a) Be convenient, safe and efficient to use having regard to matters such as slope, dimensions, layout and the expected number and type of vehicles; and

- The proposal is assessed as safe & efficient in terms of slope, dimensions, layout, expected traffic activity& type of vehicles i.e Austroads Car - B99 vehicle 5.2m long by 1.94m wide for User Class 1A (residential access).

(b) Provide adequate space to turn within the site unless reversing from the site would not adversely affect the safety and convenience of users and passing traffic.

- Reverse exit manoeuvres can be achieved for all 5 proposed parking spaces in accordance with manoeuvre space requirements for 90-degree parking – Figure 2.2 of AS / NZS 2890.1 Part 1 – Off Street car parking, also see Figure 15.

All 5 proposed parking spaces satisfy manoeuvre space requirements for reverse exit onto Coffey Drive. **P2 is satisfied .**

Acceptable solution A2.2: The layout of car spaces and access ways must be designed in accordance with AS2890.1-2004 Parking Facilities, Part 1: Off Road Car Parking.

A2.2 is satisfied.

Section E6.8.5 Pedestrian walkways

Acceptable Solution A1: *Pedestrian access must be provided in accordance with Table E6.5:*

Table E6.5 requires a 1m wide footpath separated from the driveway and parking aisles except at crossing points where the number of parking spaces required is 11 or more.

The proposal provides 5 car parking spaces:

- 2 spaces per dwelling for 2 dwellings
- 2 visitor parking space

No footpath is not proposed. **A1 is satisfied.**

7. Recommendations and Conclusions

This traffic impact assessment has been prepared to assess the proposed 2-unit multiple dwelling development at 6 Coffey Drive, Binalong Bay in accordance with the Break O Day Interim Planning Scheme 2013 requirements.

It has been prepared following a review of traffic activity, Coffey Drive crash data, road safety review, Austroads Safe System Assessment ,traffic capacity review, amenity and liveability review.

7.1 Traffic Capacity

From the number of lots with dwellings and traffic observations Coffey Drive has estimated traffic activity varying between 100 and 250vpd depending on the season. The traffic generated by the proposal is 5-10 vpd. Coffey Drive has no traffic capacity issues.

7.2 Traffic Safety

The proposal is considered safe from the following aspects:

- 5-year reported crash history reveals no crashes in the vicinity of 6 Coffey Drive.
- road safety review identified no traffic safety issues with the Coffey Drive approaches to 6 Coffey Drive.
- proposed off street parking layout and access to Coffey Drive is assessed as safe.
- in terms of Austroads Safe System Assessment, the Coffey Drive approaches to 6 Coffey Drive are assessed with a crash risk score of 22 / 448 which is a very low score demonstrating very good alignment with the Safe Systems Objective.

7.3 Amenity and Liveability Review

The 2 proposed dwellings at 6 Coffey Drive will increase traffic on Coffey Drive between 5 and 10 vpd subject to the season. This level of traffic activity easily satisfies liveability, safety and amenity objectives.

7.4 Break O Day Interim Planning Scheme 2013 requirements

Evidence provided demonstrates that the Road & Railway Code E4 and Car Parking & Sustainable Transport Code E6 requirements of the Break O Day Interim Planning Scheme 2013 are satisfied.

Recommendations

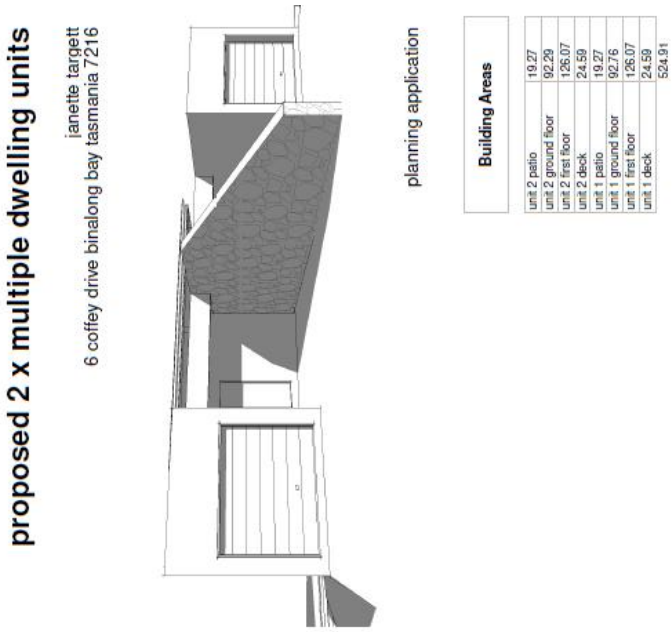
- *Provide driveways to 6 Coffey Drive consistent with LGAT Urban Road Driveways Standard Drawing TSD – R09.*

Summary

This report finds that subject to the above recommendations, Coffey Drive approaches to 6 Coffey Drive and the driveway itself will continue to operate safely and efficiently and the proposal is supported on traffic grounds.

