NOTICE OF PROPOSED DEVELOPMENT

Notice is hereby given that an application has been made for planning approval for the following development:

SITE: 7 River Street, Carlton

PROPOSED DEVELOPMENT:
DWELLING

The relevant plans and documents can be inspected at the Council Offices at 47 Cole Street, Sorell during normal office hours, or the plans may be viewed on Council's website at www.sorell.tas.gov.au until **Monday 5th August 2024.**

Any person may make representation in relation to the proposal by letter or electronic mail (sorell.council@sorell.tas.gov.au) addressed to the General Manager. Representations must be received no later than **Monday 5th August 2024.**

APPLICANT: **M Bax**

APPLICATION NO: **DA 2024 / 48 - 1**
DATE: **18 July 2024**

7 River Street, Carlton - Representation Close Monday 5th August 2024

18-Jul-2024

100 m

Disclaimer: This map is a representation of the information currently held by Sorell Council. While every effort has been made to ensure the accuracy of the product, Council accepts no responsibility for any errors or omissions. Any feedback on omissions or errors would be appreciated.

STORMWATER ASSESSMENT

7 River Street

Carlton

April 2024

GEO-ENVIRONMENTAL SOLUTIONS

Investigation Details

Client:	Ben Newman
Site Address:	7 River Street, Carlton
Date of Inspection:	14/12/2023
Proposed Works:	New house
Investigation Method:	Geoprobe 540UD - Direct Push
Inspected by:	M. Campbell

Site Details

Certificate of Title (CT):	85421/1
Title Area:	Approx. 1401 m²
Applicable Planning Overlays:	Bushfire-prone areas, Coastal Inundation Hazard, Flood-prone Areas, Priority Vegetation
Slope & Aspect:	Flat with no dominant aspect
Vegetation:	Grass & Weeds Undisturbed

Background Information

Geology Map:	MRT 1:250000
Geological Unit:	Quaternary Sediments
Climate:	Annual rainfall 500mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	AS2870:2011, AS1726:2017 AS1547:2012 & AS4055:2021

Investigation

A number of bore holes were completed to identify the distribution and variation of the soil materials at the site, bore hole locations are indicated on the site plan. See soil profile conditions presented below. Tests were conducted across the site to obtain bearing capacities of the material at the time of this investigation.

Soil Profile Summary

BH 1 Depth (m)	BH 2 Depth (m)	BH 3 Depth (m)	USCS	Description
0.00 – 0.30	0.00 – 0.30	0.00 – 0.20	A3	Dark Grey **SAND (SW**), single grain structure, slightly moist loose consistency, variable boundary to
0.30 – 1.50	0.30 – 1.60	0.20 – 2.0+	A31	Grey **SAND (SW**), single grain structure, moist to wet (groundwater at 1.5m) medium dense consistency, variable boundary to
1.50 – 1.6+	1.60 – 1.8+		A4	Brownish Yellow and Grey **SAND (SW**), single grain structure, moist medium dense consistency, clear boundary to

Soil Conditions

The soil on site consists of deep sand deposits which have developed from Quaternary Sediments. The soil has a high estimated permeability of approximately 5m/day.

GES have identified the following at the site:

- The site has a <1% grade and presents a low risk to slope stability and landslip
- There are no proposals for cuts or change of grade which will impact on any proposed onsite stormwater absorption,
- The site soils have been identified as comprising of deep sand deposits which have developed from Quaternary Sediments and no soil dispersion was identified
- Aa water table was observed at the time of the investigation @~1.50m
- There is a low risk of the natural soils being impacted by contamination
- Bedrock was not encountered at the time of the investigation.

Soil Dispersion

The soils are non-dispersive

Summary

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.

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

Please contact me if you have any further questions.

Dr John Paul Cumming PhD CPSS
Director

GES Stormwater Maintenance Plan Checklist

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

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

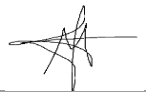
HYDRAULIC DESIGN REPORT

FE-24001-38 PERFORMANCE SOLUTION REPORT

Document Information

Title	Client	Document Number	Project Manager
7 River St, Carlton TAS 7173 Performance Solution Report	**Geo Environmental Solutions PTY LTD**	FE-24001-38	**Manuri Alwis** *BEng (Hons)* *Civil Engineer*

Document Initial Revision

REVISION 00	Staff Name	Signature	Date
Prepared by	Manuri Alwis ***Civil Engineer***		12/06/2024
Reviewed by	Ash Perera ***Civil Hydraulic Engineer***		18/06/2024
Authorised by	Max W. Möller ***Principal Hydraulic Engineer***		18/06/2024

Document Revision History

Rev No.	Description	Reviewed by	Authorised by	Date

INTRODUCTION

This report details the stormwater management strategies for the proposed development **7 River St, Carlton TAS 7173**. 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 and the incorporation of stormwater tank and dispersion trench elements.

The suggestion is to add detention to proposed stormwater tanks and install a dispersion trench to provide the function of dispersion for all impervious roof areas.

EXISTING CONDITIONS AND ASSUMPTIONS

The site covers an area of approximately 1,524m². The proposed impervious area totals 571m², consisting of 289m² for the proposed roof, 47m² for the proposed deck from the dwelling and studio, and 235m² for the proposed gravel driveway, accounting for 37.47% of the total site.

Stormwater from the site would be routed through the proposed conventional underground drainage system comprising of Grated Sumps and PVC Pipes, coupled with dispersion trench elements for on-site detention.

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

- The stormwater drainage system is designed using Bureau of Meteorology (BOM) published rainfall Intensity Frequency Duration (IFD) data as a minor / major system to accommodate the 1% 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.

Proposed studio roof areas, which are to discharge to the proposed 20,000L stormwater tank and outflow to the 9m² (6m x 1.5m), 1m deep dispersion trench. Proposed gravel driveway and studio deck is compensated within the tank calculation.

Proposed dwelling and shed roof areas, which are to discharge to the proposed 20,000L stormwater tank and outflow to the above-mentioned dispersion trench. Proposed dwelling deck area is compensated within the tank calculations.

PERFORMANCE SOLUTION COMPLIANCE

AS 3500.3 – CL 7.10	7.10.1 – Overflow is safe and does not compromise freeboard to habitable spaces.
General	• AS/NZS 3500.3: Part 3 Stormwater Drainage • Australian Rainfall and Run-off Volume 8: Urban Stormwater Management • Australian Runoff Quality – A Guide to Water Sensitive Urban Design • Storm drainage design in small urban catchments: A handbook for Australian practice • Water Sensitive Urban Design (WSUD) Engineering Procedure: Stormwater • Water Services Association of Australia Code (WSAA).

DETENTION DESIGN

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

Detention volume = 3310L (Proposed dwelling, deck & shed) 1340L (Proposed studio, deck & gravel driveway)

Permissible site discharge = 1.17L/s (Proposed dwelling, deck & shed) 1.06L/s (Proposed studio, deck & gravel 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	571	100	0	0
Total Impervious	0	0	571	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 20-min storm duration by a permissible site discharge of 1.17L/s and 1.06L/s for proposed dwelling, deck & shed and proposed studio, deck & gravel driveway respectively. Therefore, the site must detain the difference using an on-site

stormwater detention (OSD) system with 3310L and 1340L minimum capacity stormwater detention tank for proposed dwelling, deck & shed and proposed studio, deck & gravel driveway respectively.

General Maintenance,

Task	Action	Frequency
General Cleaning – gutters, downpipe, filters etc.	Clear all debris from gutters, ensure operational	Approximately every 3 months
Specialised cleaning and inspection	Inspect all gutters downpipes, inflow, and outflow – flush if required. Inspect all filters replace if required.	Yearly
Maintenance	Perform detailed inspection and maintenance of stormwater infrastructure by a qualified person.	Every 5 years.

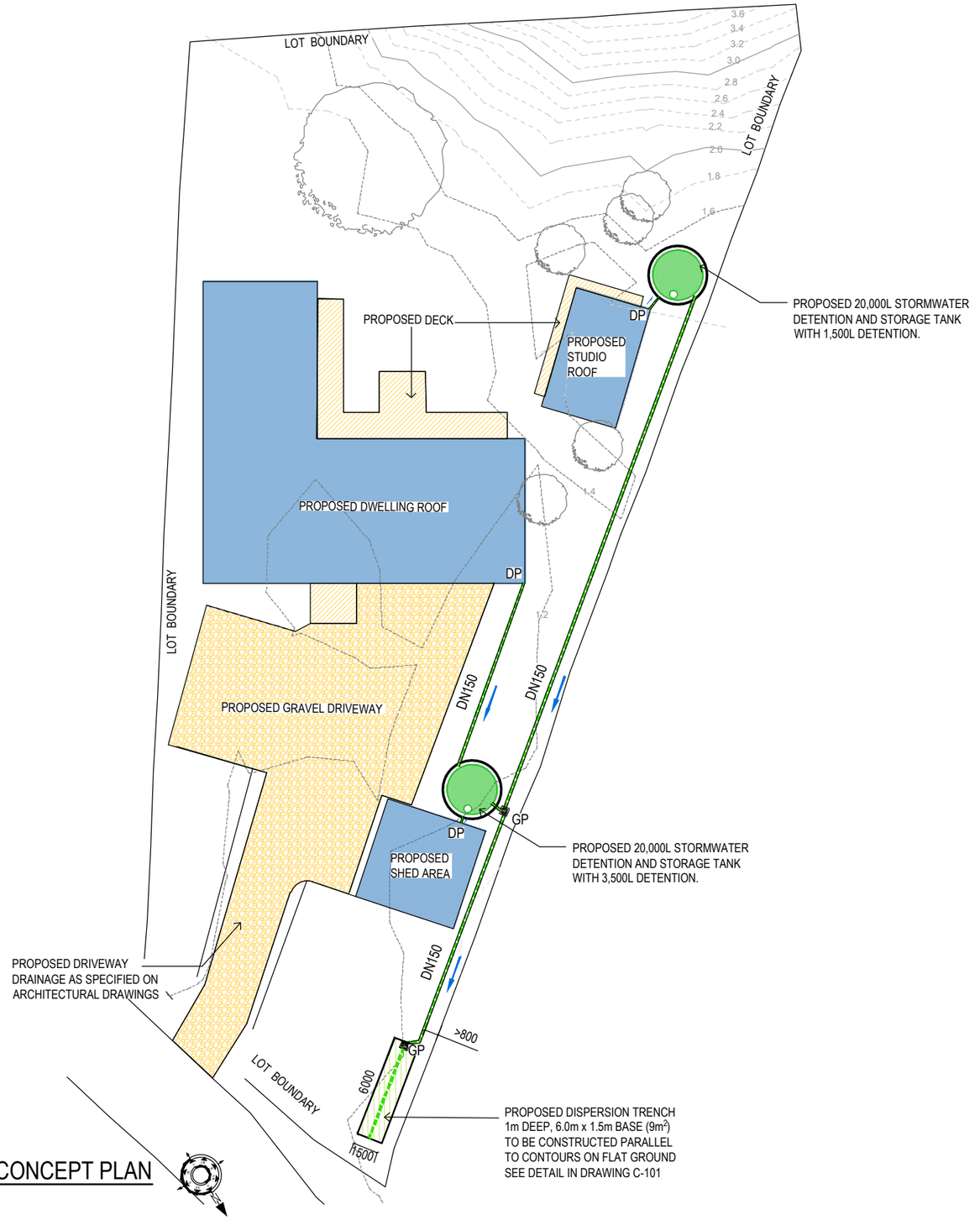
SUMMARY AND CONCLUSIONS

- Detention design to be adopted as per design and documentation.
- The designed solution complies with the performance solution design check carried out above.
- The proposed 20,000L stormwater tank with 3,500L dedicated detention has been sized over a 20-minute storm duration for proposed dwelling & shed, and the overflow of the tank is directed to the dispersion trench of 6.0m x 1.5m base, 1.0m deep. The detention required for proposed dwelling deck is compensated within the tank detention calculation.
- The existing 20,000L stormwater tank with 1,500L dedicated detention has been sized over a 20 - min storm duration for studio, and the overflow will be directed to the above-mentioned dispersion trench. The proposed gravel driveway and studio deck area are compensated within the detention tank calculation.
- The coefficient of timber/gravel is considered half impervious (C=0.5) and the total of 235m² timber decking area is included in the gravel category in the software (structural toolkit) detention calculation.
- DN100 slotted PVC pipe with geotextile covering on top of aggregate to be installed within the dispersion trench.
- 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: 300

