NOTICE OF AN APPLICATION FOR PLANNING PERMIT

Form 2

The land affected by the application is located at:	**7 Keys Court WY YUNG VIC 3875 Lot: 4 PS: 840690**
The application is for a permit to:	**Six Lot Subdivision, Removal of Native Vegetation and Roadworks**
A permit is required under the following clauses of the planning scheme:	
Planning Scheme Clause	**Matter for which a permit is required**
32.03-3 (LDRZ)	Subdivide land
44.01-2 (EMO)	Carry out works (roadfworks)
44.01-3 (EMO)	Remove, destroy or lop any vegetation
44.01-5 (EMO)	Subdivide land
52.17-1	Remove, destroy or lop native vegetation, including dead native vegetation
The applicant for the permit is:	**Beveridge Williams & Co Pty Ltd**
The application reference number is:	**5.2025.170.1**

You may look at the application and any documents that support the application free of charge at: https://www.eastgippsland.vic.gov.au/building-and-development/advertised-planning-permit-applications

You may also call 5153 9500 to arrange a time to look at the application and any documents that support the application at the office of the responsible authority, East Gippsland Shire. This can be done during office hours and is free of charge.

Any person who may be affected by the granting of the permit may object or make other submissions to the responsible authority.

An objection must

- **be made to the Responsible Authority in writing,**
- **include the reasons for the objection, and**
- **state how the objector would be affected.**

The responsible authority must make a copy of every objection available at its office for any person to inspect during office hours free of charge until the end of the period during which an application may be made for review of a decision on the application.

The Responsible Authority will not decide on the application before:	**Subject to the applicant giving notice**

If you object, the Responsible Authority will tell you its decision.

April McDonald

From: Snapforms Notifications <no-reply@snapforms.com.au>
Sent: Thursday, 29 May 2025 1:23 PM
To: Planning Unit Administration
Subject: Planning Permit application
Attachments: Planning_Permit_Application_2025_2025-05-29T13-22-55_25463075_0.pdf; Title 12375_347.pdf; S173 Agreement AV292985M.pdf; 1600534 - Proposed plans of subdivision for endorsement.pdf; 1600534 - Planning Submission.pdf; 1600534 - Cover letter for planning permit application.pdf; 1600534 - Drainage Plan.pdf; 1600534 - Native Vegetation Removal Report.pdf; attachment_errors.txt

Planning Permit Application

A "Planning Permit Application" has been submitted via the East Gippsland Shire Council website, the details of this submission are shown below:

Applicant name: Chris Curnow

Business trading name: Beveridge Williams

Email address: curnowc@bevwill.com.au

Postal address : PO Box 47, Sale, VIC., 3850

Preferred phone number:

Secondary phone number: 0351443877

Owner's name:

Owner's business trading name (if applicable):

Owner's postal address:

Street number: 7

Street name: Keys Court

Town: Wy Yung

Post code: 3875

Lot number: 4

Plan number: PS840690K

Is there any encumbrance on the Title such as a restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?: Yes

Will the proposal result in a breach of a registered covenant restriction or agreement?: No

Existing conditions : Vacant

Description of proposal : Six Lot Subdivision & Removal of Native Vegetation

Estimated cost of development: 0

Has there been a pre-application meeting: No

Your reference number: 1600534

Full copy of Title: Title 12375_347.pdf

Covenants agreements: S173 Agreement AV292985M.pdf

Plans: 1600534 - Proposed plans of subdivision for endorsement.pdf

Planning report: 1600534 - Planning Submission.pdf

ExtraFile: 5

1. Supporting information/reports: 1600534 - Cover letter for planning permit application.pdf

2. Supporting information/reports: 1600534 - Geotechnical Risk Assessment.pdf

4. Supporting information/reports: 1600534 - Land Capability Assessment.pdf

3. Supporting information/reports: 1600534 - Drainage Plan.pdf

5. Supporting information/reports: 1600534 - Native Vegetation Removal Report.pdf

Invoice Payer:

Address for Invoice:

Invoice Email:

Primary Phone Invoice:

Declaration: Yes

Authority Check: Yes

Notice Contact Check: Yes

Notice check 2: Yes

Privacy Statement Acknowledge: Yes

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 12375 FOLIO 347

Security no : 124124889465K
Produced 29/05/2025 12:54 PM

LAND DESCRIPTION

Lot 4 on Plan of Subdivision 840690K.
PARENT TITLE Volume 12201 Folio 237
Created by instrument PS840690K 19/05/2022

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

AGREEMENT Section 173 Planning and Environment Act 1987
AV292985M 02/02/2022

DIAGRAM LOCATION

SEE PS840690K FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 7 KEYS COURT WY YUNG VIC 3875

ADMINISTRATIVE NOTICES

NIL

eCT Control 22727X EAST GIPPSLAND CONVEYANCING
Effective from 25/03/2024

DOCUMENT END

PLAN OF SUBDIVISION

EDITION 1 | PS 840690K

LOCATION OF LAND

PARISH: WY-YUNG
TOWNSHIP: ———
SECTION: ———
CROWN ALLOTMENT: 35 CI (PART)
CROWN PORTION: ———
TITLE REFERENCE: VOL 12201 FOL 237

LAST PLAN REFERENCE: LOT 2 - PS831229G

POSTAL ADDRESS: (at time of subdivision) 66 LANTERIS ROAD, WY YUNG, 3875

MGA2020 CO-ORDINATES: (of approx centre of land in plan) E: 553 690 N: 5817 510 **ZONE:** 55

Council Name: East Gippsland Shire Council

Council Reference Number: PS840690K
Planning Permit Reference: 228/2020/P
SPEAR Reference Number: S168807E

Certification

This plan is certified under section 6 of the Subdivision Act 1988

Public Open Space

A requirement for public open space under section 18 of the Subdivision Act 1988 has not been made

Digitally signed by: Robert Pringle for East Gippsland Shire Council on 11/10/2021

Statement of Compliance issued: 18/03/2022

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
RI	EAST GIPPSLAND SHIRE COUNCIL

NOTATIONS

DEPTH LIMITATION DOES NOT APPLY

SURVEY:
This plan is based on survey.

STAGING:
This is not a staged subdivision.
Planning Permit No. 228/2020/P

This survey has been connected to permanent marks No(s). 82

In Proclaimed Survey Area No. NIL

NOTATIONS

DIMENSIONS SHOWN UNDERLINED ARE NOT THE RESULT OF THIS SURVEY. THE AREA OF LOT 4 IS BY DEDUCTION FROM TITLE.

EASEMENT INFORMATION

LEGEND: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1 & E-3	GAS PIPELINE	20	AD359466A	VOL 10474 FOL 067
E-2 & E-3	POWERLINE	16	PS831229G - SECTION 88 OF THE ELECTRICITY INDUSTRY ACT 2000	AUSNET ELECTRICITY SERVICES PTY LTD
E-4	DRAINAGE	3	THIS PLAN	EAST GIPPSLAND SHIRE COUNCIL

Crowther&Sadler Pty.Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
152 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

SURVEYORS FILE REF: 18766

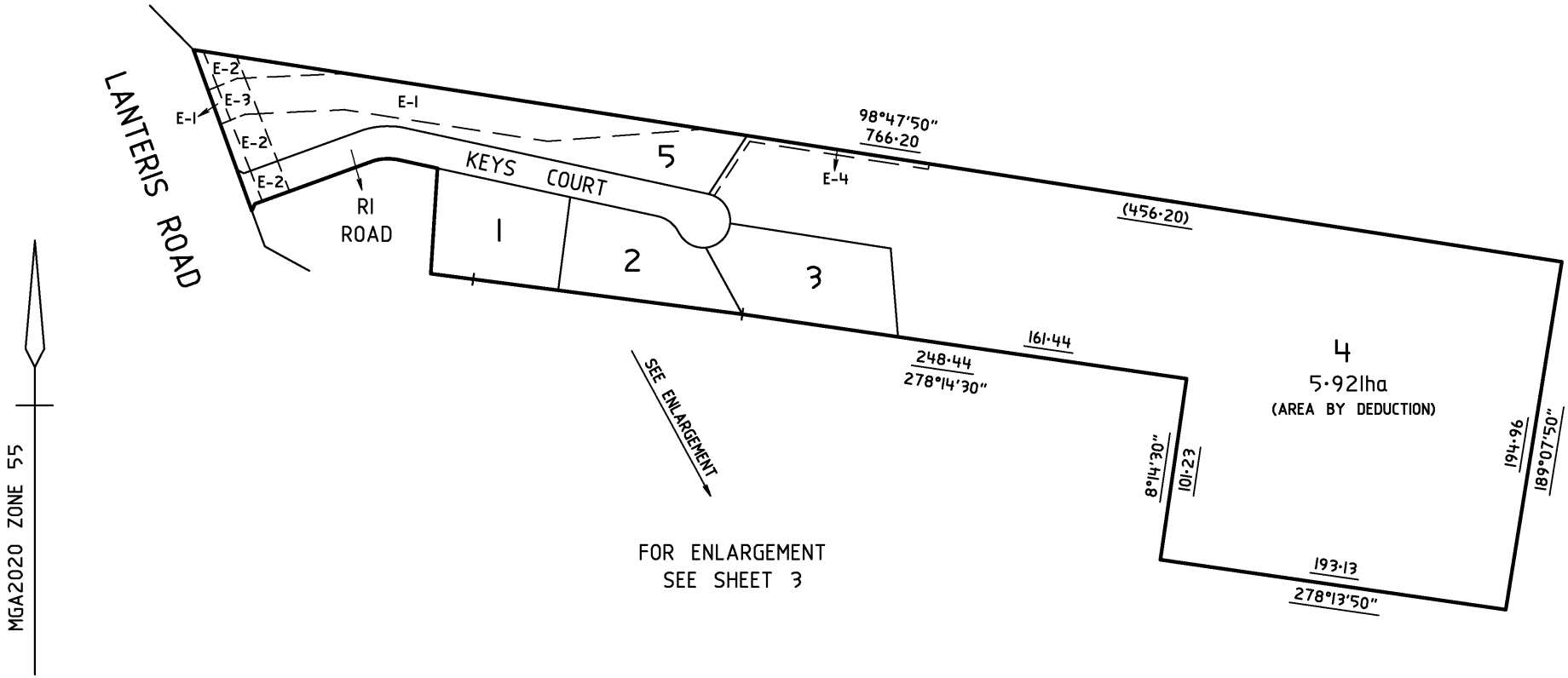
ORIGINAL SHEET SIZE: A3

SHEET 1 OF 3 SHEETS

Digitally signed by: Michael J Sadler, Licensed Surveyor, Surveyor's Plan Version (3), 24/06/2021, SPEAR Ref: S168807E

PLAN REGISTERED
TIME: 2:36pm DATE: 19/05/2022
L.Hawkins
Assistant Registrar of Titles

PS 840690K



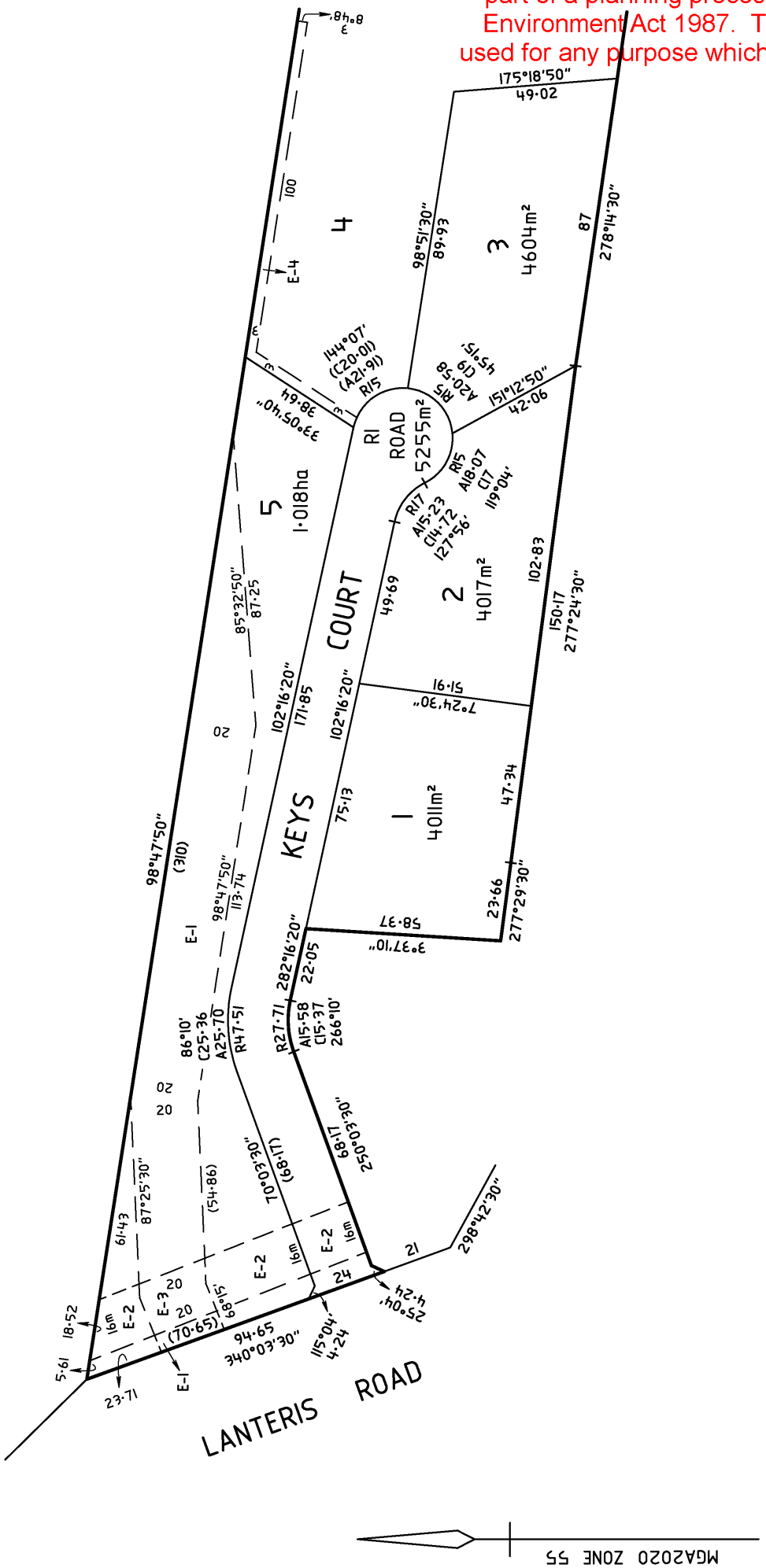
Crowther & Sadler Pty. Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
152 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

SURVEYORS REF	SCALE		ORIGINAL SHEET SIZE:	SHEET 2
18766	1:2500	25 0 25 50 75 100	A3	

Digitally signed by: Michael J Sadler, Licensed Surveyor, Surveyor's Plan Version (3), 24/06/2021, SPEAR Ref: S168807E

Digitally signed by: East Gippsland Shire Council, 11/10/2021, SPEAR Ref: S168807E

PS 840690K



SURVEYORS REF 18766	SCALE 1:1250	12·5 0 12·5 25 37·5 50	ORIGINAL SHEET SIZE: A3	SHEET 3

Digitally signed by: Michael J Sadler, Licensed Surveyor, Surveyor's Plan Version (3), 24/06/2021, SPEAR Ref: S168807E

Digitally signed by: East Gippsland Shire Council, 11/10/2021, SPEAR Ref: S168807E

Crowther & Sadler Pty. Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
182 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

Department of Environment, Land, Water & Planning

Electronic Instrument Statement

The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

Produced 06/08/2024 10:09:53 AM

Status	Registered	Dealing Number	AV292985M
Date and Time Lodged	02/02/2022 12:16:45 PM		

Lodger Details

Lodger Code	19261N
Name	BEST HOOPER PTY. LTD.
Address	
Lodger Box	
Phone	
Email	
Reference	211171 East Gippslan

APPLICATION TO RECORD AN INSTRUMENT

Jurisdiction VICTORIA

Privacy Collection Statement
The information in this form is collected under statutory authority and used for the purpose of maintaining publicly searchable registers and indexes.

Estate and/or Interest
FEE SIMPLE

Land Title Reference
12201/237

Instrument and/or legislation
RECORD - AGREEMENT - SECTION 173
Planning & Environment Act - section 173

Applicant(s)

Name	EAST GIPPSLAND SHIRE COUNCIL
Address	
Street Number	273
Street Name	MAIN
Street Type	STREET
Locality	BAIRNSDALE
State	VIC
Postcode	3875

Additional Details

Reference :211171 East Gippslan
Secure Electronic Registries Victoria (SERV), Level 13, 697 Collins Street Docklands 3008
Locked bag 20005, Melbourne 3001, DX 210189
ABN 86 627 986 396

Department of Environment, Land, Water & Planning

Electronic Instrument Statement

Refer Image Instrument

The applicant requests the recording of this Instrument in the Register.

Execution

1. The Certifier has taken reasonable steps to verify the identity of the applicant or his, her or its administrator or attorney.
2. The Certifier holds a properly completed Client Authorisation for the Conveyancing Transaction including this Registry Instrument or Document.
3. The Certifier has retained the evidence supporting this Registry Instrument or Document.
4. The Certifier has taken reasonable steps to ensure that this Registry Instrument or Document is correct and compliant with relevant legislation and any Prescribed Requirement.

Executed on behalf of	EAST GIPPSLAND SHIRE COUNCIL
Signer Name	GIANCARLO ROMANO
Signer Organisation	BEST HOOPER PTY. LTD.
Signer Role	AUSTRALIAN LEGAL PRACTITIONER
Execution Date	02 FEBRUARY 2022

File Notes:
NIL

This is a representation of the digitally signed Electronic Instrument or Document certified by Land Use Victoria.

Statement End.

Reference :211171 East Gippslan
Secure Electronic Registries Victoria (SERV), Level 13, 697 Collins Street Docklands 3008
Locked bag 20005, Melbourne 3001, DX 210189
ABN 86 627 986 396

Imaged Document Cover Sheet

The document following this cover sheet is an imaged document supplied by LANDATA®, Secure Electronic Registries Victoria.

Document Type	**Instrument**
Document Identification	**AV292985M**
Number of Pages (excluding this cover sheet)	**12**
Document Assembled	**06/08/2024 10:09**

TABLE OF CONTENTS

PLANNING AND ENVIRONMENT ACT 1987

SECTION 173 AGREEMENT

THIS AGREEMENT is made the 14 day of December 2021

BETWEEN:

EAST GIPPSLAND SHIRE COUNCIL

of 273 Main Street, Bairnsdale, Victoria 3875

("Council")

- and -

WOODY GROUP PTY LTD (ACN 006 445 745)

of 345 Great Alpine Road, Lucknow, Victoria 3875

("the Owner")

INTRODUCTION

A. The Council is the Responsible Authority for the Planning Scheme under the Act.

B. The Owner is or is entitled to be registered as the proprietor of the Subject Land.

C. On 11 March 2021, the Council granted Planning Permit No. 228/2020/P permitting the subdivision of the Subject Land into five lots, roadworks a vegetation removal in accordance with the endorsed plans and subject to conditions. The planning permit was amended on 29 June 2021. The planning permit includes Condition 12 & 13 of the planning permit which provides:

12. Before the issue of a Statement of Compliance, the owner of the land must enter into an agreement with the responsible authority in accordance with Section 173 of the Planning and Environment Act 1987, which will provide that:

a) Any dwelling on each lot must include a rainwater tank having a minimum storage capacity of 2,000 litres; and

b) The rainwater tank must collect rainwater runoff from the roof of the dwelling; and

c) The rainwater tank must be used as the primary water source for flushing of toilets, laundry services and also include an external tape for garden irrigation.

This agreement must be prepared by the owner. The cost of the preparation, review and recording on the title of the agreement in accordance with Section 181 of the Planning and Environment Act 1987 to the satisfaction of the responsible authority must be borne by the owner of the land.

13. *Before the issue of a Statement of Compliance, the owner of the land must enter into an agreement with the responsible authority in accordance with Section 173 of the Planning and Environment Act 1987, which will provide that:*

    a) *All septic tank systems for each lot must include the secondary treatment of waste water and disposal of that treated waste water by service irrigation to the area(s) designed in accordance with the land capability assessment prepared for these lots and as submitted as part Planning Permit Application 228/2020/P unless with the written consent of the Responsible Authority.*

    This agreement must be prepared by the owner. The cost of the preparation, review and recording of the title agreement in accordance with Section 181 of the Planning and Environment Act 1987 (Vic) to this the satisfaction of the Responsible Authority must be borne by the owner of the land.

D. As at the date of this Agreement, the Subject Land is encumbered by Mortgage No. AQ129278X in favour of the Mortgagee. The Mortgagee has consented to the Owner entering into this Agreement with respect to the Subject Land.

E. The parties enter into this Agreement -

    (a) to give effect to the requirements of the Permit; and

    (b) to achieve and advance the objectives of planning in Victoria and the objectives of the Planning Scheme in respect of the Subject Land.

IT IS AGREED:

1 DEFINITIONS

In this Agreement the words and expressions set out in this clause have the following meanings unless the context admits otherwise –

1.1 **"the Act"** means the *Planning and Environment Act 1987*.

1.2 **"this Agreement"** means this agreement and any agreement executed by the parties expressed to be supplemental to this Agreement.

1.3 **"Council"** means East Gippsland Shire Council as the Responsible Authority for the Planning Scheme and any subsequent person or body which is the Responsible Authority for the Planning Scheme.

1.4 **"the Endorsed Plan"** means the plan(s), endorsed with the stamp of the Council, as the plan(s) which form part of the Permit, as amended from time to time.

1.5 **"Land Capability Assessment"** means the Land Capability Assessment prepared by Simon Anderson Consultants dated 7 July 2020.

1.6 **"Mortgagee"** means the person or persons registered or entitled from time to time to be registered by the Registrar of Titles as Mortgagee of the Subject Land or any part of it.

1.7 **"Owner"** means the person or persons registered or entitled from time to time to be registered by the Registrar of Titles as proprietor or proprietors of an estate in fee simple of the Subject Land or any part of it and includes a Mortgagee-in-possession.

1.8 **"party"** or **"parties"** means the Owner and Council under this Agreement as appropriate.

1.9 **"Permit"** means Planning Permit No. 228/2020/P issued 11 March 2021 and amended 29 June 2021, as amended from time to time, and described in recital C of this Agreement.

1.10 **"Planning Scheme"** means the South Gippsland Planning Scheme and any other planning scheme which applies to the Subject Land.

1.11 **"Subject Land"** means the land situated at 64 Lanteris Road, Wy Yung, Victoria 3875 being the land comprised in Certificate of Title Volume 12201 Folio 237 and any reference to the Subject Land in this Agreement will include a reference to any lot created by the subdivision of the Subject Land or any part of it.

1.12 **"Wastewater"** means water carrying wastes and includes:

1.12.1 Blackwater - toilet waste (water flush, incineration, dry composting systems);

1.12.2 Greywater – water from the shower, bath, basins, washing machine, laundry trough and kitchen (also called sullage);

1.12.3 Sewage – wastewater which includes both greywater and blackwater;

1.12.4 Yellow water – urine with or without flush water; and or

1.12.5 Brown water – sewage without urine.

2 INTERPRETATION

In this Agreement unless the context admits otherwise:

2.1 The singular includes the plural and vice versa.

2.2 A reference to a gender includes a reference to each other gender.

2.3 A reference to a person includes a reference to a firm, corporation or other corporate body and that person's successors in law.

2.4 If a party consists of more than one person this Agreement binds them jointly and each of them severally.

2.5 A reference to an Act, Regulation or the Planning Scheme includes any Acts, Regulations or amendments amending, consolidating or replacing the Act, Regulation or Planning Scheme.

2.6 The introductory clauses to this Agreement are and will be deemed to form part of this Agreement.

2.7 A term used in this Agreement has its ordinary meaning unless that term is defined in this Agreement. If a term is not defined in this Agreement and it is defined in the Act it has the same meaning as defined in the Act.

