Meander Valley Council
Working Together

PLANNING NOTICE

An application has been received for a Permit under s.57 of the Land Use Planning Approvals Act 1993:

APPLICANT:	**Theresa Hatton Building Design - PA\24\0155**
PROPERTY ADDRESS:	**3952 Meander Valley Road EXTON (CT: 122829/1)**
DEVELOPMENT:	**Multiple dwellings (1 existing, 1 proposed) - density, not connected to sewerage, driveway, parking areas, siting of parking area.**

The application can be inspected until **Tuesday, 26 March 2024**, at www.meander.tas.gov.au or at the Council Office, 26 Lyall Street, Westbury (during normal office hours).

Written representations may be made during this time addressed to the General Manager, PO Box 102, Westbury 7303, or by email to planning@mvc.tas.gov.au. Please include a contact phone number. Please note any representations lodged will be available for public viewing.

If you have any questions about this application please do not hesitate to contact Council's Planning Department on 6393 5320.

Dated at Westbury on 9 March 2024.

Jonathan Harmey
GENERAL MANAGER

APPLICATION FORM

Meander Valley Council
Working Together

PLANNING PERMIT

Land Use Planning and Approvals Act 1993

- Application form & details MUST be completed **IN FULL**.
- Incomplete forms will not be accepted and may delay processing and issue of any Permits.

OFFICE USE ONLY

Property No: | | | | | | **Assessment No:** | | - | | | | | - | | | | |

DA | | **PA** | | **PC** | |

- Is your application the result of an illegal building work? ☐ Yes ☑ No
- Have you already received a Planning Review for this proposal? ☐ Yes ☑ No
- Is a new vehicle access or crossover required? ☑ Yes ☐ No

Indicate by ✓ box

PROPERTY DETAILS:

Address: 3952 Meander Valley Road | Certificate of Title: 122829

Suburb: EXTON | | Lot No: 1

Land area: 2477m² m² / ha

Present use of land/building: Residential *(vacant, residential, rural, industrial, commercial or forestry)*

- Does the application involve Crown Land or Private access via a Crown Access Licence: ☐ Yes ☐ No
- Heritage Listed Property: ☐ Yes ☐ No

DETAILS OF USE OR DEVELOPMENT:

Indicate by ✓ box ☑ Building work ☐ Change of use ☐ Subdivision ☐ Demolition ☐ Forestry ☐ Other

Total cost of development *(inclusive of GST):* $ *Includes total cost of building work, landscaping, road works and infrastructure*

Description of work: Multi dwelling Development

Use of building: Dwelling (main use of proposed building – dwelling, garage, farm building, factory, office, shop)

New floor area: 124 m² New building height: 4.839 m

Materials: External walls: Trimdek Colour: white

Roof cladding: Galvanise Iron Colour: Grey - Galv.

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
122829	1
EDITION	DATE OF ISSUE
4	01-Nov-2007

SEARCH DATE : 19-Dec-2023
SEARCH TIME : 09.29 AM

DESCRIPTION OF LAND

Parish of EXTON, Land District of WESTMORLAND
Lot 1 on Sealed Plan 122829
Being the land described in Conveyance no. 59/6030
Derivation : Part of 1,040 Acres Gtd. to William Field, J. Bonney and E. Richards.
Prior CTs 23052/1 and 53317/4

SCHEDULE 1

M152112 TRANSFER to LARAINE ANN COLEBROOK Registered 01-Nov-2007 at 12.01 PM

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP 53317 FENCING PROVISION in Schedule of Easements
SP122829 EASEMENTS in Schedule of Easements
SP122829 FENCING COVENANT in Schedule of Easements
SP122829 SEWERAGE AND/OR DRAINAGE RESTRICTION

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

OWNER DONALD WILLIAM ADAMS & MARLENE JOYCE ADAMS
THOMAS HOPKINS
FOLIO REFERENCE ~~CT Vol 4091 Fol 50~~ F/R 23052-1
~~CT Vol 53317 Fol 1~~ F/R 53317-4

GRANTEE PART OF 1040 ACRES GRANTED TO WILLIAM FIELD, JOSEPH BONNEY & ELIZABETH RICHARDS.

PLAN OF SURVEY

BY SURVEYOR JOHN WILLIAM DENT of

LOCATION
LAND DISTRICT OF WESTMORLAND
PARISH OF EXTON

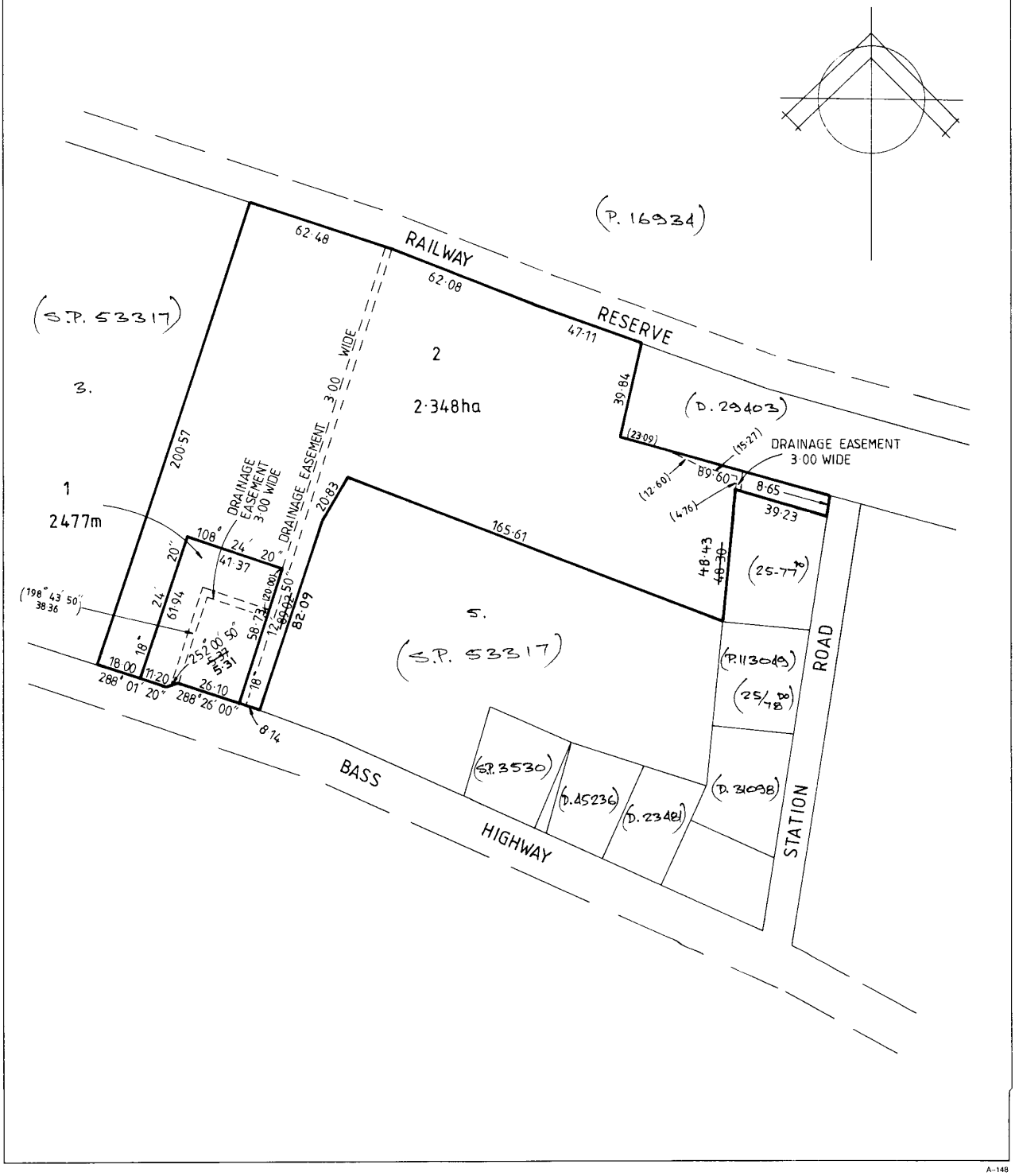
SCALE 1:1500 LENGTHS IN METRES

REGISTERED NUMBER
SP 122829

APPROVED
EFFECTIVE FROM 14 JUN 1996
Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 121	LAST UPI No. 6500 6500 0527 2177	LAST PLAN No. S.P. 53317	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

LOT 2 IS COMPILED FROM SP 53317 AND THIS SURVEY



A-148

REGISTERED NUMBER

SP 122829

SCHEDULE OF EASEMENTS

NOTE:—The Town Clerk or Council Clerk must sign the certificate on the back page for the purpose of identification.

The Schedule must be signed by the owners and mortgagees of the land affected. Signatures should be attested.

EASEMENTS AND PROFITS

Each lot on the plan is together with:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and

(2) any easements or profits à prendre described hereunder.

Each lot on the plan is subject to:—

(1) such rights of drainage over the drainage easements shewn on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and

(2) any easements or profits à prendre described hereunder.

The direction of the flow of water through the drainage easements shewn on the plan is indicated by arrows.

DRAINAGE EASEMENTS

Lots 1 and 2 on the plan are subject to existing rights of drainage for the benefit of the Warden Councillors and Electors of the Municipality of Westbury or its successors over such portions marked "DRAINAGE EASEMENT 3.00 WIDE" on the plan created by Sealed Plan 53317.

FENCING COVENANT

The owner of Lot 1 hereby covenants with Thomas Hopkins ("the Vendor") that the Vendor shall not be required to fence.

SP 122829

SIGNED by THOMAS HOPKINS the registered proprietor of the land comprised in Certificate of Title Volume 53317 Folio 4 in the presence of:-) Thomas Hopkins

D. Lahman

Second Hand Dealer

RSD 1514 Bass Hwy Exton

SIGNED by DONALD WILLIAM ADAMS one of the registered proprietors of the land comprised in Certificate of Title Volume 4091 Folio 50 in the presence of:-) D W Adams

L. J. Nettey

Grain Merchant

RSD 784 EXTON 7303

SIGNED by MARLENE JOYCE ADAMS one of the registered proprietors of the land comprised in Certificate of Title Volume 4091 Folio 50 in the presence of:-) M. J. Adams.

L. J. Nettey

Grain Merchant

RSD 784 EXTON 7303

SP122829

This is the schedule of easements attached to the plan of THOMAS HOPKINS
(Insert Subdivider's Full Name)

DONALD WILLIAM ADAMS AND MARLENE JOYCE ADAMS affecting land in

CERTIFICATE OF TITLE VOLUME 53317 FOLIO 4 AND VOLUME 4091 FOLIO 50
(Insert Title Reference)

Sealed by Meander Valley Council on 1st February 1996

Solicitor's Reference CWR.KS

~~Council Clerk/Town Clerk~~
General Manager

OS-K 3134

Theresa. L. Hatton Building Designer Individual Design
P.O. Box 282, Launceston TAS 7250
Ph: 63347144

22 January 2024

Meander Valley Council,
Att: Planning Officer,
P.O. Box 102,
Westbury TAS 7303

Dear Planning Officer,

RE 3952 Meander Valley Road, Exton, Proposed Unit Development

The client is L Colebrook at 3952 Meander Valley Road, Exton. The proposed development is to build another dwelling on the site for a family member. The existing dwelling was the old church and the proposed dwelling will be 2 bedroom.

The zone is Village Zone in Tasmanian Planning Scheme.

12.0 Village Zone

12.1 Zone Purpose

The purpose of the Village Zone is:
12.1.1 To provide for small rural centres with a mix of residential, community services and commercial activities.
12.1.2 To provide amenity for residents appropriate to the mixed-use characteristics of the zone.

12.3 Use Standards

12.3.1 All non-residential uses
Objective:
That non-residential use:
(a) is compatible with the mixed use characteristics of a village; and
(b) does not cause unreasonable loss of amenity to adjacent sensitive uses.

Theresa. L. Hatton Building Designer Individual Design
P.O. Box 282, Launceston TAS 7250
Ph: 63347144

12.4 Development Standards for Buildings and Works

12.4.1 Residential density and servicing for multiple dwellings

Objective:

That the density of multiple dwellings:

(a) makes efficient use of land for housing; and

(b) optimises the use of infrastructure and community services.

Acceptable Solutions

A1

Multiple dwellings must:

(a) have a site area per dwelling of not less than 600m2; and

Response : The site is 2477m2

(b) have a connection to a reticulated sewerage, stormwater and full water supply service.

Response : Confirmation from Taswater

Performance Criteria

P1.1

For a site that has a connection to or is capable of being connected to, a reticulated sewerage, stormwater and full water supply service, multiple dwellings must only have a site area per dwelling that is less than 600m2 if the number of dwellings:

(a) have a site area per dwelling that does not exceed the capacity of the reticulated infrastructure services; and

(b) are consistent with the density existing on established properties in the area; or

(c) the development provides a specific accommodation need with significant social or community benefit.

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P1.2

For a site that is not capable of being connected to a reticulated sewerage, stormwater and full water supply service, multiple dwellings must have a site area that:

(a) is sufficient for on-site wastewater and stormwater disposal and water supply; and

Response : A wastewater assessment has been undertaken to confirm the site will have enough space on site for a waste water system for the proposed dwelling and the existing system will remain for the Church Dwelling.

(b) a regulated entity has provided written advice stating that the site is unable to be connected to a full water supply service or a reticulated sewerage system.

Response : The site has a water connection.

12.4.2 Building height

Objective:

That building height is compatible with the streetscape and does not cause an unreasonable loss of amenity for adjoining properties.