NEW SERVICES

- STORMWATER PIPE
- STORMWATER FLOW DIRECTION
- GRATED STORMWATER PIT. 450X450 CLASS A
  ACO GALVANISED HEELGUARD OR SIMILAR ENGINEER APPROVED
- STORMWATER DETENTION AND 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=1,524m^2

- PROPOSED IMPERVIOUS ROOF AREA 289m²
- PROPOSED IMPERVIOUS DECK AREA 47m²
- PROPOSED IMPERVIOUS GRAVEL AREA 235m²

NOTES :

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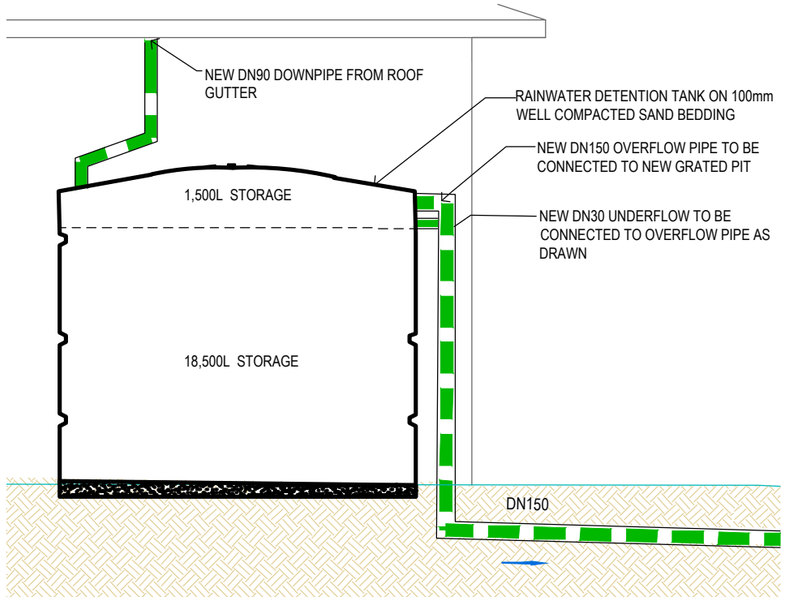
2. WORK TO FIGURED DIMENSIONS ONLY.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, SERVICE ENGINEER'S AND FLUSSIG SPATIAL DRAWINGS AND SPECIFICATIONS.

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	CONCEPT		

flussig ENGINEERS
e: admin@flussig.com.au
p: (03) 6288 7704
w: www.flussig.com.au
a: 116 Bathurst St, Level 4 Hobart, 7000, TASMANIA

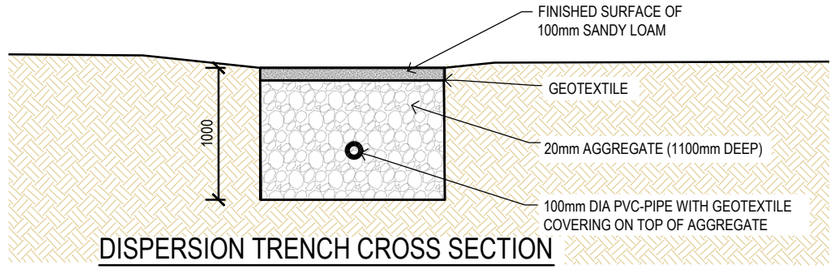
CLIENT:	GEO ENVIRONMENTAL SOLUTIONS PTY LTD
SITE:	7 RIVER ST, CARLTON TAS 7173
TITLE:	PERFORMANCE SOLUTION CONCEPT DESIGN
PROJECT:	PROPOSED DEVELOPMENT

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
AS SHOWN	18.06.2024	MA	MM
PROJECT NO:	DRAWING NO:		REVISION:
FE-24001-38	C-100		00



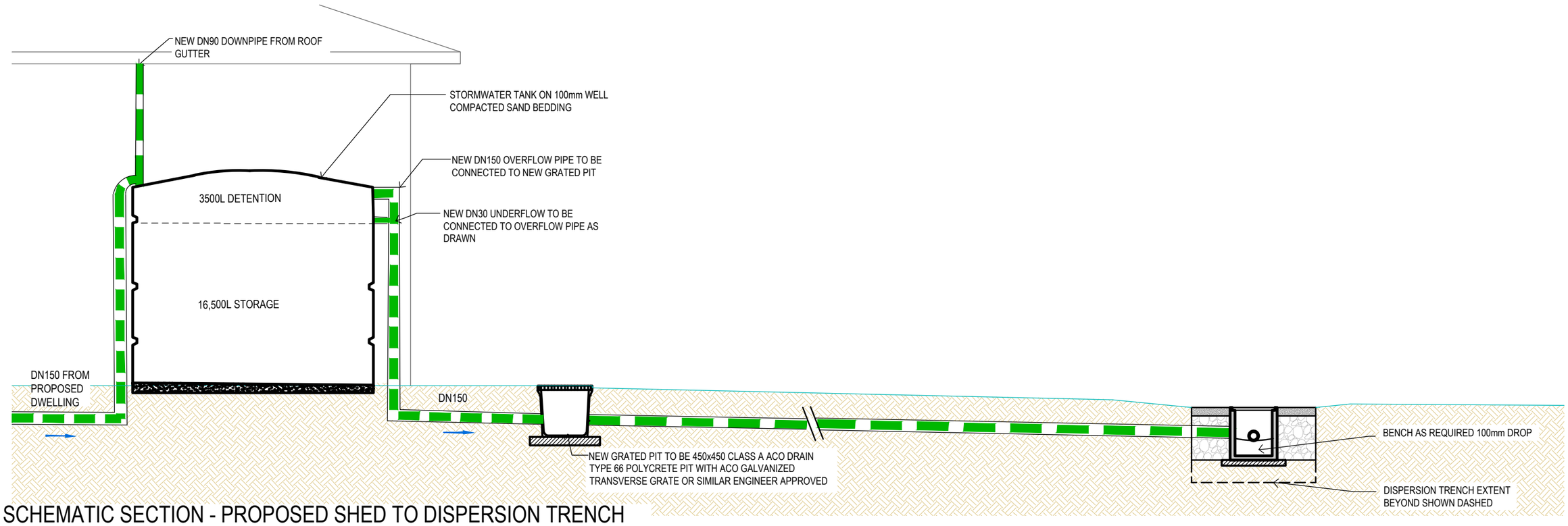
SCHEMATIC SECTION - PROPOSED STUDIO TO AND GRATED PIT ARRANGEMENT

SCALE 1:50



DISPERSION TRENCH CROSS SECTION

SCALE 1:50



SCHEMATIC SECTION - PROPOSED SHED TO DISPERSION TRENCH

SCALE 1:50

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REV:	DESCRIPTION:	BY:	DATE:

STATUS: CONCEPT

flussig ENGINEERS
e: admin@flussig.com.au
p: (03) 6288 7704
w: www.flussig.com.au
a: 116 Bathurst St, Level 4 Hobart, 7000, TASMANIA

CLIENT: GEO ENVIRONMENTAL SOLUTIONS PTY LTD

SITE: 7 RIVER ST, CARLTON TAS 7173

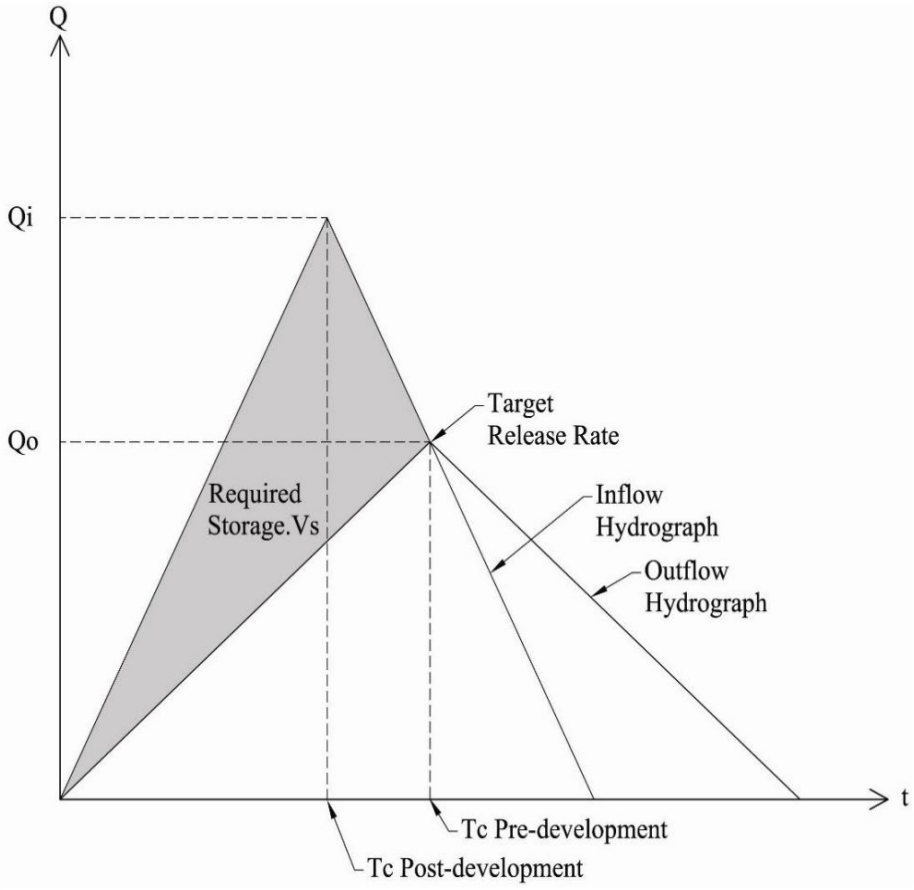
TITLE: PERFORMANCE SOLUTION CONCEPT DESIGN

PROJECT: PROPOSED DEVELOPMENT

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
AS SHOWN	18.06.2024	MA	MM

PROJECT NO:	DRAWING NO:	REVISION:
FE-24001-38	C-101	00

APPENDIX B
DETENTION COMPUTATIONS



Triangular Hydrograph Method Schematic

7 River Street, Carlton TAS 7173 - Proposed dwelling, deck and shed

STORMWATER DETENTION V5.05

Flussig Engineers

Location: **Carlton TAS**
Site: **296m² with tc = 20 and tcs = 15 mins.**
PSD: **AEP of 5%, Above ground PSD = 1.17L/s**
Storage: **AEP of 5%, Above ground volume = 3.31m³**

Design Criteria

(Custom AEP IFD data used)

Location =	Carlton TAS	
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) =	296	m²	=	0.0296 Ha
Pre-development coefficient (Cp) =	0.30			
Post development coefficient (Cw) =	0.93			
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	296	0.30	89
Total	296 m²		89

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	0	0.90	0
Roof	256	1.00	256
Gravel	40	0.50	20
Garden	0	0.30	0
Total	296 m²		276

Cw = ΣArea*C/Total = 0.932

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

PSD Intensity (I) =	45.4	mm/hr	For catchment tc = 20 mins.	
Pre-development (Qp = Cp*I*As/0.36) =	1.12	L/s		
Peak post development (Qa = 2*Cw*I*As/0.36) =	6.96	L/s	=(0.153 x I)	Eq. 2.24
Storage method =	A	(A)bove,(P)ipe,(U)nderground,(C)ustom		
Permissible site discharge (Qu = PSD) =	1.166	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 = -14.5 c = 15.6