2.8 The obligations of the Owner under this Agreement, will take effect as separate and several covenants which are annexed to and run at law and equity with the Subject Land PROVIDED THAT if the Subject Land is subdivided, this Agreement must be read and applied so that each subsequent owner of a lot is only responsible for those covenants and obligations which relate to that owner's lot.

3 SPECIFIC OBLIGATIONS OF THE OWNER

The Owner covenants and agrees that:

3.1 Except with the written consent of Council, any dwelling to be constructed on any lot approved under Permit must include a minimum storage 2000 litre capacity rainwater tank. The rainwater tank must:

3.1.1 Be used as the primary water source for the flushing toilets and laundry services within any dwelling.

3.1.2 Must be used to collect rain-water runoff from the roof of the dwelling.

3.1.3 Include an external tap for garden irrigation

3.2 Wastewater, emanating from any dwelling to be constructed on any allotment approved under the Permit must be treated to a secondary standard and disposed of via a subservice irrigation to the area (areas) designed in accordance with the Land Capability Assessment, except with the written consent of Council.

3.3 **Council's Costs to be Paid**

3.3.1 the Owner must pay to the Council, the Council's reasonable costs and expenses (including legal expenses on a party/party basis) of and incidental to the preparation, drafting, review, finalisation, engrossment, execution and registration of this Agreement and until those costs are paid they will remain a debt of the Owner to the Council.

4 ACKNOWLEDGEMENT AND COVENANTS OF THE COUNCIL

4.1 The Council acknowledges that the Owner's covenants in this Agreement satisfy conditions 12 and 13 of the Permit.

4.2 The Council covenants that it will forthwith apply to register this Agreement pursuant to Section 181 of the Act.

5 FURTHER OBLIGATIONS OF THE OWNER

The Owner further covenants and agrees that:

5.1 **Notice and Registration**

5.1.1 the Owner will bring this Agreement to the attention of all prospective purchasers, mortgagees, transferees and assigns;

5.2 **Further actions**

5.2.1 the Owner will do all things necessary, including signing any further agreements, undertakings, covenants and consents, approvals or other documents necessary for the purpose of ensuring that the Owner carries out the Owner's covenants

under this Agreement and to enable the Council to enforce the performance by the Owner of such covenants and undertakings;

5.2.2 the Owner will consent to the Council making application to the Registrar of Titles to make a recording of this Agreement in the Register on the Certificate of Title of the Subject Land in accordance with Section 181 of the Act and do all things necessary to enable the Council to do so including signing any further agreement, acknowledgment or document or procuring the consent to this Agreement of any mortgagee or caveator to enable the recording to be made in the Register under that Section;

6 AGREEMENT UNDER SECTION 173 OF THE ACT

The Council and the Owner agree that without limiting or restricting their respective powers to enter into this Agreement and, insofar as it can be so treated, this Agreement is made pursuant to Section 173 of the Act.

7 OWNERS WARRANTIES

Without limiting the operation or effect which this Agreement has, the Owner warrants that apart from the Owner and any other person who has consented in writing to this Agreement, no other person has any interest, either legal or equitable, in the Subject Land which may be affected by this Agreement.

8 SUCCESSORS IN TITLE

Without limiting the operation or effect which this Agreement has, the Owner must ensure that, until such time as a memorandum of this Agreement is registered on the title to the Subject Land, successors in title shall be required to:

8.1 give effect to and do all acts and sign all documents which will require those successors to give effect to this Agreement; and

8.2 execute a deed agreeing to be bound by the terms of this Agreement.

9 GENERAL MATTERS

9.1 Notices

A notice or other communication required or permitted to be served by a party on another party must be in writing and may be served:

9.1.1 by delivering it personally to that party;

9.1.2 by sending it by prepaid post addressed to that party at the address set out in this Agreement or subsequently notified to each party from time to time; or

9.1.3 by sending it by facsimile provided that a communication sent by facsimile shall be confirmed immediately in writing by the sending party hand delivery or prepaid post.

9.2 A notice or other communication is deemed served:

9.2.1 if delivered, on the next following business day;

9.2.2 if posted, on the expiration of two business days after the date of posting; or

9.2.3 if sent by facsimile, on the next following business day unless the receiving party has requested retransmission before the end of that business day.

9.3 **No Waiver**

Any time or other indulgence granted by the Council to the Owner or any variation of the terms and conditions of this Agreement or any judgement or order obtained by the Council against the Owner will not in any way amount to a waiver of any of the rights or remedies of the Council in relation to the terms of this Agreement.

9.4 **Severability**

If a court, arbitrator, tribunal or other competent authority determines that a word, phrase, sentence, paragraph or clause of this Agreement is unenforceable, illegal or void then it must be severed and the other provisions of this Agreement will remain operative.

9.5 **No Fettering of the Council's Powers**

It is acknowledged and agreed that this Agreement does not fetter or restrict the power or discretion of Council to make any decision or impose any requirements or conditions in connection with the granting of any planning approval or certification of any plans of subdivision applicable to the Subject Land or relating to any use or development of the Subject Land.

10 COMENCEMENT OF AGREEMENT

Unless otherwise provided in this Agreement, this Agreement commences from the date of this Agreement.

11 ENDING OF AGREEMENT

11.1 This Agreement may be ended by agreement between Council and the Owner.

11.2 If this Agreement relates to more than one lot and the owner of that lot has complied with all of the obligations in relation to that lot, the owner of that lot may request Council to end this Agreement in relation to that lot.

11.3 As soon as reasonably practicable after the Agreement has ended, Council will, at the request and at the cost of the Owner, make application to the Registrar of Titles under Section 183(1) of the Act to cancel the recording of this Agreement on the register.

EXECUTED by the parties on the date set out at the commencement of this Agreement.

SIGNED AND SEALED UNDER DELEGATED AUTHORITY ON BEHALF OF THE EAST GIPPSLAND SHIRE COUNCIL BY)

Signature

ANTHONY BASFORD

Full name

CEO

Officer title

EXECUTED by **WOODY GROUP PTY LTD (ACN 006 445 745)** in accordance with Section 127(1) of the *Corporations Act 2001* by being signed by authorised persons:)

C I Wood

Director

BARRY EDGAR WOOD

Full Name

345 Great Alpine Road

Lucknow, Vic 3875

Usual Address

5/11/2021

10

Mortgagee's Consent

National Australia Bank Ltd as Mortgagee under Instrument of Mortgage No. AQ129278X consents to the Owner entering into this Agreement and in the event that the Mortgagee becomes mortgagee-in-possession, agrees to be bound by the covenants and conditions of tis Agreement.

.....

KELLY BURTON
Agribusiness Manager
1/245 Raymond Street
SALE VIC 3850

Registrar of Titles
Land Titles Office
2 Lonsdale Street
MELBOURNE

APPLICATION TO REGISTER AN AGREEMENT UNDER SECTION 173 OF THE PLANNING AND ENVIRONMENT ACT 1987

Certificate of Title Volume 12201 **Folio** 237
Registered Proprietor/s: Woody Group Pty Ltd ACN 006 445 745

National Australia Bank Limited A.B.N. 12 004 044 937 as Mortgagee pursuant to Registered Mortgage number AQ129278X hereby consents to the within Agreement.

Dated this 2nd day of December 20 21

EXECUTED by **NATIONAL AUSTRALIA BANK LIMITED** by being signed sealed and delivered in Victoria by its Attorney Nadine Butler who holds the position of Level 3 Attorney under Power of Attorney dated 1/3/2007 (a certified copy of which is filed in Permanent Order Book No 277 Page No 025 Item 35) in the presence of:

..... Attorney

.....
Signature of Witness

Beveridge Williams

Our Reference: 1600534

29 May 2025

ACN 006 197 235
ABN 38 006 197 235

Sale Office
45 Macalister Street
PO Box 47
Sale VIC 3850
Tel: (03) 5144 3877

beveridgewilliams.com.au

Andrew Bates
Acting Statutory Planning Co-ordinator
East Gippsland Shire Council
PO Box 1618
BAIRNSDALE VIC 3875

Dear Robert,

RE: APPLICATION FOR A PLANNING PERMIT
SUBDIVISION OF LAND INTO SIX LOTS, REMOVAL OF NATIVE VEGETATION & CARRYING OUT OF ROADWORKS
7 KEYS COURT, WY YUNG
LOT 4 ON PLAN OF SUBDIVISION NO. 840690K (VOLUME: 12375, FOLIO: 347)

I refer to the above matter and advise that Beveridge Williams & Co. Pty. Ltd. acts on behalf of , , , , who are the registered owners of 7 Keys Court, Wy Yung.

wishes to subdivide their land into six lots and connect all lots to reticulated electricity, water and telecommunications. To achieve this outcome, ' has instructed Beveridge Williams & Co. Pty. Ltd. to seek a planning permit that will allow the subdivision of the land and removal of vegetation in the manner shown at ***Figure 1***.

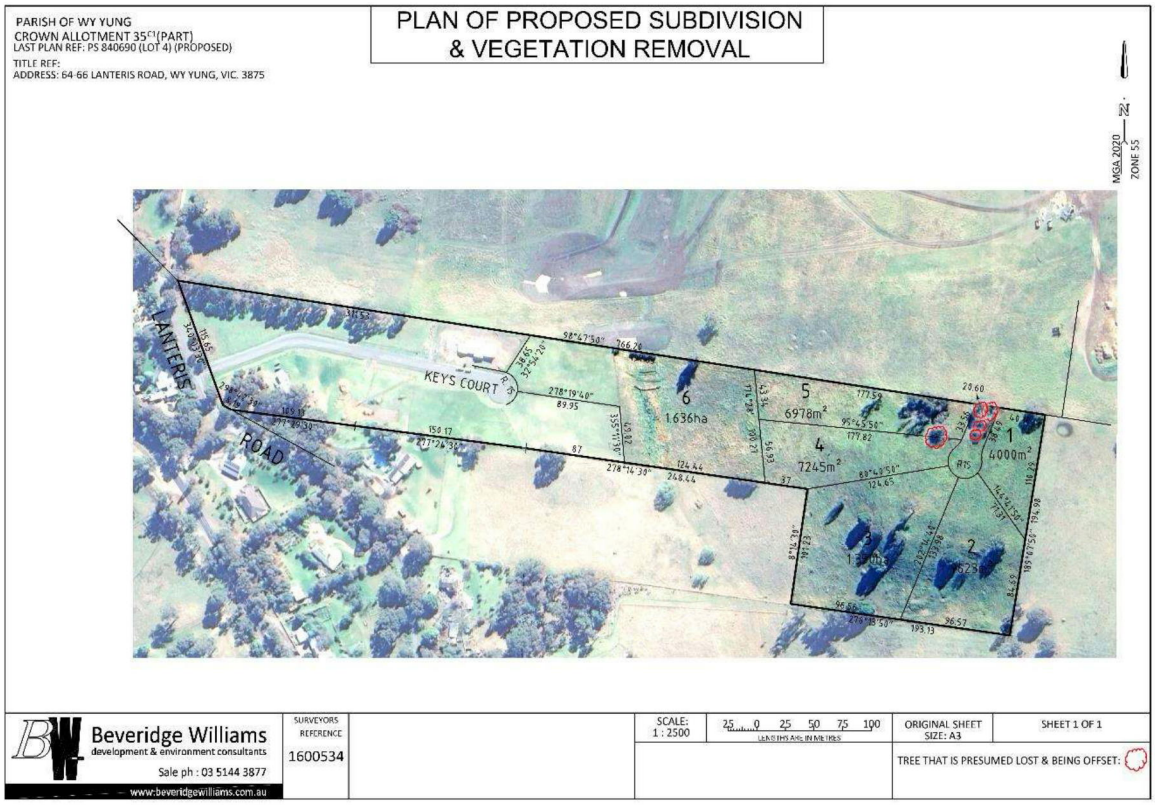


***Figure 1**: Proposed Plan of Subdivision and vegetation removal*

Road access and reticulated water, electricity and telecommunication will be available to proposed Lot 6 via existing facilities within Keys Court. Road access and utility services to proposed Lots 1-5 will become available upon completion of these assets within Stage 4 of the adjoining 'Wy Yung Acres' estate at 30 Clifton West Road, Wy Yung.

The subdivision will lead to the presumed loss of native vegetation in the northern portion of the land, of which 5 native trees require a planning permit to be issued prior to their removal.

A review of the East Gippsland Planning Scheme reveals that the following Clauses are relevant to this proposal:

- **Clause 02.04** (Strategic Framework Plans);
- **Clause 11.01-1S** (Settlement);
- **Clause 11.01-1R** (Settlement - Gippsland);
- **Clause 11.01-1L** (Stratford);
- **Clause 13.03-1S** (Floodplain Management);
- **Clause 15.01-3S** (Subdivision Design);
- **Clause 15.01-4S** (Healthy Neighbourhoods);
- **Clause 15.01-5S** (Neighbourhood Character);
- **Clause 16.01-1S** (Housing Supply);
- **Clause 16.01-2S** (Housing Affordability);
- **Clause 16.01-3S** (Housing Affordability);
- **Clause 32.03** (Low Density Residential Zone), noting that **Clause 32.03-3** triggers the need for a planning permit for a subdivision of this nature;
- **Clause 44.01** (Erosion Management Overlay), noting that **Clause 44.01-5** triggers the need for a planning permit for a subdivision, removal of vegetation and carrying out of roadworks on land affected by the Erosion Management Overlay;
- **Clause 52.17** (Native Vegetation), noting that the 'presumed loss' of five native trees has been considered under **Clause 52.17** and offsets calculated accordingly;
- **Clause 56.07** (Integrated Water Management); and,
- **Clause 65** (Decision Guidelines).

The following documents have been enclosed along with this letter in support of the proposal:

- A Title search statement & title plan for the subject site;
- A Planning Property report for the subject site, which demonstrates the applicable zoning and overlay controls;
- A slope and landslip risk assessment prepared by Strata Geoscience;
- A land capability assessment prepared by Strata Geoscience;
- A drainage plan prepared by Crossco Engineering;
- A Native Vegetation Removal Plan;
- A Site and Context Description that discusses the nature of land use and development across the subject site, its immediate surrounds and the applicable planning policies;
- A Planning Assessment that discusses the proposal in light of the provisions of the applicable clauses listed above; and,
- A proposed plan of subdivision and a proposed plan of vegetation removal for endorsement under any permit granted.

Payment of Council's application fees in the amount of **$2,180.10** will be made upon receipt of an invoice from Council to cover the applicable fees for an application made under Classes 18 & 22 of the *Regulations*.

If you require any further information prior to making a decision on this application, please do not hesitate to call me on 03 5144 3877.

Yours faithfully,

CHRIS CURNOW
Principal Planner
BEVERIDGE WILLIAMS

Native Vegetation Removal Report

NVRR ID: 319_20250526_9GC

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). This report is **not an assessment by DEECA** of the proposed native vegetation removal. Offset requirements have been calculated using modelled condition scores.

Report details

Date created: 26/05/2025

Local Government Area: EAST GIPPSLAND SHIRE

Registered Aboriginal Party: Gunaikurnai

Coordinates: 147.61301, -37.78840

Address:
7 KEYS COURT WY YUNG 3875
54A HYLTON VISTA WY YUNG 3875

Regulator Notes

Removal polygons are located:

Summary of native vegetation to be removed

Assessment pathway	**Intermediate Assessment Pathway**		
Location category	Location 1 The native vegetation extent map indicates that this area is not typically characterised as supporting native vegetation. It does not meet the criteria to be classified as Location Category 2 or 3. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0*	**0.167**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.000*
		Extent of proposed removal - Scattered Trees (ha)	*0.167*
No. Large Trees proposed to be removed	**2**	*No. Large Patch Trees*	*0*
		No. Large Scattered Trees	*2*
No. Small Scattered Trees	3		

Offset requirements if approval is granted

Any approval granted will include a condition to secure an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**0.036 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.34
Large Trees	2
Vicinity	East Gippsland CMA or EAST GIPPSLAND SHIRE LGA

NB: values within tables in this document may not add to the totals shown above due to rounding

The availability of third-party offset credits can be checked using the Native Vegetation Credit Register (NVCR) Search Tool - https://nvcr.delwp.vic.gov.au

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General offset is required.

Application requirements

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

Application Requirement 1 - Native vegetation removal information

If the native vegetation removal is mapped correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 1.

Application Requirement 2 - Topographical and land information

This statement describes the topographical and land features in the vicinity of the proposed works, including the location and extent of any ridges, hilltops, wetlands and waterways, slopes of more than 20% gradient, low-lying areas, saline discharge areas or areas of erosion.

The land falls from an upper terrace in the northeast portion down to a north-south running gully nearer to the western boundary. The trees that are 'presumed lost' as a result of the proposed subdivision all sit on a flat portion of the upper terrace. They are not within a wetland, waterway, sloping area, low-lying area, saline discharge area or an area of erosion.

Application Requirement 3 - Photographs of the native vegetation to be removed

Application Requirement 3 is not addressed in this Native Vegetation Removal Report. All applications must include recent, timestamped photos of each Patch, Large Patch Tree and Scattered Tree which has been mapped in this report.

Application Requirement 4 - Past removal

If past removal has been considered correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 4.

Application Requirement 5 - Avoid and minimise statement

This statement describes what has been done to avoid and minimise impacts on native vegetation and associated biodiversity values.

The topography of the land and the point at which the road in the adjoining estate meets the land constrains the alignment of a new central roadway to the area where the 4 impacted trees are located. The remaining tree, which sits near the new boundary of Lots 4 & 5, may be retained by future owners, but it is in quite poor condition may become dangerous in a residential context. So, it is seen as prudent to offset its loss now.

Application Requirement 6 - Property Vegetation Plan

This requirement only applies if an approved Property Vegetation Plan (PVP) applies to the property
Does a PVP apply to the proposal?

Application Requirement 7 - Defendable space statement

Where the removal of native vegetation is to create defendable space, this statement:

- Describes the bushfire threat; and

- Describes how other bushfire risk mitigation measures were considered to reduce the amount of native vegetation proposed for removal (this can also be part of the avoid and minimise statement).

This statement is not required if, If the proposed defendable space is within the Bushfire Management Overlay (BMO), and in accordance with the 'Exemption to create defendable space for a dwelling under Clause 44.06 of local planning schemes' in Clause 52.12-5.

The proposed removal of native vegetation is not required to create defendable space.

Application Requirement 8 - Native Vegetation Precinct Plan

This requirement is only applicable if you are removing native vegetation from within an area covered by Native Vegetation Precinct Plan (NVPP), and the proposed removal is not identified as 'to be removed' within the NVPP.
Does an NVPP apply to the proposal?

Application Requirement 9 - Offset statement

This statement demonstrates that an offset is available and describes how the required offset will be secured. The Applicant's Guide provides information relating to this requirement.

An offset will be purchased through a broker as part of the subdivisional works in the event that a permit is granted.

Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in the Guidelines. If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority (e.g. local Council). This Native vegetation removal report must be submitted with your application and meets most of the application requirements. The following requirements need to be addressed, as applicable.

Application Requirement 3 - Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed **must be provided** with the application. All photographs must be clear, show whether the vegetation is a Patch of native vegetation, Patch Tree or Scattered Tree, and identify any Large Trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

Application Requirement 6 - Property Vegetation Plan

If a PVP is applicable, it must be provided with the application.

Appendix 1: Description of native vegetation to be removed

General Habitat Units for each zone (Patch, Scattered Tree or Patch Tree) are calculated by the following equation in accordance with the Guidelines

General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant			Information calculated by NVR Map							
Zone	**Type**	**DBH (cm)**	**EVC code (modelled)**	**Bioregional conservation status**	**Large Tree(s)**	**Condition score (modelled)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**General Habitat Units**
A	Scattered Tree	76	EGL_0016	Least Concern	1	0.200	0.070	0.070	0.420	0.015
B	Scattered Tree	67	EGL_0016	Least Concern	-	0.200	0.031	0.000	0.420	0.000
C	Scattered Tree	95	EGL_0016	Least Concern	1	0.200	0.070	0.070	0.430	0.015
D	Scattered Tree	38	EGL_0016	Least Concern	-	0.200	0.031	0.007	0.420	0.001
E	Scattered Tree	20	EGL_0016	Least Concern	-	0.200	0.031	0.019	0.431	0.004