Appendices

Appendix A Site Plans



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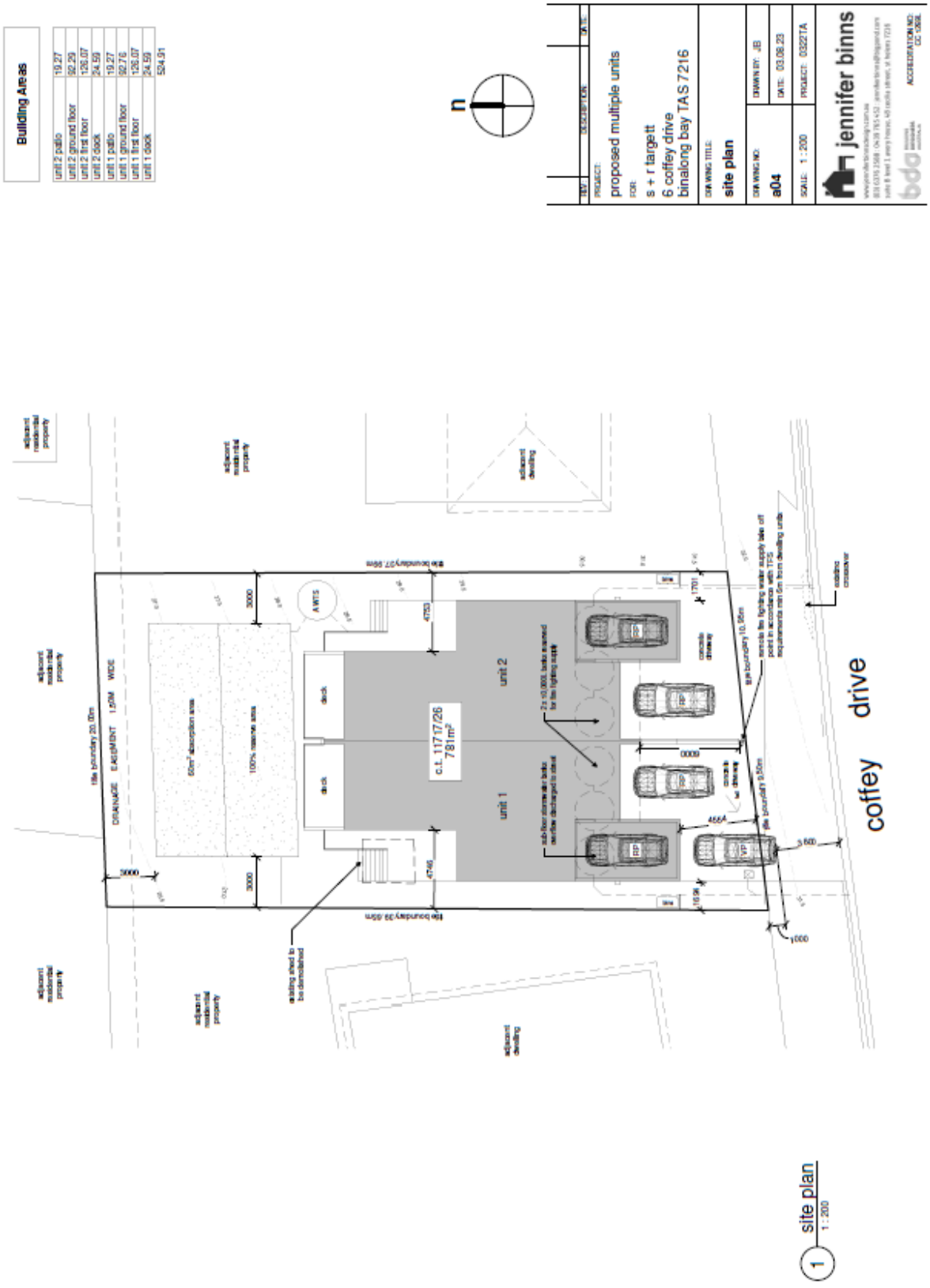
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unit 2 first floor 126.07
unit 2 deck 24.59
unit 1 patio 19.27
unit 1 ground floor 92.76
unit 1 first floor 126.07
unit 1 deck 24.59
524.91
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a04
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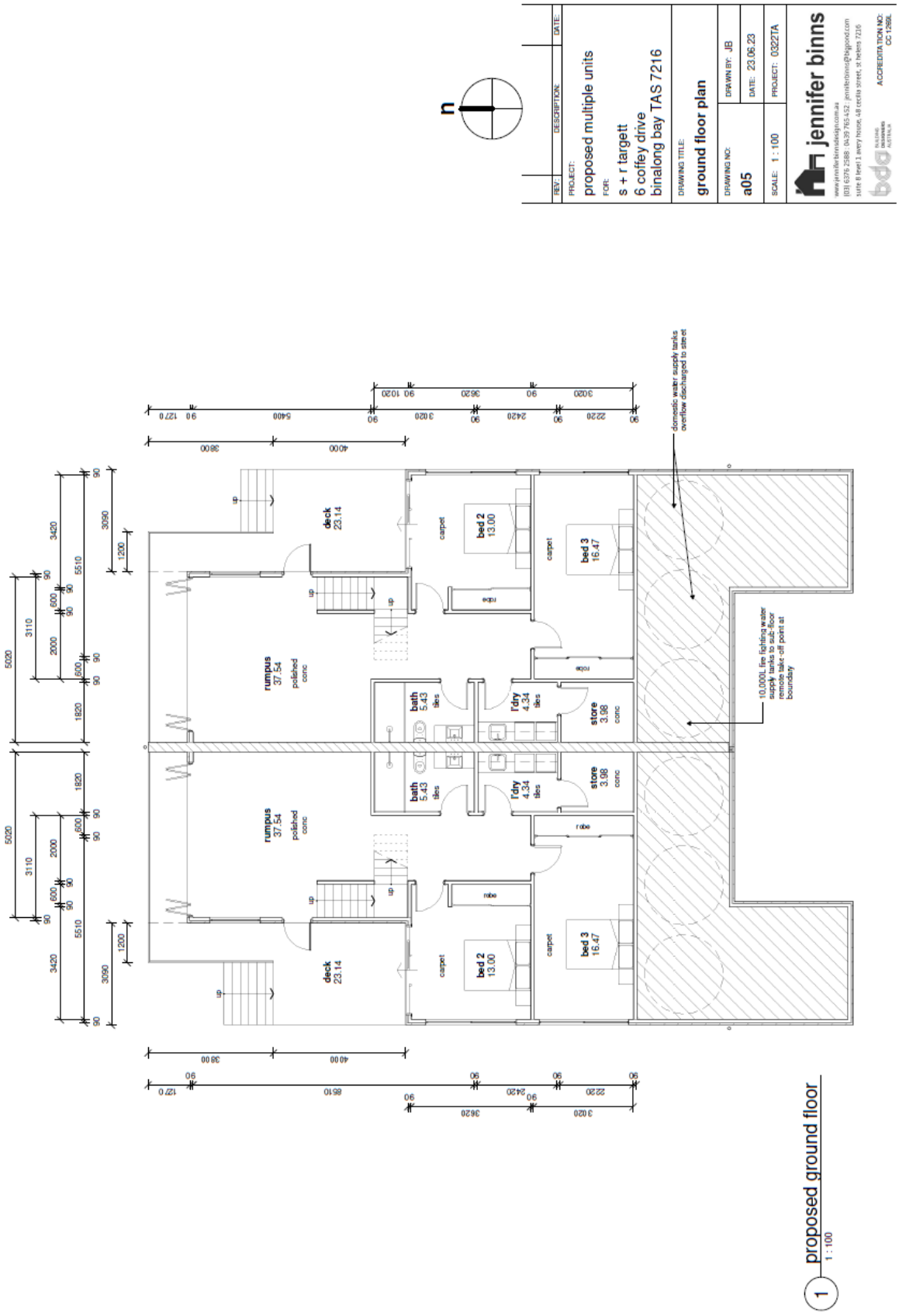
PROJECT: 0322TA
jennifer binns
ACCREDITATION NO: CC 1382
coffey drive
unit 1
unit 2
c.t. 117717/26
781m²
site boundary 20.00m
site boundary 39.88m
site boundary 27.99m