Acceptable Solutions

A1

Building height must be not more than 8.5m.

Response : Building Complies 4.839m

Theresa. L. Hatton Building Designer Individual Design
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12.4.3 Setback

Objective:

That building setback is compatible with the streetscape and does not result in an unreasonable impact on amenity of adjoining properties.

Acceptable Solutions

A1

Buildings must have a setback from a frontage of:

(a) not less than 4.5m;

(b) not less than existing buildings on the site; or

(c) not more or less than the maximum and minimum setbacks of the buildings on adjoining properties.

Response : Building setback from frontage more than 4.5m- complies

A2

Buildings must have a setback from side and rear boundaries of not less than:

(a) 3m; or

(b) half the wall height of the building, whichever is the greater.

Response : Building setback from side & rear boundary more than 3m – complies.

A3

Air extraction, pumping, refrigeration systems, compressors or generators, excluding Residential, Visitor Accommodation, Natural and Cultural Values Management, Passive Recreation and Utilities, must have a setback from a property containing a sensitive use of not less than 10m.1

Response : N/A

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Ph: 63347144

12.4.4 Site coverage

Objective:
That site coverage:
(a) is compatible with the character of the development existing in the area; and
(b) provides sufficient area for private open space and landscaping

Acceptable Solutions
A1
Site coverage must be not more than 50%.

Response :
The site is now 2477m2 –
The buildings in total are 552m2
Site coverage complies.

12.4.5 Fencing

That the height and transparency of frontage fences:
(a) allows the potential for mutual passive surveillance between the road and the dwelling; and
(b) provides reasonably consistent height and transparency.

Acceptable Solutions
A1
No Acceptable Solution.2

Performance Criteria
P1
A fence (including a free-standing wall) within 4.5m of a frontage must:

(a) provide for security and privacy, while allowing for passive surveillance of the road; and

Response: This is a pre-existing site – with established fencing and gardening. The existing fence will remain.

Theresa. L. Hatton Building Designer Individual Design
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Ph: 63347144

(b) be consistent with the height and transparency of fences in the street, having regard to:
(i) topography of the site; and
(ii) traffic volumes on the adjoining road.

Response: The fences in the local area are low, consistent with the existing fencing on site. With the business across the road and associated works at this property a low fence on the proposed property is paramount to being able to enter the road way safely, even with the low count of vehicles using the road.

12.4.6 Outdoor storage areas
Objective:
That outdoor storage areas for non-residential use do not detract from the appearance of the site or surrounding area.
Acceptable Solutions
A1
Outdoor storage areas for non-residential uses, excluding for the display of goods for sale, must not be visible from any road or public open space adjoining the site.

Response : N/A

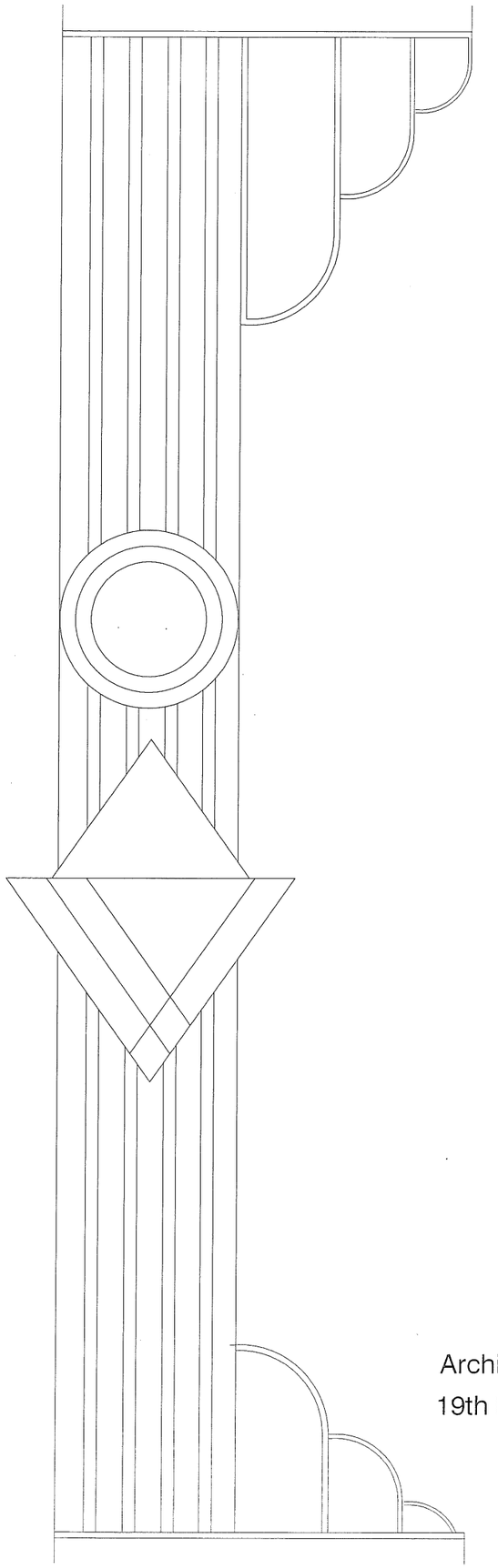
Parking
Lot 1 - The existing Church dwelling has a 2-car garage and a circular driveway.
Lot 2- The proposed dwelling has an existing garage and a cross over for the garage. The traffic through Exton is now limited, with most people travelling the highway and bypassing Exton. There is an existing 2 car garage with access of Meander Valley Road, now.
There will be parking for 2 cars plus visitor on Lot 1 and 2 cars for Lot 2.
Ample street parking on site.

If you have any further questions, please contact the undersigned.

Theresa. L. Hatton Building Designer Individual Design
P.O. Box 282, Launceston TAS 7250
Ph: 63347144

Kind regards

Theresa Hatton



Proposed Unit Development
for L Colebrook & J- L Colebrook
at 3952 Meander Valley Road
Exton

PLANNING DOCUMENTATION ONLY

Planning Application Set

Architectural Drawings No. 5066P-01, 12

19th December 2023

#A3 Drawing No. 5066P-01 of 12

Individual Designs

Theresa L. Hatton

Building Designer

Accredited Building Practitioner
Accreditation Number CC 298 R

Telephone (03) 6334 7144

theresa.hatton@bigpond.com

P.O. Box 282, Launceston 7250

ABN 22 654 809 821

Information Page

Project Address:
3952 Meander Valley Road
Exton
Client: L Colebrook
Designer: Theresa . L Hatton
Accreditation No. : CC298R

Title: 122829/1

Index of Drawings:
Architectural
1- Cover Page
2- Information Page
3- Existing Site Plan
4- Proposed Site Plan
5- Drainage Plan
6- Proposed Site Details
7- U1- Existing Floor Plan
8- U1- Existing Elevations
9- U1- Existing Elevations
10- U2 - Proposed Floor Plan
11- U2 - Proposed Elevations
12- U2- Proposed Elevations

Floor Area: U1- 288m2 & U2-125m2
Wind Speed: N2
Soil Classification: H2
Climate Zone: 7
Bushfire - Prone Area: Bal 40

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ABN 22 654 809 821

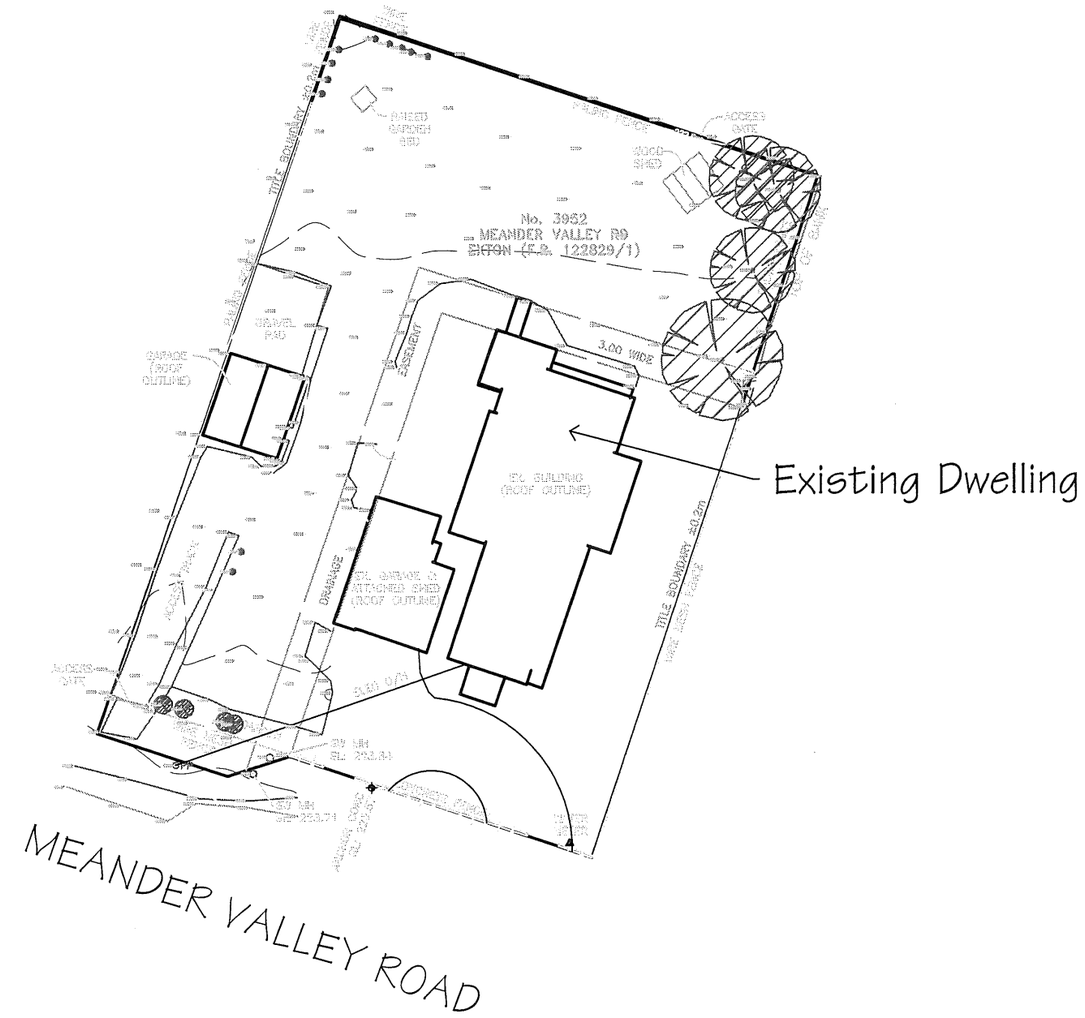
PLANNING
DOCUMENTATION ONLY

Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -02 of 12

N



Existing Dwelling

Existing Site Plan

Title details taken from 122829/1
Title boundaries measurements are in meters

GENERAL NOTES

1. Check all dimensions and verify levels on site.
2. Do Not Scale from this drawing - if in doubt ask.
3. All workmanship and materials to comply with all relevant S.A.A. Codes and the N.C.C.
4. These drawings have been prepared for application of Planning permit from the Local Council only. Not all details for the entering into a contract or tender are covered in these documents. They are to be used as a guide only for the building works.
5. Confirm all project details with the owner prior to the purchase of materials, commencement of work and construction.

PLANNING DOCUMENTATION ONLY

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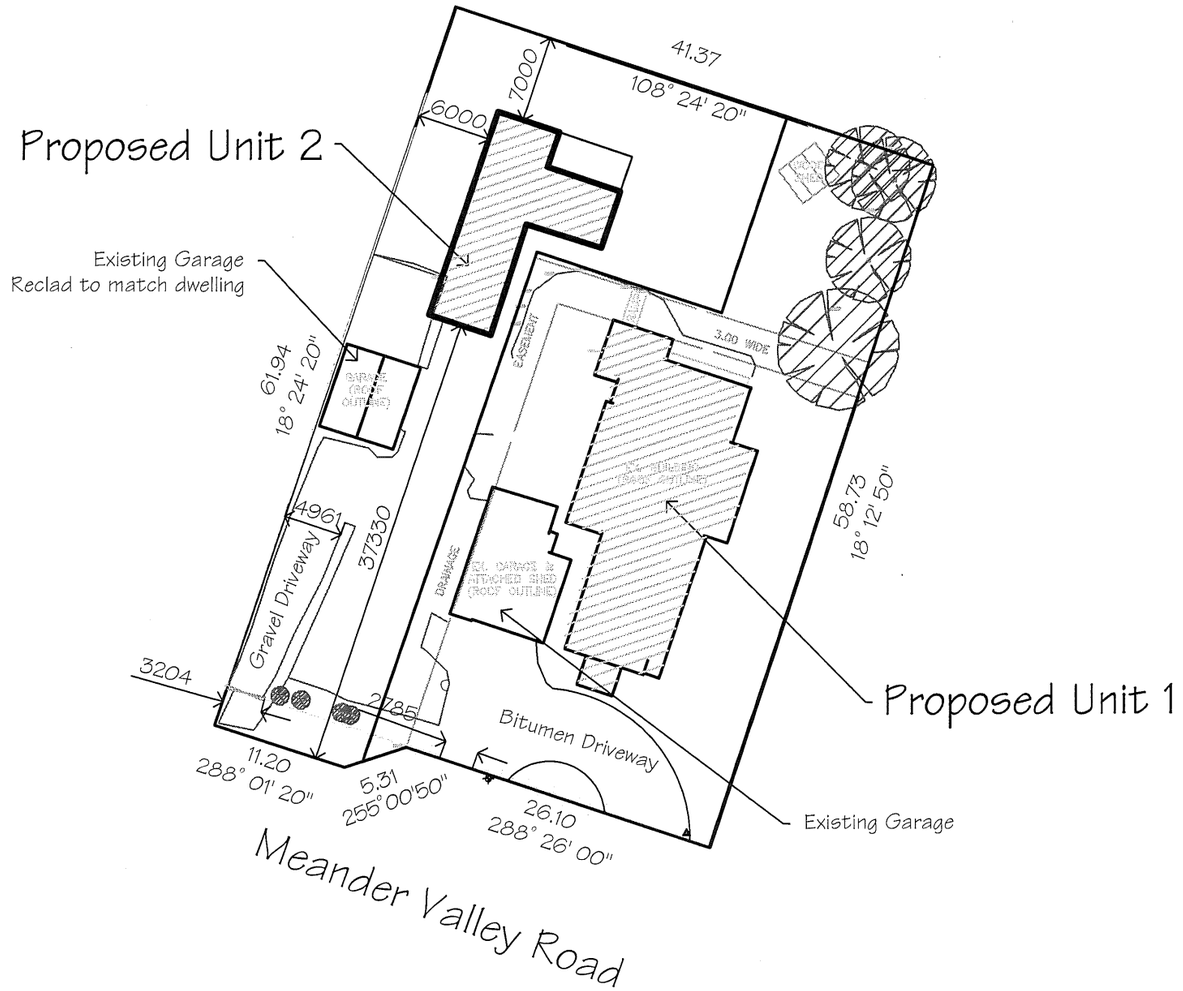
Building Designer
Individual Designs ABN 22 654 809 821
Telephone (03) 63 347144
P.O. Box 282. Launceston 7250

Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:500 U.N.O
19th December 2023

Drawing No. 5066P -03 of 12

N



Proposed Site Plan

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Proposed Unit Development
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Exton
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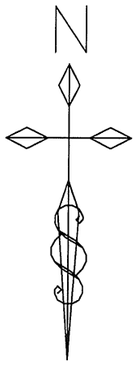
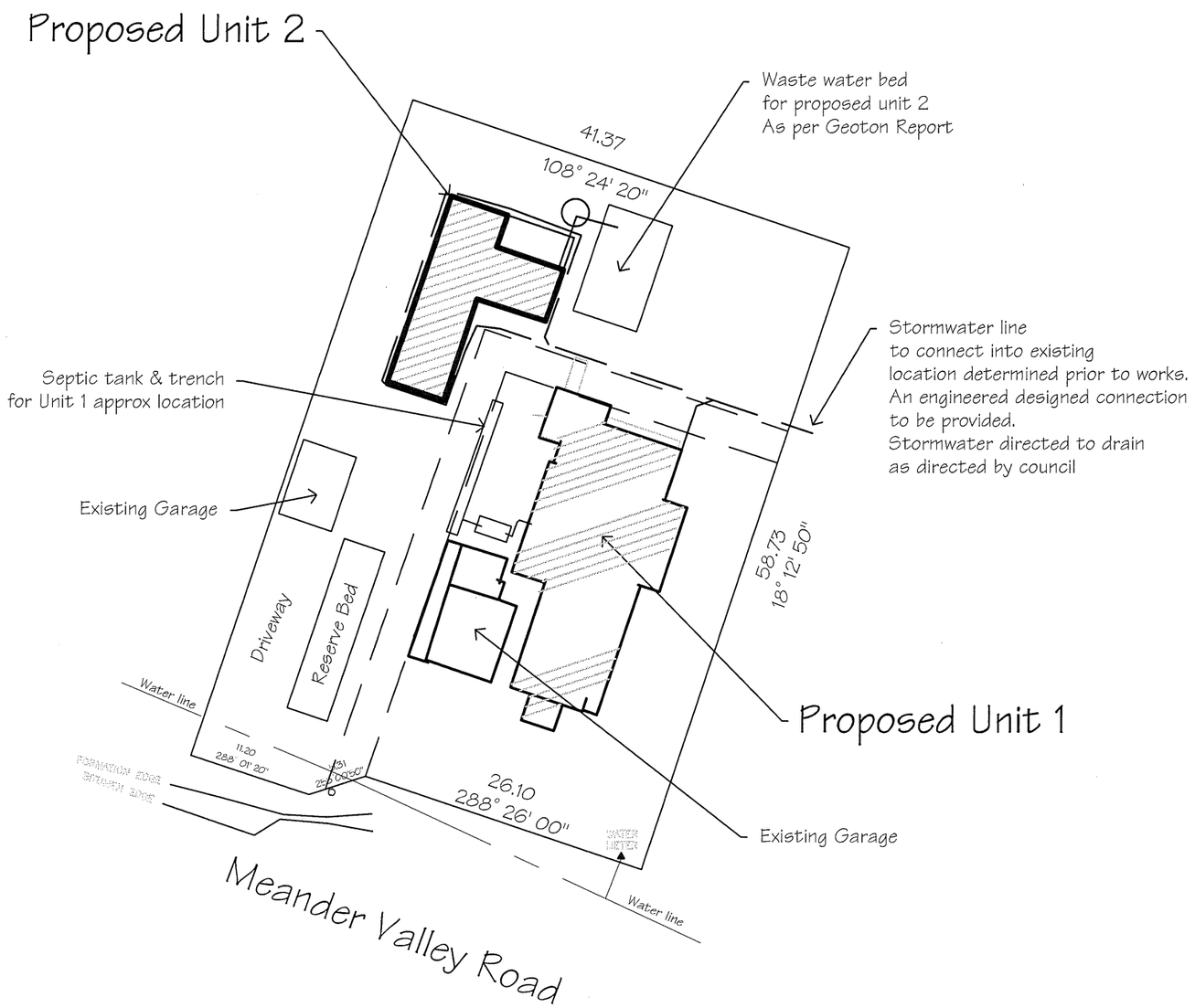
Scale 1:500 U.N.O
19th December 2023

Drawing No. 5066P -04 of 12





Proposed Drainage Plan

Title details taken from 122829/1
Title boundaries measurements are in meters

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PLANNING
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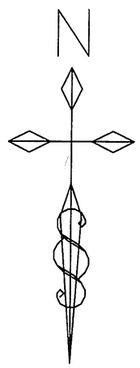
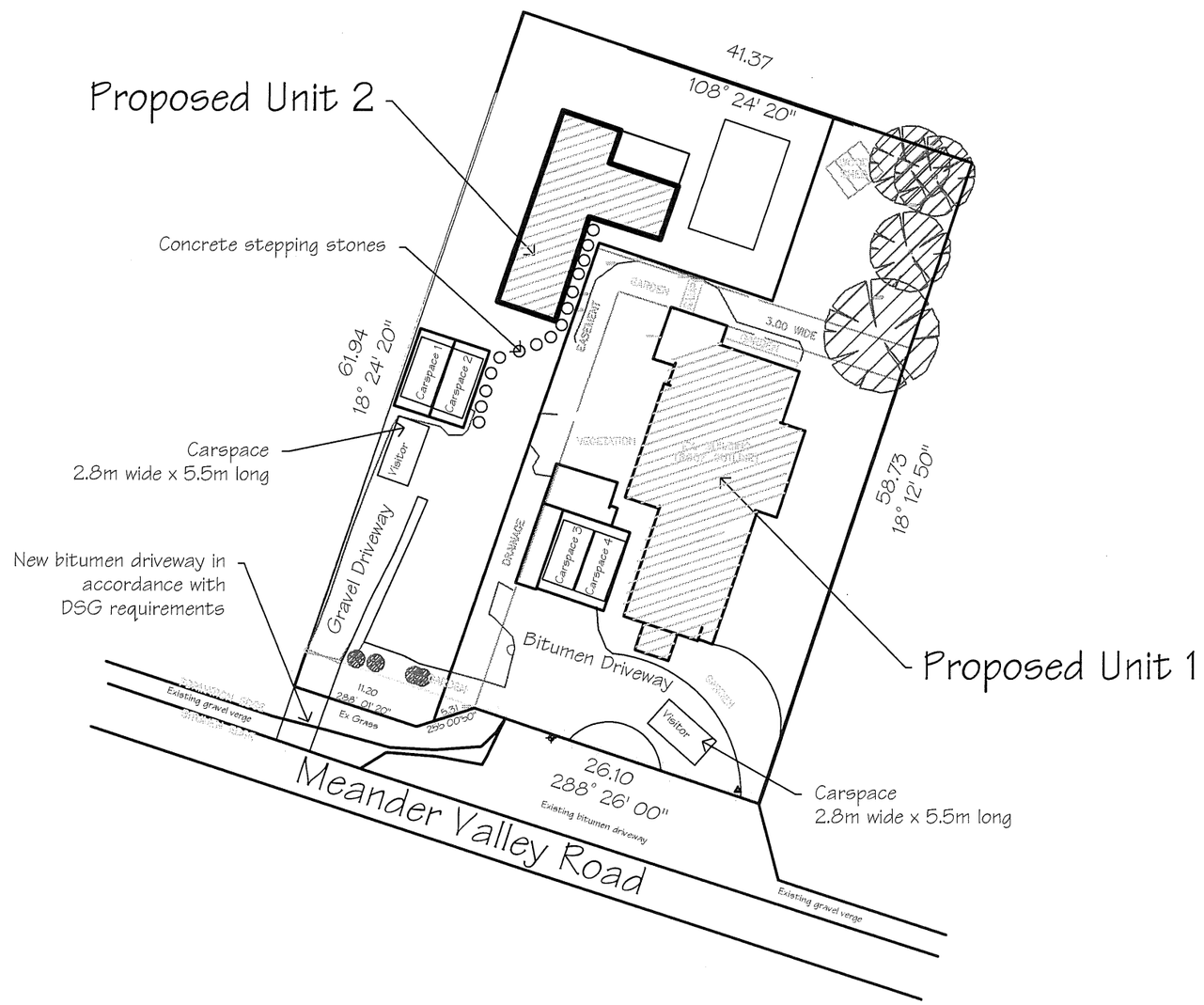
Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:500 U.N.O
19th December 2023

Drawing No. 5066P -05 of 12





Title details taken from 122829/1
Title boundaries measurements are in meters

Proposed Site Details

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PLANNING DOCUMENTATION ONLY

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Telephone (03) 63 347144
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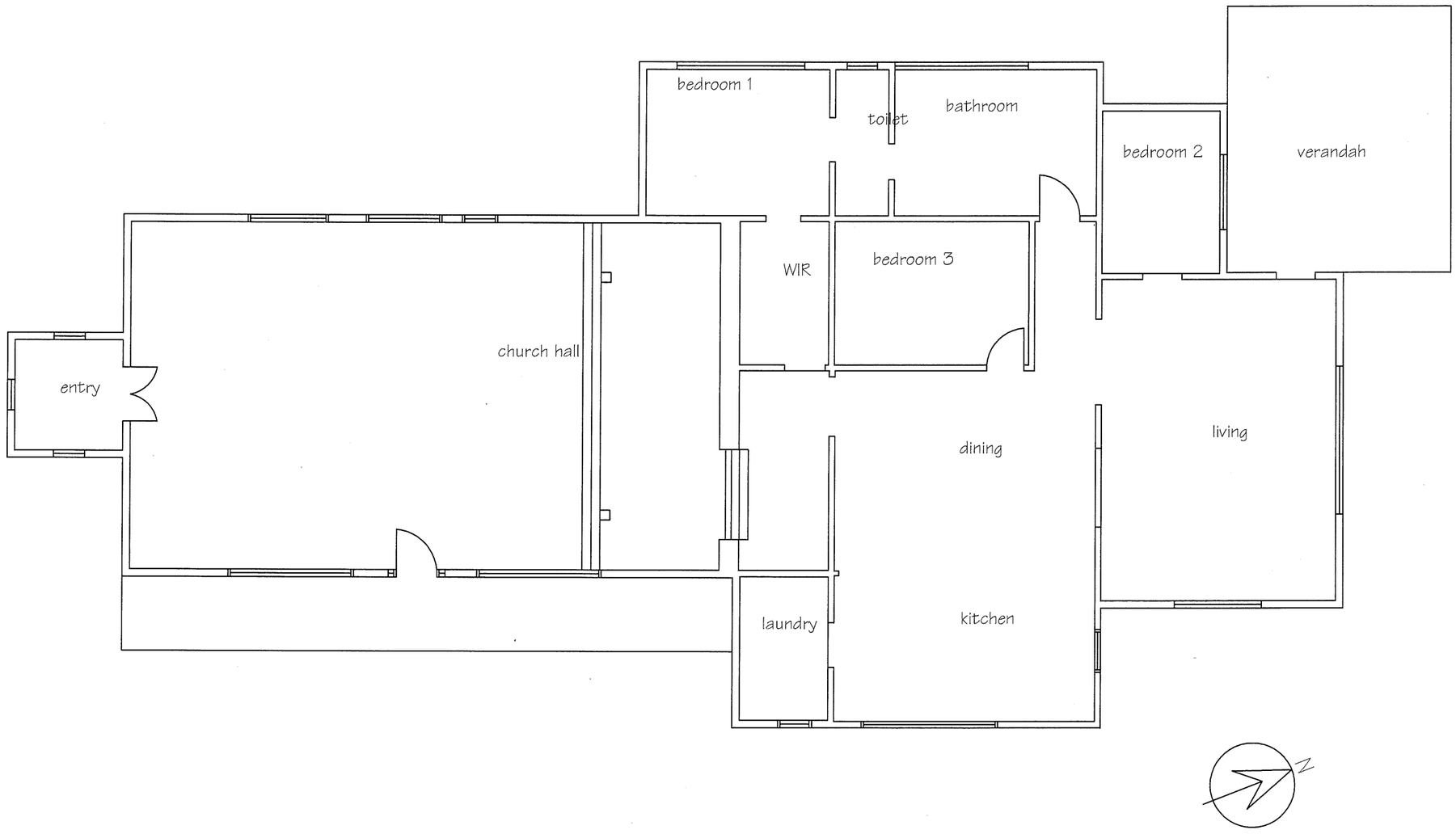
Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:500 U.N.O
19th December 2023