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

PSD = 1.166 L/s

Below ground pipe - Eq 3.3

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

= 1.12

PSD = 1.157 L/s

Below ground rectangular tank - Eq 3.4

t =tcs/(tc*(1-2*PSD/(3*Qa))) = 0.840

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

= 1.12

PSD = 1.123 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	87.2	13.4	1.71		
13	57.6	8.8	2.69		
17	49.8	7.6	2.92		
21	44.2	6.8	3.07		
26	38.9	6.0	3.19		
30	35.7	5.5	3.25		
34	33.0	5.1	3.29		
38	30.9	4.7	3.31		
42	29.0	4.4	3.32		
46	27.4	4.2	3.32		

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

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m³)
Above	37.1	31.3	4.8	**3.31**
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) = 0.87 L/s at which time above ground storage occurs
I = 360*Qp2/(2*Cw*As*10³) = 5.7 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	37.1	4.8	3.3	28.8	57.3	86.1
Pipe						
B/ground						

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

Orifice

Permissible site discharge (Qu=PSD) = 1.17 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) = 388.5 mm
Orifice flow (Q) = CD*Ao*√(2*g*H)

Therefore:
Orifice area (Ao) = 692 mm²
Orifice diameter (D = √(4*Ao/π)) = 29.7 mm

7 River Street, Carlton TAS 7173 - Proposed studio, deck and gravel driveway

STORMWATER DETENTION V5.05

Flussig Engineers

Location: **Carlton TAS**
Site: **275m² with tc = 20 and tcs = 15 mins.**
PSD: **AEP of 5%, Above ground PSD = 1.06L/s**
Storage: **AEP of 5%, Above ground volume = 1.34m³**

Design Criteria

(Custom AEP IFD data used)

Location =	Carlton TAS	
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) =	275	m²	=	0.0275 Ha
Pre-development coefficient (Cp) =	0.30			
Post development coefficient (Cw) =	0.56			
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	275	0.30	83
Total	275 m²		83

Cp = ΣArea*C/Total = 0.300

Post development

Zone	Area (m²)	C	Area * C
Concrete	0	0.90	0
Roof	33	1.00	33
Gravel	242	0.50	121
Garden	0	0.30	0
Total	275 m²		154

Cw = ΣArea*C/Total = 0.560

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

PSD Intensity (I) =	45.4	mm/hr	For catchment tc = 20 mins.	
Pre-development (Qp = Cp*I*As/0.36) =	1.04	L/s		
Peak post development (Qa = 2*Cw*I*As/0.36) =	3.89	L/s	=(0.086 x I)	Eq. 2.24
Storage method =	A	(A)bove,(P)ipe,(U)nderground,(C)ustom		
Permissible site discharge (Qu = PSD) =	1.063	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 = -8.7 c = 8.1

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

PSD = 1.063 L/s

Below ground pipe - Eq 3.3

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

= 1.04

PSD = 1.051 L/s

Below ground rectangular tank - Eq 3.4

t =tcs/(tc*(1-2*PSD/(3*Qa))) = 0.910

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

= 1.04

PSD = 1.024 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	87.2	7.5	0.86		
9	69.0	5.9	1.13		
11	62.7	5.4	1.21		
13	57.6	4.9	1.26		
15	53.4	4.6	1.30		
16	51.5	4.4	1.32		
18	48.2	4.1	1.34		
20	45.4	3.9	1.35		
22	43.0	3.7	1.35		
24	40.8	3.5	1.35		

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

Type	td (mins)	I (mm/hr)	Qa (L/s)	Vs (m³)
Above	19.1	46.6	4.0	**1.34**
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) = 0.80 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	19.1	4.0	1.3	14.4	25.9	40.3
Pipe						
B/ground						

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

Orifice

Permissible site discharge (Qu=PSD) = 1.06 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) = 166 mm
Orifice flow (Q) = CD*Ao*√(2*g*H)

Therefore:
Orifice area (Ao) = 965 mm²
Orifice diameter (D = √(4*Ao/π)) = 35.1 mm

Dispersion trench

Hydrology		
A = total impervious area collected	289	sqm
C = coefficient (roof)	1	
ARI = Annual Reccurence Interval	20	yr

Ground Conditions		
Hydraulic conductivity K (absorption rate)	3.4722	mm/min
Adjusted rate (15% clogging factor)	2.9514	mm/min

Trench Design		
Length, L	6	m
Width, B	1.5	m
Depth, h	1	m
Base area, BA	9	sqm
Void space	35%	
Trench Storage	3.15	cum
	3150.00	L

Detention tank data		
Tank storage	5.00	cum
Tank Underflow	2.23	L/s
Tank Underflow	133.80	L/m
Total Available storage	8.15	cum
	8150	L

Final Check			
Criteria	**Requirement (L)**	**Design(L)**	**Check**
Detention	4,650	8150	**OK**
Trench capacity for underflow	2145	3150	**OK**

Checking storms

	Duration (min)	Intensity (mm/hr)	Vol in System(L)	Vol in Trench (L)	Vol out Trench (L)	Storage total System (L)	Storage Trench(L)	Hours to empty Trench
5Mins	5	87.2	2100	669	133	**1967**	**536**	0
6Mins	6	82.9	2396	803	159	**2236**	**643**	1
10Mins	10	65.7	3165	1338	266	**2899**	**1072**	1
20Mins	20	45.4	4374	2676	531	**3842**	**2145**	2
30Mins	30	35.7	5159	4014	797	**4362**	**3217**	2
1Hr	60	23.3	6734	1734	1594	**5140**	**140**	3
2Hrs	120	15.5	8959	3959	3188	**5772**	**772**	4
3Hrs	180	12.3	10664	5664	4781	**5883**	**883**	4
6Hrs	360	8.62	14947	9947	9563	**5385**	**385**	6
12Hrs	720	6.06	21016	16016	19125	**1891**	**-3109**	10
24Hrs	1440	4.11	28507	23507	38250	**-9743**	**-14743**	15
48Hrs	2880	2.55	35374	30374	76500	**-41126**	**-46126**	19
72Hrs	4320	1.83	38079	33079	114750	**-76671**	**-81671**	21

IFD Design Rainfall

Location

Label: 7 River St, Carlton TAS 7173
Latitude: -42.872 [Nearest grid cell: 42.8625 (S)]
Longitude: 147.642 [Nearest grid cell: 147.6375 (E)]

IFD Design Rainfall Intensity (mm/h)

Issued: 18 June 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	64.8	72.9	100	121	142	172	198
2 min	55.1	61.5	82.5	97.5	113	131	145
3 min	48.9	54.7	73.9	87.6	102	119	133
4 min	44.2	49.6	67.5	80.4	93.7	111	125
5 min	40.6	45.6	62.3	74.5	87.2	105	119
10 min	29.6	33.3	46.1	55.6	65.7	80.5	93.0
15 min	23.9	27.0	37.4	45.1	53.4	65.6	76.0
20 min	20.5	23.1	31.9	38.5	45.4	55.7	64.3
25 min	18.1	20.4	28.0	33.8	39.8	48.6	55.9
30 min	16.3	18.4	25.2	30.3	35.7	43.3	49.7
45 min	13.0	14.6	19.9	23.8	27.8	33.3	37.8
1 hour	11.1	12.5	16.9	20.0	23.3	27.7	31.1
1.5 hour	8.91	9.99	13.4	15.8	18.3	21.4	23.8
2 hour	7.65	8.57	11.5	13.5	15.5	18.0	19.9
3 hour	6.19	6.95	9.29	10.8	12.3	14.3	15.7
4.5 hour	5.02	5.65	7.56	8.80	9.98	11.5	12.6
6 hour	4.31	4.87	6.54	7.62	8.62	9.96	11.0
9 hour	3.46	3.93	5.32	6.20	7.03	8.18	9.04
12 hour	2.94	3.34	4.56	5.34	6.06	7.10	7.88
18 hour	2.29	2.62	3.61	4.26	4.87	5.76	6.44
24 hour	1.89	2.17	3.02	3.58	4.11	4.90	5.50
30 hour	1.62	1.86	2.60	3.09	3.56	4.27	4.82
36 hour	1.41	1.62	2.28	2.72	3.15	3.79	4.28
48 hour	1.13	1.30	1.83	2.20	2.55	3.08	3.49
72 hour	0.808	0.929	1.31	1.57	1.83	2.21	2.51
96 hour	0.631	0.724	1.02	1.22	1.41	1.70	1.94
120 hour	0.520	0.595	0.831	0.989	1.14	1.38	1.56
144 hour	0.445	0.509	0.704	0.833	0.956	1.15	1.31
168 hour	0.391	0.447	0.614	0.720	0.820	0.985	1.12

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: Ben Newman *Owner name*

Address

Suburb/postcode

Designer details:

Name: Max W. Moller

Category: Civil

Business name: Flussig Engineers

Phone No: 03 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 Ben Newman

Designer's project reference No. FE_24001-38

Address: 7 River Street,

Lot No:

Carlton

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-24001-38_REV00-C100 FE-24001-38_REV00-C101	Prepared by: Flussig Engineers	Date: 18.06.24
Schedules:	Prepared by:	Date:
Specifications: Performance Solution Report	Prepared by: Flussig Engineers	Date: 18.06.24
Computations: Performance solution Report	Prepared by: Flussig Engineers	Date:18.06.24
Performance solution proposals: Onsite stormwater retention	Prepared by: Flussig Engineers	Date:18.06.24
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 - 7 River Street, Carlton'

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  18.06.24

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.

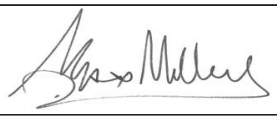
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

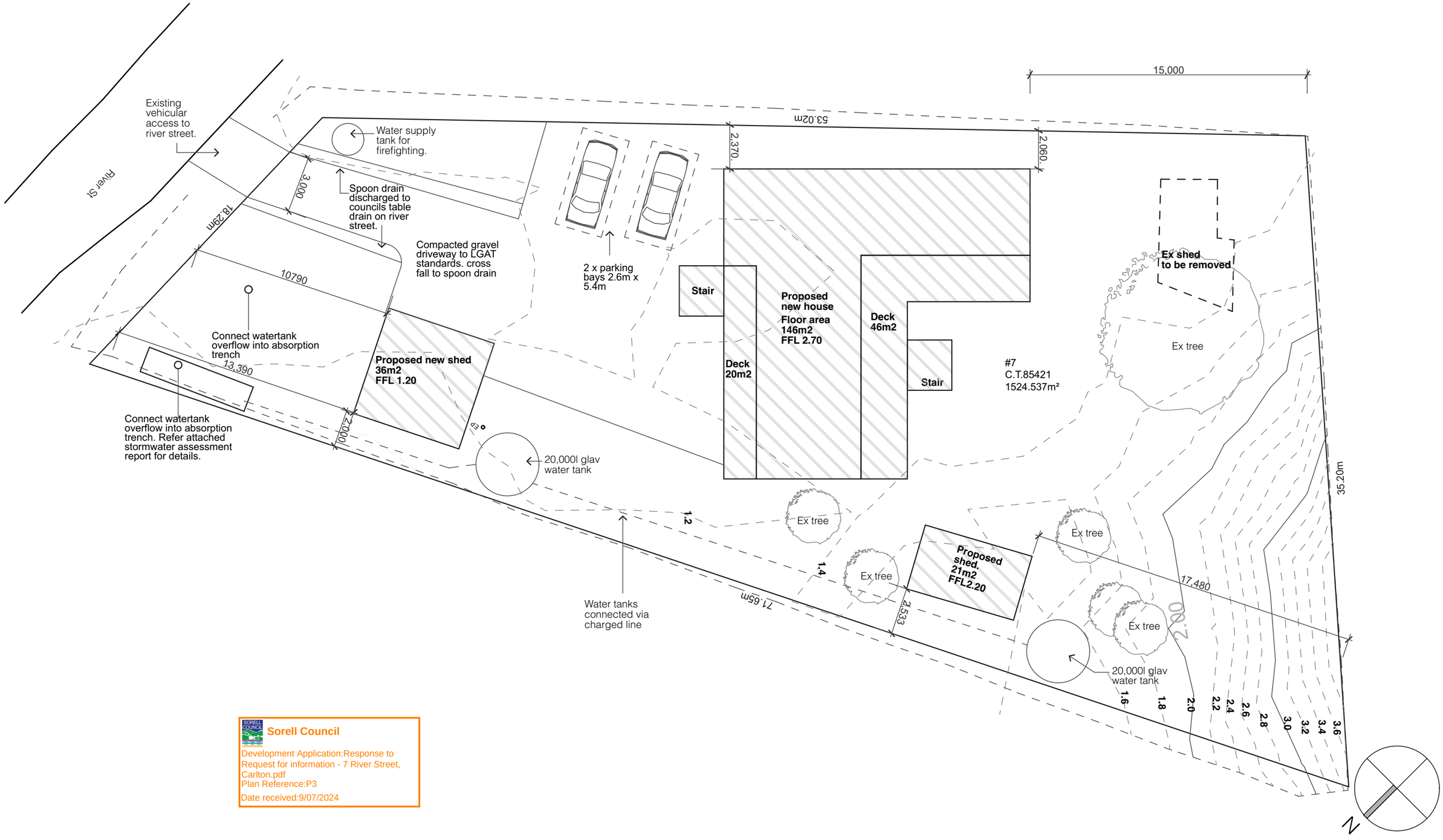
- [x] The works will not increase the demand for water supplied by TasWate
- [x] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [x] The works will not require a new connection, or a modification 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 wor ks 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		18.06.24