site boundary 9.50m
site boundary 10.05m
adjacent residential property
adjacent dwelling
existing crossover
existing shed to be demolished
1 site plan
1 : 200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PROJECT: 0322TA
jennifer binns
ACCREDITATION NO: CC1286E
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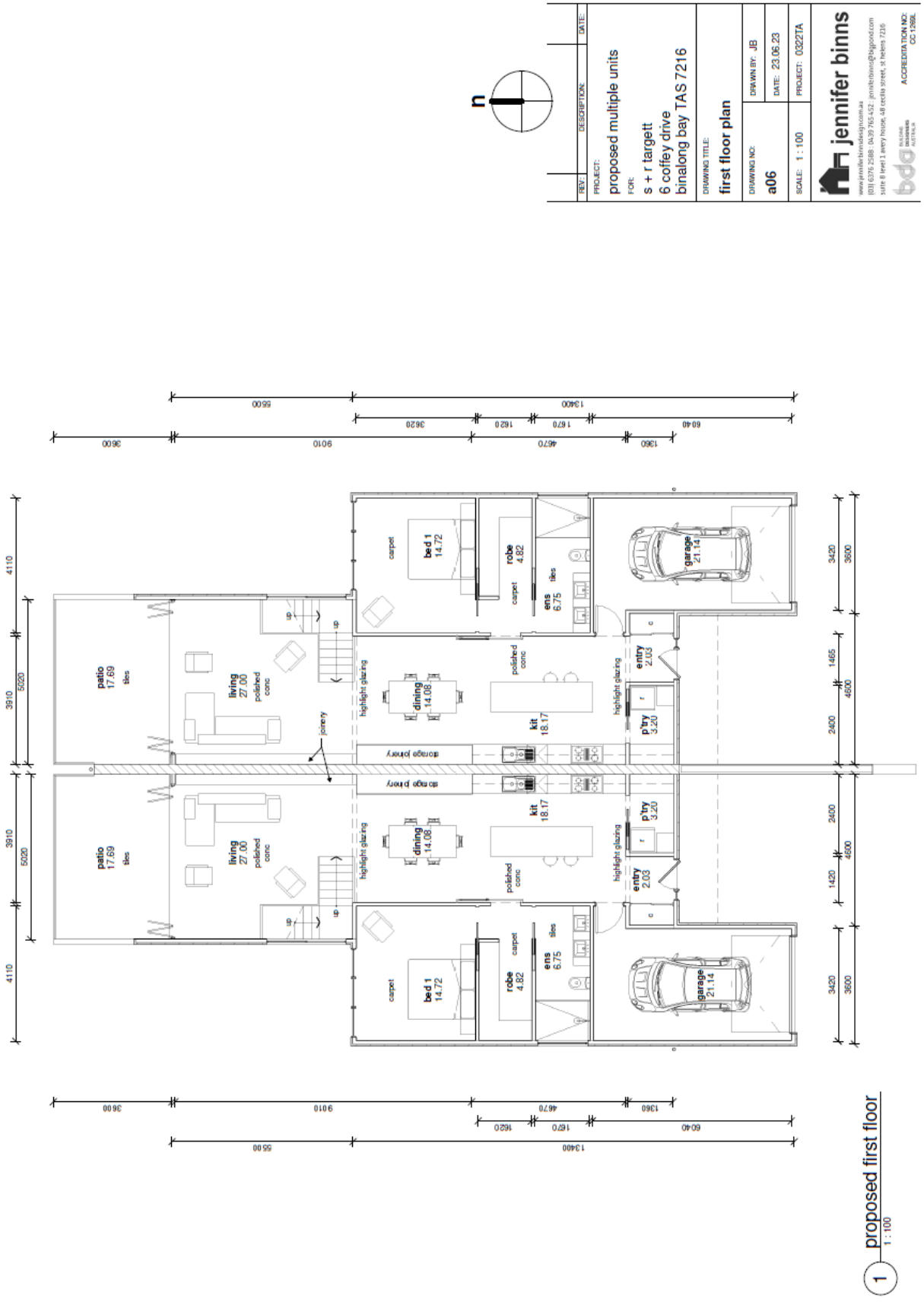
10,000L fire fighting water supply tanks to sub-floor remote take-off point at boundary
deck 23.14
rumpus 37.54 polished conc
bed 2 13.00
bed 3 16.47
carpet
robe
bath 5.43 tiles
l'dry 4.34 tiles
store 3.98 conc
up
proposed ground floor
1 : 100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first floor plan