Appendix 2: Images of mapped native vegetation

1. Property in context

Proposed Removal
Property Boundaries

N

200 m

2. Aerial photograph showing mapped native vegetation

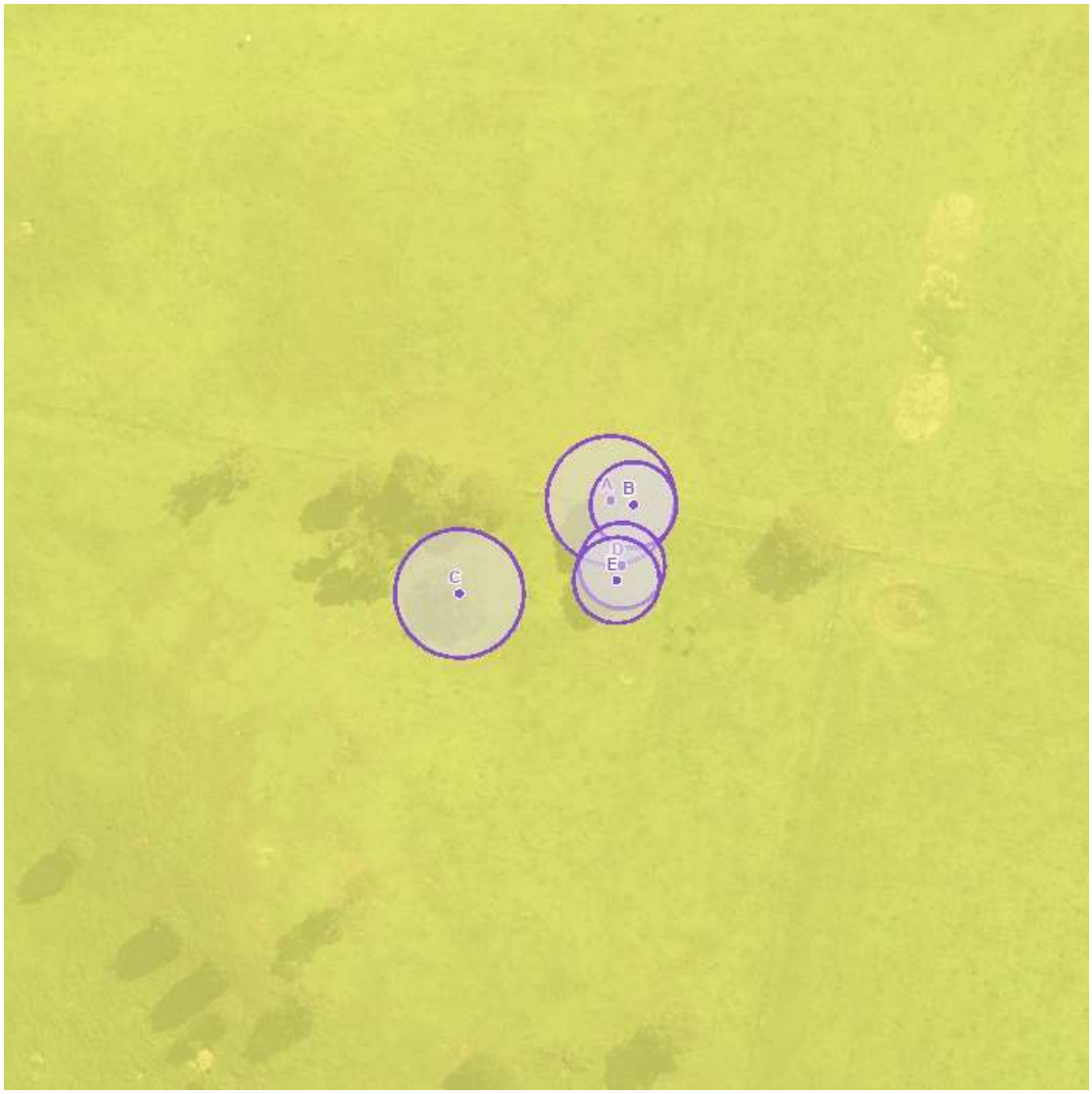
Proposed Removal

N

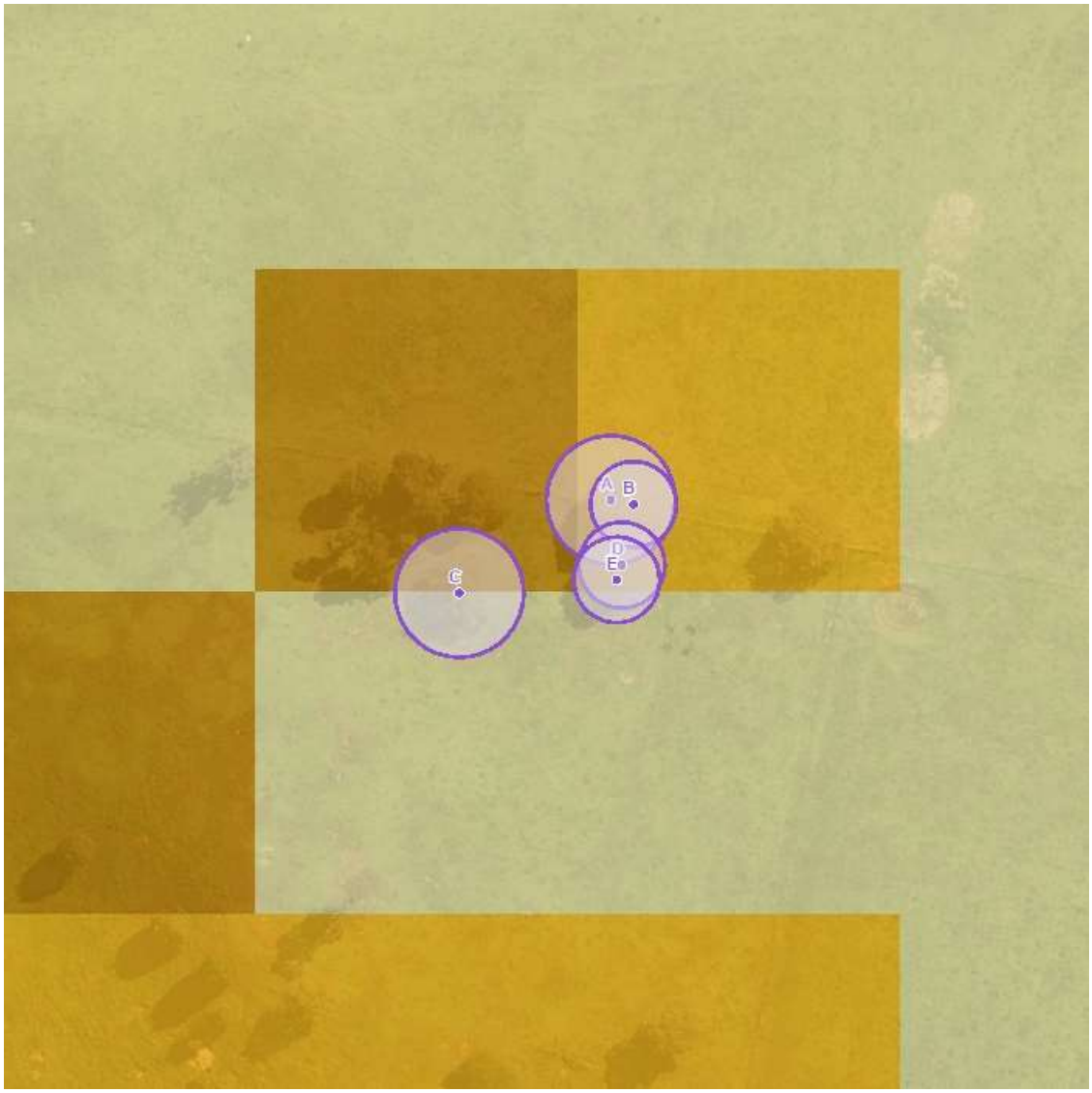
35 m

3. Location Risk Map

4. Strategic Biodiversity Value Score Map



5. Condition Score Map



6. Endangered EVCs

Not Applicable

strata
geoscience and environmental

Limited Scope Reconnaissance Land Capability Assessment and Onsite Wastewater System Concept Design for

Proposed 6 Lot Subdivision
7 Keys Court
Wy Yung

October 2024

Report Details

Table 1: Site, Client, Author and Report Details	
Address	7 Keys Court Wy Yung
Nature of Proposed Development	Proposed 6 Lot Subdivision
Client	Beveridge Williams
Author	Sven Nielsen MEngSc CPSS
Report Number	SR05771
Report Date	11/10/2024

Table 2: Copies Recipient	
1 PDF	Chris Curnow, Project Manager, Beveridge Williams
1 PDF	Strata Geoscience and Environmental Project File

Table of Contents

Executive Summary

Beveridge Williams contracted Strata Geoscience and Environmental Pty Ltd to conduct a Reconnaissance Land Capability Assessment and Onsite Wastewater System Concept Design at a proposed subdivision on 7 Keys Court Wy Yung.

The investigation consisted of desktop and field reconnaissance, laboratory testing, risk analysis, modelling and reporting.

Desktop and field investigation, combined with risk modelling found that the site has constraints associated with:

- Aspect
- Erosion
- Climate
- Vegetation Cover
- Soil Texture
- Emmerson
- Sodicity
- Soil Drainage
- Landslip
- Slope Gradient
- Soil Depth

Given these findings, the following concept design recommendations are made:

- Treatment of all effluent generated onsite to a minimum of secondary levels
- Land application via subsurface irrigation scaled via water and nutrient balancing.
- Appropriate setbacks from all site boundaries, surface waters and bores.

Furthermore, all installed treatment plants should have a regular servicing contract in place between a qualified servicing agent and the property owner to further limit risk.

It is noteworthy that the above recommendations ensure a high level of sewage treatment and disposal possible in a domestic context and are to industry best practise.

1. Introduction, Guidelines and Standards Referenced

Strata Geoscience and Environmental Pty Ltd was commissioned to perform a limited scope Land Capability Assessment for:

Table 3: Site and Client Details	
Client/Agent	Beveridge Williams
Site Address	7 Keys Court Wy Yung (see Site Plan)
Nature of Development	Proposed 6 lot Subdivision

The investigation was conducted based upon specific development plans supplied by the client (Figure 2) and with reference to the following documents:

1. EPA Victoria (2024) Code of Practice for Onsite Wastewater Management
2. Australian Standard AS1547-2012 Onsite Wastewater Management

The investigation also follows the principles outlined in:

1. 2006 MAV & DSE Model LCA Report
2. EPA Publication 746.4 Guidelines for Land Capability Assessment
3. MAV DEPI & EPA 2014 Land Capability Assessment Framework
4. AS1726-1993 Geotechnical Site Investigations.

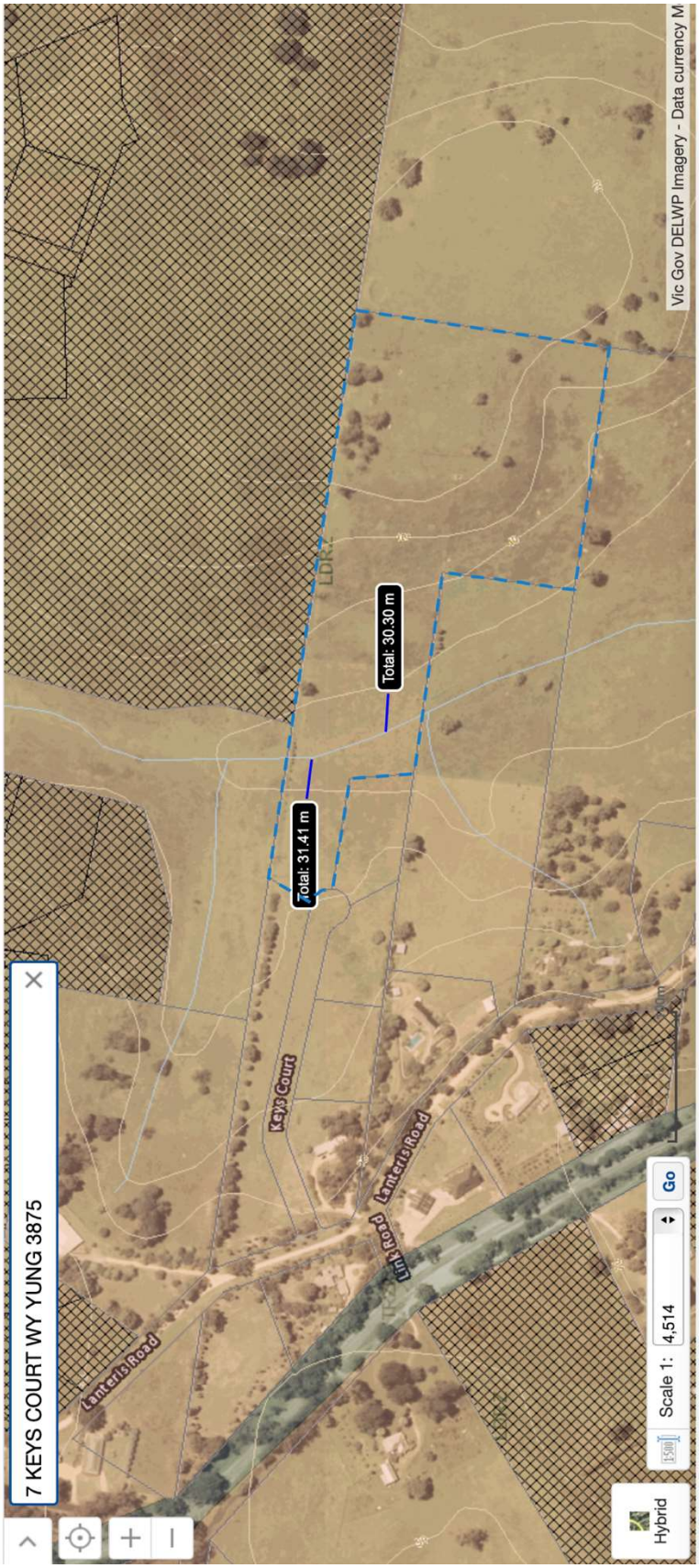
2. Description of the Development

Table 4: Site Description	
Site Address	7 Keys Court Wy Yung
Owner/Developer/Agent	Beveridge Williams
Address	As above
Council Area	East Gippsland
Zoning	LDRZ
Min Proposed Allotment Size	4080 m^2 approx.
Anticipated Wastewater Load	Up to 1080 L/D (See Section 6)
Availability of Sewer	Unsewered and likely to be unsewered in mid term

3. Site Plans and Key Site Features

A range of soil and landscape features were assessed for their potential to impact upon land application area siting and level of wastewater treatment required over the site. Figures 1-2 give locality and proposed site plans respectively whilst Table 5 summarises key features as in relation to effluent management over the site.

Figure 1 Locality Plan, Site Survey Plan (if available), Surface Water and Groundwater Bore Feature Plan



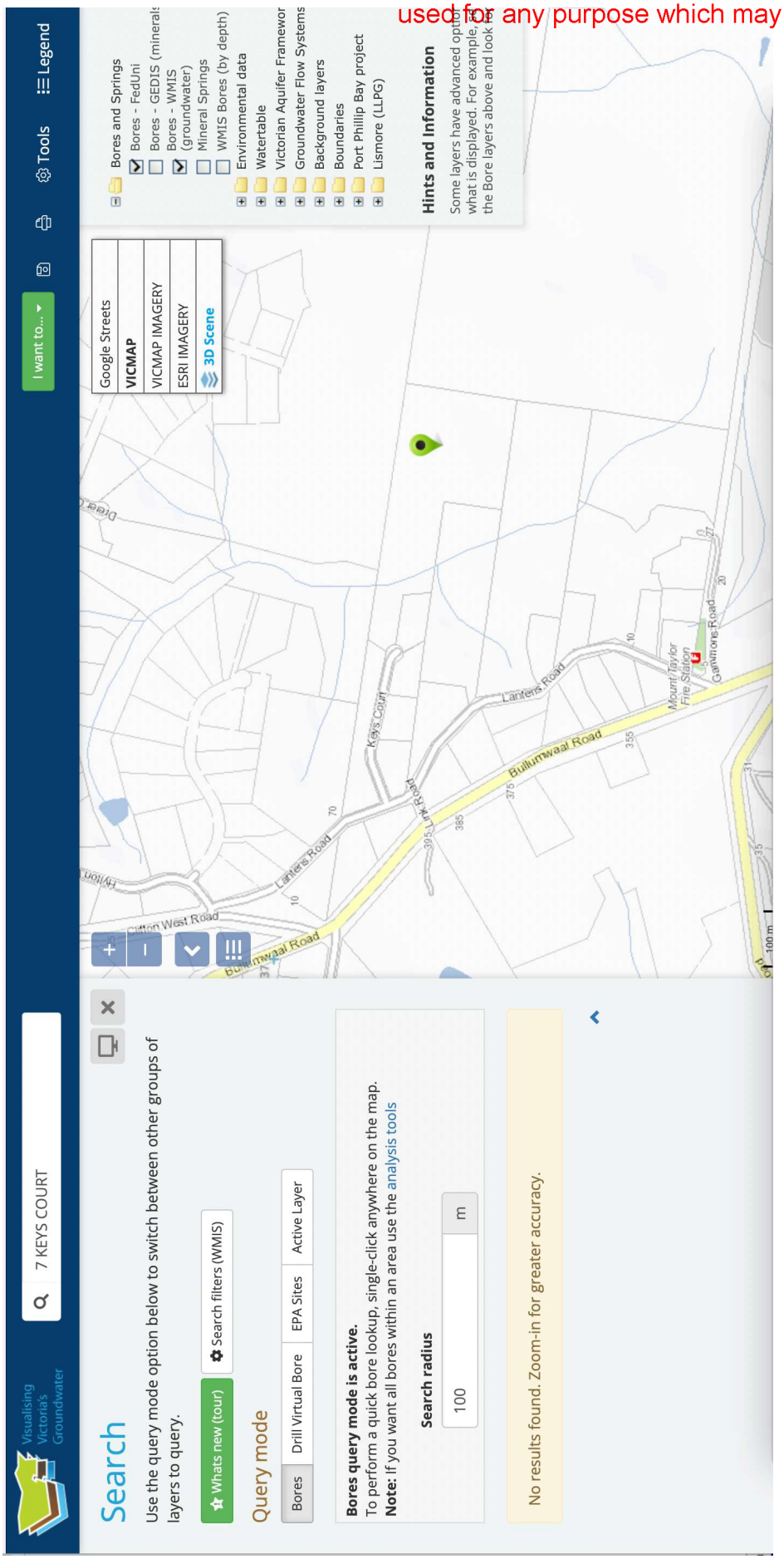


Figure 2 Proposed Subdivision Plan

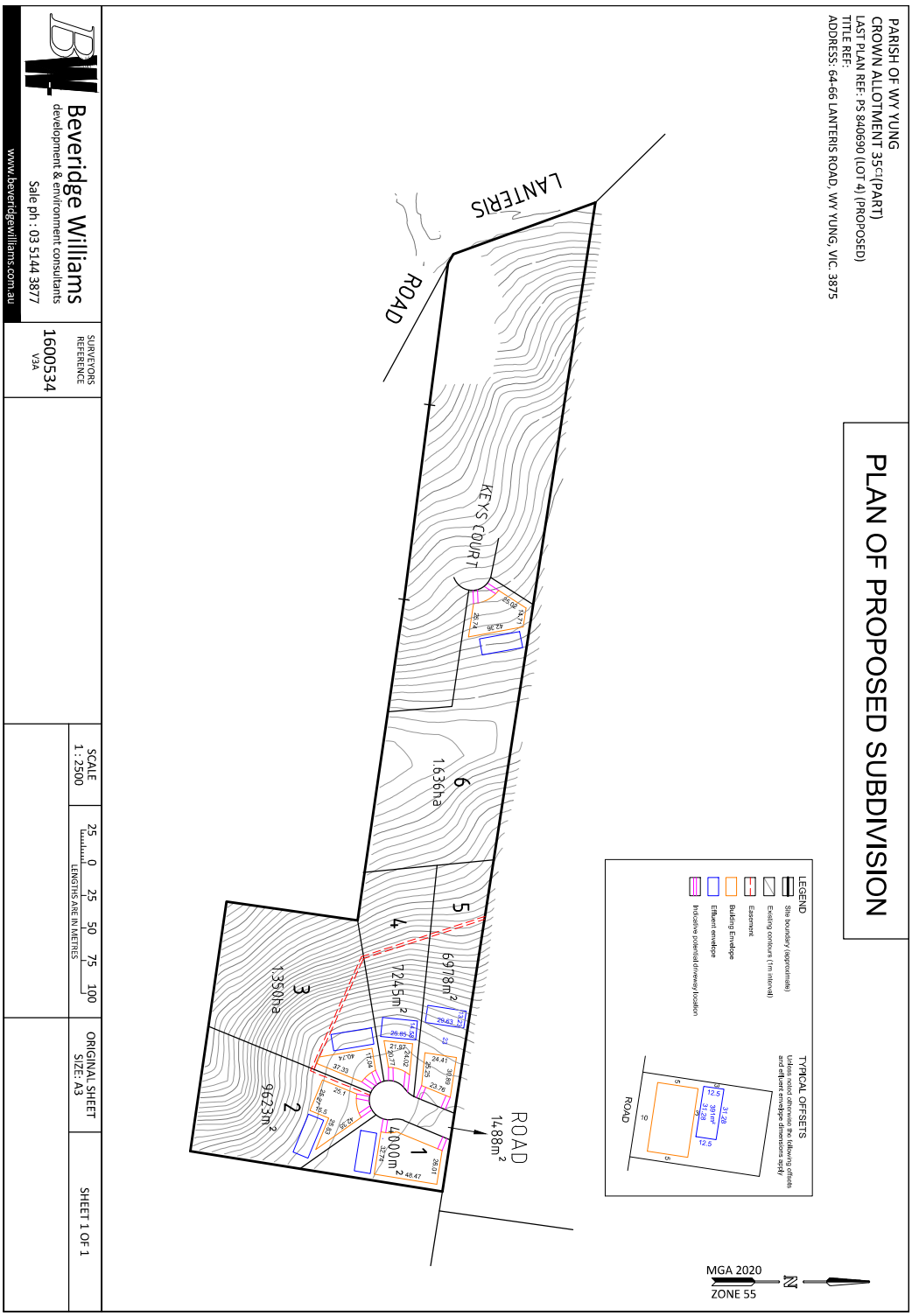


Table 5 Site Features	
Climate	The nearest weather station with **long term** data is the Bairnsdale Airport Station with a mean annual rainfall of 648 mm (BOM 2024). Climate Data from BOM presented in Appendix 2. The region has a near Mediterranean climate with maximum temperatures and minimum rainfall in the summer.
Exposure	The site is relatively shielded with exposure to winds which predominate from the NW/SW directions
Vegetation	Sparse with some mature trees
Landform	Undulating slopes flat - steep
Slope, Slope Stability and Aspect	Variable slopes and aspects – avoid steeper areas
Fill	No fill evident in proposed land application areas
Rocks and Rock Outcrops	Minor rock outcropping on higher landforms observed
Erosion Potential	No evidence of erosion, soils possibly subject to dispersion and surface rill or sheet erosion. Recommend irrigation systems into constructed ornamental garden beds.
Nearest Surface Water	Drainage line cutting through site. 30m separation form any surface water achievable on each proposed lot.
Flood Potential	Unknown
Stormwater Run-on and Upslope Seepage	Stormwater to be directed away from proposed effluent envelopes. No seepage observed.
Groundwater	**No registered bores onsite. No bores with 100m of site.** (See VVG Portal results page 9). Risk to groundwater from subsurface irrigation into topsoils of secondary effluent considered low if recommended buffer distances maintained. Based on the Department of Natural Resources and Environment Groundwater Resources Victoria Map groundwater is likely to be >10m below ground surface and have a salinity range of 501-1000 mg/L TDS. The following beneficial uses are indicated SEPP (Waters): • Maintenance of ecosystems • Stock watering • Industrial water use • Primary contact recreation • Buildings and structures
Site Surface Drainage and Subsurface Drainage	The site receives minimal run on and does not show signs of springs or other areas of ephemeral subsurface water retention.
Recommended Buffer Distances	Given the significant land area, all buffer distances as stipulated in EPA (2024) are achievable. Please refer to Note 4 Table 5 of EPA 2024.
Available Land Application Area	There is surplus space to land application area requirements (including reserves).

4. Soil Assessment and Constraints

Soils have been assessed for their suitability for onsite wastewater management through both desktop review and intrusive field investigation.

4.1 Site Geology

Reconnaissance land system mapping carried out by DEPI (2003) at a scale of 1:200,000, indicates the subject land is underlain by 'Stockdale with Munro' weathering from Quaternary/Tertiary aged sediments (Geoscience Australia 1:100000 Bairnsdale Sheet).

The following is taken from the legend of the DEPI (2003) map sheet:

"The soils of the Stockdale map unit are all texture contrast soils. The surface soils are strongly to moderately acidic and range from dark greyish brown loamy sands to sandy loams. Invariably they have a bleached subsurface soil. Brown medium to heavy clays occur at a variable depth, generally before 50 cm, typically with yellowish brown, grey or strong brown mottles. The sandy surface soils have a low nutrient and water holding capacity if the organic matter levels are low and are also prone to wind erosion"

It is noteworthy that soils encountered in bores rarely showed highly duplex profiles noted above (Appendix 2). Discontinuous clay lens are likely to exist over the site mainly as Clayey Sands trending Sandy Clays. Various phases were tested as per Section 3.3

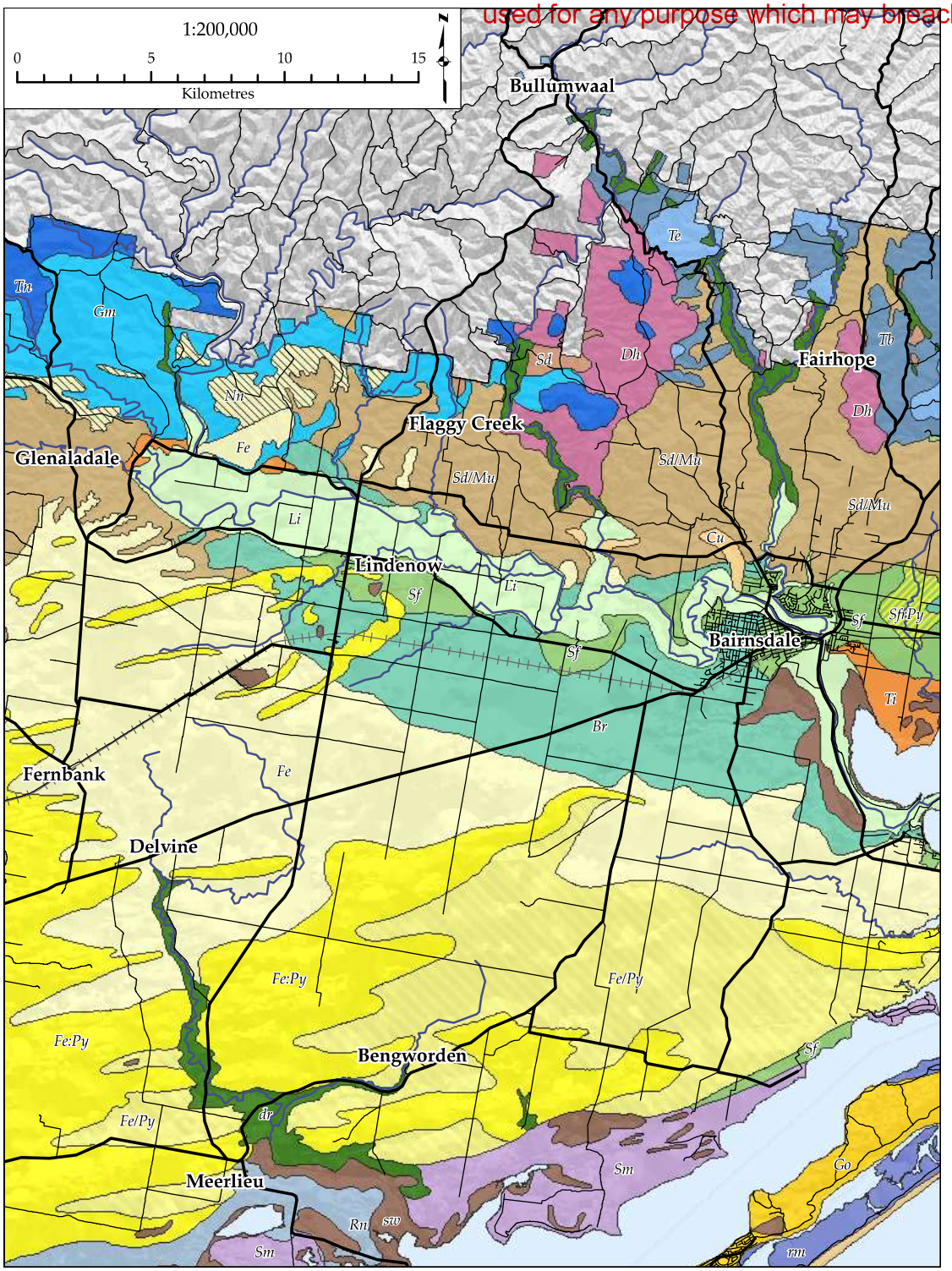


Figure 3 Soil mapping for Bairnsdale (DEPI, 1:200000)

Referring to the Geoscience Australia 1:250000 Bairnsdale Sheet, the site is situated on undulating slopes underlain by Tertiary fluvial gravels, sands and clays which have been incised by localised drainage lines to create newer Quaternary aged alluvial/fluvial deposits. The site occupies a mid-slope to top-slope position in the localised landscape, with slight to moderate slopes surrounding the proposed development areas.

