DEVELOPMENT APPLICATION

PDPLANPMTD-2025/055368

PROPOSAL: Dwelling

LOCATION: 20 Toronto Drive, Seven Mile Beach

RELEVANT PLANNING SCHEME: Tasmanian Planning Scheme - Clarence

ADVERTISING EXPIRY DATE: 10 November 2025

The relevant plans and documents can be inspected at the Council offices, 38 Bligh Street, Rosny Park, during normal office hours until 10 November 2025. In addition to legislative requirements, plans and documents can also be viewed at www.ccc.tas.gov.au during these times.

Any person may make representations about the application to the Chief Executive Officer, by writing to PO Box 96, Rosny Park, 7018 or by electronic mail to clarence@ccc.tas.gov.au. Representations must be received by Council on or before 10 November 2025.

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

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

City of Clarence

City of Clarence
38 Bligh St Rosny Park
PO Box 96
Rosny Park TAS, 7018

03 6217 9500
clarence@ccc.tas.gov.au
ccc.tas.gov.au

Application for Development / Use or Subdivision

Use this form to obtain planning approval for developing or using land, including subdividing it into smaller lots or lot consolidation.

Proposal: Proposed New Residence

Location: Lot 3 Toronto Drive, Seven Mile Beach

Personal Information Removed

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Is the property on the Tasmanian Heritage Register? Yes ☐ No ■

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

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

Current use of site: Vacant Land

Does the proposal involve land administered or owned by the Crown or Council? Yes ☐ No ■

Declaration

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

Acknowledgement

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

Personal Information Removed

Please refer to the development/use and subdivision checklist on the following pages to determine what documentation must be submitted with your application.

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Development/use or subdivision checklist

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

- ☑ Details of the location of the proposed use or development.
- ☑ A copy of the current Certificate of Title, Sealed Plan, Plan or Diagram and Schedule of Easements and other restrictions for each parcel of land on which the use or development is proposed.
- ☑ Full description of the proposed use or development.
- ☑ Description of the proposed operation. May include where appropriate: staff/student/customer numbers; operating hours; truck movements; and loading/unloading requirements; waste generation and disposal; equipment used; pollution, including noise, fumes, smoke or vibration and mitigation/management measures.
- ☐ Declaration the owner has been notified if the applicant is not the owner.
- ☐ Crown or Council consent (if publically-owned land).
- ☑ Any reports, plans or other information required by the relevant zone or code.
- ☑ Fees prescribed by the City of Clarence.

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

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

- ☑ Site analysis and site plan, including where relevant:
  - Existing and proposed use(s) on site.
  - Boundaries and dimensions of the site.
  - Topography, including contours showing AHD levels and major site features.
  - Natural drainage lines, watercourses and wetlands on or adjacent to the site.
  - Soil type.
  - Vegetation types and distribution, and trees and vegetation to be removed.

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- Location and capacity of any existing services or easements on/to the site.
- Existing pedestrian and vehicle access to the site.
- Location of existing and proposed buildings on the site.
- Location of existing adjoining properties, adjacent buildings and their uses.
- Any natural hazards that may affect use or development on the site.
- Proposed roads, driveways, car parking areas and footpaths within the site.
- Any proposed open space, communal space, or facilities on the site.
- Main utility service connection points and easements.
- Proposed subdivision lot boundaries.

☑ Where it is proposed to erect buildings, detailed plans with dimensions at a scale of 1:100 or 1:200 showing:

- Internal layout of each building on the site.
- Private open space for each dwelling.
- External storage spaces.
- Car parking space location and layout.
- Major elevations of every building to be erected.
- Shadow diagrams of the proposed buildings and adjacent structures demonstrating the extent of shading of adjacent private open spaces and external windows of buildings on adjacent sites.
- Relationship of the elevations to natural ground level, showing any proposed cut or fill.
- Materials and colours to be used on rooves and external walls.

☐ Where it is proposed to erect buildings, a plan of the proposed landscaping showing:

- Planting concepts.
- Paving materials and drainage treatments and lighting for vehicle areas and footpaths.
- Plantings proposed for screening from adjacent sites or public places.

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

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

CERTIFICATE OF TITLE

LAND TITLES ACT 1980

TASMANIA

TORRENS TITLE

VOLUME	FOLIO
188363	3
EDITION	**DATE OF ISSUE**
2	26-Jul-2025
Page 1	of 1

I certify that the person described in Schedule 1 is the registered proprietor of an estate in fee simple (or such other estate or interest as is set forth in that Schedule) in the land within described subject to such exceptions, encumbrances, interests and entries specified in Schedule 2 and to any additional entries in the Folio of the Register.

Recorder of Titles

DESCRIPTION OF LAND

City of CLARENCE
Lot 3 on Sealed Plan 188363
Derivation : Part of 97 Acres Gtd. to William Garlick
Prior CT 182879/250

SCHEDULE 1

N268851 TRANSFER to KELLY MELISSA EARLE Registered 26-Jul-2025 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP188363 EASEMENTS in Schedule of Easements
SP188363 COVENANTS in Schedule of Easements
SP188363 FENCING PROVISION in Schedule of Easements
SP188363 SEWERAGE AND/OR DRAINAGE RESTRICTION
SP188363 COUNCIL NOTIFICATION under Section 83(5) of the Local Government (Building and Miscellaneous Provisions) Act 1993.
SP172346, SP181390 & SP182879 FENCING PROVISION in Schedule of Easements
SP172346, SP181390 & SP182879 SEWERAGE AND/OR DRAINAGE RESTRICTION
SP172346 & SP181390 SEPTIC TANK NOTIFICATION
SP182879 COUNCIL NOTIFICATION under Section 83(5) of the Local Government (Building and Miscellaneous Provisions) Act 1993.

OWNER TORONTO PASTORAL COY. PTY. LTD.

FOLIO REFERENCE C.T.182879/250

GRANTEE ~~PART OF 90 ACRES GRANTED TO GEORGE AND CHARLOTTE JOSPEH AND~~ 97 ACRES GRANTED TO WILLIAM GARLICK, PART OF 1000 ACRES LOCATED TO JOHN JEWELL, ~~PART OF 1000 ACRES LOCATED TO WILLIAM RUMNEY~~

PLAN OF SURVEY

BY SURVEYOR SAMUEL FRANKLIN HARVEY
ROGERSON AND BIRCH SURVEYORS
UNIT 1 – 2 KENNEDY DRIVE, CAMBRIDGE PARK
PH 6248-5898 MOB. 0402-476-360

CITY OF CLARENCE

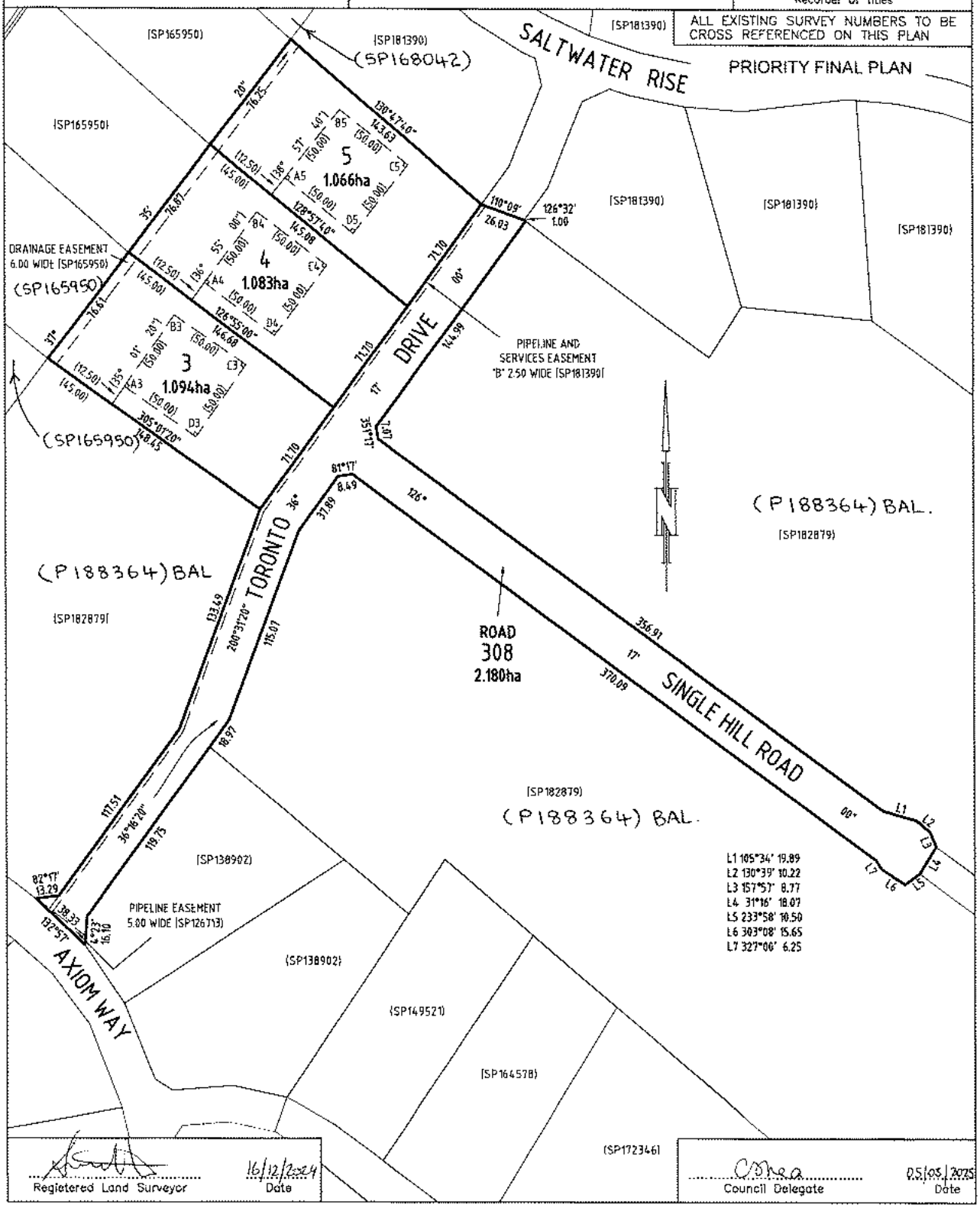
SCALE 1: 2,000 LENGTHS IN METRES

REGISTERED NUMBER
SP188363

~~APPROVED~~
EFFECTIVE FROM 7 APR 2025
Recorder of Titles

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

PRIORITY FINAL PLAN



Registered Land Surveyor — 16/12/2024 Date

Council Delegate — 05/05/2025 Date

SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 188363

EASEMENTS AND PROFITS

Each lot on the plan is together with:-
(1) such rights of drainage over the drainage easements shown on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and
(2) any easements or profits a prendre described hereunder.
Each lot on the plan is subject to:-
(1) such rights of drainage over the drainage easements shown on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and
(2) any easements or profits a prendre described hereunder.
The direction of the flow of waler through the drainage easements shown on the plan is indicated by arrows.

Drainage easement
Lot 3 on the plan is SUBJECT TO a right of drainage over that part of Lot 3 shown on the plan as "DRAINAGE EASEMENT 6.00 WIDE" appurtenant to Lot 100 on Sealed Plan 165950 (subject to conditions more fully set forth in Sealed Plan 165950 (if any))

Lot 4 on the plan is SUBJECT TO a right of drainage over that part of Lot 4 shown on the plan as "DRAINAGE EASEMENT 6.00 WIDE" appurtenant to Lot 100 on Sealed Plan 165950 (subject to conditions more fully set forth in Sealed Plan 165950 (if any))

Lot 5 on the plan is SUBJECT TO a right of drainage over that part of Lot 5 shown on the plan as "DRAINAGE EASEMENT 6.00 WIDE" appurtenant to Lot 100 on Sealed Plan 165950 (subject to conditions more fully set forth in Sealed Plan 165950 (if any))

Pipeline easement
Lot 308 on the plan is SUBJECT TO a PIPELINE EASEMENT over that part of Lot 308 shown on the plan as "PIPELINE EASEMENT 5.00 WIDE", being pipeline rights (as defined therein and subject to conditions therein) (appurtenant to Lot 1 on Sealed Plan 126713) (subject to conditions more fully set forth in Sealed Plan 126713 if any)

Pipeline and services easements in gross
Lot 308 on the plan is SUBJECT TO a PIPELINE AND SERVICES EASEMENT over that part of Lot 308 shown on the plan as "PIPELINE AND SERVICES EASEMENT 'B' 2.50 WIDE" in favour of Tasmanian Water & Sewerage Corporation Pty Ltd (subject to conditions more fully set forth in Sealed Plan 181390)

3471-5014-8147, v. 2 (USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REF: CT 182879/250 SOLICITOR & REFERENCE: Dobson Mitchell Allport James Ramsay	PLAN SEALED BY: Clarence City Council DATE: 5th March 2025 SD: 2012/1 REF NO. Council Delegate Clare Shea

NOTE: The Council Delegate must sign the Certificate for the purposes of identification.

ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 2 OF 3 PAGES	Registered Number SP 188363
SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REFERENCE: CT 182879/250	

Restrictive covenants

The owners of Lot 3, 4 and 5 each covenant with the Vendor and the owners for the time being of every other lot shown on the plan to the intent that the burden of this covenant may run with and bind the covenantor's lot, and every part of it, and that the benefit of it may be annexed to and devolve with each and every part of every other lot shown on the plan, to observe the following stipulations:

1. NOT TO, without the consent of Council, erect or permit to be erected or permit to remain on a Lot any advertising signs of any type whatsoever PROVIDED THAT a sign indicating that a Lot is for sale will be permitted for a limited period;
2. NOT TO use reflective materials in the construction of any dwelling on a Lot nor to erect any shed or outbuilding of anything but non-reflective materials;
3. NOT TO construct a residential building on a Lot using materials other than general brick, weatherboard, finished rendered surface or masonry construction but the use of other timber or non-masonry materials used as in-fill panels will be permitted PROVIDED THAT these latter materials do not exceed 30 percent of the total external wall area;
4. NOT TO use galvanised iron or other reflective material in the construction of the roof of any dwelling or other structure on a Lot;
5. NOT TO construct a dwelling on a Lot that has a minimum floor area of less than 160 square metres which area does not include patios, garages or carports;
6. NOT TO permit vehicles with a Gross Vehicle Mass greater than 10 tonne to be parked, stored or allowed to remain on the Lot for in excess of six hours;
7. NOT TO store or allow to remain on a Lot any construction plant and equipment, transport equipment or salvage or building materials except where immediately required for use in the construction of a dwelling and associated infrastructure on a Lot;
8. NOT TO bring on a Lot any transportable house or a house relocated from another place;
9. NOT TO place or permit to remain on a Lot any water tank which has any external metal finish;
10. NOT TO place or permit to remain on a Lot any caravan, shed or other structure (excluding dwellings) to be used as a permanent residence provided that a caravan, shed or other structure may be utilised for a period not exceeding one year during the construction of a permanent dwelling or residence;
11. NOT TO, without the consent of Council, conduct any trade or business on a Lot PROVIDED THAT the letting for residential purposes of the whole of any dwelling erected on a Lot will not be in contravention of this stipulation;

....

3471-5014-8147, v. 2

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

Co

ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 3 OF 3 PAGES	Registered Number SP 188363
SUBDIVIDER: Toronto Pastoral Coy Pty Ltd FOLIO REFERENCE: CT 182879/250	

12. NOT TO use colourbond and/or cedar boards as the main materials in the construction of a residential dwelling;

In respect of Lot 3:

13. NOT TO construct any building or part of a building on the Lot outside the building envelope area marked A3, B3, C3, D3 on the plan unless otherwise approved by Council;

In respect of Lot 4:

14. NOT TO construct any building or part of a building on the Lot outside the building envelope area marked A4, B4, C4, D4 on the plan unless otherwise approved by Council;

In respect of Lot 5:

15. NOT TO construct any building or part of a building on the Lot outside the building envelope area marked A5, B5, C5, D5 on the plan unless otherwise approved by Council.

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

Definitions
Council means the Clarence City Council or its legal successors from time to time

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

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

Full name: CRAIG BRADLEY ROGERSON
Position held: DIRECTOR

Full name: ANDREW JOHN FARRELL
Position held: DIRECTOR

3471-5014-8147, v. 2
NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Registered Number

SP 188363

COUNCIL APPROVAL

(Insert any qualification to the permit under section 83(5), section 109 or section 111 of the Local Government (Building & Miscellaneous Provisions) Act 1993)
The subdivision shown in this plan is approved

pursuant to Section 83(5) such that;

- the Clarence Council cannot provide a means of sewerage or drainage.
- each Lot on the Plan is suitable for the installation of an onsite waste water disposal system for a single dwelling.

In witness whereof the common seal of

has been affixed, pursuant to a resolution of the Council of the said municipality

passed the 13 day of January 2012 , in the presence of us

Member .....

Member .....

Council Delegate .....CShea.....

Clare Shea
Head of Governance
Clarence City Council
38 Bligh Street
Rosny Park 7018

Council Reference 3D - 2012/1

NOMINATIONS

For the purpose of section 88 of the Local Government (Building & Miscellaneous Provisions) Act 1993

the owner has nominated

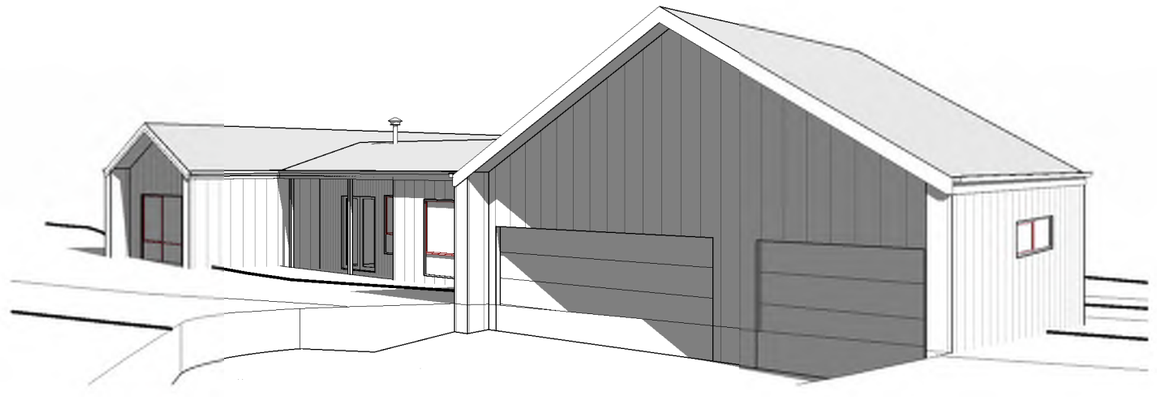
DOBSON MITCHELL and ALLPORT	Solicitor to act for the owner
ROGERSON & BIRCH SURVEYORS	Surveyor to act for the owner

OFFICE EXAMINATION: Indexed ✓ Computed 18/3/2025 Examined 18/3/2025

PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

K. M. EARLE

PDH25049



BUILDING DRAWINGS

No	DRAWING
01	SITE PLAN
02	PART SITE PLAN
03	SITE DRAINAGE PLAN
04	LOCALITY PLAN
05	FLOOR PLAN
06	DOOR AND WINDOW SCHEDULES
07	ELEVATIONS
08	ELEVATIONS
09	ROOF PLAN
10	PERSPECTIVES

GARAGE AREA	76.32	m2	(8.22	SQUARES)
FLOOR AREA	229.73	m2	(24.73	SQUARES)
ALFRESCO AREA	51.41	m2	(5.53	SQUARES)
PORCH AREA	8.47	m2	(0.91	SQUARES)
TOTAL AREA	365.93		39.39	

STROUD HOMES Feels like home

Love local. Love Stroud.

GENERAL PROJECT INFORMATION
TITLE REFERENCE: 3/188363
SITE AREA: 1.094 Ha
DESIGN WIND SPEED: S
SOIL CLASSIFICATION: N2
CLIMATE ZONE: 7
ALPINE AREA: NO
CORROSIVE ENVIRONMENT: LOW
BAL RATING: BAL-19
OTHER KNOWN HAZARDS: BUSHFIRE-PRONE AREAS, AIRPORT OBSTACLE LIMITATION AREA

Prime Design
your build, your way
L: 10 Goodman Court , Invermay, 7248
p(l) + 03 6332 3790
H: Shop 9, 105-111 Main Road, Moonah, 7009
p(h)+ 03 6228 4575
info@ primedesigntas.com.au
primedesigntas.com.au
Accredited Building Practitioner: Frank Geskus -No CC246A
BUILDING DESIGNERS ASSOCIATION OF TASMANIA

REV.	DATE	DESCRIPTION

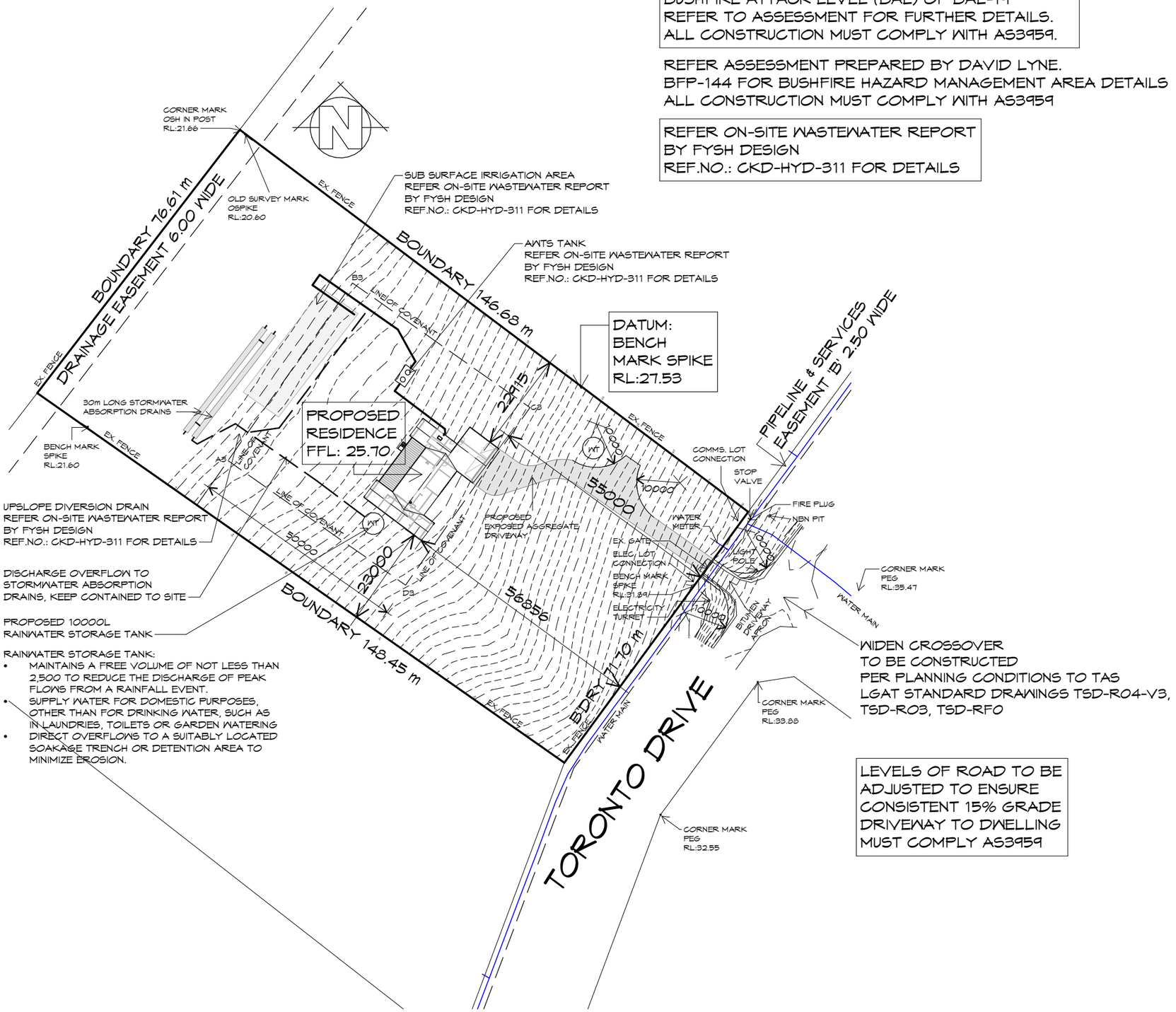
OCTOBER 2025

PLANNING

THIS PROJECT HAS BEEN DETERMINED TO HAVE A BUSHFIRE ATTACK LEVEL (BAL) OF BAL-19
REFER TO ASSESSMENT FOR FURTHER DETAILS.
ALL CONSTRUCTION MUST COMPLY WITH AS3959.

REFER ASSESSMENT PREPARED BY DAVID LYNE.
BFP-144 FOR BUSHFIRE HAZARD MANAGEMENT AREA DETAILS
ALL CONSTRUCTION MUST COMPLY WITH AS3959

REFER ON-SITE WASTEWATER REPORT
BY FYSH DESIGN
REF.NO.: CKD-HYD-311 FOR DETAILS



WIDEN CROSSOVER
TO BE CONSTRUCTED
PER PLANNING CONDITIONS TO TAS
LGAT STANDARD DRAWINGS TSD-R04-V3,
TSD-R03, TSD-RF0

LEVELS OF ROAD TO BE
ADJUSTED TO ENSURE
CONSISTENT 15% GRADE
DRIVEWAY TO DWELLING
MUST COMPLY AS3959

RAINWATER STORAGE TANK:
- MAINTAINS A FREE VOLUME OF NOT LESS THAN 2,500 TO REDUCE THE DISCHARGE OF PEAK FLOWS FROM A RAINFALL EVENT.
- SUPPLY WATER FOR DOMESTIC PURPOSES, OTHER THAN FOR DRINKING WATER, SUCH AS IN LAUNDRIES, TOILETS OR GARDEN WATERING
- DIRECT OVERFLOWS TO A SUITABLY LOCATED SOAKAGE TRENCH OR DETENTION AREA TO MINIMIZE EROSION.

GENERAL NOTES

- CHECK & VERIFY ALL DIMENSIONS & LEVELS ON SITE
- WRITTEN DIMENSIONS TO TAKE PREFERENCE OVER SCALED
- ALL WORK TO BE STRICTLY IN ACCORDANCE WITH NCC 2022, ALL S.A.A.. CODES & LOCAL AUTHORITY BY-LAWS
- ALL DIMENSIONS INDICATED ARE FRAME TO FRAME AND DO NOT ALLOW FOR WALL LININGS
- CONFIRM ALL FLOOR AREAS
- ALL PLUMBING WORKS TO BE STRICTLY IN ACCORDANCE WITH A.S. 3500, NCC 2022 & APPROVED BY COUNCIL INSPECTOR
- BUILDER/PLUMBER TO ENSURE ADEQUATE FALL TO SITE CONNECTION POINTS IN ACCORDANCE WITH A.S. 3500 FOR STORMWATER AND SEWER BEFORE CONSTRUCTION COMMENCES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ENGINEER'S STRUCTURAL DRAWINGS
- ALL WINDOWS AND GLAZING TO COMPLY WITH A.S. 1288 & A.S. 2047
- ALL SET OUT OF BUILDINGS & STRUCTURES TO BE CARRIED OUT BY A REGISTERED LAND SURVEYOR AND CHECKED PRIOR TO CONSTRUCTION
- IF CONSTRUCTION OF THE DESIGN IN THIS SET OF DRAWINGS DIFFER FROM THE DESIGN AND DETAIL IN THESE AND ANY ASSOCIATED DOCUMENTS BUILDER AND OWNER ARE TO NOTIFY DESIGNER
- BUILDER'S RESPONSIBILITY TO COMPLY WITH ALL PLANNING CONDITIONS
- BUILDER TO HAVE STAMPED BUILDING APPROVAL DRAWINGS AND PERMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION
- CONSTRUCTION TO COMPLY WITH AS 3959, READ IN CONJUNCTION WITH BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT REPORT.