Drawing No. 5066P-06 of 12



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PLANNING DOCUMENTATION ONLY

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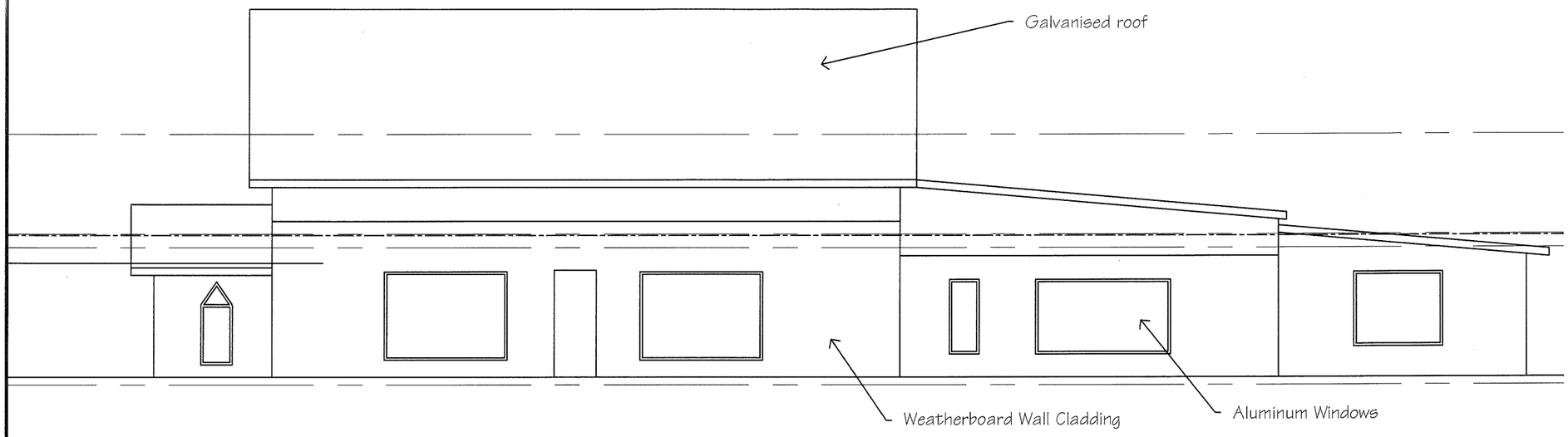
Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

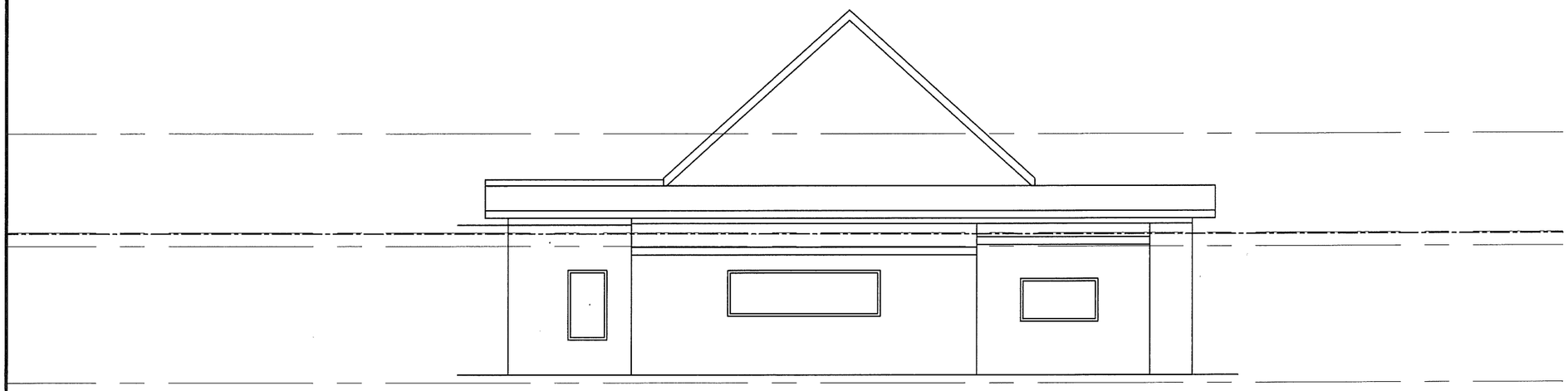
Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -07 of 12

Unit 1 - Floor Plan



Unit 1 - East Elevation



Unit 1 - North Elevation

GENERAL NOTES

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Proposed Unit Development
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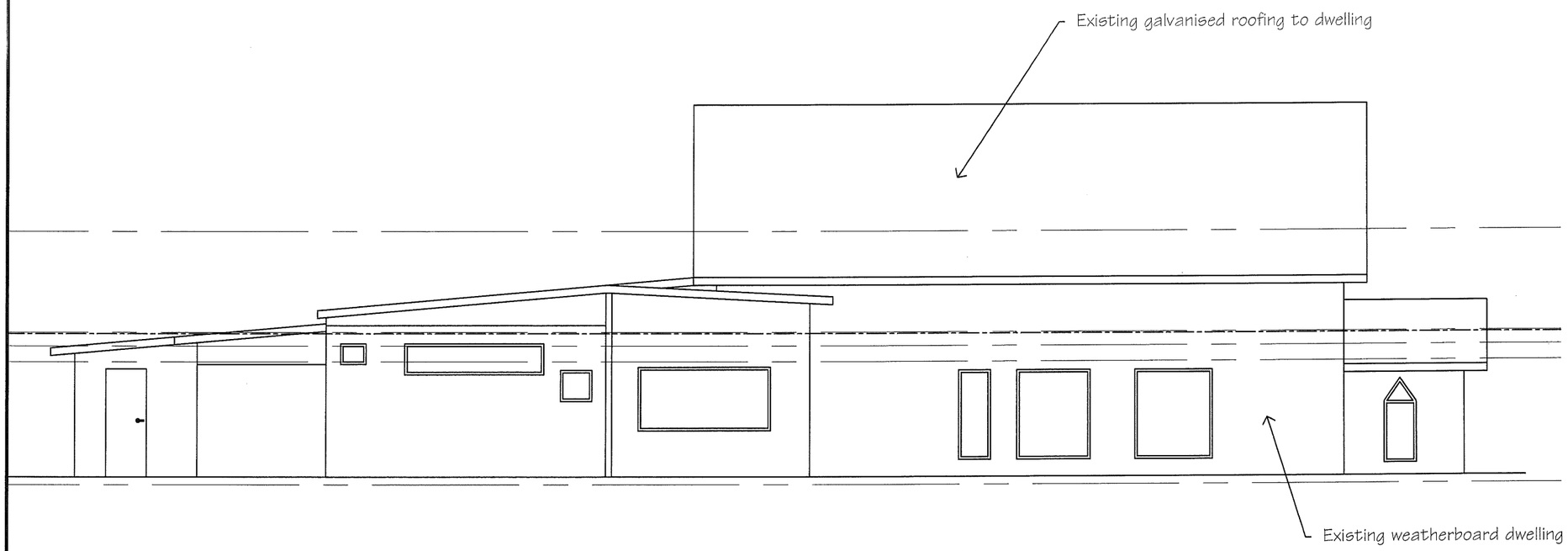
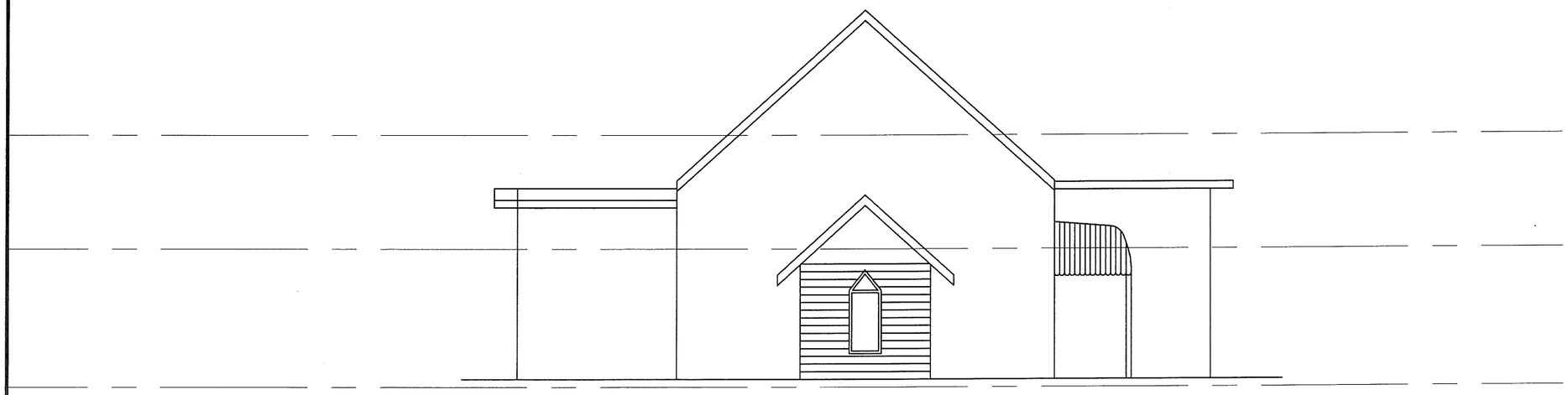
Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -08 of 12



Unit 1 - West Elevation



Unit 1 - South Elevation

GENERAL NOTES

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Proposed Unit Development
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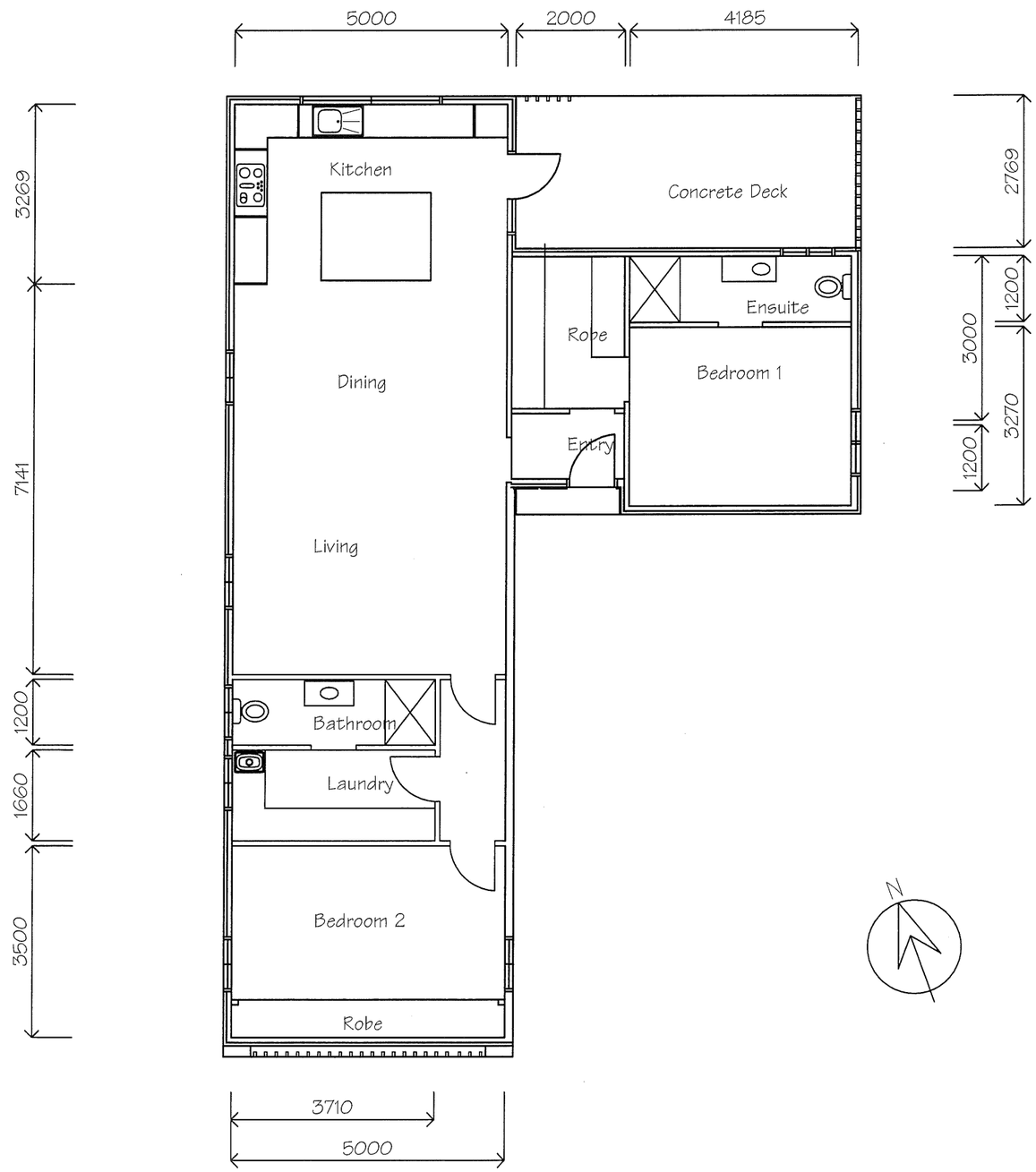
for L Colebrook & J- L Colebrook

Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -09 of 12



Proposed Floor Plan

GENERAL NOTES

1. Check all dimensions and verify levels on site.
2. Do Not Scale from this drawing - if in doubt ask.
3. All workmanship and materials to comply with all relevant S.A.A. Codes and the N.C.C.
4. These drawings have been prepared for application of Planning permit from the Local Council only. Not all details for the entering into a contract or tender are covered in these documents. They are to be used as a guide only for the building works.
5. Confirm all project details with the owner prior to the purchase of materials, commencement of work and construction.