Sorell Council

Development Application:Response to Request for information - 7 River Street, Carlton.pdf
Plan Reference:P3

Date received:9/07/2024

Revision		Date

PRELIMINARY
not to be used for construction

GENERAL NOTES
DO NOT SCALE DRAWINGS
CONFIRM DIMENSIONS AND SETOUTS ON SITE PRIOR TO MANUFACTURE AND INSTALLATION
ALL WORK IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS AND BCA
ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH WRITTEN SPECIFICATION AND ENGINEERS DRAWINGS

Project Title

New House & Out Buildings
7 River Street
Carlton

Client

Ben and Adele Newman

MATTHEW BAX
ARCHITECT
ph 0408 522 661
e matt@matthewbaxarchitect.com.au
w www.matthewbaxarchitect.com.au

Drawing Title

Site Plan

Drawn	Checked
Scale 1:200 @ A3	
Date July 2024	
File Number 2328	Printed: Tuesday, 9 July 2024
Drawing No 100	

GEO-ENVIRONMENTAL ASSESSMENT

7 River Street

Carlton

April 2024

GES

GEO-ENVIRONMENTAL

SOLUTIONS

Investigation Details

Client:	Ben Newman
Site Address:	7 River Street, Carlton
Date of Inspection:	14/12/2023
Proposed Works:	New house
Investigation Method:	Geoprobe 540UD - Direct Push
Inspected by:	M. Campbell

Site Details

Certificate of Title (CT):	85421/1
Title Area:	Approx. 1401 m²
Applicable Planning Overlays:	Bushfire-prone areas, Coastal Inundation Hazard, Flood-prone Areas, Priority Vegetation
Slope & Aspect:	Flat with no dominant aspect facing slope
Vegetation:	Grass & Weeds Undisturbed

Background Information

Geology Map:	MRT 1:250000
Geological Unit:	Quaternary Sediments
Climate:	Annual rainfall 500mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	AS2870:2011, AS1726:2017 AS1547:2012 & AS4055:2021

Investigation

A number of bore holes were completed to identify the distribution and variation of the soil materials at the site, bore hole locations are indicated on the site plan. See soil profile conditions presented below. Tests were conducted across the site to obtain bearing capacities of the material at the time of this investigation.

Soil Profile Summary

BH 1 Depth (m)	BH 2 Depth (m)	BH 3 Depth (m)	USCS	Description
0.00 – 0.30	0.00 – 0.30	0.00 – 0.20	A3	Dark Grey **SAND (SW**), single grain structure, slightly moist loose consistency, variable boundary to
0.30 – 1.50	0.30 – 1.60	0.20 – 2.0+	A31	Grey **SAND (SW**), single grain structure, wet medium dense consistency, variable boundary to
1.50 – 2.0+	1.60 – 2.0+		A4	Brownish Yellow and Grey **SAND (SW**), single grain structure, moist medium dense consistency, no refusal

Site Notes

The soil onsite consists of deep deeps. A watertable was encountered at approx. 1.5m within the proposed construction area but was not encountered within the proposed wastewater application area (investigation depth of 2m).

Site Classification

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

The site has been classified as:

Class A

Y^s range: **0mm**

Notes: The soils are deep coastal sand deposits with permanent groundwater at depth.

Wind Loading Classification

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

Wind Classification: N2

Region:	A
Terrain Category:	1.0
Shielding Classification:	PS
Topographic Classification:	T0
Wind Classification:	N2
Design Wind Gust Speed – m/s ($V_{h,u}$):	40

Wastewater Classification & Recommendations

According to AS1547-2012 for on-site wastewater management the soil on the property is classified as **SAND (category 1)**. Any onsite wastewater will need to involve secondary treatment of effluent due to the limited space available onsite and the presence of a water table at approx. 1.5m. It is proposed to install a package treatment system (e.g. AWTS such as Econocycle, Envirocycle, Ozzikleen etc) with the treated effluent discharged into an absorption bed. A Design Loading Rate (DLR) of 40L/m^2/day has therefore been assigned for secondary treated effluent.

The proposed development currently consists of a three-bedroom dwelling however, the onsite wastewater system will be designed to accommodate the expected load of a four-bedroom dwelling to allow for any future extension. The maximum wastewater load has therefore been calculated at 720L/day, based on a tank water supply and a maximum occupancy of 6 people.

Using the DLR of 40L/m^2/day, an absorption area of at least 18m^2 will be required. This can be accommodated by a 12m x 1.5m x 0.6m absorption bed as per the attached design. The absorption area will need to be located on the small rise in the western corner of the block to ensure it is outside of the inundation hazard area.

A cut-off drain will not be required due to the highly permeable soil onsite. A 100% reserve area will need to be set aside and kept free from, development for any future wastewater requirements. There is sufficient space available onsite to accommodate the required reserve.

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

Upslope or level buildings:	3m
Downslope buildings:	6m
Upslope or level boundaries:	1.5m
Downslope boundaries:	4.5m
Downslope surface water:	100m

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

Construction Notes & Recommendations

The site has been classified as **Class A** - see 'Site Classification' above.

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

All earthworks on site must comply with AS3798:2012, and I further recommend that consideration be given to drainage and sediment control on site during and after construction. Care should also be taken to ensure there is adequate drainage in the construction area to avoid the potential for weak bearing and foundation settlement associated with excessive soil moisture.

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

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

Director

APPENDIX 1 - PSP Results Table

Perth Sand Penetrometer (PSP) Conversion to Californian Bearing Ratio
(ref: Australian Standard AS 1289.6.3.3 - 1997)

PSP Location BH2

Depth (mm)	PSP (Blows/100mm)	PSP (mm/Blow)	PSP Resistance (mPa)	Allowable Bearing Capacity (kPa)	CBR (Rounded Up)
0-100	1	100.0	0.3	37	2
100-200	4	25.0	1.3	147	8
200-300	4	25.0	1.3	147	8
300-400	5	20.0	1.6	184	10
400-500	4	25.0	1.3	147	8
500-600	6	16.7	1.9	221	13
600-700	6	16.7	1.9	221	13
700-800	3	33.3	0.9	110	6
800-900	3	33.3	0.9	110	6
900-1000	4	25.0	1.3	147	8
1000-1100	5	20.0	1.6	184	10
1100-1200	9	11.1	2.8	331	20
1200-1300	6	16.7	1.9	221	13
1300-1400	6	16.7	1.9	221	13
1400-1500	5	20.0	1.6	184	10
1500-1600	9	11.1	2.8	331	20
1600-1700	10	10.0	3.1	368	22
1700-1800	12	8.3	3.8	441	27
1800-1900	14	7.1	4.4	515	32
1900-2000	15	6.7	4.7	551	35

GES

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	Ben Newman	Assess. Date	15-Apr-24
		Ref. No.	
Assessed site(s)	7 River St Carlton	Site(s) inspected	14-Dec-24
Local authority	Sorell	Assessed by	John Paul 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 = 720 (using the 'No. of bedrooms in a dwelling' method)

Septic tank wastewater volume (L/day) = 240

Sullage volume (L/day) = 480

Total nitrogen (kg/year) generated by wastewater = 2.2

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

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)	41	36	36	45	36	29	46	47	40	48	44	56
Adopted rainfall (R, mm)	41	36	36	45	36	29	46	47	40	48	44	56
Retained rain (Rr, mm)	37	32	32	41	32	26	41	42	36	43	40	50
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	130	110	91	63	42	29	32	42	63	84	105	126
Evapotr. less rain (mm)	**93**	**78**	**59**	**23**	**10**	**3**	**-10**	**0**	**27**	**41**	**65**	**76**

Annual evapotranspiration less retained rain (mm) = 463

Soil characterisitics

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

Adopted permeability (m/day) = 3 Adopted LTAR (L/sq m/day) = 40 Min depth (m) to water = 1.5

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) =	12
Width (m) =	1.5
Depth (m) =	0.6
Total disposal area (sq m) required =	33
comprising a Primary Area (sq m) of:	18
and a Secondary (backup) Area (sq m) of:	15

Sufficient area is available on site

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

Comments

Using a DLR of 40L/sqm/day an absorption area of at least 18sqm is required.

GES

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	Ben Newman	Assess. Date	15-Apr-24
		Ref. No.	
Assessed site(s)	7 River St Carlton	Site(s) inspected	14-Dec-24
Local authority	Sorell	Assessed by	John Paul Cumming

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

Alert	Factor	Units	Value	Confid level	Limitation		Remarks
					Trench	Amended	
	Expected design area	sq m	1,000	V. high	Moderate	No change	
A	Density of disposal systems	/sq km	25	Mod.	High		
	Slope angle	degrees	4	High	Very low		
	Slope form	Convex spreading		High	Very 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 NE or NW		V. high	Low		
	Frequency of strong winds		Common	High	Low		
	Wastewater volume	L/day	720	High	Moderate		
	SAR of septic tank effluent		1.7	High	Low		
	SAR of sullage		2.6	High	Moderate		
	Soil thickness	m	2.0	V. high	Very low		
	Depth to bedrock	m	3.0	V. high	Very low		
	Surface rock outcrop	%	0	V. high	Very low		
	Cobbles in soil	%	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		
	Adopted permeability	m/day	3	Mod.	Very high	Moderate	Other factors lessen impact
	Long Term Accept. Rate	L/day/sq m	40	High	Very high	Moderate	Other factors lessen impact

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

Comments

The site has the capability to accept secondary treated wastewater

GES

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	Ben Newman	Assess. Date	15-Apr-24
		Ref. No.	
Assessed site(s)	7 River St Carlton	Site(s) inspected	14-Dec-24
Local authority	Sorell	Assessed by	John Paul Cumming

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

Alert	Factor	Units	Value	Confid level	Limitation Trench	Limitation Amended	Remarks
A	Cation exchange capacity	mmol/100g	35	High	High		
A	Phos. adsorp. capacity	kg/cub m	0.4	High	High		
	Annual rainfall excess	mm	-463	High	Very low		
	Min. depth to water table	m	1.5	High	Moderate		
	Annual nutrient load	kg	3.7	High	Very 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	200	V. high	Moderate		
	Dist. to nearest other feature	m	50	V. high	Moderate	No change	
	Risk of slope instability	Very low		V. high	Very low		
	Distance to landslip	m	200	V. high	Low		

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

Comments

Secondary treatment of wastewater is required

Explanatory Notes

1 Scope of Works

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

1.1 Site Classification AS2870:2011

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

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

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

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

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

1.2 Soil Characterisation

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

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

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

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

1.3 USCS Material Descriptions

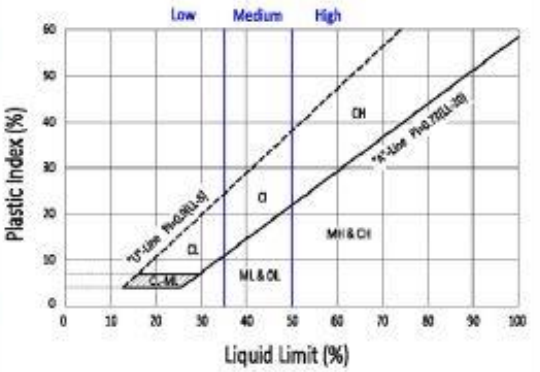
Soils for engineering purposes are the unconsolidated materials above bedrock, they can be residual, alluvial, colluvial or aeolian in origin.