SURVEYOR'S NOTES:

- THIS PLAN HAS BEEN PREPARED BY SURVEY PLUS FROM A COMBINATION OF EXISTING RECORDS AND FIELD SURVEY FOR THE PURPOSES OF SHOWING THE PHYSICAL FEATURES OF THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
- TITLE BOUNDARIES SHOWN WERE NOT VERIFIED OR MARKED BY SURVEY PLUS AT THE TIME OF THIS SURVEY.
- SERVICES SHOWN ON THIS PLAN WERE LOCATED WHERE POSSIBLE BY FIELD SURVEY. THEY ARE NOT A COMPLETE PICTURE OF SERVICES ON SITE. ALL SERVICE LOCATIONS ARE TO BE VERIFIED BEFORE COMMENCEMENT OF ANY WORK ON SITE, IN PARTICULAR THOSE SERVICES NOT PREVIOUSLY LOCATED THROUGH FIELD SURVEY.
- SURVEY PLUS CAN NOT ACCEPT LIABILITY WHATSOEVER FOR LOSS OR DAMAGE CAUSED TO ANY UNDERGROUND SERVICE WHETHER SHOWN BY OUR SURVEY OR NOT.
- THIS NOTE IS AN INTEGRAL PART OF THIS PLAN/DATA. REPRODUCTION OF THIS PLAN OR ANY PART OF IT WITHOUT THIS NOTE BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH A REPRODUCTION INVALID AND NOT SUITABLE FOR USE WITHOUT PRIOR AUTHORITY OF SURVEY PLUS.
- HORIZONTAL DATUM IS MGA (GDA94).
- VERTICAL DATUM IS AHD.
- CONTOUR INTERVAL IS 0.2 METRE, INDEX IS 1.0 METRE.
- SURVEY BY ROBOTIC TOTAL STATION AND GPS.
- IMPORTED DATA SHOWN ON THIS PLAN WAS OBTAINED FOR PUBLIC AVAILABLE DATA FROM VARIOUS GOVERNMENT AUTHORITIES. THIS INFORMATION IS PROVIDED FOR GUIDANCE ONLY. THE ACCURACY OF ANY IMPORTED DATA IS PER THE ACCURACY QUOTED BY THE SOURCE AND IS IN NO WAY GUARANTEED BY SURVEY PLUS. USERS MUST NOT RELY ON THIS DATA FOR ON-GROUND LOCATION OF BOUNDARIES AND/OR SERVICES.
- BOUNDARIES ARE COMPILED ONLY FROM SP188363 AND RELEVANT SURVEY INFORMATION OBTAINED FROM LAND TITLES OFFICE AND ARE APPROXIMATE AND SUBJECT TO SURVEY.
- 3D DATA TURNED OFF IN LAYER CONTROL.
  - 3D TIN
  - MAJOR CONTOUR 3D
  - MINOR CONTOUR 3D

SITE PLAN

1 : 1000

Prime Design
L: 10 Goodman Court, Invermay, 7248 - p+ 03 6332 3790
H: Shop 9, 105-111 Main Road, Moonah,7009 - p+ 03 6228 4575
info@primedesigntas.com.au primedesigntas.com.au
TASMANIAN DESIGNERS

REV. DATE DESCRIPTION

Client name: K. M. EARLE

PLANNING
NOTE: DO NOT SCALE OFF DRAWINGS

Project: PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

Drawing: SITE PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 01	1 : 1000	03

Accredited building practitioner: Frank Geskus -No CC246A

10000L NON COMBUSTIBLE
BUSHFIRE FIRE FIGHTING TANK
REFER ASSESSMENT PREPARED BY DAVID LYNE.
BFP-144 FOR FURTHER DETAILS.
ALL CONSTRUCTION MUST COMPLY WITH AS3959

PROPOSED
RESIDENCE
FFL: 25.70

WT

TOP OF BATTER
TOE OF BATTER

1:20
5.00%

1:12
8.27%

1:14
7.28%

1:7
15.30%

1:7
15.26%

1:21
4.86%

1:25
3.96%

1:10
10.21%

1:10
10.49%

1:10
10.48%

PROPOSED
EXPOSED AGGREGATE
DRIVEWAY

DISTANCE FROM PUBLIC
ROADWAY TO TURNING
AREA IS 28m

DRIVEWAY COMPACTED
FCR ALL WEATHER
DRIVEWAY. ENSURE
ADEQUATE DRAINAGE.
MAXIMISE SLOPE STABILITY

EX FENCE

BOUNDARY 146.68 m

29
30
31

55000

23000

LINE OF COVENANT

D3

EX. GATE

ELEC. LOT
CONNECTION

BENCH MARK
SPIKE /
RL:31.89

WATER MAIN

BOUNDARY 71.70 m

ELECTRICITY
TURRET

PROPOSED 10000L
RAINWATER STORAGE TANK

REFER ASSESSMENT PREPARED BY DAVID LYNE.
BFP-144 FOR BUSHFIRE HAZARD MANAGEMENT AREA DETAILS
ALL CONSTRUCTION MUST COMPLY WITH AS3959

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BUSHFIRE ATTACK LEVEL (BAL) OF BAL-19
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PART SITE PLAN

1 : 200

Prime Design
L: 10 Goodman Court, Invermay, 7248 - p+ 03 6332 3790
H: Shop 9, 105-111 Main Road, Moonah,7009 - p+ 03 6228 4575
info@primedesigntas.com.au primedesigntas.com.au
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

REV. DATE DESCRIPTION

Client name:
K. M. EARLE

PLANNING

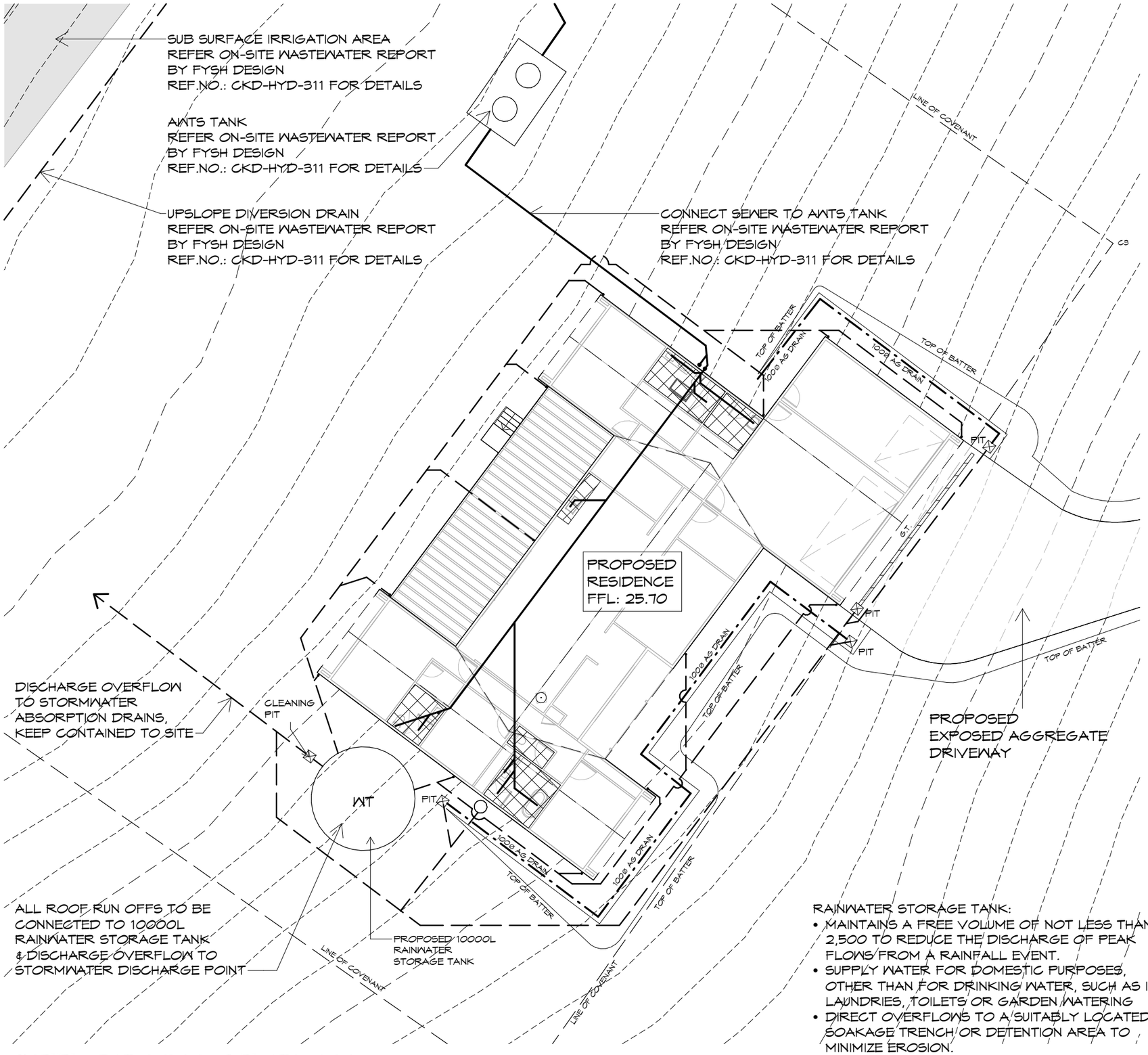
NOTE: DO NOT SCALE OFF DRAWINGS

Project:
PROPOSED NEW RESIDENCE
(LOT 3) 20 TORONTO DRIVE,
SEVEN MILE BEACH

Drawing:
PART SITE PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 02	1 : 200	03

Accredited building practitioner: Frank Geskus -No CC246A



SITE DRAINAGE PLAN

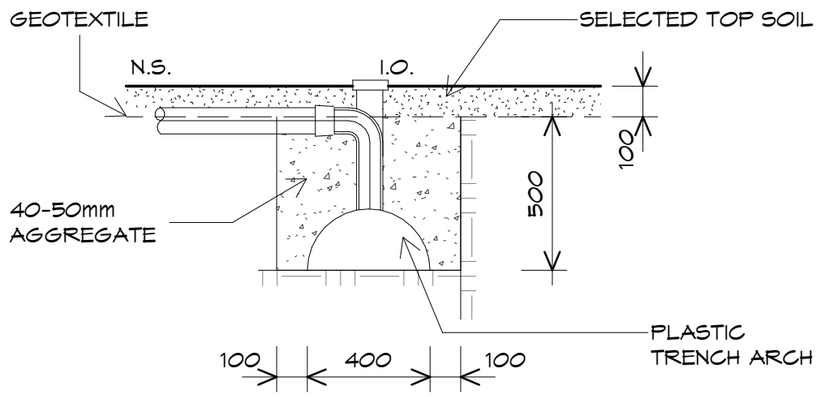
1 : 200

LEGEND

- PIT — 450X 450 SURFACE DRAINAGE PIT
- WET AREAS
- SEWER LINE
- STORMWATER LINE
- G.T. — 150 GRATED TRENCH
- 100Φ AG DRAIN

PLUMBING NOTES:
ALL DRAINAGE WORK SHOWN IS PROVISIONAL ONLY AND IS SUBJECT TO AMENDMENT TO COMPLY WITH THE REQUIREMENTS OF THE LOCAL AUTHORITIES.
ALL WORK IS TO COMPLY WITH THE REQUIREMENTS OF AS 3500.2021 & THE TASMANIAN PLUMBING CODE. AND MUST BE CARRIED OUT BY A LICENCED TRADESMAN ONLY.

READ IN CONJUNCTION WITH ON-SITE WASTEWATER REPORT BY FYSH DESIGN REF.NO.: CKD-HYD-311 FOR DETAILS



TYPICAL SECTION - ABSORPTION DRAIN
1:20

RAINWATER STORAGE TANK:
- MAINTAINS A FREE VOLUME OF NOT LESS THAN 2,500 TO REDUCE THE DISCHARGE OF PEAK FLOWS FROM A RAINFALL EVENT.
- SUPPLY WATER FOR DOMESTIC PURPOSES, OTHER THAN FOR DRINKING WATER, SUCH AS IN LAUNDRIES, TOILETS OR GARDEN WATERING
- DIRECT OVERFLOWS TO A SUITABLY LOCATED SOAKAGE TRENCH OR DETENTION AREA TO MINIMIZE EROSION.

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REV. DATE DESCRIPTION

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Project: PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

Drawing: SITE DRAINAGE PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 03	As indicated	03

Accredited building practitioner: Frank Geskus -No CC246A

PROPOSED NEW RESIDENCE
LOT 3 TORONTO DRIVE,
SEVEN MILE BEACH

THIS PROJECT HAS BEEN DETERMINED TO HAVE A BUSHFIRE ATTACK LEVEL (BAL) OF BAL-19
REFER TO ASSESSMENT FOR FURTHER DETAILS.
ALL CONSTRUCTION MUST COMPLY WITH AS3959.

REFER ASSESSMENT PREPARED BY DAVID LYNE.
BFP-144 FOR BUSHFIRE HAZARD MANAGEMENT AREA DETAILS
ALL CONSTRUCTION MUST COMPLY WITH AS3959

LOCALITY PLAN

1 : 2000

THIS SITE IS ZONED **RURAL LIVING** AND **REQUIRES** A BUSHFIRE ASSESSMENT.
RESIDENCE **IS NOT** OVER **100m** FROM UNMANAGED BUSH/GRASSLANDS GREATER THAN 1 HECTARE.

REFER TO BUSHFIRE ASSESSMENT REPORT FOR MANAGMENT PLAN

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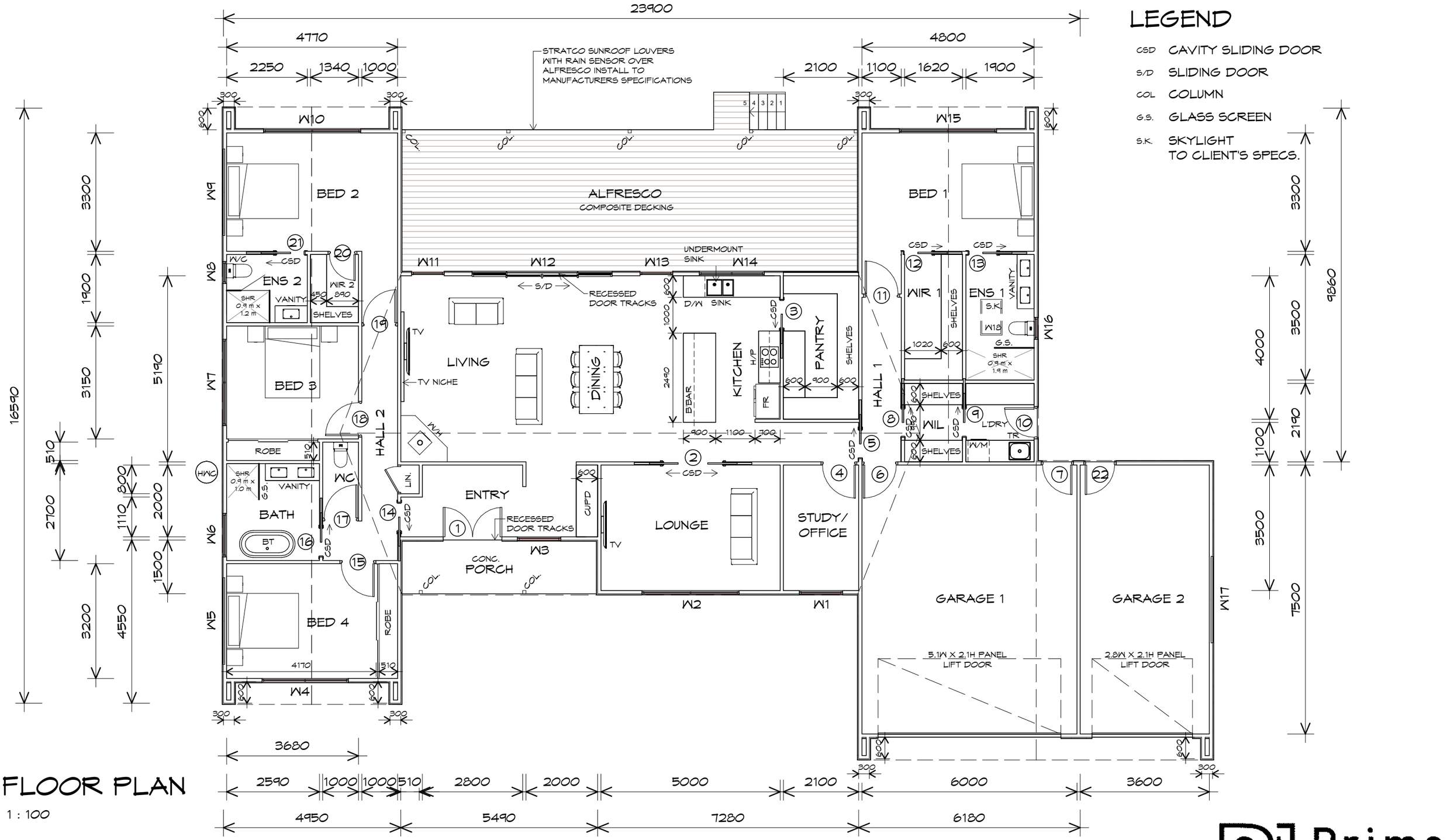
PLANNING
NOTE: DO NOT SCALE OFF DRAWINGS

Project:
PROPOSED NEW RESIDENCE
(LOT 3) 20 TORONTO DRIVE,
SEVEN MILE BEACH

Drawing:
LOCALITY PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	**Scale:**	**Revision:**
PDH25049 - 04	1 : 2000	03

Accredited building practitioner: Frank Geskus -No CC246A



LEGEND

- CSD CAVITY SLIDING DOOR
- S/D SLIDING DOOR
- COL COLUMN
- G.S. GLASS SCREEN
- S.K. SKYLIGHT TO CLIENT'S SPECS.

FLOOR PLAN

1 : 100

GARAGE AREA	76.32	m2	(8.22 SQUARES)
FLOOR AREA	229.73	m2	(24.73 SQUARES)
ALFRESCO AREA	51.41	m2	(5.53 SQUARES)
PORCH AREA	8.47	m2	(0.91 SQUARES)
TOTAL AREA	365.93		39.39

NOTE:
FLOOR AREAS INCLUDE TO EXTERNAL FACE OF BUILDING AND GARAGE, UNLESS OTHERWISE STATED. DECKS AND OUTDOOR AREAS ARE CALCULATED SEPARATELY.

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REV. DATE DESCRIPTION

Client name: K. M. EARLE

PLANNING

NOTE: DO NOT SCALE OFF DRAWINGS

Project: PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

Drawing: FLOOR PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 05	1 : 100	03

Accredited building practitioner: Frank Geskus -No CC246A

DOOR SCHEDULE

MARK	WIDTH	TYPE	REMARKS
1	1640	EXTERNAL ENTRY DOOR	
2	820	CAVITY SLIDING DOOR	
3	820	CAVITY SLIDING DOOR	
4	920	INTERNAL TIMBER DOOR	
5	820	CAVITY SLIDING DOOR	
6	920	INTERNAL TIMBER DOOR	
7	820	EXTERNAL SOLID DOOR	
8	820	CAVITY SLIDING DOOR	
9	820	CAVITY SLIDING DOOR	
10	820	EXTERNAL SOLID DOOR	
11	920	INTERNAL TIMBER DOOR	
12	820	CAVITY SLIDING DOOR	
13	820	CAVITY SLIDING DOOR	
14	820	CAVITY SLIDING DOOR	
15	920	INTERNAL TIMBER DOOR	
16	820	CAVITY SLIDING DOOR	
17	920	INTERNAL TIMBER DOOR	
18	920	INTERNAL TIMBER DOOR	
19	920	INTERNAL TIMBER DOOR	
20	720	INTERNAL TIMBER DOOR	
21	820	CAVITY SLIDING DOOR	
22	820	EXTERNAL SOLID DOOR	

WINDOW SCHEDULE

MARK	HEIGHT	WIDTH	TYPE	REMARKS
W1	2100	1210	AWNING WINDOW	
W2	2100	2710	AWNING WINDOW	
W3	1800	1210	AWNING WINDOW	
W4	2100	2410	AWNING WINDOW	
W5	600	2410	AWNING WINDOW	
W6	1800	1210	AWNING WINDOW	OPAQUE
W7	2100	2410	AWNING WINDOW	
W8	900	610	AWNING WINDOW	OPAQUE
W9	600	2410	AWNING WINDOW	
W10	2100	2710	AWNING WINDOW	
W11	2100	910	AWNING WINDOW	
W12	2100	3910	DOUBLE SLIDING DOOR	
W13	2100	910	AWNING WINDOW	
W14	1500	1810	AWNING WINDOW	
W15	2100	2710	AWNING WINDOW	
W16	900	610	AWNING WINDOW	OPAQUE
W17	600	2410	AWNING WINDOW	
W18	970	665	VELUX FIXED SKYLIGHT	

ALUMINIUM WINDOWS **DOUBLE GLAZING** COMPLETE
WITH FLY SCREENS TO SUIT **BAL-19** RATING.
ALL WINDOW MEASUREMENTS TO BE VERIFIED ON SITE
PRIOR TO ORDERING

NOTE:
ALL EXTERNAL GLAZING TO BE LOW REFLECTIVE GLASS

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BUILDING DESIGNERS ASSOCIATION OF TASMANIA

REV. DATE DESCRIPTION

Client name: K. M. EARLE

PLANNING

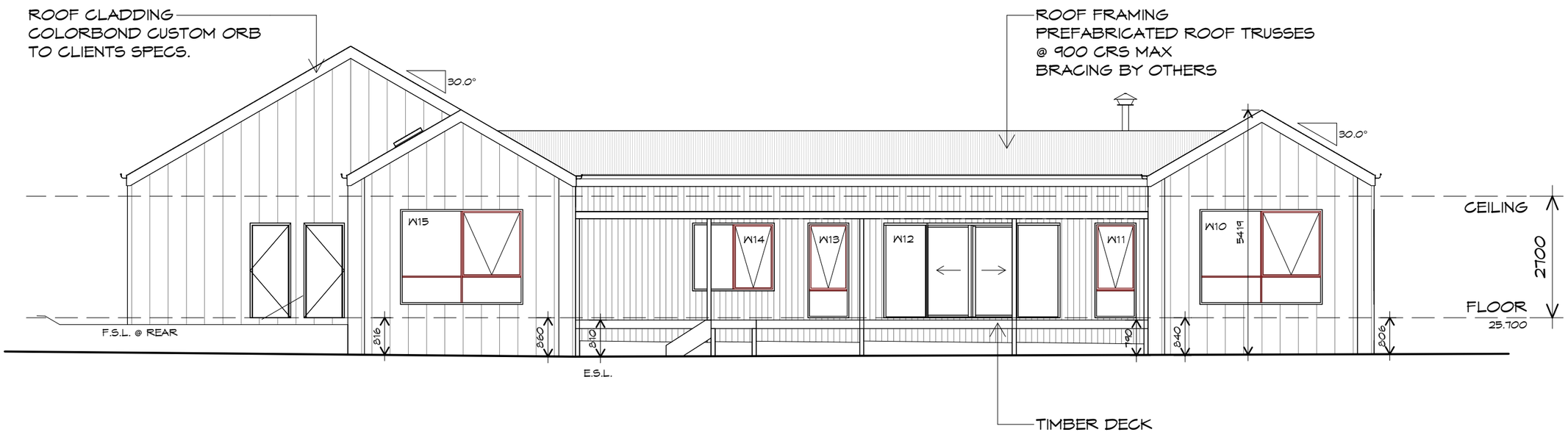
NOTE: DO NOT SCALE OFF DRAWINGS

Project: PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

Drawing: DOOR AND WINDOW SCHEDULES

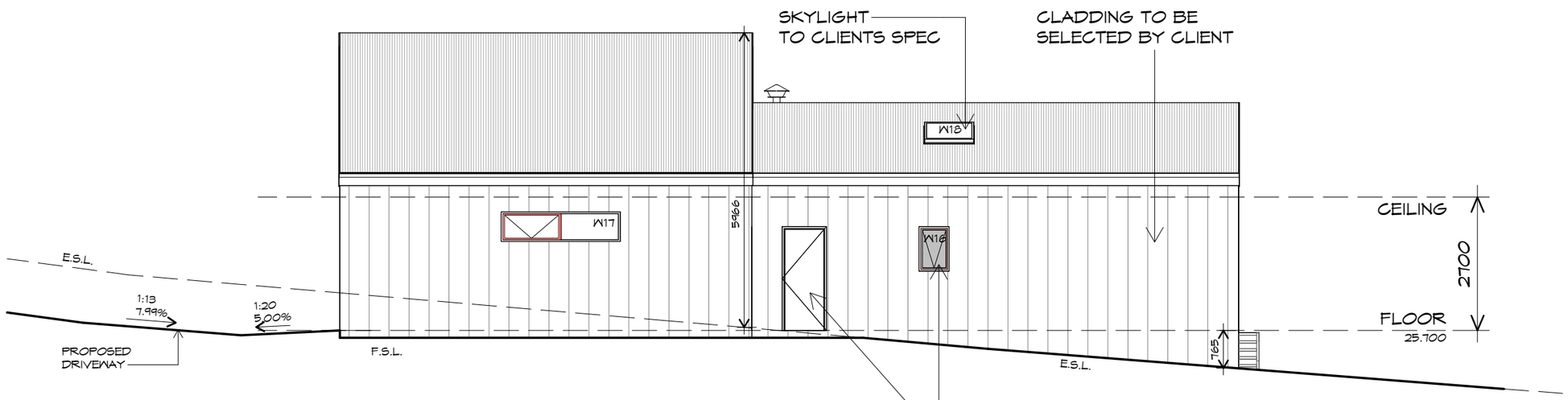
Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 06		03

Accredited building practitioner: Frank Geskus -No CC246A



NORTH WESTERN ELEVATION

1 : 100



NORTH EASTERN ELEVATION

1 : 100

NOTE:
EXTERNAL SURFACES OF BUILDINGS VISIBLE TO PUBLIC TO BE PREDOMINANTLY NEUTRAL, MID-TONED COLOURS THAT MINIMISE CONTRAST WITH THE BACKGROUND LANDSCAPE COLOURS

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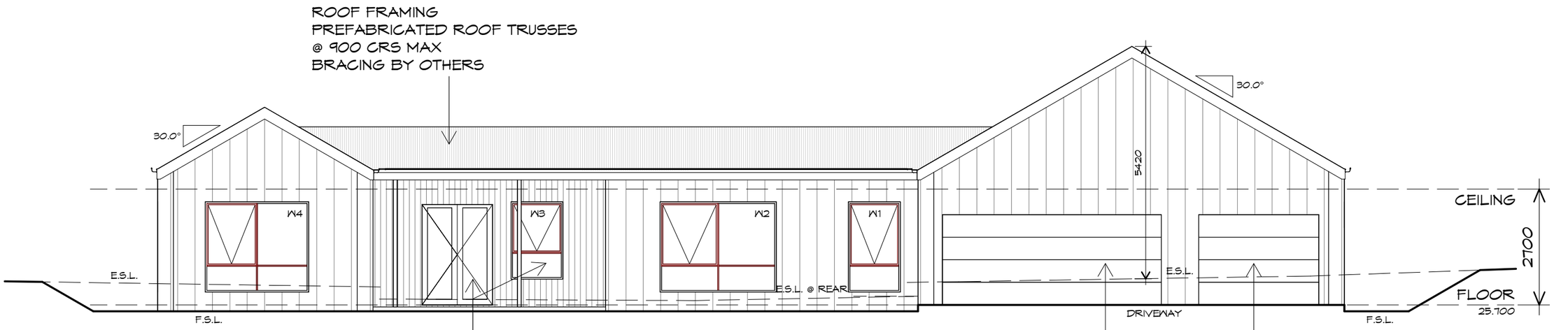
Project:
PROPOSED NEW RESIDENCE
(LOT 3) 20 TORONTO DRIVE,
SEVEN MILE BEACH

Drawing:
ELEVATIONS

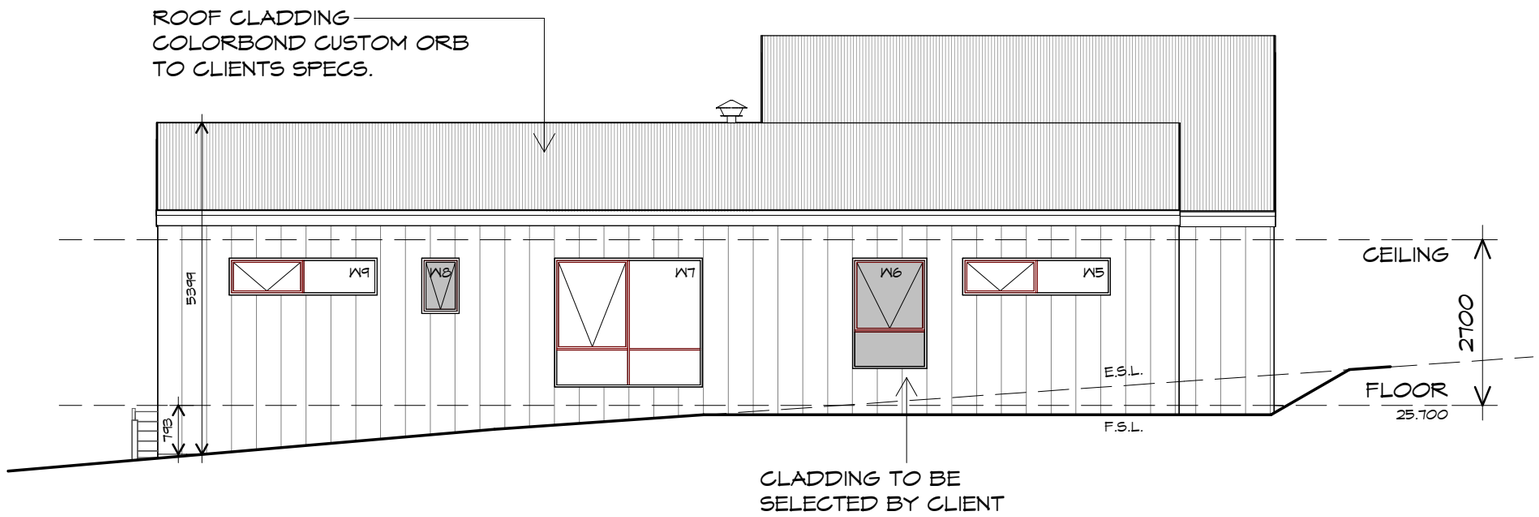
Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	**Scale:**	**Revision:**
PDH25049 - 07	1 : 100	03

Accredited building practitioner: Frank Geskus -No CC246A



SOUTH EASTERN ELEVATION

1 : 100



SOUTH WESTERN ELEVATION

1 : 100

NOTE:
EXTERNAL SURFACES OF BUILDINGS VISIBLE TO PUBLIC TO BE PREDOMINANTLY NEUTRAL, MID-TONED COLOURS THAT MINIMISE CONTRAST WITH THE BACKGROUND LANDSCAPE COLOURS

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STROUD HOMES Feels like home
Love local. Love Stroud.