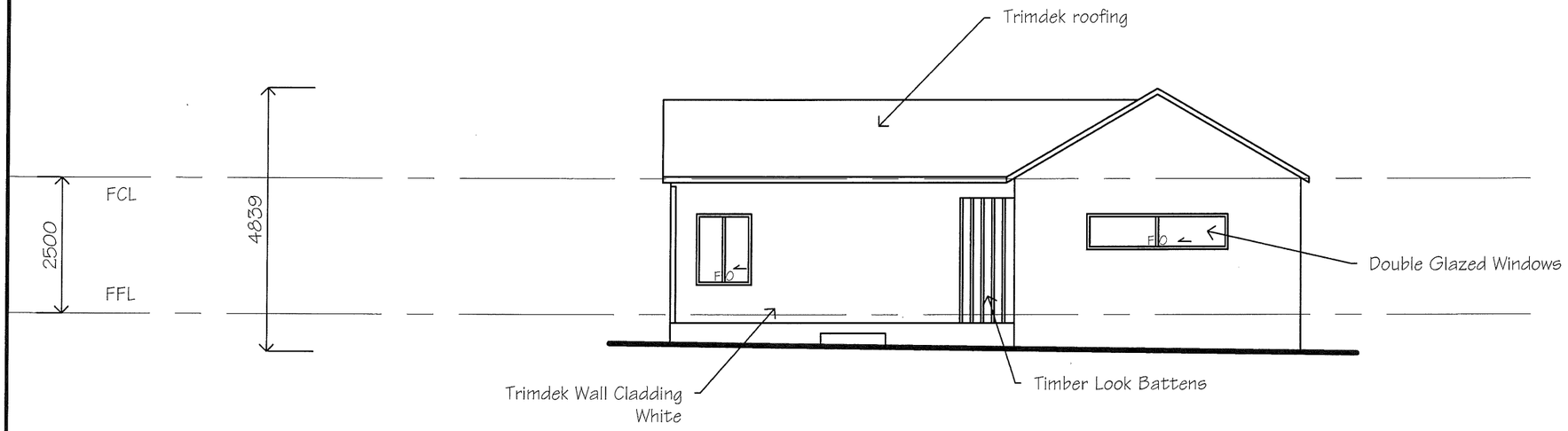
PLANNING
DOCUMENTATION ONLY

Theresa L. Hatton
Building Designer
Individual Designs ABN 22 654 809 821
Telephone (03) 63 347144
P.O. Box 282. Launceston 7250

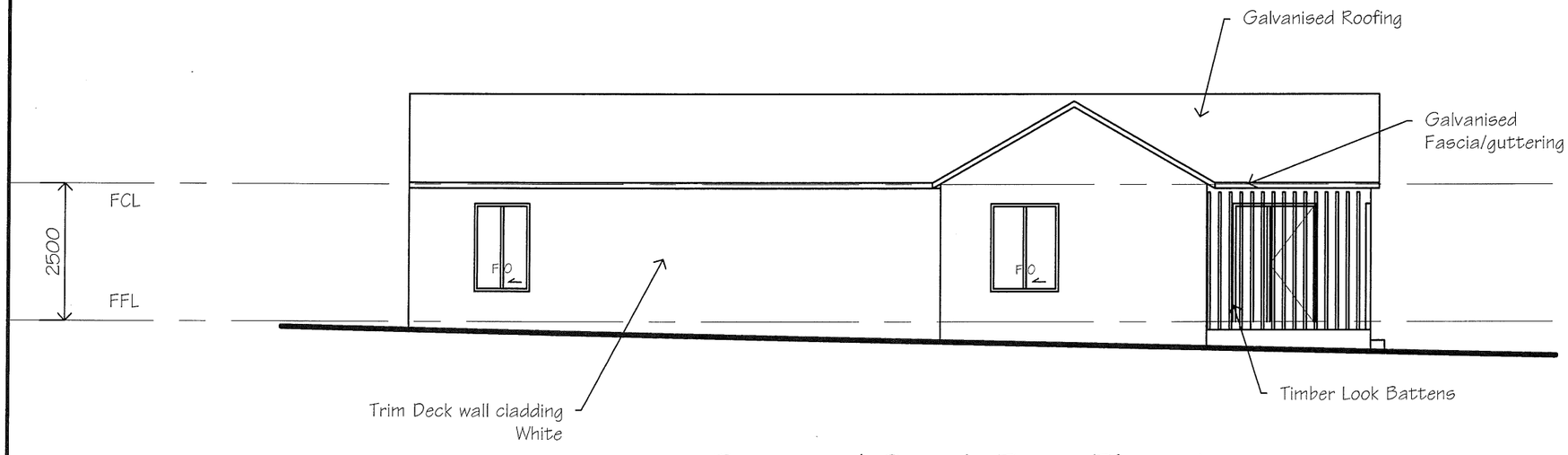
Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -10 of 12



Proposed North East Elevation



Proposed South East Elevation

GENERAL NOTES

1. Check all dimensions and verify levels on site.
2. Do Not Scale from this drawing - if in doubt ask.
3. All workmanship and materials to comply with all relevant S.A.A. Codes and the N.C.C.
4. These drawings have been prepared for application of Planning permit from the Local Council only. Not all details for the entering into a contract or tender are covered in these documents. They are to be used as a guide only for the building works.
5. Confirm all project details with the owner prior to the purchase of materials, commencement of work and construction.

PLANNING
DOCUMENTATION ONLY

Theresa L. Hatton
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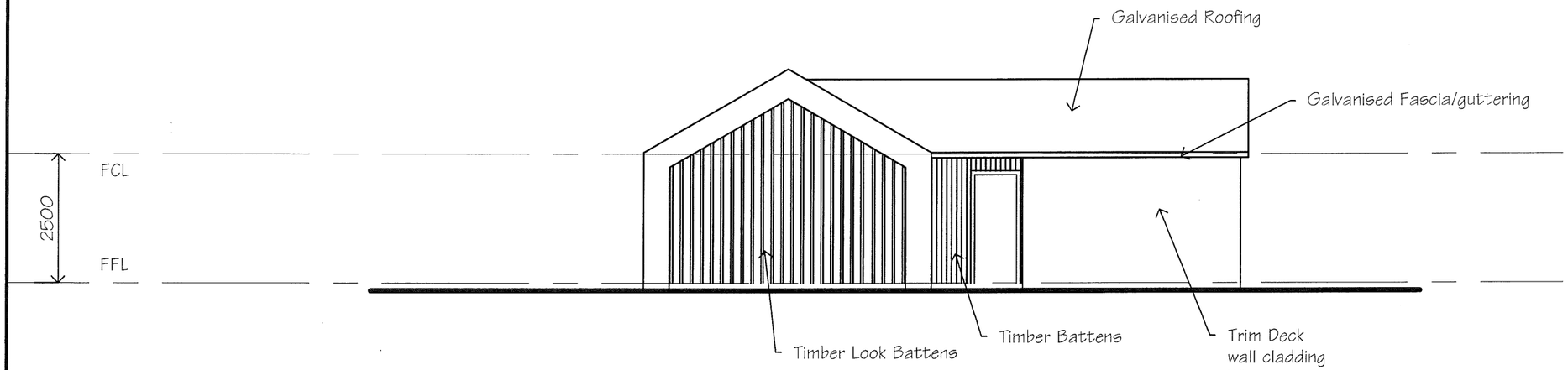
P.O. Box 282. Launceston 7250

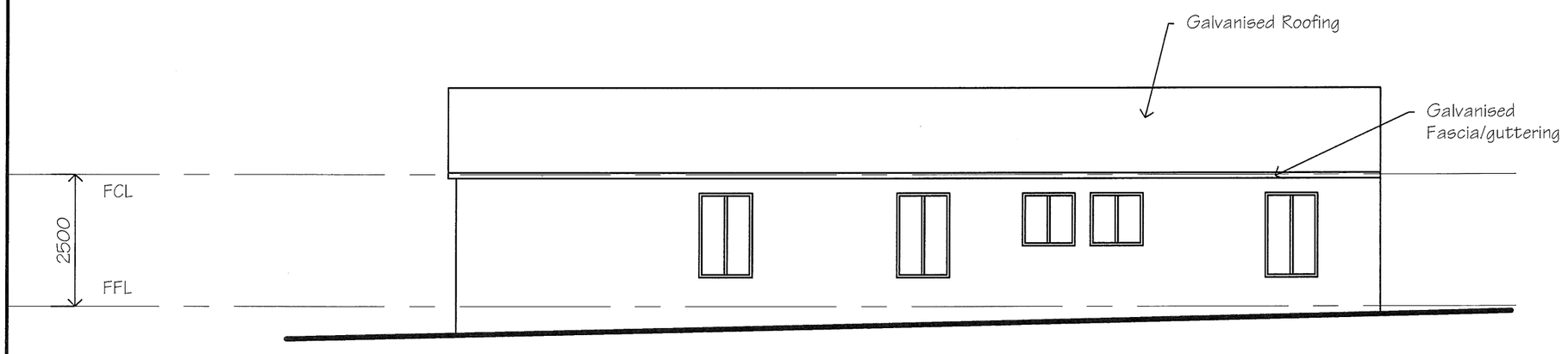
Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -11 of 12



Proposed South West Elevation



Proposed North West Elevation

GENERAL NOTES

1. Check all dimensions and verify levels on site.
2. Do Not Scale from this drawing - if in doubt ask.
3. All workmanship and materials to comply with all relevant S.A.A. Codes and the N.C.C.
4. These drawings have been prepared for application of Planning permit from the Local Council only. Not all details for the entering into a contract or tender are covered in these documents. They are to be used as a guide only for the building works.
5. Confirm all project details with the owner prior to the purchase of materials, commencement of work and construction.

PLANNING
DOCUMENTATION ONLY

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Proposed Unit Development
at 3952 Meander Valley Road
Exton
for L Colebrook & J- L Colebrook

Scale 1:100 U.N.O
19th December 2023

Drawing No. 5066P -12 of 12

GEOTON Pty Ltd
Geotechnical Consultants

Geoton Pty Ltd ABN 81 129 764 629
PO Box 522 Prospect TAS 7250
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Invermay TAS 7248
Tel (+61) (3) 6326 5001
www.geoton.com.au

8 November 2023

Reference No. GL23624Ab

Theresa L Hatton Building Design
PO Box 282
LAUNCESTON TAS 7250

Attention: Ms Theresa Hatton

RE: Site Classification & On-site Wastewater Disposal Assessment and Design
3952 Meander Valley Road, Exton

We have pleasure in submitting herein our report detailing the results of the geotechnical investigation conducted at the above site.

Should you require clarification of any aspect of this report, please contact Bassam AL-Sinayyid or the undersigned on 03 6326 5001.

For and on behalf of

Geoton Pty Ltd

Tony Barriera

Director – Principal Geotechnical Engineer

1 INTRODUCTION

A limited scope investigation has been conducted for Theresa L Hatton Building Design at the site of a proposed residential development at 3952 Meander Valley Road, Exton.

The investigation has been conducted to assess the following:

- The general subsurface conditions at the site and consequently assign a Site Classification in accordance with AS 2870 – 2011 "Residential Slabs and Footings";
- The surrounding topography and provide a Wind Classification in accordance with AS 4055 – 2021 "Wind Loads for Housing"; and
- The suitability of the site for disposal of domestic wastewater and the design of an on-site wastewater disposal system in accordance with AS/NZS 1547:2012 "On-site domestic wastewater management".

Plans of the proposed development were provided, prepared by Theresa L. Hatton Building Designer, Drawing Numbers 5066SK1-01 and 5066SK-03, dated 26 October and 1 November 2023. We understand that the proposed development will consist of a two-bedroom dwelling.

2 FIELD INVESTIGATION

The field investigation was conducted on 3 October 2023 and involved the drilling of 4 boreholes by hand auger to the investigated depths of 1.6m to 1.8m.

In-situ vane shear strength tests were conducted in the clay layers encountered in the investigation and the permeability of the site was tested using a Constant Head Permeameter.

The results of the field are shown on the borehole logs.

The logs of the boreholes are included in Appendix A and their locations are shown on Figure 1 attached.

3 SITE CONDITIONS

The site is currently developed with an existing dwelling, two garages and a driveway. The ground surface is relatively level and vegetated with a low grass cover.

Photographs of the site are attached as Plate 1 and 2.

The MRT Digital Geological Atlas, 1: 25,000 Series, indicates that the site is mapped as Cretaceous to Neogene Period basalt, with this being generally confirmed by our field investigation.

Examination of the LIST Landslide Planning Map – Hazard Bands Overlay indicates that the site is not within a mapped landslide hazard area.

The investigation indicated that the soil profile is relatively uniform over the site. The boreholes encountered clayey silt topsoil to depths of 0.1m, overlying clayey silt to

depths of 0.3m to 0.4m, underlain by silty clay to the investigated depths of 1.6m to 1.8m.