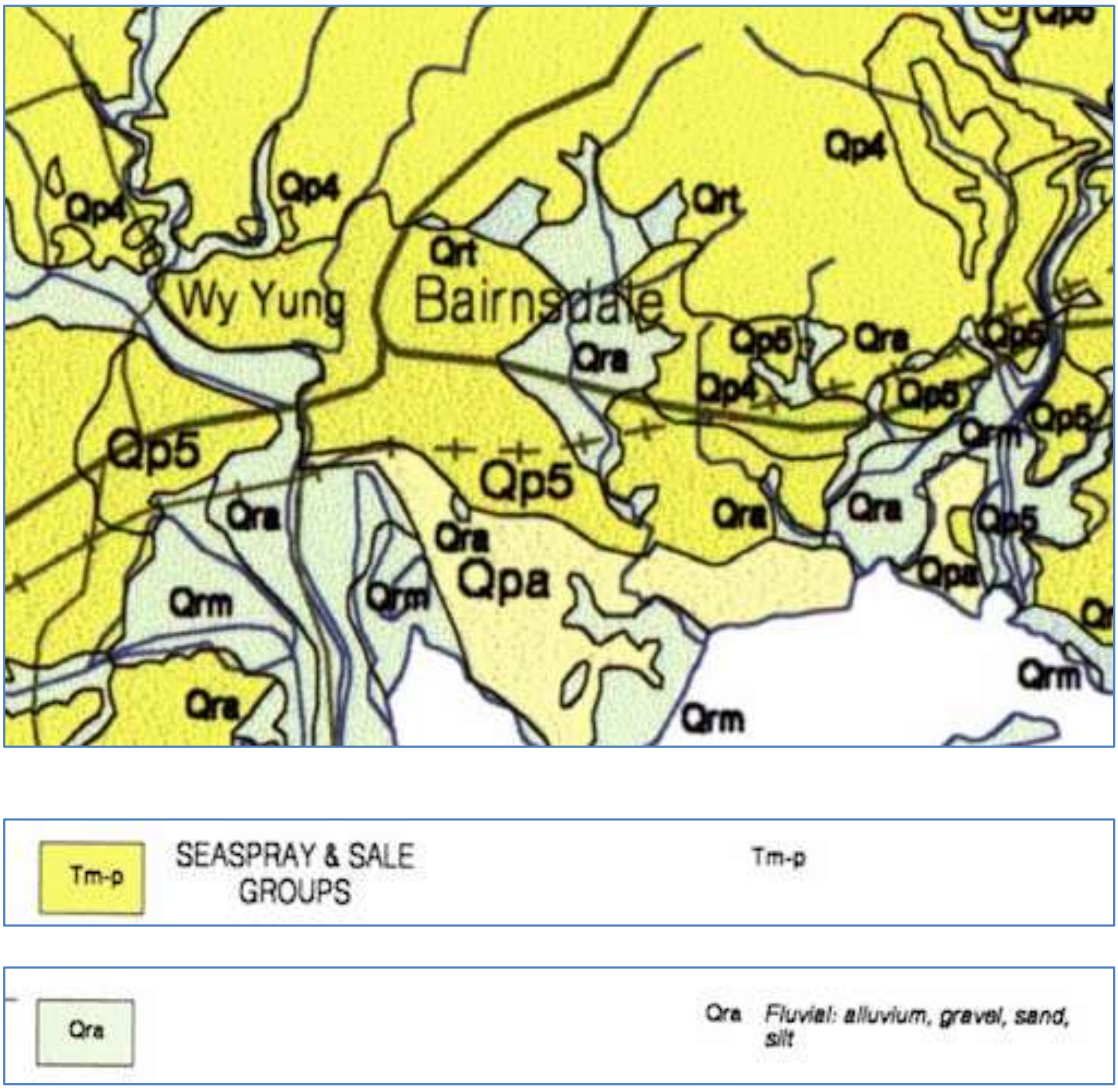


Figure 4 Geoscience Australia 1:250000 Bairnsdale Geological Map

3.2 Soil Classification and Physical Properties

Field investigation consisted of drilling 8 soil bores using a man portable power auger to 1.5m (or refusal) with retrieval of undisturbed drill cuttings for logging, sampling and testing for various physico-chemical parameters.

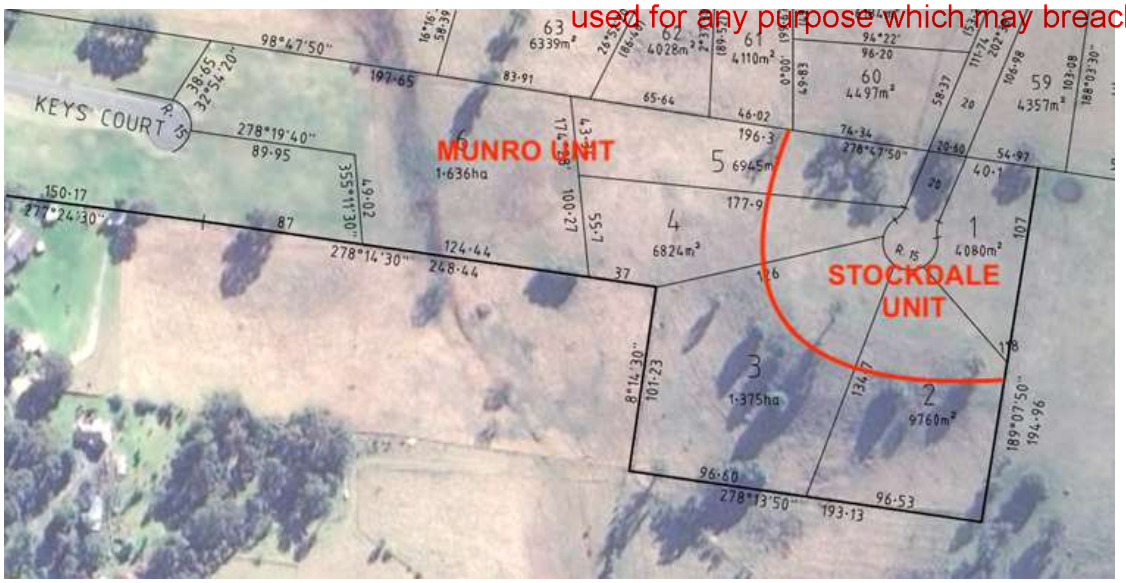
Bore logs and soil permeability data/soil dispersion test results (where relevant) are presented in Appendix 2/4.

Given this reconnaissance, there are two main regionally extensive soil types identified at the Site being Munro (deep sand - Podosol) and Stockdale (sand over clay – Sodosol/Chromosol).

The dominant soil types on slope sand lowers part of the site are deep sandy soils (Podosols) of the Munro soil type. This soil is a moderately deep sandy to clayey sand soil derived from windblown and slope deposited sands and fine gravels with either or both accumulations of iron oxides and organic matter in the sandy subsoils (known as Podosols).

In the higher scarp areas of the site, a texture-contrast soil (sandy above clayey sediments) formed from windblown sands over yellowish brown to reddish brown blocky structured clays to sandy clays are found. These have been described and mapped by the state government in the region as Stockdale soil type.

The Stockdale soil is typically a Subnatric Brown Sodosol or a Magnesic Brown Chromosol/Kurosol. These texture-contrast soils have sandy upper profiles over a sharp change to structured clayey subsoil profiles (clays at <50 cm from surface). The Stockdale Soil occurs on the elevated flat-topped ridgeline (old/elevated river terrace surface) and a lower terrace and the rolling slopes both above and below these flatter terrace remnants. Some stone-lines (concentrations of gravels and/or stones) occur in the texture-contrast soils at the sand – clay boundary."



4.2 Field Investigation

Field investigation consisted of drilling soil bores using a vehicle mounted 100mm solid flight auger to 1.5 m or refusal with retrieval of disturbed soil samples for logging, sampling and laboratory testing.

Bore logs and field permeability data/soil test results (where relevant) are presented in Appendix 1. Laboratory results are presented in Appendix 3.

Table 4 Typical Soil Characteristics	
Soil Depth (m)	0.5-1.5m+
Depth to Water Table (m)	2.0m+
Coarse Fragments (%)	0-5%
Colloid Stability	Emmerson class and exchangable sodium percentage results indicate sodic soil phases present.
Soil Nutrient Attenuation	Good – clay phases will have moderate Cation Exchange Capacity.
Soil Field Permeability and Concept Design Loading Rates	Field permeability variable, recommend DIR of 3.5mm/d given clays encountered in some bores.
Basement Permeability	Basement rock likely >5m – permeability therefore not relevant

	Topsoils (A1-A3)	Subsoils (B1-B3)
Description	Silty SAND (SM)	(DISCONTINUOUS) Sandy CLAY (CL)/Clayey SAND (SC)
Soil Category (AS1547-2011)	1	4
DIR (mm/d)/DLR (L/D) (Secondary)	30/5	15/3.5
Indicative pH range*	6-7	5.5
Indicative EC* us/cm	15-20	15
Indicative CEC* meq/100g	5-10	10-15
Indicative Emmerson Class*	3/7	3/7

*Full lab results in Appendix 3

5. Land Capability Assessment Matrix

5.1 Assessment Matrix

Referring to MAV & DSE (2006), EPA Victoria Publication 746.1 Land Capability Assessment for Onsite Domestic Wastewater Management and MAV DEPI & EPA 2014 Land Capability Assessment Framework, a qualitative LCA assessment table has been produced for the site.

Table 6: Risk Assessment of Site Characteristics (MAV, DEPI, EPA 2014)

Characteristic	Level of Constraint			Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor	Moderate	Major	
Aspect (affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West	South	Minor-Moderate
Climate (difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	Moderate
Erosion [1] (or potential for erosion)	Nil or minor	Moderate	Severe	Moderate
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	Minor
Fill [2] (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill is good quality	Extensive poor quality fill and variable quality fill	Minor
Flood frequency (ARI) [3]	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Minor
Groundwater bores [4]	No bores onsite or on neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.4 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.4 (as amended)	Minor

Characteristic	Level of Constraint			Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor	**Moderate**	**Major**	
Land area available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA and duplicate LAA and buffer distance requirements	Insufficient area for LAA	Minor
Landslip (or landslip potential) [5]	Nil	Minor to moderate	High or Severe	Moderate
Rock outcrops (% of surface)	<10%	10-20%	>20%	Minor
Slope Form (affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	Minor
Slope gradient [6] **(%)**				
(a) for absorption trenches and beds	<6%	6-15%	>15%	Major
(b) for surface irrigation	<6%	6-10%	>10%	Moderate
(c) for subsurface irrigation	<10%	10-30%	>30%	Minor
Soil Drainage [7] **(qualitative)**	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills	Moderate

Characteristic	Level of Constraint			Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor	**Moderate**	**Major**	
Stormwater run-on	Low likelihood of stormwater run-on		High likelihood of inundation by stormwater run-on	Minor
Surface waters - setback distance (m) [9]	Setback distance complies with requirements in EPA Code of Practice 891.4 (as amended)		Setback distance does not comply with requirements in EPA Code of Practice 891.4 (as amended)	Minor – 30m setback for primary irrigation field
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake	Limited variety of vegetation	Sparse vegetation or no vegetation	Moderate

Characteristic	Level of Constraint					Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor		**Moderate**	**Major**		
Soil Drainage [8] (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed somewhat slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong gleying. All horizons wet for several months	Moderate

Table 7: Risk Assessment of Soil Characteristics

Characteristic	Level of Constraint			Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor	Moderate	Major	
Electrical Conductivity (ECe) (dS/m) as a measure of soil salinity [1]	<0.8	0.8 – 2	>2	Minor
Emerson Aggregate Class (consider in context of sodicity)	4, 5, 6, 8	7	1, 2, 3	Major
Gleying [2] **(see Munsell Soil Colour Chart)**	Nil	Some evidence of greenish grey / black or bluish grey / black soil colours	Predominant greenish grey / black, bluish grey / black colours	Minor
Mottling (see Munsell Soil Colour Chart)	Very well to well-drained soils generally have uniform brownish or reddish colour	Moderately well to imperfectly drained soils have grey and/or yellow brown mottles and in the mottled areas occur higher in the profile the less well-drained the soil	Poorly drained soils have predominant grey colours with yellow brown or reddish brown mottles located along root channels, large pores and cracks	Minor
pH [3] **(favoured range for plants)**	5.5 - 8 is the optimum range for a wide range of plants; 4.5 - 5.5 suitable for many acid-loving plants		<4.5, >8	Minor

Characteristic	Level of Constraint			Assessed Level of Constraint for Site and Mitigation if required
	Nil or Minor	Moderate	Major	
Rock Fragments (size & volume %)	0 – 10%	10 – 20 %	>20%	Minor
Sodicity [4] (ESP %)	<6%	6 – 8%	>8%	Major
Soil Depth to Rock or other impermeable layer (m) [5]	>1.5 m	1.5 – 1 m	<1 m	Moderate
Soil Structure (pedality)	Highly or Moderately structured	Weakly-structured	Structureless, Massive or hardpan	Minor
Soil Texture, [6] Indicative Permeability	Cat. 2b, 3a, 3b, 4a	Cat. 4A, 4c, 5a	Cat. 1, 2a, 5b, 5c, 6	Moderate
Watertable Depth (m) below the base of the LAA	>2 m	2 – 1.5 m	<1.5 m	Minor

Legend:

Nil or Minor: If all constraints are minor, conventional/standard designs are generally satisfactory.
Moderate: For each moderate constraint an appropriate design modification over and above that of a standard design, should be outlined.
Major: Any major constraint might prove an impediment to successful on-site wastewater management, or alternatively will require in-depth investigation and incorporation of sophisticated mitigation measures in the design to permit compliant onsite wastewater management.

5.2 LCA Conclusions

Qualitative LCA modelling has identified the following site constraints/risks:

- Aspect
- Erosion
- Climate
- Vegetation Cover
- Soil Texture
- Emmerson
- Sodicity
- Soil Drainage
- Landslip
- Slope Gradient
- Soil Depth

5.3 Risk Mitigation and Design Implications

The identified constraints may be risk mitigated by:

- Treat to minimum secondary levels
- Install subsurface irrigation into constructed ornamental garden beds scaled to the water balance model
- Confirm minimum setback distances to all sensitive environmental receivers

Please refer to See Section 6 and Appendices for further specific system recommendations.

6. Proposed Onsite Wastewater System Design

6.1 General System Recommendations

Given the results of the LCA, the following recommendations are made for a suitable wastewater treatment system:

- Secondary treatment of effluent with subsurface disposal via water/nutrient balanced irrigation is a suitable method for onsite wastewater system disposal.

6.2 Onsite Wastewater Flow and Land Application Area Modelling

For modelling purposes, it is proposed that a **five bedroom** equivalent dwelling with standard water saving fixtures will be constructed with a loading rate of **180L/EP/day** and a total daily loading of **1080 L/day** being applicable.

Therefore, the calculated effluent flows and required disposal area for is as follows:

6.2.1 Water Balance and Land Application Area Modelling

Please refer to Appendix 2 for the water balance modelling based upon VLCAF (2013). The nominated area method is used to calculate the area required to balance all inputs and outputs, without the need for wet weather storage. As a result of these calculations, at least **391.3 m^2** of area is required to achieve zero wet weather storage.

6.2.2 Nutrient Balance and Land Application Area Modelling

Please refer to Appendix 2 for the nutrient balance modelling (Nitrogen and Phosphorus) based upon VLCAF (2013). The methodology aims to ensure that the LAA is of sufficient size to ensure all nutrients from the applied effluent are assimilated by soils and vegetation. As a result of these calculations, at least **358 m^2** of area is required to achieve sustainable assimilation of N and P over the nominated system design life.

BASED UPON THE ABOVE MODELLING THE MINIMUM MODELLED LAA REQUIREMENT IS 391 m^2 FOR SECONDARY TREATED EFFLUENT BASED UPON THE WATER BALANCE MODEL.

6.2.3 Alternative Land Application Area Modelling

Given that the water balance model produces the most conservative LAA, it has been used to calculate the subsurface irrigation area for a range of loadings based upon the "Number of bedrooms plus 1" model at 180L/person/day. Results are detailed in Table 8 below:

Table 8 LAA Requirement for Various Dwelling Sizes

Number of Bedrooms	Theoretical Loading (L/day)	Required LAA (m^2 of Irrigation)
4	900	326
5	1080	391
6	1260	457
7	1440	522

6.3 System Concept Design

6.3.1 Treatment System

Given the above modelling the following treatment system would be appropriate:

- Minimum 4 star WELS rated dual flush toilets (3/4.5L) or approved dry composting toilets
- Min DN100 gravity fed sewer pipe
- Min 1500L/day (Treatment Capacity) Approved Packaged Treatment Plant capable of secondary treatment

6.3.2 Land Application Areas

The land application areas could consist of:

- Min 391 m^2 of subsurface irrigation dosed into constructed ornamental gardens as detailed in Appendix 3.
- Irrigation should be zoned into maximum 250m^2 zones and dose loaded via a pressure dosed sequencing valve.

6.3.3 Provision of Adequate Setback Distances and Relevance of Reserve Provision

Given the minimum land application areas modelled above combined with the current development plan, setback distances complying with the minimum requirements of EPA Vic (2024) are achievable (see Figure 2 and Appendix 3).

It is noteworthy that Section 3.10.2 of EPA (2024) stipulates that a reserve area is not required for a surface or sub-surface pressure-compensating irrigation system where the size of the system has been calculated and designed using the latest version of the Model LCA Report and the recommended Design Irrigation Rates in Tables 3 and 9.

6.4 System Risk Management

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

Table 9 System Risk Management		
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 using water balance modelling • Use Conservative DLR/DIR • Use water conservation practices eg water reduction fixtures • Not rated for spa installation
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 drainage	• Use appropriate DLR/DIR after permeability testing • Treat with gypsum, manage sodium inputs • Dose effluent into constructed garden beds.
Site Constraints	• See section 5	• See recommendations Section 5

Risk	Factors that Increase Risk Likelihood	Design Risk Reduction Measures
High Rainfall/Torrential Rainfall	• Inappropriate LAA Scaling • Stormwater impacts	• Use suitable hydraulic scaling following water balance model • Stormwater Diversion around LAA if required
Clogged Filter	• Overloading • Infrequent cleaning	• Clean monthly • Regular servicing inline with manufacturers recommendations
Pipe Blockages	• Overloading • Infrequent de-sludging	• Reduce solids inflows • Service AWTS regularly • Check IO's/flush lines regularly
Sludge transport to LAA	• Infrequent de-sludging • Clogged outlet filter • High organic loading	• Regular servicing inline with manufacturers recommendations • Clean outlet filter/flush lines regularly • No sinkerator installation
Broken pipes in LAA	• Stock/vehicles	• Exclude stock/vehicles

6.5 System Management and Maintenance

The proposed system is designed to allow for system automation and as such there are negligible management requirements from owners/site managers. A detailed operations manual and maintenance log should be provided to the owners/site managers upon installation of the system. This should remain onsite and will provide details on troubleshooting, emergency service technical support, service scheduling, flow rate and effluent quality monitoring.

Emergency contacts for on call service agents should be listed next to alarm modules and in operations manual to provide support in the event of technical difficulties/breakdown

6.5.1 Servicing

The following servicing program is recommended:

- Servicing of AWTS and associated infrastructure (via a servicing contract) is proposed in line with minimum manufacturer's recommendations.
- Desludging of anaerobic/sedimentation chambers and septic tanks at a maximum frequency of three years.

6.5.2 Monitoring

Annual effluent sampling and analysis at a NATA accredited laboratory is recommended over the first two years of operation. Sampling should be conducted by suitable qualified personnel and involve chain of custody documentation.

The following parameters should be included in any analysis

- BOD
- TSS
- Thermotolerant Coliforms
- Oil and Grease
- Total Nitrogen
- Ammonia
- Total Phosphorous
- pH

6.5.3 Effluent Quality Objectives

The proposed upgraded treatment system process will perform to a minimum secondary treatment standard as prescribed by EPA (2024). Namely:

- BOD <20mg/L
- TSS<30mg/L
- CFU<30cfu/100ml

If treatment quality objectives are not met then advice MUST be sort from the servicing agent, manufacturer and designer.

6.5.4 Contingency Planning

Specific contingencies for installed systems will be included in the operations manual and include:

Table 10 Contingency Planning

Problem	Contingency
Overflow of effluent from treatment plant	• Call service agent immediately • Reduce/cease effluent loading into system (ie ensure all taps, fixtures etc are off) • Minimise building use until problem fixed • Attempt to contain pooling effluent (only if safe to do so)
Critical components of treatments Plants not working	• Structure duty standby of all critical components with auto changeover.
Treatment plant pump not working (Alarm ringing/flashing)	• Check power supply to pump • Call service agent immediately • Reduce/cease effluent loading into system (ie ensure all taps, fixtures etc are off) • Minimise building use until problem fixed

Structural failure of treatment plant tank	• Call service agent immediately • Reduce/cease effluent loading into system (ie ensure all taps, fixtures etc are off) • Minimize building use until problem fixed
Effluent overflowing in land application area	• Call service agent immediately • Reduce/cease effluent loading into system (ie ensure all taps, fixtures etc are off) • Minimise building use until problem fixed • If problem persists seek advice from designer
Water run on to land application area	• Ensure upslope diversion of any run on • Check existing diversion system and clear if required
Land application area emitting odours	• Call service agent immediately – check treatment quality of effluent at outlet to land application area • Check for physical damage to land application area • If problem persists seek advice from designer
Excessive growth of vegetation in land application area	• Check for physical damage to land application area. • Mow/slash/thin/prune/weed land application area at regular intervals. • Remove aggressive invasive weed species. • If problem persists seek advice form designer

7. Conclusions and Further Recommendations

In conclusion, the following comments and recommendations are made:

- Given the identified site and soil limitations, secondary treatment with subsurface disposal into constructed ornamental gardens is recommended.
- The maximum wastewater flow rate modelling shows that the generated flows from the proposed development is likely to be no more than 1080 L/day (for a 5 bedroom dwelling).
- Modelled flows will likely require a land application area comprising:
    - Min 391 m^2 of subsurface irrigation based upon the water balance method.
- It is likely that peak flows associated with the modelled development should be within the buffering capacity of proposed system both in terms of the system sizing as well as for effluent acceptance into the disposal area.
- Given the lot sizes and current development plan adequate setback distances can be met.
- Any earthworks and drainage installation associated with lot development may alter conditions of the site and as a result the recommendations of this report MUST be reconfirmed after these works have occurred. Failure to ensure this will void report recommendations. Stormwater diversion or interceptor drain installation may be appropriate at this time.