REV. DATE DESCRIPTION

Client name:
K. M. EARLE

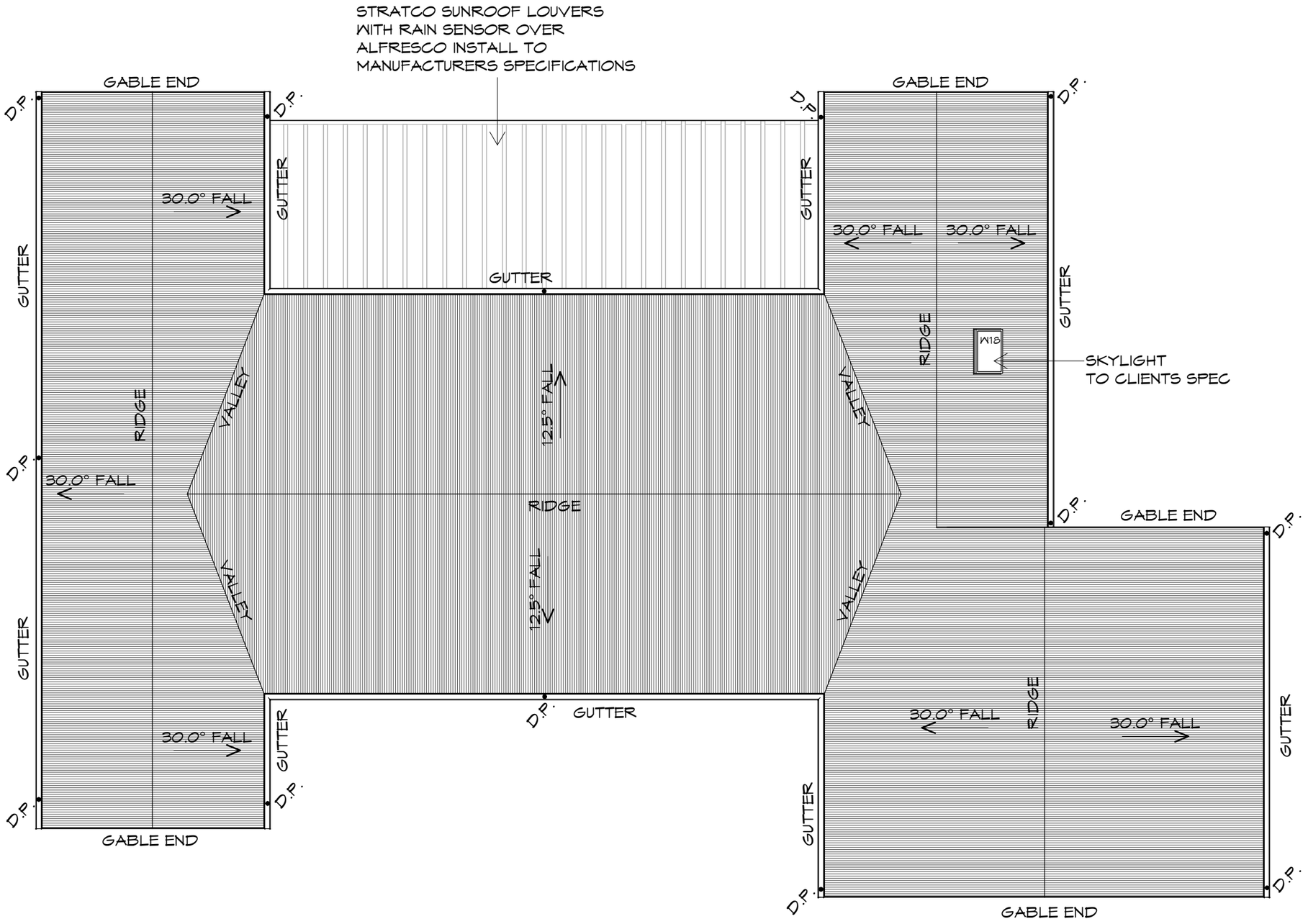
PLANNING
NOTE: DO NOT SCALE OFF DRAWINGS

Project:
PROPOSED NEW RESIDENCE
(LOT 3) 20 TORONTO DRIVE,
SEVEN MILE BEACH

Drawing:
ELEVATIONS

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 08	1 : 100	03

Accredited building practitioner: Frank Geskus -No CC246A



ROOF PLAN

1 : 100

ADDITIONAL ROOF LOAD
NO SOLAR P.V. SYSTEM HAS BEEN ALLOWED FOR,
NO SOLAR HOT WATER HAS BEEN ALLOWED FOR.

ROOF PLUMBING NOTES:

GUTTER INSTALLATION
TO BE IN ACCORDANCE WITH
ABCB HOUSING PROVISIONS PART 7.4.4
WITH FALL NO LESS THAN
1:500 FOR EAVES GUTTER
BOX GUTTERS IN ACCORDANCE WITH
AS33500.3:2021

UNLESS FIXED TO METAL FASCIA
EAVES GUTTER TO BE FIXED
@ 1200 CRS MAX.

VALLEY GUTTERS ON A ROOF WITH A PITCH:
A) MORE THAN 12.5° DEGREES - MUST
HAVE A WIDTH OF NOT LESS THAN
400mm AND ROOF OVERHANG OF NOT
LESS THAN 150mm EACH SIDE OFVALLEY
GUTTER.
B) LESS THAN 12.5° DEGREES, MUST BE
DESIGNED AS A BOX GUTTER.

LAP GUTTERS 75mm IN THE DIRECTION
OF FLOW, RIVET & SEAL WITH AN
APPROVED SILICONE SEALANT.

DOWNPIPE POSITIONS SHOWN ON THIS
PLAN ARE NOMINAL ONLY.
EXACT LOCATION & NUMBER OF D.P'S
REQUIRED ARE TO BE IN ACCORDANCE
WITH ABCB HOUSING PROVISIONS PART 7.4.5
REQUIREMENTS.
SPACING BETWEEN DOWNPIPES MUST NOT
BE MORE THAN 12m & LOCATED AS CLOSE AS
POSSIBLE TO VALLEY GUTTERS

METAL ROOF
METAL SHEETING ROOF TO BE INSTALLED IN
ACCORDANCE WITH ABCB HOUSING PROVISIONS PART
7.2. REFER TO TABLE 7.2.2a FOR ACCEPTABLE
CORROSION PROTECTION FOR SHEET ROOFING,
REFER TO TABLE 7.2.2b-7.2.2e FOR ACCEPTABILITY
OF CONTACT BETWEEN DIFFERENT ROOFING
MATERIALS. FOR FIXING, SHEET LAYING SEQUENCE,
FASTENER FREQUENCY FOR TRANVERSE FLASHINGS
AND CAPPINGS, ANTI CAPILLARY BREAKS, FLASHING
DETAILS REFER TO ABCB HOUSING PROVISIONS PART
7.2.5- 7.2.7. ROOF PENETRATION FLASHING DETAILS.
REFER TO TO ABCB HOUSING PROVISIONS PART
7.2.5- 7.2.7. ROOF SHEETING MUST OVERHANG MIN
35mm AS PER ABCB HOUSING PROVISIONS PART 7.2.8

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REV. DATE DESCRIPTION

Client name: K. M. EARLE

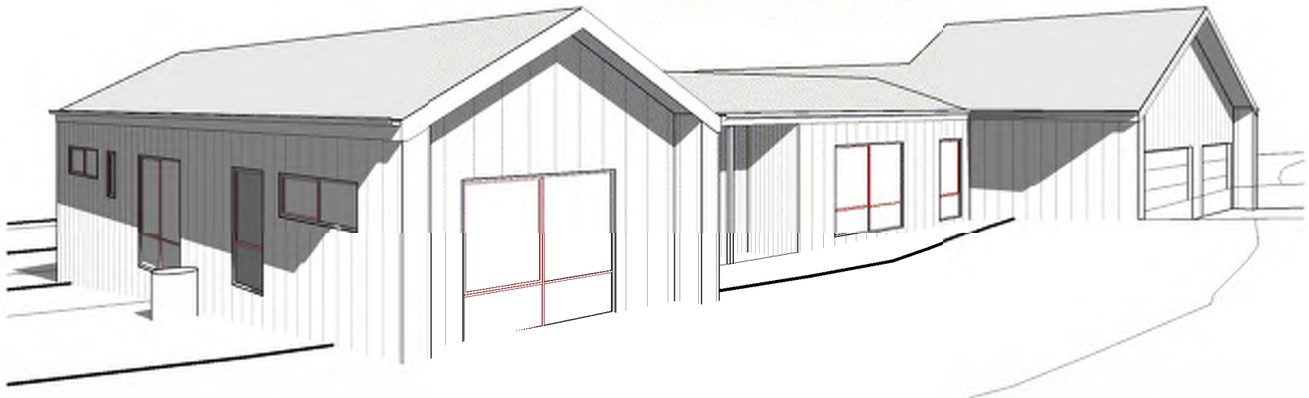
PLANNING
NOTE: DO NOT SCALE OFF DRAWINGS

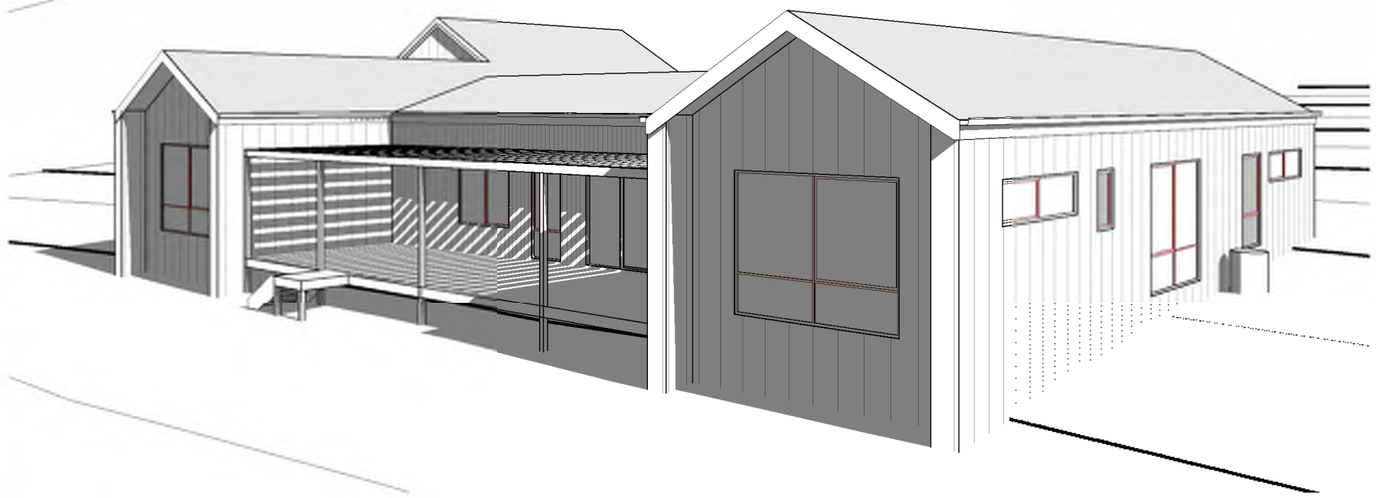
Project: PROPOSED NEW RESIDENCE (LOT 3) 20 TORONTO DRIVE, SEVEN MILE BEACH

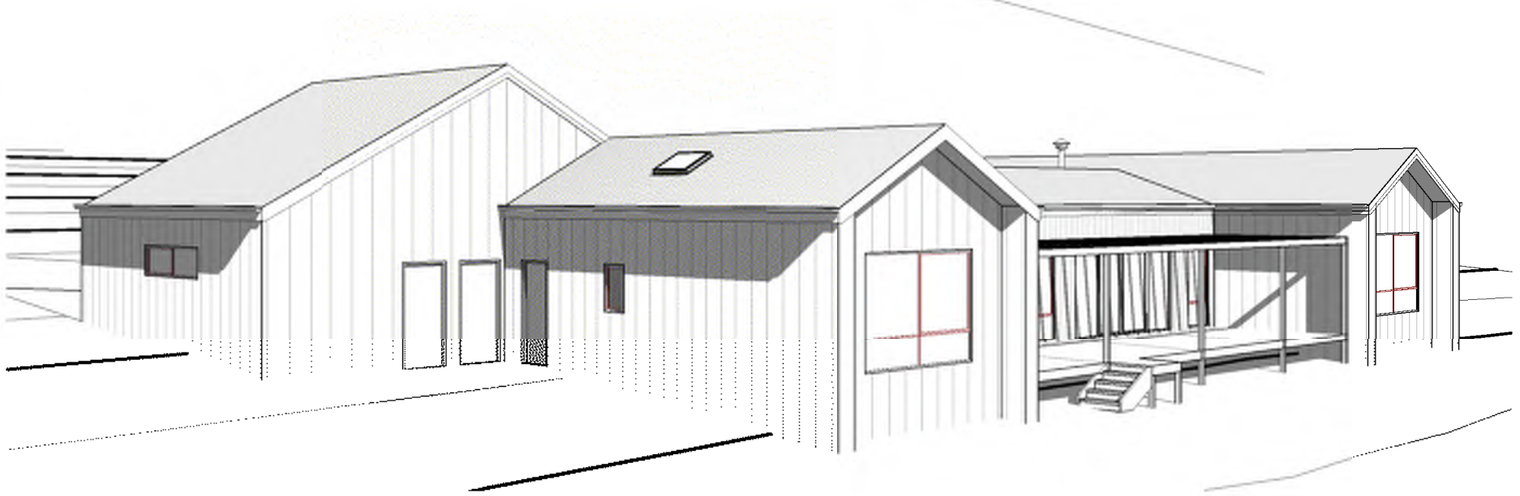
Drawing: ROOF PLAN

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	Scale:	Revision:
PDH25049 - 09	1 : 100	03

Accredited building practitioner: Frank Geskus -No CC246A







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PLANNING

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Project:
PROPOSED NEW RESIDENCE
(LOT 3) 20 TORONTO DRIVE,
SEVEN MILE BEACH

Drawing:
PERSPECTIVES

Date:	Drafted by:	Approved by:
09.10.2025	Author	Approver
Project/Drawing no:	**Scale:**	**Revision:**
PDH25049 - 10		03

Accredited building practitioner: Frank Geskus -No CC246A

SITE SOIL EVALUATION FOR FOUNDATIONS AND WASTEWATER

Lot 3 TORONTO DRVE – SEVEN MILE BEACH

PROPOSED DWELLING

Client: Prime Design

Certificate of Title: 188363/3

Investigation Date: 14/07/2025

Refer to this Report As

Enviro-Tech Consultants Pty. Ltd. 2025. Site Soil Evaluation for Foundations and Wastewater Report for a Proposed Dwelling, Lot 3 Toronto Drive – Seven Mile Beach. Unpublished report for Prime Design by Enviro-Tech Consultants Pty. Ltd., 14/07/2025.

Report Distribution

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Limitations of this report

In some cases, variations in actual Site conditions may exist between subsurface investigation boreholes. This report only applies to the tested parts of the Site at the Site of testing, and if not specifically stated otherwise, results should not be interpreted beyond the tested areas.

The Site investigation is based on the observed and tested soil conditions relevant to the inspection date and provided design plans (building footprints presented in Attachment A). Any site works which has been conducted which is not in line with the Site plans will not be assessed. Subsurface conditions may change laterally and vertically between test Sites, so discrepancies may occur between what is described in the reports and what is exposed by subsequent excavations. No responsibility is therefore accepted for any difference in what is reported, and actual Site and soil conditions for parts of the investigation Site which were not assessed at the time of inspection.

This report has been prepared based on provided plans detailed herein. Should there be any significant changes to these plans, then this report should not be used without further consultation which may include drilling new investigation holes to cover the revised building footprint. This report should not be applied to any project other than indicated herein.

No responsibility is accepted for subsequent works carried out which deviate from the Site plans provided or activities onsite or through climate variability including but not limited to placement of fill, uncontrolled earthworks, altered drainage conditions or changes in groundwater levels.

At the time of construction, if conditions exist which differ from those described in this report, it is recommended that the base of all footing excavations be inspected to ensure that the founding medium meets that requirement referenced herein or stipulated by an engineer before any footings are poured.

Investigation Summary

Site Classification

In accordance with AS2870 – 2011 and after thorough consideration of the known details pertaining to the proposed building and associated works (hereafter referred to as the Site), the geology, soil conditions, soil properties, and drainage characteristics of the Site have been classified as follows:

CLASS S Observed Soil Profile and use of non-reactive fill (sand or FCR) overlying natural profile

Class A: Footings excavated onto bedrock

Class M: Used of excavated clay soils as fill

Foundations

It is recommended that concentrated loads including but not limited to slab edge or internal beam or strip footings supported directly on piers or pads which are founded in the Extremely Weathered SANDSTONE Bedrock at 0.6 to 0.7 m depth or greater with allowable bearing capacities exceeding 400 kPa.

Wind Load Classification

The AS 4055-2021 Wind loads for Housing classification is summarised.

Region:	A
Terrain category:	TC2
Shielding Classification:	NS
Topographic Classification:	T0
Wind Classification:	N2
Design Wind Gust Speed ($V_{h,u}$) m/s	40

I recommend that during construction, I and/or the design engineer are notified of any major variation in the foundation conditions as predicted in this report.

Kris Taylor, BSc (hons)

Environmental & Engineering Geologist

Director

Site Investigation

The Site investigation is summarised in Table 1.

Table 1 Summary of Site Investigation

Client	Prime Design
Project Address	Lot 3 Toronto Drive - Seven Mile Beach
Council	Clarence
Planning Scheme	Tasmanian Planning Scheme
Inundation, Erosion or Landslip Overlays	None
Proposed	Dwelling
Investigation	Fieldwork was carried out by an Engineering Geologist on the 14/7/2025
Site Topography	The building site has a gentle slope of approximately 7% (4°) to the northwest
Site Drainage	The site receives overland flow runoff directly from the southeast.
Soil Profiling	Three investigation holes were direct push sampled from surface level around the proposed dwelling (Appendix A):
Investigation Depths	The target excavation depth was estimated at 1.5 m. Borehole BH01 was direct push sampled to 0.8 m, borehole BH02 was direct push sampled to 1.1 m, and borehole BH03 was direct push sampled to 1.6 m (all ending in SANDSTONE). Borehole logs and photos are presented in Appendix B & C.
Soil moisture and groundwater	All recovered soil at the site ranged from slightly moist to moist. Groundwater was not encountered.
Geology	According to 1:25,000 Mineral Resources Tasmania geological mapping (accessed through The LIST), the geology comprises of: Permian - Triassic Freshwater predominantly cross-bedded quartzose to feldspathic sandstone commonly with overturned cross-bedding, subordinate siltstone with sparse plant and vertebrate fossils (Knocklofty Formation).

Soil Profiles

The geology of the site has been documented and described according to Australian Standard AS1726 for Geotechnical Site Investigations, which includes the Unified Soil Classification System (USCS). Soil layers, and where applicable, bedrock layers, are summarized in Table 2.

Table 2 Soil Summary Table

#	Layer	Details	USCS	BH01	BH02	BH03
1	Silty SAND	TOPSOIL: Silty SAND, dark brown, poorly sorted, fine to medium grained sand, with clay, trace roots, 5 % roots, L	SM	0-0.1 DS@0.0	0-0.1	0-0.1
2	Sandy CLAY	Sandy CLAY, olive brown, high plasticity, fine grained sand, trace roots, 5 % roots, F-St	CH	0.1-0.2 DS@0.1	0.1-0.2	
3	Silty SAND	Silty SAND, black, poorly sorted, fine to medium grained sand, trace roots, trace clay, 5 % roots and charcoal, L-MD	SM			0.1-0.3 DS@0.2
4	Sandy CLAY	Sandy CLAY, strong brown, high plasticity, fine grained sand, St-VSt	CH	0.2-0.4 DS@0.3	0.2-0.4	
5	Sandy CLAY	Sandy CLAY, olive brown, high plasticity, fine to medium grained sand, F-VSt	CH			0.3-0.9 DS@0.6
6	Clayey SAND	Clayey SAND with silt, yellowish brown, poorly sorted, fine to medium grained sand, MD	SC	0.4-0.6 DS@0.5	0.4-0.7	
7	Silty Sandy CLAY	Silty Sandy CLAY, yellowish brown, poorly sorted, medium plasticity, fine grained sand, F-VSt	CI			0.9-1.3 DS@1.1
8	SANDSTONE	Extremely Weathered SANDSTONE Bedrock		0.6-0.8 DS@0.7 REF	0.7-1.1 DS@0.8 REF	1.3-1.6 REF

Consistency[1] **VS** Very soft; **S** Soft; **F** Firm; **St** Stiff; **Vst** Very Stiff; **H** Hard. Consistency values are based on soil strengths AT THE TIME OF TESTING and is subject to variability based on field moisture condition
Density[2] **VL** Very loose; **L** Loose; **MD** Medium dense; **D** Dense; **VD** Very Dense
Rock Strength **EL** Extremely Low; **VL** Very Low; **L** Low; M Medium; **H** High; **VH** Very High; **EH** Extremely High
PL Point load test (lump)
DS Disturbed sample
PV Pocket vane shear test
FV Downhole field vane shear test
U50 Undisturbed 48mm diameter core sample collected for laboratory testing.
REF Borehole refusal
INF DCP has continued through this layer and the geology has been inferred.

[1] Soil consistencies are derived from a combination of field index, DCP and shear vane readings.
[2] Soil density descriptions presented in engineering logs are derived from the DCP testing.

Recommendations

Dispersive soils

Findings

The results presented in Appendix D indicate:

- Near the proposed building envelope (BH01 and BH02) deeper soil Layers 6, 7 and 8 (typically deeper than 0.2m) comprises Emerson Class 1 category soils which are considered severely dispersive
- Soils shallower than 0.2m near the dwelling are only slightly dispersive (Layer 2) or not dispersive at all (Layer 1).

Site specific recommendations

- It is estimated that the cut will expose the Class 1 dispersive soils within the building pad
- It is recommended the cut is excavated to bedrock uphill of the building to form a trench which is to be backfilled with sand wrapped in geofabric. The sand will act to prevent tunnel development beneath the dwelling.
- As a more robust alternative, a footing may be established onto the bedrock uphill of the dwelling and a low height retaining wall may be established above this footing to retain dispersive soil.
- Ideally, the ground should be paved or at least treated, possibly lined and topped with loam between the dispersion barrier and the building to reduce the risk of freshwater ingress.
- Stormwater is to be piped away from the dwelling into a suitably lined or non-dispersive soil capped swale drain for gentle redistribution over the land surface.

For further guidance, general recommendations are presented in Appendix F.

Plumbing

Refer to hydraulic design drawings for detailed plumbing advice and requirements.

Refer to Table 3 to assess soil movement (Ys) around pipework for different depth ranges.

*Table 3 Millimetres soil movement (Ys) for determining plumbing requirements for various soil depths **

Building	Profiles	P*	E Ys >75	H2 Ys 60-75	H1 Ys 40-60	M Ys 20-40	S Ys 0-20	A Ys 0
Dwelling	BH01 BH02	No					0-0.7	0.7-3

* Depths in this table are based on surfaces at the time of testing and do not allow for the influence of any additional fill added to the soil profile unless the Iss calculation depth has been modified based on the proposed cut and fill (see 'Footing Minimum Target Depths'). Where additional fill is proposed (and not indicated in the attached plans) Enviro-Tech are to be advised of final FFL's so the Site classification can be recalculated according to the specific fill reactivity and thickness used in the design.

Class A and S

When pipework service trench basses fall within Class A to S depth range as shown in Table 3, and all plumbing recommendations herein have been implemented, the drainage system does not require any additional protection and should be installed following the AS/NZS 3500 series standards.

Wastewater and Stormwater Management

If swale drains or absorption trenches are proposed for tank overflow or roof catchment management, the stormwater is not to be diverted within 45° downgradient of any building structure unless verified in a plan provided to Envirotech for approval. The proposed wastewater absorption area is suitably located.

Site Drainage

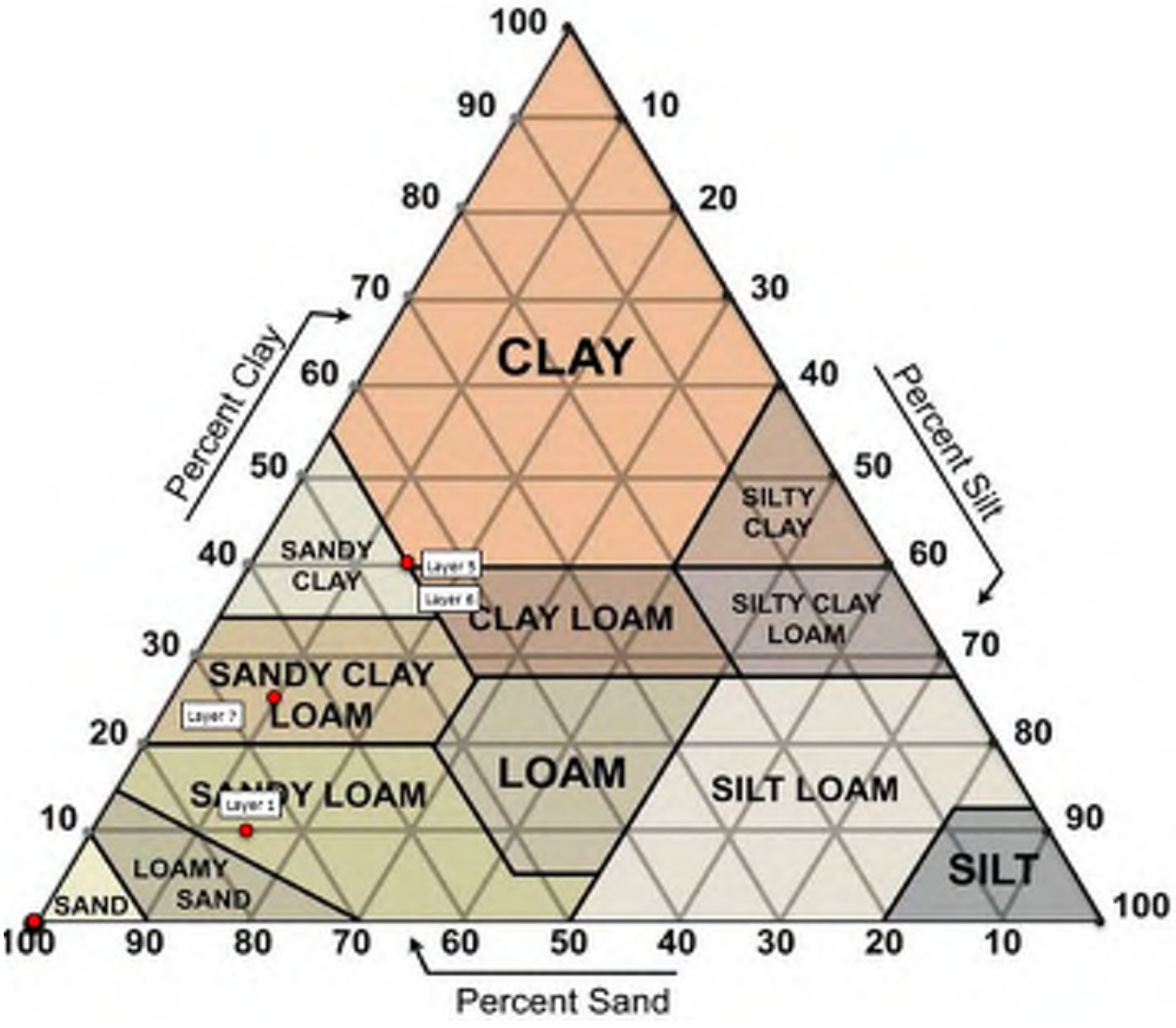
Due to the presence of the dispersive soils, stormwater absorption trenches need to be avoided at the Site.

Surface drainage shall be considered in the design of the footing system, and necessary modifications shall be included in the design documentation. The surface drainage of the site shall be controlled from the beginning of the preparation and construction of the site. The drainage system shall be completed after the completion of the building construction.

Ideally, the areas around the footprint of the building should be graded or drained so that the water cannot pond against or near the building. As soon as footing construction has been completed, the ground immediately adjacent to the building should be graded to a uniform fall of 50mm minimum away from the building over the first metre. The final provision of paving to the edge of the building can greatly limit soil moisture variations due to seasonal wetting and drying.

Wastewater

The saturated soil permeability is estimated to be at a rate of 0.8mm per hour. The limiting Layers 5 and 6 are on the boundary between a CLAY and a Sandy CLAY with textures and observed drainage consistent with a Category 6 soil.



Temporary Site Drainage

It is recommended that drainage protection works (cut off drains/mounds) are put in place above (upgradient of) the work area to prevent water and sediment from accumulating in and around footings and reduce the risk of erosion and instability around any proposed earth retaining structures.

