Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2025/187

LOCATION OF AFFECTED AREA

46 HONEYWOOD DRIVE, HONEYWOOD

DESCRIPTION OF DEVELOPMENT PROPOSAL

SINGLE DWELLING

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M, MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS IN ACCORDANCE WITH S.57(5) OF THE LAND USE PLANNING AND APPROVALS ACT 1993 CONCERNING THIS APPLICATION UNTIL 4:45 P.M. ON **03/02/2026**. ADDRESSED TO THE CHIEF EXECUTIVE OFFICER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au. REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
Chief Executive Officer

SCAN ME

Brighton
going places

PLANNING - NEW DWELLING & SHED

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

46 HONEYWOOD DRIVE
HONEYWOOD, TASMANIA, 7017
LUKE KERSHAW

REV P3 - ISSUED FOR PLANNING APPROVAL 15.01.2026

GENERAL INFORMATION:

DESIGNER: DAVID LYNE CC7063
CLIENT: LUKE KERSHAW
JOB NUMBER: TBA
CLASSIFICATION: 1A & 10a
TITLE REFERENCE: 144527/3
DESIGN WIND SPEED: N2
SOIL CLASSIFICATION: 'S'
CLIMATE ZONE: 7
BAL: 19
LOT SIZE: 1.151ha
HABITABLE FLOOR AREA: 59.5m²
PROPOSED SHED AREA: 156.5m²
TOTAL FLOOR AREA: 216m²
SITE COVERAGE: 1.9%

DRAWING REGISTER:

B00	COVER SHEET	N/A
B01	NOTES SHEET 1	N/A
B02	NOTES SHEET 2	N/A
B03	SITE PLAN	1:1000
B04	SITE PLAN - PART PLAN	1:300
B05	FLOOR PLAN	1:100
B06	ELEVATIONS	1:100
B07	EXISTING SHED PLAN	1:50

GENERAL NOTES:

- CHECK ALL DIMENSIONS, BOUNDARIES, EASEMENTS AND SERVICE LOCATIONS ON SITE.
- ALL WORK SHALL COMPLY WITH THE TASMANIAN BUILDING REGULATIONS 2016, AND RELEVANT CURRENT AUSTRALIAN STANDARDS.
- CHECK CAREFULLY ALL ASPECTS OF THESE DOCUMENTS BEFORE COMMENCING WORK.
- ANY ERRORS OR ANOMALIES TO BE REPORTED TO THE DRAWER BEFORE WORK IS CONTINUED.
- CONFIRM ALL SIZES AND HEIGHTS ON SITE. DO NOT SCALE OFF PLAN.
- ALL FRAMING TO COMPLY WITH AS 1684 RESIDENTIAL TIMBER-FRAMED CONSTRUCTION. NOTE: ALL TIMBER SIZES SPECIFIED ARE MINIMUM REQUIREMENT ONLY.
- SUBSTITUTES MAY BE USED AS LONG AS VERIFICATION OF EQUAL PERFORMANCE IS OBTAINED.
- ALL CONSTRUCTION IS TO COMPLY WITH THE BUILDING CODE OF AUSTRALIA AND ALL RELEVANT AUSTRALIAN STANDARDS.
- WIND LOADS DETERMINED IN ACCORDANCE WITH AS 4055 WIND LOADS FOR HOUSING.
- THESE DOCUMENTS TO BE USED WITH THE DESIGNERS SPECIFICATIONS, SOIL TESTS AND ALL DOCUMENTATION PREPARED BY AN ENGINEER.
- THESE DOCUMENTS ARE INTENDED FOR COUNCIL APPLICATIONS AND NORMAL CONSTRUCTION.
- THIS DESIGN IS COVERED UNDER COPYRIGHT AND ANY CHANGES MUST BE CONFIRMED WITH THE DESIGNER, THE DESIGNER RETAINS ALL INTELLECTUAL PROPERTY.

NOT FOR CONSTRUCTION

REV	DATE	REMARK
P3	15.01.2026	REVISED PLANNING ISSUE
P2	05.01.2026	REVISED PLANNING ISSUE
P1	22.10.2025	PRELIMINARY ISSUE

LYNE DESIGN

BUILDING DESIGN/ DRAFTING - BUSHFIRE MANAGEMENT
DAVID LYNE ACCREDITED DESIGNER: CC7063
11 GRANVILLE AVENUE
GEILSTON BAY, TASMANIA 7015
MOBILE: 0421 852 987 david@lynedesign.com.au

PROJECT
46 HONEYWOOD DRIVE
HONEYWOOD, TAS 7017

TITLE
COVER SHEET

Accepted LUKE KERSHAW (Client 1)	Date
Accepted NOT APPLICABLE (Client 2)	Date
Approved NOT APPLICABLE (Builder)	Date

This document must be signed

SCALES @ A3	DESIGNED BY	DRAWN BY
N/A	D.LYNE	D.LYNE
	PLOT DATE	15/01/2026

DO NOT SCALE. Use only figured dimensions. Locations of structure, fittings, services etc on this drawing are indicative only. CONTRACTOR to check all other project drawings for co-ordination between structure, fabric, fixtures, fittings, services etc. CONTRACTOR to site check all dimensions and exact locations of all items. no responsibility shall be taken for dimensional information scaled or digitally derived from this document.

PLOT DETAILS HONEYWOOD.DWG

PROJECT NO. TBA

DWG NO.	REVISION
B00	P3

GENERAL:

1. THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT. (THIS INCLUDES BUT IS NOT LIMITED TO THE OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, OPERATORS, RENOVATORS, MAINTAINERS AND DEMOLISHERS.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE STRUCTURAL DESIGN DRAWINGS, ANY OTHER DRAWINGS BY OTHERS, SPECIFICATIONS AND OR REPORTS, AND WITH SUCH OTHER WRITTEN INSTRUCTION THAT MAY BE ISSUED.
3. ALL CONSTRUCTION WORK TO COMPLY WITH THE CURRENT BUILDING CODES AND REGULATIONS OF THE RELEVANT AUSTRALIAN STATE OR TERRITORY.
4. DIMENSIONS ARE EXPRESSED IN MILLIMETERS, UNO. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THESE DRAWINGS. SETTING OUT DIMENSIONS SHALL BE VERIFIED BY LICENCED BUILDER/ SURVEYOR BEFORE COMMENCING WORK. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND THE OTHER DRAWINGS IS TO BE ADVISED BEFORE PROCEEDING WITH ANY WORK.
5. THE PLANS AND SPECIFICATIONS ARE SUBJECT TO APPROVAL BY THE LOCAL BUILDING AUTHORITY PRIOR TO CONSTRUCTION.
6. THE BUILDING CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, APPROVALS, AND INSPECTIONS AS REQUIRED BY LAW.
7. ALL STRUCTURAL ELEMENTS, INCLUDING FOOTINGS, FOUNDATIONS, WALLS, AND ROOF STRUCTURES, MUST BE DESIGNED BY A QUALIFIED STRUCTURAL ENGINEER AND COMPLY WITH THE APPROPRIATE AUSTRALIAN STANDARDS. REFER TO STRUCTURAL DRAWINGS BEFORE COMMENCING ANY WORKS.
8. THE MATERIALS AND FINISHES SPECIFIED MUST MEET THE REQUIRED AUSTRALIAN STANDARDS AND REGULATIONS FOR FIRE SAFETY, ACOUSTIC PERFORMANCE, ENERGY EFFICIENCY, AND DURABILITY.
9. THE BUILDER SHALL CARRY OUT REGULAR QUALITY INSPECTIONS DURING CONSTRUCTION TO ENSURE COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.
10. THE HOUSE PLANS ARE COPYRIGHT PROTECTED, AND UNAUTHORIZED REPRODUCTION, OR USE WITHOUT THE WRITTEN CONSENT OF THE DESIGNER IS STRICTLY PROHIBITED.
11. THE FINAL COMPLETION OF THE PROJECT SHALL INCLUDE OBTAINING THE NECESSARY OCCUPANCY CERTIFICATE FROM THE LOCAL BUILDING AUTHORITY.

HEALTH AND SAFTEY:

1. THERE ARE A NUMBER OF HAZARDS AND HENCE RISKS WHICH ARE NOT UNIQUE TO THIS PROJECT WHICH NEED TO BE MANAGED DURING THESE PHASES. A REMINDER TO CONSTRUCTORS, OPERATORS, MAINTAINERS AND DEMOLISHERS OF THEIR RESPONSIBILITIES UNDER WORK HEALTH & SAFETY ACTS AND REGULATIONS.
2. FOR ALTERATIONS TO OR DEMOLITION OF A BUILDING CONSTRUCTED PRIOR TO:
   1990 - IT MAY CONTAIN ASBESTOS
   1986 - IT IS LIKELY TO CONTAIN ASBESTOS EITHER IN CLADDING MATERIAL, OR IN FIRE-RETARDANT INSULATION MATERIAL.
   IN EITHER CASE, THE BUILDER SHOULD CHECK, AND IF NECESSARY TAKE APPROPRIATE ACTION BEFORE DEMOLISHING, CUTTING, SANDING, DRILLING OR OTHERWISE DISTURBING THE EXISTING STRUCTURE.
3. MANY OTHER MATERIALS USED IN CONSTRUCTION OF THIS BUILDING SUCH AS (BUT NOT LIMITED TO) POWDERED MATERIALS, TREATED TIMBER, VOLATILE ORGANIC COMPOUNDS, SYNTHETIC MINERAL FIBER, CAN CAUSE HARM IF INHALED ALL PERSONS WORKING ON OR IN THE BUILDING DURING DEMOLITION AND OR CONSTRUCTION SHOULD BE WEARING PERSONAL PROTECTION EQUIPMENT INCLUDING PROTECTION AGAINST INHALATION OF HARMFUL MATERIAL.

SITE PREPARATION AND EXCAVATION:

1. IN ACCORDANCE WITH PART H1D3 OF CURRENT N.C.C., AND TO LOCAL COUNCIL REQUIREMENTS.
2. THE SITE MUST BE PROPERLY PREPARED AND LEVELED BEFORE CONSTRUCTION BEGINS. ANY NECESSARY EARTHWORKS AND SITE PREPARATION ARE THE RESPONSIBILITY OF THE CONTRACTOR.
3. SURFACE DRAINS SHALL BE DESIGNED AND CONSTRUCTED TO AVOID WATER PONDING AGAINST OR NEAR THE FOOTINGS. THE GROUND IN THE IMMEDIATE VICINITY OF THE PERIMETER FOOTINGS, INCLUDING THE GROUND UPHILL FROM A SLAB ON CUT-AND FILL SITES, SHALL BE GRADED TO FALL 50mm MINIMUM OVER A DISTANCE OF 1m AND SHAPED TO PREVENT PONDING OF WATER. WHERE FILL IS PLACED ADJACENT TO THE BUILDING, THE FILL SHALL BE COMPACTED AND GRADED TO ENSURE DRAINAGE OF WATER AWAY FROM THE BUILDING.
4. INTERNAL FINISHED FLOOR LEVEL (FFL) TO BE MIN. 150mm ABOVE FINISHED EXTERNAL GROUND AREAS (FLOWER BEDS OR GRASSED AREAS) AND MIN. 50mm ABOVE FINISHED EXTERNAL SEALED SURFACES (PAVED AREAS). PROVIDE 50mm MIN. FALL FOR THE FIRST METER AWAY FROM BUILDING TOWARDS LOWER GROUND OR ALTERNATIVELY SUFFICIENT DRAINAGE PROVISIONS (AG DRAINS, SUMPS OR SIMILAR).

FOOTINGS & SLABS:

1. CONCRETE FOOTINGS AND SLABS ARE TO BE IN ACCORDANCE WITH PART H1D4 OF CURRENT N.C.C. AND AS 2870.1 AND ENGINEERS DOCUMENTATION/ SPECIFICATIONS.
2. PROVIDE WALL CAVITY DRAINAGE WITH WEEPHOLES AT 960 MAX CENTERS ALONG LINE ABOVE FINISHED GROUND LEVEL. (SLAB AREA).

PLUMBING (SEWER & STORMWATER):

1. ALL PLUMBING WORK SHALL COMPLY WITH THE RELEVANT PLUMBING STANDARDS AND BE CARRIED OUT BY A LICENSED PLUMBER.
2. ADEQUATE PROVISIONS FOR STORMWATER DRAINAGE MUST BE MADE TO PREVENT WATERLOGGING AND FLOODING ON THE PROPERTY. THE DRAINAGE SYSTEM DESIGN SHOULD COMPLY WITH THE LOCAL COUNCIL'S GUIDELINES.

GLAZING:

1. ALL WINDOWS AND GLAZING MUST COMPLY WITH AS2047 AND AS1288 AND PART H1D1 OF CURRENT N.C.C. MANUFACTURER TO PROVIDE CERTIFICATION OF COMPLIANCE.
2. ALL WINDOW MEASUREMENTS SHOWN ARE NOMINAL ONLY AND ARE TO BE VERIFIED ON SITE, PRIOR TO ORDERING.

LIGHT:

1. NATURAL LIGHT TO BE IN ACCORDANCE WITH PART H4P4 OF CURRENT N.C.C.
2. NATURAL LIGHT MUST BE PROVIDED TO ALL HABITABLE ROOMS
3. REQUIRED WINDOWS MUST HAVE A LIGHT TRANSMITTING AREA OF AT LEAST 10% OF THE FLOOR AREA.
4. SANITARY COMPARTMENTS, BATHROOM,LAUNDRIES AND THE LIKE NOT PROVIDED WITH NATURAL LIGHT MUST BE PROVIDED WITH ARTIFICIAL LIGHT AT A RATE OF NOT LESS THAN 1 LIGHT FITTING PER 16m2 OF FLOOR AREA AND IN ACCORDANCE WITH AS/NZS 1680.0

HEATING APPLIANCES:

1. IN ACCORDANCE WITH PART H7D5 OF CURRENT N.C.C AND AS/NZS 2918 FOR DOMESTIC SOLID-FUEL BURNING APPLIANCES.
2. ALL HEATING APPLIANCES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

BUILDING SEALING:

1. IN ACCORDANCE WITH CURRENT N.C.C. CHIMNEYS AND FLUE MUST BE FITTED WITH A DAMPER/FLAP THAT CAN BE CLOSED.
2. ROOFS,WALLS & FLOORS SEALED BY CAULKING,SKIRTING,ARCHITRAVES OR THE LIKE.
3. EXTERNAL WINDOWS AND DOORS TO BE FITTED WITH COMPRESSIBLE STRIP, FOAM, RUBBER OR FIBROUS SEAL TO ALL EXTERNAL WINDOW SASHES AND EXTERNAL DOORS.
4. EXTERNAL FANS TO BE SELF CLOSING DAMPER OR FILTER TO BE FITTED.
5. ALL DOWNLIGHTS TO BE SEALED.

SMOKE ALARMS:

1. SMOKE ALARMS TO BE INSTALLED IN ACCORDANCE WITH PART H3D6 OF CURRENT N.C.C. AND AS3786 REQUIREMENTS.
2. SMOKE ALARMS TO BE INSTALLED IN A CLASS 1a BUILDING ON OR NEAR THE CEILING IN: - ANY STOREY CONTAINING BEDROOMS (i) BETWEEN EACH PART OF THE DWELLING CONTAINING BEDROOMS AND THE REMAINDER OF THE DWELLING; AND (ii) WHRE BEDROOMS ARE SERVED BY A HALLWAY, IN THAT HALLWAY.
3. ALL SMOKE ALARMS MUST BE CONNECTED TO THE CONSUMER MAINS POWER WHERE CONSUMER POWER IS SUPPLIED TO THE BUILDING
4. SMOKE ALARMS TO BE INTERCONNECTED WHERE THERE IS MORE THAN 1 ALARM
5. SMOKE ALARMS TO HAVE BATTERY BACK UP IN CASE OF POWER OUTAGE. RECOMMENDED BATTERIES MUST BE CAPABLE OF SERVICING THE SMOKE ALARM WITH A FAULT FOR 1 YEAR.

ROOF CLADDING, GUTTERING AND DOWNPIPES:

1. IN ACCORDANCE WITH H2D6 OF CURRENT N.C.C., AS/NZS 3500.3 AND AS/NZS 3500.5. SECTION 5 INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
2. WHEREVER FULL SHEETS CAN'T BE UTILIZED PROVIDE THE DISTANCE FOR END LAPPING WHERE SHEETS MEET: - SLOPES 5-15 = A LAP OF 200mm - SLOPES 15 AND GREATER = A LAP OF 150mm.
3. GUTTERS MUST BE INSTALLED WITH A FALL OF NOT LESS THAN - 1:500 FOR EAVES GUTTERS AND 1:100 FOR BOX GUTTERS.
4. DOWNPIPES MUST:

a) NOT SERVE MORE THAN 12m OF GUTTER LENGTH FOR EACH DOWNPIPE.

b) BE LOCATED AS CLOSE AS POSSIBLE TO VALLEY GUTTERS AND IF THE DOWNPIPE IS MORE THAN 1.2m FROM A VALLEY, PROVISION FOR OVERFLOW MUST BE MADE TO THE GUTTER.

WET AREAS & EXTERNAL WATERPROOFING:

1. IN ACCORDANCE WITH PART H4D2 OF CURRENT N.C.C. AND AS/NZS 3740.
2. BUILDING ELEMENTS IN WET AREAS MUST BE WATERPROOF OR WATER RESISTANT IN ACCORDANCE WITH TABLE UNDER H4D4.
3. WATERPROOFING MEMBRANES FOR EXTERNAL ABOVE GROUND USE MUST COMPLY WITH AS4654 PARTS 1 AND 2.