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a06
SCALE: 1 : 100
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DATE: 23.06.23
PROJECT: 0322TA
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suite 8 level 1 avery house, 48 cecile street, st helens 7216
ACCREDITATION NO: CC 1268L
bedroom 1
14.72
robe
4.82
ens
6.75
carpet
tiles
garage
21.14
entry
2.03
p'try
3.20
kit
18.17
dining
14.08
living
27.00
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patio
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joinery
highlight glazing
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dn
1 proposed first floor
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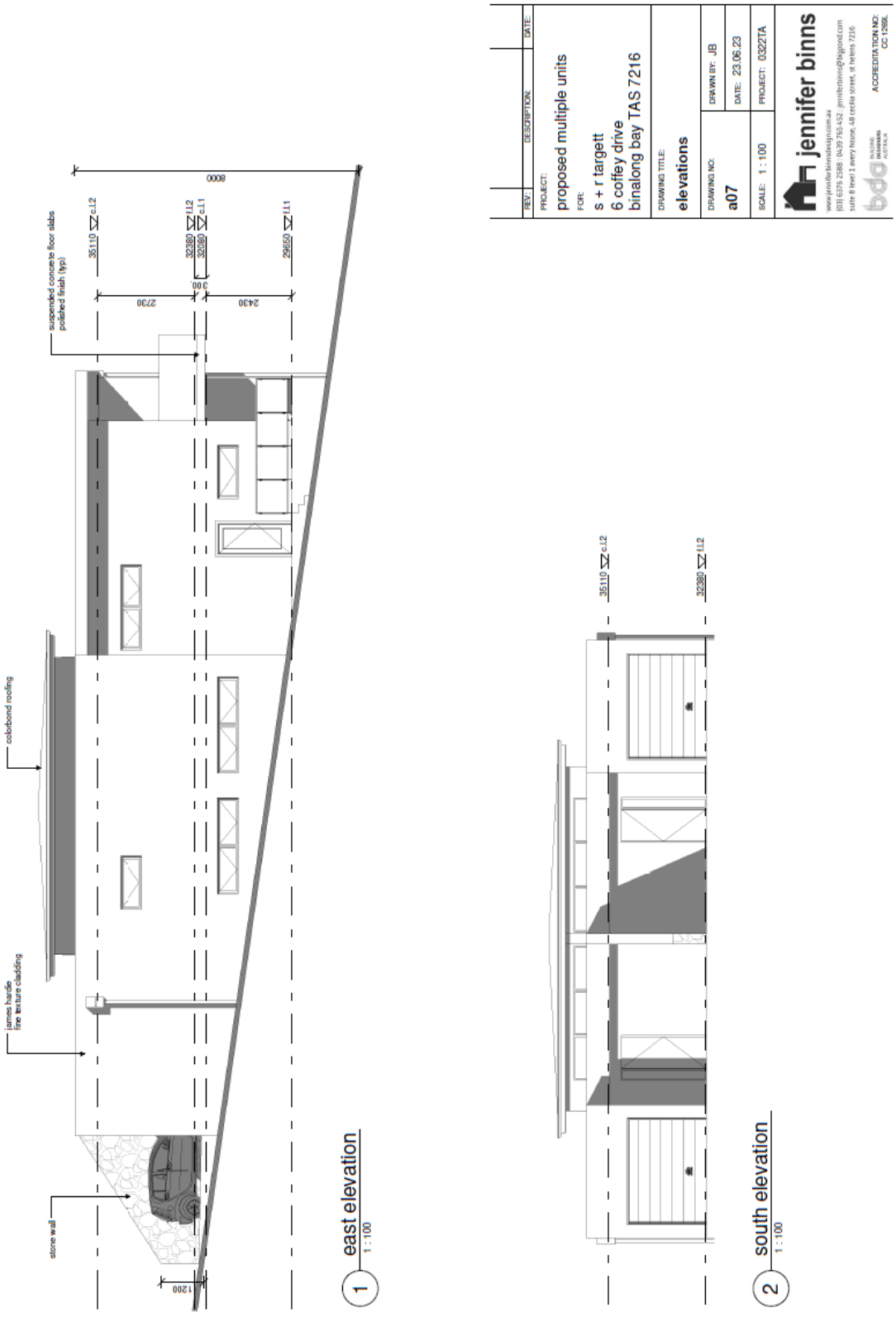
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PROJECT: 03227A
jennifer binns
ACCREDITATION NO: CC1258L
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colorbond roofing
james hardie fine texture cladding
stone wall
1200
2430
2730
300
8000
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32380 f.l.2
32080 f.l.1
29650 f.l.1
1 east elevation
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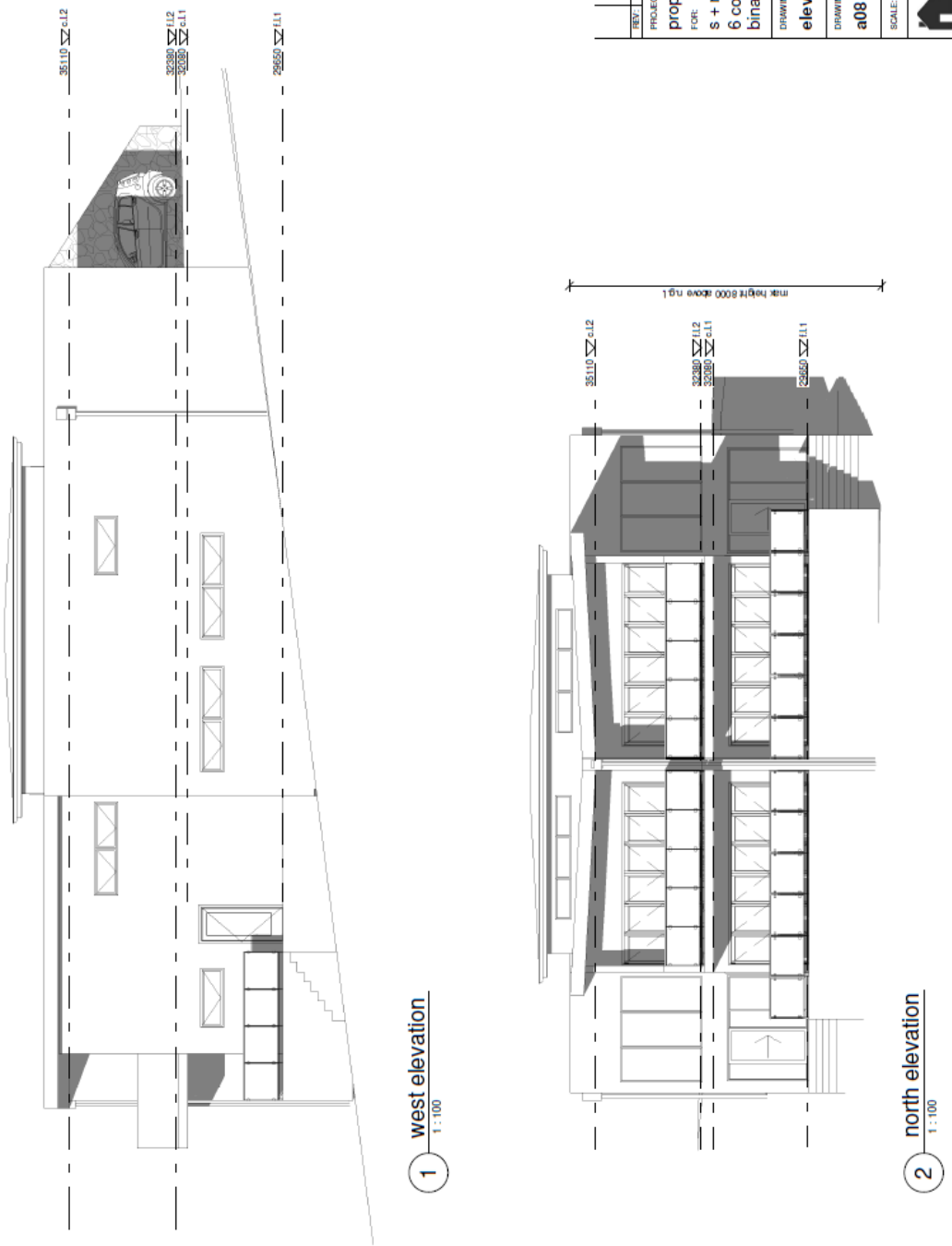
2 south elevation
1 : 100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29550 f.l.1