Filling Works

- In the case where either of the following conditions occur, the Site is classified as Class P (AS2870 Clauses 2.5.2 and 2.5.3), in which case footings are to be designed in accordance with engineering specifications:
    - FILL OTHER THAN SAND exceeds 0.4 m depth.
    - SAND FILL exceeds 0.8 m depth.
- It is recommended that footing (edge beams, internal beams, and load support thickenings) concentrated loads are transferred through the fill to target founding layers.
- Subject to engineering advice, edge beams, internal beams, and load support thickenings may need to be founded on natural ground.
- SAND or FCR is always recommended rather than fill containing SILT or CLAY.
- Compacted CLAY or SAND FILL on well drained slopes should not exceed 1V:2H unless supported by an engineered retaining wall.
- Compacted stable rock fill on well drained slopes should not exceed 2V:3H unless supported by an engineered retaining wall.
- Any proposed filling works must be in accordance with AS3798 'Earthworks for Residential and Commercial Developments'.
- Before placing fill for landscaping, all topsoil should be removed from the filled area.
- Ideally, the fill should be free draining and placed to prevent water ponding. The fill should be placed in layers no greater than 150mm height and suitably compacted.

Long-term erosion management

The following measures are generally recommended for maintaining long-term erosion stability of soil slopes:

- Slopes exceeding 1V: 4H and up to 1V: 3H will need to be effectively stabilised with mulch/topsoil mixes, drill/broadcast seeding, hydroseeding or soil binders.
- Slopes up to 1V:2Hcan be stabilised with straw mulching.
- Slopes exceeding 1V: 2H and up to 1V:1.5H may be effectively stabilised with hydromulching
- Slopes exceeding 1V:1.5H but no greater than 1V: 1H will generally require measures such as erosion control blankets.

Earth-Retaining Structures

Any excavations higher than 1.0m and exceeding the recommended batter angle should be supported with a retaining wall engineered that allows free drainage of the retained soil and rock.

Building Pad Preparation

Any organic matter or other deleterious materials will need to be removed from the building envelope.

Topsoil containing grass roots must be removed from the area on which the footing will rest.

Unless otherwise stated in an engineering report, fill or loose, soft, low bearing capacity soil should either be removed from the building pad, or otherwise footings or piers should ideally be established to the base of this material to support the proposed structure.

Earthworks should be carried out in accordance with AS3798 'Earthworks for Residential and Commercial Developments'. Unsuitable materials in structural fill are listed in AS2870 Section 4.3.

The base of the excavation must be generally level but may slope not more than 1:40 to allow excavations to drain.

Bored Pier Impediments - Obstructions

There were no obvious impediments to auguring such as cobbles or boulders obstructions.

Bored Pier Impediments - Groundwater

Groundwater was not observed.

Footing Preparation

Footing excavations must be free of loose earth, tree roots, mud or debris immediately before pouring concrete, ensuring the footing is appropriately seated on the target layer.

Foundation Maintenance

Details on appropriate site and foundation maintenance practises from the CSIRO BTF 18 Foundation Maintenance and Footing Performance: A Homeowner's Guide are presented in Appendix G of this report.

Kris Taylor, BSc (hons)

Environmental & Engineering Geologist

Notes About Your Assessment

The Site classification provided and footing recommendations including foundation depths are assessed based on the subsurface profile conditions present at the time of fieldwork and may vary according to any subsequent *Site works* carried out. *Site works* may include changes to the existing soil profile by cutting more than 0.5 m and filling more than 0.4 to 0.8 m depending on the type of material and the design of the footing. All footings must be founded through fill *other than* sand not exceeding 0.4 m depth or sand not exceeding 0.8 m depth, or otherwise a Class P applies (AS2870 Clauses 2.5.2 and 2.5.3).

For reference, borehole investigation depths relative to natural soil surface levels are stated in borehole logs where applicable.

In some cases, variations in actual Site conditions may exist between subsurface investigation boreholes. At the time of construction, if conditions exist which differ from those described in this report, it is recommended that the base of all footing excavations be inspected to ensure that the founding medium meets the requirement referenced herein or stipulated by an engineer before any footings are poured.

The site classification assumes that the performance requirements as set out in Appendix B of AS 2870 are acceptable and that site foundation maintenance is carried out to avoid extreme wetting and drying.

It is the responsibility of the homeowner to ensure that the soil conditions are maintained and that abnormal moisture conditions do not develop around the building. The following are examples of poor practises that can result in abnormal soil conditions:

- The effect of trees being too close to a footing.
- Excessive or irregular watering of gardens adjacent to the building.
- Failure to maintain Site drainage.
- Failure to repair plumbing leaks.
- Loss of vegetation near the building.

The pages that make up the last six pages of this report are an integral part of this report. The notes contain advice and recommendations for all stakeholders in this project (i.e. the structural engineer, builder, owner, and future owners) and should be read and followed by all concerned.

References

AS 1289.6.3.2-2003 Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9 kg dynamic cone penetrometer test, Standards Australia, Sydney, Retrieved from SAI Global

AS 1289.7.1.1-2003 Methods of testing soils for engineering purposes Method 7.1.1: Soil reactivity tests—Determination of the shrinkage index of a soil—Shrink-swell index, Standards Australia, Sydney, Retrieved from SAI Global

AS 1726-2017, Geotechnical Site investigations, Standards Australia, Sydney, Retrieved from SAI Global

AS 2870-2011, Residential slabs and footings, Standards Australia, Sydney, Retrieved from SAI Global

AS4055 (2021). Australian Standard. Prepared by Committee BD-099, Wind Loads for Housing. Approved on behalf of the Council of Standards Australia on 1st June 2021 and published on 25th June 2021.

DPIPWE 2009. Dispersive Soils and their Management. Technical Reference Manual. Sustainable Land Use Department of Primary Industries Water and Environment.

Webster, S.L., Brown, R.W. and Porter, J.R. (1994) Force Projection Site Evaluation Using the Electric Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP). Technical Report No. GL-94-17, Air Force Civil Engineering Support Agency, US Air Force, Tyndall Air Force Base, FL.

Appendix A Mapping

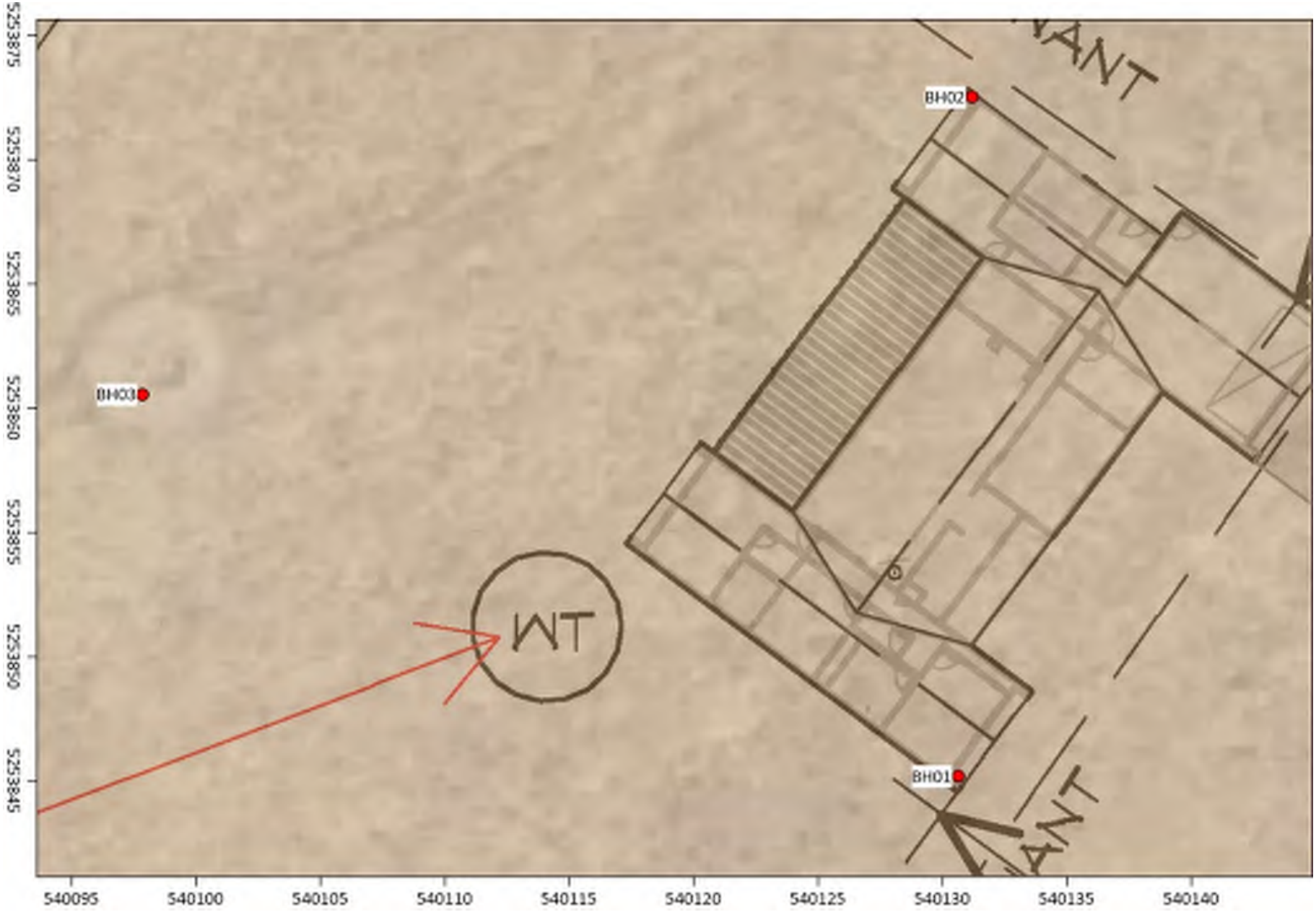


Figure 1 Site Borehole Locations

Appendix B Borehole Logs

enviro·tech CONSULTANTS

ASSESSMENT: Foundation Classification
STRUCTURE: Proposed Dwelling
EASTING: 540130.5 **HORIZONTAL**
NORTHING: 5253845 **ACCURACY:** 0.6m

HOLE ID NO.: BH01
DATE TESTED: 14/07/2025
LOGGED BY: T. Gallagher
ELEVATION: 26.00

LOCATION: Lot 3 Toronto Drive-Seven Mile Beach
CLIENT: Prime Design

EQUIPMENT: Core & Auger
NATURAL SURFACE (RL):

DEPTH (m)	GRAPHIC	DESCRIPTION	LAYER	DENSITY CONSISTENCY STRENGTH	MOISTURE INDEX	%	SAMPLES	TEST	Cu (kPa)	UCS (kpa/mm)	BLOW COUNT	DCP blows/100mm 0 5 10 15 20
0.0	SM	TOPSOIL: Silty SAND, dark brown, poorly sorted, fine to medium grained sand, with clay, trace roots, 5 % roots	1	loose	Moist	24	DS				2 0	
	CH	Sandy CLAY, olive brown, high plasticity, fine grained sand, trace roots, 5 % roots	5	stiff	Slightly Moist	18	DS				4 0	
	CH	Sandy CLAY, strong brown, high plasticity, fine grained sand	6	stiff to very stiff	Slightly Moist	19	DS				6 0 4 0	
0.5	SC	Clayey SAND with silt, yellowish brown, poorly sorted, fine to medium grained sand	7	medium dense	Slightly Moist	16	DS				2 9 6 0	
		Extremely Weathered SANDSTONE Bedrock yellow	8		Slightly Moist	26	DS				REF	
		Direct Push Sampler Refusal on Extremely Weathered SANDSTONE Bedrock End of borehole at 0.8m depth.										

GROUNDWATER: Not Encountered
TESTING: Penetrometer: AS 1289.6.3.2

PAGE 1 of 1

Where blows per 100mm are less than 1, distance travelled per penetrometer blow is measured and converted to blows per 100mm.
DS - Disturbed Sample; U50 - Undisturbed 50mm Core; FV - Field Vane (Ømm); PP - Pocket Penetrometer; CBR - California Bearing Ratio; PV - Pocket Vane

enviro·tech CONSULTANTS

ASSESSMENT: Foundation Classification
STRUCTURE: Proposed Dwelling
EASTING: 540131 **HORIZONTAL**
NORTHING: 5253872.5 **ACCURACY:** 0.62m

HOLE ID NO.: BH02
DATE TESTED: 14/07/2025
LOGGED BY: T. Gallagher
ELEVATION: 25.00

LOCATION: Lot 3 Toronto Drive-Seven Mile Beach
CLIENT: Prime Design

EQUIPMENT: AMS Powerprobe 9120 RAP
NATURAL SURFACE (RL):

DEPTH (m)	GRAPHIC	DESCRIPTION	LAYER	DENSITY CONSISTENCY STRENGTH	MOISTURE INDEX	%	SAMPLES	TEST	Cu (kPa)	UCS (kg/cm²)	BLOW COUNT	DCP Blows/100mm 0 5 10 15 20
0.0	SM	TOPSOIL: Silty SAND, dark brown, poorly sorted, fine to medium grained sand, with clay, trace roots, 5 % roots	1	loose	Slightly Moist						2.0	
	CH	Sandy CLAY, olive brown, high plasticity, fine grained sand, trace roots, 5 % roots	5	firm	Slightly Moist						1.9	
	CH	Sandy CLAY, strong brown, high plasticity, fine grained sand	6	stiff	Slightly Moist						4.0	
0.5	SC	Clayey SAND with silt, yellowish brown, poorly sorted, fine to medium grained sand	7	medium dense	Slightly Moist						4.0	
											5.0	
											6.0	
		Extremely Weathered SANDSTONE Bedrock yellow	8		Slightly Moist	17	DS				6.0	
1.0											REF	
		Direct Push Sampler Refusal on Extremely Weathered SANDSTONE Bedrock End of borehole at 1.1m depth.										

GROUNDWATER: Not Encountered
TESTING: Penetrometer: AS 1289.6.3.2

PAGE 1 of 1

Where blows per 100mm are less than 1, distance travelled per penetrometer blow is measured and converted to blows per 100mm.
DS - Disturbed Sample; U50 - Undisturbed 50mm Core; FV - Field Vane (Ømm); PP - Pocket Penetrometer; CBR - California Bearing Ratio; PV - Pocket Vane

enviro·tech CONSULTANTS

ASSESSMENT: Foundation Classification
STRUCTURE: Proposed Dwelling
EASTING: 540098 **HORIZONTAL**
NORTHING: 5253860.5 **ACCURACY:** 0.6m

HOLE ID NO.: BH03
DATE TESTED: 14/07/2025
LOGGED BY: T. Gallagher
ELEVATION: 24.00

LOCATION: Lot 3 Toronto Drive-Seven Mile Beach
CLIENT: Prime Design

EQUIPMENT: Power Auger
NATURAL SURFACE (RL):

DEPTH (m)	GRAPHIC	DESCRIPTION	LAYER	DENSITY CONSISTENCY STRENGTH	MOISTURE INDEX	%	SAMPLES	TEST	Cu (kPa)	UCS (kpa/mm)	BLOW COUNT	Blows/100mm 0 5 10 15 20
0.0	SM	TOPSOIL: Silty SAND, dark brown, poorly sorted, fine to medium grained sand, with clay, trace roots, 5 % roots	1		Slightly Moist							
	SM	Silty SAND, black, poorly sorted, fine to medium grained sand, trace roots, trace clay, 5 % roots and charcoal	2		Slightly Moist	10	DS					
0.5	CH	Sandy CLAY, olive brown, high plasticity, fine to medium grained sand	3		Slightly Moist	25	DS					
1.0	CI	Silty Sandy CLAY, yellowish brown, poorly sorted, medium plasticity, fine grained sand	4		Slightly Moist	18	DS					
1.5		Extremely Weathered SANDSTONE Bedrock yellow	8									
		Direct Push Sampler Refusal on Extremely Weathered SANDSTONE Bedrock End of borehole at 1.6m depth.										

GROUNDWATER: Not Encountered
TESTING: Permeameter: AS 1289.6.7.3

PAGE 1 of 1

Where blows per 100mm are less than 1, distance travelled per penetrometer blow is measured and converted to blows per 100mm.
DS - Disturbed Sample; U50 - Undisturbed 50mm Core; FV - Field Vane (Ø mm); PP - Pocket Penetrometer; CBR - California Bearing Ratio; PV - Pocket Vane

Appendix C Core Photographs

BH01

BH02

BH03

*** 1 metre core tray length**

Appendix D Geotechnical Testing

Dynamic Cone Penetrometer (DCP)

Dynamic cone penetrometer (DCP) testing was conducted according to AS 1289.6.3.2 with the results presented in Appendix B.

Soil Dispersion (Emerson aggregate test)

Select soil samples were tested for dispersion susceptibility using the Emerson Class number method according to AS1289.3.8.1. The results presented in Table 4 demonstrate that:

- Near the proposed building envelope (BH01 and BH02) deeper soil Layers 6, 7 and 8 (typically deeper than 0.2m) comprises Emerson Class 1 category soils which are considered severely dispersive
- Soils shallower than 0.2m near the dwelling are only slightly dispersive (Layer 2) or not dispersive at all (Layer 1).

Table 4 Summary of the Emerson class results.

Layer	Soil	Depth	Sample ID	Emersion Class	Date Tested	Water	pH
1	Silty SAND	0	BH01 0.0	Class >4	15/07/2025	DI 16°C	
5	Sandy CLAY	0.1	BH01 0.1	Class 2	15/07/2025	DI 16°C	5.24
2	Silty SAND	0.2	BH03 0.2	Class 3	15/07/2025	DI 16°C	5.7
6	Sandy CLAY	0.3	BH01 0.3	Class 1	15/07/2025	DI 16°C	4.2
7	Clayey SAND	0.5	BH01 0.5	Class 1	15/07/2025	DI 16°C	5.53
3	Sandy CLAY	0.6	BH03 0.6	Class 1	15/07/2025	DI 16°C	7.4
8	SANDSTONE	0.7	BH01 0.7	Class 1	15/07/2025	DI 16°C	6.2

Permeameter Testing

Permeameter testing was carried out in borehole BH03. A soil auger was used to excavate the Soil to prepare for the test to ensure the soak well was effectively draining. Where applicable, the reported water table height has been used as the test depth. Results are presented Table 5.

Table 5 Permeameter testing results.

Borehole	Hole Depth (m)	Hole Diameter (mm)	Test Duration (min)	Flow Rate (cm3/min)	Ksat (m/day)	Ksat (mm/hr)
BH03	1.5	50	10.1	52.2	1.9E-02	0.8

Exposure Classification for Concrete

Soil at the Site marginally exceeds a pH of 5.5 and given the clay nature of the soils, an exposure classification of A1 applies. No testing has been conducted for EC, however, this testing is proposed with future assessments when systems are in place.

Appendix E Geotechnical Interpretation

Footing Minimum Target Depths

Footing design for the proposed structures are to consider the depths of limiting layers at the base of potentially problematic soils. Where practical/allowable, thickened beams may be deepened through problematic soil layers according to engineering specifications (Table 6). Table 7 should be referred to where only 50kPa allowable bearing capacity is required.

Table 6 also presents a summary of the estimated soil depths and associated layers where less than 5mm of vertical soil movement can expected due to soil moisture fluctuations from normal seasonal wetting and drying cycles. Where 5mm tolerances are required, concentrated loads including but not limited to slab edge or internal beam or strip footings shall be supported directly on piers in accordance with minimum target layer depths presented in Table 6, with considerations given to required bearing capacities in accordance with Table 7.

Table 6 Soil characteristic surface movements and recommended footing minimum target depths

Footing design parameters	BH01	BH02
Ys Calculation Depth	0m^	0m^
Surface movement Ys (mm)	15	15
Soil reactivity class	S	S
Base of problem soil layer (m)*	-	-
Layer at base of problem soil*	-	-
Pier/Footing minimum target depth (m)#	>0.7^	>0.8^
Pier/footing minimum target layer#	8	8
Allowable bearing capacity at min target depth (kPa) #	400	400

- No problem layers encountered

^ Calculations relative to surface of borehole at the time of investigation

~ Calculated based on revised soil profile depth/thickness following indicative cut and fill. Inferred fill reactivity indicated (Iss value) which is typically based on more reactive soils expected to be encountered within inferred cut.

* Base of problematic soil layer depth below top of borehole surface at the time of testing to achieve 100 kPa allowable bearing capacity or greater.

Target soil layer depth where Ys values from normal wetting and drying cycles are estimated at less than 5mm vertical movement. >minimum bored pier depths (see bearing capacity table for bored pier design depths).

Soil and Rock Allowable Bearing Capacity & End Bearing Capacity

Soil allowable bearing capacity was calculated from correlations with DCP blow counts. A recommended safety factor of 3 is applied in accordance with AS2870. Where high clay and silt content is observed in the soil, soil allowable bearing capacity is determined from undrained shear strengths using field vane correlated DCP values. Interpretive bearing capacity values are presented in Table 7.

Table 7 Soil allowable bearing capacities and problematic ground conditions.

Depth below investigation surface (m)	Allowable Bearing Capacity (kPa)		
	BH01	BH02	BH03
0	90~	90~	
0.1	170	100	
0.2	240	170	
0.3	170	170	
0.4	120	210	
0.5	260	260	
0.6	SANDSTONE	260	
0.7	SANDSTONE	SANDSTONE	
0.8		SANDSTONE	
0.9		SANDSTONE	
1		SANDSTONE	
1.1			
1.2			
1.3			SANDSTONE
1.4			SANDSTONE
1.5			SANDSTONE

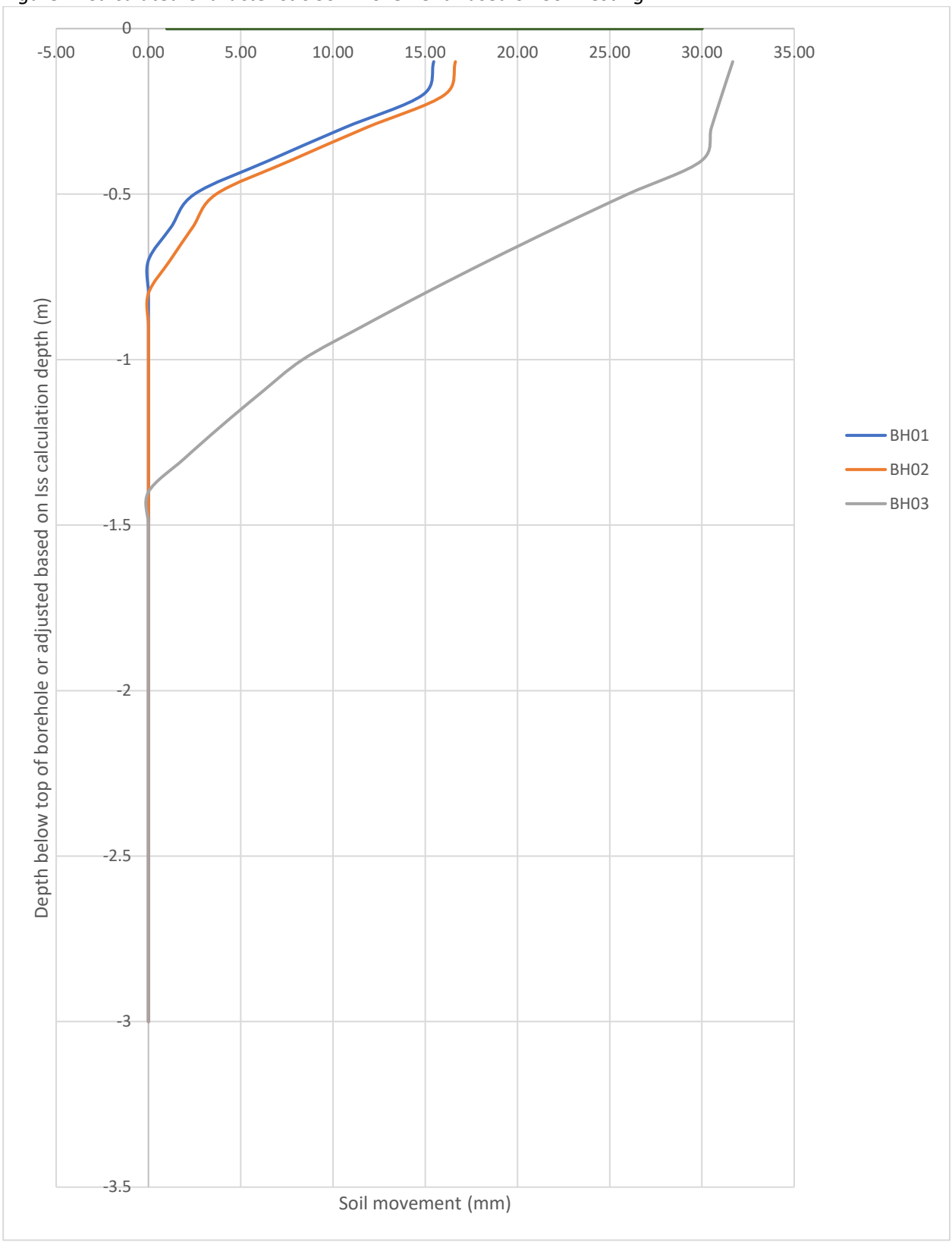
Correlations drawn from DCP and vane shear testing.
REF - Penetrometer Refusal
^ Footings to be founded through the FILL
~ Problematic soil layer attributed to loose, soft, or low allowable bearing capacity soil (<100 kPa)
*Soil layer expected at the base of problematic soil layers at test location (or at surface where problematic soils not encountered) to achieve 100 kPa allowable bearing capacity or greater.

Characteristic Soil Movement (Ys)

The characteristic soil movement (soil reactivity) from wetting and drying cycles is calculated according to AS 2870 Section 2.3. The calculations are based on Iss % testing results or correlations with linear shrink data and are based on complete soil profiles for boreholes drilled within the building Site. In the case of where cut and fill are proposed and building finished floor levels (FFL) are made available, the Iss value is recalculated based on the FFL and estimated cut and fill as per Table 6.

According to AS 2870 Section 2.3, calculations consider the depth of groundwater and bedrock. Soil characteristic movements based on lab testing are presented in Figure 2.

Figure 2 Calculated Characteristic Soil Movement Based on Soil Testing



Appendix F General Advice - Dispersive Soil Management

The Site may be susceptible to tunnel erosion if subsurface drainage is not adequately managed. Tunnel erosion typically initiates in excavated cuts; however, it can also develop where dispersive soils are exposed through excavation, leading to the release of pore water and concentrated groundwater discharge. Additional contributing factors may include broken pipes, ineffective stormwater infrastructure, or unmanaged surface flows. If left unaddressed, these conditions can result in progressive subsoil loss, potentially undermining footings or causing settlement-related damage to the structure.

Tunnel erosion typically progresses upslope, initiated by the dissolution and removal of highly dispersive Class 1 and Class 2 soil layers. As tunnels enlarge, they can undermine surrounding soils that may not be dispersive but are still susceptible to collapse due to loss of subsoil support. If unmanaged, tunnel erosion can extend beyond property boundaries, posing a risk to nearby infrastructure including buildings, roads, and underground services. For further background on the management of Emerson Class 1 soils, refer to the Department of Primary Industries, Parks, Water and Environment (DPIPWE, 2009) guidance document.

Dispersive soils should be managed through a combination of drainage control and ground treatment measures. These may include overland flow management, controlled cut and fill practices, and, in more severe cases, the installation of sand barriers to interrupt subsurface flow paths. Where dispersive soils are exposed—particularly on batters or in excavation faces—chemical treatment using gypsum or lime may be employed to improve soil cohesion and reduce erosion potential. Application rates should be guided by Emerson Class test results, as outlined in Table 8.

Gypsum and hydrated lime are proven effective in mitigating erosion in dispersive soils by displacing sodium ions on clay particles and replacing them with calcium. This cation exchange improves soil structure, increases shear strength, and enhances resistance to tunnel and surface erosion. The effectiveness of treatment is influenced by the soil's properties; higher application rates of gypsum are typically required for soils with greater cation exchange capacity, elevated pH, and lower Emerson Class numbers. Application guidelines should be based on laboratory test results, including Emerson Class assessment, to ensure appropriate treatment dosages.

Table 8 Prescribed gypsum and hydrated lime application rates – see Emerson soil testing results

Dispersive soil Emerson class	Gypsum/Hydrated Lime Application Rate pH < 7.5	Gypsum Application Rate pH > 7.5
Class 3	0 to 0.3 kg/m2	0.2 – 0.5 kg/m2
Class 2	0.5 kg/m2	1.0 kg/m2
Class 1	1.0 kg/m2	1.5 kg/m2

Where practicable, vehicle driveways and parking areas should be located on level or gently sloping terrain to minimise the need for deep excavation and reduce disturbance to dispersive soils identified on Site.

General Recommendations

To minimise disturbance and erosion in areas where Class 1 dispersive soils have been identified, the following measures are recommended:

- **Drainage Control:** Construct soil cut-off mounds or shallow interceptor trenches in non-dispersive soils, no deeper than 0.2 m above the interface with Class 1 dispersive soils. These should be positioned upslope of any proposed cuts to divert surface water before it reaches vulnerable areas.
- **Chemical Treatment:** Apply gypsum or hydrated lime to exposed dispersive soils where surface water movement is expected—particularly on freshly cut embankments, filled areas, service trenches, and zones where topsoil has been removed.
- **Surface Protection:** Cover all severely dispersive soils with either impermeable surfacing (e.g. paving) or a layer of non-dispersive topsoil to reduce erosion and limit moisture ingress.
- **Batter Stabilisation:** Place non-dispersive topsoil over freshly cut batters to protect against surface erosion and reduce the likelihood of tunnel initiation.
- **Remediation of Existing Tunnels:** Where tunnel erosion has already occurred, additional stabilisation of natural or constructed drainage gullies may be required. This may include the use of sand barriers and, in more severe cases, geotextile-wrapped drainage rock structures. When correctly designed, such barriers can intercept subsurface flow, promote controlled surface discharge, and direct water away from at-risk areas.