NOT FOR CONSTRUCTION

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LYNE DESIGN

BUILDING DESIGN/ DRAFTING - BUSHFIRE MANAGEMENT

DAVID LYNE ACCREDITED DESIGNER: CC7063

11 GRANVILLE AVENUE

GEILSTON BAY, TASMANIA 7015

MOBILE: 0421 852 987 david@lynedesign.com.au

PROJECT

46 HONEYWOOD DRIVE
HONEYWOOD, TAS 7017

TITLE

NOTES SHEET

Accepted LUKE KERSHAW (Client 1)	Date
Accepted NOT APPLICABLE (Client 2)	Date
Approved NOT APPLICABLE (Builder)	Date

This document must be signed

SCALES @ A3	DESIGNED BY	DRAWN BY
N/A	D. LYNE	D. LYNE
	PLOT DATE	15/01/2026

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PLOT DETAILS HONEYWOOD.DWG

PROJECT NO. TBA

DWG NO.	REVISION
B01	P3

STAIR CONSTRUCTION:

1. IN ACCORDANCE WITH PART H5D1 OF CURRENT N.C.C.

2. STAIRS MUST BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOW: (a) EACH FLIGHT MUST HAVE NOT MORE THAN 18 NOR LESS THAN 2 RISERS. (b) THE NOMINAL DIMENSION OF GOINGS AND RISERS OF A STAIR MUST BE CONSTANT THROUGHOUT EACH STAIR (c) TREADS MUST BE SOLID CONSTRUCTION IF THE STAIRWAY IS MORE THAN 10m HIGH OR 3 STOREYS. (d) A FLIGHT OF STAIRS MUST NOT HAVE MORE THAN 3 WINDERS (e) THE RISERS MUST NOT ALLOW A 125mm SPHERE TO PASS THROUGH BETWEEN THE TREADS (f) TREADS & NOSINGS MUST HAVE-(i) A SURFACE WITH A SLIP-RESISTANCE CLASSIFICATION NOT LESS THAN THAT LISTED IN TABLE UNDER H5D2 WHEN TESTED IN ACCORDANCE WITH AS4586

BARRIERS AND HANDRAILS:

1. IN ACCORDANCE WITH PART H5P1 OF CURRENT N.C.C.

2. (a) A CONTINUOUS BARRIER MUST BE PROVIDED ALONG THE SIDE OF -(i) ANY ROOF TO WHICH GENERAL ACCESS IS PROVIDED; AND (ii) ANY STAIRWAY OR RAMP; AND (iii) A FLOOR, CORRIDOR, HALLWAY, DECK, VERANDAH, MEZZANINE OR THE LIKE; AND (iv) ANY DELINEATED PATH OF ACCESS TO A BUILDING (b) THE REQUIREMENTS OF (a) DO NOT APPLY TO -(i) AREAS REFERRED TO IN H5D2; OR (ii) A RETAINING WALL, UNLESS THE RETAINING WALL FORMS PART OF, OR IS DIRECTLY ASSOCIATED WITH A DELINEATED PATH OF ACCESS TO A BUILDING FROM THE ROAD, OR A DELINEATED PATH OF ACCESS BETWEEN BUILDINGS; OR (iii) A BARRIER PROVIDED TO AN OPENABLE WINDOW COVERED BY H5D2
3. (a) THE HEIGHT OF A BARRIER REQUIRED BY H5D3 MUST BE IN ACCORDANCE WITH THE FOLLOWING: (i) THE HEIGHT MUST NOT BE LESS THAN 865mm ABOVE THE NOSINGS OF THE STAIR TREADS OR THE FLOOR OF A RAMP. (ii) THE HEIGHT MUST NOT BE LESS THAN -(A) 1m ABOVE THE FLOOR OF ANY ACCESS PATH, BALCONY, LANDING OR THE LIKE; OR (B) 865mm ABOVE THE FLOOR OF A LANDING TO A STAIR WHERE THE BARRIER IS PROVIDED ALONG THE INSIDE EDGE OF THE LANDING AND DOES NOT EXCEED A LENGTH OF 500mm (b) OPENINGS IN BARRIERS MUST NOT EXCEED 125mm (c) A BARRIER, EXCEPT A WINDOW SERVING AS A BARRIER, MUST BE DESIGNED TO TAKE LOADING FORCES IN ACCORDANCE WITH AS/NZS 1170.1 (d) FOR FLOORS MORE THAN 4m ABOVE THE SURFACE BENEATH, ANY HORIZONTAL ELEMENTS WITHIN THE BARRIER BETWEEN 150mm AND 760mm ABOVE THE FLOOR MUST NOT FACILITATE CLIMBING. (f) WHERE WIRE BALUSTRAUDING IS USED IT MUST COMPLY WITH PART H5D3.

4. (a) HANDRAILS TO A STAIRWAY OR RAMP MUST -(i) BE LOCATED ALONG AT LEAST 1 SIDE OF THE FLIGHT OR RAMP; AND (ii) BE LOCATED ALONG THE FULL LENGTH OF THE FLIGHT OR RAMP, EXCEPT WHERE IT MEETS A BARRIER (iii) HAVE A TOP SURFACE HANDRAIL HEIGHT OF NOT LESS THAN 865mm VERTICALLY ABOVE THE NOSING OF THE STAIRS.

5. (a) A WINDOW OPENING MUST BE PROVIDED WITH PROTECTION, IF THE FLOOR BELOW THE WINDOW IN A BEDROOM IS 2m OR MORE ABOVE THE SURFACE BENEATH. (b) WHERE THE LOWEST LEVEL OF THE WINDOW OPENING IS LESS THAN 1.7m ABOVE THE FLOOR, A WINDOW OPENING COVERED BY (a) MUST COMPLY WITH THE FOLLOWING: (i) THE OPENABLE PORTION OF THE WINDOW MUST BE PROTECTED WITH -(A) A DEVICE CAPABLE OF RESTRICTING THE WINDOW OPENINGS; OR (B) A SCREEN WITH SECURE FITTINGS (ii) A DEVISE OR SCREEN REQUIRED BY (i) NUST -(A) NOT PERMIT A 125mm SPHERE TO PASS THROUGH THE WINDOW OPENING OR SCREEN; AND (B) RESIST AN OUTWARD HORIZONTAL ACTION OF 250N AGAINST THE -(aa) WINDOW RESTRAINED BY A DEVICE; OR (bb) SCREEN PROTECTING THE OPENING; AND (C) HAVE A CHILD RESISTANT RELEASE MECHANISM IF THE SCREEN OR DEVICE IS ABLE TO BE REMOVED, UNLOCKED OR OVERRIDDEN.

ROOM HEIGHTS:

1. IN ACCORDANCE WITH PART H4D4 OF CURRENT N.C.C.

2. CEILING HEIGHTS MUST NOT BE LESS THAN: (a) IN A HABITABLE ROOM EXCLUDING A KITCHEN - 2.4m (b) IN A KITCHEN - 2.1m (c) IN A CORRIDOR, PASSAGEWAY OR THE LIKE - 2.1m (d) IN A BATHROOM, LAUNDRRY,WC,PANTRY,STOREROOM,GARAGE OR THE LIKE -2.1m (e) IN A ROOM WITH A SLOPING CEILING OR PROJECTIONS BELOW THE CEILING LINE WITHIN: (i) A HABITABLE ROOM -(A) IN AN ATTIC - NOT LESS THAN 2.2m FOR AT LEAST 2/3 OF THE FLOOR AREA OF THE ROOM (B) I OTHER ROOMS - NOT LESS THAN 2.4m OVER 2/3 OF THE FLOOR AREA OF THE ROOM (ii) A NON-HABITABLE ROOM - NOT LESS THAN 2.1m FOR AT LEAST 2/3 OF THE ROOM AREA (f) IN A STAIRWAY, RAMP OR LANDING - 2.0m MEASURE VERTICALLY ABOVE THE NOSING OR SURFACE.

AIR MOVEMENT:

1. IN ACCORDANCE WITH PART H4V3 OF CURRENT N.C.C.

BUSHFIRE PRONE AREAS:

1. IN ACCORDANCE WITH PART H7D4 OF CURRENT N.C.C AND AS3959-2018.

2. AN ASSESSMENT TO DETERMINE THE BAL RATING MUST BE UNDERTAKEN AND ANY REQUIREMENTS FROM THE SUBSEQUENT BAL LEVEL MUST BE APPLIED.

3. A CLASS 1 BUILDING WITHIN A DESIGNATED BUSHFIRE PRONE AREA MUST BE IN ACCORDANCE WITH TAS 3.7.4.1 VEHICULAR ACCESS AND TAS 3.7.4.2 WATER SUPPLY.

VENTILATION:

1. IN ACCORDANCE WITH PART H4P5 OF CURRENT N.C.C.

2. AN EXHAUST FAN OR OTHERS MEANS OF MECHANICAL VENTILATION MAY BE USED TO VENTILATE A SANITARY COMPARTMENT, LAUNDRY OR BATHROOM PROVIDED CONTAMINATED AIR EXHAUSTS-(i) DIRECTLY OUTSIDE THE BUILDING BY WAY OF DUCTS; OR (ii) INTO A ROOF SPACE-(A) IS ADEQUATLY VENTILATED BY OPEN EAVES, AND/OR ROOF VENTS (B) IS COVERED BY ROOF TILES WITHOUT SARKING.

3. SANITARY COMPARTMENTS MUST NOT OPEN DIRECTLY INTO A KITCHEN OR PANTRY UNLESS-(a) ACCESS IS BY AN AIRLOCK, HALLWAY OR OTHER ROOM (b) THE ROOM CONTAINING THE CLOSET PAN IS PROVIDED WITH MECHANICAL EXHAUST.

SOUND INSULATION:

1. IN ACCORDANCE WITH PART H4P6 OF CURRENT N.C.C.

FACILITIES:

1. IN ACCORDANCE WITH PART H4D5 OF CURRENT N.C.C

2. THE DOOR TO A SANITARY CLOSED COMPARTMENT MUST -(a) OPEN OUTWARDS OR (b) SLIDE OR (c) BE READILY REMOVABLE FROM THE OUTSIDE OF THE COMPARTMENT UNLESS THERE IS A CLEAR SPACE OF 1.2m BETWEEN THE PAN AND THE DOORWAY.

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LYNE DESIGN

BUILDING DESIGN/ DRAFTING - BUSHFIRE MANAGEMENT

DAVID LYNE ACCREDITED DESIGNER: CC7063
11 GRANVILLE AVENUE
GEILSTON BAY, TASMANIA 7015
MOBILE: 0421 852 987 david@lynedesign.com.au

PROJECT
46 HONEYWOOD DRIVE
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Accepted LUKE KERSHAW (Client 1)	Date
Accepted NOT APPLICABLE (Client 2)	Date
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This document must be signed

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N/A	D. LYNE	D. LYNE
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PLOT DETAILS HONEYWOOD.DWG

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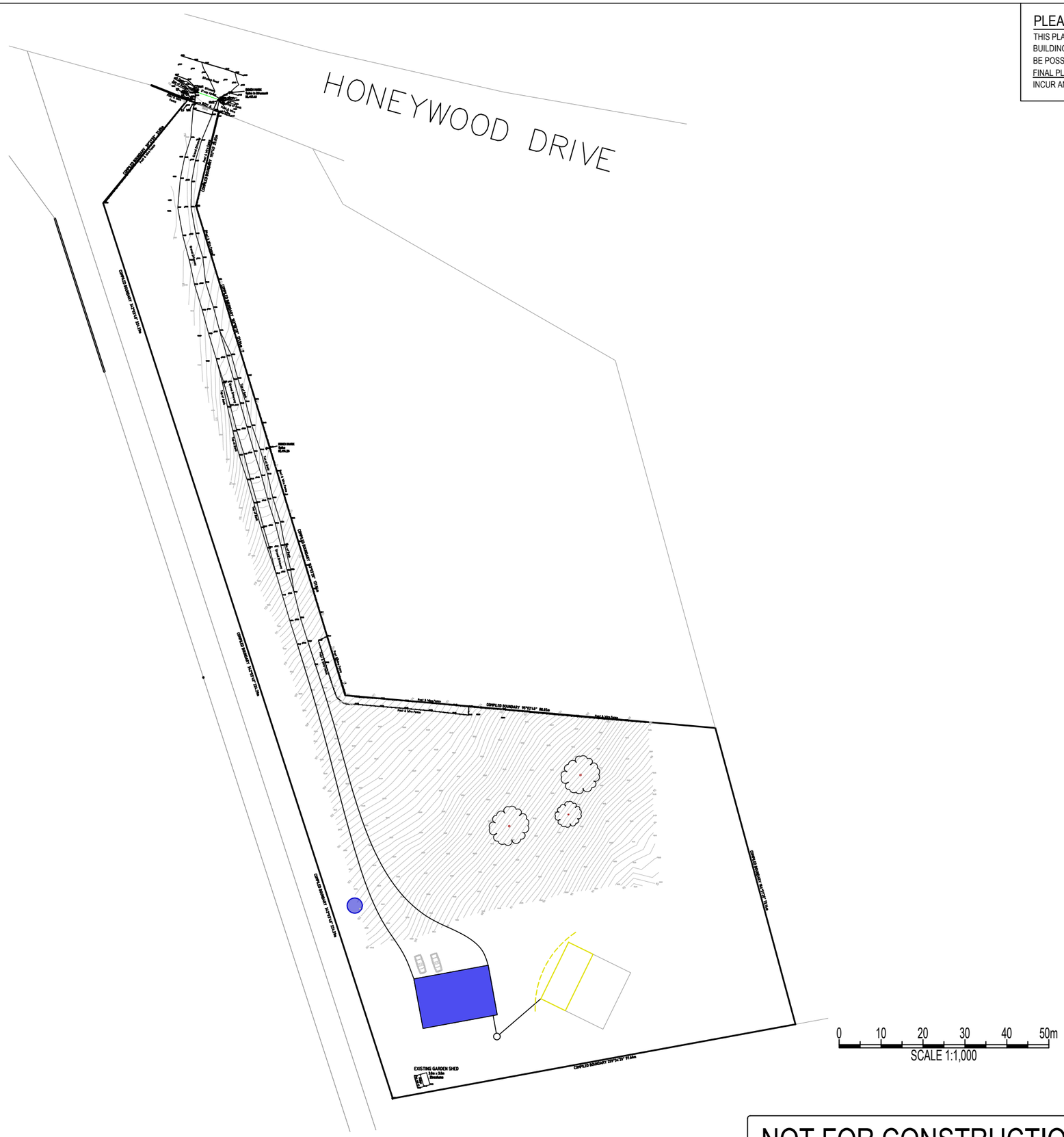
B02	P3

ALL SITE WORKS SHALL BE IN ACCORDANCE WITH N.C.C., CSIRO BTF 18,19,22 AND AS2870
MINIMAL SITE DISTURBANCE IS TO BE CARRIED OUT. SEDIMENT CONTROL; 'GEOLAB' SILT FENCE 1000 OR SIMILAR. TOPSOIL STOCKPILES REMAINING ON THE SITE TO BE COVERED WITH PLASTIC, ADEQUATELY RETAINED ALONG ALL EDGES. UNUSED STOCKPILES TO BE REMOVED FROM SITE OR USED FOR FUTURE LANDSCAPING.

SITE PREPARATION AND EXCAVATION

IN ACCORDANCE WITH PART 3.1 OF CURRENT N.C.C., AND TO LOCAL COUNCIL REQUIREMENTS.

INTERNAL FINISHED FLOOR LEVEL (FFL) TO BE MIN. 150mm ABOVE FINISHED EXTERNAL GROUND AREAS (FLOWER BEDS OR GRASSED AREAS) AND MIN. 50mm ABOVE FINISHED EXTERNAL SEALED SURFACES (PAVED AREAS). PROVIDE 50mm MIN. FALL FOR THE FIRST METER AWAY FROM BUILDING TOWARDS LOWER GROUND OR ALTERNATIVELY SUFFICIENT DRAINAGE PROVISIONS (AG DRAINS, SUMPS OR SIMILAR).



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SITE PLAN
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P2	05.01.2026	REVISED PLANNING ISSUE
P1	22.10.2025	PRELIMINARY ISSUE

LYNE DESIGN
BUILDING DESIGN/ DRAFTING - BUSHFIRE MANAGEMENT
DAVID LYNE ACCREDITED DESIGNER: CC7063
11 GRANVILLE AVENUE
GEILSTON BAY, TASMANIA 7015
MOBILE: 0421 852 987 david@lynedesign.com.au

PROJECT
46 HONEYWOOD DRIVE
HONEYWOOD, TAS 7017

TITLE
SITE PLAN

Accepted LUKE KERSHAW (Client 1)	Date
Accepted NOT APPLICABLE (Client 2)	Date
Approved NOT APPLICABLE (Builder)	Date

This document must be signed

SCALES @ A3	DESIGNED BY	DRAWN BY
1:1000	D.LYNE	D.LYNE
	PLOT DATE	15/01/2026

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PROJECT NO. TBA

DWG NO. B03 | REVISION P3

ALL SITE WORKS SHALL BE IN ACCORDANCE WITH N.C.C., CSIRO BTF 18,19,22 AND AS2870
MINIMAL SITE DISTURBANCE IS TO BE CARRIED OUT. SEDIMENT CONTROL; 'GEOLAB' SILT FENCE 1000 OR SIMILAR. TOPSOIL STOCKPILES REMAINING ON THE SITE TO BE COVERED WITH PLASTIC, ADEQUATELY RETAINED ALONG ALL EDGES. UNUSED STOCKPILES TO BE REMOVED FROM SITE OR USED FOR FUTURE LANDSCAPING.

SITE PREPARATION AND EXCAVATION

IN ACCORDANCE WITH PART 3.1 OF CURRENT N.C.C., AND TO LOCAL COUNCIL REQUIREMENTS.

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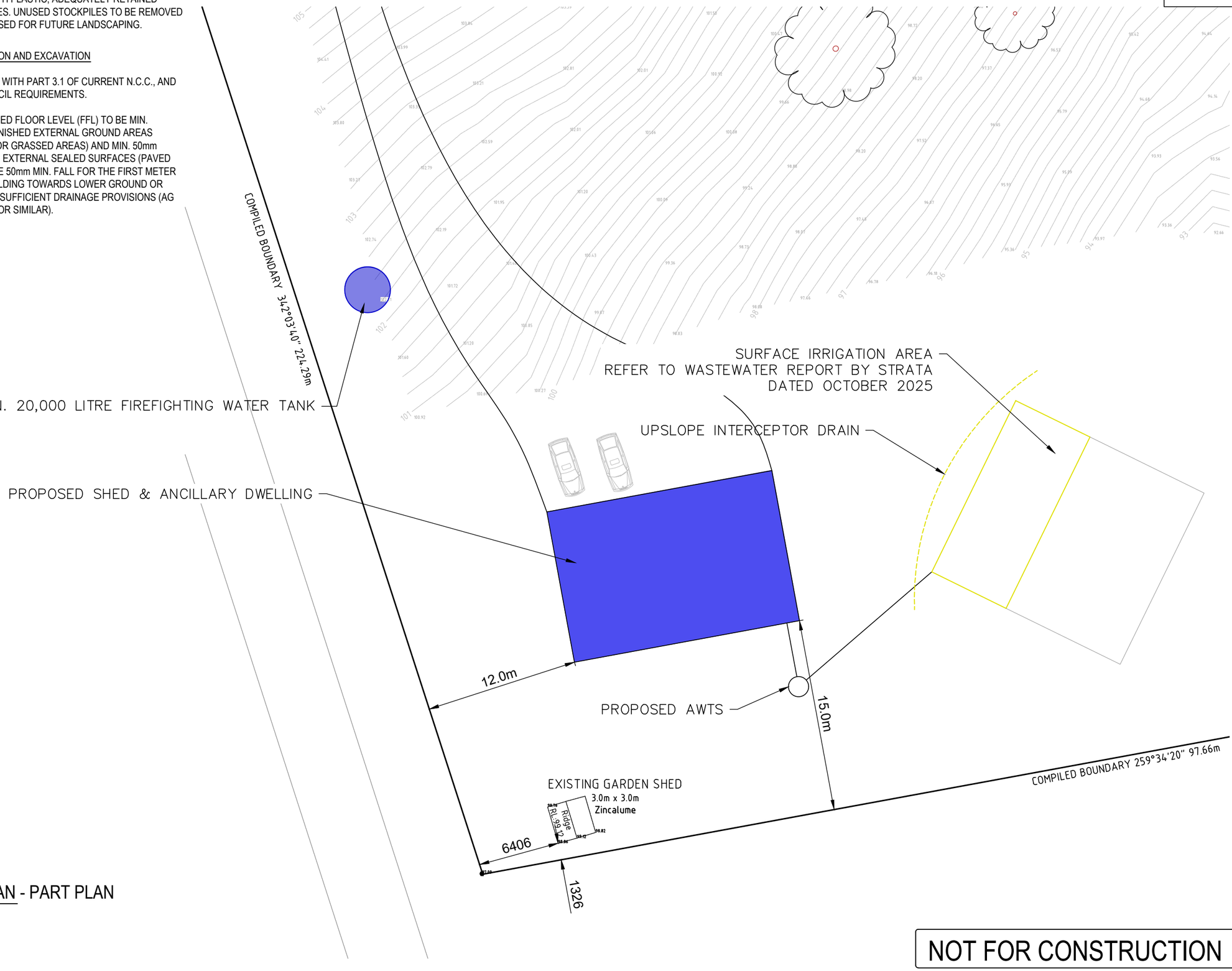