The boreholes did not encounter any signs of groundwater seepage over the investigated depths.

Full details of soil conditions encountered are presented on the borehole logs.

An assessment of the plasticity characteristics of the materials encountered indicates that the clay soils at this site possess a very high shrink/swell potential.

4 SITE CLASSIFICATION

After allowing due consideration of the site geology, drainage and soil conditions, the site has been classified as follows:

CLASS H2 (AS 2870)

Foundation designs in accordance with this classification are to be subject to the overriding conditions of Section 5 below.

This Classification is applicable only for ground conditions encountered at the time of this investigation. If cut or fill earthworks are carried out, then the Site Classification will need to be re-assessed, and possibly changed.

5 FOUNDATIONS

Particular attention should be paid to the design of footings as required by AS 2870 – 2011.

In addition to normal founding requirements arising from the above classification, particular conditions at this site dictate that the founding medium for all footings would be as follows:

Clayey SILT (MH) – high plasticity, dark brown

encountered below 0.1m from the existing ground surface

An allowable bearing pressure of **100 kPa** is available for edge beams, strips and pads founded as above.

The site classification presented assumes that the current natural drainage and infiltration conditions at the site will not be markedly affected by the proposed site development work. Care should therefore be taken to ensure that surface water is not permitted to collect adjacent to the structure and that significant changes to seasonal soil moisture equilibria do not develop as a result of service trench construction or tree root action.

Attention is drawn to Appendix B of AS 2870 and CSIRO Building Technical File BTF18 “Foundation Maintenance and Footing Performance: A Homeowner’s Guide” as a guide to maintenance requirements for the proposed structure.

Although the borehole data provides an indication of subsurface conditions at the site, variations in soil conditions may occur in areas of the site not specifically covered by

the field investigation. The base of all footing or beam excavations should therefore be inspected to ensure that the founding medium meets the requirements referenced herein with respect to type and strength of founding material.

The boreholes were backfilled shortly after being drilled, not allowing time for groundwater seepage flows to develop. Groundwater seepages or higher groundwater levels can occur during and/or after a prolonged period of wet weather or a heavy rainfall event.

6 WIND CLASSIFICATION

After allowing due consideration of the region, terrain, shielding and topography, the site has been classified as follows:

WIND CLASSIFICATION N2 (AS 4055:2021)

REGION	TERRAIN CATEGORY	SHIELDING	TOPOGRAPHY
A	TC2	NS	T0

7 EFFLUENT DISPOSAL

The AS/NZS 1547:2012 and *Building Act 2016:* Director's Guidelines for On-site Wastewater Management Systems provide guidelines for typical wastewater flow allowances. The documents recommend a typical wastewater flow of 150L/person/day for households on reticulated water. As the proposed development is to be a two-bedroom dwelling, a population equivalent of 4 with a wastewater daily flow of **600L/day** has been adopted.

7.1 Permeability of Soil and Soil Category

The permeability (K_{sat}) at the site was measured to be 0.5m/day. For strongly structured Category 6 soils the indicative K_{sat} from AS/NZS1547 Table 5.1 is 0.06 m/day – 0.5 m/day. Therefore, the measured permeability is consistent with strongly structured Category 6 soils.

- Adopted Permeability – 0.5m/day.

Based on the findings of the borehole investigation and the results of the permeability test, the soil has been classified as follows:

- Texture – Medium to Heavy Clay (Table E1 from AS/NZS 1547);
- Structure – Strongly Structured (Table E4 from AS/NZS 1547); and
- Category – 6 (Table E1 from AS/NZS 1547).

7.2 Disposal and Treatment Method

The soils within the proposed effluent disposal area are assessed as having sufficient depth and clay content to provide an adequate attenuation period for the breakdown of pathogens within the treated effluent.

As the site has Category 6 soils that have very low permeability, the site is not suitable for traditional absorption trenches or beds. Additionally, the site has limited available area for the disposal of on-site wastewater.

As such, the site assessment indicates that the site is suitable for the disposal of domestic effluent by way of an Aerated Wastewater Treatment System (AWTS) and a conventional distribution bed raised above the natural ground surface to allow the aerobic process and attenuation period to further treat the effluent in a sand and gravel filter bed and reduce the size of the disposal system.

7.3 Tank Installation

As the site may be subject to high groundwater levels, care **must** be taken when installing the AWTS unit. 'AS/NZS 1546:2008 3.2.2 Anchorage' and the specific AWTS unit manufacturer's installation instructions should be adhered to.

7.4 Design Loading Rate

According to AS/NZS 1547 Table L1 and based on the importation of 350mm depth of clean sand and 100mm aggregate to raise the distribution bed above the natural surface, the adopted DLR has been modified and set at **10mm/day**.

7.5 Absorption Bed System

Guidelines for the design of the conventional bed systems are outlined in AS/NZS 1547:2012 Appendix L. The method of determining the dimensions for the bed is outlined in AS/NZS 1547:2012 Section L4 and is as follows:

$$L = \frac{Q}{DLR \times W}$$

Where L = Length in metres

Q = Design daily flow in L/day

DLR = Design Loading Rate in mm/day

W = Bed width in metres

As the DLR has been set at 10mm/day and the daily flow (Q) has been set at 600L/day, when the parameters are inserted in the above equation the bed dimensions required are as follows:

- Bed length = 10m
- Bed width = 6.0m
- Bed depth = 0.6m

This would give a disposal area of approximately 60m^2.

There is adequate secondary (back-up) area of 60m^2.

The raised bed is to be located in the area shown on the site plan.

The bed is to be constructed as per the layout and cross section provided on Figure 2 attached.

Guidelines for the design of sub-surface irrigation are outlined in AS/NZS 1547 Appendix M.

The area of the disposal field shall be vegetated with grasses or other suitable vegetation. A list of Tasmanian plants suitable for treated wastewater from AWTS units is attached as Appendix B.

The risk management process is an inherent part of the on-site wastewater disposal design. The on-site wastewater disposal system has been designed by considering the site characteristics and with risk identification in accordance with AS1547:2012. The risk reduction measures are detailed in the report and form the basis of the system selection and design.

As part of the Building Act, the client must specify the AWTS model and provide the Certificate of Accreditation for that particular model before the proposed development gets approval. A list of accredited AWTS models can be found on the Tasmanian Consumer, Building and Occupational Services website.

https://www.cbos.tas.gov.au/topics/technical-regulation/plumbing-standards/wastewater/aerated-wastewater-treatment-systems

7.6 Setbacks

The minimum separation distances between the disposal area and downslope features are based on Appendix R from AS/NZS 1547 “Recommended Setback Distances for Land Application Systems” and Section 3.1 from the *Building Act 2016:* Director’s Guidelines for On-site Wastewater Management Systems. The following minimum setbacks are required:

- 15.0m from downslope sensitive features such as watercourses;
- 1.5m from property boundaries; and
- 3.0m from buildings.

7.7 Wastewater Recommendations

It is recommended that the following actions are undertaken in looking after your system:

- Minimise domestic water use;
- Minimise the use of non-biodegradable detergents;
- Minimise the use of detergents containing phosphorous (e.g. Calgon or similar);
- Avoid discharging polluting chemicals into wastewater systems; and
- Monitor quality of groundwater.

References:

AS 1726 2017 Geotechnical site investigation

AS 2870 - 2011 Residential Slabs and Footings

AS 4055 - 2021 Wind Loads for Housing

AS/NZS 1547 - 2012 On-site domestic wastewater management

Building Act 2016: Director's Guidelines for On-site Wastewater Management Systems

Attachments:

Limitations of report

Figure 1 - Site Plan

Figure 2 – Raised Conventional Bed Plan and Section

Site Photographs

Appendix A: Borehole Logs & Explanation Sheets

Appendix B: List of AWTS Example Plants

Appendix C: Certificate Forms

GEOTON Pty Ltd

Geotechnical Consultants - Limitations of report

These notes have been prepared to assist in the interpretation and understanding of the limitations of this report.

Project specific criteria

The report has been developed on the basis of unique project specific requirements as understood by Geoton and applies only to the site investigated. Project criteria are typically identified in the Client brief and the associated proposal prepared by Geoton and may include risk factors arising from limitations on scope imposed by the Client. The report should not be used without further consultation if significant changes to the project occur. No responsibility for problems that might occur due to changed factors will be accepted without consultation.

Subsurface variations with time

Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. In the event of significant delays in the commencement of a project, further advice should be sought.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and at the time they are taken. All available data is interpreted by professionals to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, as it is virtually impossible to provide a definitive subsurface profile which includes all the possible variabilities inherent in soil and rock masses.

Report Recommendations

The report is based on 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 and therefore the report recommendations can only be regarded as preliminary. Where variations in conditions are encountered, further advice should be sought.

Specific purposes

This report should not be applied to any project other than that originally specified at the time the report was issued.

Interpretation by others

Geoton will not be responsible for interpretations of site data or the report findings by others involved in the design and construction process. Where any confusion exists, clarification should be sought from Geoton.

Report integrity

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Geoenvironmental issues

This report does not cover issues of site contamination unless specifically required to do so by the client. In the absence of such a request, Geoton take no responsibility for such issues.

NOTES

PLUMBING CONNECTIONS TO BE CARRIED OUT IN ACCORDANCE WITH PLUMBING CODES AND REGULATIONS

VENTS, OVERFLOW RELIEF GULLY AND INSPECTION OPENINGS TO BE PROVIDED AS PER THE PLUMBING CODES AND REGULATIONS

RAISED CONVENTIONAL BED TO BE SET BACK:
15.0m FROM DOWNSLOPE SENSITIVE FEATURES SUCH AS WATER COURSES,
1.5m FROM PROPERTY BOUNDARIES; AND
3.0m FROM BUILDINGS.

N

BOUNDARY

1.5m

AWTS

RAISED CONVENTIONAL BED 60M^2
6M X 10M
SEE FIGURE 2

PROPOSED DWELLING

BH 1

3.0m

BH 2

NEAR LEVEL

223

223

222

BH 3

BOUNDARY

EXISTING GARAGE

NEAR LEVEL

EXISTING DWELLING

RESERVE AREA 60m^2

BH 4

DRAINAGE EASEMENT

EXISTING GARAGE

EXISTING DRIVEWAY

223

224

BOUNDARY

MEANDER VALLEY ROAD

224

Approximate Scale

5 0 5 10 m

The location of the AWTS unit may be altered provided that fall is achieved from the dwelling to the unit.

Legend

BH 1 — Approximate Borehole Location

Cadastral Parcels

224 — Contour in Metres (LiDAR Derived)

GEOTON Pty Ltd

Date	8/11/2023	Drawn	BA
Scale	As Shown	Approved	TB
Original size	A3	Rev	

Client: THERESA L HATTON BUILDING DESIGN

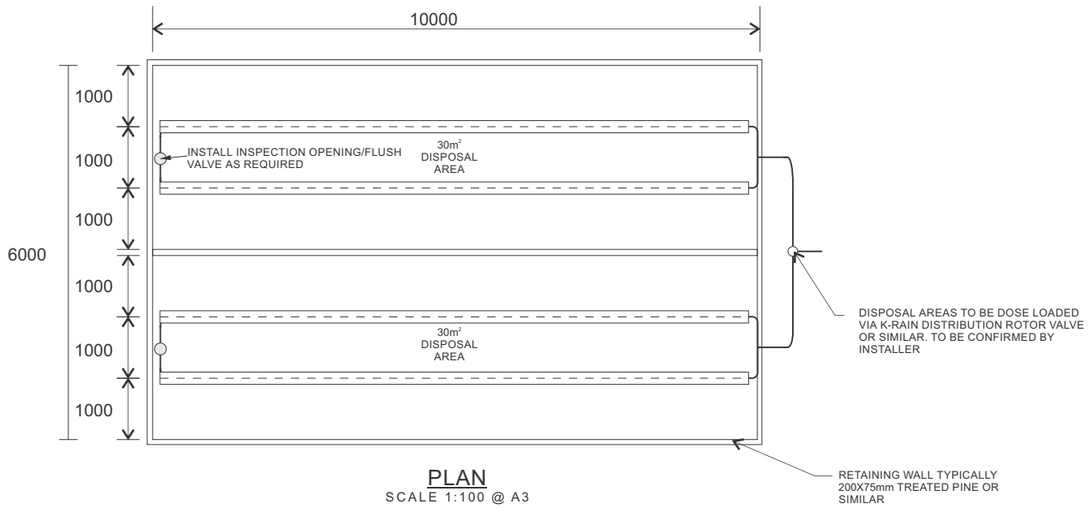
Project: 3952 MEANDER VALLEY ROAD EXTON

Title: SITE PLAN

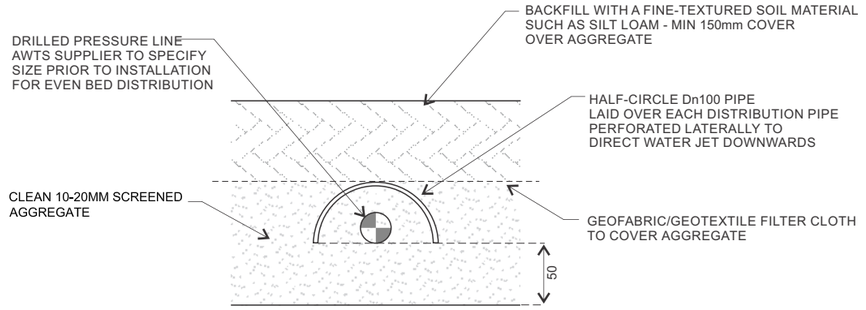
Project no: GL23624A

Figure no. 1

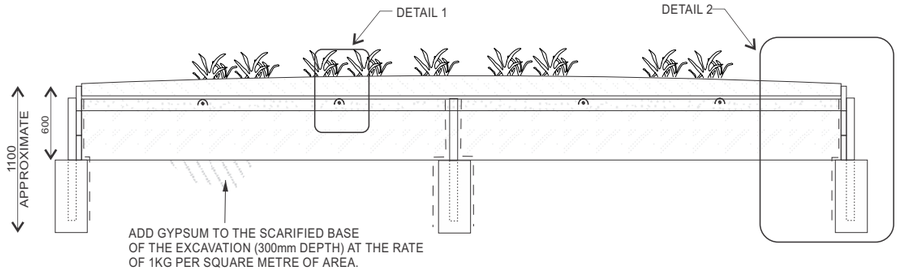
IRRIGATION BED DIMENSION MAY BE ALTERED TO SUIT THE CLIENTS NEEDS
PROVIDED THE TOTAL AREA REMAINS 60m²