Key Management Measures for Dispersive Soils in Cut Embankments:

Surface water drainage can erode dispersive soils in embankment cuts. Groundwater discharge may worsen tunnel erosion by accelerating the development of secondary porosity—where subsurface flow progressively enlarges voids within the soil mass, leading to tunnel formation and internal instability. Management considerations:

- **Topsoil Removal Risks:** Earthworks commonly begin with the removal of non-dispersive topsoil, which often acts as a natural protective layer. Once removed, the underlying dispersive soils become highly vulnerable to erosion.
- **Barrier Construction in Cut Slopes:** Where excavation is necessary, erosion can be mitigated through immediate installation of physical barriers:
    - Place a sand layer (sand barrier) over exposed dispersive soil within the cut to interrupt flow paths.
    - Construct an earth retaining wall in front of the cut to contain soil and stabilise the slope face.
- **Timely Implementation:** All erosion control measures must be implemented immediately following excavation to prevent the initiation of tunnel erosion.
- **Use of Retaining Structures:** Low-height retaining walls (e.g., timber sleeper walls) constructed at the base of cut faces can assist in retaining eroding soils and maintaining the effectiveness of sand barriers.

Sand Barriers

To manage dispersive soils exposed in cut slopes, the following layered treatment is recommended:

- **Chemical Stabilisation:** Apply gypsum or hydrated lime at application rates specified in Table 8, based on Emerson Class testing.
- **Sand Layer:** Install a minimum 100 mm thick layer of clean, free-draining sand to act as a barrier and interrupt preferential flow paths.
- **Topsoil Cover:** Place a layer of non-dispersive, free-draining topsoil (such as loam) over the sand barrier to retain the sand in place and facilitate effective revegetation or application of surface treatments.
- **Erosion Control:** Implement surface erosion protection measures as outlined in the Erosion Control section to prevent wash-off and maintain system effectiveness.

Retaining Walls

The following measures are recommended when constructing retaining walls in areas with dispersive soils:

- Retaining walls should be founded on bedrock or non-dispersive soils to reduce the risk of tunnel erosion and structural instability.
- Where walls are constructed in Class 1 dispersive soils, freshly cut surfaces may be treated with gypsum or hydrated lime at application rates specified in Table 8 to reduce erosion potential.

Drainage

Effective drainage is critical in dispersive soil environments to prevent erosion, tunnel formation, and structural damage. The following measures are recommended:

- Divert surface water away from cut and fill slopes to reduce infiltration into dispersive soils.
- A sealed toe drain is essential to prevent water from soaking into freshly cut dispersive soils and migrating through dispersive fill layers beneath paved surfaces.
- For optimal surface drainage over Class 1 soils, install concrete spoon drains in preference to earthen swales to minimise erosion risk.
- Where earthen swale drains are used, stabilise Class 1 soils with gypsum or hydrated lime at a rate adjusted to soil pH. A liner (e.g. 20 mm bentonite layer) beneath topsoil and turf may be used to limit vertical water infiltration.
- Subsurface drains installed in Class 1 soils should be backfilled with a sand mix containing 2% gypsum or hydrated lime to inhibit dispersion and maintain flow pathways.
- Non-perforated drainage pipes should be used to divert water away from identified groundwater discharge points, limiting further erosion.

Filling

The use of dispersive soils as fill presents a significant risk for tunnel erosion, especially where water movement is poorly controlled. The following measures are recommended to reduce risk and ensure long-term stability:

- Dispersive soil used as fill is highly susceptible to tunnel erosion, particularly when exposed to concentrated surface or groundwater flow.
- Groundwater can migrate along the base of and within fill layers, initiating erosion of dispersive materials and undermining overlying structures.
- All proposed filling, especially within or near building footprints, should be carefully managed. This may involve either:
    - Removal of Class 1 dispersive soil from beneath the structure, or
    - Chemical treatment of dispersive fill using gypsum or hydrated lime, applied to the surface of each compacted lift.
    - Preventing water from intercepting dispersive soil by liming the fill or with careful drainage management
- When chemically treating fill:
    - Use 300 mm thick lifts with full application rates as specified in Table 8.
    - For 150 mm thick lifts, halve the application rate accordingly.
- Ensure compaction is achieved close to optimum moisture content, particularly in areas adjacent to footings and structures.
- Paved surfaces over filled areas significantly reduce the risk of tunnel erosion, if cut-off drains are installed to prevent water ingress at the fill base.
- Where feasible, spoon drains and pavement edges at the toe of cut batters should be founded on non-dispersive soil or bedrock to intercept all surface water and eliminate seepage pathways.
- If topsoil is removed prior to filling, and it is classified as slightly dispersive (Class 3) or non-dispersive (Class 4 or higher), it may be replaced with a liner or imported non-dispersive material to protect the dispersive fill beneath.

Roofed and Paved Area Stormwater Management

All captured water on-site, including roof runoff, must be managed to remain at the surface and be evenly dispersed downslope across the Site. Roof runoff must be directed to detention tanks, with overflow discharged via surface irrigation—not into soakage pits. Due to the absence of non-dispersive topsoil, imported loam is required in irrigation areas. Irrigation must either:

1. Be delivered just below the surface, draining directly into the imported loam without contact with dispersive soils; or
2. Be applied via above-ground sprinklers onto imported loam to prevent erosion and maintain surface stability.

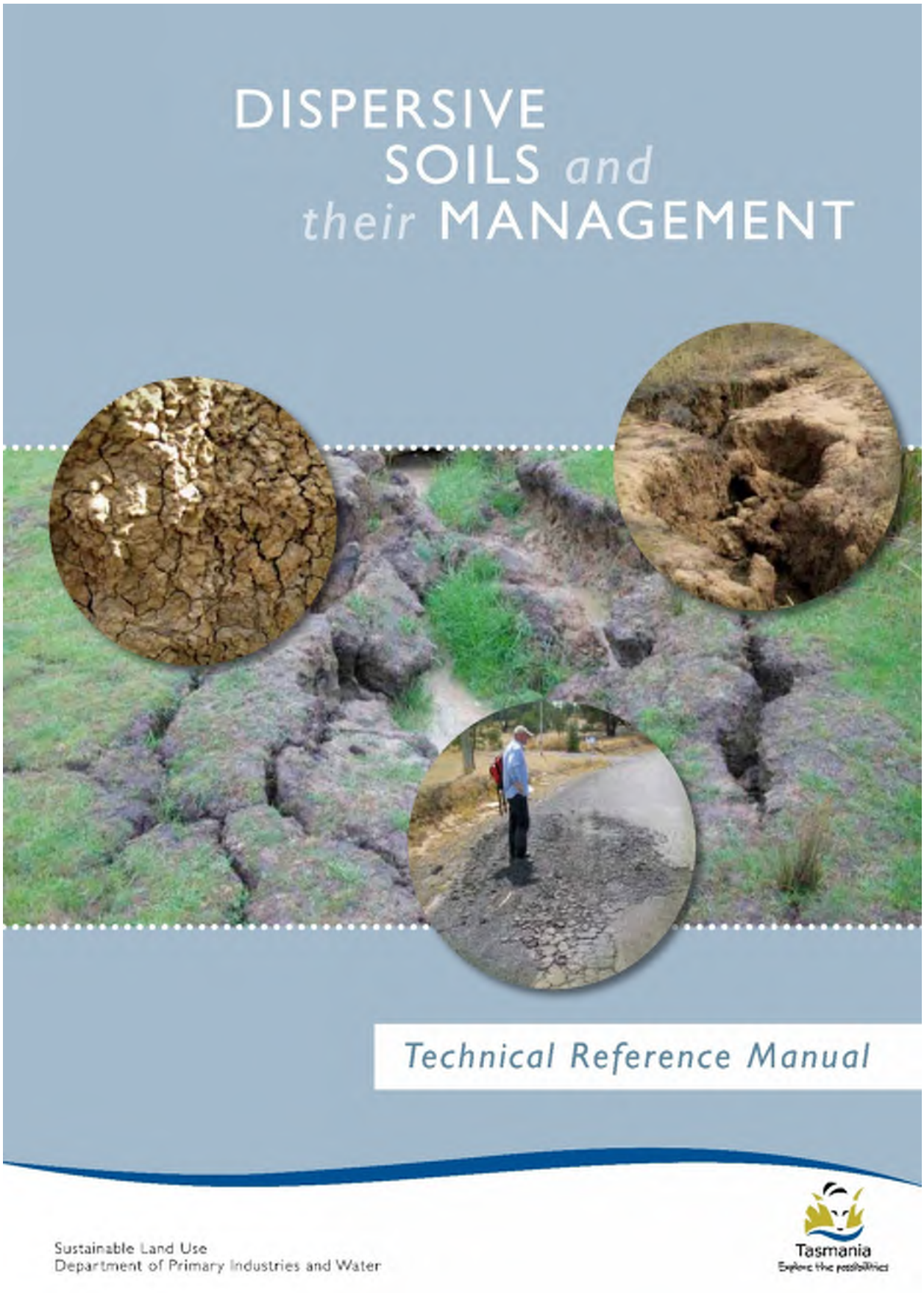
Runoff from pavements and other impervious surfaces must either be captured and redirected into detention tanks for controlled redistribution.

For driveways, runoff should be directed via cross-slope or in-slope alignment into lined side drains or swales. These must convey collected water to designated redistribution areas —such as detention tanks with surface irrigation or into distribution swales. Overflow must be dispersed across imported loam soils which is not located upgradient or downgradient of existing structures and ensuring water is not concentrated near foundations or fill. If distribution swales are used, they must be lined, constructed with low gradients, and designed to promote sheet flow rather than concentrated runoff. Distribution swale overflow must discharge onto non-dispersive imported loam soils.

Service Trenches

An effective measure to prevent stormwater ingress into backfilled service trenches is to ensure the trench surface is well sealed with non-dispersive soils or stable topsoil. As an additional site-specific recommendation, service trenches should be backfilled with compacted sand, which will help prevent water channelisation and reduce the risk of tunnel erosion along trench alignments.

DPIPWE 2009 Dispersive Soils and their Management. Technical Reference Manual. Sustainable Land Use Department of Primary Industries Water and Environment.



4.1 MANAGEMENT OPTIONS FOR TUNNEL EROSION

Past efforts to repair tunnel erosion in agricultural landscapes have relied on mechanical destruction of the tunnel system by deep ripping, contour furrowing, and contour ripping. Unfortunately many of these techniques either failed or resulted in tunnel re-emergence in an adjacent areas (Floyd 1974, Boucher 1995). The use of these 'agricultural' techniques is inappropriate in peri-urban areas where tunnel repair requires a low incidence of re-failure due to the potential for damage to infrastructure. Experience with the construction of earth dams using dispersive clays, demonstrates that repair and prevention of tunnel erosion in urban and peri-urban environments is best achieved using a combination of,

- Identification and avoidance of dispersive soils.
- Precise re-compaction.
- Chemical amelioration.
- Sand blocks and barriers.
- Topsoil, burial and revegetation.

4.2 IDENTIFICATION AND AVOIDANCE OF DISPERSIVE SOILS

The risk of tunnel erosion resulting from construction activities on dispersive soils can often be reduced or eliminated by identifying and avoiding areas containing dispersive soils. The presence and severity of dispersive soils can vary enormously over short distances (Figure 13). In many instances, large scale (ie 10 x 10 or 20 x 20 meter grid) soil survey and screening of soils for dispersion, (using the Emerson crumb test - section 3, Appendix I) can be used to site dwellings and infrastructure away from dispersive soils. Advice should be sought from a suitably qualified and experienced engineer or soil professional.

4.3 COMPACTION

Ritchie (1965) demonstrated that the degree of compaction within the dam wall was the single most important factor in reducing dam failure from piping (tunnel erosion). A high degree of compaction reduces soil permeability, restricting the movement of water and dispersed clay through the soil matrix, which decreases the severity of dispersion and restricts tunnel development (Vacher *et al.* 2004). However, dispersive soils can be difficult to compact as they lose strength rapidly at or above optimum moisture content, and thus may require greater compactive force than other soils (McDonald et *al.* 1981). Bell & Bryun (1997) and Bell and Maud (1994) suggest that dispersive clays must be compacted at a moisture content 1.5 -2% above the optimum moisture content in order to achieve suficent density to prevent piping (Elges 1985).

Construction of structures such as earth dams and footings for buildings with dispersive soils require geotechnical assessment and advice from a qualified and experienced engineer, in order to determine compaction measures such as the optimal moisture content, number of passes, and maximum thickness of compacted layers.

Normal earth moving machinery including bull-dozers, excavators and graders do not provide sufficient compactive force to reduce void spaces or achieve adequate compaction in dispersive soils. A sheepsfoot roller of appropriate weight is usually required to compact dispersive soils. By comparison a D6 dozer applies only 0.6 kg/cm^2 pressure compared to 9.3 kg/cm^2 for a sheepsfoot roller (Sorensen 1995).

Figure 13. The severity (or sodium content) and depth of dispersive subsoils can vary considerably over short distances. (a) At this site highly dispersive subsoils exist meters away from (b) non-dispersive soils.

4.4 CHEMICAL AMELIORATION

Initiation of tunnel erosion is predominantly a chemical process, so it makes sense to use chemical amelioration strategies when attempting to prevent or repair tunnel erosion in dispersive soils. Despite the widespread use of gypsum and lime to treat sodic soils in agriculture, the use of gypsum and lime to treat tunnel affected areas has been relatively rare (Boucher 1990).

Hydrated lime (calcium hydroxide) has been widely used to prevent piping in earth dams. Rates of application have varied depending on soils and degree of compaction used in construction. Laboratory testing usually indicates that only around 0.5 – 1.0% hydrated lime is required to prevent dispersion, however difficulties with application and mixing necessitate higher rates of application (Moore *et al.* 1985). Moore *et al.* (1985) cite examples of the use of hydrated lime to control piping in earth dams at rates between 0.35% (N.S.W. Australia) and 4% (New Mexico). Elgers (1985), and McElroy (1987) recommend no less than 2% hydrated lime (by weight of the total soil material) to prevent dispersion within dam embankments, while Bell and Maud (1994) suggest that 3% - 4% by mass of hydrated lime should be added to a depth of 0.3m on the upper face of embankments. In alkaline (pH >7.0) soils (most sodic subsoils in Tasmania are neutral or alkaline) the effectiveness of hydrated lime is reduced by the formation of insoluble calcium carbonate (Moore *et al.* 1985), such that gypsum is preferred to hydrated lime. It is important to note that agricultural lime (calcium carbonate) is not a suitable substitute for hydrated lime due to its low solubility (McElroy 1987). Also note that excessive applications of lime may raise soil pH above levels required to sustain vigorous plant growth.

Gypsum (calcium sulphate) is more effective than lime for the treatment of dispersive soils as it increases the electrolyte concentration in the soil solution as well as displacing sodium with calcium within the clay structure (Raine and Loch 2003). Gypsum is less commonly used than hydrated lime in dam construction and other works due to its lower solubility, and higher cost. Elges (1985) recommends that in construction, a minimum of 2% by mass of gypsum be used. Bell and Maud (1994) present a means of calculating the amount of gypsum required to displace excess sodium and bring ESP values within desired limits (normally < 5). Be aware that application of excessive amounts of gypsum may cause soil salinity to temporarily rise beyond the desired level for plant growth.

NOTE:

- Use of gypsum in Tasmania is covered under the Fertiliser Act 1993, which has established the allowable limit for cadmium and lead at 10 mg/kg and 5 mg/kg for mercury.
- Gypsum is usually imported into Tasmania from Victoria or South Australia, which have different standards for allowable heavy metal content.
- Purchasers of gypsum should check with suppliers to ensure that gypsum imported into Tasmania is compliant with current regulations.

Alum (aluminium sulphate) has been effectively used to prevent dam failure and protect embankments from erosion. Application rates are not well established. Limited data suggests mixtures of 0.6 – 1.0% (25% solution of aluminium sulphate) (Bell and Bruyn 1997, McElroy 1987) to 1.5% (Ouhadi, and Goodarzi 2006) of the total dry weight of soil may be appropriate. Alum is however highly acidic (pH 4-5), and thus alum treated soils will need to be capped with topsoil in order to establish vegetation (Ryker 1987). Soil testing is required to establish appropriate application rates for Tasmanian soils.

Long chain polyacrylamides have been shown to increase aggregate stability, reduce dispersion and maintain infiltration rates in dispersive soils (Levy *et al.* 1992, Raine and Loch 2003). However the effect is highly variable between various polyacrylamide products and the chemical and physical properties of the soil. The benefit of polyacrylamides is generally short due to their rapid degradation (Raine and Loch 2003). Further advice and laboratory testing should be conducted before using polyacrylamides to protect earth dams from piping failure.

Note that appropriate application rates for gypsum, hydrated lime, alum and polyacrylamides have not been established for dispersive soils in Tasmania. Extensive laboratory assessment of materials used for the construction of dams or embankments is required before locally relevant 'rules of thumb' can be established for the use of these products.

4.5 SAND BLOCKS AND SAND BARRIERS

Sand filters were first developed to prevent piping in earth dams. Sand filters prevent dam failure by trapping entrained sand and silt, blocking the exit of the tunnel and preventing further tunnel development (Sherard *et al.* 1977). Following the work of Sherard *et al.* (1977), Richley (1992 and 2000) developed the use of sand blocks to prevent tunnel erosion during installation of an optical fibre cable in highly dispersive soils near Campania, Tasmania. The sand blocks work slightly differently to the sand filters in that they allow the free water to rise to the surface through the sand. The use of sand blocks has recently been modified by Hardie *et al.*, (2007) to prevent re-initiation of tunnel erosion along an optical fibre cable near Dunalley. Modifications to the original technique developed by Richley (1992 and 2000) include (Figure 14 &15);

- Upslope curved extremities to prevent the structure from being by-passed.
- Geotextile on the downslope wall to prevent collapse or removal of sand following settlement or erosion.
- Application of gypsum (around 5% by weight) to ensure infiltrating water contains sufficiently electrolyte to prevent further dispersion.
- Earth mound upslope of the structure to prevent run-on entering the sand blocks.

Figure 15. (a) Installation of sandblock perpendicular to a service trench. Note securing of geotextile to the optical fibre cable to prevent water flowing past the sand block. (b) Sandblock before final topsoiling.

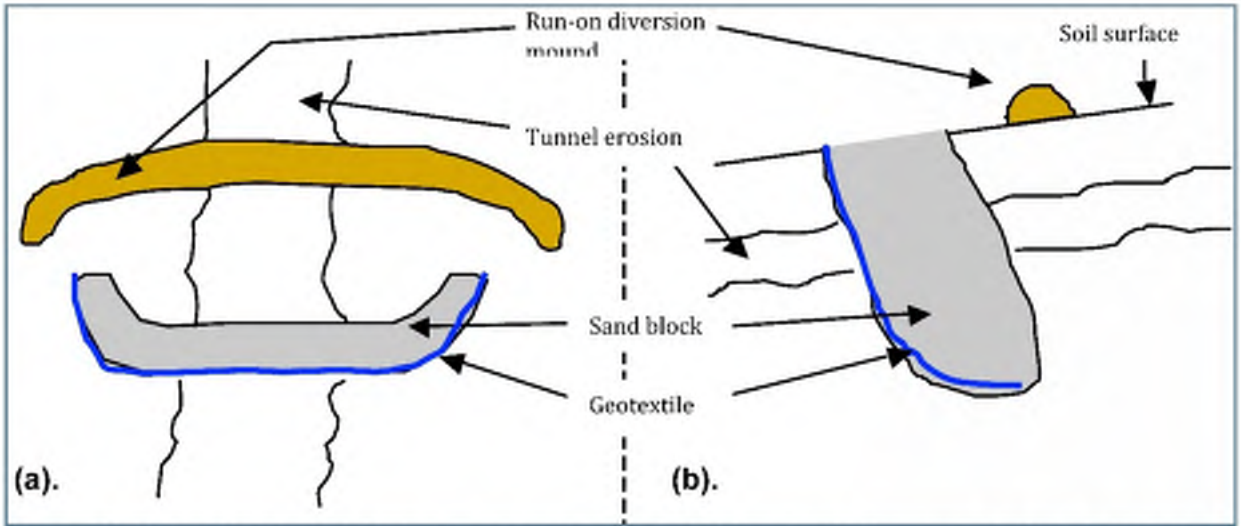


Figure 14. Modified sand block design. (a) plan view, (b) cross section view. The depth of the sand block is determined by the depth of dispersive soils or tunnel erosion. The span length of the structure is determined by the width of the tunnelling.

4.6 USE OF TOPSOIL / BURIAL AND REVEGETATION

Topsoil or burial of exposed dispersive soils reduces the likelihood of subsoil dispersion and initiation of tunnel erosion by;

- Providing a source of salt to increase the electrolyte content of infiltration water.
- Preventing desiccation and subsoil cracking.
- Promoting even infiltration.
- Providing a protective cover from raindrop impact.
- Providing a suitable medium for revegetation.

Topsoil minimises the interaction between water and dispersive clays by providing both a physical and chemical barrier.Topsoil also reduces soil desiccation and development of surface cracks (Sorensen 1995). It is suggested that exposed dispersive subsoils be covered with at least 150mm of non dispersive topsoil and sown with an appropriate mix of grass species. In some cases it will be necessary to protect the topsoil from erosion with 'jute' cloth or similar product.

The suitability of planting trees in tunnel affected areas is influenced by the amount of annual rainfall and frequency of soil cracking resulting from desiccation. Boucher (1995) recommends the preferred option for revegetation of reclaimed tunnel erosion is a widely spaced tree cover in association with a combination of perennial and annual pastures, rather than a dense stand of trees or pasture alone. Experience in Tasmania suggests that in low rainfall areas, or areas in which existing trees or shrubs cause soil drying and cracking, the preferred option for revegetating tunnel affected land is a dense healthy pasture. In high rainfall areas, dense plantings of trees have been successfully used to repair or stabilise tunnel erosion for example Coklough (1973) successfully used Pinus radiata to stabilise tunnel-gully affected land in a moderate rainfall area near Tea Tree, Tasmania.

5.0 ACTIVITIES THAT INCREASE THE RISK OF EROSION ON DISPERSIVE SOILS

ACTIVITIES THAT INCREASE RISK OF INITIATING TUNNEL EROSION, INCLUDE;

- Removal of topsoil.
- Soil excavation or expose of subsoils to rainfall.
- Supply of services via trenches.
- Construction of roads and culverts in dispersive subsoils.
- Installation of sewage and grey water disposal systems in dispersive subsoils.
- Dam construction from dispersive soils.

OPTIONS FOR REDUCING THE RISK OF TUNNEL EROSION DURING CONSTRUCTION AND DEVELOPMENT WORKS ON DISPERSIVE SOILS INCLUDE,

- Where possible do not remove or disturb topsoil or vegetation.
- Ensure that dispersive subsoils are covered with an adequate layer of topsoil.
- Avoid construction techniques that result in exposure of dispersive subsoils.
- Use alternatives to 'cut and fill' construction such as pier and post foundations.
- Where possible avoid the use of trenches for the supply of services ie water & power.
- If trenches must be used, ensure that repacked spoil is properly compacted, treated with gypsum and topsoiled.
- Consider alternative trenching techniques that do not expose dispersive subsoils.
- Ensure runoff from hard areas is not discharged into areas with dispersive soils.
- If necessary create safe areas for discharge of runoff.
- If possible do not excavate culverts and drains in dispersive soils.
- Consider carting non-sodic soil to create appropriate road surfaces and drains without the need for excavation.
- Ensure that culverts and drains excavated into dispersive subsoils are capped with non-dispersive clays mixed with gypsum, topsoiled and vegetated.
- Avoid use of septic trench waste disposal systems; consult your local council about the use of alternative above ground treatment systems.
- Where possible do not construct dams with dispersive soils, or in areas containing dispersive soils.
- If dams are to be constructed from dispersive clays, ensure you consult an experienced, qualified civil engineer to conduct soil tests before commencing construction.
- Construction of dams from dispersive soils is usually possible, using one or a combination of: precise compaction, chemical amelioration, capping with non-dispersive clays, sand filters and adequate topsoiling.

With all forms of construction on dispersive soils, ensure you obtain advice and support from a suitably experienced and qualified engineer or soil professional before commencing work.

Appendix G Foundation Maintenance & Footing Performance (CSIRO)

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

BTF 18
replaces
Information
Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction
There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion
All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation
This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil
All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure
This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.
Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/ Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

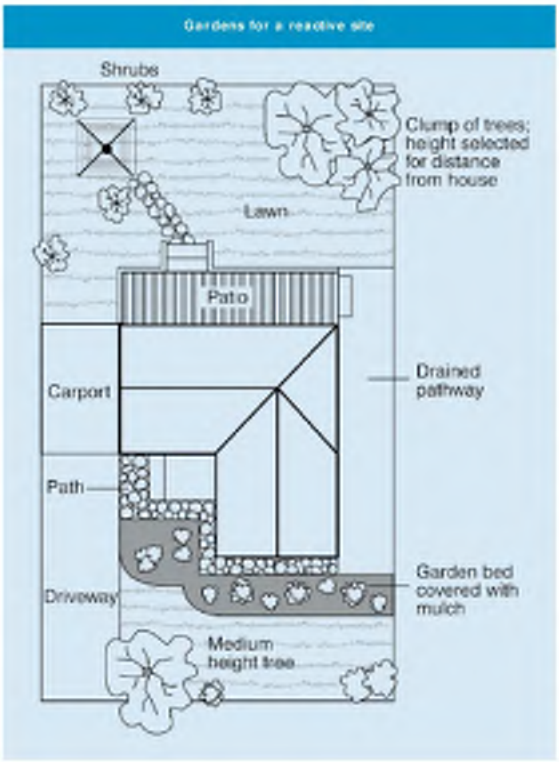
It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

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

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation
In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden
The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees
Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs
State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation
Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lower FAIB, MIAMA, Partner, Construction Diagnosis.

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CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form 55

To: Prime Design *Owner /Agent*

Shop 9, 105-111 Main Road *Address*

Moonah TAS 7009 *Suburb/postcod*

Qualified person details:

Qualified person: Kris Taylor

Address: 445 Macquarie Street Phone No: 0476 595 889

Hobart 7004 Fax No:

Licence No: NA Email address: office@envirotechtas.com.au

Qualifications and Insurance details: Bachelor of Science with honours in geology, 25 years environmental geology experience, PI Insurance to $2,000,000 in environmental geology

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

Speciality area of expertise: Site and soil evaluation and land application system design*

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

Details of work

Address: Toronto Drive Lot No: 3

Seven Mile Beach 7170 Certificate of title No: 188363/3

The assessable item related to this certificate: Site and soil evaluation for wastewater management

(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: On-site wastewater management

(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 items, 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:

Enviro-Tech Consultants Pty. Ltd. 2025. Site Soil Evaluation for Foundations and Wastewater Report for a Proposed Dwelling, 3Lot 3 Toronto Drive - Seven Mile Beac. Unpublished report for Prime Design by Enviro-Tech Consultants Pty. Ltd., 14/07/2025.

Site 'On-site wastewater design report' (CKEMP Design)

References:

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

- An assessment of Site and soil conditions for on-site wastewater management and design

Scope and/or Limitations

*Site and soil evaluation by Enviro-Tech Consultants Pty. Ltd.
Land application system design is assessed in a separate 'On-site wastewater report' by a licensed building service designer:
- Chris Fysh Licensed Building Services Designer - Civil / Hydraulic (License No: 479819732)

I certify the matters described in this certificate.

Qualified person:

Signed:

Certificate No:

Date: 14/07/2025

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form 55

To: Prime Design *Owner /Agent*

Shop 9, 105-111 Main Road *Address*

Moonah TAS 7009 *Suburb/postcode*

Qualified person details:

Qualified person: Kris Taylor

Address: 445 Macquarie Street

Hobart 7004

Phone No: 0476 595 889

Fax No:

Licence No: NA

Email address: office@envirotechtas.com.au

Qualifications and Insurance details: Bachelor of Science with Honours in Geology. Lloyd's Underwriting $2,000,000: Site classification. Soil & rock testing. Soil & rock mechanics.

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

Speciality area of expertise: Foundation classification in accordance with AS 2870*

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

Details of work: Foundation Classification

Address: Toronto Drive

Lot No: 3

Seven Mile Beach 7170

Certificate of title No: 188363/3

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 - AS 2870 and Stability Report in accordance with Foundation and Footings Society (Tasmania) Code of Practice.*

(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 items, 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:	*Enviro-Tech Consultants Pty. Ltd. 2025. Site Soil Evaluation for Foundations and Wastewater Report for a Proposed Dwelling, Lot 3 Toronto Drive - Seven Mile Beach. Unpublished report for Prime Design by Enviro-Tech Consultants Pty. Ltd.,14/07/2025.
Relevant calculations:	
References:	AS2870-2011 Residential Slabs and Footings AS1726-2017 Geotechnical site investigations AS1289-2014 Methods of testing soils for engineering purposes CSIRO Building technology file – 18.

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

Foundation 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, placement of fill, uncontrolled earthworks, drainage condition changes, variations in site maintenance other than indicated in supplied plans.