SITE PLAN - PART PLAN
SCALE: 1:300

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MOBILE: 0421 852 987 david@lynedesign.com.au

PROJECT
46 HONEYWOOD DRIVE
HONEYWOOD, TAS 7017

TITLE
SITE PLAN

Accepted (Client 1)	LUKE KERSHAW	Date
Accepted (Client 2)	NOT APPLICABLE	Date
Approved (Builder)	NOT APPLICABLE	Date

This document must be signed

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DWG NO. B04 | REVISION P3

CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH AS1684.2 AND AS 3959 FOR BUSHFIRE ATTACK LEVEL - BAL-19
GLAZING TO BE IN ACCORDANCE WITH AS1288 AND AS2047
WIND SPEED 40m/s N2

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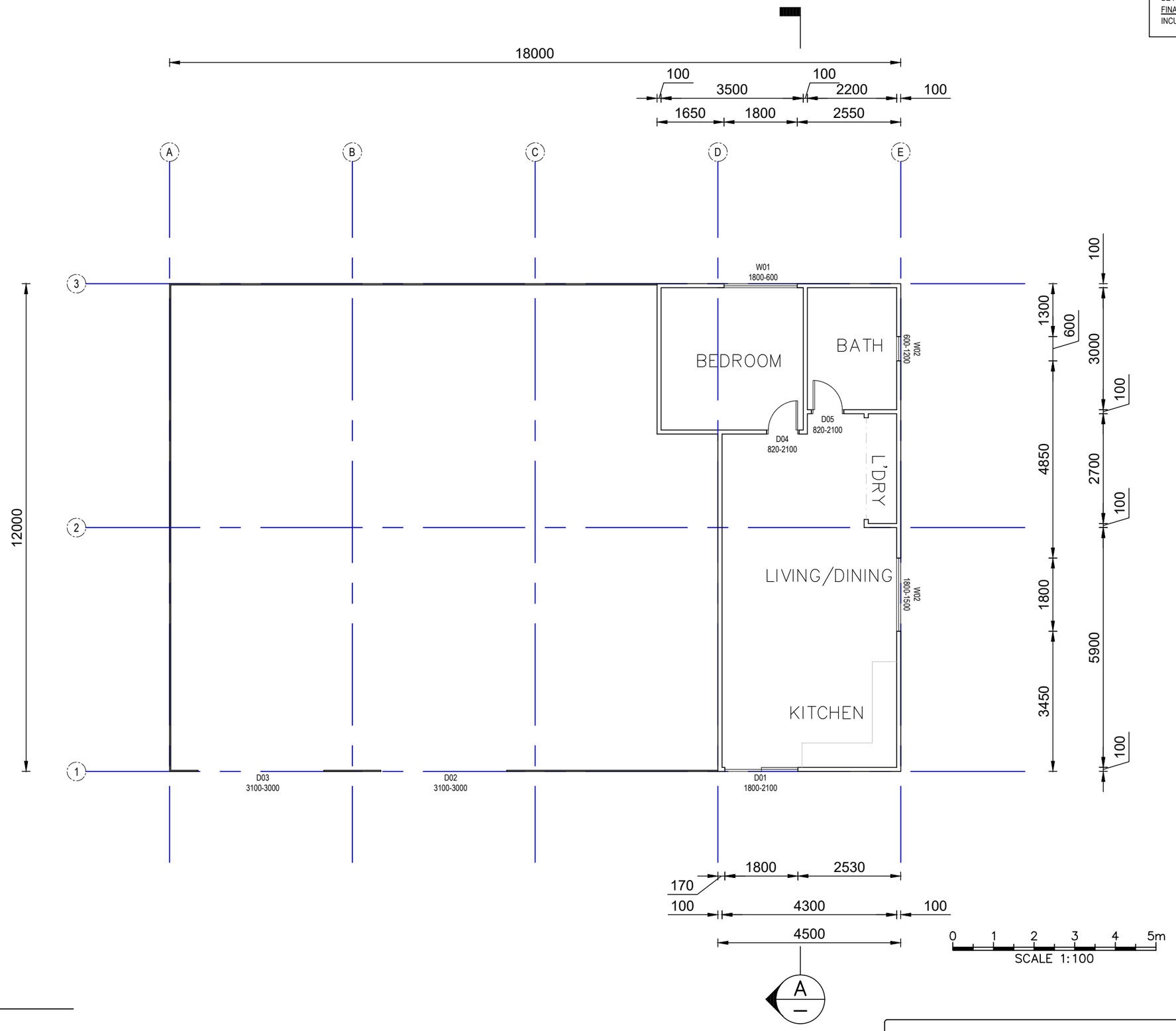

FLOOR PLAN

SCALE: 1:100

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HONEYWOOD, TAS 7017

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FLOOR PLAN

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	PLOT DATE	15/01/2026

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B05	P3

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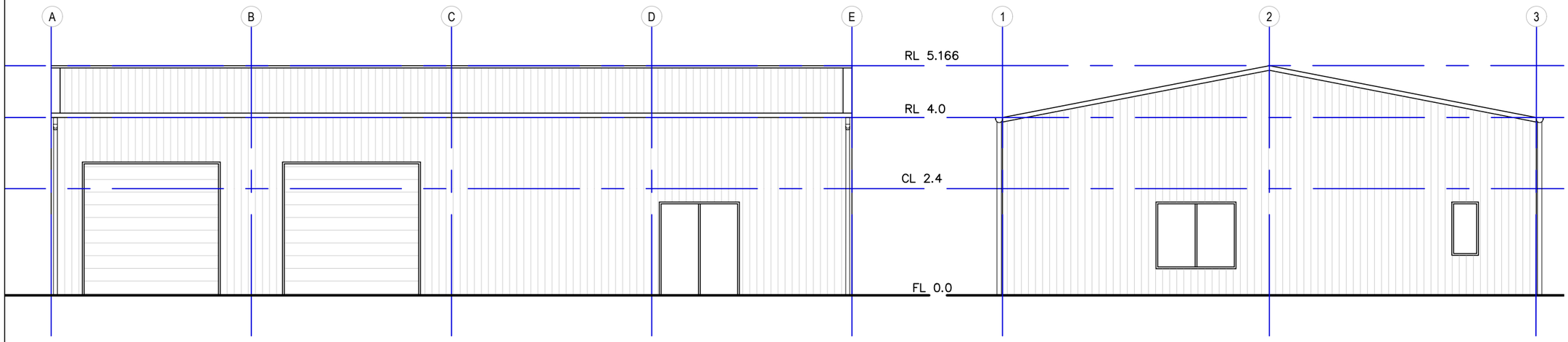

NORTHERN ELEVATION

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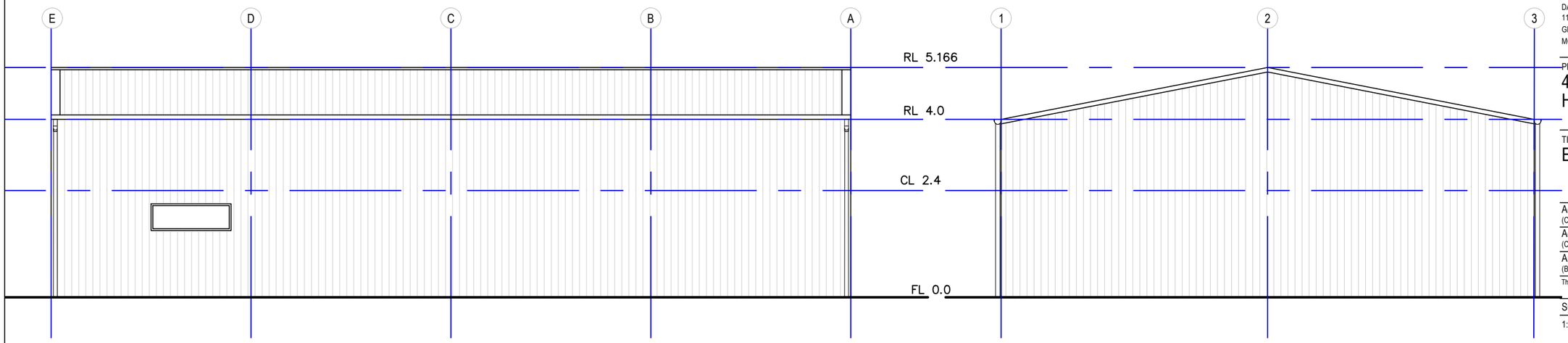
EASTERN ELEVATION

SCALE: 1:100



SOUTHERN ELEVATION

SCALE: 1:100

WESTERN ELEVATION

SCALE: 1:100

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HONEYWOOD, TAS 7017

TITLE

ELEVATIONS SHEET

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B06	P3

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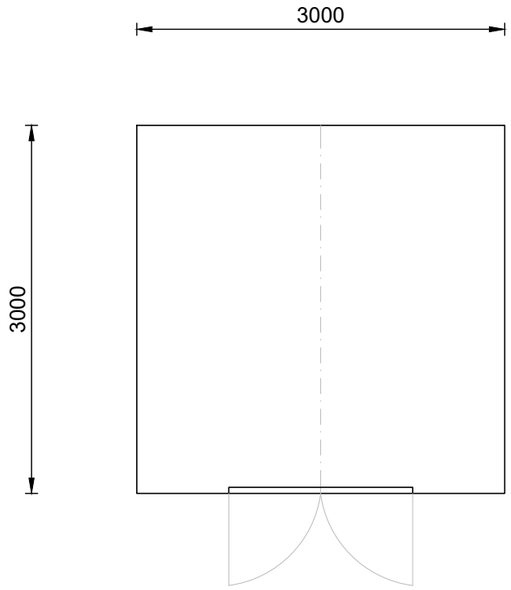

FLOOR PLAN

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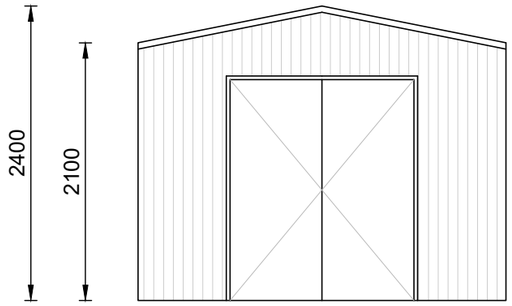

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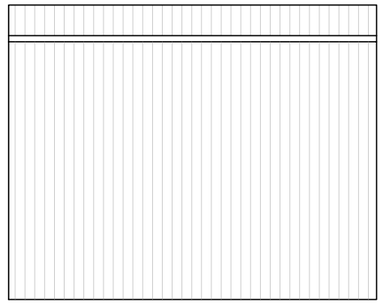

EASTERN ELEVATION

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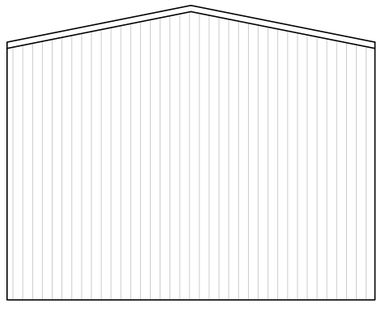

SOUTHERN ELEVATION

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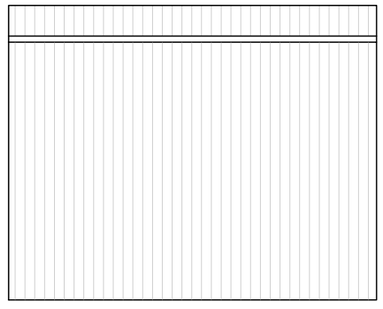

WESTERN ELEVATION

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0 0.5 1 1.5 2 2.5m

SCALE 1:50

EXISTING SHED PLAN

SCALE: 1:50

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B06	P3

strata
geoscience and environmental

Soil Dispersion Risk Assessment and Management Strategies

46 Honeywood Drive Honeywood

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Appendix 2 Laboratory Test Results,
Appendix 3 Extracts DPIWE (2009), Aust Geomechanics Guidelines (2007)
Appendix 4 Bore Logs
Appendix 5 Terms and Conditions

Abstract

Lyne Design contracted Strata Geoscience and Environmental Pty Ltd to perform risk assessment for dispersive soils of proposed development areas underlying 46 Honeywood Drive Honeywood. The proponent is proposing residential construction in an area identified as a having potential for dispersive soils.

A desktop review found that the site as being in an area identified as proximal to a mapped tunnel erosion hazard (DPIWE 2009). Geotechnical reconnaissance of the proposed development area comprised field observation of geomorphic, soil and water factors associated with dispersive soils as well as limited field and laboratory testing of soils recovered from geotechnical bores. The investigation found that variable soil conditions exist over the site, namely variable depth CLAYS (CL/CH) overlying Inter-bedded Triassic aged Sandstones.

A risk assessment for dispersive soils over the proposed development areas has found:

- Dispersive soil phases exist over the site. The presence and severity of these dispersive phases are likely to vary enormously over short distances.
- The risk associated with site development creating soil erosion is high
- Treatment measures MUST be adopted to limit this risk to life and property

Treatment measures to limit risk are detailed in Section 4.

1. Introduction

1.1 Site Location and Context

The proposed development area is located at 46 Honeywood Drive Honeywood in SE Tasmania.

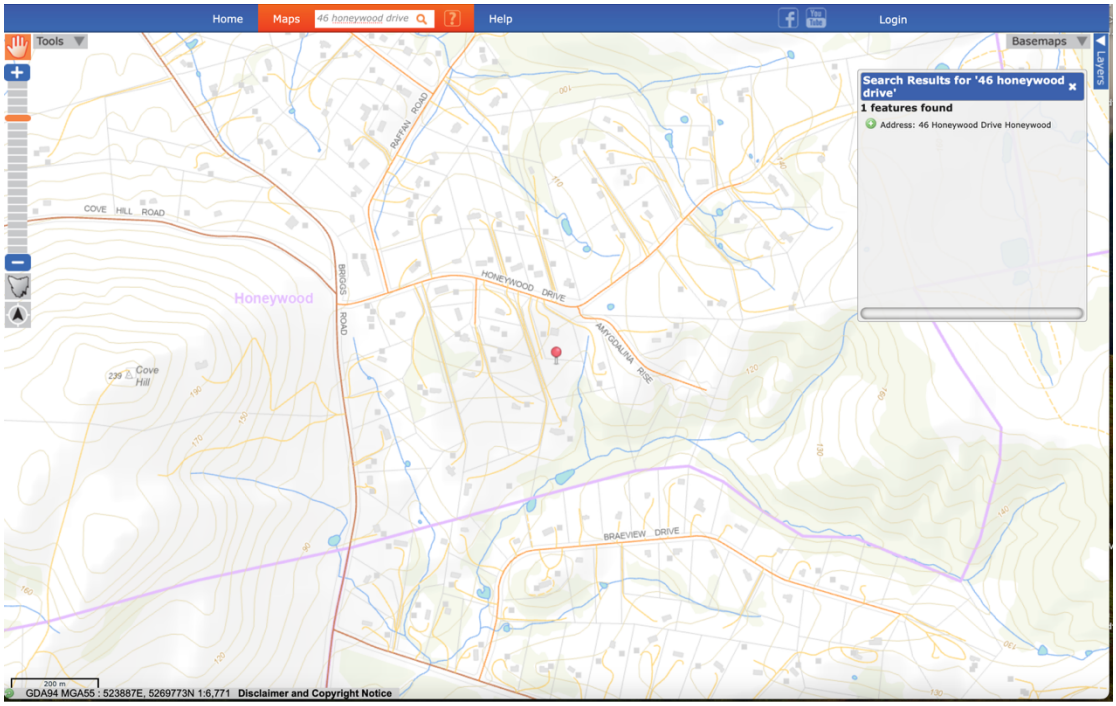

Figure 1 Site Location

1.2 Scope of Work

It is the scope of this investigation to perform a risk assessment for soil dispersion given the current development proposal (see Appendix 1). The scope has been determined in consultation with the proponent and local council office and is subject to temporal and budgetary considerations. This investigation will inform further sampling and analysis as well as the preparation of development specific management plans if warranted.

1.3 Guidelines and Standards Referenced

This investigation is made with reference to, or in general accordance with, the following standards and guidelines:

- Standards Australia (1993) AS1726-1993 Geotechnical Site Investigations
- Standards Australia (2004) AS/NZS4360 - Risk Management
- Standards Australia (1997) AS3798 “Guidelines for Earthworks on commercial and residential subdivision”
- Australian Geomechanics Society (2007) Landslide Risk Management. Australian Geomechanics 42(1) March 2007.
- *DPIWE (2009) Dispersive Soils and their Management: Technical Reference Manual*’ Available at: http://www.dpiw.tas.gov.au/inter.nsf/WebPages/TPRY-5Z66FY?open

2. Desktop Review and Site Investigation

2.1 Conceptual Surface Geology and Geomorphology

Referring to the MRT 1:25000 mapping series accessed via LISTMAP, the site is situated on a slight to moderate slope underlain interbedded micaceous brown, red-purple, green and grey carbonaceous siltstone, shale and mudstone with notable thin beds of bioturbated silicified sandstone, and planar-bedded, ripple cross-laminated and cross-bedded quartzose and muddy quartzose sandstone.

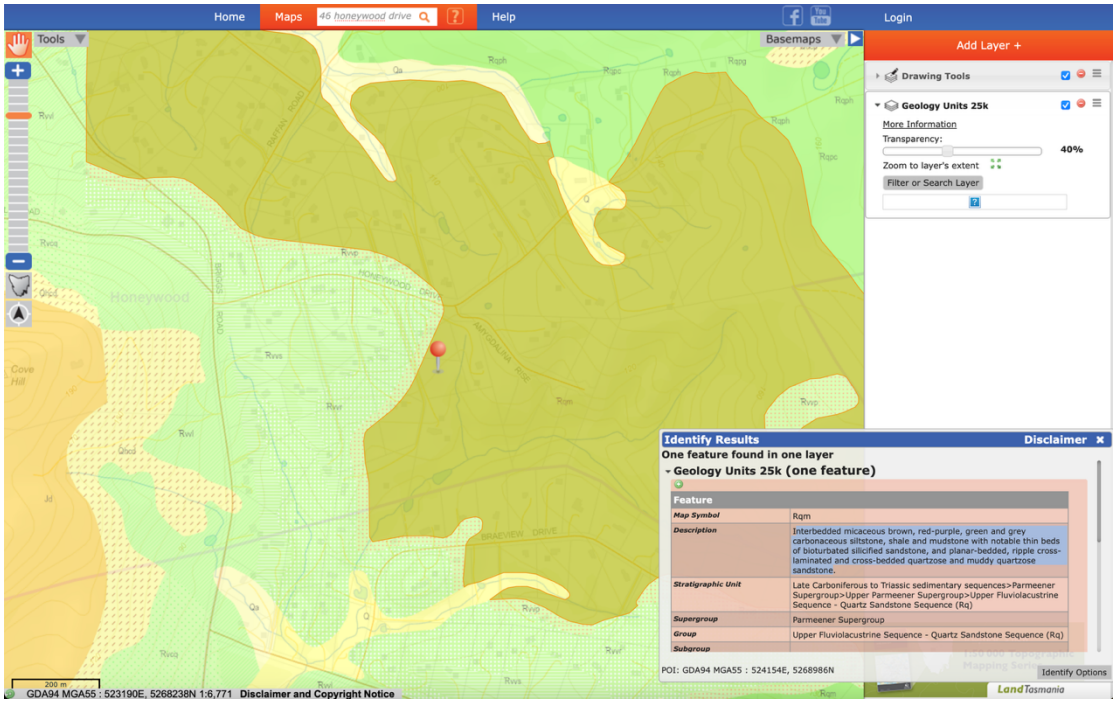

Figure 2 MRT 1:25000 mapping series overlain in LISTMAP

2.2 Conceptual Site Hydrogeology

Whilst site specific hydro-geological modelling has not been conducted and no site specific data is available, it is likely that a confined groundwater aquifer exists under the site in bedrock. Base flows for localised drainage lines are likely supplied by a shallow ephemeral unconfined aquifer moving through or over subsoils. Regional groundwater is therefore likely moving in a south easterly direction. At the time of this investigation this aquifer was not intercepted to a maximum drilled depth of 1.8 mbgs. Shallow groundwater can

impact upon dispersive soils by causing tunnel erosion and it is therefore critical to manage groundwater flows where it is impacting upon soils

2.3 Potential for Dispersive Soil Occurrence

Referring to the DPIWE (2009) the site is identified as "as being in an area identified as proximal to an area of "severe tunnel erosion hazard" (Figure 3). Given this above further investigation into geomorphic, soil and laboratory indicators over the proposed development area is warranted.