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

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

Plasticity Chart

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



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

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

1.4 Bearing Capacities and DCP testing.

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

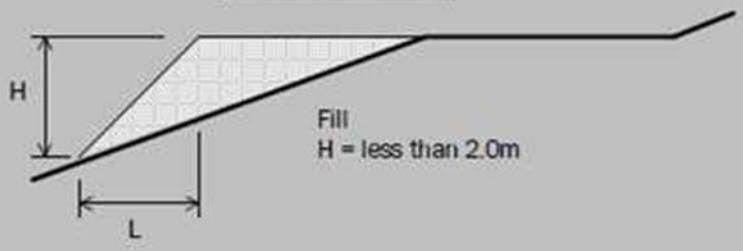
- Dynamic Cone Penetrometer – a 16mm rod with a 20mm diameter cone end is driven with a 9kg hammer dropping 510mm (AS 1289, Test 6.3.2).
- Perth Sand Penetrometer – a 16mm diameter flat-ended rod is driven with a 9kg hammer, dropping 600mm (AS 1289 Test 6.3.3). This test was developed for testing the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

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

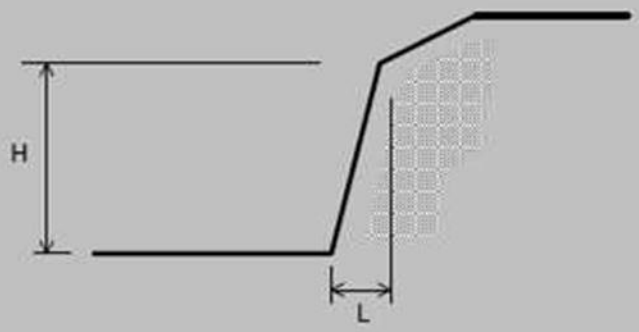
1.5 Batter Angles for Embankments *(Guide Only)*

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

FILL EMBANKMENTS



CUT EMBANKMENTS



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

Glossary of Terms

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

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

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

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

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

Foundation – Ground which supports the building

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

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

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

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

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

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

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

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

Disclaimer

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

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

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

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

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

Acceptable Solutions	**Performance Criteria**	**Compliance**
A1 Horizontal separation distance from a building to a land application area must comply with one of the following: a) be no less than 6m; or b) be no less than: (i) 3m from an upslope building or level building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.	P1 a) The land application area is located so that (i) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.; and (ii) is setback a sufficient distance from a downslope excavation around or under a building to prevent inadequately treated wastewater seeping out of that excavation	Complies with A1 (a) Land application area will be located with minimum separation distance to proposed building of 6m.
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 A3 (b) (i) Land application area will be located with a minimum separation distance of 1.5m from an upslope or level property boundary Complies with A3 (b) (ii) Land application area will be located with a minimum separation distance of 5.5m of downslope property boundary
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable	Complies with A4 No bore or well identified within 50m

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

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SOLUTIONS

AS1547:2012 – Loading Certificate – AWTS Design

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

Site Address: 7 River St, Carlton

System Capacity: 6 persons @ 120L/person/day

Summary of Design Criteria

DLR: 40L/m^2/day.

Absorption area: 18m^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 QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Ben Newman *Owner /Agent*
7 River Street *Address*
Carlton 7173 *Suburb/postcode*

Qualified person details:

Qualified person: John-Paul Cumming
Address: 29 Kirksway Place
Battery Point 7004
Phone No: 03 6223 1839
Fax No:
Licence No: AO999
Email address: jcumming@geosolutions.net.au

Qualifications and Insurance details: Certified Professional Soil Scientist (CPSS stage 2)
(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items

Speciality area of expertise: AS2870-2011 Foundation Classification
(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)

Details of work:

Address: 7 River Street
Carlton 7173
Lot No:
Certificate of title No: 85421/1

The assessable item related to this certificate: Classification of foundation Conditions according to AS2870-2011
(description of the assessable item being certified)
Assessable item includes –
- *a material;*
- *a design*
- *a form of construction*
- *a document*
- *testing of a component, building system or plumbing system*
- *an inspection, or assessment, performed*

Certificate details:

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

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

building work, plumbing work or plumbing installation or demolition work ☒
or
a building, temporary structure or plumbing installation: ☐

In issuing this certificate the following matters are relevant –

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

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

Site Classification consistent with AS2870-2011.

Scope and/or Limitations

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

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

Qualified person:

Signed:

Certificate No: J9788

Date: 15/04/2024

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Ben Newman *Owner name*
7 River Street *Address*
Carlton 7173 *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 Ben Newman
Designer's project reference No. J9788
Address: 7 River Street
Lot No: 85421/1
Carlton 7173

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

Description of work:

On-site wastewater management system - design

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

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

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

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

Other details:

AWTS with absorption bed

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Apr-24
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Apr-24
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Apr-24

Standards, codes or guidelines relied on in design process:

AS1547:2012 On-site domestic wastewater management.

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

Any other relevant documentation:

Geo-Environmental Assessment - 7 River Street Carlton - Apr-24

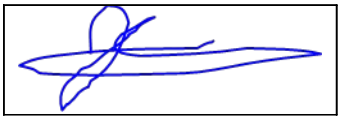
Geo-Environmental Assessment - 7 River Street Carlton - Apr-24

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		15/04/2024
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.

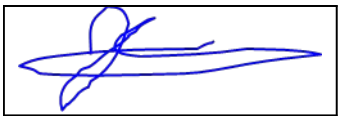
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

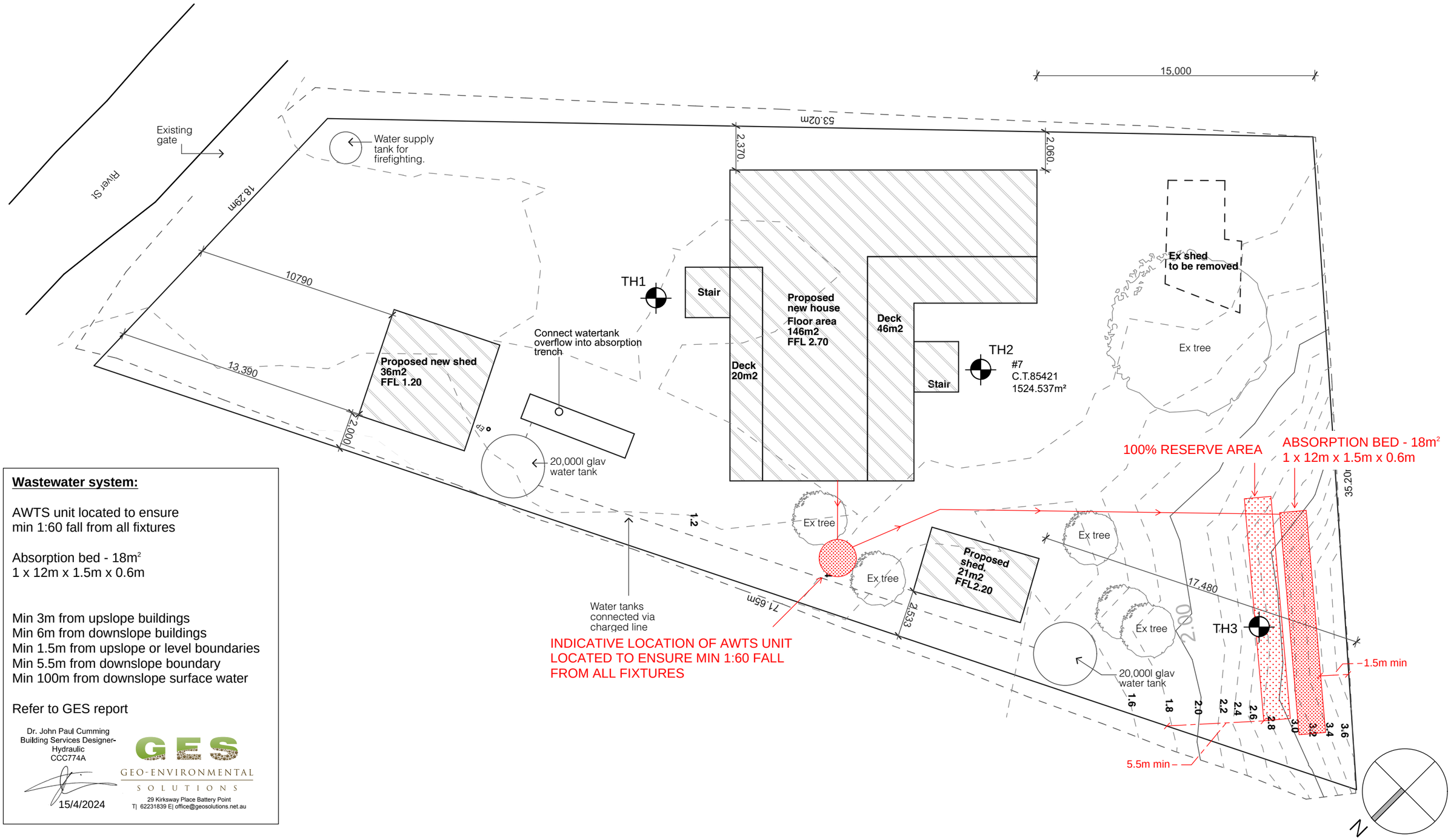
- [x] The works will not increase the demand for water supplied by TasWater
- [x] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [x] The works will not require a new connection, or a modification 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		15/04/2024



Wastewater system:

AWTS unit located to ensure
min 1:60 fall from all fixtures

Absorption bed - 18m²
1 x 12m x 1.5m x 0.6m

Min 3m from upslope buildings
Min 6m from downslope buildings
Min 1.5m from upslope or level boundaries
Min 5.5m from downslope boundary
Min 100m from downslope surface water

Refer to GES report

INDICATIVE LOCATION OF AWTS UNIT LOCATED TO ENSURE MIN 1:60 FALL FROM ALL FIXTURES

Dr. John Paul Cumming
Building Services Designer-Hydraulic
CCC774A

15/4/2024

GES
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Revision		Date

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Project Title

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7 River Street
Carlton

Client
Ben and Adele Newman

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Drawing Title

Site Plan

Drawn	Checked
Scale 1:200 @ A3	
Date March 2024	
File Number 2328	Printed: Thursday, 14 March 2024
Drawing No 100	