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1 : 100
2 north elevation
1 : 100
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jennifer binns
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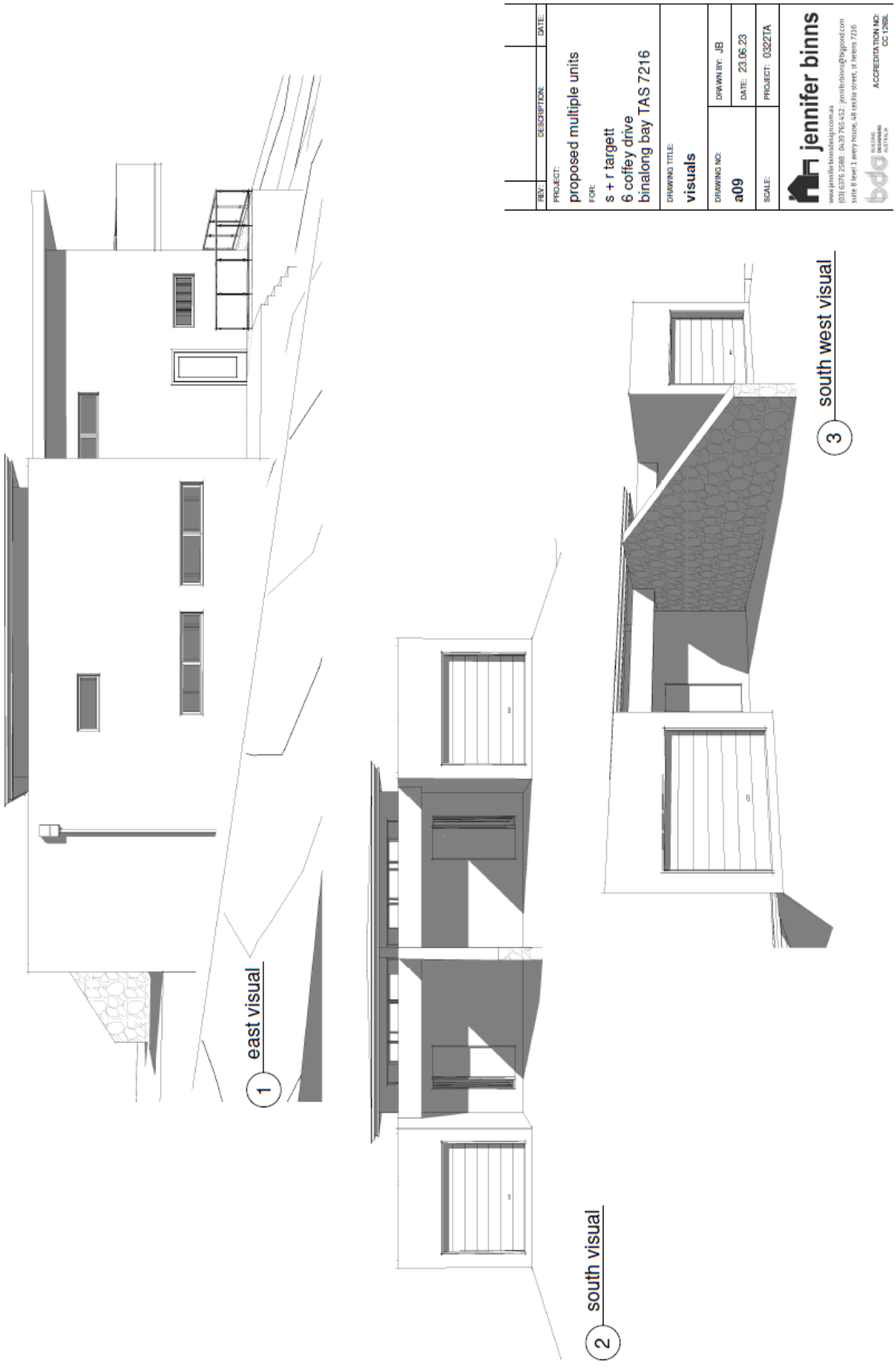
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3 south west visual
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visuals
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a09
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DATE: 23.06.23
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PROJECT: 0322TA
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ACCREDITATION NO:
CC 1298L