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

S Nielsen MEngSc CPSS
Environmental Engineering Scientist
Strata Geoscience and Environmental Pty Ltd
E: sven@strataconsulting.com.au
W: www.strataconsulting.com.au

8. References

- AS1726-1993- Geotechnical Site Investigations
- AS 1547-2012 Onsite Wastewater Disposal
- Bureau of Meteorology Website- Monthly Climate Statistics
- EPA (2024) Vic Code of Practice for Onsite Wastewater Management
- MAV & DSE 2006 (as amended) Model LCA Report
- VLCAF (2024) Victorian Land Capability Assessment Framework – Calculation of Water and Nutrient Balances
- Isbell (2002) Australian Soil Classification (Revised Edn) CSIRO Publishing
- Northcote, K.H. and Skene J.K.M., (1972) Australian soils with saline and sodic properties. *CSIRO Soil Publication* 27.
- Doyle, R 2019 Expert Witness Report prepared by Dr Richard Barry Doyle in relation to a Review of Land Capability Assessment, Erosion and Slope Risks Assessment and Management Strategies and the Implications of their Findings at 30 Clifton West Road, Wy Yung

Appendix 1 Site Photos and Indicative Borelogs

Plate 1(Above) Looking East Over the site- Plate 2 (Below) Overlooking Proposed Lot 6

Plate 3 Sands associated with Munro subsoils on Proposed Lot 6

Plate 3(Above) Looking North up mapped drainage line- Plate 4 (Below) Looking east over

steep slopes of Lot 4/5

Plate 5 Example of large burrow associated with steeper slopes over lots 1-5

Plate 6 Small stock dam over boundary from Lot 1

Plate 7 – Auger recoveries Lot 1

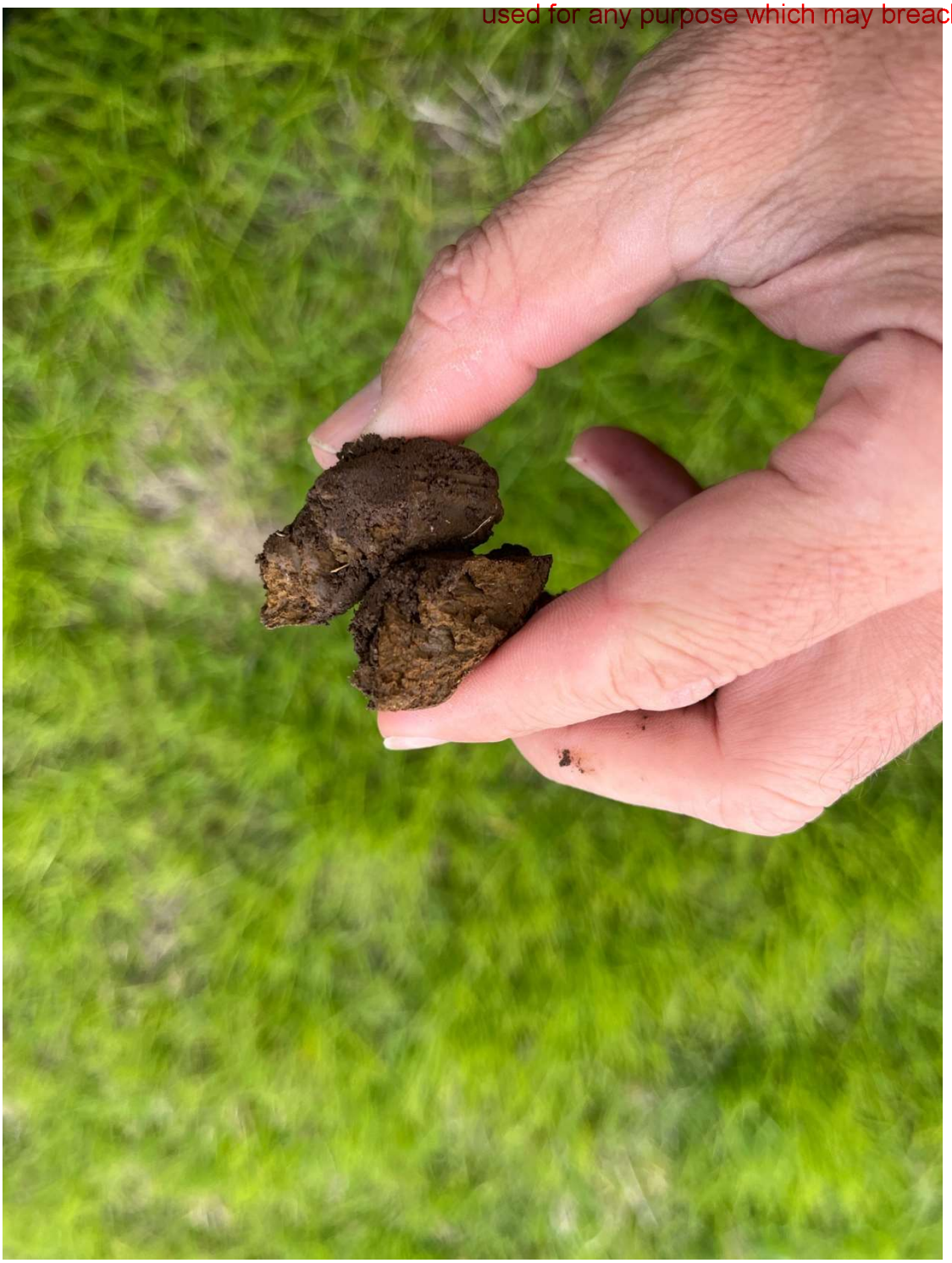
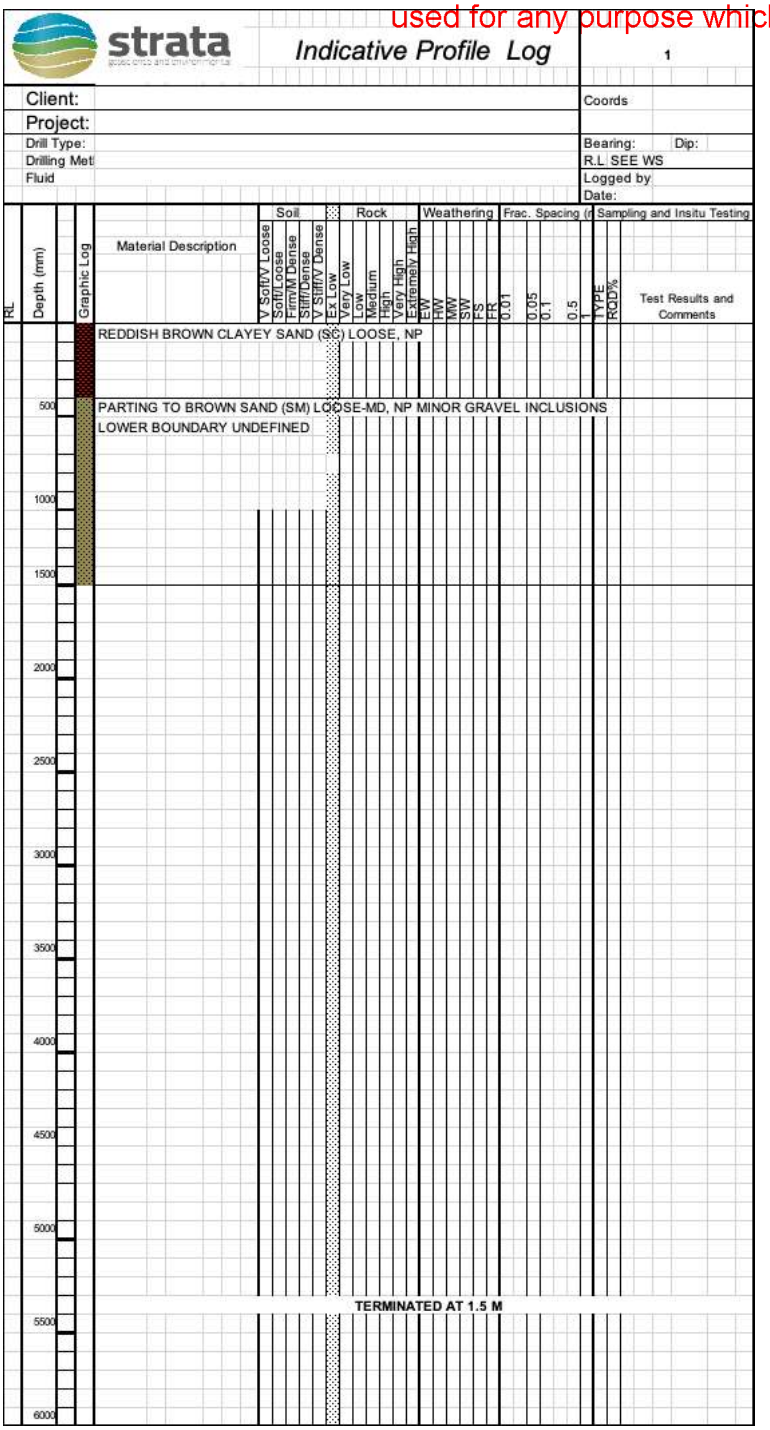


Plate 8 Sandy Clays from Lot 2 associate with the Stockdale Unit

Plate 9(Above) Undulating slope with multiple burrow disturbance under scarp of Lot 3 in Munro soil unit. Plate10 (Below) Looking north over flat scarp of Lot 1in Stockdale soil unit



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Indicative Profile Log 1

Client:
Project:
Drill Type:
Drilling Met
Fluid

Coords
Bearing: Dip:
R.L SEE WS
Logged by
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
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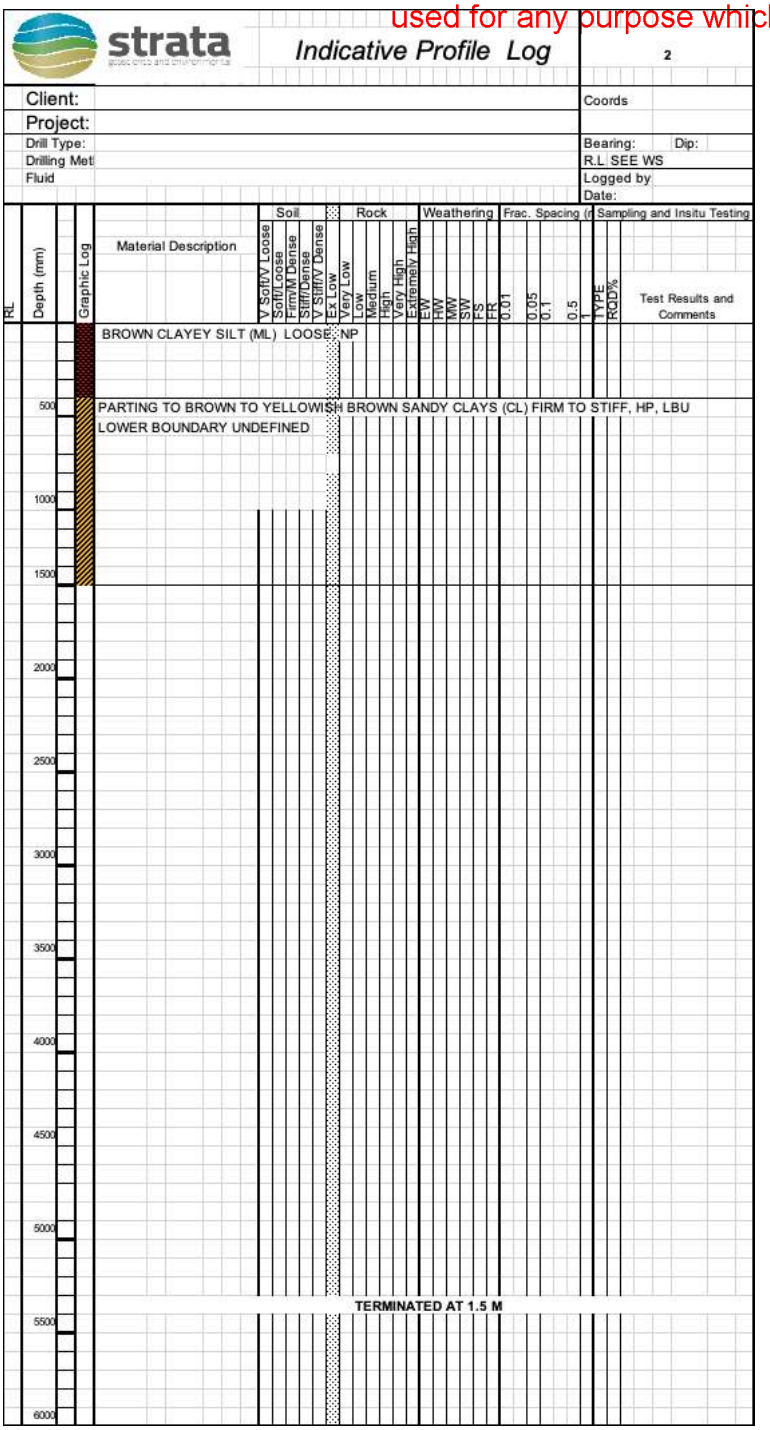
	500		PARTING TO BROWN SAND (SM) LOOSE-MD, NP MINOR GRAVEL INCLUSIONS LOWER BOUNDARY UNDEFINED						
	1000								
	1500		TERMINATED AT 1.5 M						
	2000								
	2500								
	3000								
	3500								
	4000								
	4500								
	5000								
	5500								
	6000								



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Indicative Profile Log 2

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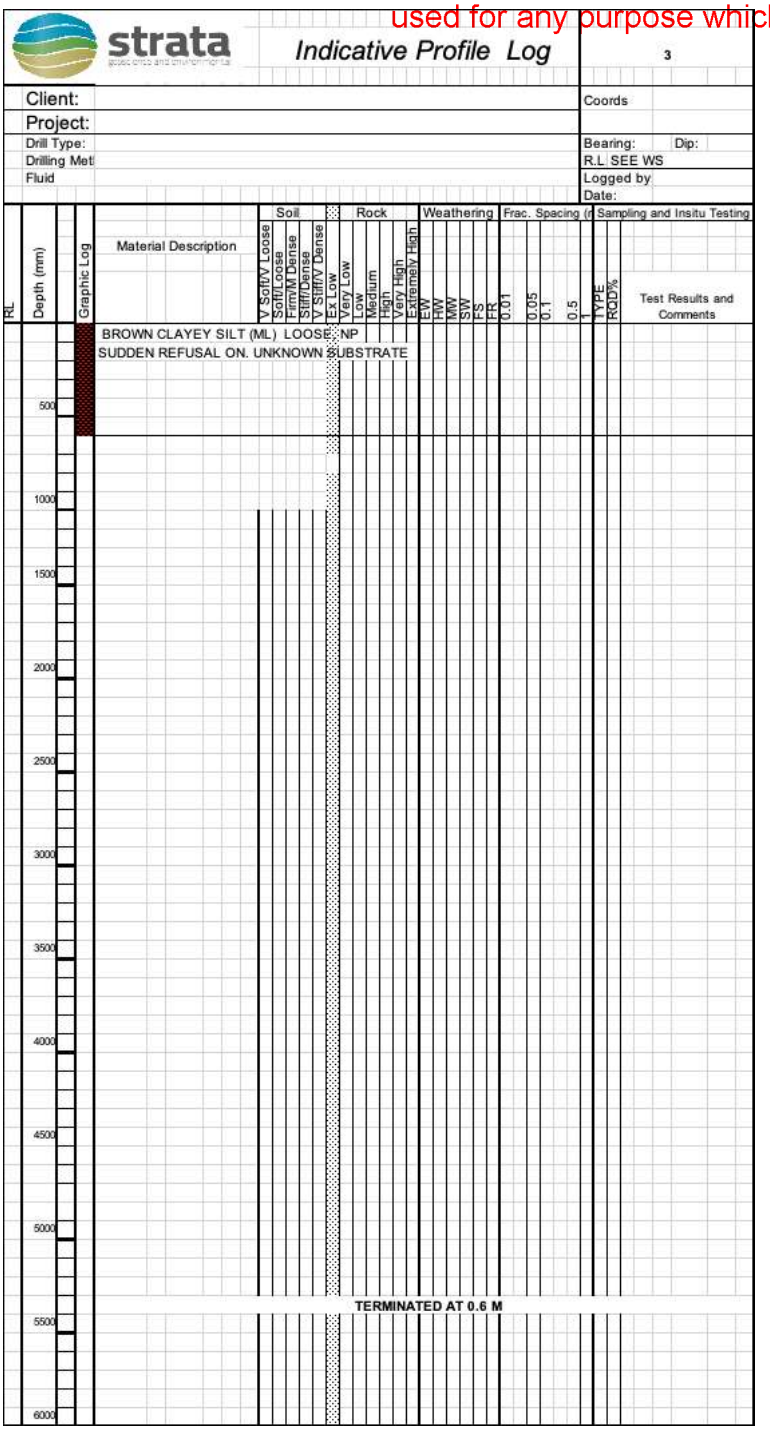
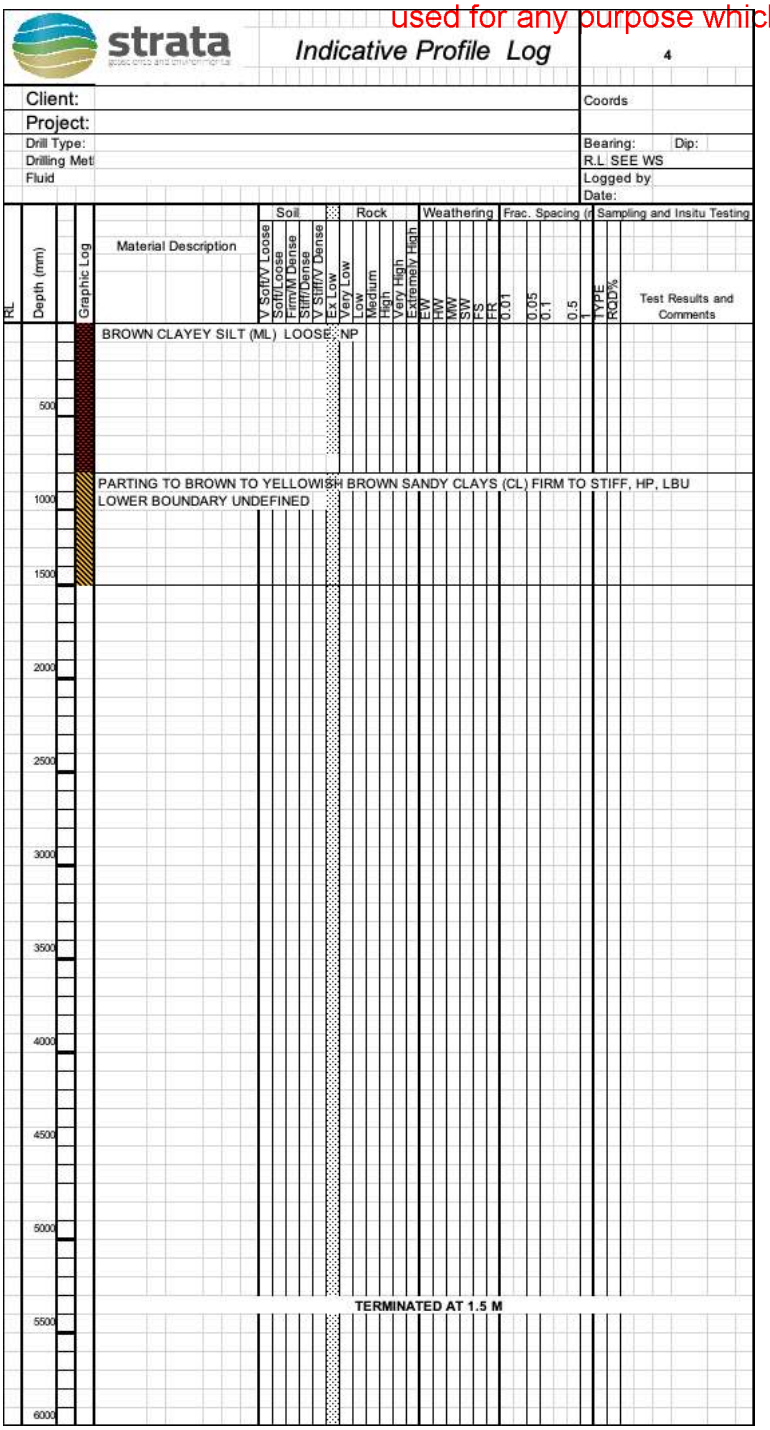
Project:
Drill Type:
Drilling Met
Fluid

Coords
Bearing: Dip:
R.L SEE WS
Logged by
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; SS; 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 SILT (ML) LOOSE, NP						
	500		PARTING TO BROWN TO YELLOWISH BROWN SANDY CLAYS (CL) FIRM TO STIFF, HP, LBU						
			LOWER BOUNDARY UNDEFINED						
	1000								
	1500		TERMINATED AT 1.5 M						
	2000								
	2500								
	3000								
	3500								
	4000								
	4500								
	5000								
	5500								
	6000								





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Indicative Profile Log 4

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Project:
Drill Type:
Drilling Met
Fluid

Coords
Bearing: Dip:
R.L SEE WS
Logged by
Date:

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			BROWN CLAYEY SILT (ML) LOOSE, NP																										
	500																												
	1000		PARTING TO BROWN TO YELLOWISH BROWN SANDY CLAYS (CL) FIRM TO STIFF, HP, LBU LOWER BOUNDARY UNDEFINED																										
	1500																												
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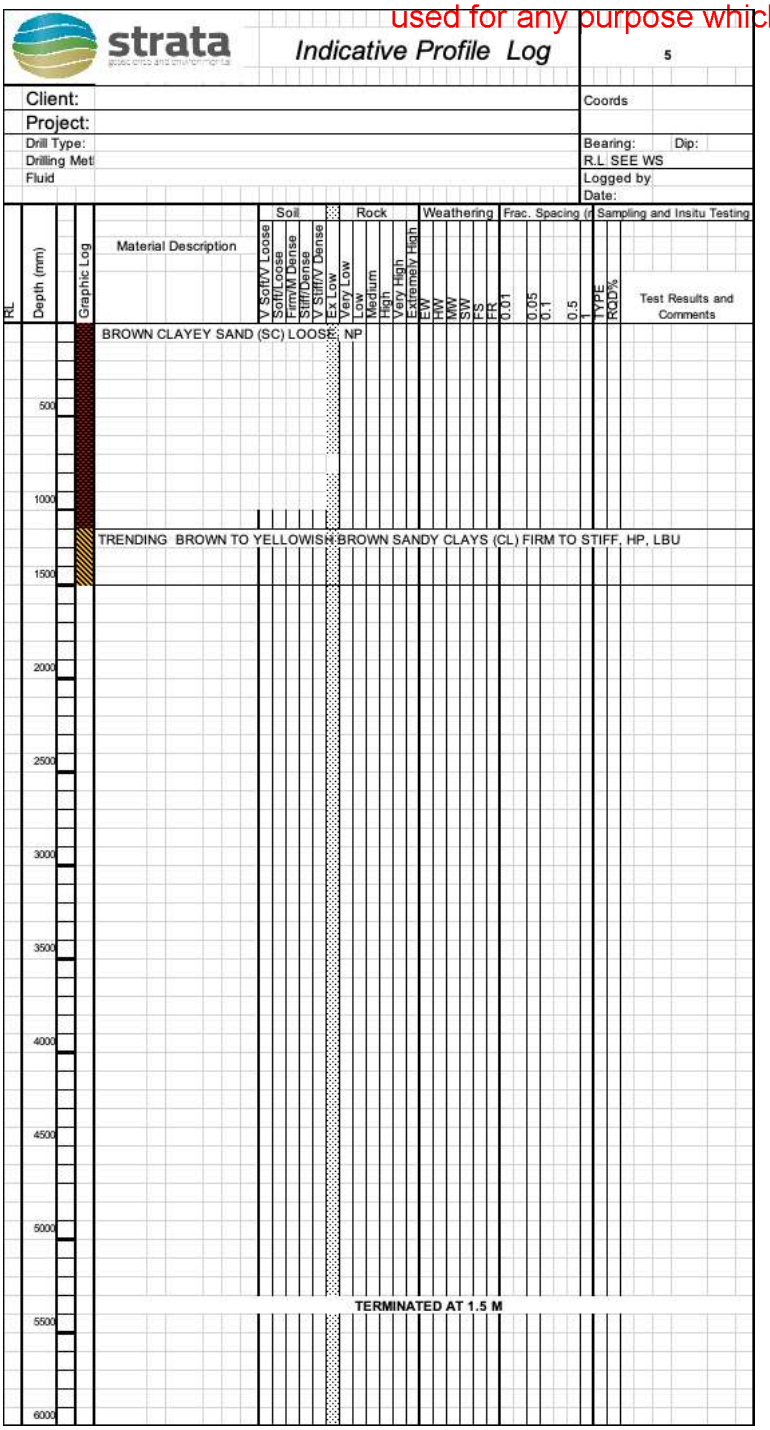
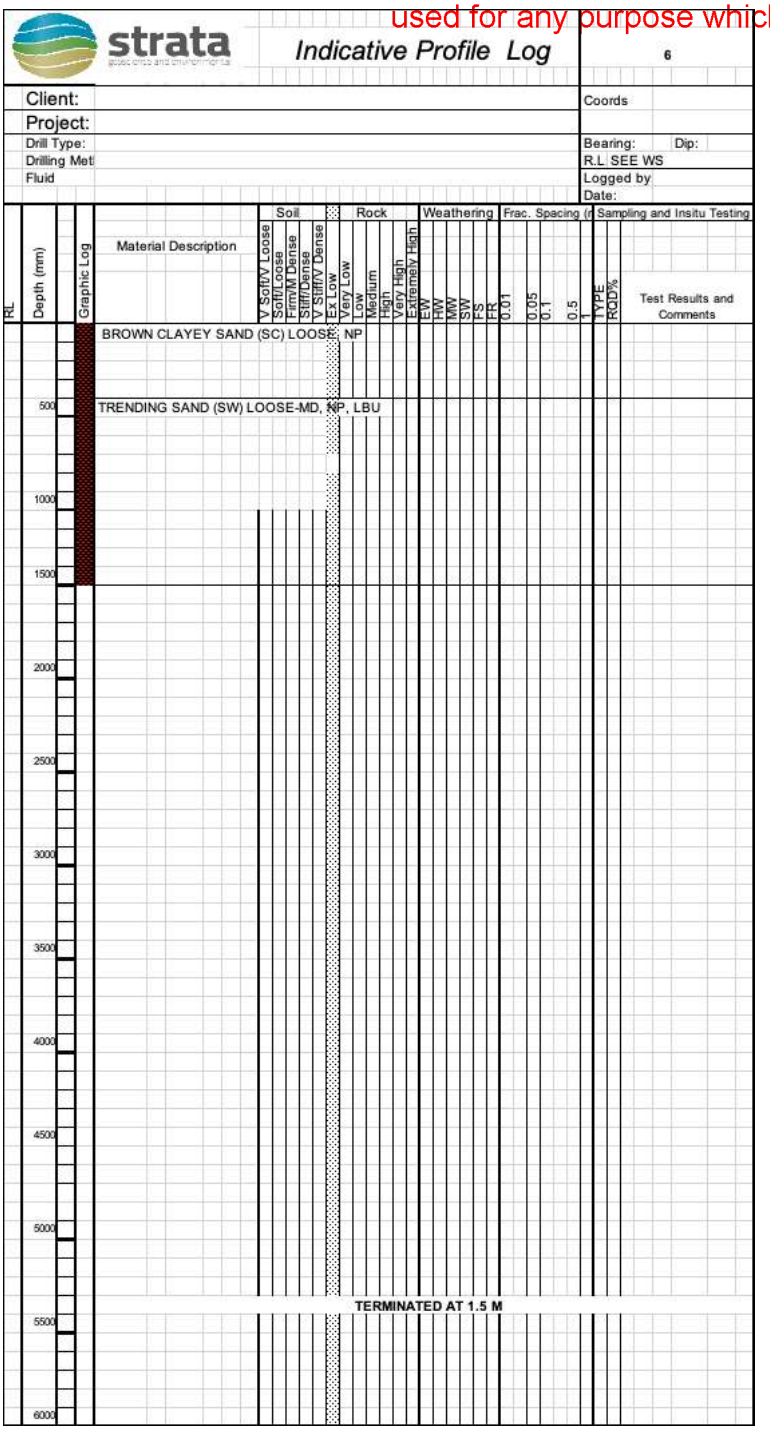
	4500																												
	5000																												
	5500		TERMINATED AT 1.5 M																										
	6000																												





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Indicative Profile Log 6

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Drill Type:
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Fluid

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Bearing: Dip:
R.L SEE WS
Logged by
Date:

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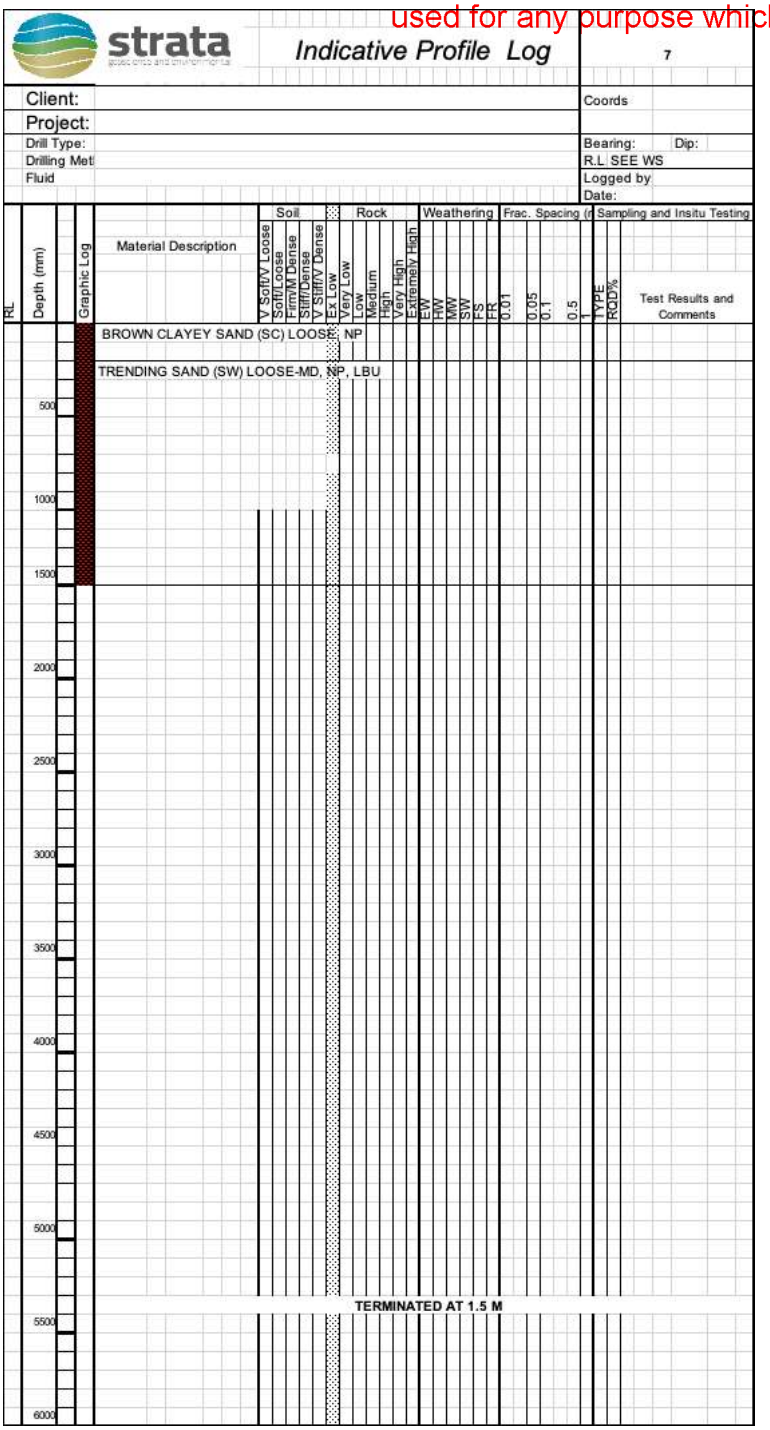
			BROWN CLAYEY SAND (SC) LOOSE, NP						
	500		TRENDING SAND (SW) LOOSE-MD, NP, LBU						
	1000								
	1500								
	2000								
	2500								
	3000								
	3500								
	4000								
	4500								
	5000								
	5500		TERMINATED AT 1.5 M						
	6000								



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Indicative Profile Log 7

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Project:
Drill Type:
Drilling Met
Fluid

Coords
Bearing: Dip:
R.L SEE WS
Logged by
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	SS	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																										
			TRENDING SAND (SW) LOOSE-MD, NP, LBU																										
	500																												
	1000																												
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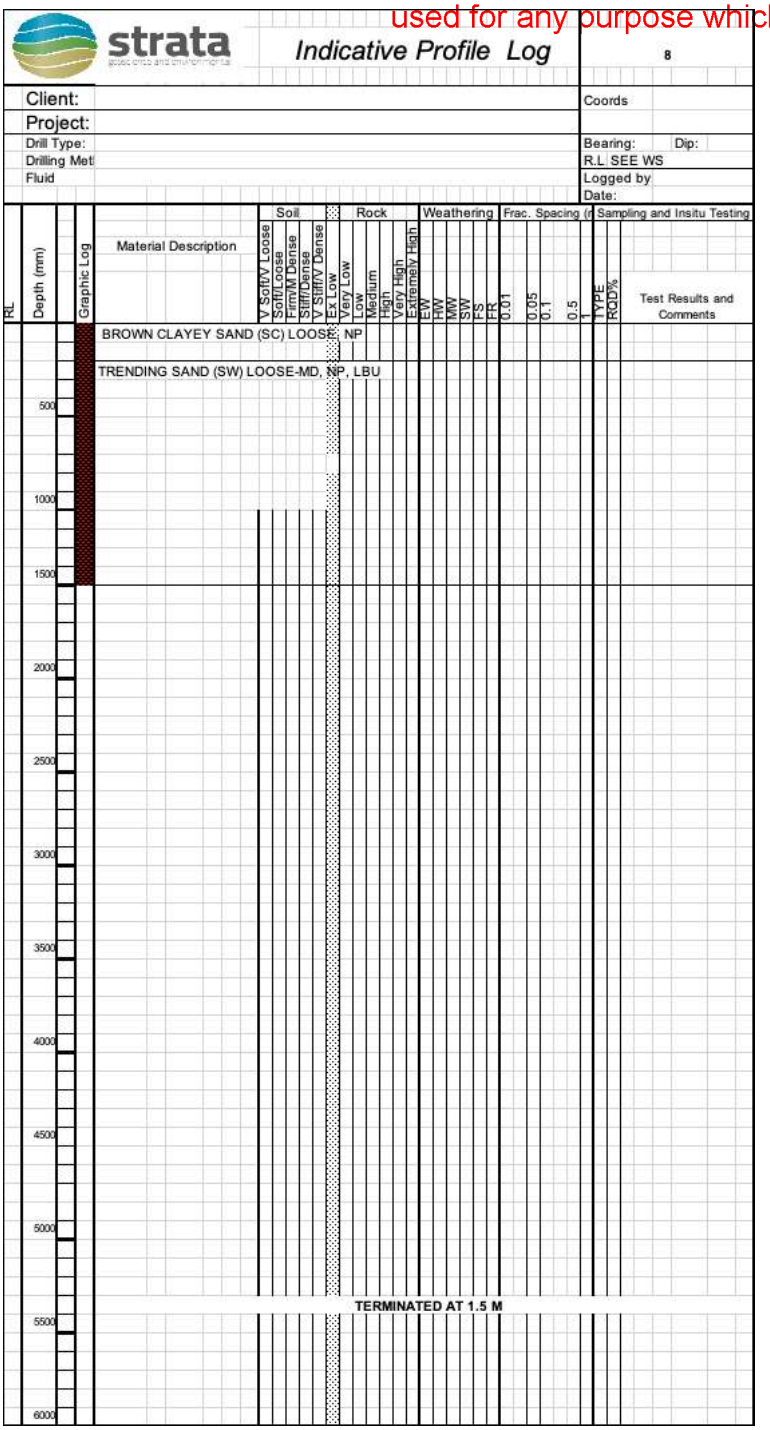

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Indicative Profile Log

8

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Project:
Drill Type:
Drilling Met
Fluid

Coords
Bearing: Dip:
R.L SEE WS
Logged by
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																										
			TRENDING SAND (SW) LOOSE-MD, NP, LBU																										
	500																												
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	5500		TERMINATED AT 1.5 M																										
	6000																												

Appendix 2 Climate Data, Water and Nutrient Balance Calculations (after VLCAF 2024)

Nominated Area Water Balance & Storage Calculations

Site Address: 7 Keys Court Wy Yung

INPUT DATA

Design Wastewater Flow	Q	1080	L/day
Design DIR	DI R	24.5	mm/week
Daily DIR		3.5	mm/day
Nominated Land Application Area	L	350	m sq
Crop Factor	C	0.7-0.8	unitless
Retained Rainfall		0.75	unitless
Rainfall Data	Bairnsdale		
Evaporation Data	Sale		

				6.1	5.7	4.3	2.8	1.8	1.5	1.6	2.2	2.9	3.8	4.6	5.5	daily evap
Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D	\	days	31	28	31	30	31	30	31	31	30	31	30	31	365
Rainfall	R	\	mm/month	50.7	44.4	47.6	56.7	43.6	63.2	45.9	37.3	50.2	62.6	80.2	62.5	644.9
Evaporation	E	\	mm/month	201.5	162.4	136.4	84	52.7	42	46.5	68.2	93	124	153	186	1349.7
Crop Factor	C			0.80	0.80	0.80	0.70	0.60	0.60	0.60	0.60	0.70	0.80	0.80	0.80	
OUTPUTS																
Evapotranspiration	ET	ExC	mm/month	161	130	109	59	32	25	28	41	65	99	122	149	1020.18
Percolation	B	(DIR/7)xD	mm/month	108.5	98	108.5	105.0	108.5	105.0	108.5	108.5	105.0	108.5	105.0	108.5	1277.5
Outputs		ET+B	mm/month	269.7	227.92	217.6	163.8	140.1	130.2	136.4	149.4	170.1	207.7	227.4	257.3	2297.7
INPUTS																
Retained Rainfall	RR	R*0.75	mm/month	38.025	33.3	35.7	42.525	32.7	47.4	34.425	27.975	37.65	46.95	60.15	46.875	483.675
Effluent Irrigation	W	(QxD)/L	mm/month	95.7	86.4	95.7	92.6	95.7	92.6	95.7	95.7	92.6	95.7	92.6	95.7	1126.3
Inputs		RR+W	mm/month	133.7	119.7	131.4	135.1	128.4	140.0	130.1	123.6	130.2	142.6	152.7	142.5	1610.0
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	0.0	0.0	9.8	3.5	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-136.0	-108.2	-86.3	-28.7	-11.8	9.8	-6.3	-25.8	-39.9	-65.1	-74.7	-114.8	-257.3
Cumulative Storage	M		mm	0.0	0.0	0.0	0.0	0.0	9.8	3.5	0.0	0.0	0.0	0.0	0.0	13.2
Maximum Storage for Nominated Area	N		mm	9.77												
	V	NxL	L	3420												
LAND AREA REQUIRED FOR ZERO STORAGE			m^2	145	155	184	267	312	391	328	276	245	208	194	159	

MINIMUM AREA REQUIRED FOR ZERO STORAGE: 391.3 m^2

Nutrient Balance

Site Address:

SUMMARY - LAND APPLICATION AREA REQUIRED BASED ON MOST LIMITING NUTRIENT BALANCE 358 m^2

INPUT DATA[1]

Wastewater Loading				Nutrient Crop Uptake					
Hydraulic Load	1080	L/day	Crop N Uptake	220	kg/ha/yr	which equals	60.27	$mg/m^2/day$
Effluent N Concentration	25	mg/L	Crop P Uptake	50	kg/ha/yr	which equals	13.70	$mg/m^2/day$
% N Lost to Soil Processes (Geary & Gardner 1996)	0.2	Decimal	Phosphorus Sorption					
Total N Loss to Soil	5400	mg/day	P-sorption result	240	mg/kg	which equals	3360	kg/ha
Remaining N Load after soil loss	21600	mg/day	Soil Bulk Density	1400	kg/m^3			
Effluent P Concentration	8	mg/L	Depth of Soil	1	m			
Design Life of System	25	yrs	% of Predicted P-sorp.[2]	0.5	Decimal			

NUTRIENT BALANCE BASED ON ANNUAL CROP UPTAKE RATES

Minimum Area required with zero buffer			Determination of Buffer Zone Size for a Nominated Land Application Area (LAA)		
Nitrogen	358	m^2	Nominated LAA Size	561	m^2
Phosphorus	269	m^2	Predicted N Export from LAA	-4.46	kg/year
			Predicted P Export from LAA	-3.42	kg/year
			Phosphorus Longevity for LAA	270	years
			Minimum Buffer Required for excess nutrient	0	m^2

PHOSPHORUS BALANCE

Using the nominated LAA Size

Nominated LAA Size	561	m^2			
Daily P Load	0.009	kg/day	→ Phosphorus generated over life of system	78.840	kg
Daily P Uptake	0.008	kg/day	→ Phosphorus vegetative uptake for life of system	0.125	kg/m^2
Measured P-sorption capacity	0.336	kg/m^2			
Assumed P-sorption capacity	0.168	kg/m^2	→ Phosphorus adsorbed over 50 years	0.168	kg/m^2
Site P-sorption capacity	94.248	kg	→ Desired Annual P Application Rate	6.575	kg/year
			which equals	0.018	kg/day
P-load to be sorbed	0.349	kg/year			

Relevant Climate Data

Monthly Rainfall (millimetres)

BAIRNSDALE AIRPORT

Station Number: 085279 · State: VIC · Opened: 1942 · Status: Open · Latitude: 37.88°S · Longitude: 147.57°E · Elevation: 49 m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1942							16.1	18.4	35.2	84.6	229.1	25.8	
1943	63.1	31.5	12.6	1.3	54.9	57.3	17.1	60.3	51.0	30.9	45.8	55.4	481.2
1944	15.0	5.6	22.8	85.8	225.4	12.0	10.5	23.8	23.8	32.4	25.5	45.6	528.2
1945	76.1	14.9	28.5	89.4	33.3	24.5	44.4	20.4	41.4	83.9	86.9		
1983								20.2	88.2	81.9	27.6	47.5	
1984	71.2	29.2	40.5	67.2	36.0	21.9	182.0	45.1	62.3	22.0	31.4	40.2	649.0
1985	39.4	6.4	60.6	81.6	41.6	91.0	33.2	43.8	70.4	111.2	141.8	153.0	874.0
1986	58.4	7.8	9.8	28.8	44.4	18.4	37.2	40.4	56.3	45.4	136.4	45.6	528.9
1987	39.4	58.4	45.6	21.3	43.6	35.8	105.0	31.0	40.8	41.8	35.2	81.8	579.7
1988	38.8	18.4	53.0	77.8	78.2	23.0	32.6	46.8	96.8	30.8	275.6	45.6	817.4
1989	10.2	31.4	81.4	60.0	68.2	103.4	88.2	36.0	47.0	72.2	51.0	65.2	714.2
1990	2.6	45.4	46.6	167.4	26.6	16.0	39.0	63.0	77.0	106.8	35.6	42.6	668.6
1991	108.4	20.6	43.0	22.4	16.2	111.2	128.2	47.2	51.2	35.0	19.0	69.2	671.6
1992	95.0	52.4	70.8	46.4	22.8	91.4	22.8	55.0	130.6	77.8	111.4	127.8	904.2
1993	53.0	61.8	72.2	17.0	19.5	22.8	65.8	26.9	172.7	116.8	49.5	76.8	754.8
1994	33.8	206.8	33.2	37.4	35.6	47.0	16.0	12.6	46.6	47.8	88.0	56.1	660.9
1995	80.8	46.4	36.8	35.4	52.2	42.2	40.8	27.1	57.8	123.0	112.0	88.2	742.7
1996	101.8	100.2	31.4	48.4	39.0	26.4	85.6	31.8	54.6	44.4	86.4	39.0	689.0
1997	41.0	14.6	73.8	10.6	*35.2*	42.6	19.0	11.2	47.9	39.2	44.0	44.0	*423.1*
1998	29.1	30.4	19.0	21.6	15.2	295.1	25.8	34.0	27.0	64.4	122.0	67.0	750.6
1999	111.3	99.6	66.2	44.7	35.8	25.2	32.7	32.8	32.4	81.8	34.2	43.8	640.5
2000	55.4	26.2	83.8	53.7	*122.3*	*49.8*	*44.6*	*45.2*		*57.8*	*60.6*	*20.0*	
2001	*43.8*	*33.6*	*47.4*	*98.0*	*36.2*	*42.6*	*82.0*	65.0	*53.2*	*61.8*	*97.8*	*71.8*	*733.2*
2002	*31.0*	*90.2*	*41.2*	*138.8*	*45.4*	*74.0*	*21.8*	*5.4*	*22.8*	*32.8*	*57.2*	*28.0*	*588.6*
2003	*12.4*	*41.4*	*20.4*	*78.2*	*15.6*	*23.4*	*29.6*	*44.6*	*34.4*	*95.0*	*63.0*	*60.4*	*518.4*
2004	*39.8*	*37.6*	*3.8*	*181.0*	*44.8*	*16.6*	*38.2*	*49.8*	*48.6*	*38.0*	*86.0*	*77.2*	*661.4*
2005	*59.2*	*71.0*	*31.8*	*32.6*	*14.8*	*26.2*	*94.8*	*35.4*	*51.6*	*40.8*	*86.2*	*53.8*	*598.2*
2006	*50.4*	*10.0*	*15.0*	*36.6*	*83.2*	*19.6*	*61.6*	*40.2*	*36.6*	*8.0*	*13.8*	*18.8*	*393.8*
2007	*3.2*	*108.4*	*50.8*	*39.2*	*12.8*	*322.6*	*51.6*	*27.8*	*13.0*	*27.8*	*107.4*	*72.4*	*837.0*
2008	*92.2*	*55.6*	*10.8*	*19.6*	*22.8*	*10.2*	*40.0*	*24.0*	*19.2*	*12.6*	*137.2*	*60.8*	*505.0*
2009	*9.0*	*44.2*	*12.6*	*29.8*	*15.0*	*18.0*	*22.4*	*38.0*	*51.2*	*84.8*	*44.0*	*50.2*	*419.2*
2010	*33.2*	*91.0*	*44.6*	*18.4*	*68.0*	*42.0*	*10.8*	*50.2*	*25.6*	*93.6*	*55.6*	*92.2*	*625.2*
2011	*31.2*	*76.6*	*76.8*	*60.0*	*34.0*	*63.2*	*67.8*	*46.6*	*42.4*	*76.0*	*106.0*	*56.8*	*737.4*
2012	*35.2*	*57.2*	*144.0*	*33.6*	*74.0*	*95.4*	*13.4*	*34.2*	*29.4*	*38.2*	*47.2*	*25.6*	*627.4*
2013	*2.8*	*46.6*	*65.8*	*35.4*	*16.0*	*262.0*	*12.4*	*22.2*	*62.2*	*65.0*	*90.0*	*43.0*	*723.4*
2014	*23.6*	*12.8*	*41.8*	*97.2*	*31.0*	*58.8*	*20.6*	*57.4*	*45.6*	*58.8*	*47.4*	*130.6*	*625.6*
2015	*66.8*	*38.0*	*13.4*	*145.8*	*18.8*	*44.8*	*47.4*	*56.2*	*21.8*	*54.2*	*88.0*	*57.4*	*652.6*
2016	*103.4*	*7.2*	*88.4*	*27.0*	*48.2*	*100.4*	*107.2*	*21.4*	*91.8*	*93.2*	*56.8*	*28.6*	*773.6*
2017	*16.4*	*28.8*	*35.8*	*64.2*	*14.4*	*16.0*	*14.0*		*30.6*	*64.4*	*19.4*	*127.4*	
2018	*47.4*	*28.8*	*14.6*	*6.8*	*35.4*	*64.8*	*26.2*	*17.8*	*28.0*	*39.0*	*69.2*	*42.2*	*420.2*
2019	*33.0*	*25.4*	*54.6*	*6.8*	*59.4*	*38.4*	*38.2*	*13.8*	*33.4*	*11.4*	*87.4*	*6.6*	*408.4*
2020	*127.6*		*34.6*	91.4	*22.2*	*12.0*	*90.4*	*52.4*	5.4	*87.6*	*43.0*	*94.0*	
2021	*50.4*	32.0	126.8	*13.4*	*74.4*	*117.2*	*12.0*	*65.6*	*89.2*	*99.0*	*170.4*	*83.8*	*934.2*
2022	125.8	21.8	*94.2*	*117.8*	*28.2*	*37.4*	25.0	*70.8*	*43.2*	*75.8*	*85.8*	*86.8*	*812.6*
2023	*16.8*	13.6	*65.8*	*40.8*	*43.0*	*32.6*	*5.2*	*30.0*	*18.6*	*128.2*	*102.4*	*101.4*	*598.4*
2024	*50.6*	*28.2*	*27.8*	*65.4*	*13.8*	86.8							

Quality control: 12.3 Done & acceptable, *12.3* Not completed or unknown

Monthly Rainfall (millimetres)

BAIRNSDALE AIRPORT

Station Number: 085279 · State: VIC · Opened: 1942 · Status: Open · Latitude: 37.88°S · Longitude: 147.57°E · Elevation: 49 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	50.7	44.4	47.6	56.7	43.6	63.2	45.9	37.3	50.2	62.6	80.2	62.5	648.0
Lowest	2.6	5.6	3.8	1.3	12.8	10.2	5.2	5.4	5.4	8.0	13.8	6.6	393.8
5th percentile	4.1	7.3	11.1	7.4	14.5	12.6	11.0	12.8	18.7	14.5	20.6	20.8	418.1
10th percentile	10.9	10.6	12.8	14.5	15.1	16.2	12.7	18.0	22.1	29.0	29.1	26.5	422.5
Median	42.4	32.0	42.4	42.8	35.7	42.1	35.2	35.7	46.1	61.8	69.2	56.5	652.6
90th percentile	102.9	90.8	83.1	111.9	74.3	108.9	93.5	59.4	88.9	103.7	136.9	99.2	821.3
95th percentile	110.9	100.1	93.3	144.8	82.4	240.3	106.9	64.7	96.1	115.7	164.7	127.7	877.0
Highest	127.6	206.8	144.0	181.0	225.4	322.6	182.0	70.8	172.7	128.2	275.6	153.0	934.2

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml.