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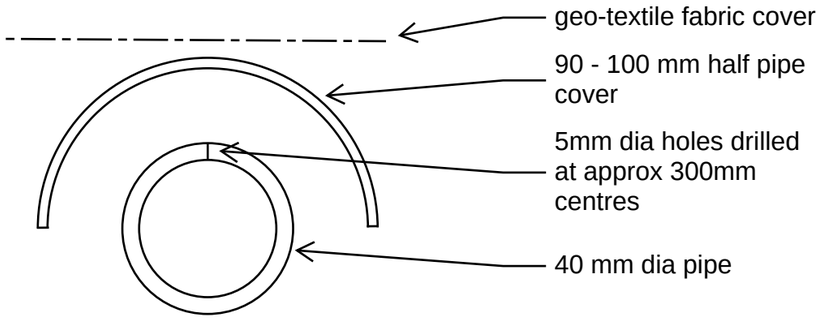
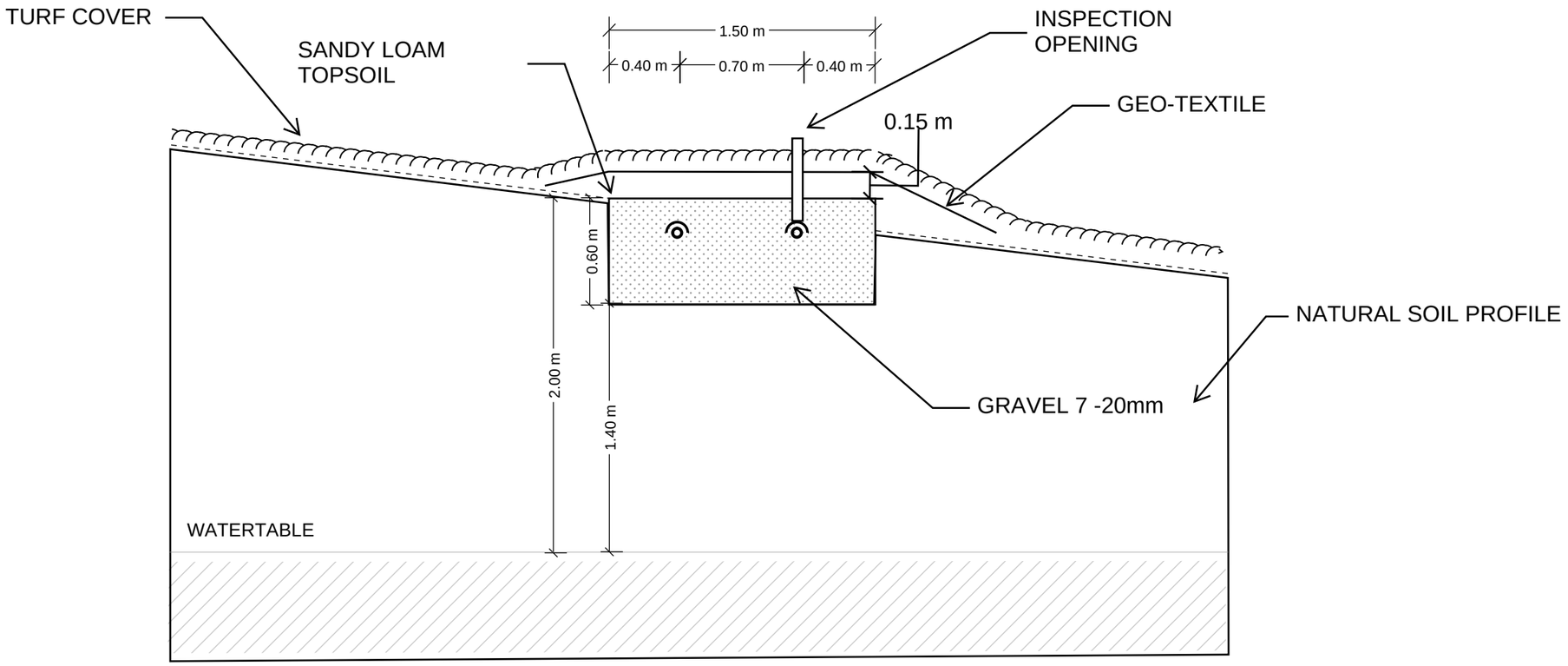
Distribution pipe detail





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

Design notes:

1.Absorption bed dimensions of up to 15m long by 0.60m deep by 1.5m wide.

2. Base of bed to be excavated level min 600mm into natural soils and smearing and compaction avoided.

3. Bed to be filled with 20-40mm aggregate 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.

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

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

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

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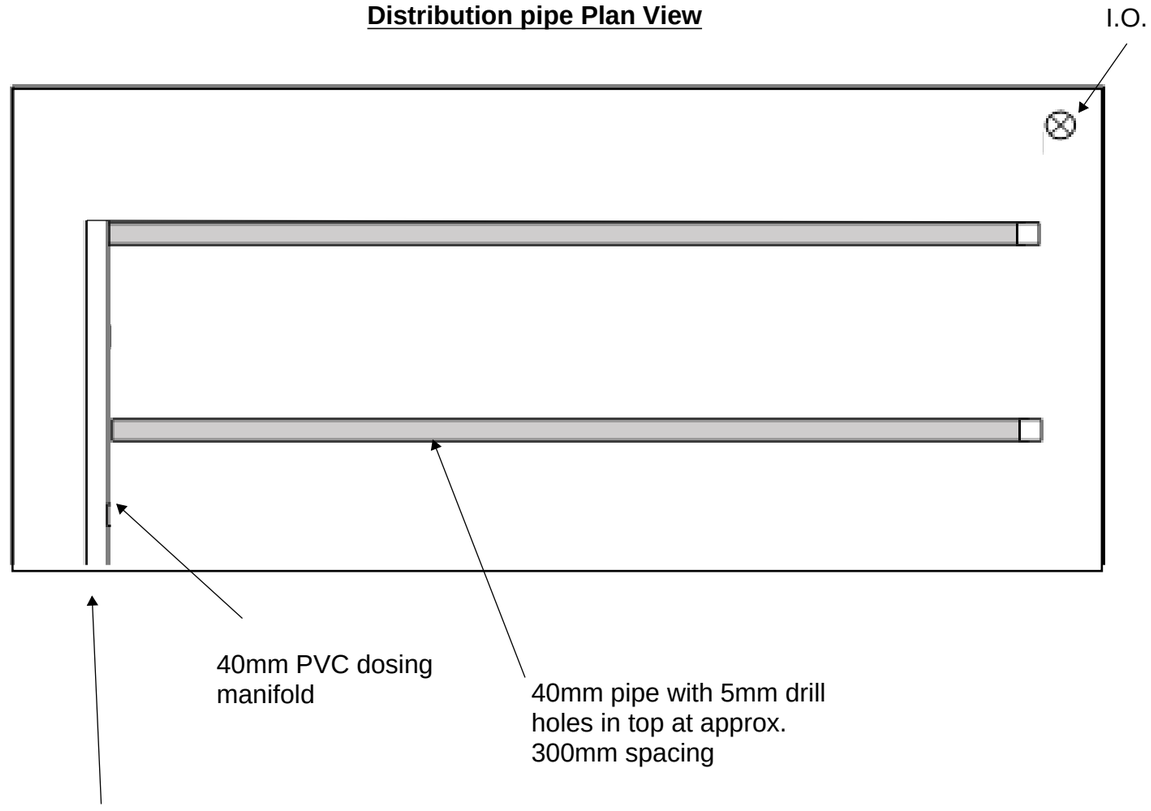
Distribution pipe Plan View



Do not scale from these drawings. Dimensions to take precedence over scale.		December 2021		On-site Wastewater Design Notes	Sheet 2 of 2

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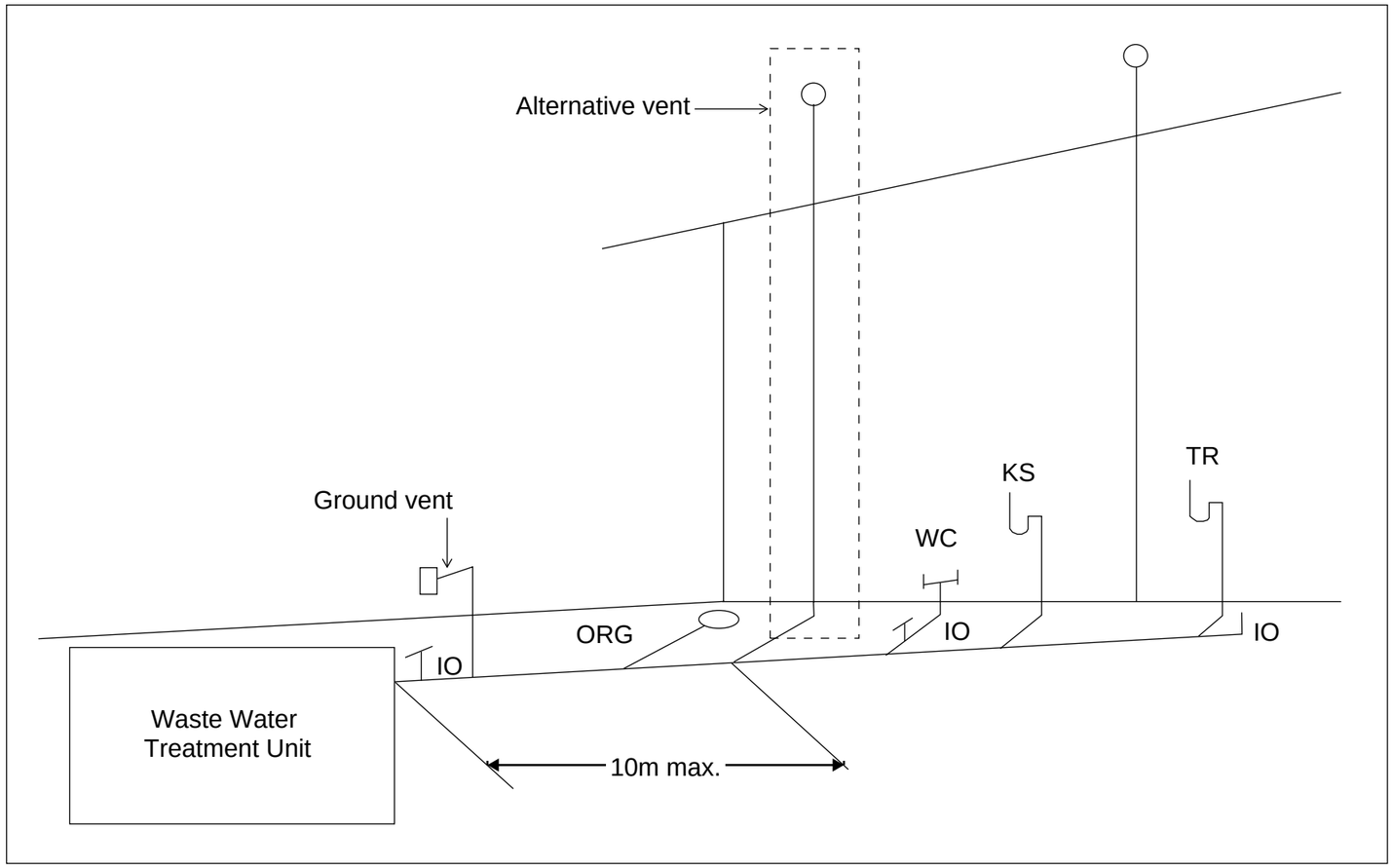