1 north east visual

2 north visual

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binalong bay TAS 7216

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visuals

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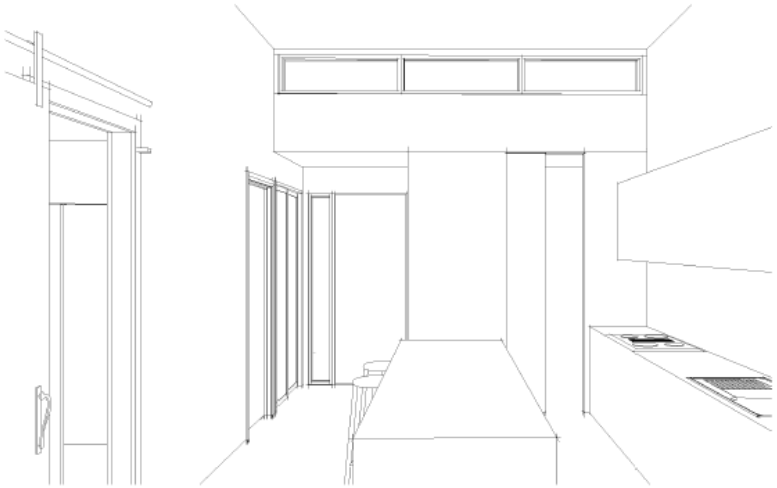
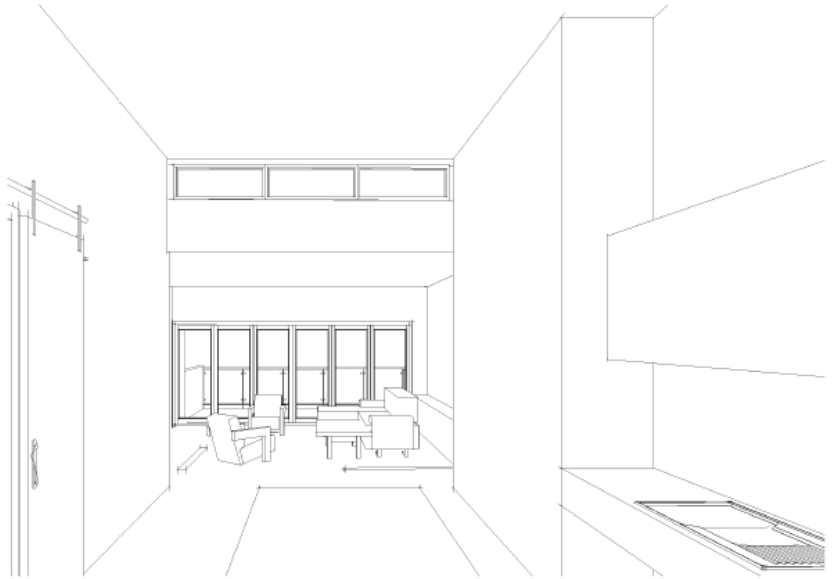
suite 8 level 1 avery house, 48 cecilia street, st helens 7216
bda BUILDING DESIGNERS AUSTRALIA
ACCREDITATION NO: CC 1269L



1 interior kitchen view looking south



2 interior living view looking north

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binalong bay TAS 7216

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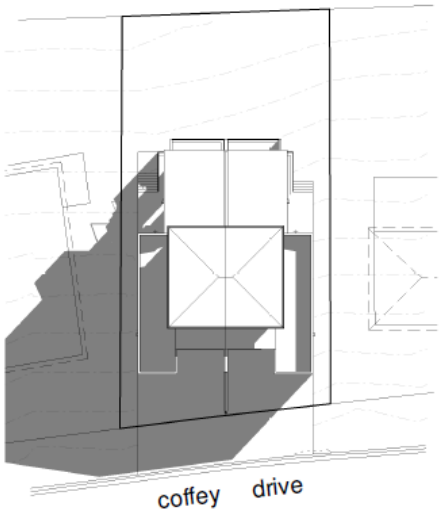