Product code: IDCJAC0001 reference: 0108749891 Created on Tue 02 Jul 2024 11:32:13 AM AEST

Australian Government
Bureau of Meteorology

Mean total evaporation (mm)

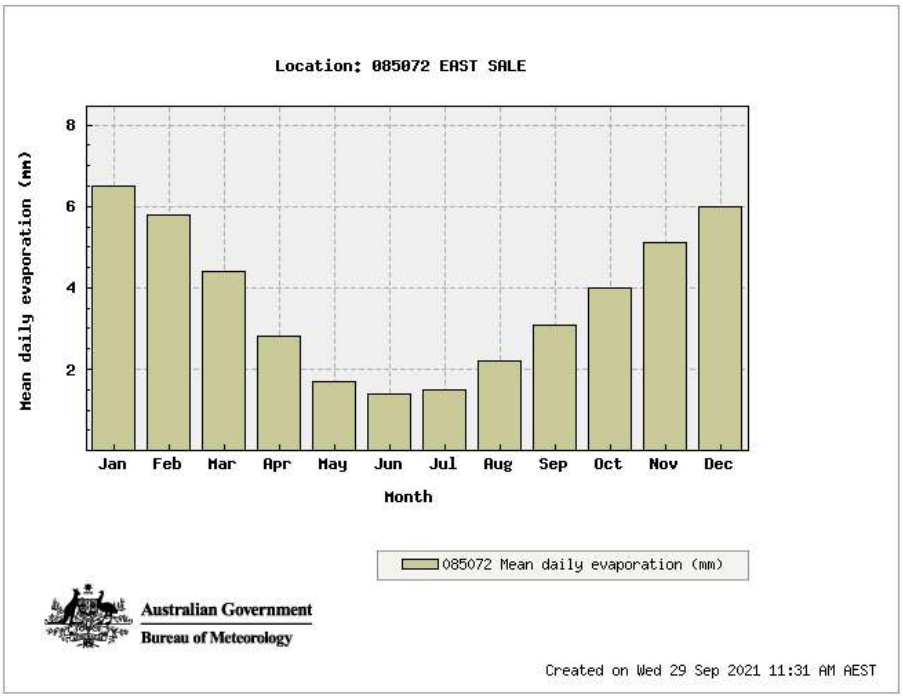
Site details

Site name: EAST SALE
Site number: 085072
Commenced: 1943
Latitude: 38.12 °S
Longitude: 147.13 °E
Elevation: 4 m
Operational status: Still Open

Yearly data | 30 year statistics | Comparison site | First statistic | Second statistic

Note: Only one option can be redrawn at a time

Include data for the year: 2015 Redraw



Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Mean daily evaporation (mm) for years 1971 to 2015	6.5	5.8	4.4	2.8	1.7	1.4	1.5	2.2	3.1	4.0	5.1	6.0	3.7	44

12.3 = Not quality controlled

Appendix 3 Laboratory Results

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Certificate of Analysis

Strata Geoscience and Environmental P/L
17 Little Arthur Street
North Hobart
TAS 7000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Sven Nielsen**

Report **1095997-S**
Project name 7 KEYS COURT WY YUNG LCA
Received Date May 10, 2024

Client Sample ID			**BH01 0.5M**	**BH02 0.5M**	**BH02 1.0M**	**BH03 0.5M**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M24-My0030751**	**M24-My0030752**	**M24-My0030753**	**M24-My0030754**
Date Sampled			**May 09, 2024**	**May 09, 2024**	**May 09, 2024**	**May 09, 2024**
Test/Reference	LOR	Unit				
Ammonia (as N)	5	mg/kg	7.2	12	11	9.9
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	17	21	18	27
Nitrate & Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	9.1
Nitrate (as N)	5	mg/kg	< 5	< 5	< 5	9.0
Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Organic Nitrogen (as N)*	10	mg/kg	422.8	2188	979	2290.1
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	6.6	7.4	7.0	7.4
Total Kjeldahl Nitrogen (as N)	10	mg/kg	430	2200	990	2300
Total Nitrogen (as N)*	10	mg/kg	430	2200	990	2300
Exchangeable Sodium Percentage (ESP)	0.1	%	0.9	3.4	16	1.2
Magnesium (exchangeable)	0.1	meq/100g	0.5	2.0	8.5	3.1
Phosphorus	5	mg/kg	140	350	73	280
Potassium (exchangeable)	0.1	meq/100g	0.1	0.2	0.2	0.5
Sodium (exchangeable)	0.1	meq/100g	< 0.1	0.3	1.9	0.2
Emerson Class Number	1	units	see attached	see attached	see attached	see attached
Particle Size by Sieve analysis*						
<63 Micron	0.1	%w/w	3.1	2.8	70	5.9
>2000 Micron	0.1	%w/w	1.7	19	1.8	12
1000-2000 Micron	0.1	%w/w	8.7	15	0.8	16
125-300 Micron	0.1	%w/w	64	35	4.0	36
300-500 Micron	0.1	%w/w	7.3	8.3	0.7	9.0
500-1000 Micron	0.1	%w/w	8.8	11	1.0	12
63-125 Micron	0.1	%w/w	6.7	9.3	22	8.1
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	2.1	4.9	1.4	9.3
Cation Exchange Capacity	0.5	meq/100g	2.8	7.4	12	13
Sample Properties						
% Moisture	1	%	6.3	20	25	18

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Client Sample ID			BH04 0.5M	BH04 1.0M	BH05 0.5M	BH05 1.0M
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M24-My0030755	M24-My0030756	M24-My0030757	M24-My0030758
Date Sampled			May 09, 2024	May 09, 2024	May 09, 2024	May 09, 2024
Test/Reference	LOR	Unit				
Ammonia (as N)	5	mg/kg	11	11	9.9	12
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	23	17	18	15
Nitrate & Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrate (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Organic Nitrogen (as N)*	10	mg/kg	1589	869	1790.1	988
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	6.1	7.2	7.5	6.6
Total Kjeldahl Nitrogen (as N)	10	mg/kg	1600	880	1800	1000
Total Nitrogen (as N)*	10	mg/kg	1600	880	1800	1000
Exchangeable Sodium Percentage (ESP)	0.1	%	6.5	16	1.8	8.5
Magnesium (exchangeable)	0.1	meq/100g	2.1	6.8	2.3	6.1
Phosphorus	5	mg/kg	150	130	290	420
Potassium (exchangeable)	0.1	meq/100g	0.5	0.4	0.6	0.5
Sodium (exchangeable)	0.1	meq/100g	0.3	1.4	0.1	0.7
Emerson Class Number	1	units	see attached	see attached	see attached	see attached
Particle Size by Sieve analysis*						
<63 Micron	0.1	%w/w	2.4	57	0.7	53
>2000 Micron	0.1	%w/w	17	2.8	41	9.7
1000-2000 Micron	0.1	%w/w	12	0.7	5.6	1.1
125-300 Micron	0.1	%w/w	46	5.6	36	6.9
300-500 Micron	0.1	%w/w	4.8	0.3	3.6	0.5
500-1000 Micron	0.1	%w/w	7.4	0.7	4.7	1.6
63-125 Micron	0.1	%w/w	9.7	33	7.5	27
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	2.0	0.5	3.2	1.2
Cation Exchange Capacity	0.5	meq/100g	5.0	9.1	6.2	8.5
Sample Properties						
% Moisture	1	%	12	15	13	18

Client Sample ID			BH06 0.5M	BH06 1.0M
Sample Matrix			Soil	Soil
Eurofins Sample No.			M24-My0030759	M24-My0030760
Date Sampled			May 09, 2024	May 09, 2024
Test/Reference	LOR	Unit		
Ammonia (as N)	5	mg/kg	9.5	8.3
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	32	10
Nitrate & Nitrite (as N)	5	mg/kg	7.6	< 5
Nitrate (as N)	5	mg/kg	7.5	< 5
Nitrite (as N)	5	mg/kg	< 5	< 5
Organic Nitrogen (as N)*	10	mg/kg	1090.5	291.7
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	5.6	6.3
Total Kjeldahl Nitrogen (as N)	10	mg/kg	1100	300
Total Nitrogen (as N)*	10	mg/kg	1100	300
Exchangeable Sodium Percentage (ESP)	0.1	%	0.4	1.5
Magnesium (exchangeable)	0.1	meq/100g	0.6	0.3
Phosphorus	5	mg/kg	120	57

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Client Sample ID			BH06 0.5M	BH06 1.0M
Sample Matrix			Soil	Soil
Eurofins Sample No.			M24-My0030759	M24-My0030760
Date Sampled			May 09, 2024	May 09, 2024
Test/Reference	LOR	Unit		
Potassium (exchangeable)	0.1	meq/100g	0.3	0.1
Sodium (exchangeable)	0.1	meq/100g	< 0.1	< 0.1
Emerson Class Number	1	units	see attached	see attached
Particle Size by Sieve analysis*				
<63 Micron	0.1	%w/w	9.3	3.3
>2000 Micron	0.1	%w/w	3.5	5.6
1000-2000 Micron	0.1	%w/w	15	21
125-300 Micron	0.1	%w/w	40	31
300-500 Micron	0.1	%w/w	4.4	14
500-1000 Micron	0.1	%w/w	14	20
63-125 Micron	0.1	%w/w	14	4.4
Cation Exchange Capacity				
Calcium (exchangeable)	0.1	meq/100g	2.4	0.8
Cation Exchange Capacity	0.5	meq/100g	3.3	1.3
Sample Properties				
% Moisture	1	%	9.8	8.2

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P			
Ammonia (as N)	Melbourne	May 14, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrate & Nitrite (as N)	Melbourne	May 14, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrate (as N)	Melbourne	May 14, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrite (as N)	Melbourne	May 14, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Organic Nitrogen (as N)*	Melbourne	May 10, 2024	7 Days
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 14, 2024	28 Days
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Phosphorus	Melbourne	May 14, 2024	180 Days
- Method: LTM-MET-3010 Alkali Metals Sulfur Silicon and Phosphorus by ICP-AES			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	Melbourne	May 14, 2024	7 Days
- Method: LTM-INO-4030 Conductivity			
Exchangeable Sodium Percentage (ESP)	Melbourne	May 15, 2024	28 Days
- Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)			
pH (1:5 Aqueous extract at 25 °C as rec.)	Melbourne	May 14, 2024	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Particle Size by Sieve analysis*	Melbourne	May 14, 2024	28 Days
- Method: LTM-INO-4460 Particle Size Distribution (Sieving)			
Magnesium (exchangeable)	Melbourne	May 15, 2024	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Potassium (exchangeable)	Melbourne	May 15, 2024	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Sodium (exchangeable)	Melbourne	May 15, 2024	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Cation Exchange Capacity	Melbourne	May 15, 2024	28 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
% Moisture	Melbourne	May 10, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name: Strata Geoscience and Environmental P/L
Address: 17 Little Arthur Street
North Hobart
TAS 7000

Project Name: 7 KEYS COURT WY YUNG LCA

Order No.:
Report #: 1095997
Phone:
Fax:

Received: May 10, 2024 9:20 AM
Due: May 20, 2024
Priority: 6 Day
Contact Name: Sven Nielsen

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						Emerson Class Number	pH (1:5 Aqueous extract at 25 °C as rec.)	Particle Size by Sieve analysis*	Exchangeable Cations	Moisture Set	Cation Exchange Capacity	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	Exchangeable Sodium Percentage (ESP)
Melbourne Laboratory - NATA # 1261 Site # 1254							X	X	X	X	X	X	X
External Laboratory						X							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	BH01 0.5M	May 09, 2024		Soil	M24-My0030751	X	X	X	X	X	X	X	X
2	BH02 0.5M	May 09, 2024		Soil	M24-My0030752	X	X	X	X	X	X	X	X
3	BH02 1.0M	May 09, 2024		Soil	M24-My0030753	X	X	X	X	X	X	X	X
4	BH03 0.5M	May 09, 2024		Soil	M24-My0030754	X	X	X	X	X	X	X	X
5	BH04 0.5M	May 09, 2024		Soil	M24-My0030755	X	X	X	X	X	X	X	X
6	BH04 1.0M	May 09, 2024		Soil	M24-My0030756	X	X	X	X	X	X	X	X
7	BH05 0.5M	May 09, 2024		Soil	M24-My0030757	X	X	X	X	X	X	X	X
8	BH05 1.0M	May 09, 2024		Soil	M24-My0030758	X	X	X	X	X	X	X	X
9	BH06 0.5M	May 09, 2024		Soil	M24-My0030759	X	X	X	X	X	X	X	X
10	BH06 1.0M	May 09, 2024		Soil	M24-My0030760	X	X	X	X	X	X	X	X
Test Counts						10	10	10	10	10	10	10	10

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Conductivity (1:5 aqueous extract at 25 °C as rec.)	uS/cm	< 10			10	Pass	
Phosphorus	mg/kg	< 5			5	Pass	
Method Blank							
Total Kjeldahl Nitrogen (as N)	mg/kg	< 10			10	Pass	
Method Blank							
Exchangeable Sodium Percentage (ESP)	%	< 0.1			0.1	Pass	
Magnesium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Method Blank							
Cation Exchange Capacity							
Calcium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity	meq/100g	< 0.5			0.5	Pass	
Method Blank							
Exchangeable Sodium Percentage (ESP)	%	< 0.1			0.1	Pass	
Magnesium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Method Blank							
Cation Exchange Capacity							
Calcium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity	meq/100g	< 0.5			0.5	Pass	
Method Blank							
Phosphorus	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Conductivity (1:5 aqueous extract at 25 °C as rec.)	%	99			70-130	Pass	
LCS - % Recovery							
Total Kjeldahl Nitrogen (as N)	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	M24-My0030753	CP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus	M24-My0025402	NCP	mg/kg	10000	rep2770.81258882312	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M24-My0035784	NCP	%	15	15	1.3	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M24-My0030752	CP	mg/kg	12	12	<1	30%	Pass	
Nitrate & Nitrite (as N)	M24-My0030752	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Nitrite (as N)	M24-My0030752	CP	mg/kg	< 5	< 5	<1	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	M24-My0030752	CP	pH Units	7.4	7.3	pass	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M24-My0030752	CP	mg/kg	2200	2200	<1	30%	Pass	

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Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M24-My0030757	CP	mg/kg	9.9	9.8	1.2	30%	Pass	
Nitrate & Nitrite (as N)	M24-My0030757	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Nitrite (as N)	M24-My0030757	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Exchangeable Sodium Percentage (ESP)	M24-My0030757	CP	%	1.8	1.8	2.0	30%	Pass	
Magnesium (exchangeable)	M24-My0030757	CP	meq/100g	2.3	2.3	<1	30%	Pass	
Potassium (exchangeable)	M24-My0030757	CP	meq/100g	0.6	0.6	<1	30%	Pass	
Sodium (exchangeable)	M24-My0030757	CP	meq/100g	0.1	0.1	1.3	30%	Pass	
Duplicate									
Particle Size by Sieve analysis*				Result 1	Result 2	RPD			
<63 Micron	M24-My0030757	CP	%w/w	0.7	1.1	43	30%	Fail	Q15
63-125 Micron	M24-My0030757	CP	%w/w	7.5	7.1	5.9	30%	Pass	
Duplicate									
Cation Exchange Capacity				Result 1	Result 2	RPD			
Calcium (exchangeable)	M24-My0030757	CP	meq/100g	3.2	3.3	1.8	30%	Pass	
Cation Exchange Capacity	M24-My0030757	CP	meq/100g	6.2	6.3	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	M24-My0030758	CP	uS/cm	15	16	9.8	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	M24-My0030758	CP	pH Units	6.6	6.8	pass	30%	Pass	
Exchangeable Sodium Percentage (ESP)	M24-My0030758	CP	%	8.5	8.9	3.7	30%	Pass	
Magnesium (exchangeable)	M24-My0030758	CP	meq/100g	6.1	6.0	<1	30%	Pass	
Potassium (exchangeable)	M24-My0030758	CP	meq/100g	0.5	0.5	<1	30%	Pass	
Sodium (exchangeable)	M24-My0030758	CP	meq/100g	0.7	0.8	3.4	30%	Pass	
Duplicate									
Cation Exchange Capacity				Result 1	Result 2	RPD			
Calcium (exchangeable)	M24-My0030758	CP	meq/100g	1.2	1.2	<1	30%	Pass	
Cation Exchange Capacity	M24-My0030758	CP	meq/100g	8.5	8.5	<1	30%	Pass	

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Comments

Emerson Class Number analysed by: East West Enviroag: report reference: EW241079

Sample Integrity

Custody Seals Intact (If used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Harry Bacalis	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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☐ **Sydney** Unit F3 - 6 Building F, 16 Mars Road, Lane Cove Phone: +612 9900 8400 Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane** Unit 1-21 Smallwood Place, Murarrie Phone: +617 3902 4600 Email: EnviroSampleQLD@eurofins.com.au

☑ **Melbourne** 2 Kingston Town Close, Oakleigh, VIC 3166 Phone: +613 8564 5000 Fax: +613 8564 5090 Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 1 of 1

Company Name: Strata Geoscience	Contact Name: sven nielsen 0413545358	Purchase Order:	COC Number:
Office Address:	Project Manager:	PROJECT Number:	Eurofins | mgt quote ID:
	Email for results: sven@strataconsulting.com.au	PROJECT Name: 7 KEYS COURT WY YUNG LCA	

Special Directions & Comments:

Eurofins \| mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	EMMERSON CLASS	EC	pH	EXCHANGABLE CATIONS	%CEC	ESP	PARTICLE SIZE DISTRIBUTION (SIEVE)	SUITE B19D NUTRIENTS
1	BHO1 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
2	BH02 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
3	BH02 1.0M	9/05/2024	S	X	X	X	X	X	X	X	X
4	BH03 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
5	BH04 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
6	BH04 1.0M	9/05/2024	S	X	X	X	X	X	X	X	X
7	BH05 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
8	BH05 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
9	BH06 0.5M	9/05/2024	S	X	X	X	X	X	X	X	X
10	BH06 1.0M	9/05/2024	S	X	X	X	X	X	X	X	X
11											
12											
13											
14											
15											
16											

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers: 1LP | 250P | 125P | 1LA | 40mL vial | 125mL A | Jar — Sample comments:

Laboratory Staff		Turn around time	Method Of Shipment	
Relinquished By:	Received By: Howie A	☐ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	Temperature on arrival:
Date & Time:	Date & Time: 10/5 9:20	☑ 5DAY ☐ 10 DAY ☐ Other	☐ Hand Delivered X	Report number:
Signature:	Signature:		☑ Postal	#1084447
			Courier Consignment #:	

QS3009_R1 Issue Date: 22 August 2013 Page 1 of 1

13.2°C NO ICE

eastwest
geo ag enviro

82 Plain Street Tamworth NSW 2340
e admin@eastwestonline.com.au
t 02 6762 1733
f 02 6765 9109
abn 82 125 442 382

eastwestonline.com.au

ANALYSIS REPORT SOIL

PROJECT NO: EW241079		**Date of Issue:**	**23/05/2024**
Customer:	EUROFINS MELBOURNE	Report No:	1
Address:	6 Monterey Road DANDENONG SOUTH VIC 3175	Date Received:	16/05/2024
		Matrix:	Soil
Attention:	Savini Suduweli	Location:	1095997
Phone:	03 8564 5000	Sampler ID:	Client
Fax:		Date of Sampling:	9/05/2024
Email:	enviroreportsAU@eurofins.com	Sample Condition:	Acceptable

Comments:
3a = severe dispersion of the remould. 3b = moderate to slight dispersion of the remould.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

Signed: Anne Michie

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 12360
Accredited for compliance with ISO/IEC 17025 - Testing

This analysis relates to the sample submitted and it is the client's responsibility to make certain the sample is representative of the matrix to be tested.

Samples will be discarded one month after the date of this report. Please advise if you wish to have your sample/s returned.

Document ID: REP-01
Issue No: 3
Issued By: S. Cameron
Date of Issue: 16/12/2019

eastwestonline.com.au

ANALYSIS REPORT

PROJECT NO: EW241079 **Location: 1095997**

					CLIENT SAMPLE ID	24-My0030751	24-My0030752	24-My0030753	24-My0030754
					DEPTH	BH01 0.5M	BH02 0.5M	BH02 1.0M	BH03 0.5M
Test Parameter	Method Description	Method Reference	Units	LOR		241079-1	241079-2	241079-3	241079-4
Emerson Aggregate Test	Class	PMS-21	Number	na		3b	7	3a	7

eastwestonline.com.au

ANALYSIS REPORT

PROJECT NO: EW241079 **Location: 1095997**

				CLIENT SAMPLE ID	24-My0030755	24-My0030756	24-My0030757	24-My0030758
				DEPTH	BH04 0.5M	BH04 1.0M	BH05 0.5M	BH05 1.0M
Test Parameter	Method Description	Method Reference	Units	LOR	241079-5	241079-6	241079-7	241079-8
Emerson Aggregate Test	Class	PMS-21	Number	na	3b	3a	3b	3b

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ANALYSIS REPORT

PROJECT NO: EW241079 **Location: 1095997**

					CLIENT SAMPLE ID	24-My0030759	24-My0030760	
					DEPTH	BH06 0.5M	BH06 1.0M	
Test Parameter	**Method Description**	**Method Reference**	**Units**	**LOR**		**241079-9**	**241079-10**	
Emerson Aggregate Test	Class	PMS-21	Number	na		7	3b	

This Analysis Report shall not be reproduced except in full without the written approval of the laboratory.
Soils are air dried at 40°C and ground <2mm.
NB: LOR is the Lowest Obtainable Reading.