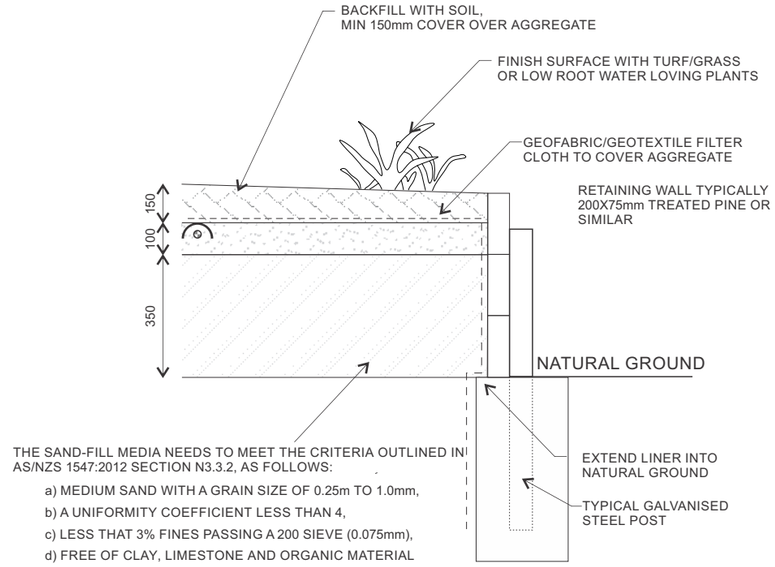
PLAN
SCALE 1:100 @ A3



DETAIL 1
SCALE 1:5 @ A3



TYPICAL SECTION
SCALE 1:50 @ A3



DETAIL 2
SCALE 1:20 @ A3

CONSTRUCTION NOTES:
a) Pine sleepers to be a minimum thickness of 75mm and a minimum rating of H4.
b) Posts are recommended to be anchored a minimum ratio of 1:1 height to depth cemented into natural ground.
c) Maximum height of timber retaining wall should not exceed 1m (bed can be cut into slope to achieve lower bed height).
d) Posts are recommended to be of steel construction or 75mm treated pine sleeper.
e) Posts are to be installed on the outside of bed.
f) Maximum post spacing is to be no more than 2400mm.
g) Lining recommended Polyethylene Lining LDPE 200um or similar.
h) Polyethylene liner to be extended into natural ground by a minimum 200mm prior backfilling.
i) Timber sleepers to be treated with a bitumen waterproofing on the exterior if backfilled around.
j) Bed distribution lines MUST enter the beds from the top (pipe work to be attached to the exterior of bed).

BED CONSTRUCTION TO BE UNDERTAKEN BY SUITABLY QUALIFIED PERSON EXPERIENCED WITH RETAINING WALLS

ALL ORGANICS AND TOPSOIL TO BE REMOVED FROM THE BASE OF THE BED PRIOR TO BACKFILLING

GEOTON Pty Ltd				client: THERESA L HATTON BUILDING DESIGN	
				project: 3952 MEANDER VALLEY ROAD EXTON	
date	8/11/2023	drawn	BA		
scale	As Shown	approved	TB	title: RAISED BED PLAN AND SECTION	
original size	A3	rev		project no: GL23624A	figure no. 2

PLATE 1 - View of the site looking to the northeast

PLATE 2 - View of the site looking to the south

GEOTON Pty Ltd				client:	THERESA L HATTON BUILDING DESIGN	
title:	PHOTOGRAPH			project:	3952 MEANDER VALLEY ROAD HAGLEY	
date:	3/10/2023	original size	A4	project no:	GL23624A	figure no. PLATES 1 & 2

Appendix A

Borehole Logs

GEOTON Pty Ltd
Geotechnical Consultants
PO Box 522 Prospect TAS 7250
Unit 24, 16-18 Goodman Court, Invermay TAS
Tel (03) 6326 5001

ENGINEERING BOREHOLE LOG

Borehole no. BH1
Sheet no. 1 of 1
Job no. GL23624A

Client : Theresa L Hatton Building Design
Project : Site Classification and On-site Wastewater Assessment and Design
Location : 3952 Meander Valley Road, Exton

Date : 03/10/2023
Logged By : BA

Drill model : Hand Auger
Hole diameter : 55mm
Easting:
Northing:
Slope: 90°
Bearing: -
RL Surface :
Datum :

Method	Support	Penetration	Water	Notes Samples Tests	Depth (m)	Graphic log	Classification Symbol	Material Description	Moisture condition	Consistency density, index	Structure, additional observations
ADV	N							TOPSOIL - Clayey SILT, high plasticity, dark brown	M	St	
							MH	Clayey SILT - high plasticity, dark brown	M	St	
					0.25						W>PL
					0.50		CH	Silty CLAY - high plasticity, brown	M	VSt	W>PL V=132 kPa
								becoming brown/orange			
					0.75						
				D	1.00						V>140 kPa
								becoming red/brown/orange			
					1.25						
								trace fine to medium gravel			
					1.50						V>140 kPa
					1.75						
								Borehole BH1 terminated @ 1.8m			V>140 kPa
					2.00						
					2.25						

GEOTON Pty Ltd
Geotechnical Consultants
PO Box 522 Prospect TAS 7250
Unit 24, 16-18 Goodman Court, Invermay TAS
Tel (03) 6326 5001

ENGINEERING BOREHOLE LOG

Borehole no. BH2
Sheet no. 1 of 1
Job no. GL23624A

Client : Theresa L Hatton Building Design
Project : Site Classification and On-site Wastewater Assessment and Design
Location : 3952 Meander Valley Road, Exton
Date : 03/10/2023
Logged By : BA

Drill model : Hand Auger
Hole diameter : 55mm
Easting:
Northing:
Slope: 90°
Bearing: -
RL Surface :
Datum :

Method	Support	Penetration	Water	Notes Samples Tests	Depth (m)	Graphic log	Classification Symbol	Material Description	Moisture condition	Consistency density, index	Structure, additional observations
ADV	N							TOPSOIL - Clayey SILT, high plasticity, dark brown	M	St	
							MH	Clayey SILT - high plasticity, dark brown	M	St	
					0.25						W>PL
							CH	Silty CLAY - high plasticity, brown	M	VSt	
					0.50						W>PL V=128 kPa
								becoming brown/orange			
					0.75						
					1.00						V>140 kPa
					1.25			becoming red/brown/orange trace fine to medium gravel			
					1.50						V>140 kPa
					1.75						
								Borehole BH2 terminated @ 1.8m			V>140 kPa
					2.00						
					2.25						

GEOTON Pty Ltd
Geotechnical Consultants
PO Box 522 Prospect TAS 7250
Unit 24, 16-18 Goodman Court, Invermay TAS
Tel (03) 6326 5001

ENGINEERING BOREHOLE LOG

Borehole no. BH3
Sheet no. 1 of 1
Job no. GL23624A

Client :	Theresa L Hatton Building Design		Date : 03/10/2023
Project :	Site Classification and On-site Wastewater Assessment and Design		Logged By : BA
Location :	3952 Meander Valley Road, Exton		
Drill model :	Hand Auger	Easting: Slope: 90°	RL Surface :
Hole diameter :	55mm	Northing: Bearing: -	Datum :

Method	Support	Penetration	Water	Notes Samples Tests	Depth (m)	Graphic log	Classification Symbol	Material Description	Moisture condition	Consistency density, index	Structure, additional observations
ADV	N							TOPSOIL - Clayey SILT, high plasticity, dark brown	M	St	
							MH	Clayey SILT - high plasticity, dark brown	M	St	
					0.25						W>PL
							CH	Silty CLAY - high plasticity, brown	M	VSt	W>PL
					0.50						V=138 kPa
								becoming brown/orange			
					0.75						
					1.00						V>140 kPa
					1.25			trace fine to medium gravel			
					1.50						V>140 kPa
								Borehole BH3 terminated @ 1.6m			
					1.75						
					2.00						
					2.25						

GEOTON Pty Ltd
Geotechnical Consultants
PO Box 522 Prospect TAS 7250
Unit 24, 16-18 Goodman Court, Invermay TAS
Tel (03) 6326 5001

ENGINEERING BOREHOLE LOG

Borehole no. BH4
Sheet no. 1 of 1
Job no. GL23624A

Client : Theresa L Hatton Building Design — Date : 03/10/2023
Project : Site Classification and On-site Wastewater Assessment and Design — Logged By : BA
Location : 3952 Meander Valley Road, Exton

Drill model : Hand Auger — Easting: — Slope: 90° — RL Surface :
Hole diameter : 55mm — Northing: — Bearing: - — Datum :

Method	Support	Penetration	Water	Notes Samples Tests	Depth (m)	Graphic log	Classification Symbol	Material Description	Moisture condition	Consistency density, index	Structure, additional observations
								TOPSOIL - Clayey SILT, high plasticity, dark brown, trace fine gravel	M	St	
					0.25		MH	Clayey SILT - high plasticity, dark brown	M	St	W>PL
ADV	N				0.50		CH	Silty CLAY - high plasticity, brown	M	VSt	W>PL V=138 kPa
					0.75			becoming brown/orange			
					1.00			trace fine to medium gravel			V>140 kPa
					1.25						
					1.50						V>140 kPa
					1.75						
					2.00			Borehole BH4 terminated @ 1.8m			
					2.25						

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Investigation Log Explanation Sheet

METHOD – BOREHOLE

TERM	Description
AS	Auger Screwing*
AD	Auger Drilling*
RR	Roller / Tricone
W	Washbore
CT	Cable Tool
HA	Hand Auger
DT	Diatube
B	Blank Bit
V	V Bit
T	TC Bit

* Bit shown by suffix e.g. ADT

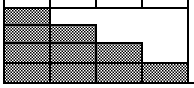
METHOD – EXCAVATION

TERM	Description
N	Natural exposure
X	Existing excavation
H	Backhoe bucket
B	Bulldozer blade
R	Ripper
E	Excavator

SUPPORT

TERM	Description
M	Mud
N	Nil
C	Casing
S	Shoring

PENETRATION

1	2	3	4	
				No resistance ranging to Refusal

WATER

Symbol	Description
	Water inflow
	Water outflow
	17/3/08 water on date shown

NOTES, SAMPLES, TESTS

TERM	Description
U_{50}	Undisturbed sample 50 mm diameter
U_{63}	Undisturbed sample 63 mm diameter
D	Disturbed sample
N	Standard Penetration Test (SPT)
N*	SPT – sample recovered
N_C	SPT with solid cone
V	Vane Shear
PP	Pocket Penetrometer
P	Pressumeter
B_S	Bulk sample
E	Environmental Sample
R	Refusal
DCP	Dynamic Cone Penetrometer (blows/100mm)
PL	Plastic Limit
LL	Liquid Limit
LS	Linear Shrinkage

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION

Based on AS 1726:2017

MOISTURE

TERM	Description
D	Dry
M	Moist
W	Wet

CONSISTENCY/DENSITY INDEX

TERM	Description
VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fr	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	Very dense

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Soil Description Explanation Sheet (1of 2)

DEFINITION

In engineering terms, soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL AND SOIL NAME

Soils are described in accordance with the AS 1726: 2017 as shown in the table on Sheet 2.

PARTICLE SIZE DEFINITIONS

NAME	SUBDIVISION	SIZE (mm)
BOULDERS		>200
COBBLES		63 to 200
GRAVEL	Coarse	19 to 63
	Medium	6.7 to 19
	Fine	2.36 to 6.7
SAND	Coarse	0.6 to 2.36
	Medium	0.21 to 0.6
	Fine	0.075 to 0.21
SILT		0.002 to 0.075
CLAY		<0.002

MOISTURE CONDITION

Coarse Grained Soils

Dry Non-cohesive and free running.

Moist Soil feels cool, darkened in colour. Soil tends to stick together.

Wet As for moist but with free water forming when handling.

Fine Grained Soils

Moist, dry of Plastic Limited – w < PL
Hard and friable or powdery.

Moist, near Plastic Limit – w ≈ PL
Soils can be moulded at a moisture content approximately equal to the plastic limit.

Moist, wet of Plastic Limit – w > PL
Soils usually weakened and free water forms on hands when handling.