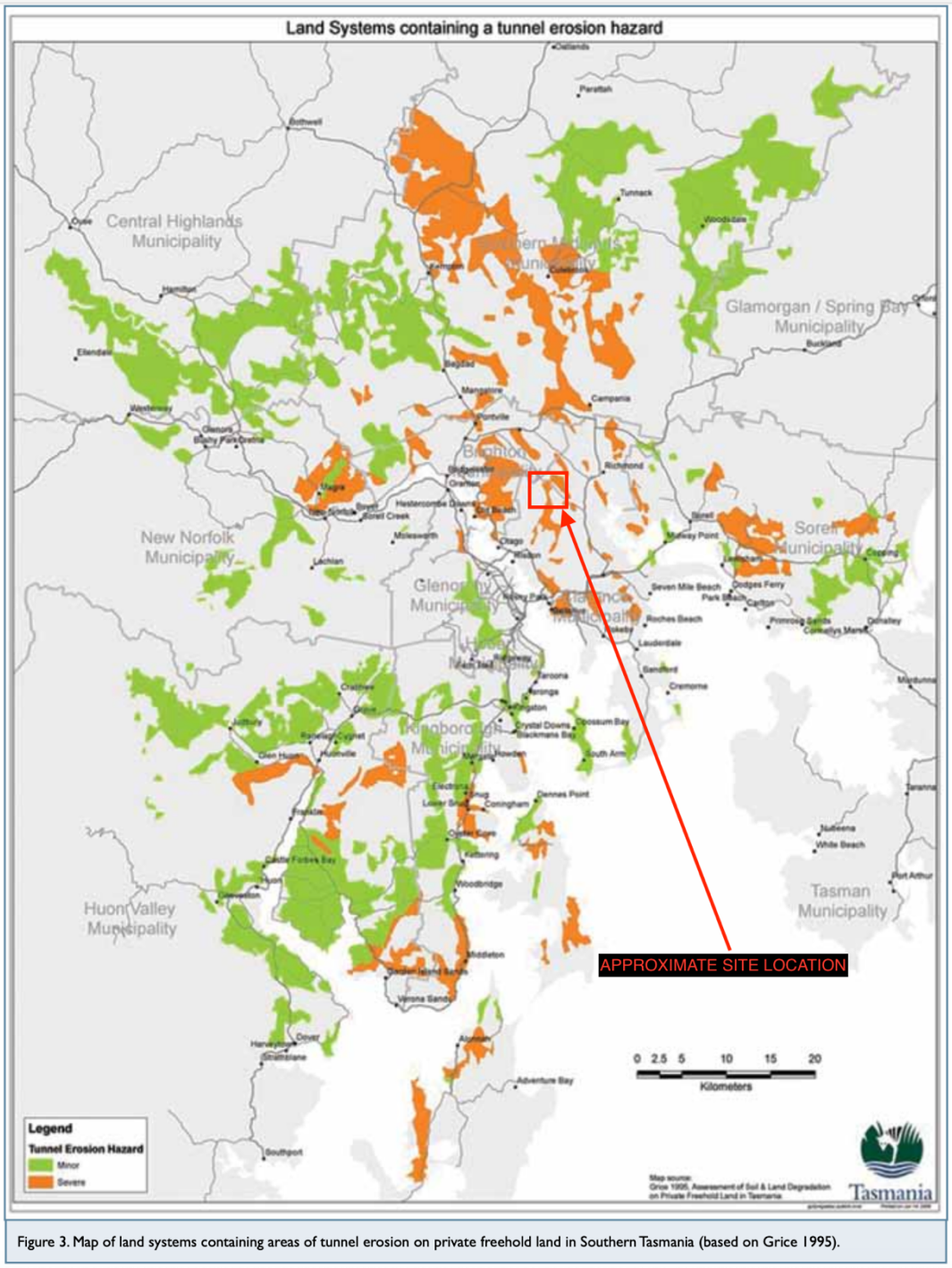

Figure 3. Map of land systems containing areas of tunnel erosion on private freehold land in Southern Tasmania (based on Grice 1995).

Figure 3 Map of land systems containing tunnel erosion (DPIWE 2009)

2.4 Development Specific Criteria

Development plans (if available) are presented in Appendix 1.

2.5 Site Investigation

Geomorphic factors were assessed via a visual inspection of the site, soil and water factors were investigated by the drilling of geotechnical test bores. Soils were sampled at 500mm from the ground surface to as an initial screening investigation to inform the requirement of follow up sampling. Probes were thoroughly cleaned between bores to prevent the possibility of cross-contamination. Samples were bagged to minimise oxygen exposure before refrigerated transportation to the laboratory for Emmerson Testing.

3. Results and Discussion

3.1 Field Reconnaissance

Field reconnaissance involved a site walk over to confirm geomorphology and the drilling of geotechnical bores in proposed development areas to facilitate soil sampling. Logs are presented in Appendix 4.

General comments from field reconnaissance include:

- The site is slightly sloping, covered with pasture and likely suffers from imperfect drainage through the wetter months of the year.
- The site has been excavated to produce a bulk cut and fill earthworks
- Variable soil conditions are likely across the site with respect to soil depth as well as well as clay content in subsoils (where present).
- Clays are likely stratified and will exhibit variable dispersive tendencies.

3.2 Laboratory Results

Samples at 500mm were tested for Emmerson Class. Results are presented in Appendix 2 and indicate:

- Samples from all potentially disturbed areas returned an Emmerson Classes of 1 and 4 (See Appendix 2).

3.3 Discussion

Geotechnical reconnaissance found shallow CLAYEY SANDS (SC) and SANDS (SM) over CLAYS (CL/CH) of variable depth (Appendix 4).

Results of analysis of soil samples at 500/1000 mmbgs from bores returned an Emmerson Class of 1 and 4. This indicates dispersive soil phases associate with stratified clays.

The laboratory results indicate a risk of intercepting and disturbing severely dispersive soil phases (Class 1/2) over the site. Such phases are likely to vary enormously over short distances. Only intensive and costly soil sampling and analysis for Exchangable Sodium Percentage, Sodium Absorption Ratio, Dispersion Index and Cation Exchange Capacity could accurately model risk over the entire site.

Given the potential presence of highly dispersive soil phases over the site, the following risk analysis has been prepared based upon the assumption that highly dispersive phase are likely to be disturbed by the current development plan.

3.4 Risk Assessment

Table 1 – Summary of soil dispersion or instability hazards, consequences and risk, with suggested treatment options and revised risk after treatment option implementation

Hazard: Soil dispersion or instability activated by:	**Likelihood of occurrence**	**Consequences to life and property**	**Level of risk to life and property**	**Mitigation options to lower risk levels (see Section 4 for further details)**	**Level or risk after mitigation**
Construction of Dwelling/Outbuildings	Possible	Major	High	Limit bulk earthworks. Found upon underlying bedrock. Capture and reticulate all runoff. Chemical amelioration, re-vegetate and re-topsoil.	**Low**
Construction of Roading/Driveways	Possible	Medium	Moderate	Camber to downslope. Vegetate downslope swales (WSUD). Avoid culverts and trenching. Chemical amelioration, re-vegetate and re-topsoil. Use of weirs, rock lined swales to reduce water velocity.	**Low**
Delivery of Utility Services	Possible	Minor	Moderate	Above ground piping or aerial delivery of stormwater to public infrastructure.	**Low**
Onsite wastewater System Land Application	Possible	Minor	Moderate	Above ground spray irrigation inro mulched constructed ornamental gardens.	**Low**

Onsite stormwater System Land Application	Possible	Minor	Moderate	Above ground land application via tank overflow pipe spreader into rock armoured Geotextile lined rock armoured bed with mulched and vegetated absorption area.	**Low**

Concepts and terminology from AGS (2007) Practice Note Guidelines for Landslide Risk Management (See Appendix 3)

4. Conclusions and Recommendations

This risk assessment for dispersive soils over the proposed development areas has found:

- **Dispersive soil phases exist over the site. The presence and severity of these dispersive phases are likely to vary enormously over short distances.**
- **The risk associated with site development creating soil erosion is high.**
- **Treatment measures MUST be adopted to limit this risk to life and property**

Given the above the following GENERAL treatment measures are recommended to limit risk to life and property:

- **Maintaining topsoils and minimising subsoil disturbance**
- **Re – topsoiling and revegetating disturbed areas**
- **Chemical amelioration of all disturbed areas using gypsum at an application rate of 1kg/m^2**
- **If possible do not construct culverts and drains in dispersive soils.**
- **Avoid/limit bulk earthworks or construction of new dams if possible.**

With reference to the development plan (see Appendix 1) the following recommendations are made:

- ***Dwelling/Outbuildings Construction Methods***:

Given the presence of dispersive soil in the region, mitigation should be undertaken as follows:

  - Foundations must be placed upon underlying competent bedrock.
  - Cut and fill areas are to be covered with 150mm topsoil with gypsum mixed at 1.0 kg/m^2 and re-vegetated. Areas are then to be mulched and track rolled. The areas are to be monitored and any signs of tunnel erosion are to be rectified immediately.
  - Limit concentration of run-off from hardstands. Excavated ground levels are to fall away from the house so that no water pools.
  - Trenching in dispersive soils is to be avoided. Avoid trenching of stormwater and water supply pipes from header tanks into the clay layer. Lay piping scratched max 100mm deep into the topsoil layer, cover with topsoil mounded over pipes and re-seed immediately.

- ***Roadways/driveways MUST:***

  - Minimise bulk earthworks and site cutting by following site contours.
  - Have cambers slightly sloping down slope and roadside swales and batters MUST be revegetated following the principles of water sensitive urban design.
  - The use of road bars and diversion mounds to channel water away from roads is encouraged (see DPIWE 2009 pg 26).
  - Subgrade MUST be compacted, treated with gypsum and a suitable base layer must be rolled to limit infiltration into dispersive soils under roads.

  - If culverts and drains are absolutely necessary ensure that they are excavated in dispersive soils are capped with non dispersive clays mixed with gypsum and topsoil and re – vegetated and monitored.
  - Construct rock weirs or line drains with rocks to reduce water velocity.

- ***Services installation MUST***:
  - Avoid trenching systems and use above ground piping or aerial cabling where possible.
  - Where underground service installation is absolutely necessary ensure dispersive soils are capped with non dispersive clays mixed with gypsum and topsoil and re –vegetated and monitored.

It is furthermore recommended that:

- All treatment measures designed or installed by others MUST be ratified by the author.
- Ongoing monitoring of all works for signs of erosion must be undertaken by owners or occupiers in conjunction with Strata Geoscience and Environmental P/L
- The above recommendations/conditions could be included as permit conditions and if they are not implemented will void the modelling contained within this report.

Any questions or comments in relation to this investigation or its findings should be directed towards the author.

S Nielsen MEngSc CPSS
Director
Strata Geoscience and Environmental Pty Ltd
E:sven@strataconsulting.com.au

5. References

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- Standards Australia (1997) AS3798 “Guidelines for Earthworks on commercial and residential subdivision”
- Australian Geomechanics Society (2007) Landslide Risk Management. Australian Geomechanics 42(1) March 2007.
- *DPIWE (2009) Dispersive Soils and their Management: Technical Reference Manual*' Available at: http://www.dpiw.tas.gov.au/inter.nsf/WebPages/TPRY-5Z66FY?open

6. Appendices

This report contains the following appendices:

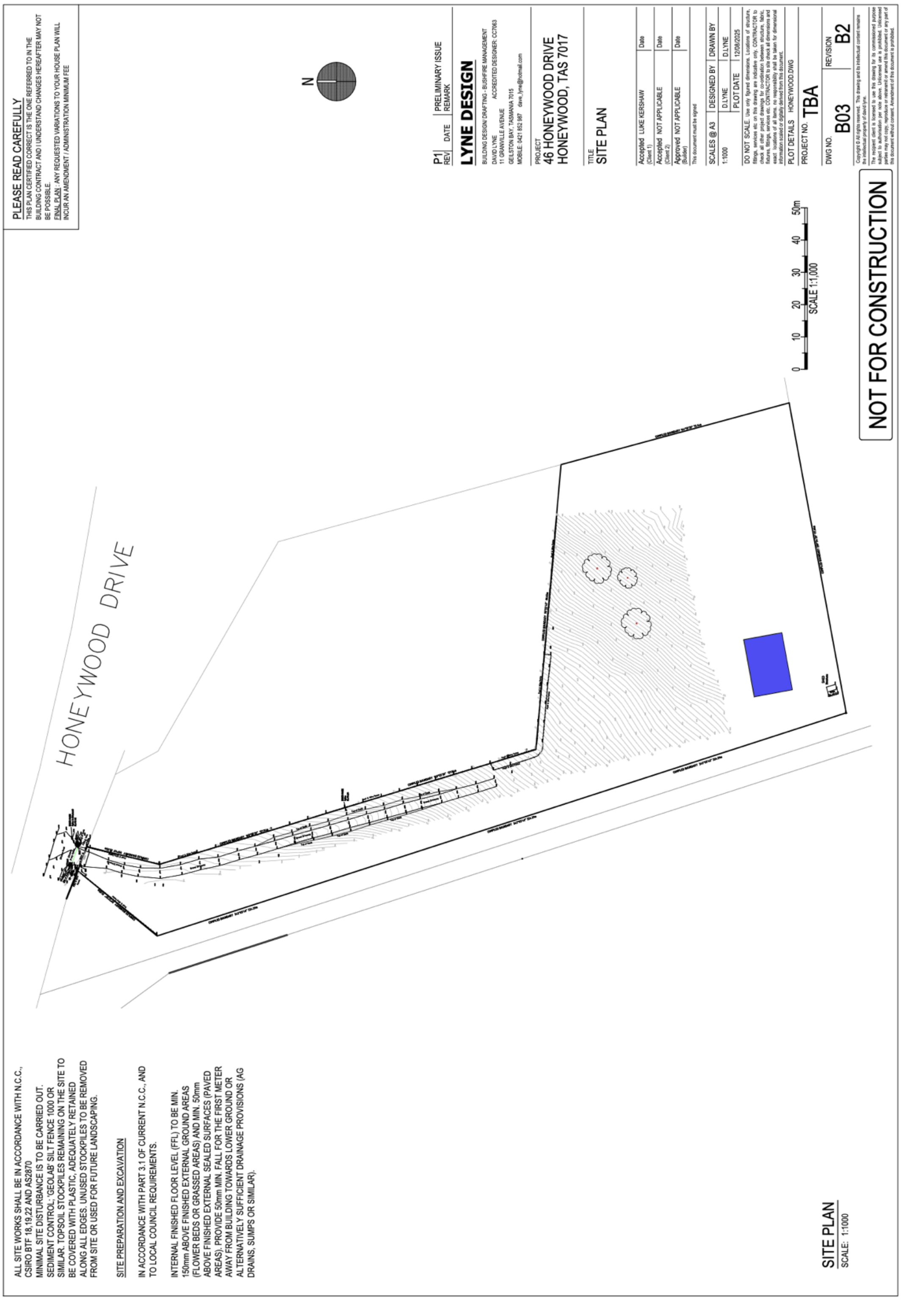
Appendix 1 Site Photographs and Development Plans
Appendix 2 Laboratory Test Results
Appendix 3 Extracts DPIWE (2009), Aust Geomechanics Guidelines (2007)
Appendix 4 Bore Logs
Appendix 5 Terms and Conditions

All appendices **must** accompany this report and be reproduced faithfully in **full colour**.