DOCUMENT END

Appendix 4 Wastewater System Concept Design
Proposed Irrigation Concept Design

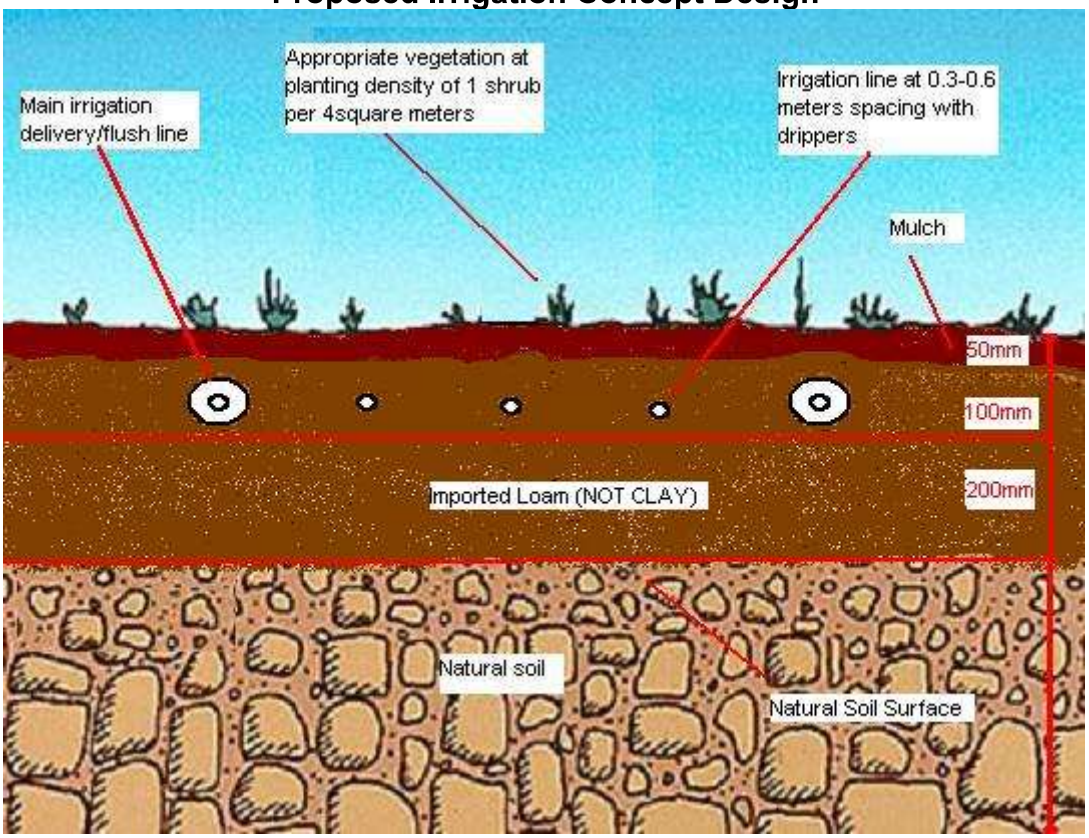

Figure 1 Irrigation cross section showing major delivery/flush lines and irrigation lines.

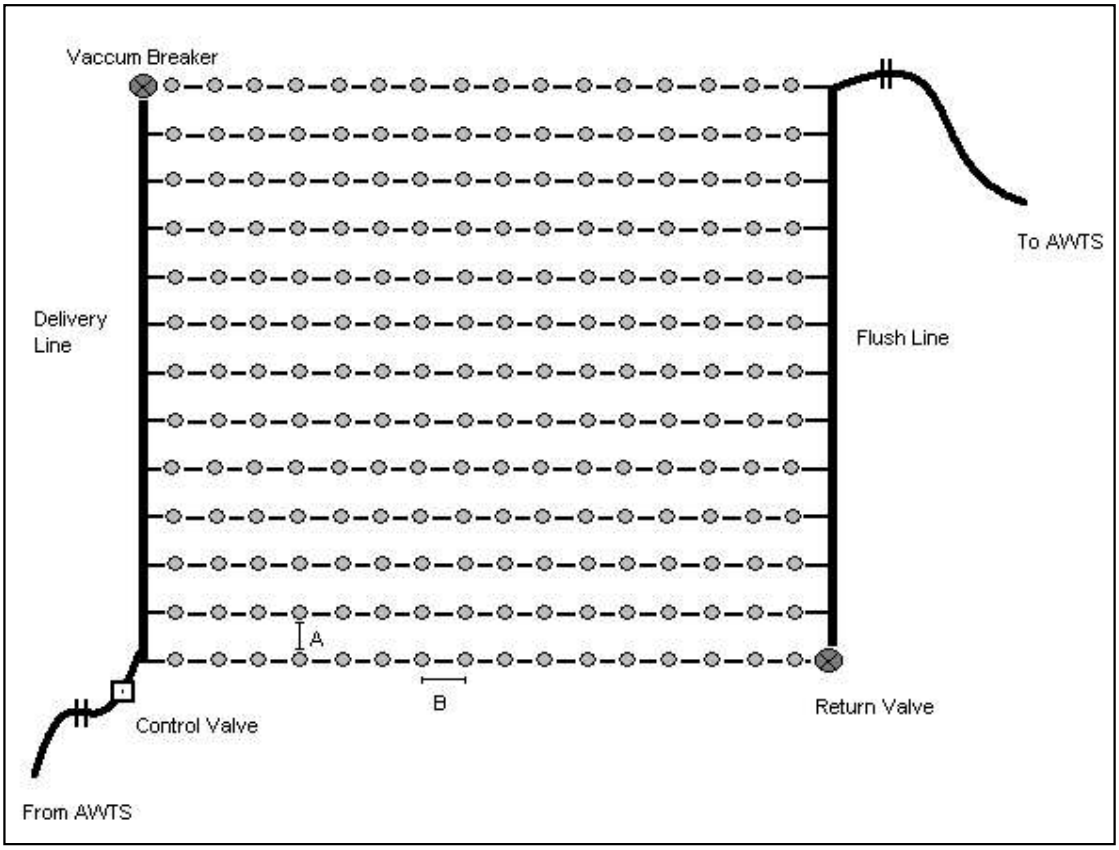

Figure 2 Irrigation Plan View

Site De-vegetation and Soil Renovation Processes

1. Soils may be disturbed by site de-vegetation and removal of large trees. Soil may also be compacted by vehicular traffic or livestock. The following steps should be taken to renovate the soil profile before irrigation is installed:
    a. Mechanically till, harrow or plough and level the residual soil surface. Ensure that all areas where vehicles or livestock have compacted the soil are deeply ripped or tilled to ensure adequate soil permeability. Ensure that the ground surface is levelled along natural slope contours and that all major rocks, gravels, road surfacing 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 2-18) 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

2. Delivery/flush line diameter = 25 -30 mm
3. Irrigation line diameter = 12-16mm
4. 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).
5. Dripper/Sprinkler spacing (B) as per manufacturers specifications.
6. 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).
7. 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.
8. Irrigation areas greater than 400 m^2 should be split into a maximum 250 m^2 cells with effluent flows switched between irrigation lots with an automatic valve system.
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 soil permeability.
12. Gypsum should be incorporated at the rate of 1kg/5m^2 into 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.
15. A minimum 50mm of heavy mulch should be imported to cover the ground surface.
16. Where practical a 50% reserve area should be identified on the site to allow movement or expansion 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.

Appendix 4 Flow Rates, Design Loading Rates and Setback Tables (EPA 2024)

Table 4-4: Minimum daily wastewater flow rates and organic loading rates – community/commercial premises[10]

Source	Design hydraulic flow rates for all water supplies (L/person/day)	Organic material loading design rates (g BOD/person/day)
Motels/hotels/guesthouse		
Bar trade per customer	7	8
Bar meals per diner	10	10
Per resident guest and staff with in-house laundry	150	80
Per resident guest and staff with outsourced laundry	100	80
Restaurants (per potential diner)[11]		
Premises <50 seats	40	50
Premises >50 seats	30	40
Tearooms, cafés (light refreshments and prepared food (e.g. cakes, etc.) per seat	10	10
Conference facilities per seat	25	30
Function centre per seat	30	35
Take-away food shop per customer	10	40
Public areas (with toilet, but no showers and no café)[12]		
Public toilets	6	3
Theatres, art galleries, museums	3	2
Meeting halls with kitchenette	10	5
Premises with showers and toilets		
Golf clubs, gyms, pools etc. (per person)	50	10
Hospitals – per bed	350	150
Shops/shopping centres		
Per employee	15	10
Public access	5	3
School – childcare		
Per day pupil and staff	20	20
Resident staff and boarders	150	80
Factories, offices, day training centres,		

[10] Based on EPA Publication 500: Code of Practice for Small Wastewater Treatment Plants.
[11] Number of seats multiplied by the number of seatings, i.e., may include multiple seatings for breakfast, morning and afternoon teas, lunch and dinner.
[12] For premises such as public areas, factories or offices with showers and toilets, use the flow rates for 'Premises with showers and toilets' in the calculations.

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Source	Design hydraulic flow rates for all water supplies (L/person/day)	Organic material loading design rates (g BOD/person/day)
medical centres		
No showers	20	15
With showers	50	30
Camping grounds		
Fully serviced – onsite cabins/ caravans with showers, toilets and cooking facilities	150	60
Recreation areas/Amenity blocks with showers, communal kitchen and toilets	100	40

Table 4-1: Design flow rates for households[3].

Sewage source	Design flow rate (L/person/day)	
	Reticulated water supply[4]	Onsite roof water tank supply
Households with standard water fixtures	180	150
Households with extra sewage-producing facilities[5]	220	190
Households with WELS[6] scheme fixtures and fittings	150	120

[3] Adapted from Government of South Australia, SA Health (2013), On-site wastewater systems Code.
[4] Includes reticulated town water supply, groundwater bores or stock and domestic waterway diversion licences (where connected to household use).
[5] Extra wastewater producing facilities could include, but are not limited to, spa baths.
[6] WELS – Water efficiency labelling scheme. Requires 4 Stars or higher for dual-flush toilets, shower-flow restrictors, aerator taps, flow/pressure control valves, and 3 Stars or higher for all appliances (for example. clothes washing machines).

Table 4-8: Soil categories and design loading/irrigation rates (reproduced from AS1547:2012 with permission by Standards Australia)

Soil texture	Soil structure	Soil category	Indicative soil permeability Ksat (m/d)	Design irrigation rates (DIR)/design loading rates (DLR) (mm/day)						
				Absorption trenches/ beds			ETA trenches/ beds	Subsurface and surface irrigation	LPED irrigation	Mounds (basal area)
				Table L1, AS/NZS 1547:2012			Table L1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table N1, AS/NZS 1547:2012
				Primary treated effluent		Secondary treated effluent				
				Conservative rate	Maximum rate					
Gravels and sands	Structureless (massive)	1	>3.0	See Note 1 of Table L1, AS/NZS 1547:2012 for DLR values			See Note 4 of Table L1, AS.NZS1547 :2012	5 (See Note 1 of Table M1, AS/NZS 1547:2012)	See Note 3 of Table M1, AS/NZS154:201 2)	32
Sandy loams	Weakly structured	2a	>3.0					5	4	24
	Massive	2b	1.4–3.0	15	25	50		(See Note 1 Table M1, AS/NZS 1547:2012)	4	24
Loams	Highly/moderately structured	3a	1.5–3.0	15	25	50		4	3.5	24
	Weakly structured or massive	3b	0.5–1.5	10	15	30		4	3.5	16
Clay loams	Highly/moderately structured	4a	0.5–1.5	10	15	30	12	3.5	3	16
	Weakly structured	4b	0.12–0.5	6	10	20	8	3.5	3	8
	Massive	4c	0.06–0.12	4	5	10	5	3.5	3	5 (See Note

Soil texture	Soil structure	Soil category	Indicative soil permeability Ksat (m/d)	Design irrigation rates (DIR)/design loading rates (DLR) (mm/day)						
				Absorption trenches/ beds			ETA trenches/ beds	Subsurface and surface irrigation	LPED irrigation	Mounds (basal area)
				Table L1, AS/NZS 1547:2012			Table L1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table N1, AS/NZS 1547:2012
				Primary treated effluent		Secondary treated effluent				
				Conservative rate	Maximum rate					
										of Table N1 AS/NZS 1547:2012)
Light clays	Strongly structured	5a	0.12–0.5	5	8	12	8	3	2.5	8
	Moderately structured	5b	0.06–0.12		5	10	5	3 (See Note 1 of Table M1, AS/NZS1547:2012)	(See Note 4 of Table M1, AS/NZS1547:20 12)	5 (See Note of Table N1 AS/NZS 1547:2012)
	Weakly structured or massive	5c	<0.06			8	(See Note 2, 3 5 of Table L1 AS/NZS 1547:2012)			
Medium to heavy clays	Strongly structured	6a	0.06–0.5	(See Notes 2 and 3 of Table L1 AS/NZS1547:2012)				2 (See Note 2 of Table M1, AS/NZS1547:2012)	(See Note 3 of Table M1, AS/NZS1547:20 12)	
	Moderately structured	6b	<0.06							
	Weakly structured or massive	6c	<0.06							

The design loading rates and design irrigation rates in Table 4-9 are amended to meet Victorian specific recommendations.

Table 4-9: Soil categories and design loading/irrigation rates recommended for Victoria

Soil texture	Soil structure	Soil category	Design irrigation rates (DIR)/design loading rates (DLR) (mm/day)				
			Absorption trenches/ beds	ETA trenches/ beds	Subsurface and surface irrigation	LPED irrigation	Mounds (basal area)
			Table L1, AS/NZS 1547:2012	Table L1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table M1, AS/NZS 1547:2012	Table N1, AS/NZS 1547:2012
Gravels and sands	Structureless (massive)	1	Recommended to use values from "conservative rate" column of Table 4-8 See also Note 1, 2 and 3 of Table 4-9	ETA/ETS systems are not normally used on soil categories 1 and 2a.	Refer to values and notes in Table 4-8 See also Note 4 of Table 4-9	LPED irrigation is not suitable on soil categories 1 and 2a	Refer to values and notes in Table 4-8
Sandy loams	Weakly structured	2a					
	Massive	2b		15		Refer to values and notes in Table 4-8	
Loams	Highly/moderately structured	3a		Refer to values and notes in Table 4-8			
	Weakly structured or massive	3b					
Clay loams	Highly/moderately structured	4a					
	Weakly structured	4b					
	Massive	4c					
Light clays	Strongly structured	5a					
	Moderately structured	5b					
	Weakly structured or massive	5c					
Medium to heavy clays	Strongly structured	6a				LPED irrigation is not suitable on soil category 6	
	Moderately structured	6b					
	Weakly structured or massive	6c					

Notes to Table 4-9:

1. There is elevated risk associated with primary treated effluent being dispersed to trenches and beds in soil categories 1 and 2a. This is due to the high infiltration rate of these soils, which leads to uneven distribution along the base of the trench. These soils have low nutrient retention capacities, often allowing accession of nutrients to groundwater.
2. Use of absorption trenches/beds in category 1 and 2a soils require design by a suitably qualified and experienced person. Where groundwater quality is at risk, secondary treatment is required and consideration should also be given to disinfection, nutrient removal, soil modification or distribution over a large application area.
3. Use of absorption trenches/beds in category 5b, 5c and 6 soils requires special design and distribution techniques or soil modification procedures. In most situations the design will need to rely on more processes than just absorption by the soil.
4. The design irrigation rate for subsurface or surface irrigation may be increased in sandy soils (categories 1 and 2) where secondary treatment is installed with disinfection and nutrient reduction.

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Table 4-10: Setback distances (m) [20,21]

Landscape feature or structure	OWMS with primary treated effluent	OWMS with secondary treated effluent or Level 3 greywater effluent	OWMS with Level 1 and 2 greywater effluent
Building/allotment boundary			
Up-slope of building (See Note 1)	6	3	3
Down-slope of building	3	1.5	1.5
Up-slope of adjacent lot	6	3	1
Down-slope of adjacent lot	3	1.5	0.5
Services			
Water supply pipe	3	1.5	1.5
Up-slope of potable supply channel (stock and domestic)	300	150	150
Down-slope of potable water supply	20	10	10

[20] Setback distances are measured horizontally from the external wall of the treatment plant and the boundary of the land application area, except for soil depth as per Note 10.
[21] The setback distances for flat land are equivalent to down-slope setback distances.

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Landscape feature or structure	OWMS with primary treated effluent	OWMS with secondary treated effluent or Level 3 greywater effluent	OWMS with Level 1 and 2 greywater effluent
channel (stock and domestic)			
In-ground water tank (See Note 2)	15	7.5	3
Closed stormwater drain	6	3	2
Open stormwater drain	50	30	10
Gas supply pipe	3	1.5	1.5
Recreational areas			
Children's grassed playground (See Note 3)	6	3	2
In-ground swimming pool	6	3	2
Surface waters			
Dam, lake or reservoir (used as source water for drinking or within a special water supply catchment) (See Notes 5, 6)	300	300	150
Waterways (used as a source of water for drinking or within a special water supply catchment) (See Notes 4, 5)	100	100	50
Waterways not used as source of water for drinking or within a special water supply catchment (for example, wetlands (continuous or ephemeral); estuaries (See Note 4)	60	30	30
Ocean beach at high-tide mark; dams, reservoirs or lakes not used as source of water for drinking or within a special water supply catchment (See Note 6)	60	30	30
Dam, lake or reservoir (used as source water for drinking or within a special water supply catchment) (See Notes 5, 6)	300	300	150
Drainage lines (See Note 7)	40	20	20

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Landscape feature or structure	OWMS with primary treated effluent	OWMS with secondary treated effluent or Level 3 greywater effluent	OWMS with Level 1 and 2 greywater effluent
Up-slope of cutting/escarpment (See Note 8)	15	15	15
Groundwater bores			
Groundwater bores – category 1 and 2a soils	NA	50	20
Groundwater bores – category 2b to 6 soils	20	20	20
Soil depth (See Note 9)			
Depth to highest seasonal water table (See Note 10)	1.5	1.5	1.5
Depth to hydraulically limiting layer (for example, bedrock)	1.5	0.6	0.6

Notes to Table 4-10:

1. Establishing an OWMS up-slope of a building may have implications for the structural integrity of the building. This should be examined by a building surveyor on a site-by-site basis.
2. It is recommended that OWMS are installed down-slope of an in-ground water tank.
3. Means a school, council, community or other children's grassed playground managed by an organisation which may contain play equipment but does not mean a sports field.
4. Means a waterway as defined in the *Water Act 1989*.
5. Applies to land adjacent to a dam, lake, reservoir or waterway that provides source water used for the supply of public drinking water or, which is subject to an environmental significance overlay (ESO) that designates maintenance of water quality as the environmental objective to be achieved, or within a special water supply catchment area listed in Schedule 5 of the *Catchment and Land Protection Act 1994*.
6. Does not apply to dams, lakes or reservoirs located above ground level that cannot receive runoff.
7. An intermittent stream that is found to be a drainage line (drainage depression) with no defined banks and the bed is not incised. The topography of the drainage line should be demonstrated in writing and photographs in the LCA report.
8. A cutting/escarpment from which water is likely to emanate.
9. Depth is measured vertically through the soil profile from the base of absorption/ETA trenches/beds or from the irrigation pipes.
10. The highest seasonal water table occurs when groundwater is closest to the ground surface. This usually occurs in the wettest months of the year.

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Table 4-11 shows risk factors that may influence setback distance.

Table 4-11: Site constraint risk factors

Risk factor	Parameter
Soil type and geology	Permeability of soil
Topography	Slope
	Landform
	Drainage
	Position of land application area (including system/soil interfaces)
Groundwater	Depth and quality
Weather conditions (rainfall)	Rainfall
	Evaporation
	Flood potential
Wastewater quality	Primary treated effluent
	Secondary treated effluent
Microbial quality of effluent	Consistency of high microbial quality of effluent
Application method	Drip irrigation or subsurface application versus surface/above ground application of effluent
Sensitivity of the receiving environment	Proximity to sensitive receptors (drinking water reservoir/offtake/catchment)

Appendix 5 Professional Indemnity Insurance Certificate of Currency

tasman underwriting

Professional Indemnity Insurance:
Lloyd's Certificate of Insurance
effected through
IBL Limited t/as Tasman Underwriting

The policy referred to below is current as at the date of issue. Whilst a policy expiry date is indicated it should be noted that the policy may be cancelled prior to this expiry date. This certificate is provided for information purposes and is accurate based on our records at the time of issue. It summarises the cover and does not form part of the policy documentation. We are under no obligation to inform you of any subsequent changes to the insurance contract or our records. This certificate confers no rights on the holder.

Insured:	Strata Geoscience & Environmental Pty Ltd; Strata Geoscience & Environmental (Sven Nielsen t/as); Nielsen Family Trust
Policy Number:	PI83961
Limit of Indemnity:	$2,000,000 any one **claim** and $2,000,000 in the aggregate
Business:	Consulting Geotechnical, Environmental & Plumbing Engineers
Retroactive Date:	05/05/2010 (excluding known claims and circumstances)
Period of Insurance:	26/05/2024 at 4pm to 26/05/2025 at 4pm LST
Insurer:	100% Certain underwriters at Lloyd's of London Under contract number B1230FP73399A23
Policy Wording:	Professional Indemnity Insurance TPIC2023.12.01

This Certificate is issued by the Coverholder in accordance with the authority granted to them by certain Underwriters at Lloyd's under the Agreement Number B1230FP73399A23.
IN WITNESS WHEREOF this Certificate has been signed at Tuesday, May 07 2024 by;

IBL Limited t/as Tasman Underwriting
ABN: 65 005 754 718 AFSL: 231203
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LLOYD'S

Appendix 6 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.

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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.

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Interpretation

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.

Design/Report Recommendations

Where sewage treatment plant and/or application system designs are provided by Strata, reasonable effort will be made to minimise environmental, public health and commercial 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) changes to original use of site infrastructure or changes from original modelled loadings as a result of change of use or incorrect loading information supplied by the client: or
(iii) seepage, pollution or contamination or the cost of removing, nullifying or clearing up seepage, polluting or contaminating substances; or
(iv) poor system performance where septic tanks have not been de-sludged at maximum intervals of 3 years or sewage treatment plants have not been serviced in compliance with the manufacturers recommendations; or
(v) system /component failure of any recommended system/component; or
(vi) poor contractor construction/installation practice; or
(vii) Inferior product/component selection by installing contractor ; or
(viii) any treatment plant , treatment plant component or land application area breakdown of any kind; or
(ix) failure of the client to commission both interim and final inspections by the designer throughout the system construction; or
(x) the selection of inappropriate plants for irrigation areas or any increased cost associated with upkeep of recommended plants or their replacement; or
(xi) damage to any infrastructure by seepage/effluent including but not limited to foundations, walls, driveways and pavements; or
(xii) land instability, soil erosion or dispersion caused by seepage/effluent or the installation of sewage plant infrastructure; or

(xiii) Excavation difficulties given hard rock, watertables, collapsing soils or other difficult conditions; or
(xiv) Dammages to underground services via excavation or system installation; or
(xv) design changes requested by the Permit Authority;or
(xvi) time delays associated with any of the above, or to strata or any of its representatives being able to mobilise to site for any reason.

Furthermore Strata does not guarantee land application area esign life beyond 2 years from installation. Strata does not warrant EPA sand filter designs.

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