*This report contains soil classification information prepared in accordance with AS2870 as well as AS2870 extracts which may be used as general guidance for plumbing design. The hydraulic designer is to use their own judgment in the application of this information and this report must be read in in conjunction with hydraulic plans prepared for the proposed development.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:			14/07/2025

ON-SITE WASTEWATER REPORT

T.P Coy PTY LTD

Prime Design

Lot 3 Toronto Drive, Seven Mile Beach

Fysh Design Reference: ***CKD-HYD-311***

Date:03/09/2025

For Approval Rev 0

TABLE OF CONTENTS

1. INTRODUCTION AND SCOPE OF ENGAGEMENT

Fysh Design has been engaged to provide a design for a new wastewater system for the proposed 4-bedroom dwelling at Lot 3 Toronto Drive Seven Mile Beach

The proposed dwelling will have **4 bedrooms.**

The following report outlines the methodology and assumptions used for the proposed AWTS secondary treatment system.

2. WASTEWATER DESIGN

Site Conditions

Client: T P Coy / Prime Design

Address: Lot 3 Toronto Drive, Seven Mile Beach

Site Area – Approx 1.094Ha

Building Type – Proposed residential dwelling

Drainage lines & Water Courses – Free drainage with overland flow run off directly from the southeast, no groundwater encountered.

Vegetation – Mixed native grass species, native trees, bushland

Rainfall in the previous 7 days – 67.8mm (Hobart Airport Weather Station)

Average slope approx. Moderate slope of 7% (4 Deg) to the Northwest

Domestic water supply – TasWater Town Supply

Background Information

Mapped Geology – Mineral Resources Tasmania 1:250,000

Rock Type – Cretaceous – Quaternary Gravel Sand Silt Mud

Soil Depth – 1.3m refusal found. (sandstone bedrock)

Landslide Zoning None

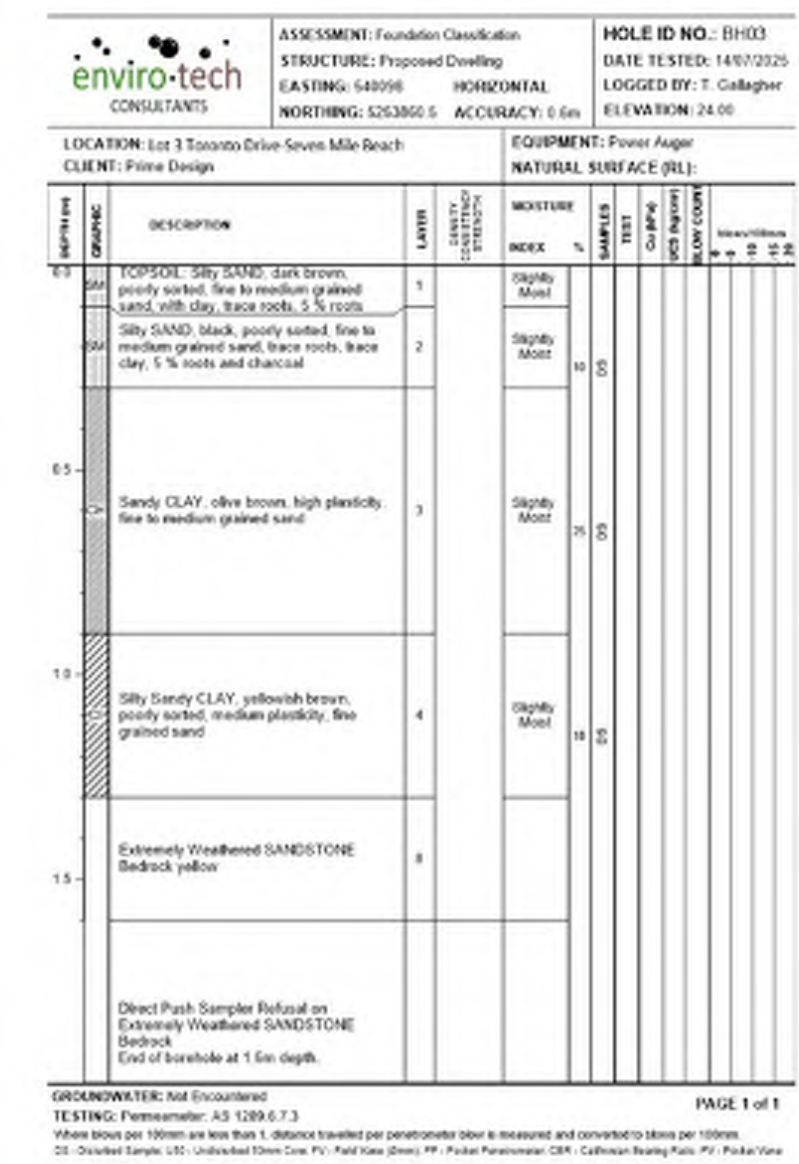
Flood Prone Zoning - None

Local Rainfall Data – Annual rainfall approx. 495mm (Hobart Weather Station)

Local Services – Onsite wastewater disposal, TasWater Water supply

A site and soil report were conducted by Enviro-Tech Soil Consultants on the 14th of July (see attached with compiled documents) Figure 1 below displays the soil profile and properties analysed by Enviro-Tech Soil Consultants.

Three auger holes were completed to identify the profile and variation in soil materials on site. Test Hole BH03 was drilled within the approximate location where the existing wastewater irrigation line system is, in accordance with AS1547.2012 (refer to figure 04)



enviro·tech
CONSULTANTS

ASSESSMENT: Foundation Classification
STRUCTURE: Proposed Dwelling
EASTING: 640098 HORIZONTAL
NORTHING: 5263860.5 ACCURACY: 0.6m

HOLE ID NO.: BH03
DATE TESTED: 14/07/2025
LOGGED BY: T. Gallagher
ELEVATION: 24.00

LOCATION: Lot 3 Toronto Drive Seven Mile Beach
CLIENT: Prime Design
EQUIPMENT: Power Auger
NATURAL SURFACE (RL):

DEPTH (m)	GRAPHIC	DESCRIPTION	LAYER	MOISTURE INDEX %	SAMPLES	TEST
0.0	SM	TOPSOIL: Silty SAND, dark brown, poorly sorted, fine to medium grained sand, with clay, trace roots, 5 % roots	1	Slightly Moist		
	SM	Silty SAND, black, poorly sorted, fine to medium grained sand, trace roots, trace clay, 5 % roots and charcoal	2	Slightly Moist	10	DS
0.5	CH	Sandy CLAY, olive brown, high plasticity, fine to medium grained sand	3	Slightly Moist	25	DS
1.0	CH	Silty Sandy CLAY, yellowish brown, poorly sorted, medium plasticity, fine grained sand	4	Slightly Moist	10	DS
1.5		Extremely Weathered SANDSTONE Bedrock yellow	5			
		Direct Push Sampler Refusal on Extremely Weathered SANDSTONE Bedrock End of borehole at 1.6m depth.				

GROUNDWATER: Not Encountered
TESTING: Permeameter: AS 1289.6.7.3
PAGE 1 of 1

Figure 1, Bore Hole 03 Soil Profile data

Figure 2 – Bore Hole 03 Soil Samples

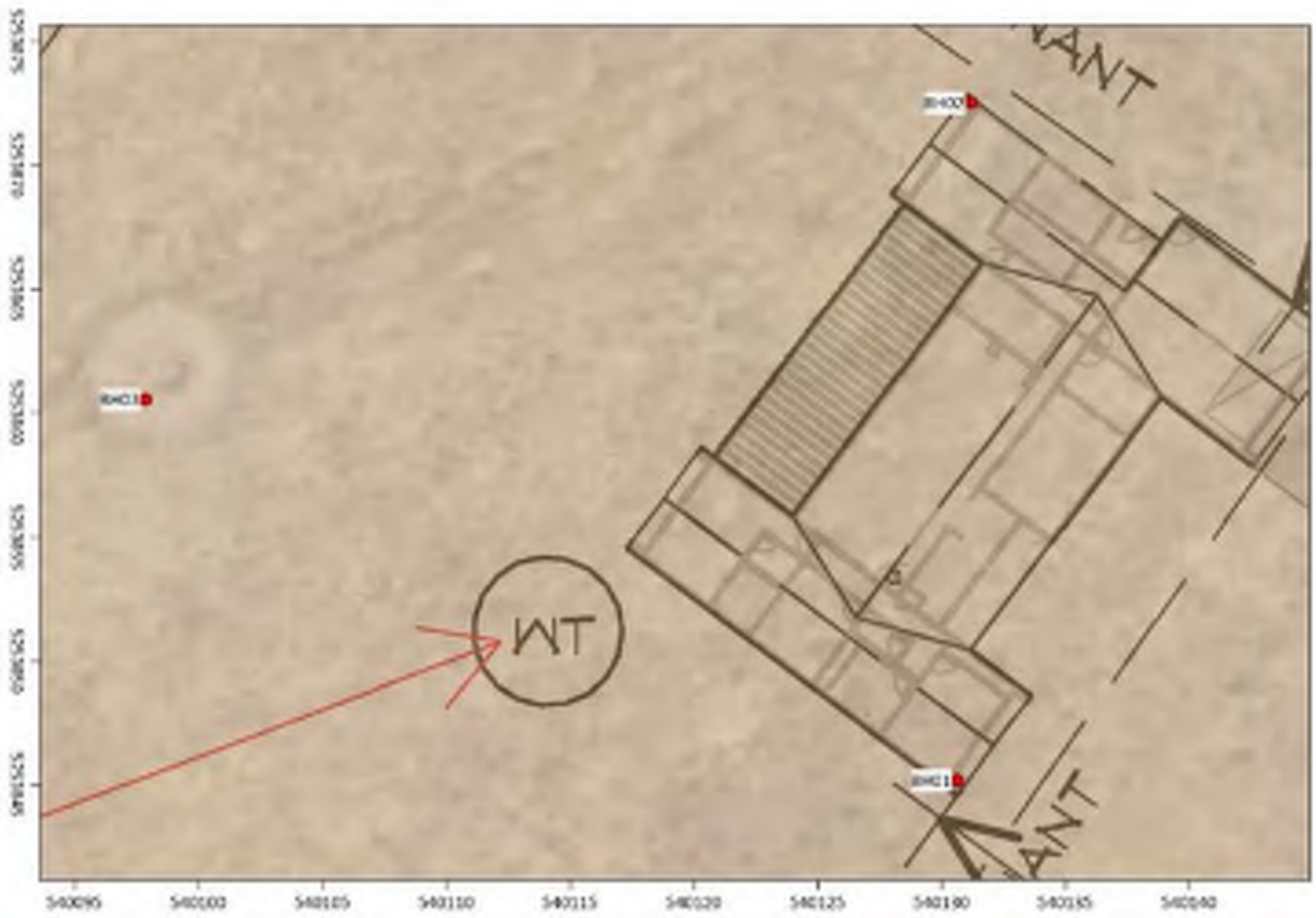


Figure 3 – Bore Hole Test Location

Wastewater Loading Certificate for system design (As per Clause 7.4.2(d) of AS1547/2012) (Proposed)

Proposed System Capacity – 6 people @ 150 L/Person/Day **(As per Table 1 of Tasmanian directors' determination for wastewater, for a 4-bedroom dwelling**

Summary of Design Criteria (Proposed) – DIR *3.0/m2/day (Secondary Treatment DIR Rating)*

Q = Design Flow = 900L/Day

Q/ (DIRxLine) separation (1m)

900 / (3.0x1.0) = 300m Long (Minimum rounded required)

This calculation is based on the top 250mm layer of soil tested is Sand and topsoil with Clays **(Category 6)**

Water Supply – TasWater Supply

Reserve area use - (unused backyard area)

Consequences of changes in loading capacity – A proposed Taylex ABS 1500 Poly or Concrete system (or approved equivalent) the Taylex ABS 1500 Poly or Concrete system Secondary treatment system has an additional peak load capacity of 600L per day with demands only requiring 900L per day, with an overall capacity of 1500L per day. Irrigation area has some redundancy and has been sized conservatively with slope etc.

Consequences of overloading the system – A proposed Taylex ABS 1500 Poly or Concrete system (or approved equivalent) the Taylex ABS 1500 Poly or Concrete system Secondary treatment system has an additional peak load capacity of 600L per day with demands only requiring 900L per day, with an overall capacity of 1500L per day. Irrigation area has some redundancy and has been sized conservatively with slope etc.

Consequences of underloading the system – No odour should occur due to 2 stage solid break down of the proposed system utilizing secondary treatment, so long as the proposed system is maintained by qualified contractor on a quarterly basis.

Consequences poor maintenance or attention – Refer to maintenance section of report.

Other Design considerations

- Use water saving fixtures.
- Remove excess fats and grease from kitchen dishes.
- Ensure no solids are put into the system.
- Food disposal system not to be used.
- Do not dispose of sanitary nappies or napkins to the system.
- Use biodegradable detergents.
- Do not dispose of powerful chemicals, bleaches, or whiteners etc down drain system.
- Spread load of washing machine and dishwasher routines throughout the day

Wastewater Classification and Recommendations

According to AS1547.2012 for on-site wastewater management the natural site soil in the property is classified as Clays (**Category 6).**

Table J1 of AS1547.2012 indicates based on 4 bedroom in the main dwelling, a conservative population of up to 6 people loading has been adopted.

Table J1 of AS1547.2012 indicates based on 4 bedroom in the proposed dwelling a conservative population of up to 6 people loading has been adopted. It is proposed all outflow from the proposed building is connected via a DN100 Gravity line to a proposed Taylex ABS 1500L AWTS system (or approved equivalent) then outflows via pumped discharged to adequately sized sub surface irrigation system

An upslope cut off drain table drain is recommended upslope for the irrigation area for peak rainfall events, to prevent water egress into the irrigation area (as per detail)

A DIR of 3.0/mm/day, **Category 6** rating has been applied to this rating due utilizing existing 250mm of natural topsoil layer, and a 250mm thick layer of imported well-structured sandy loam **or mulch** on top of proposed poly irrigation area. For calculations, please refer to the trench summary reports.

Please see design / construction details at the end of the report for further details on the sub surface area

Wastewater Site Layout

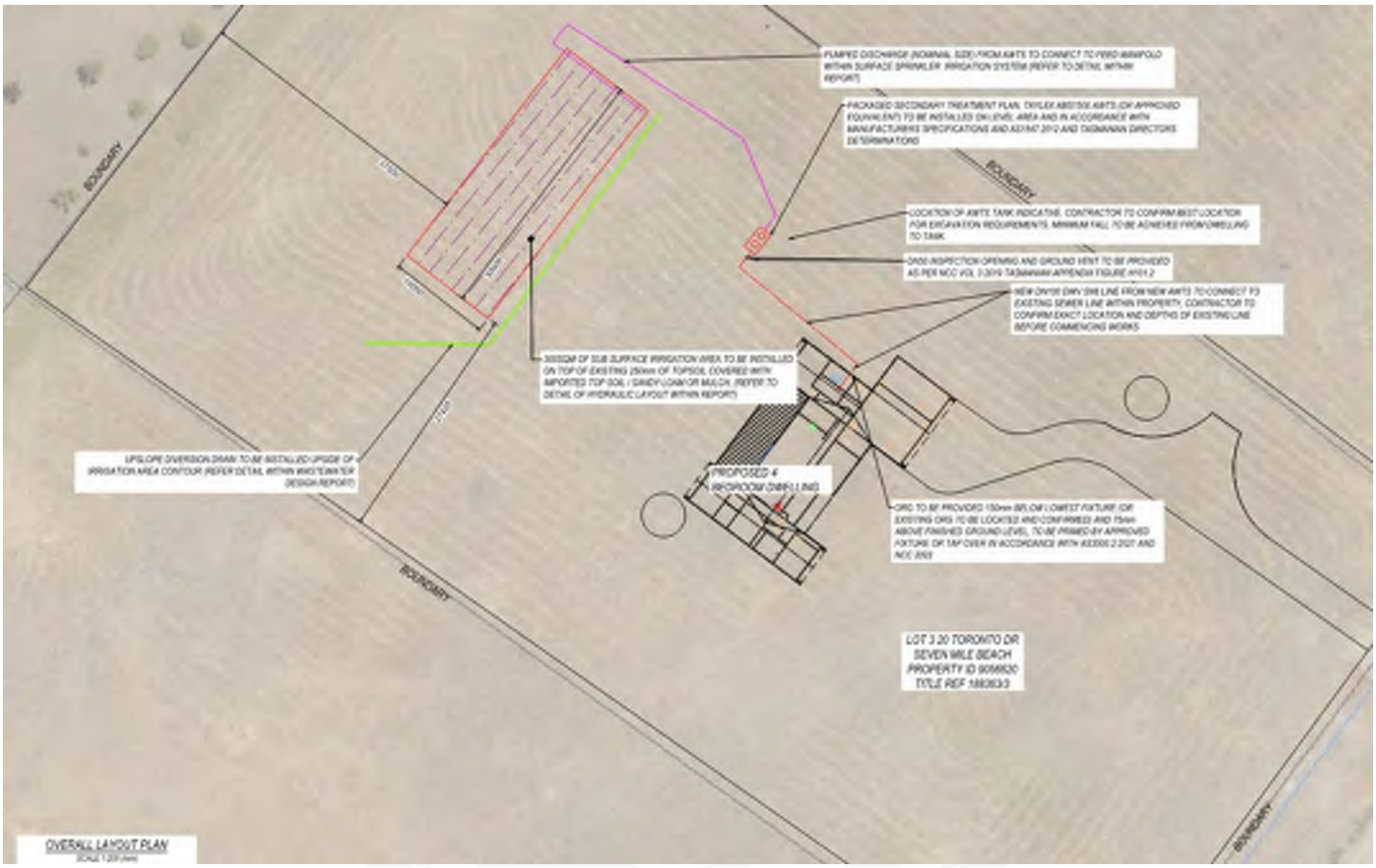


Figure 5: RECOMMENDED SUB SURFACE IRRIGATION LAYOUT

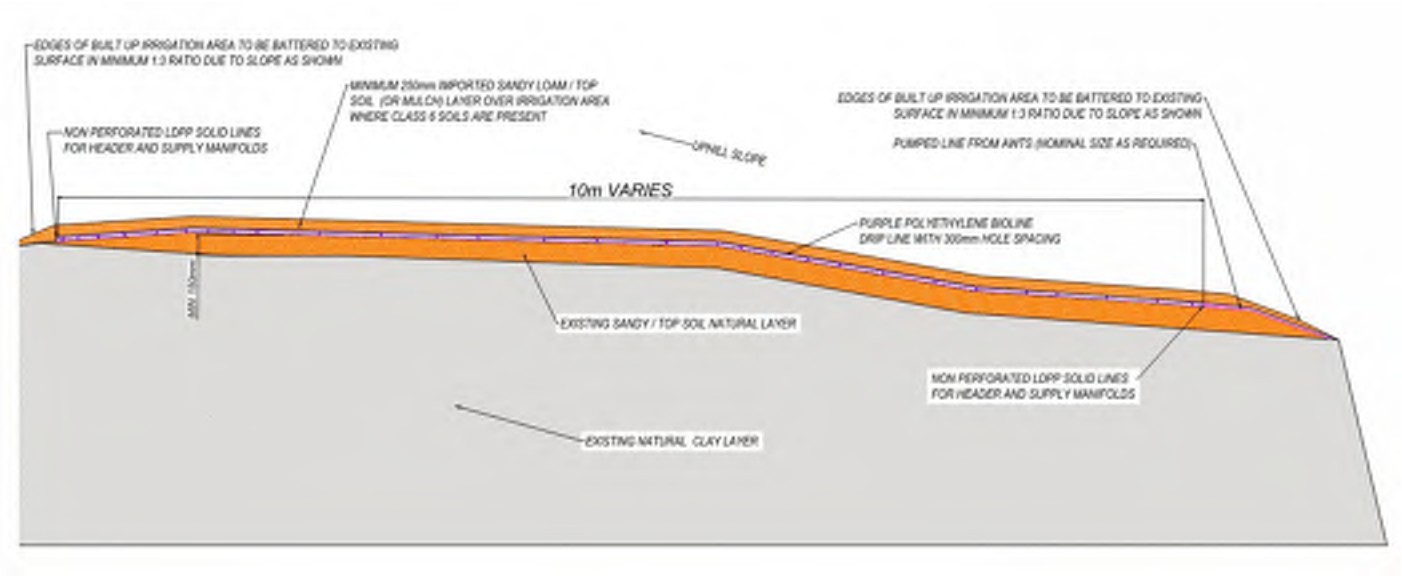


Figure 6: RECCOMENDED IRRIGATION CROSS SECTION DETAIL

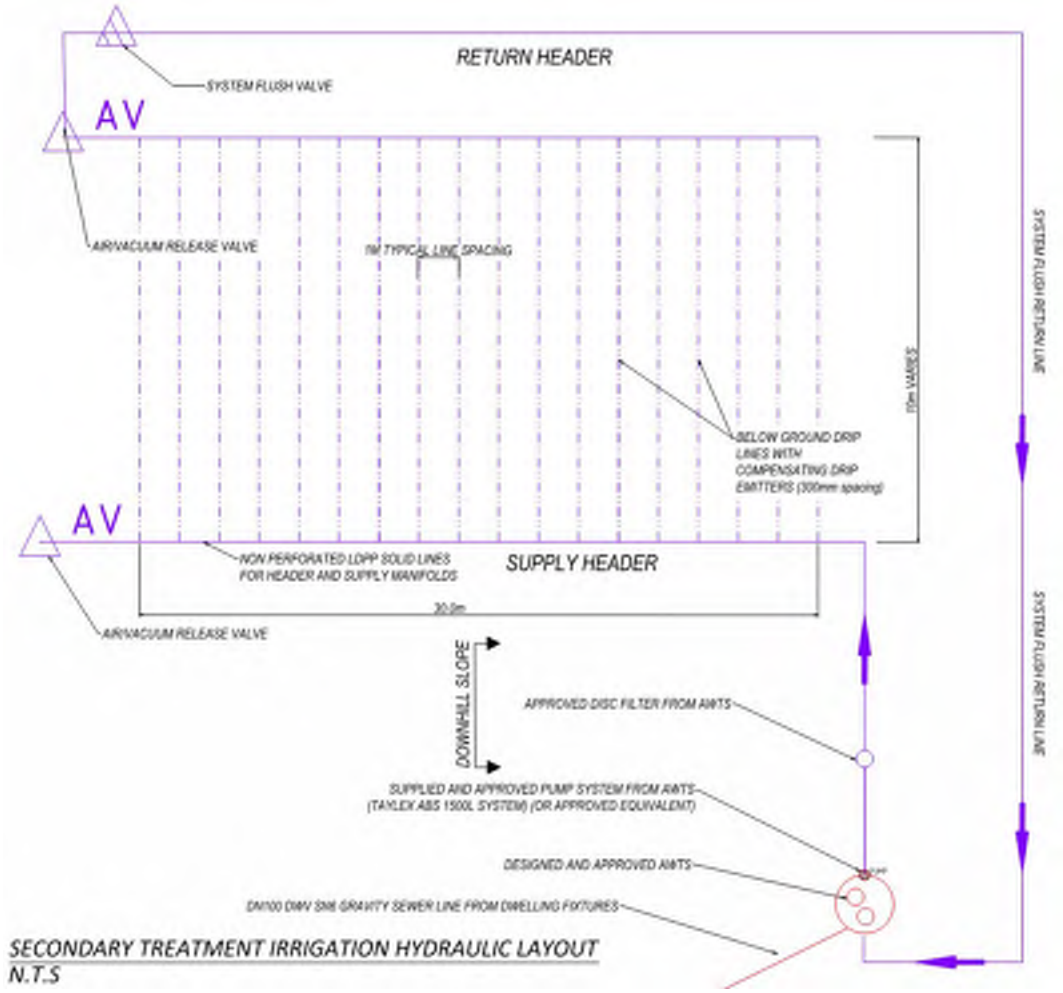


Figure 7: PROPOSED WASTEWATER IRRIGATION LAYOUT

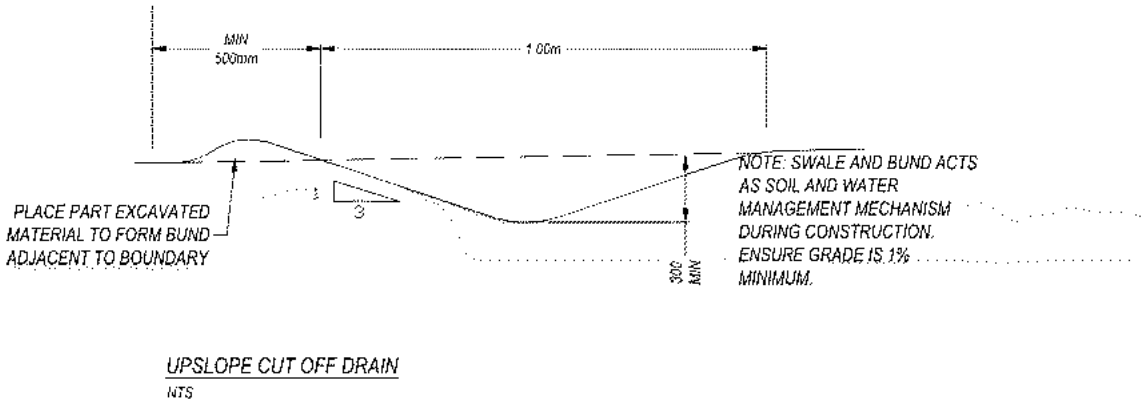


Figure 8: PROPOSED UPSLOPE CUT OFF DRAIN

- Treatment Sub surface irrigation area dimensions of up to 1 x 30m Long x 10.0m wide x 0.3m deep (300m2 Total)
- Sub surface Irrigation area to be excavated to a max grade of 10% across the entire footprint, battered at min 1 in 4 to existing surface where required.
- Base of irrigation area to be excavated level and spearing and compaction MUST be avoided.
- All works onsite to comply with AS3500.2, NCC2022, AS1547.2012 and all council regulations.

Tasmanian directors' determination guideline requirements for on-site wastewater management – building extensions, alterations, or outbuildings.