Wet, near Liquid Limit - w ≈ LL

Wet, wet of Liquid Limit - w > LL

CONSISTENCY TERMS FOR COHESIVE SOILS

TERM	UNDRAINED STRENGTH s_u (kPa)	FIELD GUIDE
Very Soft	≤12	Exudes between the fingers when squeezed in hand
Soft	12 to 25	Can be moulded by light finger pressure
Firm	25 to 50	Can be moulded by strong finger pressure
Stiff	50 to 100	Cannot be moulded by fingers
Very Stiff	100 to 200	Can be indented by thumb nail
Hard	>200	Can be indented with difficulty by thumb nail
Friable	–	Can be easily crumbled or broken into small pieces by hand

RELATIVE DENSITY OF NON-COHESIVE SOILS

TERM	DENSITY INDEX (%)
Very Loose	≤15
Loose	15 to 35
Medium Dense	35 to 65
Dense	65 to 85
Very Dense	> 85

DESCRIPTIVE TERMS FOR ACCESSORY SOIL COMPONENTS

DESIGNATION OF COMPONENT	IN COARSE GRAINED SOILS		IN FINE GRAINED SOILS	TERM
	% Fines	% Accessory coarse fraction	% Sand/ gravel	
Minor	≤5	≤15	≤15	Trace
	>5, ≤12	>15, ≤30	>15, ≤30	With
Secondary	>12	>30	>30	Prefix

SOIL STRUCTURE

ZONING		CEMENTING	
Layer	Continuous across the exposure or sample.	Weakly cemented	Easily disaggregated by hand in air or water.
Lens	Discontinuous layer of different material, with lenticular shape.	Moderately cemented	Effort is required to disaggregate the soil by hand in air or water.
Pocket	An irregular inclusion of different material.		

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

Extremely Weathered material	Material is weathered to such an extent that it has soil properties. Structure and/or fabric of parent rock material retained and visible.
Residual soil	Structure and/or fabric of parent rock material not retained and visible.

TRANSPORTED SOILS

Aeolian soil	Carried and deposited by wind.
Alluvial soil	Deposited by streams and rivers.
Colluvial soil	Soil and rock debris transported downslope by gravity.
Estuarine soil	Deposited in coastal estuaries, and including sediments carried by inflowing rivers and streams, and tidal currents.
Fill	Man-made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Lacustrine soil	Deposited in freshwater lakes.
Marine soil	Deposited in a marine environment.

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Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 63 mm and basing fractions on estimated mass)						**GROUP SYMBOL**	**PRIMARY NAME**
COARSE GRAINED SOIL More than 65% of soil excluding oversize fraction is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to naked eyes)	GRAVEL More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVEL (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes		GW	GRAVEL
				Predominantly one size or a range of sizes with some intermediate sizes missing		GP	GRAVEL
			GRAVEL WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML and MH below)		GM	Silty GRAVEL
				Plastic fines (for identification procedures see CL, CI and CH below)		GC	Clayey GRAVEL
		SAND More than half of coarse fraction is smaller than 2.36 mm	CLEAN SAND (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes		SW	SAND
				Predominantly one size or a range of sizes with some intermediate sizes missing		SP	SAND
			SAND WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML and MH below)		SM	Silty SAND
				Plastic fines (for identification procedures see CL, CI and CH below)		SC	Clayey SAND
FINE GRAINED SOIL More than 35% of soil excluding oversize fraction is smaller than 0.075 mm		IDENTIFICATION PROCEDURES ON FRACTIONS <0.075 mm					
			DRY STRENGTH	**DILATANCY**	**TOUGHNESS**		
		SILT & CLAY (low to medium plasticity, LL ≤ 50)	None to Low	Slow to Rapid	Low	ML	SILT
			Medium to High	None to Slow	Medium	CL, CI	CLAY
			Low to Medium	Slow	Low	OL	ORGANIC SILT
		SILT & CLAY (high plasticity, LL > 50)	Low to Medium	None to Slow	Low to Medium	MH	SILT
			High to Very High	None	High	CH	CLAY
			Medium to High	None to Very Slow	Low to Medium	OH	ORGANIC CLAY
		Highly Organic Soil	Readily identified by colour, odour, spongy feel and frequently by fibrous texture.			Pt	PEAT

● LL – Liquid Limit.

COMMON DEFECTS IN SOILS

TERM	**DEFINITION**	**DIAGRAM**
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (e.g. bedding). May be open or closed.	
FISSURE	A surface or crack across which the soil has little or no tensile strength, but which is not parallel or sub parallel to layering. May be open or closed. May include desiccation cracks.	
SHEARED SEAM	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting fissures which divide the mass into lenticular or wedge-shaped blocks.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.	

TERM	**DEFINITION**	**DIAGRAM**
SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter.	
TUBE CAST	An infilled tube. The infill may be uncemented or weakly cemented soil or have rock properties.	
INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open defects.	

Appendix B

Example Plants

Taz Wild Plants

Phone: (03) 6384 2165
Fax: (03) 6384 2165
Web site: www.tazwild.com

Wastewater Treatment Units

Tasmanian Plants suitable for Water from Wastewater Treatment Units

Water from septic tanks and aerated wastewater treatment units such as Biocycle, Envirocycle or other may contain salts, boron and disease bearing microbes. The major ingredients of most cleaning fluids are various salts, of which common kitchen salt (sodium chloride) is the least common. These salts may have large concentrations in wastewater, which can have a detrimental effect on plants. The survival of plants will depend on the concentrations of salts. Long-term build up of chemicals and salts in the soil will adversely affect any plantings.

We can't guarantee these plants will survive but they are tolerant to reasonable amounts of the main offenders and will tolerate wet conditions.

Below is a list of plants to help make an attractive garden bed for your wastewater treatment area.

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.

Velleia paradoxa
Spur valleia
Wild flower 20cm X 20cm with large yellow flowers spring and summer. Prefers moist soils which are well drained and part shade to full sun.

Viola fuscoviolacea
A spreading, matting violet with attractive dense foliage and tiny deep purple-blue flowers in spring and summer. Prefers a moist position. Withstands frosts and snow.

Viola hederacea
Native violet
An attractive creeping evergreen perennial with fan shaped leaves. This plant produces beautiful mauve flowers over a long flowering period. An ideal ground cover for full sun to part shade in well drained soils.

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 C

Certificate Forms

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To:	Theresa L Hatton Building Design		*Owner /Agent*
	PO Box 282		*Address*
	Launceston Tas	7250	*Suburb/postcode*

Qualified person details:

Qualified person:	Tony Barriera - Geoton Pty. Ltd.		
Address:	PO Box 522	Phone No:	03 6326 5001
	Prospect Tas 7250	Fax No:	
Licence No:	CC6220 P	Email address:	tbarriera@geoton.com.au

Qualifications and Insurance details:	Tony Barriera – BEng, MSc CPEng, NER – IEAust 471929 Civil, Geotechnical Certain Underwriters at Lloyd's- ENG 22 000330	*(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items*
Speciality area of expertise:	Geotechnical Engineering	*(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)*

Details of work:

Address:	3952 Meander Valley Road	Lot No:	1
	Exton Tas 7303	Certificate of title No:	122829/1

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

Certificate details:

Certificate type:	Foundation Site Classification – AS2870	*(description from Column 1 of Schedule 1 of the Director's Determination - Certificates by Qualified Persons for Assessable Items n)*

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

building work, plumbing work or plumbing installation or demolition work: ☐

or

a building, temporary structure or plumbing installation: X

In issuing this certificate the following matters are relevant –

Documents:	Geoton Pty Ltd, Report Reference No. GL23624Ab, dated 8/11/2023
Relevant calculations:	Refer to report
References:	AS 2870 – 2011 Residential Slabs and Footings Construction AS 4055 – 2021 Wind Loads for Housing CSIRO Building Technical File 18

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

Site Classification in accordance with AS2870 - 2011
Wind Loading in accordance with AS 4055 - 2021
Findings and recommendations of report

Scope and/or Limitations

The classification applies to the site as investigated at the time and does not account for any future alteration to foundation conditions resulting from earthworks, drainage condition changes or site maintenance variations.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		GL23624Ab	8/11/2023

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Theresa L Hatton Building Design *Owner name*
PO Box 282 *Address*
Launceston 7250 *Suburb/postcode*

Designer details:

Name: Tony Barriera
Category: Civil Engineer – Hydraulic - Domestic
Business name: Geoton Pty Ltd
Phone No: 03 6326 5001
Business address: P O Box 522
Prospect TAS 7250
Fax No:
Licence No: IEAust 471929, CC6220 P
Email address: tbarriera@geoton.com.au

Details of the proposed work:

Owner/Applicant Theresa Hatton
Designer's project reference No. GL23624Ab
Address: 3952 Meander Valley Road
Lot No: 122829/1
Exton 7303

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

Description of work:
New building
on-site wastewater management system

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

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

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

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

Other details:
All design documents provided in Report GL23624Ab, dated 8/11/2023

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by:	Date:
Schedules:	Prepared by:	Date:
Specifications:	Prepared by:	Date:
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by:	Date:

Standards, codes or guidelines relied on in design process:

All design documents are contained within report

AS/NZS1547:2012 On-site domestic-wastewater management

Any other relevant documentation:

Attribution as designer:

I Tony Barriera of Geoton Pty Ltd am responsible for the design of that part of the work as described in this certificate;

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2016* and sufficient detail for the builder or plumber to carry out the work in accordance with the documents and the Act;

This certificate confirms compliance and is evidence of suitability of this design with the requirements of the National Construction Code.

	Name: (print)	*Signed*	*Date*
Designer:	Tony Barriera		8/11/2023
Licence No:	CC6220P		

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:

- ☐ The works will not increase the demand for water supplied by TasWater
- ☐ 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
- ☐ The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- ☐ The works will not damage or interfere with TasWater's works
- ☐ The works will not adversely affect TasWater's operations
- ☐ The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- ☐ I have checked the LISTMap to confirm the location of TasWater infrastructure
- ☐ 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 Tony Barriera of Geoton Pty Ltd 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:	Tony Barriera		8/11/2023

GEOTON Pty Ltd
Geotechnical Consultants

LOADING CERTIFICATE

To:	**Theresa L Hatton Building Design**	*Owner /Agent*	Certificate Ref: AS/NZS 1547:2012 Section 7.4.2
	PO Box 282	*Address*	
	Launceston Tas **7250**	*Suburb/postcode*	

Details of work:

Address:	**3952 Meander Valley Road**	Lot No:	1
	Exton Tas **7303**	Certificate of title No:	122829/1
The work related to this certificate:	On-site domestic-wastewater management	*(description of the work or part work being certified)*	

Certificate details:

In issuing this certificate the following matters are relevant –

Documents:	Report GL23624Ab dated 8/11/2023 Figure 1 – Site Plan Figure 2 – Raised Conventional Bed Plan and Section
Relevant calculations:	Contained in the above
References:	AS/NZS1547:2012 On-site domestic-wastewater management

Substance of Certificate:

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

Wastewater Characteristics

Population equivalent used for this assessment	= 4 (2 bedroom dwelling)
Wastewater volume (L/day) used for this assessment	= 600 (150 Litres per person)
Approximate blackwater volume (L/day)	= 240
Approximate greywater volume (L/day)	= 360

Soil Characteristics/Design Criteria

Texture (Table E1 from AS/NZS 1547)	= Medium to Heavy Clay
Soil category (Table E1 from AS/NZS 1547)	= 6
Soil structure (Table E4 from AS/NZS 1547)	= Strongly Structured
Indicative permeability (Table 5.1 from AS/NZS 1547)	= 0.06 - 0.5m/day
Adopted permeability	= 0.5m/day
Adopted Design Irrigation Rate	= 10mm/day
Soil thickness for disposal	= >1.8m
Minimum depth (m) to water	= >1.8m

Dimensions for On-Site Treatment System

Disposal and treatment methods = Aerated Wastewater Treatment System (AWTS) and Raised Conventional Bed
Site modification and specific design = Not required
Primary disposal area required = 60m^2
Reserve disposal area required = 60m^2
Location and use of Reserve area = Reserve area located to the south of the proposed dwelling. Currently vacant with a low cover of grass.
Is there sufficient area available on site for disposal (including reserve) = Yes

Notes

The purpose of the reserve area is to allow for future extention of the land application system to allow a factor of safety against unforseen malfunction or failure, perhaps following increased household occupancy or inadvertent misuse of the system.

The land application area may be reduced to account for flow reductions by water-saving devices, provided the organic loading rate is not higher than it would have been without the flow reduction.

Allowable Variation from Design Flow

Based on an approved AWTS 8 EP system (8 equivalent persons) rated at 1200 litres per day and a wastewater design volume of 600L/day the allowable variation from design flow (peak loading events) would be an additional 600L/day.

System Limitations

Consequences of overloading the system:

(A) Adverse effects on soil properties and plant growth through excess salt accumulation in the root zone during extended dry periods
(B) Harmful long-term environmental effects to the soil of land application system or the adjacent surface water and groundwater; or
(C) Increased risk to public heath from surface ponding in the land application area or channelling or seepage beyond the land application area.

Consequences of underloading the system:

Not applicable to this type of system.

Operation Requirements

Refer to operation manual of preferred aerated waterwater treatment system.
Adverse effects of not operating the system correctly may include:

(A) Odour; and
(B) Disease.

Maintenace Requirements

Refer to operation manual of preferred aerated waterwater treatment system.
Adverse effects of not maintaining and monitoring the system correctly may include:

(A) Odour;
(B) Pump failure;
(C) Air blower failure or filter blockage;
(D) Alarm failure;
(E) Irrigation field failure; and
(F) Poor water quality, lack of disinfection.

I certify the matters described in this certificate.

	Signed:	*Date:*	*Certificate No.*
Certifier:		8/11/2023	GL23624Ab