Appendix 1 Site Photos and Development Plans

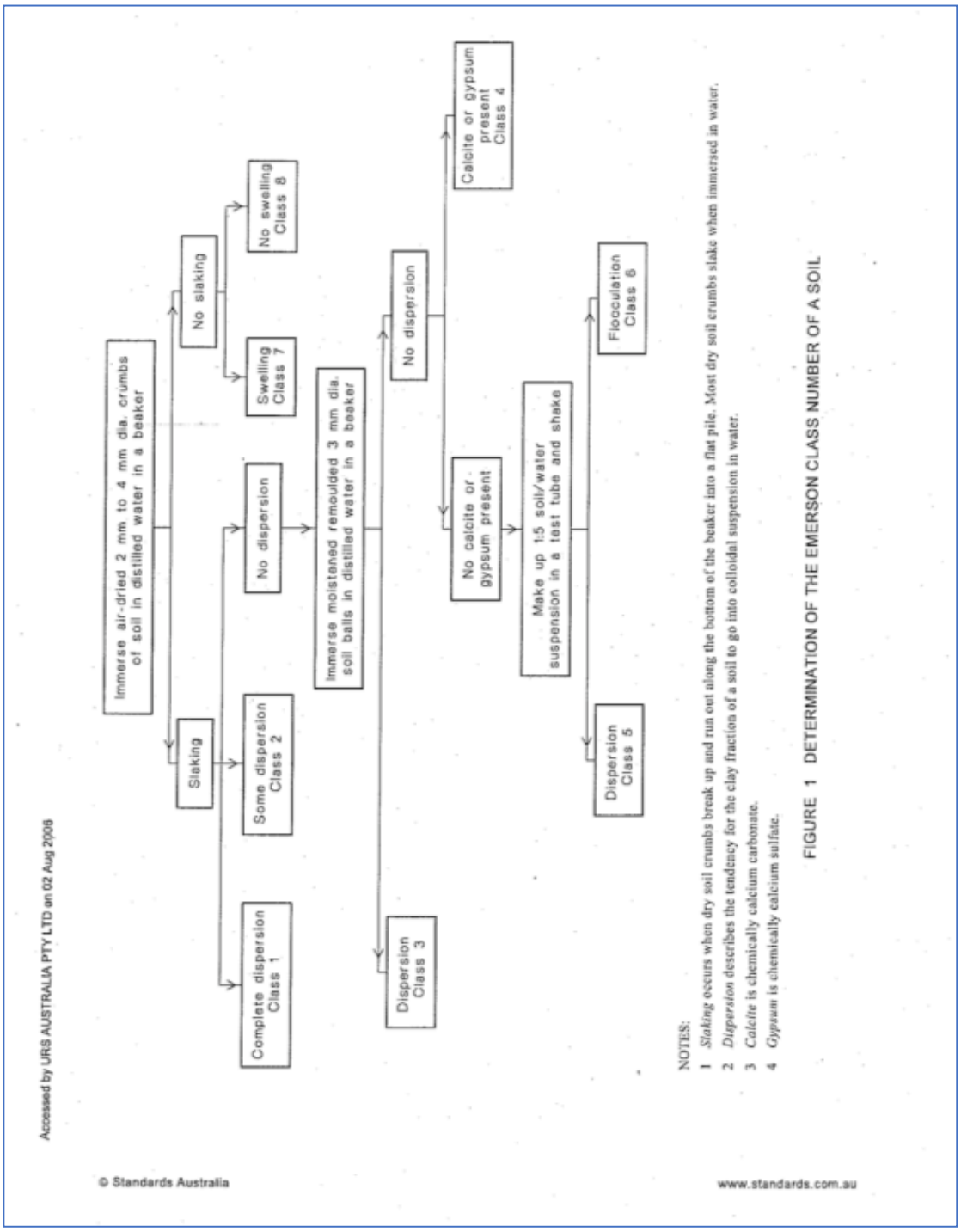
Plates 1&2- Overlooking proposed shed location

Plates 3 and 4 – Slope angles over proposed development area


PLEASE READ CAREFULLY
HONEYWOOD DRIVE
N
P1 PRELIMINARY ISSUE
LYNE DESIGN
PROJECT
46 HONEYWOOD DRIVE
HONEYWOOD, TAS 7017
TITLE
SITE PLAN
Accepted LUKE KERSHAW
Accepted NOT APPLICABLE
Approved NOT APPLICABLE
SCALES @ A3
1:1000
DESIGNED BY D.LYNE
DRAWN BY D.LYNE
PLOT DATE 12/08/2025
PLOT DETAILS HONEYWOOD.DWG
PROJECT NO. TBA
DWG NO. B03
REVISION B2
SCALE 1:1,000
NOT FOR CONSTRUCTION
ALL SITE WORKS SHALL BE IN ACCORDANCE WITH N.C.C., CSIRO BTF 18,19,22 AND AS2870
MINIMAL SITE DISTURBANCE IS TO BE CARRIED OUT.
SEDIMENT CONTROL; 'GEOLAB' SILT FENCE 1000 OR SIMILAR. TOPSOIL STOCKPILES REMAINING ON THE SITE TO BE COVERED WITH PLASTIC, ADEQUATELY RETAINED ALONG ALL EDGES. UNUSED STOCKPILES TO BE REMOVED FROM SITE OR USED FOR FUTURE LANDSCAPING.
SITE PREPARATION AND EXCAVATION
IN ACCORDANCE WITH PART 3.1 OF CURRENT N.C.C., AND TO LOCAL COUNCIL REQUIREMENTS.
INTERNAL FINISHED FLOOR LEVEL (FFL) TO BE MIN. 150mm ABOVE FINISHED EXTERNAL GROUND AREAS (FLOWER BEDS OR GRASSED AREAS) AND MIN. 50mm ABOVE FINISHED EXTERNAL SEALED SURFACES (PAVED AREAS). PROVIDE 50mm MIN. FALL FOR THE FIRST METER AWAY FROM BUILDING TOWARDS LOWER GROUND OR ALTERNATIVELY SUFFICIENT DRAINAGE PROVISIONS (AG DRAINS, SUMPS OR SIMILAR).
SITE PLAN
SCALE: 1:1000

Appendix 2 Emmerson Class Test Results

BH01 500mmbgs	BH01 1000mmbgs	BH02 500mmbgs
1	4	4



Appendix 3 Extracts from DPIWE (2009)

4.0 APPROACHES FOR MINIMISING EROSION RISK IN DISPERSIVE SOILS

MINIMISE RISK OF TUNNEL EROSION BY;

- Identifying and avoiding disturbance to areas with dispersive subsoils.
- Minimising excavation of dispersive soils.
- Not allowing water to pond on the soil surface, or exposed subsoils.
- Keeping sodic sub-soils buried under topsoil.
- Maintaining vegetation cover.

UNDERSTAND THAT;

- The presence and severity of dispersive soils may vary enormously over short distances.
- Past efforts to control field tunnel erosion have often failed.

STRATEGIES FOR REDUCING THE RISK OF TUNNEL DEVELOPMENT IN PERI-URBAN AREAS INCLUDE;

- Soil testing and avoidance.
- Precise compaction.
- Chemical amelioration.
- Sand filters and sand blocks.
- Topsoiling and revegetation.

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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.

6.0 REPAIR AND REHABILITATION OF TUNNEL EROSION

While the techniques outlined in this document represent the best available knowledge at the time of writing, it should be recognised that repair and rehabilitation works are prone to re-failure and that the techniques outlined below (and in the wider literature) have not been validated by replicated field trials or adequate long term monitoring. Differences between field sites, erosion processes and long term landuse of the reclaimed area may affect the success of repair works.

- Repair of tunnel erosion is expensive, difficult and prone to re-failure.
- Existing literature is focused on repair of field tunnel erosion in agricultural landscapes rather than urban or peri-urban areas.
- A combination of chemical, physical and vegetative measures are required to repair tunnel erosion.
- Repair of tunnel erosion in peri-urban areas should consider use of controlled compaction, chemical amelioration, sandblocks, and topsoiling.
- Revegetate repaired areas with fast growing locally appropriate pasture species and trees in higher rainfall areas.
- Seek professional assistance.

Repairing tunnel erosion is expensive, difficult and prone to re-failure. Every effort must be made to prevent the formation of tunnel erosion before intervention is required. Literature on the repair and rehabilitation of tunnel erosion is scarce and focused on agricultural landscapes rather than protection of infrastructure in urban environments. The history of tunnel erosion control and repair has been reviewed by Boucher (1990), and Ford *et al.* (1993). Boucher (1990) identified the need for a combination of mechanical, vegetative and chemical measures to control and repair tunnel erosion, however Boucher (1990) and Boucher (1995) also note that many past attempts to repair tunnel erosion have failed or been responsible for initiating further tunnelling.

In Tasmania, Colclough (1965, 1967, 1971, 1973 and 1978) pioneered early techniques for controlling tunnel erosion and Richley (1992 and 2000) demonstrated the use of sand blocks to prevent the development of tunnel erosion following installation of an optical fibre cable. Hardie *et al.*, (2007) detailed advances in repair and rehabilitation techniques resulting from experience gained with the rehabilitation of a 380 meter long tunnel erosion system in Dunalley, Tasmania.

It is strongly recommended that a suitably qualified soil professional, with first hand experience in dispersive soil management be consulted before embarking on any repair or rehabilitation works. The approach outlined below has been developed following, extensive review of literature, expert opinion from erosion consultants and first hand experience of repairing tunnel erosion.

GENERAL RECOMMENDATIONS FOR REPAIR OF TUNNEL EROSION IN PERI-URBAN AREAS.

1) Where possible cut off or divert surface water away from the tunnel system using diversion mounds rather than drains. Earthworks must be conducted without exposing dispersive subsoils. Experience has sown that identification of 'safe' areas is rare and usually dependant on there being a change in soil type or geology. If there is any doubt that a disposal area is 'safe' then works to divert flow from the head of the tunnel system should be abandoned.

2) Identify the true head of the tunnel system to determine the scale of intervention work required. This usually requires chasing tunnels with an excavator and use of coloured dye to trace water movement.

3) If tunnels are shallow and reappearance of tunnel erosion is not likely to impact on critical infrastructure, then deep ripping and cultivation techniques may be used to destroy the tunnel system (see Floyd 1974, Colclough 1965 & 1971).

4) If tunnels extend below the maximum depth of deep ripping, or if critical infrastructure is at risk from tunnel reappearance, then control and repair options will require a higher level of intervention to lower the risk of re-failure.

5) Tunnel systems will need to be dug out along their entire path using an excavator.

6) If soils have a low to moderate risk of dispersion (ESP 6 - 15), or if the consequences of tunnel reappearance is low, then the dispersive soils excavated from the trench can be treated with gypsum and repacked back into the excavated area.

7) If soils are highly dispersive (ESP> 15) or the risk of tunnel reappearance may cause damage to infrastructure, then non- dispersive clays will need to be carted to the site and repacked in the trench. Repacked soils should also be mixed with gypsum as an additional measure against future dispersion.

8) All material repacked into the trench needs to be compacted to at least 95% of proctor maximum. Compaction is best achieved using a sheepsfoot roller. Track rolling with an excavator or back hoe is not adequate. Alternative compaction techniques may be available.

9) The surface of the repacked material should be finished with a convex shape to ensure runoff is not able to pond on top of the reclaimed area. The upper surface of the repaired work should be treated with gypsum to act as an electrolyte source for water infiltrating into the repacked spoil.

10) Treated areas and exposed subsoils should be covered with topsoil and revegetated with fast growing, locally appropriate species such as cocksfoot, ryegrass, and clovers. Fertiliser may also need to be applied to ensure adequate establishment.

11) Bare areas above the tunnel head may need to be treated to minimise runoff through use of scarifying, topsoil, fertiliser and sowing locally appropriate pasture species.

12) Consideration should be given to applying gypsum over the whole area at a rate of approximately 1.0 - 2.5 t/ha every 3 to 5 years.

13) Fence off all reclaimed areas, and allow only minimal grazing over time.

14) Control rabbits and maintain vegetative ground cover.

Figure 36. Examples of tunnel erosion control (a) Poor technique. Rock rap is usually an inappropriate erosion control technique for dispersive soils. Normally rock barriers work well to trap sediment and reduce erosion. However in dispersive soils, hard surfaces such as rock are quickly bypassed i.e. upper corner of the rock structure (b) Excellent technique. Note the entire repaired area is fenced, and the whole length of the repaired tunnel is covered with topsoil and jute cloth. Sand barriers have been constructed every 20 meters down the slope.

Figure 37. Good technique. Topsoil mounding, reclaimed tunnel erosion, Brighton. Note the width of earthworks required to fix a 50cm wide tunnel, and the raised profile to shed surface water. Jute cloth would prevent surface erosion until vegetation has established.

Extracts From Australian Geomechanics Journals (2007)

PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

APPENDIX C: – QUALITATIVE TERMINOLOGY FOR USE IN ASSESSING RISK TO PROPERTY (CONTINUED)

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY

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

Notes: (5) For Cell A5, may be subdivided such that a consequence of less than 0.1% is Low Risk.
(6) When considering a risk assessment it must be clearly stated whether it is for existing conditions or with risk control measures which may not be implemented at the current time.

RISK LEVEL IMPLICATIONS

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

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

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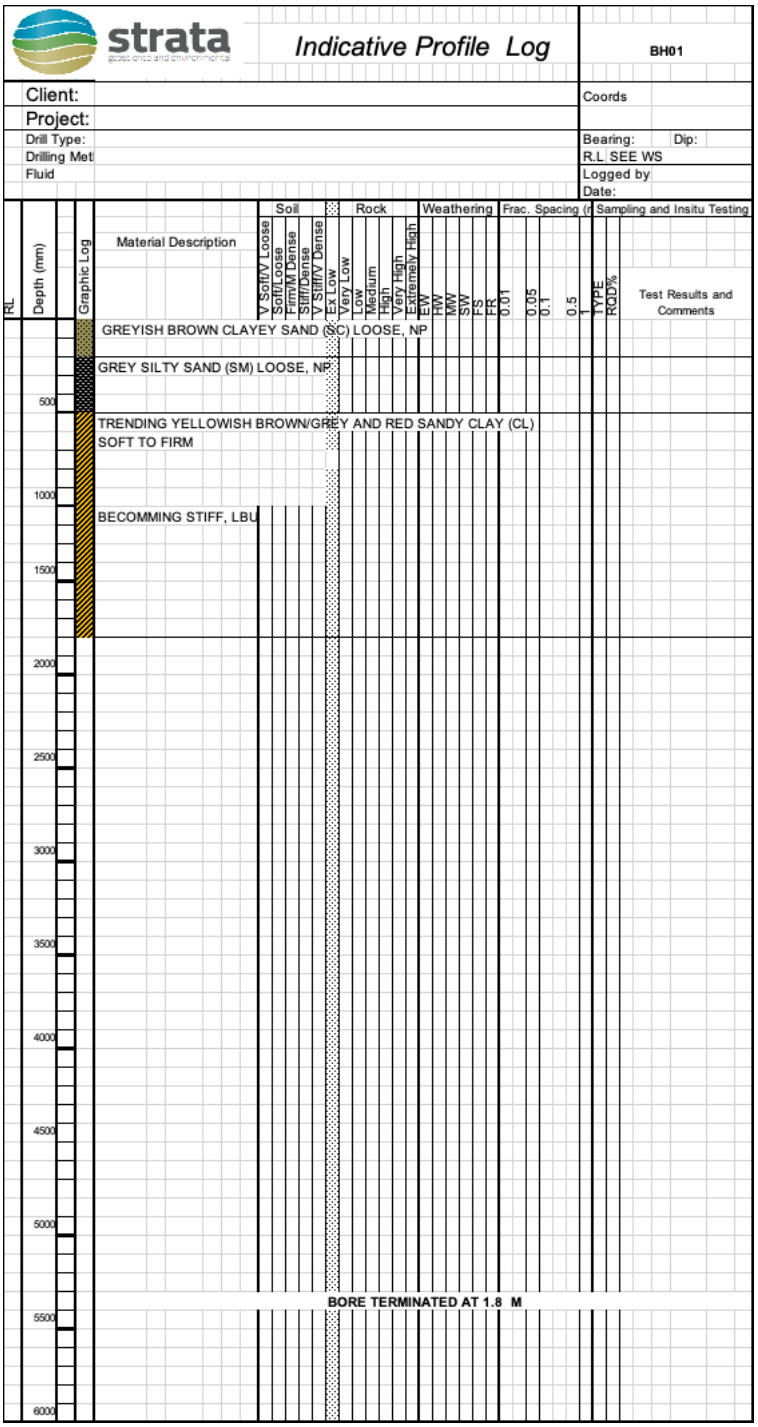
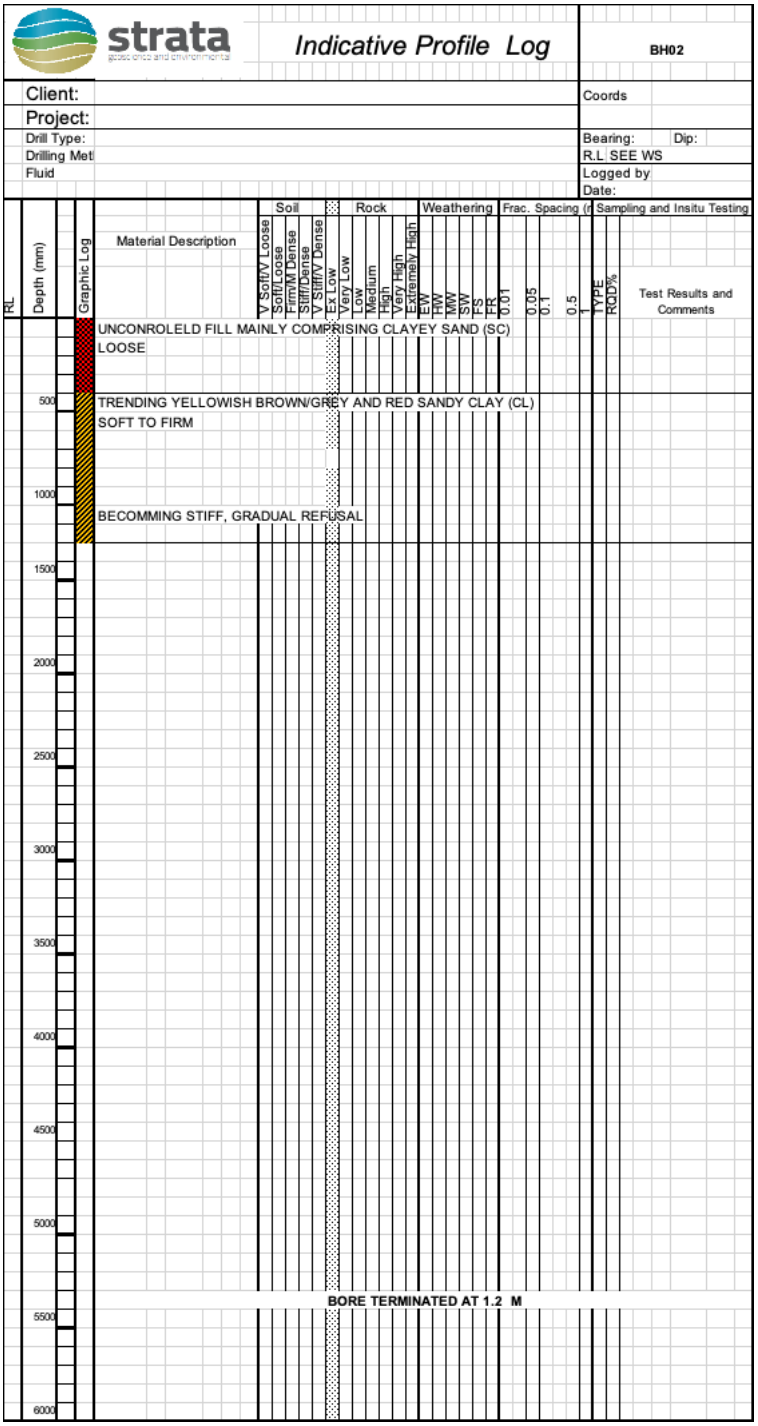
Appendix 4 Bore Logs




strata
geoscience and environmental
Indicative Profile Log
BH02
Client:
Project:
Drill Type:
Drilling Meth
Fluid
Coords
Bearing:
Dip:
R.L SEE WS
Logged by
Date:
Soil
Rock
Weathering
Frac. Spacing (m
Sampling and Insitu Testing
RL
Depth (mm)
Graphic Log
Material Description
V Soft/V Loose
Soft/Loose
Firm/M Dense
Stiff/Dense
V Stiff/V Dense
Ex Low
Very Low
Low
Medium
High
Very High
Extremely High
EW
HW
MW
SW
FR
FR
0.01
0.05
0.1
0.5
1
TYPE
RQD%
Test Results and Comments
UNCONROLELD FILL MAINLY COMPRISING CLAYEY SAND (SC)
LOOSE
TRENDING YELLOWISH BROWN/GREY AND RED SANDY CLAY (CL)
SOFT TO FIRM
BECOMMING STIFF, GRADUAL REFUSAL
BORE TERMINATED AT 1.2 M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000

Appendix 5 Terms and Conditions

Scope of Work
These Terms and Conditions apply to any services provided to you ("the Client") by Strata Geoscience and Environmental Pty Ltd ("Strata"). By continuing to instruct Strata to act after receiving the Terms and Conditions or not objecting to any of the Terms and Conditions the Client agrees to be bound by these Terms and Conditions, and any other terms and conditions supplied by Strata from time to time at Strata's sole and absolute discretion. The scope of the services provided to the Client by Strata is limited to the services and specified purpose agreed between Strata and the Client and set out in the correspondence to which this document is enclosed or annexed ("the Services"). Strata does not purport to advise beyond the Services.

Third Parties
The Services are supplied to the Client for the sole benefit of the Client and must not be relied upon by any person or entity other than the Client. Strata is not responsible or liable to any third party. All parties other than the Client are advised to seek their own advice before proceeding with any course of action.