- A2 acceptable solution has been satisfied due to a new treatment system within the existing site (New Dwelling)

Tasmanian directors' determination guideline requirements for Wastewater (standards for wastewater land application areas)

- A1 acceptable solution has been satisfied as no downstream building present
- A2 acceptable solution has been satisfied with over **465m** distance to a downslope waterway. **Satisfied**
  A3 acceptable solution has been satisfied with over **37m** distance to a downslope boundary. **As per A3 (iii) directors' determination for wastewater 1.5m plus 1.0m for every degree of gradient (4 degree) = 1.5 + 4 x 1 = 5.5m – Satisfied with 37m**
- A4 acceptable solution has been as no water bore detected on site. (Ref Enviro-tech Report)
- A5 acceptable solution has been satisfied as site is free draining and no ponding groundwater on site due to soil properties.
- A6 acceptable solution has been satisfied as due to secondary treatment sub surface irrigation achieving **500mm** distance from bedrock with sub surface irrigation

3. TRENCH 3 LOADING

Fysh Design

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report
Wastewater Design

Assessment for	Prime Design	Assess. Date	15-Aug-25
	Lot 3 Toronto Drive Seven Mile Beach	Ref. No.	CKD-HYD-311
Assessed site(s)	Lot 3 Toronto Drive Seven Mile Beach	Site(s) inspected	15-Aug-25
Local authority	Clarence City Council	Assessed by	Chris Fysh

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

Wastewater Characteristics

Wastewater volume (L/day) used for this assessment = 950 (using the No. of bedrooms in a dwelling' method)

Septic tank wastewater volume (L/day) = 300

Sullage volume (L/day) = 650

Total nitrogen (kg/year) generated by wastewater = 3.3

Total phosphorus (kg/year) generated by wastewater = 1.0

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)	40	35	38	40	37	34	41	47	40	47	44	52
Adopted rainfall (R, mm)	40	35	38	40	37	34	41	47	40	47	44	52
Retained rain (Rr, mm)	36	32	32	36	33	31	37	42	36	42	40	47
Max. daily temp. (deg. C)	23	22	21	18	15	13	13	13	16	17	19	21
Evapotrans (ET, mm)	153	135	124	66	32	16	23	36	55	91	99	133
Evapotr. less rain (mm)	**117**	**104**	**92**	**30**	**-1**	**-14**	**-14**	**-6**	**19**	**49**	**59**	**86**

Annual evapotranspiration less retained rain (mm) = 520

Soil characterisitics

Texture = Clay Loams Category = 6 Thick. (m) = 1.3

Adopted permeability (m/day) = 0.5 Adopted LTAR (L/sq m/day) = 1 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:	None
The preferred type of above-ground secondary treatment:	Trickle irrigation
Site modifications or specific designs:	Not needed

Suggested dimensions for on-site secondary treatment system

Total length (m) =	30
Width (m) =	10
Depth (m) =	0.25
Total disposal area (sq m) required =	300
comprising a Primary Area (sq m) of:	300
and a Secondary (backup) Area (sq m) of:	

Sufficient area is available on site

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

Comments

LTAR is based on secondary treatment effluent (3.0DIR reduced) sub surface Irrigatoin rate Based on a 4 bedrooms with a conservative rate of 6 people at 150 L per day on TasWater supply (Category 5 soil)

Figure 8: WASTEWATER ASSESSMENT REPORT

Fysh Design

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report

Wastewater Design

Assessment for	Prime Design	Assess. Date	15-Aug-25
	Lot 3 Toronto Drive Seven Mile Beach	Ref. No.	CKD-HYD-311
Assessed site(s)	Lot 3 Toronto Drive Seven Mile Beach	Site(s) inspected	15-Aug-25
Local authority	Clarence City Council	Assessed by	Chris Fysh

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
A	Expected design area	sq m	300		High		
	Density of disposal systems	/sq km	1		Very low		
	Slope angle	degrees	4		Very low		
	Slope form	Straight simple			Low		
	Surface drainage	Good			Very low		
	Flood potential	Site floods <1:100 yrs			Very low		
	Heavy rain events	Infrequent			Moderate		
	Aspect (Southern hemi.)	Faces N			Very low		
	Frequency of strong winds	Infrequent			Moderate		
A	Wastewater volume	L/day	900		High		
	SAR of septic tank effluent		0.8		Very low		
	SAR of sullage		1.9		Low		
	Soil thickness	m	1.3		Very low		
	Depth to bedrock	m	1.3		Moderate		
A	Surface rock outcrop	%	5		High		
	Cobbles in soil	%	5		Low		
	Soil pH		4.5		Moderate		
	Soil bulk density	gm/cub. cm	1.2		Very low		
A	Soil dispersion	Emerson No.	3		High		
	Adopted permeability	m/day	0.5		Very low		
	Long Term Accept. Rate	L/day/sq m	1				

Figure 9: SITE CAPABILITY REPORT

Fysh Design

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report

Wastewater Design

Assessment for	Prime Design	Assess. Date	15-Aug-25
	Lot 3 Toronto Drive Seven Mile Beach	Ref. No.	CKD-HYD-311
Assessed site(s)	Lot 3 Toronto Drive Seven Mile Beach	Site(s) inspected	15-Aug-25
Local authority	Clarence City Council	Assessed by	Chris Fysh

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
	Cation exchange capacity	mmol/100g	100		Low		
	Phos. adsorp. capacity	kg/cub m	1		Moderate		
	Annual rainfall excess	mm	-520		Very low		
	Min. depth to water table	m	15		Very low		
	Annual nutrient load	kg	4.3		Very low		
	G'water environ. value	Indust non-sensit			Very low		
	Min. separation dist. required	m	1		Very low		
	Risk to adjacent bores						Factor not assessed
	Surf. water env. value	Indust non-sensit			Very low		
	Dist. to nearest surface water	m	700		Very low		
	Dist. to nearest other feature	m	40		Moderate		
	Risk of slope instability	Very low			Very low		
	Distance to landslip	m	1000		Very low		

Figure 10: ENVIROMENTAL SENSITIVITY REPORT

4. MAINTENANCE AND MONITORING

- 4.1 Each installation must be serviced and monitored at not less than 3 monthly intervals in accordance with the conditions of accreditation, the conditions of permit / maintenance specified in a Schedule of Maintenance and manufacturer's requirements.
- Notes:
- (1) Only a licensed plumber and or his or her qualified technician can carry out the maintenance and required monitoring of the system other than electrical work unless licensed to do so.
- (2) The licensed plumber and his or her technician may need to complete training by the supplier before carrying out any maintenance on the system. The licensed plumber and their technician must comply with the applicable Directors Determination with regard to the training, reporting requirements and qualifications required to carry out servicing on the STS.
- (3) The maintenance and monitoring intervals may be combined provided the monitoring frequency remains at 3-month intervals.
- 4.2 The owner of the system must enter into and maintain a maintenance contract with a suitable licenced plumbing contractor.
- 4.3 The owner must notify the council that a maintenance contract is in place for the maintenance of the STS.
- 4.4 The system must be operated and maintained to ensure it performs continuously and without any intervention between inspections carried out by the plumber.
- 4.5 A service report is to be prepared by the plumber who carried out the work detailing the inspection of the installation and the results of all servicing tests and conditions at the completion of all scheduled or unscheduled services or inspections.
- 4.6 The service report is to be accompanied by a signed document certifying that the system is operating and performing adequately.
- 4.7 A copy of the service report and certifying document is to be provided to the occupant and council. Each service report is to contain a statement reminding the user about items and products that must not be placed in the system.
- 4.8 Each service must include monitoring the operation of the system and associated land application system.
- 4.9 Maintenance must be carried out on all mechanical, electrical and functioning components of the system including the associated land application system as appropriate.
- 4.10 The monitoring, servicing and reporting of the installation must include but not be restricted to the following matters, as appropriate:
- 4.10.1 Reporting on weather conditions, ambient temperature, effluent temperature
- 4.10.2 Odour
- 4.10.3 Check and test pump
- 4.10.4 Check and test air blower, fan or air venturi and clean/replace air filters
- 4.10.5 Check and test alarm system
- 4.10.6 Check slime growth on membranes and report the on condition of membranes
- 4.10.7 Check and report operation of sludge return, sludge level and de-sludging
- 4.10.8 Check and record water meter reading (if fitted)
- 4.10.9 Check and record operation of irrigation area, irrigation fittings Department of Justice – Certificate of Accreditation Doc/20/66067 Date of Issue: 14/08/20 Director of Building Control Page 13 of 20 Delegate of Minister for Building and Construction

4.10.10 Check and clean/replace irrigation filters.

4.10.11 Check and report on water quality (testing for pH, Turbidity, EC and dissolved oxygen)
4.10.12 Check, and replenish chlorine disinfection system.

4.10.13 Cleaning of the following items at above the waterline – I. clarifier II. pipework III. valves IV. walls of chambers.

Maintenance requirements for wastewater tanks

Visual inspection is to be performed annually, and pumped out regularly, once scum and sludge occupy two thirds of the tank volume and reduces settling volume below 24 hours retention, at no less than 2.5 - 3-year intervals.
Any visible wet spots or uneven grass colour can show signs of pipe blockage, blocked or damage irrigation lines shall be replaced if required.

5. CONCLUSION

This report has demonstrated that the proposed development at Lot 3 Toronto Drive Seven Mile Beach, complies with the onsite wastewater quality conditions of Clarence City Council plumbing and environmental requirements.

Please contact cfysh@fyshdesign.com.au if you require any additional information.

Yours sincerely

Chris Fysh

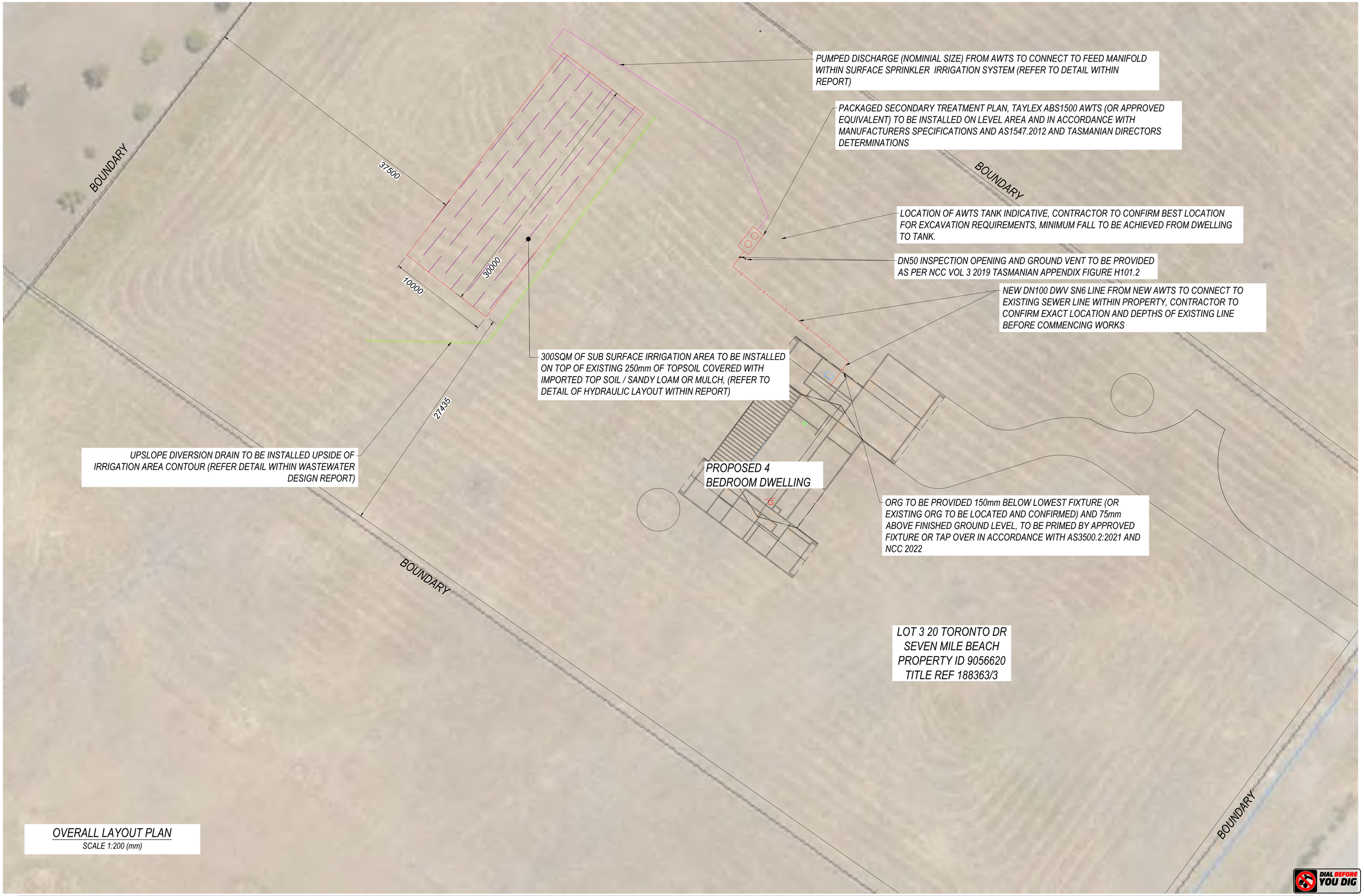
Director

Fysh Design

Building Services Designer Licence: 479819732

Mob: 0414 149 394

Email: cfysh@fyshdesign.com.au



OVERALL LAYOUT PLAN

SCALE 1:200 (mm)

REV	DESCRIPTION	DATE
0	FOR BUILDING APPROVAL CF	15/08/2025

CKEMP DESIGN
CIVIL HYDRAULIC

FYSH DESIGN
UNIT 4, 160 BUNGANA WAY
CAMBRIDGE TAS

PH: 0414 149 394

ACCREDITATION: BSD LICENCE NO. 47981973

NORTH

PROPOSED NEW WASTEWATER SYSTEM

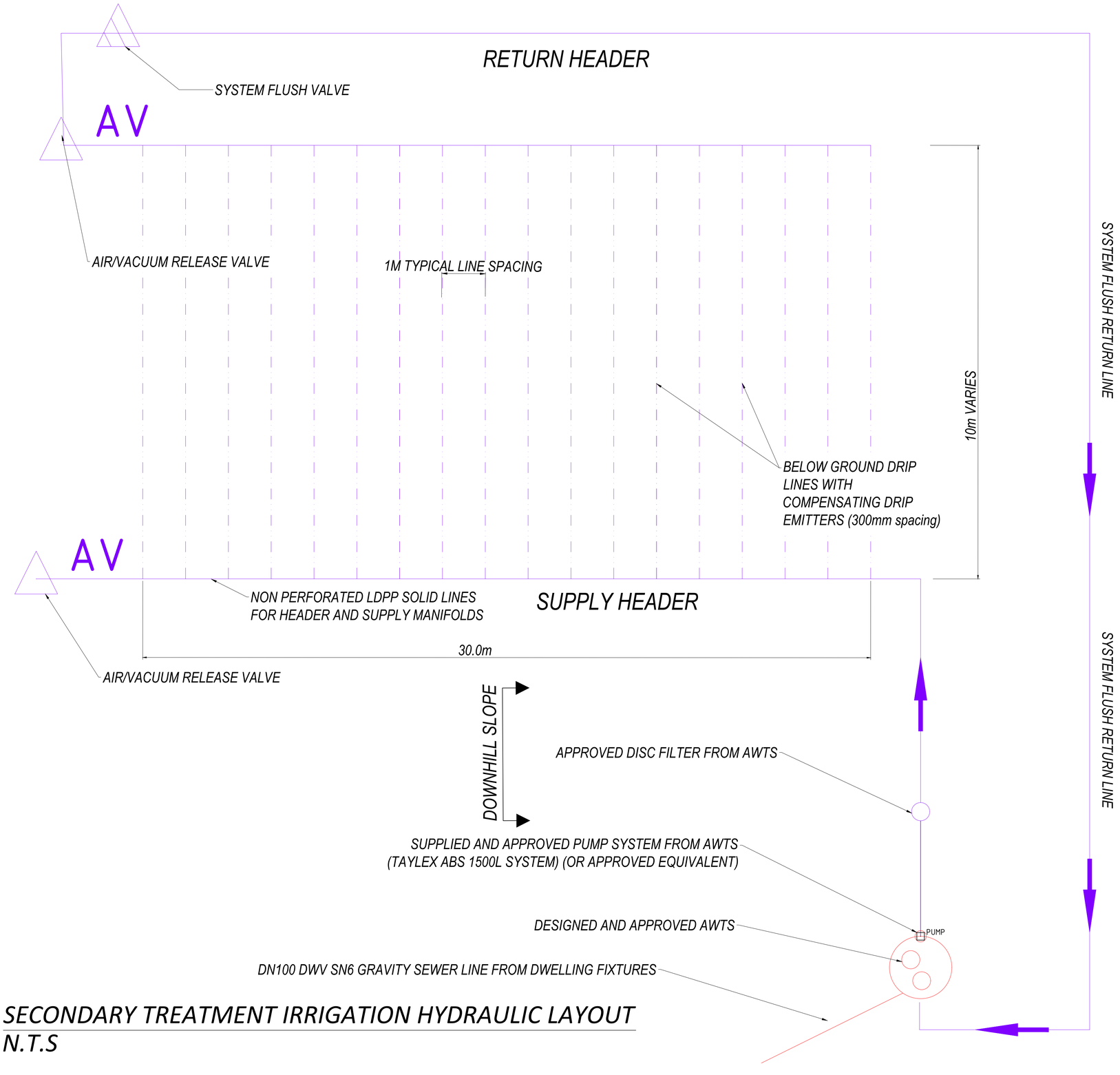
CLIENT: PRIME DESIGN
LOT 3 TORONTO DRIVE, SEVEN MILE BEACH

DRAWING TITLE
WASTEWATER LAYOUT PLAN

SCALE 1:100

DESIGNED	DRAWN	SCALE
CF	CF	AS NOTED
PROJECT	SHEET NO.	REVISION
CKD-HYD-311	H01	0

DIAL BEFORE YOU DIG



SECONDARY TREATMENT IRRIGATION HYDRAULIC LAYOUT
N.T.S

DIAL BEFORE YOU DIG

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
0	FOR BUILDING APPROVAL CF	15/08/2025			

FYSH DESIGN
UNIT 4, 160 BUNGANA WAY
CAMBRIDGE TAS, 7170
PH: 0414 149 394
ACCREDITATION: BSD LICENCE NO. 47981973

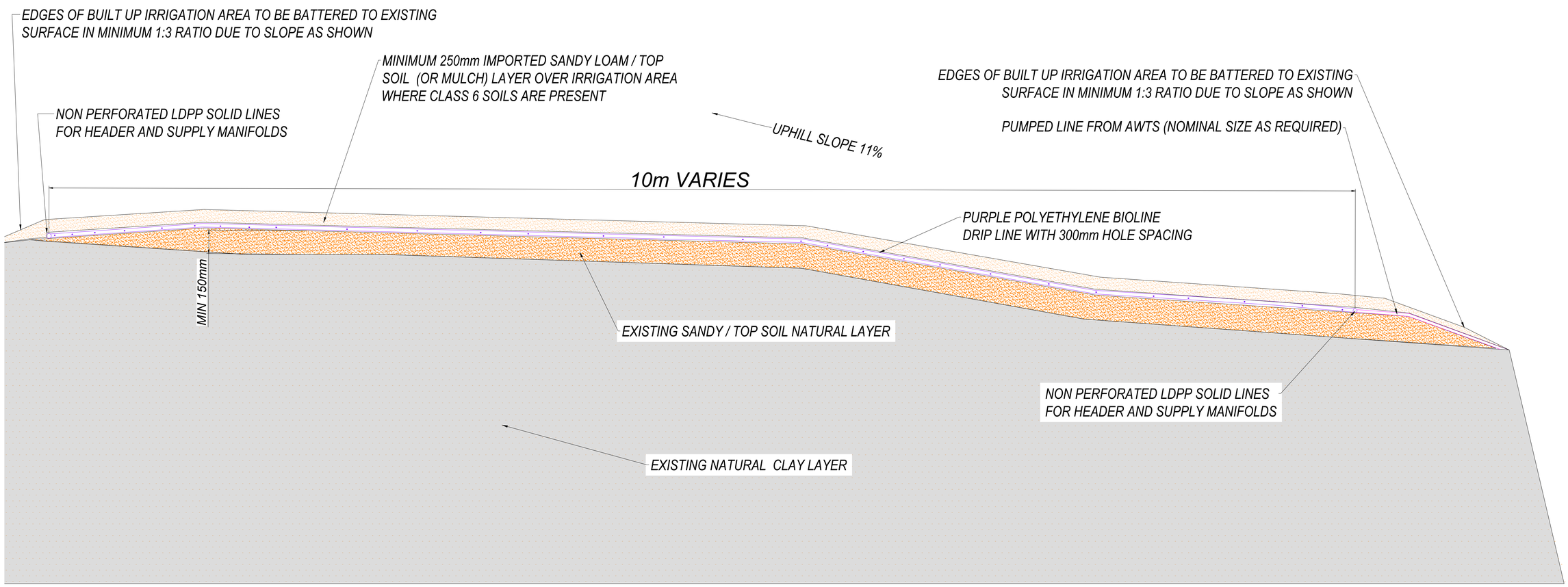
PROPOSED NEW WASTEWATER SYSTEM

CLIENT: PRIME DESIGN
LOT 3 TORONTO DRIVE, SEVEN MILE BEACH

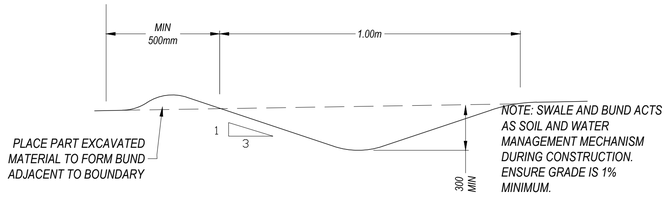
DRAWING TITLE
ONSITE WASTEWATER CROSS SECTION

SCALE 1:100

DESIGNED	DRAWN	SCALE
CF	CF	AS NOTED
PROJECT	SHEET NO.	REVISION
CKD-HYD-311	H01	0



SECONDARY TREATMENT IRRIGATION CROSS SECTION DETAIL
N.T.S



UPSLOPE CUT OFF DRAIN
NTS

DESIGN NOTES:

1. ONE 5mm HOLE AT CENTER OF INVERT OF EACH PIPE TO ALLOW FOR DRAINAGE BETWEEN PUMP CYCLES
2. GEOTEXTILE FOR 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 WITH HDPE LINER
3. FINIAL FINISHED SURFACE WITH SANDY LOAM TO BE A MINIMUM OF 150mm ABOVE AGGREGATE WITH TURF COVER OR MULCHED WITH APPROPRIATE VEGETATION (EG NATIVE GRASSES AND SMALL SHRUBS AT 1 PLANT PER 1m2)
4. THE TURF OR VEGETATION IS AN ESSENTIAL COMPONENT OF THE SYSTEM AND MUST BE MAINTAINED WITH REGULAR MOWING AND OR TRIMMING AS NEEDED
5. 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 TRENCH
6. ALL WORKS ON SITE TO COMPLY WITH AS3500, AS1547.2012, NCC VOL 3 2019
7. PUMP TO BE CAPABLE OF DELIVERING THE TOTAL FLOW RATE REQUIRED AT ALL LATERALS WHILST PROVIDING A 1.5m RESIDUAL HEAD (SQUIRT HEIGHT) AT THE HIGHEST ORIFICE (WITH NO MORE THAN 15% VARIATION IN SQUIRT HEIGHT ACROSS THE ENTIRE BED
8. FOR BEDS WITH INDIVIDUAL LATERALS, NO MORE THAN 15m LONG, IT IS ACCEPTABLE TO ADOPT A FLOW RATE 4-5L/MIN/LINEAL METER. TOTAL DYNAMIC HEAD (INCLUDING FRICTION LOSS) WILL NEED TO BE DETERMINED ON A SITE- SPECIFIC BASIS
9. 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 PRESSURE CONTROLLED FLUSH VALE INSIDE AN IRRIGATION BOX

REV	DESCRIPTION	DATE
0	FOR BUILDING APPROVAL CF	15/08/2025

REV	DESCRIPTION	DATE

FYSH DESIGN
UNIT 4, 160 BUNGANA WAY
CAMBRIDGE TAS, 7170
PH: 0414 149 394
ACCREDITATION: BSD LICENCE NO. 479819732

NORTH

PROPOSED NEW WASTEWATER SYSTEM

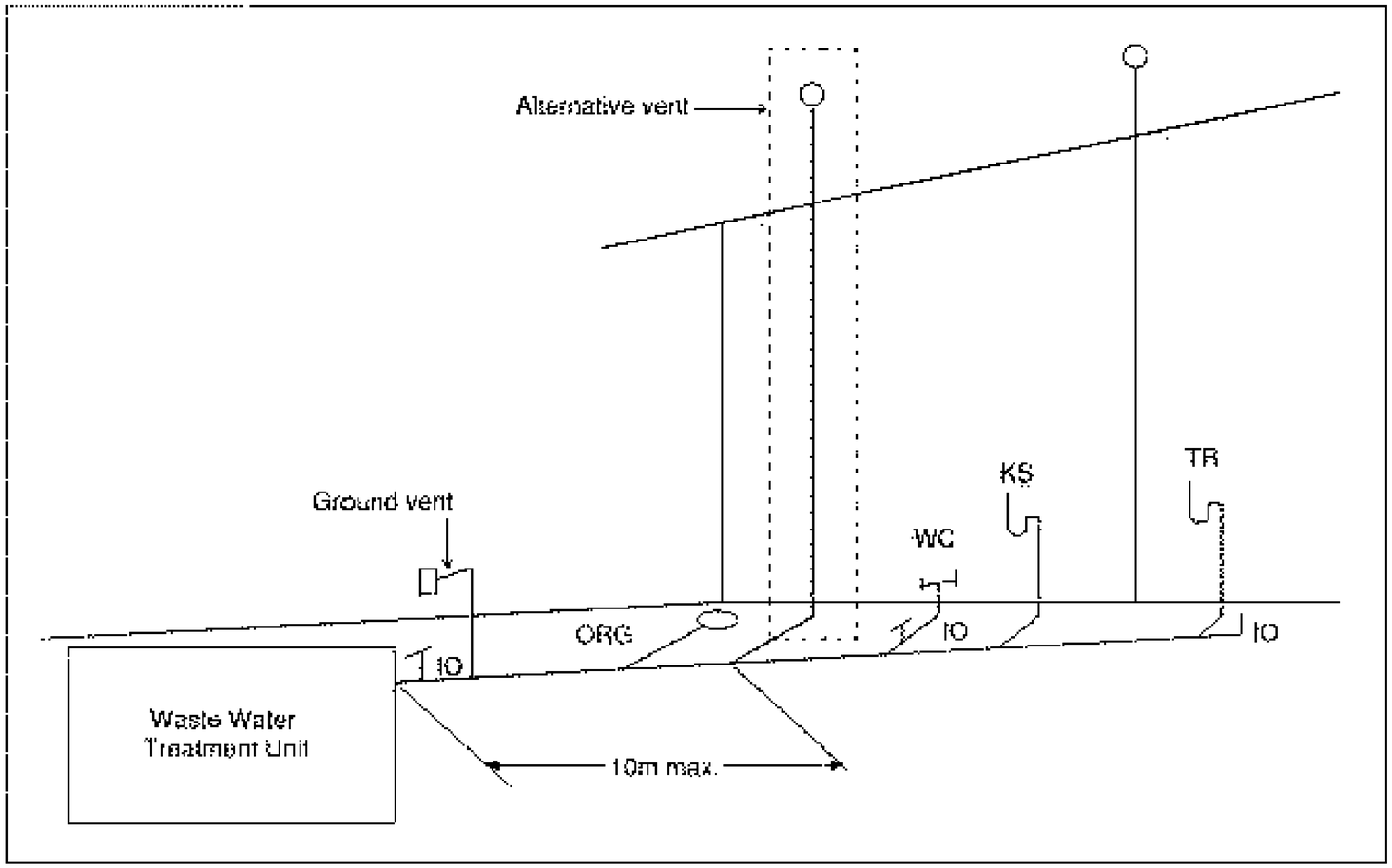
CLIENT: PRIME DESIGN
LOT 3 TORONTO DRIVE, SEVEN MILE BEACH

DRAWING TITLE
ONSITE WASTEWATER PLAN AND NOTES

SCALE 1:100

DESIGNED	DRAWN	SCALE
CF	CF	AS NOTED
PROJECT	SHEET NO.	REVISION
CKD-HYD-311	H02	0

DIAL BEFORE YOU DIG



TAS FIGURE H101.2 ALTERNATIVE VENTING ARRANGEMENTS

VENTS MUST TERMINATE IN ACCORDANCE WITH AS3500.2

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 ONSITE WASTEWATER MANAGEMENT SYSTEM. USE OF A GROUND VENT IS NOT RECOMMENDED

INSPECTION OPENINGS MUST BE LOCATED AT THE INLET TO AN ONSITE WASTEWATER MANAGEMENT SYSTEM TREATMENT UNIT AND THE POINT OF CONNECTION TO THE LAND APPLICATION SYSTEM AND MUST TERMINATE AS CLOSE AS PRACTICAL TO THE UNDERSIDE OF AN APPROVED INSPECTION OPENING COVER INSTALLED AT THE FINISHED SURFACE LEVEL

ACCESS OPENINGS PROVIDING ACCESS FOR DESLUDGING OR MAINTENANCE OF ON-SITE WASTEWATER MANAGEMENT SYSTEM TREATMENT UNITS MUST TERMINATE AT OR ABOVE FINISHED SURFACE LEVEL

ALTERNATIVE VENT IS THE PREFERRED ARRANGEMENT WHERE POSSIBLE.

TASMANIAN WASTEWATER VENTING REQUIREMENTS DETAIL

REV	DESCRIPTION		DATE
0	FOR BUILDING APPROVAL	CF	15/08/2025

REV	DESCRIPTION	DATE

FYSH DESIGN
UNIT 4, 160 BUNGANA WAY
CAMBRIDGE TAS, 7170

PH: 0414 149 394

ACCREDITATION: BSD LICENCE NO. 479819732

NORTH

PROPOSED NEW WASTEWATER SYSTEM

CLIENT: PRIME DESIGN
LOT 3 TORONTO DRIVE, SEVEN MILE BEACH
DRAWING TITLE
ONSITE WASTEWATER PLAN AND NOTES

SCALE 1:100

DESIGNED	DRAWN	PROJECT	SHEET NO.
CF	CF	CKD-HYD-311	H01

SCALE AS NOTED

REVISION 0

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Prime Design *Owner name*

Address

Suburb/postcode

Designer details:

Name: Christopher Fysh

Category: Building Services Designer – Civil / Hydraulic

Business name: Fysh Design

Phone No: 0414149394

Business address: Unit 4, 160 Bungana Way

Cambridge Tas

Fax No:

Licence No: 479819732

Email address: cfysh@fyshdesign.com.au

Details of the proposed work:

Owner/Applicant T.P Coy *Owner name* CKD-HYD-311

Address: Lot 3 Toronto Drive

Seven Mile Beach TAS

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

Description of work:

Wastewater 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:

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing-numbers: Wastewater Design Report Rev 0	Prepared by: Fysh Design	Date:03/09/2025
Schedules:	Prepared by:	Date:
Specifications:	Prepared by:	Date:
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by:	Date:

Standards, codes or guidelines relied on in design process:

AS1547.2012, AS3500.2, NCC 2022, Council EHO regulations and requirements

Any other relevant documentation:

Insurance details:
CGU Civil / Hydraulic Liability Professional Indemnity CGU PI 05-21 $5,000,000
CGU General and Product Public Liability $20,000,000

Attribution as designer:

I Christopher Fysh ..... 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:	Christopher Fysh		03/09/2025
Licence No:	479819732		

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.

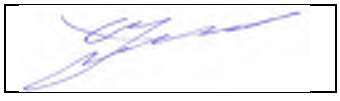
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- [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 ..Christopher Fysh..... 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:	Christopher Fysh		03/09/2025

BUSHFIRE HAZARD REPORT

Proposed change of use – Class 10a to a Class 1a dwelling
Lot 3 Toronto Drive
Acton Park, 7170

Dated 25th July 2025
Report by David Lyne BFP-144

11 Granville Avenue
Geilston Bay, 7015
M: 0421 852 987
dave_lyne@hotmail.com

Contents

Appendix A – Site analysis with Cadastral & Contour Overlay - indicates subject site
Appendix B – Site photos and designers site plan
Appendix C – Bushfire Hazard Management Plan, by David Lyne – certified date 25.07.2025; & Certificate of Others (Form 55) 1686/25

1. Introduction

I have been engaged by Prime Design to prepare a bushfire report and plan for the construction of a new residential dwelling in the suburb of Acton Park. The intent of this report is to confirm the suitability of the bushfire prone parcel of land to be successfully developed for the dwelling in accordance with the Directors Determination – Bushfire hazard areas v1.2.