Tas Figure C2D6 Alternative Venting Arrangements

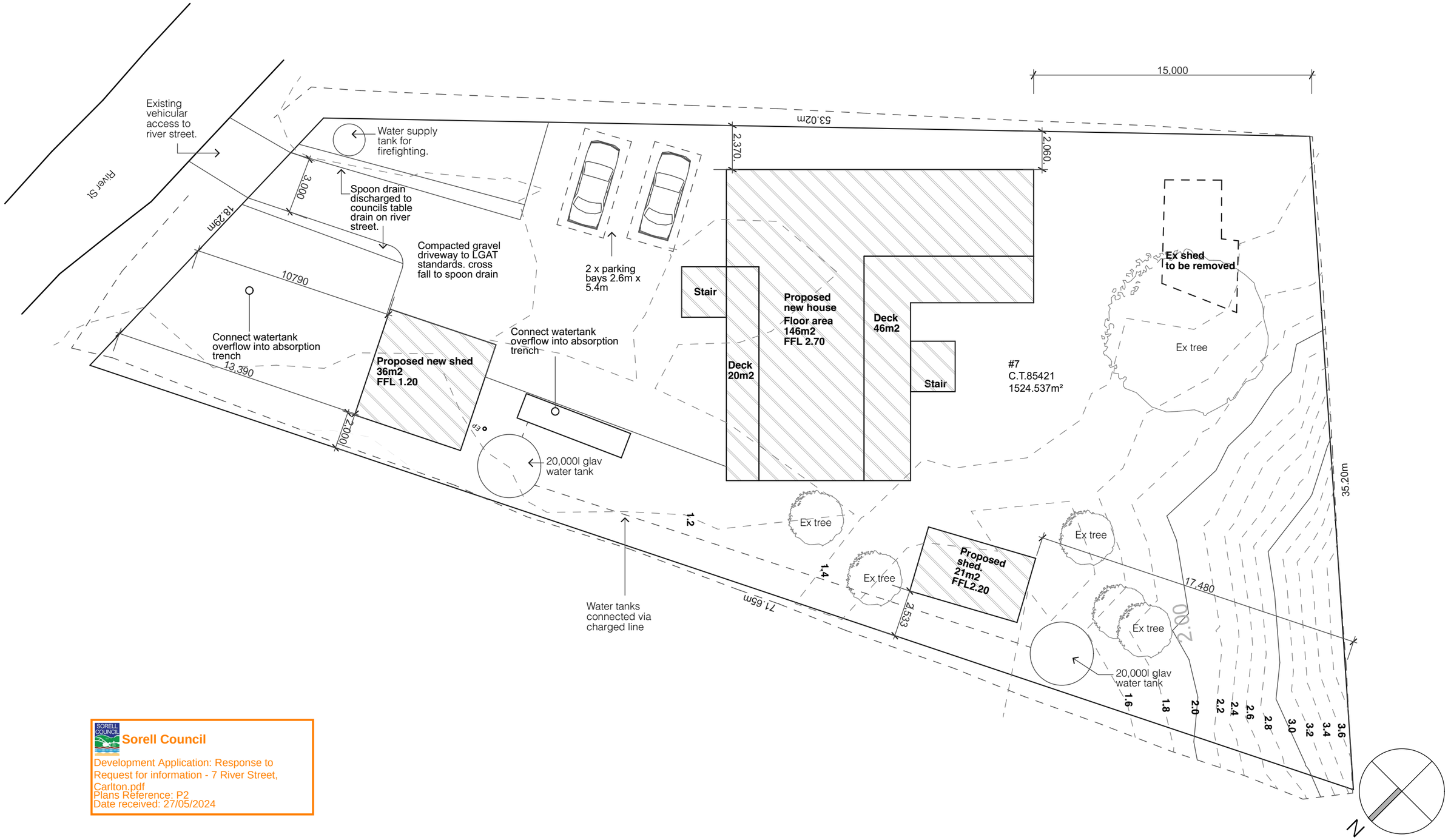
Vents must terminate in accordance with AS/NZS 3500.2

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

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

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

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



Sorell Council

Development Application: Response to Request for information - 7 River Street, Carlton.pdf
Plans Reference: P2
Date received: 27/05/2024

Revision		Date

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Client

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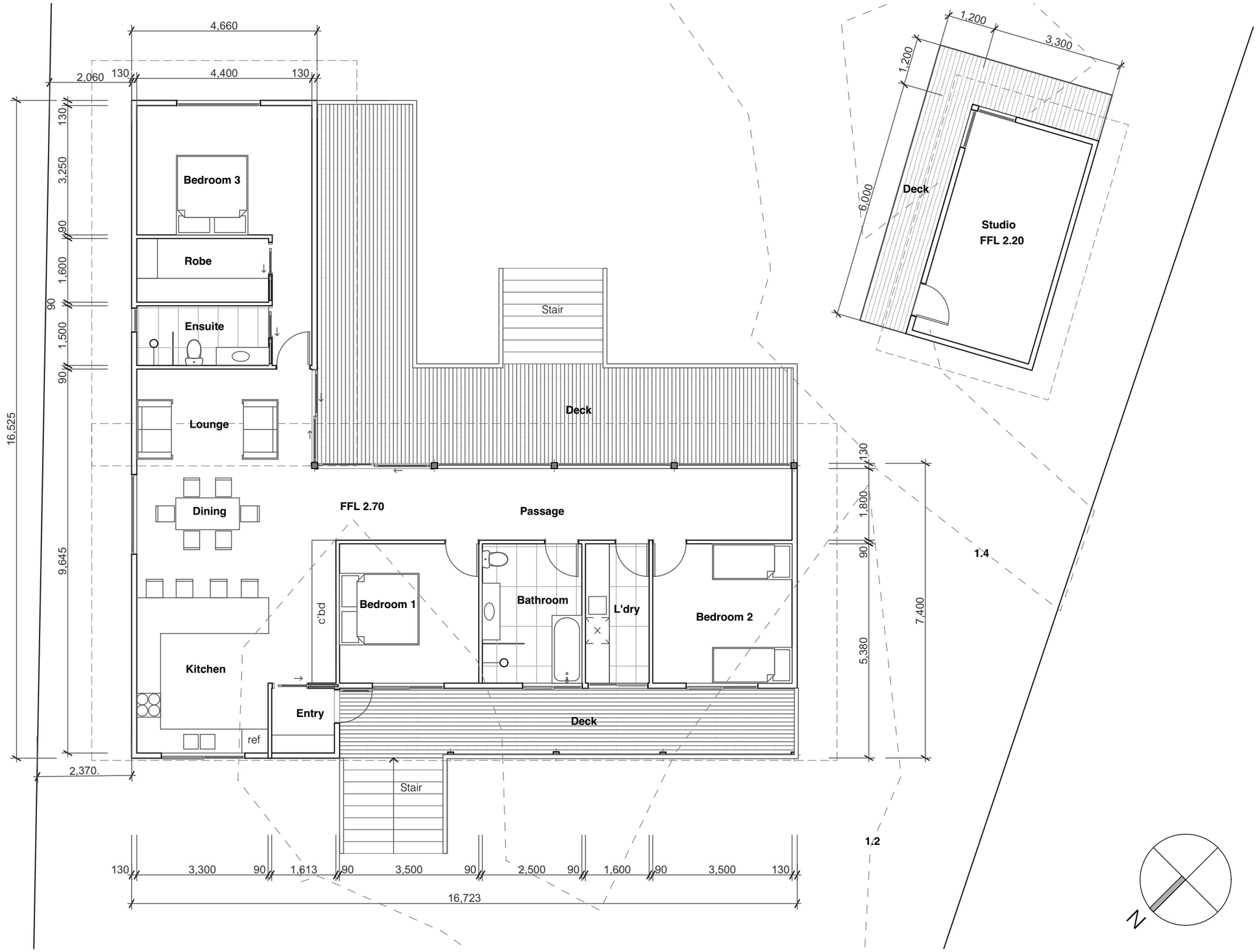
Drawing Title

Site Plan

Drawn	Checked
Scale 1:200 @ A3	
Date May 2024	
File Number 2328	Printed: Monday, 27 May 2024
Drawing No 100	



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Drawing Title

Floor Plan

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Scale 1:100 @ A3	
Date May 2024	
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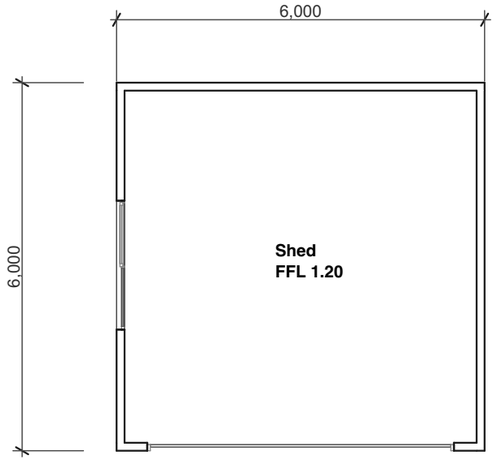
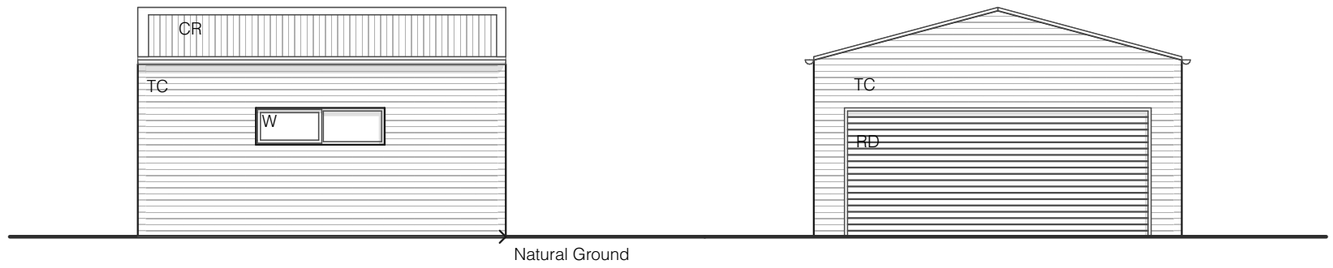
Drawing No **101**	



0. Shed Plan
1:100

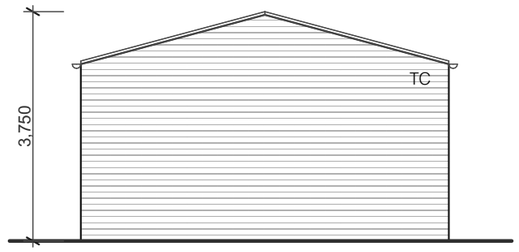
Key

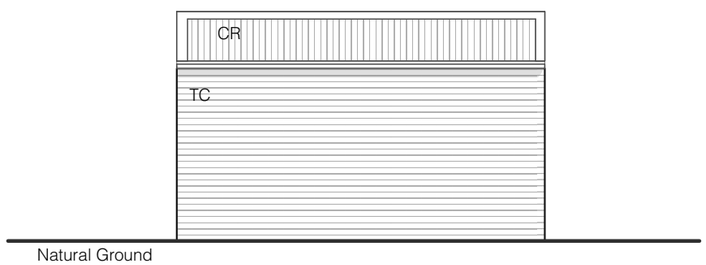
W	Window
GD	Glazed door
CR	Colorbond roofing Grey
TC	Timber cladding natural finish
CC	Cement Sheet cladding colour Mangrove
BA	Timber Balustrade
RD	Roller Door