Provision of Information
The Client is responsible for the provision of all legal, survey and other particulars concerning the site on which Strata is providing the Services, including particulars of existing structures and services and features for the site and for adjoining sites and structures. The Client is also responsible for the provision of specialised services not provided by Strata. If Strata obtains these particulars or specialised services on the instruction of the Client, Strata does so as agent of the Client and at the Client's expense. Strata is not obliged to confirm the accuracy and completeness of information supplied by the Client or any third party service provider. The Client is responsible for the accuracy and completeness of all particulars or services provided by the Client or obtained on the Client's behalf. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever suffered by the Client or any other person or entity resulting from the failure of the Client or third party to provide accurate and complete information. In the event additional information becomes available to the Client, the Client must inform Strata in writing of that information as soon as possible. Further advice will be provided at the Client's cost. Any report is prepared on the assumption that the instructions and information supplied to Strata has been provided in good faith and is all of the information relevant to the provision of the Services by Strata. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if Strata has been supplied with insufficient, incorrect, incomplete, false or misleading information.

Integrity
Any report provided by Strata presents the findings of the site assessment. While all reasonable care is taken when conducting site investigations and reporting to the Client, Strata does not warrant that the information contained in any report is free from errors or omissions. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from errors in a report. Any report should be read in its entirety, inclusive of any summary and annexures. Strata does not accept any responsibility where part of any report is relied upon without reference to the full report.

Project Specific Criteria
Any report provided by Strata will be prepared on the basis of unique project development plans which apply only to the site that is being investigated. Reports provided by Strata do not apply to any project other than that originally specified by the Client to Strata. The Report must not be used or relied upon if any changes to the project are made. The Client should engage Strata to further advise on the effect of any change to the project. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever where any change to the project is made without obtaining a further written report from Strata. Changes to the project may include, but are not limited to, changes to the investigated site or neighbouring sites, for instance, variation of the location of proposed building envelopes/footprints, changes to building design which may impact upon building settlement or slope stability, or changes to earthworks, including removal (site cutting) or deposition of sediments or rock from the site.

Subsurface Variations with Time
Any report provided by Strata is based upon subsurface conditions encountered at the time of the investigation. Conditions can and do change significantly and unexpectedly over a short period of time. For example groundwater levels may fluctuate over time, affecting latent soil bearing capacity and ex-situ/insitu fill sediments may be placed/removed from the site. Changes to the subsurface conditions that were encountered at the time of the investigation void all recommendations made by Strata in any report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any change to the subsurface conditions that were encountered at the time of the investigation. In the event of a delay in the commencement of a project or if additional information becomes available to the Client about a change in conditions becomes available to the Client, the Client should engage Strata to make a further investigation to ensure that the

conditions initially encountered still exist. Further advice will be provided at the Client's cost. Without limiting the generality of the above statement, Strata does not accept liability where any report is relied upon after three months from the date of the report, (unless otherwise provided in the report or required by the Australian Standard which the report purports to comply with), or the date when the Client becomes aware of any change in condition. Any report should be reviewed regularly to ensure that it continues to be accurate and further advice requested from Strata where applicable.

Interpretation

Site investigation identifies subsurface conditions only at the discrete points of geotechnical drilling, and at the time of drilling. All data received from the geotechnical drilling is interpreted to report to the Client about overall site conditions as well as their anticipated impact upon the specific project. Actual site conditions may vary from those inferred to exist as it is virtually impossible to provide a definitive subsurface profile which accounts for all the possible variability inherent in earth materials. This is particularly pertinent to some weathered sedimentary geologies or colluvial/alluvial clast deposits which may show significant variability in depth to refusal over a development area. Rock incongruities such as joints, dips or faults may also result in subsurface variability. Soil depths and composition can vary due to natural and anthopogenic processes. Variability may lead to differences between the design depth of bored/driven piers compared with the actual depth of individual piers constructed onsite. It may also affect the founding depth of conventional strip, pier and beam or slab footings, which may result in increased costs associated with excavation (particularly of rock) or materials costs of foundations. Founding surface inspections should be commissioned by the Client prior to foundation construction to verify the results of initial site characterisation. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any variation from the site conditions inferred to exist.

Strata is not responsible for the interpretation of site data or report findings by other parties, including parties involved in the design and construction process. The Client must seek advice from Strata about the interpretation of the site data or report.

Report Recommendations

Any report recommendations provided by Strata are only preliminary. A report is based upon the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until earthworks and/or foundation construction is almost complete. Where variations in conditions are encountered, Strata should be engaged to provide further advice. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if the results of selective point sampling are not indicative of actual conditions throughout an area or if the Client becomes aware of variations in conditions and does not engage Strata for further advice.

Geo-environmental Considerations

Where onsite wastewater site investigation and land application system designs are provided by Strata, reasonable effort will be made to minimise environmental risks associated with the disposal of effluent within site boundaries with respect to relevant Australian guidelines and industry best practise at the time of investigation. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from changes to either the project or site conditions that affect the onsite wastewater land application system's ability to safely dispose of modelled wastewater flows.

Strata does not guarantee septic trench and bed design life beyond 10 years from installation, given the influence various household chemicals have on soil structural decline and premature trench failure in some soil types. Strata is not liable, and accepts no responsibility, for poor system performance where the Client cannot show that septic tanks have been de-sludged every three years or AWTS systems have been serviced in compliance with the manufacturer's recommendations. Strata is not liable, and accepts no responsibility, for any loss associated with the selection of inappropriate plants for irrigation areas. Strata is not liable, and accepts no responsibility, for any expense whatsoever or loss associated with modification of design works requested by the permit authority. Strata is not liable and accepts no responsibility for any loss or poor system performance where both interim and final inspections are not commissioned throughout system construction.

Strata does not consider site contamination, unless the Client specifically instructs Strata to consider the site contamination in writing. If a request is made by the Client to consider site contamination, Strata will provide additional terms and conditions that will apply to the engagement.

Copyright and Use of Documents

Copyright in all drawings, reports, specifications, calculations and other documents provided by Strata or its employees in connection with the Services remain vested in Strata. The Client has a licence to use the documents for the purpose of completing the project. However, the Client must not otherwise use the documents, make copies of the documents or amend the documents unless express approval in writing is given in advance by Strata. The Client must not publish or allow to be published, in whole or in part, any document provided by Strata or the name or professional affiliations of Strata, without first obtaining the written consent of Strata as to the form and context in which it is to appear.

If, during the course of providing the Services, Strata develops, discovers or first reduces to practice a concept, product or process which is capable of being patented then such concept, product or process is and remains the property of Strata and:

(a) the Client must not use, infringe or otherwise appropriate the same other than for the purpose of the project without first obtaining the written consent of Strata; and

(b) the Client is entitled to a royalty free licence to use the same during the life of the works comprising the project.

Digital Copies of Report
If any report is provided to the Client in an electronic copy except directly from Strata, the Client should verify the report contents with Strata to ensure they have not been altered or varied from the report provided by Strata.

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strata
geoscience and environmental

Site and Soil Evaluation and Onsite Wastewater System Design

46 Honeywood Drive
Honeywood

October 2025

Important Notes:

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Strata Geoscience and Environmental reserves the right to submit this report the relevant regulatory agencies where it has a responsibility to do so.

1. Introduction

Strata Geoscience and Environmental Pty Ltd was commissioned to conduct an onsite wastewater system design for:

Client and Site Details	
Client/Agent Name	Luke Kershaw
Site Address	46 Honeywood Drive Honeywood
Proposed Development	New system for proposed dwelling

The investigation was conducted with reference to Australian Standards AS1547-2012 Onsite Domestic Wastewater Management and also follows the principles outlined in AS1726-1993 Geotechnical Site Investigations.

2. Summary of Site and Soil Evaluation and Design Outcomes

The investigation's key findings were:

	SSE and Design Outcomes
General Comments	Site suitable for disposal of secondary treatment
Key Site and Soil Limitations to System Design	• Clay soils • Shallow soils • Potential for soil dispersion/erosion • Potential for shallow ephemeral groundwater
Summary of Proposed System Specification	Primary Treatment: AWTS Secondary Treatment: AWTS Land Application: SUBSURFACE IRRIGATION

3. Investigation

Please refer to Appendix 4 for bore logs, permeability data (where tested) and other relevant site information.

4. Interpretation

The site is situated on a slight simple slope underlain by shallow clays derived from inferred Triassic aged rocks.

With respect to the sustainability of long term disposal of wastewater within the site boundaries the following comments are made:

Soils – Natural soils will have a low permeability for the acceptance of wastewater flows and will show a moderate cation exchange complex for the absorption of nutrients from effluent.

Environmental Sensitivities – The development area is slightly sloping with nearest surface water body located approximately 50+ m downslope of the proposed residence. Groundwater was not intersected throughout geotechnical investigation and is anticipated to be several meters beneath the existing ground surface.

Climate - the nearest weather station with long term data is Bridgewater Station with a mean annual rainfall of 518 mm (BOM 2025) and no evaporation data. A net rainfall deficit would likely exist for the site.

Title Searches – Searches of the Land Title did not show any easements or right of ways which would affect the positioning of the wastewater land application system.

Given the above, the general environmental and public health risk associated with the site is regarded as low provided adequate setback distances and other controls are adopted.

5. Onsite Wastewater System Design

5.1 Site and Soil Considerations

Results of the SSE (Appendix 4) found the following typical soil profile on site:

	Topsoils (A1-A3)	Subsoils (B1-B3)
Description	Clayey SILT (ML)	CLAY (CL/CH)
Soil Category (AS1547-2012)	1	5
Indicative Permeability (m/d)	2.0+	0.5
Recommended DIR (mm/d)/DLR (L/D)	5	3
pH	6.1	5.8
EC	2.2	4.2
Emmerson Class	8	5

5.2 Risk Management of Site and Soil Constraints

Risk identification and reduction measures compliant with AS1547 – 2012 Clause A3.2 is presented below:

Risk	Factors that Increase Risk Likelihood	Design Risk Reduction Measures
Hydraulic Overloading of System	• Under scaled system • Prolonged overuse • Leaking taps • Shock Loading • Excessive solid disposal	• Scale to peak potential loading • Use Conservative DLR/DIR • Use water conservation practices eg water reduction fixtures
Biological Failure	• Overuse of household chemicals • Shock loading	• Limit detergents and bleach use where practical • System not fit for spa or sinkerator installation
Marginal Soil Conditions	• low soil hydraulic conductivity • Dispersive soils • Poor aspect/drainage	• Use appropriate DLR/DIR, avoid trenching • Treat with gypsum, manage sodium inputs
Site Constraints	• Drainage • Variable slopes • Proximal surface water	• Use irrigation into topsoils on flatter areas

Risk	Factors that Increase Risk Likelihood	Design Risk Reduction Measures
High Rainfall/Torrential Rainfall	• Inappropriate LAA Scaling • Stormwater impacts	• Use suitable hydraulic scaling • Stormwater Diversion around LAA if required
Clogged Outlet Filter	• Overloading • Infrequent cleaning	• Clean monthly
Pipe Blockages	• Overloading • Infrequent de-sludging	• Reduce solids inflows • De-sludge septic max 3 year intervals • Check IO's regularly
Sludge transport to LAA	• Infrequent de-sludging • Clogged outlet filter • High organic loading	• De-sludge septic max 3 year intervals • Clean filter monthly • No sinkerator installation
Broken pipes in LAA	• Stock/vehicles	• Exclude stock/vehicles

5.3 Proposed Wastewater System Concept Design

It is therefore recommended that the following system be adopted:

Treatment Train Component	Proposed Concept Design
Primary Treatment	• AWTS
Secondary Treatment	• Irrigation
LAA Design	• Irrigation

5.4 Effluent Flow and Land Application Area Modelling

The development proposal is for the construction of a new wastewater system to service:

Maximum Daily Hydraulic and BOD Loadings			
Segment	**Loading (L/D)**	**Maximum Daily Hydraulic Loading (L/D)**	**Maximum Daily BOD Loading (g/D)**
1 Bedroom Dwelling 2 EP	2 EP at 150L/D*[1] 2 EP at 60g BOD/EP/D*[1]	300	120
FUTURE 3 Bedroom Dwelling 5 EP	5 EP at 150L/D*[1] 5 EP at 60g BOD/EP/D*[1]	750	300
Totals		**1050**	**420**
Irrigation Area Requirement m^2 (based upon DLR of 3 mm/d)		**100/250**	

*[1] Specific Flow Rate Modelling Notes taken from AS1547-2012

The absorption area could be catered for by one 100/250 m^2 subsurface irrigation installed as shown on the site plan with adequate room for a 50% reserve if required (see Appendix 2). Refer to Appendix 2/3 for more detailed calculations as well as specific design and construction notes.

5.5 System Specifications

The system has the following specification (see Appendix 1-3 for further details):

- Min DN100 gravity fed sewer pipe
- Min 1500L/d (daily treatment capacity) approved AWTS. (Note tank should be anchored to prevent popping if influenced by shallow groundwater tables).
- Min 100/250m^2 Subsurface irrigation
- Provision for 50% reserve area (must remain free from development)

5.6 Management Requirements

It is imperative that regular servicing of the treatment unit compliant with the prescriptions of the manufacturer and Council permit occur.

To ensure that the treatment system functions adequately and provides effective treatment and disposal of effluent over its design life, asset owners have the following responsibilities:

- Suitably qualified maintenance contractors must be engaged to service the system, as required by Council under the approval to operate.
- Keep as much fat and oil out of the system as possible; and
- Conserve water.

Minimum servicing schedule:

Treatment Train Component	Service Interval
AWTS	• SERIVES AS PER MANUFACTURERS RECOMMENDATIONS WITH QUALIFIED TECHNICIAN, RETAIN ALL RECORDS
IRRIGATION	• ENSURE ADEQUATE POLANTINGS OF 1 PLANT PER 4M^2 AT INSTALLATION. • ENSURE MULCH COVERING IS MAINTAINED • ENSURE UPSLOPE INTERCEPTOR (WHERE RECOMMENDED) IS INSTALLED.

To ensure that the land application area (LAA) functions adequately and provides effective treatment and disposal of effluent over its design life, asset owners have the following responsibilities:

- LAA should be checked regularly to ensure that effluent is draining freely, including flushing of lines and cleaning of inline filters.
- All vehicles, livestock and large trees should be excluded from around the irrigation area.
- Low sodium/phosphorous based detergents should be used to increase the service life of irrigation area.
- Regularly harvest (mow) vegetation within the LAA and remove this to maximise uptake of water and nutrients;
- Not to erect any structures over the LAA;
- Ensure that the LAA is kept level by filling any depressions with good quality topsoil (not clay).

Excessive surface dampness, smell or growth of vegetation around the LAA may indicate sub-optimal performance and professional advice should be sort.

5.7 Compliance Requirements

The setbacks as indicated on the site plan conform with Acceptable Solutions or Performance Criteria for setback distance outlined in the Tasmanian Building Code 2016.

Acceptable Solutions	Performance Criteria	Compliance
A1 Horizontal separation distance from a building to a land application area must comply with one of the following: a. be no less than 6m: b. be no less than: (i) 3m from an upslope or level building. (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building (iii) If secondary treatment and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building	P1 a. The land application area is located so that the risk of wastewater reducing the bearing capacity of the buildings foundations is acceptably low	Complies with b(i)
A2 Horizontal separation distance from downslope water to a land application area must comply with (a) or (b). a) be no less than 100m b) be no less than the following: i) If primary treated effluent to be no less than 15m plus 7m for every degree of average gradient from a downslope surface water, or; ii) if secondary treatment and subsurface application, no less than 15m plus 2 m for every degree of average gradient from a downslope surface water	P2 Horizontal separation distance from downslope water to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable	Complies with A2 (bii)
A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: a) be no less than 40m from a property boundary b) be no less than (i) 1.5m from an upslope or level property boundary; ar	P3 Horizontal separation distance from the boundary to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and	Complies with A3 (B) (I and III) based upon 5 degree slope

(ii) if primary treated effluent 2m for every degree of gradient from a downslope property boundary; or (iii) if secondary treated effluent and subsurface ap plus 1m for every degree of average gradient fro property boundary.	b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable	
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient	P4 Horizontal separation distance from a downslope bore to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable	Complies with A4
A5 Vertical separation distance between groundwater and a land application area must be no less than1.5m	P5 Vertical separation distance between groundwater to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable	Complies with A5
A6 Vertical separation distance between a limiting layer and a land application area must be no less than 1.5m	P6	Complies with A6

	Vertical setback must be consistent with AS/NZS 1547 Appendix R,	
A7 The arrangement of a land application area must comply with both of the following: (a) not include areas beneath buildings, driveways or ot areas; (b) have a minimum horizontal dimension of 3m.	P7 No performance criteria	Complies with A7(a/b)

6. Conclusions and Further Recommendations

In conclusion, the following comments and recommendations are made:

- The maximum wastewater flow rate (MWWF) modelling conducted in this report shows that the generated flows are likely to be no more than 1050 L/day.

- That such flows will require a land application area (LAA) comprising one 100/250 m^2 Subsurface Irrigation.

- It is likely that peak flows associated with the development should be within the buffering capacity of the system both in terms of the system sizing as well as for their acceptance into the disposal area.

- If the hydraulic capacity of soils underlying disposal areas is exceeded by effluent water flows, the disposal area has the capacity to be increased by up to 50%.