The assessment describes the site and surrounding area, classifying the vegetation, assessing the slope and environmental features. This report should be included with approval documentation forming part of the certified documentation intended to satisfy the Directors Determination. The body of the report describes the site and assesses the requirements to be implemented to satisfy the requirements of the Directors Determination.

2. Limitation of Report

This report has been prepared for the above mentioned clients for their use and distribution only. The intent of the report is to provide supporting documentation for the Development Application (specifically vegetation clearance/maintenance distances) and the Building Application. Should submitted Application Plans differ from the Certified Plans in this report then an amended design review should be conducted to determine the suitability of any amendments in relation to the Bushfire Prone Area Requirements of AS3959-2018.

It is also to be noted that the assessment has been conducted according to the site inspection being conducted in July 2025 and does not take into account the possibility of altered site conditions either naturally occurring or where currently maintained or excluded vegetation conditions change due to a lack of ongoing maintenance.

It should be noted that compliance with the recommendations contained in this assessment does not mean that there is no residual risk to life safety or property as a result of bushfire. A residual level of risk remains which recognizes that removing the risk to life and property in absolute terms is not achievable while people continue to build in bushfire prone areas. This limitation is expressed in the following extract from AS3959 (2018) which states (in the forward), *It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.*

This level of residual risk is inherent in all bushfire standards and also applies to this assessment.

3. Site Description and Background

Lot 3 Toronto Drive Acton Park is an existing land parcel located in the municipality of the Clarence Council. The property is currently grassland vegetation, with neighbouring properties to all directions also grassland.

The site has access to a sealed public road – Toronto Drive, which links to Axiom Way and eventually Acton Road. This allotment is not provided with a reticulated hydrant water supply for firefighting.

3.1 Property Details

Address: Lot 3 Toronto Drive, Acton Park 7170

Municipality: Clarence Council

Zoned: Rural Living

Lot Number: 188363/3

Type of Development: New residential dwelling

Classified BAL: **BAL-19**

Appendix A: Photo 1 – Site analysis with cadastral overlay – Subject site highlighted blue.

3.2 Classification of Vegetation

The vegetation affecting the site has been classified in accordance with Clause 2.2.3 of AS 3959-2018. The Bushfire-Prone vegetation affecting the site is predominantly ***Grassland – Group G*** in accordance with AS3959-2018.

In this case, in accordance with Clause 2.2.2 of AS 3959-2018, the relevant Fire Danger Index for Tasmania of 50 (FDI 50).

When considering the definition of Bushfire Prone Area under the Directors Determination it is evident the proposed dwelling location is within 100 metres of greater than 1 hectare of vegetation classified in accordance with AS 3959-2018 and is therefore considered *'Bushfire Prone'*.

From the proposed dwelling site a 360° survey has been conducted to determine the vegetation type, proximity and slope under the vegetation which is of the highest hazard rating. In this case the ***Grassland*** is the highest hazard vegetation surrounding the proposed dwelling.

Note: in a bushfire there is a possibility of fire attack from any direction, not just the direction of the highest hazard. Photo 1 above indicates the Bushfire Prone Vegetation described. Refer to Appendix B for current conditions as at time of inspection.

3.3 Slope

The Effective slope of the land under the classified vegetation is determined in accordance with Clause 2.2.5 of AS 3959- 2018.

The *effective* slope under the bushfire prone vegetation is generally Upslope/Flatland to the south and east; downslope 0-5° to the north and west.

Refer to Appendix A Image for topographic contour information.

4. Bushfire Assessment

In accordance with Clause 2.2 of AS 3959-2018, the Simplified Procedure has been applied to determine the Bushfire Attack Level (BAL) for the proposed dwelling site. In accordance with the Directors Determination, fire-fighting water supply and vehicle access are also considered and discussed in relation to the proposed dwelling.

It should be noted that AS3959 Table 2.6 only provides BAL ratings for separation distance up to and including 50m from grassland. Therefore, grassland less than 100m but greater than 50m separation from the site has been excluded from assessment.

4.1 Bushfire Attack Level

Considering the current conditions, in accordance with AS3959-2018 the dwelling site is capable of achieving **BAL-19** (the minimum required standard being BAL-29 required by the Directors Determination).

The desired BAL rating to be applied in this instance will be **BAL-19**. The vegetation within the Hazard Management Area (HMA) is to be continually maintained in a minimal fuel condition and in which there are no other hazards present which significantly contribute to the spread of a fire.

Table 1 – Bushfire Attack Level Assessment Summary and Notes

Property Details

Applicants Name	Prime Design	**Phone**	03 6228 4575
Municipality	Clarence Council	**Zoning**	Rural Living
Certificate of Title/Lot No.	188363/3	**Lot Size**	1.094ha
Address	Lot 3 Toronto Drive, Acton Park 7170		

Type of Building Work

New Class 1a Buildings	X
New Class 10a Building	
New Class 2 Building	
New Class 3 Building	
Alteration/Additions to an existing building	

Description of building work: e.g. *single dwelling with attached garage*
New residential dwelling

Bush Fire Attack Level (BAL)

Relevant fire danger index: (see clause 2.2.2) **FDI 50**

Assess the vegetation within 100m in all directions (tick relevant group)
Note 1: Refer to table 2.3 and figures 2.3 & 2.4 for description and classification of vegetation.

Vegetation Classification (See Table 2.3	North X	South X	East X	West X
	North East	South-West	South-East	North-West
Group -	Grassland	Grassland	Grassland	Grassland

Exclusions (where applicable)	Circle relevant paragraph descriptor from clause 2.2.3.2			
	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)

Distance of the site from classified vegetation (see clause 2.2.4)

Distance to classified vegetation	Show distances in meters			
	om	om	om	om

Effective Slope	Upslope			
Slope under the classified vegetation	Upslope/o°	Upslope/o° X	Upslope/o° X	Upslope/o°
	Downslope			
	>0 to 5° X	>0 to 5° ☐	>0 to 5° ☐	>0 to 5° X
	>5 to 10° ☐	>5 to 10° ☐	>5 to 10° ☐	>5 to 10° ☐
	>10 to 15° ☐	>10 to 15° ☐	>10 to 15° ☐	>10 to 15° ☐
	>15 to 20° ☐	>15 to 20° ☐	>15 to 20° ☐	>15 to 20° ☐

Assessed BAL for each elevation	BAL-FZ	BAL-FZ	BAL-FZ	BAL-FZ
BAL value for each side of the site	BAL-19	BAL-19	BAL-19	BAL-19
Separation to achieve BAL-29	7-<11m	6-<10m	6-<10m	7-<11m
Separation to achieve BAL-19	11-<16m	10-<14m	10-<14m	11-<16m
Separation to achieve BAL-12.5	16-<50m	14-<50m	14-<50m	16-<50m

Construction Requirements
For this particular development a BAL-19 rating would suit all directions of this site, construction will be generally compliant with AS3959 -2018 Sections 3 and 6.

4.2 Road / Vehicle Access

The primary access to the lot is from a sealed public road – Toronto Drive. As the access for the property is to be more than 30m long, but less than 200m, the private access and driveway is subject to meeting the requirements of section 2.3.2 and Table 2 of the Directors Determination.

Table 2: Requirements for Property Access		
A.	Property access length is less than 30m; or access is not required for a fire appliance to access a firefighting water point.	There are no specified design and construction requirements.
B.	Property access length is 30m or greater; or access is required for a fire appliance to a firefighting water point.	The following design and construction requirements apply to property access: (a) all-weather construction; (b) load capacity of at least 20t, including for bridges and culverts; (c) minimum carriageway width of 4m; (d) minimum vertical clearance of 4m; (e) minimum horizontal clearance of 0.5m from the edge of the carriageway; (f) cross falls of less than 3 degrees (1:20 or 5%); (g) dips less than 7 degrees (1:8 or 12.5%) entry and exit angle; (h) curves with a minimum inner radius of 10m; (i) maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and (j) terminate with a turning area for fire appliances provided by one of the following: (i) a turning circle with a minimum outer radius of 10m; or (ii) a property access encircling the building; or (ii) a hammerhead "T" or "Y" turning head 4m wide and 8m long.
C.	Property access length is 200m or greater.	**Not applicable to this development.**
D.	Property access length is greater than 30m, and access is provided to 3 or more properties.	**Not applicable to this development.**
E.	Additional requirements for certain Class 9 Buildings	**Not applicable to this development.**

4.3 Water supply for firefighting

As the proposed development does not have access to a reticulated water supply suitable for firefighting, a static water supply of minimum 10,000 litres must be provided solely for firefighting for this particular site. The water supply must include a water connection point within 3.0 m of a vehicle hardstand that is at least 6.0 m from the building. The hardstand must be connected to the property access. The water supply must comply with Table 3B of the Director's Determination:

Table 3B Static Water Supply for Fire fighting

A. Distance between building area to be protected and water supply

The following requirements apply:

1. The building area to be protected must be located within 90 metres of the water connection point of a static water supply; and
2. The distance must be measured as a hose lay, between the water connection point and the furthest part of the building area.

B. Static Water Supplies

A static water supply:

1. May have a remotely located offtake connected to the static water supply;
2. May be a supply for combined use (firefighting and other uses) but the specified minimum quantity of firefighting water must be available at all times;
3. Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including firefighting sprinkler or spray systems;
4. Must be metal, concrete or lagged by non-combustible materials if above ground; and
5. If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by:

   (a) metal;

   (b) non-combustible material; or

   (c) fibre-cement a minimum of 6 mm thickness.

C. Fittings, pipework and accessories (including stands and tank supports)

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

1. Have a minimum nominal internal diameter of 50mm;
2. Be fitted with a valve with a minimum nominal internal diameter of 50mm;
3. Be metal or lagged by non-combustible materials if above ground;
4. Where buried, have a minimum depth of 300mm;
5. Provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to firefighting equipment;
6. Ensure the coupling is accessible and available for connection at all times;
7. Ensure the coupling is fitted with a blank cap and securing chain (minimum 220 mm length);
8. Ensure underground tanks have either an opening at the top of not less than 250 mm diameter or a coupling compliant with this Table; and
9. Where a remote offtake is installed, ensure the offtake is in a position that is:

   (a) Visible;

   (b) Accessible to allow connection by firefighting equipment;

   (c) At a working height of 450 – 600mm above ground level; and

   (d) Protected from possible damage, including damage by vehicles.

D. Signage for static water connections

1. The water connection point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with: Water tank signage requirements within AS 2304 *Water storage tanks for fire protection systems; or*
2. The following requirements:

   (a) Be marked with the letter "W" contained within a circle with the letter in upper case of not less than 100 mm in height;

(b) Be in fade-resistant material with white reflective lettering and circle on a red background; (c) Be located within one metre of the water connection point in a situation which will not impede access or operation; and (d) Be no less than 400 mm above the ground.
E. Hardstand
A hardstand area for fire appliances must be provided: 1. No more than three metres from the water connection point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like); 2. No closer than six metres from the building area to be protected; 3. With a minimum width of three metres constructed to the same standard as the carriageway; and 4. Connected to the property access by a carriageway equivalent to the standard of the property access.

4.4 Hazard management area

The minimum extents of the Hazard Management Area (HMA) are for the entirety of the residential allotment to be managed and treated as HMA. Management prescriptions for the proposed HMA are provided in Table 2.

Table 2 - Hazard Management Area Prescriptions

Within 10m of habitable buildings	• No storage of flammable materials (e.g. firewood); • Avoid locating flammable garden materials near vulnerable building elements such as glazed windows/doors, decks and eaves (e.g. non-fire-retardant plants and combustible mulches); • Non-flammable features such as paths, driveways and paved areas are encouraged around habitable buildings.
Trees within HMA	• Maintain canopy separation of approximately 2.0m; • Ensure no branches overhang habitable buildings; • Remove tree branches within 2.0m of the ground level below; • Locate any new tree plantings 1.5 x their mature height from buildings; • Avoid planting trees with loose, stringy or ribbon bark.
Understory vegetation within HMA	• Maintain grass cover at <100mm; • Maintain shrubs to <2.0m height; • Shrubs are to be maintained in clumps so as to not form contiguous vegetation (i.e. clumps up to 10sqm in area, separated from each other by at least 10m); • Avoid locating shrubs directly underneath trees; • Periodically remove dead leaves, bark and branches from underneath trees and around habitable buildings.

5. Conclusion

The site has been classified as **BAL-19** as per the assessment processes outlined in AS3959-2018. The separation distances shown above are the areas to be maintained and kept in a way to reduce the fuel loads present in order to achieve lower BAL ratings. For this particular site and for where the proposed building is to be constructed, a **BAL-19** rating is easily achieved and would suit all directions of the site.

6. References

- Directors Determination – Bushfire-Prone Areas v1.2

- LIST map version. Aerial Photograph [online]. Available from: http://www.thelist.tas.gov.au/listmap/listmap

- Standards Australia 2018, *Construction of buildings in bushfire prone areas*, AS 3959-2018.

Statement

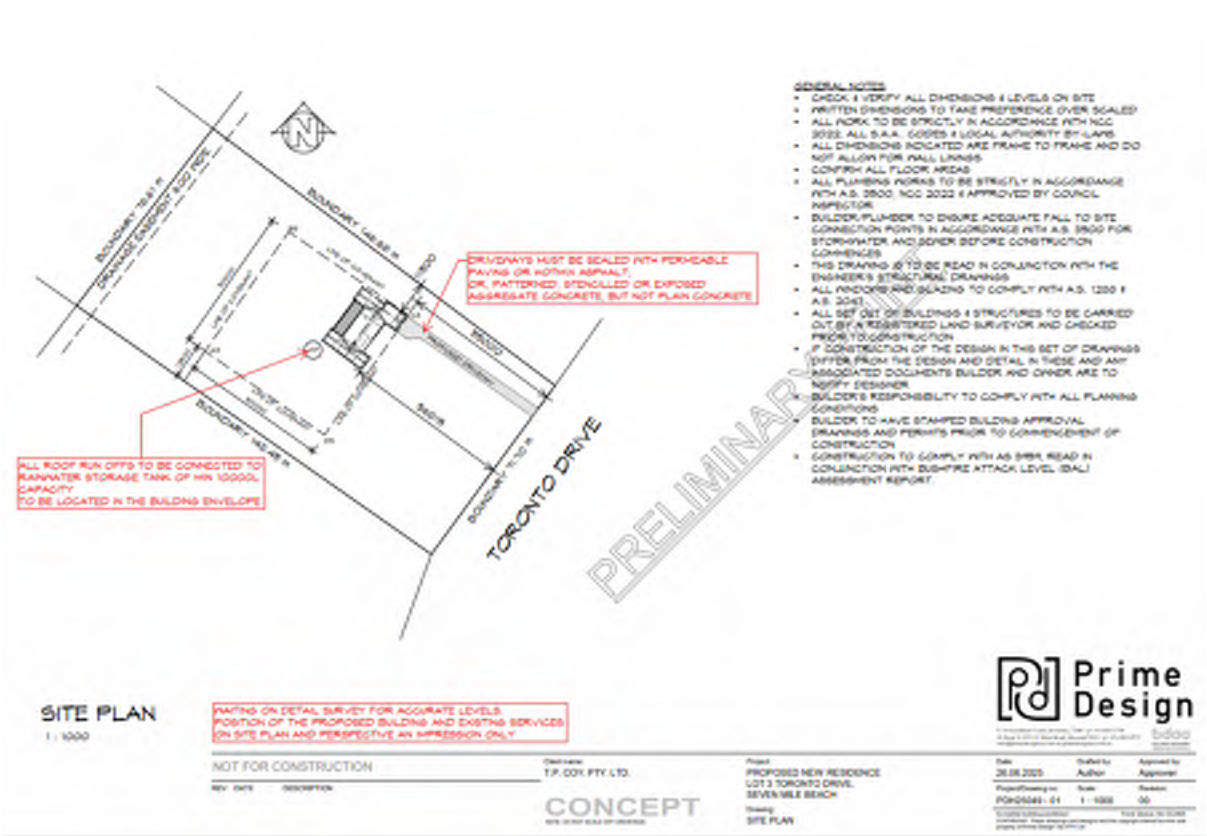
I have taken all reasonable steps to ensure that the information provided in this assessment is accurate and reflects the conditions on and around the site and allotment on the date of this assessment.

It should be noted that this report does not take into account the possibility of altered site conditions either naturally occurring or where currently maintained or excluded vegetation conditions change due to lack of ongoing maintenance. Compliance with the recommendations contained in this assessment does not mean that there is no residual risk to safety of life or property as a result of bushfire.

Signed: .....

Date: 25/07/2025.....

Appendix B – Site photos and designers site plan



Looking North

Looking South

Looking East

Looking West

HAZARD MANAGEMENT AREAS – HMA

Hazard Management Area includes the area to protect the Building as well as the access and water supplies. The entirety of this allotment should be treated as HMA.

Vegetation in the Hazard Management area is to be managed and maintained in a minimum fuel condition.

The HMA is determined from the unmanaged vegetation on this allotment and neighbouring allotments, and should the level of the unmanaged vegetation increase the BHMP and HMA should be reviewed to determine the ongoing suitability of the BHMP and HMA associated with the development.

MAINTENANCE SCHEDULE

- Removal of fallen limbs, leaf and bark litter;
- Cut lawns short (less than 100mm) and maintain;
- Remove pine bark and other garden mulch;
- Complete under–brushing and thin out the under storey;
- Prune low hanging trees to ensure separation from ground litter;
- Prune larger trees to establish and maintain horizontal and vertical canopy separation;
- Maintain storage of petroleum fuels;
- Maintain access to the dwelling and water storage area Remove fallen limbs, leaf and bark litter from roofs, gutters and around the building;
- Ensure that 10,000 litres of dedicated water supply for fire fighting purposes is available at all times.

BUSHFIRE PROTECTION MEASURES

To reduce the risk of bushfire attack, continual maintenance of bushfire protection measures including building maintenance, managed vegetation areas, water supply and road construction are to be undertaken by successive owners for perpetuity.

WATER SUPPLY

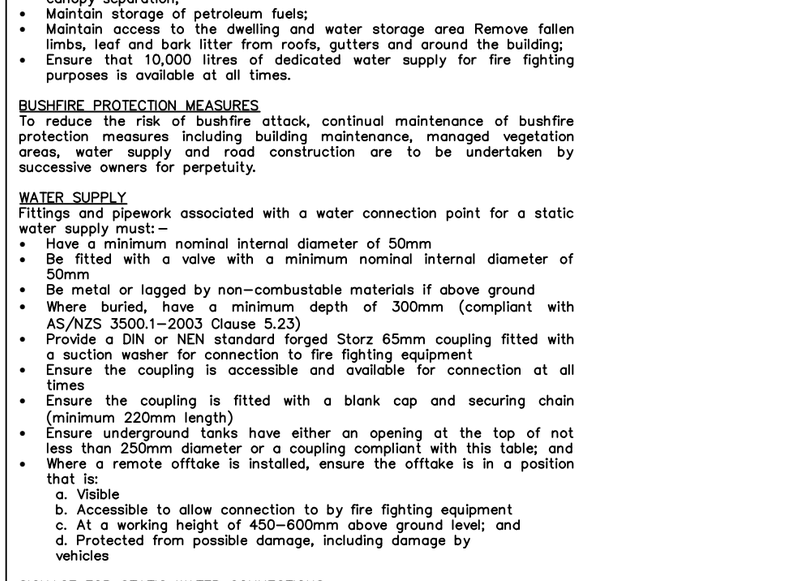
Fittings and pipework associated with a water connection point for a static water supply must: –

- Have a minimum nominal internal diameter of 50mm
- Be fitted with a valve with a minimum nominal internal diameter of 50mm
- Be metal or lagged by non–combustable materials if above ground
- Where buried, have a minimum depth of 300mm (compliant with AS/NZS 3500.1–2003 Clause 5.23)
- Provide a DIN or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment
- Ensure the coupling is accessible and available for connection at all times
- Ensure the coupling is fitted with a blank cap and securing chain (minimum 220mm length)
- Ensure underground tanks have either an opening at the top of not less than 250mm diameter or a coupling compliant with this table; and
- Where a remote offtake is installed, ensure the offtake is in a position that is:
  a. Visible
  b. Accessible to allow connection to by fire fighting equipment
  c. At a working height of 450–600mm above ground level; and
  d. Protected from possible damage, including damage by vehicles

SIGNAGE FOR STATIC WATER CONNECTIONS

The water connection points for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with: –

- Water tank signage requirements within AS2304 Water storage tanks for fire protection systems; or
- The following requirements:
  a. Be marked with the letter "W" contained within a circle with the letter in upper case of not less than 100mm in height;
  b. Be in fade–resistant material with white reflective lettering and circle on a red background;
  c. Be located within one metre of the water connection point in a situation which will not impede access or operation; and
  d. Be no less than 400mm above ground.



SITE PLAN NTS

PLAN TO BE READ IN CONJUNCTION WITH BUSHFIRE ATTACK LEVEL (BAL) REPORT

NOTIFY COUNCIL AND CERTIFYING BUSHFIRE PRACTITIONER IF ANY VARIATION IN BUILDING SETOUT OR VEGETATION HAZARDS OCCUR

ENSURE THIS PLAN AND ACCOMPANYING REPORT DO NOT CONFLICT WITH OTHER RELEVANT REPORTS AND ASSESSMENTS

BHMP
SCALE 1:500

Prepared By David Lyne – BFP 144

Prime Design
Lot 3 Toronto Drive, Acton Park
Tasmania 7170
Job No: 1686

N

11 GRANVILLE AVENUE
GEILSTON BAY, TASMANIA 7015
PH: 0421 852 987 EMAIL: dave_lyne@hotmail.com
Accredited Designer: David Lyne CC7063

PLEASE READ CAREFULLY

THIS PLAN CERTIFIED CORRECT IS THE ONE REFERRED TO IN THE BUILDING CONTRACT AND I UNDERSTAND CHANGES HEREAFTER MAY NOT BE POSSIBLE.

FINAL PLAN: ANY REQUESTED VARIATIONS TO YOUR HOUSE PLAN WILL INCUR AN AMENDMENT / ADMINISTRATION MINIMUM FEE

SIGNATURES

CLIENT:..... DATE:.....

CLIENT:..... DATE:.....

BUILDER:..... DATE:.....

DWG NO: 1686		SHEET: 01
SCALE AT A3: 1:500		DATE: 25.07.2025
DRAWN: DL	CHECK: DL	REV 0

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

To: Prime Design *Owner /Agent* *Address* *Suburb/postcode*

Form **55**

Qualified person details:

Qualified person: David Lyne

Address: 11 Granville Avenue

Geilston Bay TAS 7015

Phone No: 0421 852 987

Fax No:

Licence No: BFP-144

Email address: dave_lyne@hotmail.com

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

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

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

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

Details of work:

Address: Lot 3 Toronto Drive

Acton Park 7170

Lot No: 3

Certificate of title No: 188363

The assessable item related to this certificate: Assessment – BAL Ratings

(description of the assessable item being certified)
Assessable item includes –
- *a material;*
- *a design*
- *a form of construction*
- *a document*
- *testing of a component, building system or plumbing system*
- *an inspection, or assessment, performed*

Certificate details:

Certificate type: Bushfire Hazard
Bushfire Hazard Management Plan

(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 items, at any stage, as part of – *(tick one)*

◉ building work, plumbing work or plumbing installation or demolition work

OR

○ a building, temporary structure or plumbing installation

In issuing this certificate the following matters are relevant

Documents:	Bushfire Hazard Report – New residential dwelling Bushfire Hazard Management Plan
Relevant calculations:	• In Accordance with AS3959-2018; and • the Building Regulations (TAS).
References:	• AS3959-2018; • the Building Regulations (TAS); and • Building Code of Australia (BCA).

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

The above mentioned report concludes that a BAL-19 rating is achievable and easily maintained for the dwelling on this site

Scope and/or Limitations

The assessment has been conducted according to information provided by the designer/client and freely available historical data and does not take into account the possibility of altered site conditions from the data relied upon.
It should be noted compliance with the recommendations contained in the certified documents does not mean that there is no residual risk to life safety and property as a result of bushfire. The limitation is expressed in the following extract from AS3959-2018, which states:

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

The level of residual risk is inherent in all bushfire standards and also applies to this certification.

The assessment has been undertaken and certification provided on the understanding that; -

1. The certificate only deals with the potential bushfire risk all other statutory assessments are outside the scope of this report.

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

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		1686/25	25/07/2025

25 September 2025

Prime Design
your build, your way

Proposed New Residence at (Lot 3) 20 Toronto Drive, Seven Mile Beach

Please see a proposal for a single dwelling with 4 bedrooms, 3 bath, open living/ kitchen/ dining, walk-in pantry, laundry, two separate garages – 2 car & Single car garages, study, lounge and alfresco. The proposal falls in the Rural Living zone in the Tasmanian Planning Scheme.

I will be looking to address the codes where possible. Please do not hesitate to get in touch if you require further information for us to complete this application.

Development Standards – Rural Living Zone

Single Hill Specific Area Plan
S3.7.1 Vegetation protection and visual impact

A1 The proposed bushfire firefighting tank is outside of the building envelope.

P1

a) Proposed firefighting tank is confined to lower slope below the skyline following the natura gradient of site.

b) The site is sloping downwards when viewed from Toronto Drive, and the tank is positioned in a visually unobtrusive area when viewed form any significant public viewpoints.

c) Bushfire management does not require clearing of standing vegetation in the area. The property is currently a grassland vegetation, with neighbouring properties to all directions also grasslands. Please refer Bushfire Assessment for details.

S3.7.2 Built form

A1 Complies. Building height is not more than 6m. Please refer revised elevations for details.

A3 External surfaces of buildings visible to the public, excluding low reflectance window glass and unfinished surfaces:

a) Will use predominantly neutral, mid-tones colours that minimise contrast with background landscape colours

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b) Only use stronger, non-primary colours on up to 5% of the area of each elevation.
c) Complementary colour scheme will not be used

S3.7.3 Bird strike

A2 All the external glazing to be low reflective glass

P2 Proposed skylight to be low reflective glass. Minimal size of proposed skylight is highly likely to cause insignificant risk of bird strike in the area. Moreover, it is designed to minimise bird strike having regards to:

a) Site responsive design following the natural topography of site coherent to surrounding area.
b) Existing grassland and site conditions
c) Siting of building – within building envelope
d) Window to be low reflective glass and the size is significantly small.
e) Advice and any recommendations from suitably qualified person to be submitted with application – if required for the minimum impact caused by a single skylight.
f) Any advice from any State or Commonwealth department will be considered.

S3.7.3 Water Conservation

A1 Copy of revised plans with annotation on all the site plans for the rainwater storage tank is provided

A3 Final discharge point indicated in the Site Plan.

A4 Dispersive Soil Report attached for your reference.

Thank you for your consideration of our application and we look forward to your response.

9 October 2025

Prime Design
your build, your way

Proposed New Residence at (Lot 3) 20 Toronto Drive, Seven Mile Beach

Please see a proposal for a single dwelling with 4 bedrooms, 3 bath, open living/ kitchen/ dining, walk-in pantry, laundry, two separate garages – 2 car & Single car garages, study, lounge and alfresco. The proposal falls in the Rural Living zone in the Tasmanian Planning Scheme.

I will be looking to address the codes where possible. Please do not hesitate to get in touch if you require further information for us to complete this application.

Development Standards – Rural Living Zone

Single Hill Specific Area Plan
S3.7.1 Vegetation protection and visual impact

A1 The proposed bushfire firefighting tank is outside of the building envelope.

P1

a) Proposed firefighting tank is confined to lower slope below the skyline following the natura gradient of site.

b) The site is sloping downwards when viewed from Toronto Drive, and the tank is positioned in a visually unobtrusive area when viewed form any significant public viewpoints.

c) Bushfire management does not require clearing of standing vegetation in the area. The property is currently a grassland vegetation, with neighbouring properties to all directions also grasslands. Please refer Bushfire Assessment for details.

S3.7.2 Built form

A1 Garage does not comply.

P1

a) Proposed garage more than 6m in height is less than 20% of that building's site cover.

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b) Existing site conditions and design of compliant driveway from the access road is making the proposed garage unreasonable to comply with the acceptable solution.

c) Proposed siting of building, design, external materials, colours and landscaping will efficiently minimise visual impact.

A3 External surfaces of buildings visible to the public, excluding low reflectance window glass and unfinished surfaces:

a) Will use predominantly neutral, mid-tones colours that minimise contrast with background landscape colours
b) Only use stronger, non-primary colours on up to 5% of the area of each elevation.
c) Complementary colour scheme will not be used

S3.7.3 Bird strike

A2 All the external glazing to be low reflective glass

P2 Proposed skylight to be low reflective glass. Minimal size of proposed skylight is highly likely to cause insignificant risk of bird strike in the area. Moreover, it is designed to minimise bird strike having regards to:

a) Site responsive design following the natural topography of site coherent to surrounding area.
b) Existing grassland and site conditions
c) Siting of building – within building envelope
d) Window to be low reflective glass and the size is significantly small.
e) As a registered Building Designer, I confirm that proposed relatively small single skylight with low reflective glass is likely to cause insignificant chances of bird strike.
f) Any advice from any State or Commonwealth department will be considered.

S3.7.3 Water Conservation

A1 Copy of revised plans with annotation on all the site plans for the rainwater storage tank is provided

A3 Final discharge point indicated in the Site Plan.

A4 Dispersive Soil Report attached for your reference.

Thank you for your consideration of our application and we look forward to your response.

Kind regards,