1 East Elevation
1:100

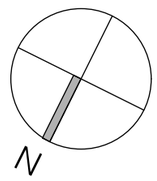
2 North Elevation
1:100





3 South Elevation
1:100

4 West Elevation
1:100



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Drawing Title
Shed Plans

Drawn | Checked

Scale 1:100 @ A3

Date May 2024

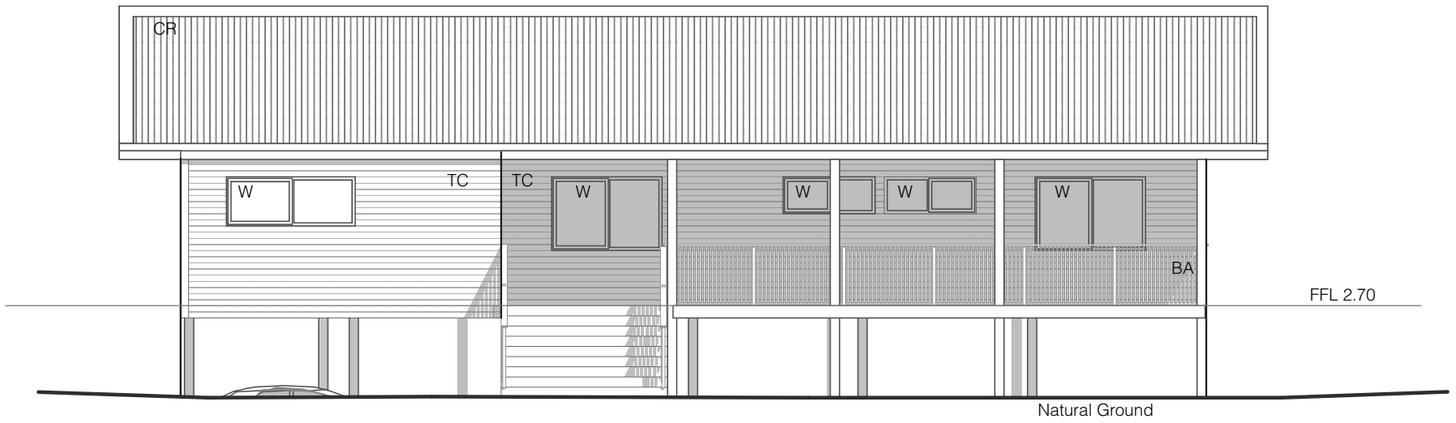
File Number **2328**

Drawing No **102**

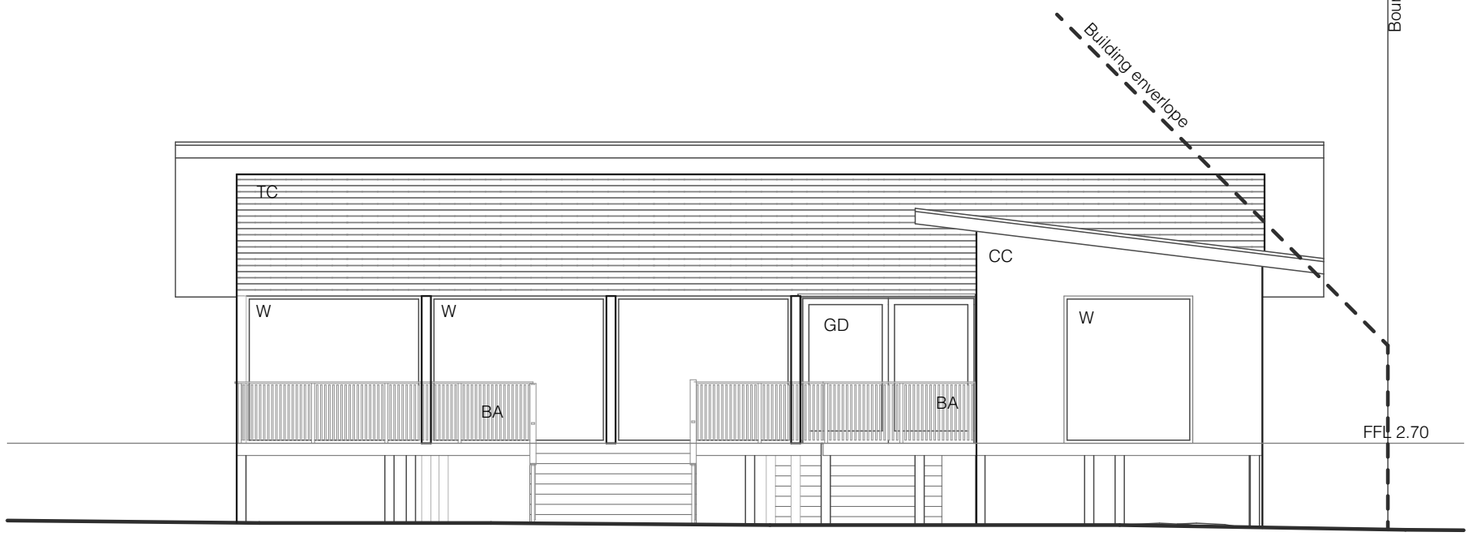
Printed: Monday, 27 May 2024

Key

W	Window
GD	Glazed door
CR	Colorbond roofing Grey
TC	Timber cladding natural finish
CC	Cement Sheet cladding colour Mangrove
BA	Timber Balustrade
RD	Roller Door



1 North East Elevation
1:100



2 South West Elevation
1:100

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Drawing Title
House Elevations 1

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Scale 1:100 @ A3

Date May 2024

File Number **2328**

Drawing No **200**

Printed: Monday, 27 May 2024

Key

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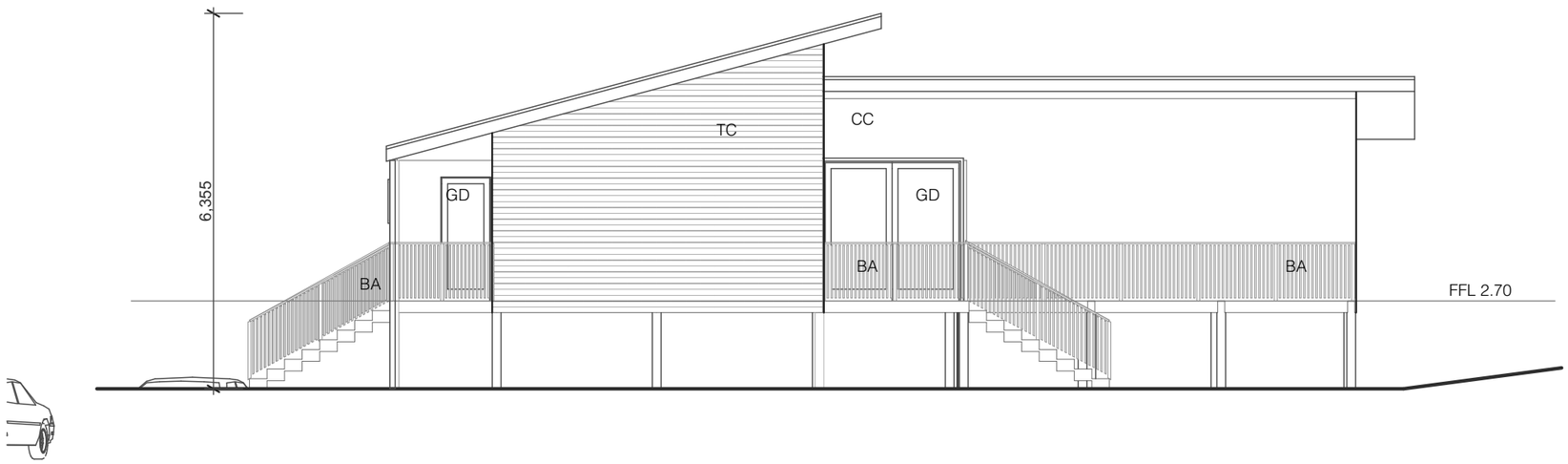

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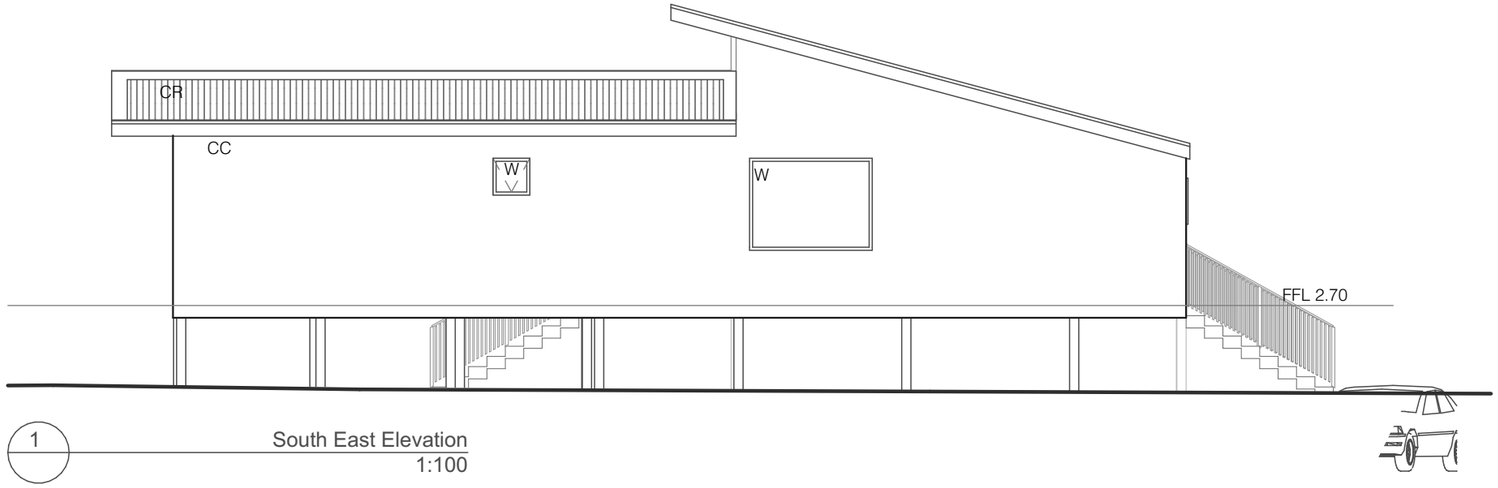

1 South East Elevation
1:100

Revision		Date

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Drawing Title
House Elevations 2

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Scale 1:100 @ A3

Date May 2024

File Number **2328**

Drawing No **201**

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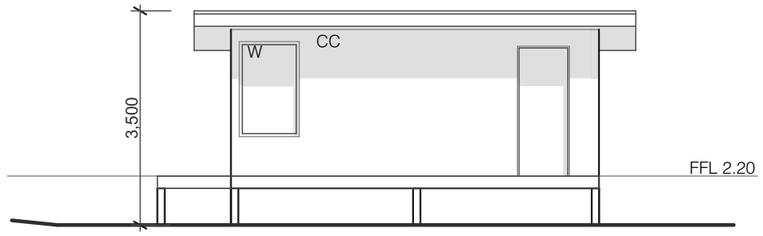

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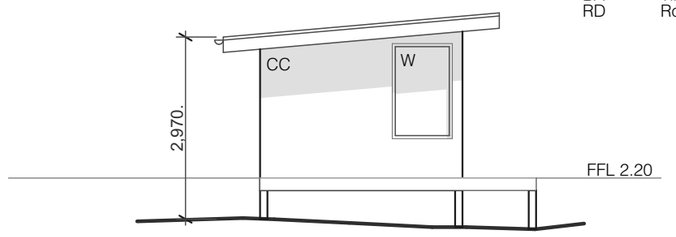

2 North Elevation
1:100

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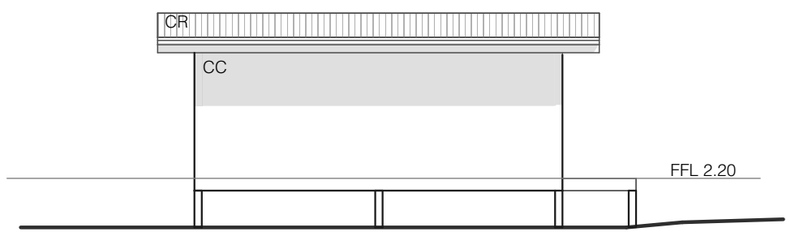

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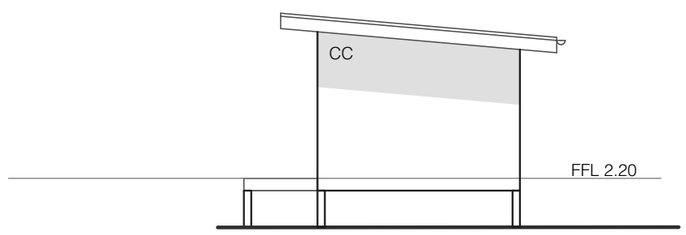
1:100



4 South Elevation
1:100

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Drawing Title
Studio Elevations

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