- **If the prescriptions of this report are followed the likely human and environmental health risks associated with effluent disposal onsite is rated as low.**

S Nielsen MEngSc CPSS
Director
Strata Geoscience and Environmental Pty Ltd
E:sven@strataconsulting.com.au

7. References

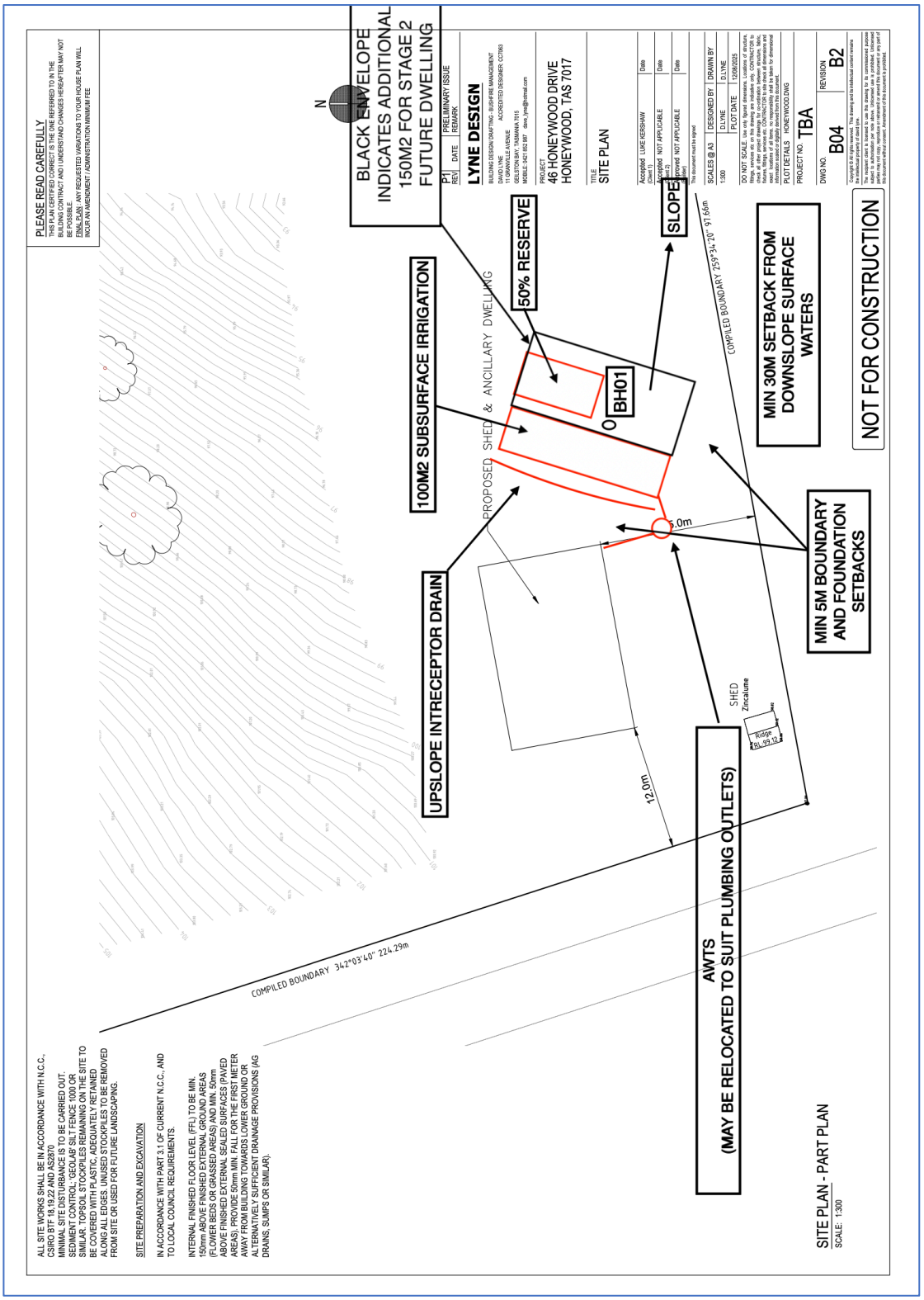
- AS1726-1993- Geotechnical Site Investigations
- AS1547-2012 Onsite Domestic Wastewater Management
- Bureau of Meteorology Website- Monthly Climate Statistics

Appendix 1 Detailed Design Calculations

Wastewater Loading Certificate*	
System Capacity	7EP at 150L/person/day = 1050 L/D
Design Summary	
• Effluent Quality	Secondary
• Adopted Soil category	5
• Amended Adopted Soil Category	Not amended
• Adopted DLR/DIR (mm/d OR L/m^2/d)	3
• LAA Design	Irrigation
• Primary LAA Requirement	100/250 m^2
• Reserve Area	Min 50% reserve LAA must be maintained in an undeveloped state near the primary LAA as identified on the site plan
Fixtures	Assumes std water saving fixtures inc 6/3L dual flush toilets, aerator forcets, Washing/dishwashing machines with min WELSS rating 4.5 star
Consequences of Variation in Effluent Flows	
• High Flows	The system should be capable of buffering against flows of up to 10 % in a 24 hr period or 5% over a 7 day period. System not rated for spa installation.
• Low Flows	Should not affect system performance
Consequences of Variation in Effluent Quality	Residence to avoid the installation of sink disposal systems (eg “sinkerators”), or the addition of large amounts of household cleaning products or other solvents. These can overload system BOD or affect effluent treatment by system biota.
Consequences of Lack of Maintenance and Monitoring Attention	Owners should maintain the system in compliance with systems Home Owners Manual and council permit. All livestock, vehicles and persons to be excluded from the LAA. Failure to ensure the above may lead to infection of waterways, bores or the spread of disease, as well as production of foul odours, attraction of pests and excessive weed growth.

***** In accordance with Clause 7.4.2(d) of AS/NZS 1547.2012.

Appendix 2 Land Application Design and Construction Notes



Irrigation Design

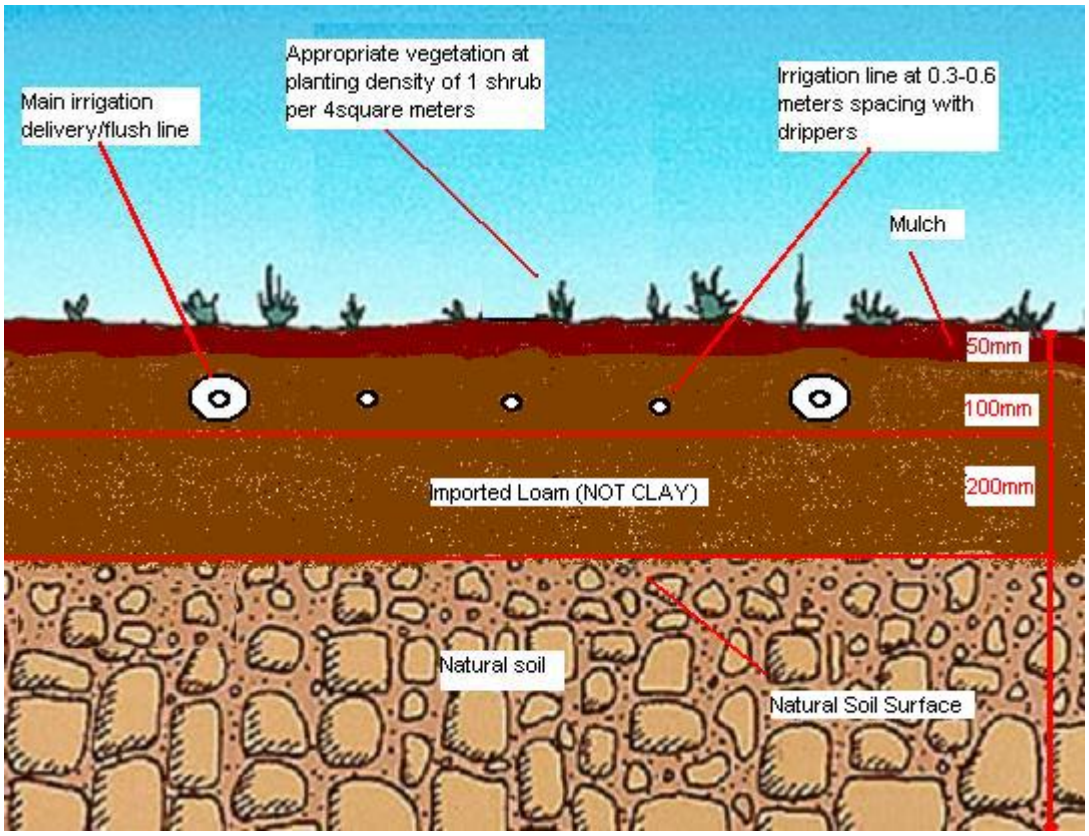


Figure 1 Irrigation cross section showing major delivery/flush lines and irrigation lines.

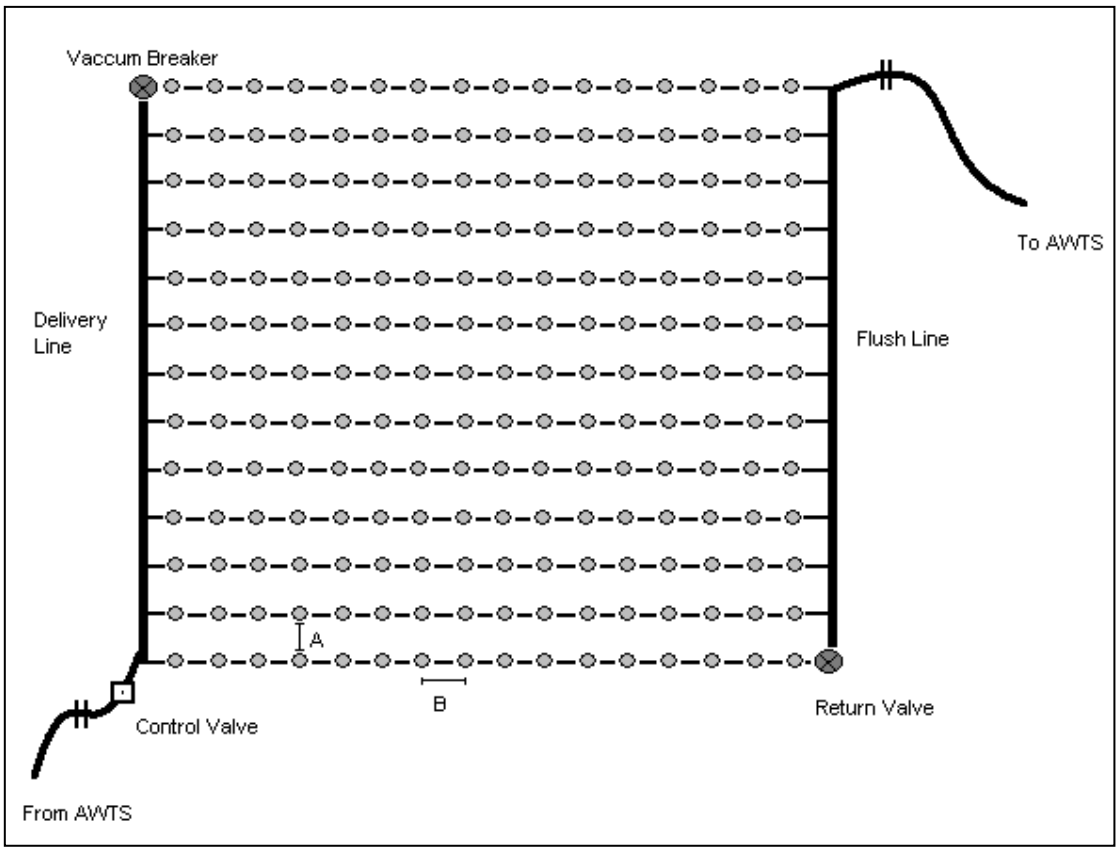


Figure 2 Irrigation Plan View

Site De-vegetation and Soil Renovation Processes (Only applicable for recently de-vegetated sites) (Pre irrigation installation)

1. The land application area is located in the area contained within the bushfire buffer zone and hence will have all vegetation removed. This will alleviate the effects of the forest canopy reducing evapotranspiration rates.
2. Soils will be disturbed by site de-vegetation and removal of large trees. After de-vegetation the following steps should be taken to renovate the soil profile before irrigation is installed:
    a. Harrow and level the residual soil surface. Ensure that the ground surface is levelled along natural slope contours and that all major rocks and large roots are removed.
    b. Gypsum should be incorporated at the rate of 1kg/5m^2
    c. Imported topsoil (not clay) should be applied as shown in Fig 1 above. Do not compact this layer, and avoid travelling over with large machinery.
    d. Irrigation should be laid as per the specifications below (point 3-4) and covered with further topsoil as per Fig 1 above.
    e. Selected vegetation should be planted at a density of approx. 1 plant per 4m^2.
    f. Mulch should be placed over the site as shown in Figure 1 above.

Land Application Area Design and Construction Notes

3. Delivery/flush line diameter = 25 -30 mm
4. Irrigation line diameter = 12-16mm
5. Irrigation line spacing (A) =300 mm for Sands, Sandy Loams and Loams to 600mm for Clay Loams, Light Clays and Heavy Clays (see the wastewater flow modelling section of this report for soil classification).
6. Dripper/Sprinkler spacing (B) as per manufacturers specifications.
7. A vacuum breaker should be installed at the highest point of the irrigation area (or in the case of multiple irrigation lots at each lot). This breaker should be protected and marked).
8. A flush line should be installed at the lowest point of the irrigation area incorporating a return valve for back flushing of the system back into the treatment chamber.
9. **All lateral lines MUST be installed parallel to the contours of the land. All minimum setbacks MUST be adhered to.**
10. An inline filter must be inserted into the delivery line.
11. The first 100mm of the natural soil below the ground surface should be mechanically tilled to aid line installation and soil permeability
12. Gypsum should be incorporated at the rate of 1kg/5m^2 in dispersive soils.
13. Imported topsoil (not clay) should be applied as shown above.
14. Selected vegetation should be planted at a density of approx. 1 plant per 4m^2. Recommendation regarding suitable species is made in this report.
15. Irrigation areas greater than 400 m^2 should be split into 100 m^2 cells with effluent flows switched between irrigation lots with an automatic valve system.
16. Where practical a 50% reserve area should be identified on the site to allow movement of the irrigation area if required.
17. In areas of moderate to steep slopes (>10%) then upslope cut off drainage should be installed to minimise shallow ground water recharge of the irrigation area from upslope.
18. All livestock and Vehicles MUST be excluded from irrigation area.

Interceptor Spoon Drain Design and Construction Notes

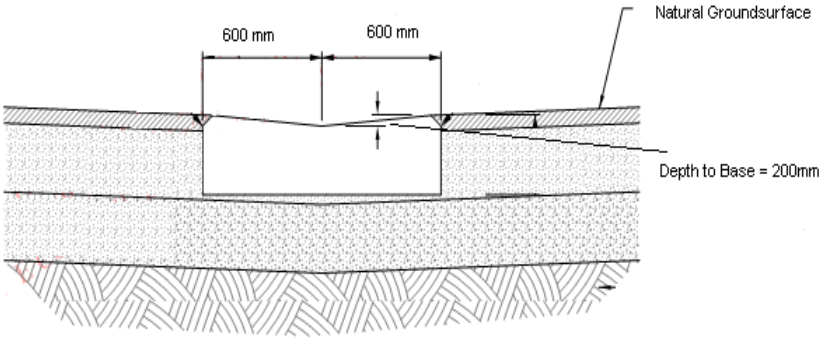


Figure 3 Spoon drain cross section showing key dimensions

1. Spoon drain should be located upslope of the proposed irrigation area/trenches/beds as shown in site plan.
2. Spoon Drains should be 1200mm wide and 200mm deep.
3. Spoon drains are best employed for areas where surface water run on from upslope areas is possible with little immediate subsurface recharge anticipated.
4. The drainage channel can be armoured with 50-100mm Dolerite aggregate if soils are anticipated to be dispersive or intensive peak flows are expected (ie if immediately down slope from hardstand surfaces).
5. Spoon drains should be constructed to ensure adequate fall to appropriate stormwater discharge points or other suitable areas provided that any water is not disposed of over site boundaries.

Indicative Plantings

PLANTS 1 – 6m

Acacia mucronata
Variable sallow wattle, Narrow leaf wattle
An upright or spreading, medium to tall shrub 3-4m X 2-3m. Quick growing. Profuse cream to yellow flowers in spring, showy. Attracts seed eating birds. Drought tolerant.

Acacia verticillata
Prickly Moses
Prickly shrub to 2m. Useful habitat plant and very attractive in flower.

Banksia marginata
Honeysuckle, Silver banksia
Evergreen shrub or small tree with attractive narrow, smooth edged leaves which are square or notched at the end and silvery beneath. Greenish yellow cones of flowers that last as cut flowers. Grows well in sandy soil. Strong upright growth.

Bauera rubioides
Dog Rose
Hardy small to medium dense shrub. 1-2m X 1-2m wide with masses of dainty pink flowers, flowering most of year, attracting butterflies. Grows well in wet or moist soils, prefers acid soils. Likes full or filtered sun. Good coastal pant. Frost tolerant. Prune regularly. Good erosion control.

Callistemon pallidus
Lemon Bottlebrush
Evergreen medium shrub, very upright with silky leaves that become smooth with age. Lovely lemon yellow bottlebrushes in spring and summer. Likes a dry or moist position. Tolerates full or filtered sunlight. Attracts nectar eating birds.

Callitris oblonga
Cypress pine, South esk pine
This is one of Australia's native conifers. It has an attractive shrubby shape and is suitable for use in the garden as a fast growing hedge, since it can be pruned to shape. It is also useful for gardens where the soil is rocky and sandy but will tolerate a range of soils, providing the drainage is good.

Correa backhousiana
Velvet correa
A dense, bushy, spreading shrub to 1.5m high by 2m wide. Leaves are glossy green on top, rusty coloured underneath. Greenish cream bell flowers in winter. Spring bird attracting. Tolerates lime and coastal plantings. Usually frost resistant.

Leptospermum lanigerum
Woolley tea-tree
Hardy medium to large shrub 2.5 to 5m high x 1.2-3m wide, massed with white flowers during spring. Soft grey foliage. Prefers moist to wet soils with good drainage and will grow well in full or filtered sun. Attracts butterflies and seed eating birds. Tolerates light snow, smog and frost.

Melaleuca ericifolia
A very hard, fast growing small evergreen tree suited to most soils and aspects. Suitable for poorly drained or saline soils and withstands coastal exposure. Needle-like leaves and 2-3cm long cream flower spikes, in spring and early summer. Ideal for planting as a screen.

Melaleuca gibbosa
Fine leafed paperbark, Slender honey-myrtle
Evergreen small shrub with mauve/purple ball shaped flowers in late spring and summer. Suitable for most soils, tolerating lime and salt soil. Frost resistant.

Melaleuca squarrosa
Tall, bushy shrub, good foliage. Scented, yellow brush flowers, in spring-summer. Suitable for most soils, tolerating very wet conditions, lime, saline and frost.

Micrantheum hexandrum
River box
Attractive foliage plant with new growth showing red stems. Cream flowers in spring. Grows up to 2m high. Prune to form a dense screen plant.

Notelaea ligustrina
Native Olive, Mock olive, Privet mock olive
Tall shrub with smooth, dark green leaves. Small yellow flowers and purple fruit. Prefers a moist, semi-shaded position but grows well in a wide range of conditions.

Pomaderris apetala
Dogwood
Medium to tall shrub 3 to 15 m. This shrub grows in a wide variety of sites from very dry to very wet but will grow larger with moisture. Looks good planted in copses.

SHRUBS TO 1m

Amperea xiphoclada
Upright or arching stems. Attractive foliage sculpturesque in appearance to 60cm. Useful for basket weaving. Dry to moist sites.

Blechnum penna-marina
Alpine Water Fern
Attractive, low growing, matted ground cover. Leathery dark green fronds to 15cm long, tinged pink when young. Ideal hanging baskets. Rockeries and moist positions in the open ground.

Blechnum wattsii
Hard Water Fern
Hardy and vigorous fern with dark green leathery fronds to 1m tall. Very easily grown in large pot or a moist, shady position in the ground.

Callistemon viridiflorus
Green Bottlebrush
Erect shrub with pale green bottlebrushes. Good in damp conditions. 1-2m X 1m. Frost resistant.

Carex appressa
Tall sedge, Tussock sedge
A tall perennial to 1.8m high. Stems acutely 3 angled and leaves 3-6mm broard. Occurs in winter wet depressions that can dry out completely in summer. Flowers in spring.

Carex inyx
Tassell Sedge
Evergreen clump forming sedge with green foliage and gorgeous golden brown pendulous tassels 1m x 1m.

Carex tasmanica
Curley Sedge
An upright sedge to 30cm. Attractive tight curls on tips of leaves. Wet sites but will tolerate long dry spells.

Dianella tasmanica
Flax Lily
An evergreen perennial plant with arching, strap-like leaves which can be up to 1.2m long. During spring and summer this plant bears clusters of nodding, star shaped, bright blue to purple flowers which are followed by glossy deep blue berries. Thrives in a sunny to partly shaded position in humus rich, well drained soil. Ideal for rockeries, poolside planting and containers.

Ficinea nodosa (syn isolepis nodosa)
Knobby club rush
Dense tufted native rush with stiff stems. Rounded brown flower knobs in summer. Suit damp or moist sandy soil. 60cm X 1m wide.