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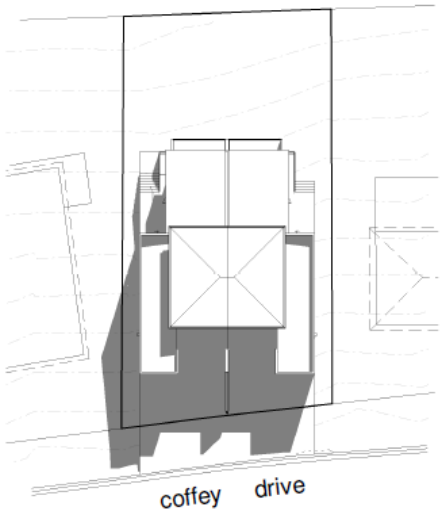

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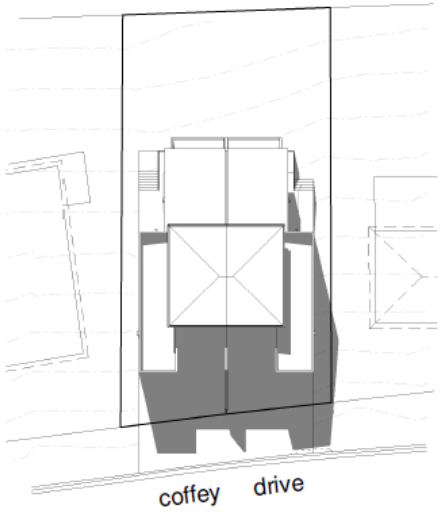

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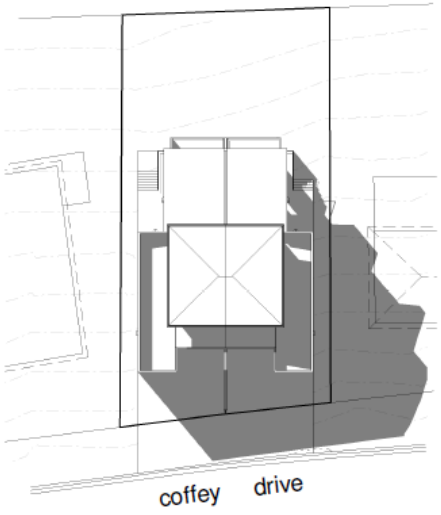

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bdg BUILDING DESIGNERS AUSTRALIA
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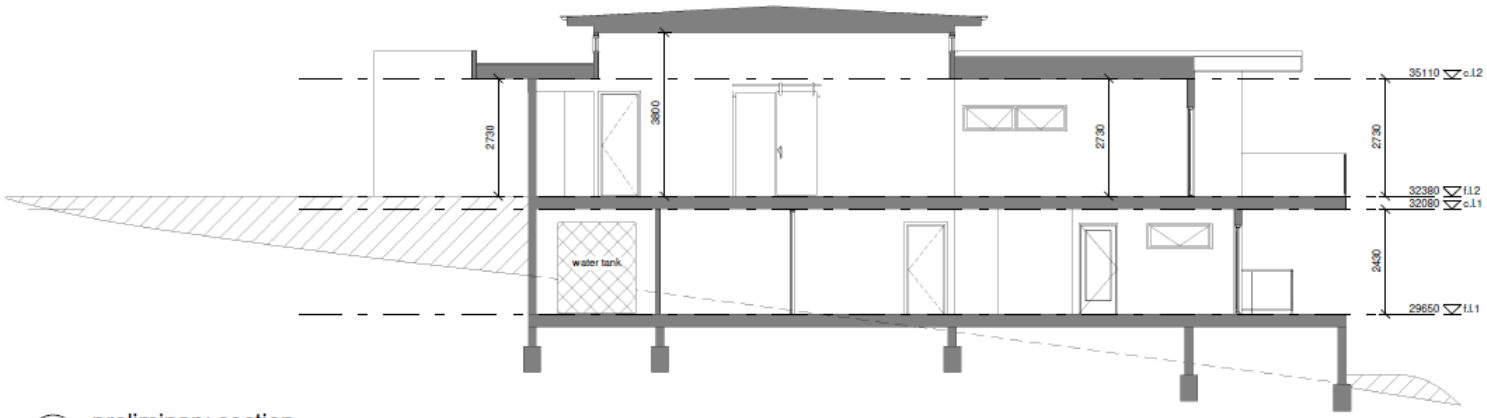

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6 coffey drive
binalong bay TAS 7216

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section

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Appendix B Level of Service Descriptions

Level of service A	A condition of free-flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.
Level of service B	In the zone of stable flow where drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is a little less than with level of service A.
Level of service C	Also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.
Level of service D	Close to the limit of stable flow and approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.
Level of service E	Traffic volumes are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause breakdown.
Level of service F	In the zone of forced flow, where the amount of traffic approaching the point under consideration exceeds that which can pass it. Flow breakdown occurs, and queuing and delays result.

Appendix C Tasmanian 26m B Double Network