Ficinea nodosa (syn isolepis nodosa)
Knobby club rush (syn. Isolepis nododa)
Ideal for planting around pond margins, this fast growing perennial plant forms clumps of upright, often arching, dark green stems. Brownish, globular flower heads are produced throughout the year. A tough hardy plant which thrives in full sun in a range of soils. Tolerates salt spray, waterlogged and saline soils. Adds texture and colour to seaside gardens and water features, useful for general garden planting.

Goodenia elongata
Lanky Goodenia
Suckering ground cover 10cm tall X 50cm. Glossy green leaves, rich yellow flowers on tall stems spring-summer, prefers moist soils in full sun or part shade.

Isolepis inundata
Knobby club rush, Swamp club rush
Handy aquatic for waters edge or general planting (eg. shrub beds, dry creek beds).

Lomandra longifolia
Long leaf mat bush, Sagg
A popular plant for use as accent in gardens, where the rush like foliage contrasts well with broad leafed plants. Use it next to ponds or as a boarder plant. Flowers in spring, bearing clusters of cream, strongly perfumed flowers - great for use in flora arrangements. A very adaptable plant that will grow well in a range of soils but does best in a moist position.

Mazus pumilio
Mauve carpet
Low growing creeping plant. Ideal ground cover, with mauve flowers, spring and summer. Semi shade or sun.

Melaleuca squamea
A bushy shrub to 1m with stunning mauve flowers in spring-summer. Grows well in a damp spot. Frost hardy.

Poa labillardieri
A popular native grass grown for its soft blue foliage. In the warmer months this clumping plant produces an attractive flower head with a purple tint. Thrives in a sunny to partly shaded position and grows in a range of soils. Suitable for planting under trees, embankments and mass plantings. Cut to just above ground level in late winter for fresh new spring growth.

Polystichum proliferum
Mother Shield Fern
An easy to grow fern with attractive green fronds. New fronds are covered with eye catching brownish scales. An ideal plant for ferneries and shaded garden positions but will perform equally well when planted in a container. Plant in humus rich, moist, well drained soil in part shade. Fertilise with a good organic fertilizer. When planting in containers use a premium potting mix.

Polystichum proliferum
Mother Shield Fern
Attractive native fern with arching fronds to 1m long forming plantlets near the tip. Very easily grown in a moist position in morning or filtered sun. Suitable for tubs.

Pratia pedunculata
Blue pratia, Common pratia, White pratia
This dainty, spreading plant forms a carpet of tiny green leaves which from spring to early summer is smothered in a mass of tiny, white flowers. This carpeting plant is ideal for filling in spaces near rocks and sleepers and makes an attractive groundcover. Thrives in a sunny to semi-shaded position in moist soil. Keep moist at all times.

Pratia pedunculata
Blue pratia, Common pratia, White pratia
This dainty, spreading plant forms a carpet of tiny, green leaves, which from spring to early summer is smothered in a mass of tiny blue flowers. This carpeting plant is ideal for filling in spaces near rocks and sleepers, and makes an attractive groundcover, thrives in a sunny to semi-shaded position in moist soil. Keep moist at all times.

Scaevola hookeri
Creeping fan flower, Mat fan flower
A very densely matting, evergreen groundcover with glossy, dark green leaves and small, white fan-shaped flowers in flushes, during spring, summer and autumn. An excellent soil binding plant for average to moist positions. Frost hardy.

TREES

Acacia dealbata
Silver Wattle
A tall tree with a smooth trunk, often decorated with silvery, mottled patches contrasting with the greyish-green leaves. In spring, clusters of golden-yellow, fluffy ball like flowers almost cover the whole tree.

Acacia melanoxylon
Blackwood
A beautiful formal tree that produces one of Australia's most sought after woods for cabinet making. Light yellow flowers occur in winter and early spring. A useful tree for a windbreak or screen as it grows densely. It is also tolerant of a wine range of positions, however its height and width will be greatest if the soil is moist and fertile.

Eucalyptus ovata
Black gum, Swamp gum
Evergreen medium to tall moisture loving tree, good for poorly drained soils. Smooth white trunk. Masses of white flowers in autumn which attract birds. Frost hardy. Good tree for cool districts. Water absorber. Drought tolerant. Excellent shade and windbreak tree.

Eucalyptus rodwayi
Swamp Peppermint
This tree is suitable for a wide range of conditions, from very dry sandy soils to river banks. Grows 15 to 20m.

Eucalyptus viminalis
White Gum
A magnificent tree with a lovely white trunk. This tree is suitable for very dry to very wet sites. Its height is 20 to 40m depending on availability of moisture.

Pomaderris apetala
Dogwood
Medium to tall shrub 3 to 15 m. This shrub grows in a wide variety of sites from very dry to very wet but will grow larger with moisture. Looks good planted in copses.

Prostanthera lasianthos
Christmas bush, Tasmanian Christmas bush
The Tasmanian Christmas bush comes into flower around Christmas with masses of mint scented foliage. A rapid growth in a range of soils but for best results grow in a well drained soil and mulch to retain moisture in the drier months. An attractive plant that will grow in a range of positions in the garden.

Tasmannia lanceolata
Mountain pepper, Native pepper
Small leafed mountain form. Handsome foliage shrub with bright green leaves and red stems. Creamy-yellow flowers in spring. Slow growing to 1.5m, hardy in a cool moist well drained position in sun or shade.

Appendix 3 Site Investigation Details/ Photos and Indicative Bore Logs

Site and Soil Evaluation with Reference to AS1547 Table D1 Appendix D1	
Site Factor	**Result**
Slope (over proposed system/LAA)	10 Degrees
Shape	Variable
Aspect	SE
Exposure	High exposure to both sun and wind
Erosion, mass movements landslip	No evidence of erosion, mass movement or landslip
Boulders/Rock Outcrops	None observed
Vegetation	Grass, weeds
Watercourse	See site plans >50m from LAA.
Soil Water Regime	Depth to permanent groundwater estimated >2m
Fill	None observed
Run-on/Flooding	Not anticipated over the development area or LAA. Upslope interceptor to capture any surface, near surface flows.
Channeled Runoff	No concentrated runoff over proposed LAA. See storm water management plan (or similar) for details of onsite storm water management.
Soil Surface Condition	Dry
Salinity	No saline tolerant species, salt scald or bare earth observed.
Other Site and Soil Factors	Ensure tank located to ensure gravity dosing

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Indicative Bore Log

BH01

Client:	See Section 1
Project:	see report
Drill Type:	
Drilling Meth	
Fluid	Nil
Coords	
Bearing:	Dip:
R.L	SEE WS
Logged by	SN
Date:	

RL	Depth (mm)	Graphic Log	Material Description	Soil: V Soft/V Loose	Soft/Loose	Firm/M Dense	Stiff/Dense	V Stiff/V Dense	Rock: Ex Low	Very Low	Low	Medium	High	Very High	Extremely High	Weathering: EW	HW	MW	SW	FS	FR	Frac. Spacing (m): 0.01	0.05	0.1	0.5	1	Sampling and Insitu Testing: TYPE	RQD%	Test Results and Comments
			BROWN CLAYEY SAND (SC) LOOSE, NP																										
			YELLOWISH BROWN SILTY CLAY (CL) DRY HARD																										
			GRADUAL REFUSAL IN INFERRED BEDROCK																										
	500																												
	1000																												
	1500																												
	2000																												
	2500																												
	3000																												
	3500																												
	4000																												
	4500																												
	5000																												
	5500		BORE TERMINATED AT 1.2 M																										
	6000																												

Appendix 4 Form 35 and Certificate of Accreditation

Section 94
Section 106
Section 129
Section 155

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Form **35**

To: LUKE KERSHAW *Owner name*

Address

Suburb/postcode

Designer details:

Name:	S NIELSEN	Category:	HYDRAULIC SERVICES
Business name:	STRATA GEOSCIENCE AND ENVIRONMNETAL P/L	Phone No:	0413545358
Business address:	72-74 LAMBECK DRIVE		
	TULLAMARINE 3043	Fax No:	
Licence No:	CC6113K	Email address:	sven@strataconsulting.com.au

Details of the proposed work:

Owner/Applicant	AS ABOVE	Designer's project reference No.	SR06373
Address:	46 HONEYWOOD DRIVE	Lot No:	
	HONEYWOOD		

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

Description of work:

WASTEWATER SYSTEM SPECIFICATION – ONLY WARRANTED TO A THE MAXIMUM MODELLED DAILY FLOW RATE AND WHEN INSTALLED AS PER THE DESIGN AND TERMS AND CONDITIONS OF THE REPORT.

(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	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: ☐X	Performance Solution: ☐ (*X the appropriate box*)
Other details:	

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: SN	Date:
Schedules:	Prepared by: SN	Date
Specifications:	Prepared by: SN	Date15/10/25
Computations	Prepared by: SN	Date 15/10/25
Performance solution proposals:	Prepared by: SN	Date:
Test reports:	Prepared by: NA	Date

Standards, codes or guidelines relied on in design process:

AS1547-2012

Any other relevant documentation:

STRATA REPORT SR06373

Attribution as designer:

I SVEN NIESLEN..... 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 i 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)SVEN NIELSEN *SN*

Designer:	SVEN NIELSEN	Sven Nielsen	15/10/25

Licence No: CC6113K

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 .....SVEN NIELSEN..... 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:	SVEN NIELSEN	Sven Nielsen	Date: 15/10/25

Tasmanian Government

Certificate of Accreditation

On-Site Wastewater Management System

This Certificate of Accreditation is hereby issued by the Director of Building Control pursuant to Section 18(1) of the *Building Act 2016* (accreditation of products).

System:	Taylex® Advanced Blower System 1500 a) Concrete ABS 1500 (10EP) and b) Poly ABS 1500 (10EP)
Manufacturer or Supplier:	Taylex Australia Pty Ltd ABN: 43 646 051 989
Of:	56 Prairie Rd, Ormeau, QLD 4208

This is to certify that the Taylex® Advanced Blower System as described in Schedule 1, is accredited as an AWTS for use in plumbing installations in Tasmania for single dwellings.

This accreditation is subject to the conditions and permitted uses specified in Schedule 2, and the National Construction Code.

Peter John Graham
Director of Building Control
Consumer, Building and Occupational Services
Department of Justice

Date of Issue: 5 April 2022 **Certificate Number:** DOC/20/89089(V2)

This Certificate of Accreditation is in force until 6 November 2025, unless withdrawn earlier at the discretion of the Director of Building Control

P: 1300 654 499 | PO Box 56, Rosny Park TAS 7018 | cbos.info@justice.tas.gov.au | www.cbos.tas.gov.au

Appendix 5 Terms and Conditions

Scope of Work
These Terms and Conditions apply to any services provided to you ("the Client") by Strata Geoscience and Environmental Pty Ltd ("Strata"). By continuing to instruct Strata to act after receiving the Terms and Conditions or by using this report and its findings for design and/or permit application processes and not objecting to any of the Terms and Conditions the Client agrees to be bound by these Terms and Conditions, and any other terms and conditions supplied by Strata from time to time at Strata's sole and absolute discretion. The scope of the services provided to the Client by Strata is limited to the services and specified purpose agreed between Strata and the Client and set out in the correspondence to which this document is enclosed or annexed ("the Services"). Strata does not purport to advise beyond the Services.

Third Parties
The Services are supplied to the Client for the sole benefit of the Client and must not be relied upon by any person or entity other than the Client. Strata is not responsible or liable to any third party. All parties other than the Client are advised to seek their own advice before proceeding with any course of action.

Provision of Information
The Client is responsible for the provision of all legal, survey and other particulars concerning the site on which Strata is providing the Services, including particulars of existing structures and services and features for the site and for adjoining sites and structures. The Client is also responsible for the provision of specialised services not provided by Strata. If Strata obtains these particulars or specialised services on the instruction of the Client, Strata does so as agent of the Client and at the Client's expense. Strata is not obliged to confirm the accuracy and completeness of information supplied by the Client or any third party service provider. The Client is responsible for the accuracy and completeness of all particulars or services provided by the Client or obtained on the Client's behalf. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever suffered by the Client or any other person or entity resulting from the failure of the Client or third party to provide accurate and complete information. In the event additional information becomes available to the Client, the Client must inform Strata in writing of that information as soon as possible. Further advice will be provided at the Client's cost. Any report is prepared on the assumption that the instructions and information supplied to Strata has been provided in good faith and is all of the information relevant to the provision of the Services by Strata. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if Strata has been supplied with insufficient, incorrect, incomplete, false or misleading information.

Integrity
Any report provided by Strata presents the findings of the site assessment. While all reasonable care is taken when conducting site investigations and reporting to the Client, Strata does not warrant that the information contained in any report is free from errors or omissions. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from errors in a report. Any report should be read in its entirety, inclusive of any summary and annexures. Strata does not accept any responsibility where part of any report is relied upon without reference to the full report.

Project Specific Criteria
Any report provided by Strata will be prepared on the basis of unique project development plans which apply only to the site that is being investigated. Reports provided by Strata do not apply to any project other than that originally specified by the Client to Strata. The Report must not be used or relied upon if any changes to the project are made. The Client should engage Strata to further advise on the effect of any change to the project. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever where any change to the project is made without obtaining a further written report from Strata. Changes to the project may include, but are not limited to, changes to the investigated site or neighbouring sites, for instance, variation of the location of proposed building envelopes/footprints, changes to building design which may impact upon building settlement or slope stability, or changes to earthworks, including removal (site cutting) or deposition of sediments or rock from the site.

Classification to AS2870-2011
It must be emphasised that the site classification to AS2870-2011 and recommendations referred to in this report are based solely on the observed soil profile at the time of the investigation for this report and account has been taken of Clause 2.1.1 of AS2870 - 2011. Other abnormal moisture conditions as defined in AS2870 – 2011 Clause 1.3.3 (a) (b) (c) and (d) may need to be considered in the design of the structure. Without designing for the possibility of all abnormal moisture conditions as defined in Clause 1.3.3, distresses will occur and may result in non "acceptable probabilities of serviceability and safety of the building during its design life", as defined in AS2870 - 2011, Clause 1.3.1. Furthermore the classification is preliminary in nature and needs verification at the founding surface inspection phase . The classification may be changed at this time based upon the nature of the founding surface over the entire footprint of the project area. Any costs associated with a change in the site classification are to be incurred by the client. Furthermore any costs associated with delayed works associated with a founding surface inspection or a change in classification are to be borne by the client. Where founding surface inspections are not commissioned the classifications contained within this report are void.

Subsurface Variations with Time
Any report provided by Strata is based upon subsurface conditions encountered at the time of the investigation. Conditions can and do change significantly and unexpectedly over a short period of time. For example groundwater levels may fluctuate over time, affecting latent soil bearing capacity and ex-situ/insitu fill sediments may be placed/removed from the site. Changes to the subsurface conditions that were encountered at the time of the investigation void all recommendations made by Strata in any report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any change to the subsurface conditions that were encountered at the time of the investigation. In the event of a delay in the commencement of a project or if additional information becomes available to the Client about a change in conditions becomes available to the Client, the Client should engage Strata to make a further investigation to ensure that the conditions initially encountered still exist. Further advice will be provided at the Client's cost. Without limiting the generality of the above statement, Strata does not accept liability where any report is relied upon after three months from the date of the report, (unless otherwise provided in the report or required by the Australian Standard which the report purports to comply with), or the date when the Client becomes aware of any change in condition. Any report should be reviewed regularly to ensure that it continues to be accurate and further advice requested from Strata where applicable.

Interpretation
Site investigation identifies subsurface conditions only at the discrete points of geotechnical drilling, and at the time of drilling. All data received from the geotechnical drilling is interpreted to report to the Client about overall site conditions as well as their anticipated impact upon the specific project. Actual site conditions may vary from those inferred to exist as it is virtually impossible to provide a definitive subsurface profile which accounts for all the possible variability inherent in earth materials. This is particularly pertinent to some weathered sedimentary geologies or colluvial/alluvial clast deposits which may show significant variability in depth to refusal over a development area. Rock incongruities such as joints, dips or faults may also result in subsurface variability. Soil depths and composition can vary due to natural and anthopogenic processes. Variability may lead to differences between the design depth of bored/driven piers compared with the actual depth of individual piers constructed onsite. It may also affect the founding depth of conventional strip, pier and beam or slab footings, which may result in increased costs associated with excavation (particularly of rock) or materials costs of foundations. Founding surface inspections should be commissioned by the Client prior to foundation construction to verify the results of initial site characterisation and failure to insure this will void the classifications and recommendations contained within this report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any variation from the site conditions inferred to exist.

Strata is not responsible for the interpretation of site data or report findings by other parties, including parties involved in the design and construction process. The Client must seek advice from Strata about the interpretation of the site data or report.

Report Recommendations
Any report recommendations provided by Strata are only preliminary. A report is based upon the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until earthworks and/or foundation construction is almost complete. Where variations in conditions are encountered, Strata should be engaged to provide further advice. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if the results of selective point sampling are not indicative of actual conditions throughout an area or if the Client becomes aware of variations in conditions and does not engage Strata for further advice.

Geo-environmental Considerations
Where onsite wastewater site investigation and land application system designs are provided by Strata, reasonable effort will be made to minimise environmental and public health risks associated with the disposal of effluent within site boundaries with respect to relevant Australian guidelines and industry best practise at the time of investigation. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from:

(i) changes to either the project or site conditions that affect the onsite wastewater land application system's ability to safely dispose of modelled wastewater flows; or
(ii) seepage, pollution or contamination or the cost of removing, nullifying or clearing up seepage, polluting or contaminating substances; or
(iii) poor system performance where septic tanks have not been de-sludged at maximum intervals of 3 years or AWTS systems have not been serviced in compliance with the manufacturers recommendations; or
(iv) failure of the client to commission both interim and final inspections by the designer throughout the system construction; or
(v) the selection of inappropriate plants for irrigation areas; or
(vi) damage to any infrastructure including but not limited to foundations, walls, driveways and pavements; or
(vii) land instability, soil erosion or dispersion; or
(viii) design changes requested by the Permit Authority.

Furthermore Strata does not guarantee land application area design life beyond 2 years from installation.

Strata does not consider site contamination, unless the Client specifically instructs Strata to consider the site contamination in writing. If a request is made by the Client to consider site contamination, Strata will provide additional terms and conditions that will apply to the engagement.

Copyright and Use of Documents
Copyright in all drawings, reports, specifications, calculations and other documents provided by Strata or its employees in connection with the Services remain vested in Strata. The Client has a licence to use the documents for the purpose of completing the project. However, the Client must not otherwise use the documents, make copies of the documents or amend the documents unless express approval in writing is given in advance by Strata. The Client must not publish or allow to be published, in whole or in part, any document provided by Strata or the name or professional affiliations of Strata, without first obtaining the written consent of Strata as to the form and context in which it is to appear.

If, during the course of providing the Services, Strata develops, discovers or first reduces to practice a concept, product or process which is capable of being patented then such concept, product or process is and remains the property of Strata and:

(i) the Client must not use, infringe or otherwise appropriate the same other than for the purpose of the project without first obtaining the written consent of Strata; and

(ii) the Client is entitled to a royalty free licence to use the same during the life of the works comprising the project.

Digital Copies of Report
If any report is provided to the Client in an electronic copy except directly from Strata, the Client should verify the report contents with Strata to ensure they have not been altered or varied from the report provided by Strata.